EPA-600/R-94-139a
August 1994

ECONOMIC GROWTH ANALYSIS SYSTEM:

Reference Manual

Version 2.0

FINAL REPORT

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EPA Contract 68-D2-0181
Work Assignment 1/012

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FOREWORD

The Economic Growth Analysis System (E-GAS) is designed to be an additional tool in developing projection inventories. Projections by their very nature are somewhat uncertain, due to their attempt to surmise the future. However, E-GAS does provide more detailed and accurate growth factors especially for the extreme, severe, serious, and multi-state moderate ozone nonattainment areas (i.e., areas that under the Clean Air Act Amendments must use photochemical grid modeling to demonstrate future attainment) than have previously been available. E-GAS, however, does not purport to be the "last word in growth projections." In fact, E-GAS will be most effective when local knowledge is used in conjunction with the model. If state/local air agency users of E-GAS do not agree with E-GAS outputs or believe their local knowledge is more accurate, then these locally derived factors should be used in the place of E-GAS as long as these locally derived growth factors can be justified and documented.

ABSTRACT

This report presents the results of work completed under EPA Contract No. 68-D2-0181, Work Assignment No. 1/012. The objective of this report was to describe Version 2.0 of the Economic Growth Analysis System (E-GAS) modeling system. The E-GAS model will be used to project emissions inventories of volatile organic compounds, oxides of nitrogen, and carbon monoxide for ozone nonattainment areas and Regional Oxidation Model (ROM) modeling regions.

This report details the design and development of the E-GAS system, and includes detailed descriptions of the workings of the E-GAS computer modeling software, and its relationships with internal modeling software components, like Regional Economic Models, Inc. (REMI) models, and external software, like ROM, the Aerometric Information Retrieval System (AIRS), and the Urban Airshed Model (UAM).

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AADT	Average Annual Daily Traffic
AEO	Annual Energy Outlook
AIRS	Aerometric Information Retrieval System
AIRS/AFS	AIRS Facility Subsystem
ANL	Argonne National Laboratories
AQMD	Air Quality Management Division
ARGUS	Argonne Utility Simulation Model
ASM	Annual Survey of Manufacturers
AUSM	Advanced Utility Simulation Model
BCM	Build Cost Module
BEA	Bureau of Economic Analysis
BEEM	Building Energy End-Use Model
BLS	Bureau of Labor Statistics
CAAA	Clean Air Act Amendments of 1990
CBO	Congressional Budget Office
CEA	Council of Economic Advisors
CO	Carbon Monoxide
COMMEND	Commercial End-Use Energy Planning System
CPI	Consumer Price Index
CSEM	Commercial Sector Energy Model
CSEMS	Commercial Sector Energy Model by State
CSTM	Coal Supply Transportation Model
DOC	Department of Commerce
DOE	Department of Energy
DRI	Data Resources, Inc.
DVMT	Daily Vehicle Miles Travelled
ECM	Emissions and Control Module
E-GAS	Economic Growth Analysis System
EIA	Energy Information Administration
EKMA	Empirical Kinetic Modeling Approach
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
EPS	Emission Preprocessor System
ERP	Economic Report of the President
FMVCP	Federal Motor Vehicle Control Program
FGD	Flue Gas Desulfurization
FGT	Flue Gas Treatment
FHWA	Federal Highway Administration
FRB	Federal Reserve Board
GL	Generalized Leontief
GNP	Gross National Product

GRP	Gross Regional Product
HOME	Household Model of Energy
HOMES	Household Model of Energy by State
HPMS	Highway Performance Monitoring System
ICARUS	Investigation of Costs and Reliability in Utility Systems Model
I/M	Inspection and Maintenance
INDEPTH	Industrial End-Use Planning Methodology-Econometric Models
INRAD	Industrial Regional Activity and Energy Demand Model
KLEM	Capital, Labor, Energy, and Materials
LPG	Liquefied Petroleum Gas
MECS	Manufacturing Energy Consumption Survey
MPO	Metropolitan Planning Organization
MRMP	Multiple Region-Multiple Period
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NAPAP	National Acid Precipitation Assessment Program
NBECS	Non-Residential Building Energy Consumption Survey
NEA	National Energy Accounts
NEDS	National Emissions Database System
NERC	North American Electric Reliability Council
NO_x	Oxides of Nitrogen
NSPS	New Source Performance Standard
NUMOD	Neural Network Electric Utility Model
OAQPS	Office of Air Quality Planning and Standards
OMB	Office of Management and Budget
PSI	Pounds per Square Inch
PURHAPS	Purchased Heat and Power Systems
QA	Quality Assurance
RACT	Reasonably Available Control Technology
REEM	Regional Energy End-Use Model
REEPS	Regional End-Use Energy Planning System
REMI	Regional Economic Models, Inc.
RFP	Reasonable Further Progress
ROM	Regional Oxidation Model
RSQE	Research Seminar in Quantitative Economics
RVP	Reid Vapor Pressure
SCC	Source Classification Code
SEDS	State Energy Data System
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SRMP	Single Region-Multiple Period
SRSP	Single Region-Single Period
TEEMS	Transportation Energy and Emissions Modeling System

TSD	Technical Support Division
UAM	Urban Airshed Model
UEC	Unit Energy Consumption
URGE	Universities Research Group on Energy
VMT	Vehicle Miles Travelled
VOC	Volatile Organic Compounds
WEFA	Wharton Econometric Forecast

ACKNOWLEDGEMENTS

This report was written by TRC Environmental Corporation for the U.S. Environmental Protection Agency's Air and Energy Engineering Research Laboratory (AEERL) and Office of Air Quality Planning and Standards (OAQPS) under the auspices of the Joint Emissions Inventory Oversight Group (JEIOG). EPA involvement included: E. Sue Kimbrough (Work Assignment Manager) and Larry Jones of the AEERL Emissions and Modeling Branch; Richard Wayland of the OAQPS Technical Support Division; Laurel Schultz of the OAQPS Air Quality Management Division; Natalie Dobie and Mark Wolcott of the Office of Mobile Sources; Gale Boyd and Don Hanson of Argonne National Laboratory; and Steve Piccot of Southern Research Institute. Further significant contributions to this document have been made by the staff from Regional Economic Models, Inc. (REMI), Amherst, MA, and their documents. Ron Capone and his staff at Ronald L. Capone & Associates provided Chapter 6 and Appendices A and B of this document.

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND

On November 15, 1990, the Clean Air Act Amendments (CAAA) of 1990 were signed into law. The CAAA require that extreme, severe, serious, and multi-State moderate ozone non-attainment areas use photochemical grid modeling to demonstrate future attainment with the ozone national ambient air quality standard (NAAQS) [Section 182(e)(2)(A)]. In addition to photochemical grid modeling, the CAAA require that moderate, serious, severe, and extreme ozone non-attainment areas submit Rate-Of-Progress (ROP) plans demonstrating a 15 percent reduction in emissions from 1990 to 1996 [Section 182(b)(1)(A)]. In addition, ROP plans (i.e., inventories) for serious, severe, and extreme areas must include demonstration of a three percent annual reduction (averaged over three years) from 1996 until attainment is achieved [Section 182(c)(2)(B)].

Section 182(b)(1)(A) of the CAAA specifies that the 15 percent reduction from baseline emissions accounts for any growth in emissions after 1990. A key component of the ROP inventories and photochemical grid modeling demonstrations will be the development of credible growth factors for the existing inventories. Credible growth factors will require accurate forecasts of economic variables and the activities associated with the economic variables. In order to meet these requirements, the Economic Growth Analysis System (E-GAS) has been designed and developed.[1]

The existing inventories for ROP demonstration and photochemical modeling will be housed in the Aerometric Information Retrieval System (AIRS). E-GAS will be applied to AIRS inventories for the development of estimated future emissions out to 2010, the year that extreme areas must reach attainment. The photochemical models which will be used to show attainment include the Regional Oxidant Model (ROM) and the Urban Airshed Model (UAM). ROM accounts for growth of regional inventories of ozone precursors and models expected levels of ozone formation and transport in the region. This model provides the expected background (or transported) concentration of ozone for urban nonattainment areas in the region being simulated.

With background concentration estimates from ROM, UAM is used to model expected levels of ozone formation in each ozone nonattainment area for specified meteorological conditions.

Chapter 2 of this report describes State modeling and ROP requirements in greater detail.

1.2 OBJECTIVES

The objective of this report is to describe the development of a prototype E-GAS model. This report includes an overview of the E-GAS modeling system (Chapter 1); a description of CAAA requirements for which E-GAS may be used (Chapter 2); a review of EPA guidance on projecting inventories (Chapter 3); a description of national and regional economic forecasts and their use in E-GAS (Chapter 4); a discussion of industrial, commercial, and residential fuel choice models included in E-GAS (Chapter 5); a discussion of the electric utility neural network module (Chapter 6); a discussion of the physical output module (Chapter 7); a discussion of the VMT module (Chapter 8); and, a description of the E-GAS CROSSWALK (Chapter 9). Details on the E-GAS user interface, minimum hardware requirements, and operation and maintenance of the system can be found in the E-GAS user's guide.

1.3 SCOPE OF E-GAS

E-GAS will be used to project emissions inventories of volatile organic compounds (VOC), oxides of nitrogen (NO_x), and carbon monoxide (CO) for ozone nonattainment areas and ROM modeling regions. Therefore, the final structure of E-GAS includes projection capabilities for sources of VOC, NO_x, and CO for ozone nonattainment areas and any attainment portions of the States associated with the areas, and States included in the ROM modeling domains.

The nonattainment areas modeled were chosen on the basis of their nonattainment designation. All serious, severe, and extreme areas were modeled, as were multi-State moderate areas. A list of these areas, their designations, and the counties included in the areas is presented in Table 1-1. These areas, their designations and area definitions, were announced in the November 6, 1991, *Federal Register*.

To minimize both the number and run time of the models in E-GAS, eight models were developed. Separate models were developed for EPA Regions 1, 4, 5, 6, 7, and 9. In addition,

TABLE 1-1. CLASSIFICATIONS OF AND COUNTIES WITHIN DESIGNATED OZONE NONATTAINMENT AREAS

Designated Area	State(s)	Classification		Counties
Los Angeles-South Coast Air Basin Area	CA	Extreme		Los Angeles County (part) Orange County Riverside County (part) San Bernardino County (part) Monterey Bay Area (Monterey, San Benito, and Santa Cruz Counties)
Chicago-Gary-Lake County	IL-IN	Severe-17	IL:	Cook County Du Page County Grundy County (part) Kane County Kendall County (part) Lake County McHenry County Will County
			IN:	Lake County Porter County
Houston-Galveston-Brazoria	TX	Severe-17		Brazoria County Chambers County Fort Bend County Galveston County Harris County Liberty County Montgomery County Waller County
Milwaukee-Racine	WI	Severe-17		Kenosha County Milwaukee County Ozaukee County Racine County Washington County Waukesha County
New York- New Jersey-Long Island	NY-NJ-CT	Severe-17	CT:	Fairfield County (part) Litchfield County (part)
			NJ:	Bergen County Essex County Hudson County Hunterdon County Middlesex County Monmouth County Morris County Ocean County Passaic County Somerset County

(continued)

TABLE 1-1. CLASSIFICATIONS OF AND COUNTIES WITHIN DESIGNATED OZONE NONATTAINMENT AREAS (continued)

Designated Area	State(s)	Classification		Counties
New York- New Jersey-Long Island, continued	NY-NJ-CT	Severe-17	NJ:	Sussex County
				Union County
			NY:	Bronx County
				Kings County
				Nassau County
				New York County
				Orange County
				Putnam County
				Queens County
				Richmond County
				Rockland County
				Suffolk County
				Westchester County
Southeast Desert Modified AQMA	CA	Severe-17		Los Angeles County (part)
				Riverside County (part)
				San Bernadino County (part)
Baltimore	MD	Severe-15		Anne Arundel County
				City of Baltimore
				Baltimore County
				Carrol County
				Harford County
				Howard County
Philadelphia-Wilmington-Trenton	PA-NJ-DE-MD	Severe-15	DE:	Kent County
				New Castle County
			MD:	Cecil County
			NJ:	Burlington County
				Camden County
				Cumberland County
				Gloucester County
				Mercer County
				Salem County
			PA:	Bucks County
				Chester County
				Delaware County
				Montgomery County
				Philadelphia County
San Diego	CA	Severe-15		San Diego County
Ventura Co.	CA	Severe-15		Ventura County

(continued)

TABLE 1-1. CLASSIFICATIONS OF AND COUNTIES WITHIN DESIGNATED OZONE NONATTAINMENT AREAS (continued)

Designated Area	State(s)	Classification	Counties
Atlanta	GA	Serious	Cherokee County Clayton County Cobb County Coweta County De Kalb County Douglas County Fayette County Forsyth County Fulton County Gwinnett County Henry County Paulding County Rockdale County
Baton Rouge	LA	Serious	Ascension Parish East Baton Rouge Parish Iberville Parish Livingston Parish Point Coupee Parish West Baton Rouge Parish
Beaumont-Port Arthur	TX	Serious	Hardin County Jefferson County Orange County
Boston-Lawrence-Worcester (E.MA)	MA-NH	Serious	MA: Barnstable County Bristol County Dukes County Essex County Middlesex County Nantucket County Norfolk County Plymouth County Suffolk County Worcester County NH: Hillsborough County (part) Rockingham County (part)
El Paso	TX	Serious	El Paso County
Greater Connecticut	CT	Serious	Fairfield County (part) Hartford County Litchfield County (part) Middlesex County New Haven County New London County Tolland County

(continued)

TABLE 1-1. CLASSIFICATIONS OF AND COUNTIES WITHIN DESIGNATED OZONE NONATTAINMENT AREAS (continued)

Designated Area	State(s)	Classification	Counties
Greater Connecticut,continued	CT	Serious	Windham County
Muskegon	MI	Serious	Muskegon County
Portsmouth-Dover-Rochester	NH	Serious	Rockingham County (part) Strafford County
Providence (all RI)	RI	Serious	Bristol County Kent County Newport County Providence County Washington County
Sacramento Metro	CA	Serious	El Dorado County (part) Placer County (part) Sacramento County Solano County (part) Sutter County (part) Yolo County
San Joaquin Valley	CA	Serious	Fresno County Kern County Kings County Madera County Merced County San Joaquin County Stanislaus County Tulare County
Sheboygan	WI	Serious	Sheboygan County
Springfield (Western MA)	MA	Serious	Berkshire County Franklin County Hampden County Hampshire County
Washington	DC-MD-VA	Serious	DC: Entire Area MD: Calvert County Charles County Frederick County Montgomery County Prince George's County VA: City of Alexandria Arlington County City of Fairfax Fairfax County Falls Church

(continued)

TABLE 1-1. CLASSIFICATIONS OF AND COUNTIES WITHIN DESIGNATED OZONE NONATTAINMENT AREAS (continued)

Designated Area	State(s)	Classification	Counties
Washington, continued	DC-MD-VA	Serious	VA: Loudoun County Manassas Manassas Park Prince William County Stafford County
Cincinnati-Hamilton	OH-KY	Moderate	KY: Boone County Campbell County Kenton County OH: Butler County Clermont County Hamilton County Warren County
Huntington-Ashland	WV-KY	Moderate	KY: Boyd County Greenup County (part) WV: Cabell County Wayne County
Louisville	KY-IN	Moderate	IN: Clark County Floyd County KY: Bullit County (part) Jefferson County Oldham County (part)
St. Louis	MO-IL	Moderate	IL: Madison County Monroe County St. Clair County MO: Franklin County Jefferson County St. Charles County City of St. Louis St. Louis County (part)

models which combine the areas in EPA Regions 2 and 3 and EPA Regions 8 and 10 were developed. Each model includes all extreme, severe, serious, and multi-State moderate areas, as well as each State and partial State in the region.

1.4 OVERVIEW OF E-GAS SYSTEM

1.4.1 General

Three factors were major considerations during the design phase of E-GAS. First, EPA guidance on projecting emissions inventories was studied. Second, the role of E-GAS in projecting inventories for photochemical models was defined. Third, emission inventories used by Regional Oxidant Model for the Northeast Transport Region (ROMNET) were obtained in order to determine the largest sources of NO_x and VOC in the Northeast. Although the importance of emission sources to the overall VOC and NO_x budgets can vary by geographic area, the Northeast Transport Region was assumed to provide a good general picture of the sources which lead to ozone formation. In addition, because of previous modeling efforts for the region, detailed inventories of VOC and NO_x emissions were available.[2]

1.4.2 EPA Guidance on Projecting Emissions

The general methodology for estimating growth in activity from inventoried emission sources involves two steps. First, the economic sector which corresponds to the emission-producing activity is identified. Second, forecasts of growth in the economic sector are used to project growth in the activity. For example, activity growth at VOC-producing petroleum refineries may be estimated using growth in Standard Industrial Classification (SIC) 2911. EPA guidance proposes that economic variables which can be used to project growth in emissions-producing activity include, in order of preference, product output, value added, earnings, and employment.[3]

EPA considers E-GAS to be one of the options for projecting point, area, and mobile emission source categories.

E-GAS provides more relevant (*i.e.*, physical output) and timely Source Classification Code (SCC)-specific growth factors than factors based on information available from BEA. Growth factors based on BEA data reflect employment and earnings growth which are not as closely related to emissions growth as value added and physical output.

E-GAS provides default, average annual growth factors for ozone nonattainment areas and for the remainder of the State in which the nonattainment area is located. E-GAS growth factors are expected to be very useful to the State and local governments in selecting growth factors for projecting future VOC emissions. They would provide a starting point for State and local governments to estimate growth.

Since annual activity growth will fluctuate rather than occur in smooth, year-by-year increases or decreases, the default factors must be reviewed and modified by State and local governments based on local knowledge of plant expansions, plant closures, new facility construction, or similar factors that would be expected to temporarily distort the default growth projections for any one year.

A detailed discussion of EPA guidance for projecting emissions is presented in Chapter 3.

1.4.3 Photochemical Modeling Demonstrations Required By The CAAA

For photochemical modeling demonstrations, States in the Northeast, Southeast, and Midwest ROM modeling areas will use estimates from the ROM to determine approximate background ozone levels from transport of ozone within the region. ROM accounts for growth in regional inventories of ozone precursors and models expected levels of ozone formation and transport in the region. This model provides the expected background (or transported) concentration of ozone for urban nonattainment areas in the modeled region. These background concentration estimates will be developed by EPA. In addition, States will need to use a photochemical grid model, such as the Urban Airshed Model, to estimate ozone formation in the nonattainment area. UAM uses background concentration estimates from ROM and determines approximate ozone formation in order to model expected levels of ozone in a nonattainment area for specified meteorological conditions.

Photochemical modeling and ROP requirements are discussed in detail in Chapter 2.

1.4.4 Emission Inventory for the Northeast Transport Region

An inventory of VOC and NO_x emissions in the Northeast Transport Region in 1985 is summarized in Table 1-2. As the data in the table indicate, VOC and NO_x emission sources differ greatly by pollutant. Over half of the 1985 NO_x emissions in the region are attributable to point sources, while less than 10 percent of VOC emissions is associated with point sources. All of the point source NO_x emissions are due to fuel combustion. Nonhighway area sources accounted for over half of the VOC emissions but less than 15 percent of NO_x emissions. Only highway mobile sources are a major source of VOC and NO_x: these sources accounted for approximately 35 percent of NO_x and 40 percent of VOC emissions. This inventory does not include CO; however, CO emissions are associated primarily with sources which also emit VOC and NO_x, namely, fuel combustion.

While two sources of NO_x emissions, utility fuel consumption and highway mobile sources, accounted for over 75 percent of all NO_x emissions, only highway mobile sources serve as a dominant source of VOC emissions. No other VOC source contributed more than 13 percent of emissions to the inventory.[2] This, along with the fact that over half of the VOC was emitted from area sources, suggests that projecting emissions-producing activity may be more difficult for VOC than for NO_x.

1.4.5 Design Decisions

Based on the information gathered concerning existing EPA projection guidance, the use of photochemical models in attainment demonstrations, and the 1985 ROMNET inventory, five major design decisions were made:

TABLE 1-2. SUMMER WEEKDAY EMISSIONS FOR 1985 BY SOURCE CATEGORY FOR THE U.S. PORTION OF THE ROMNET DOMAIN (tons/day)[2]

	NO_x	VOC
Point Sources		
Fuel Combustion		
Utility External - Coal	5,721	23
Utility External - Oil	414	10
Utility External - Gas	176	0
Utility External - Other	7	1
Utility Internal - Oil	14	1
Utility Internal - Gas	8	0
Industrial External - Oil	131	12
Industrial External - Gas	146	12
Industrial External - Other	6	1
Industrial Internal - Oil	9	0
Industrial Internal - Gas	613	5
Commercial/Institutional	62	3
Aircraft (Internal)	10	6
Solvent Metal Cleaning	0	34
Printing and Publishing	0	131
Dry Cleaning	0	0
Automobile Surface Coating	0	140
Beverage Can Surface Coating	7	64
General Wood Surface Coating	0	30
Paper Surface Coating	0	85
Miscellaneous Surface Coating	0	344
Crude Oil and Gasoline Storage	0	67
Bulk Gasoline Storage	0	19
Marine Vessel Loading	0	18
Service Stations - Stage I	0	1
Chemical Manufacture Vents	30	1
Chemical Manufacture Fugitives	0	9
Petroleum Refinery Fugitives	0	16
Refinery Wastewater Treatment	0	9
Refinery Vacuum Distillation	19	18
Cellulose Acetate Manufacture	0	30
Styrene-Butadiene Rubber Mfg.	0	4
Polyethylene Manufacture	13	30
Vegetable Oil Processing	0	2
Paint and Varnish Manufacture	0	19
Rubber Tire Manufacture	0	11
Carbon Black Manufacture	0	2
Coke Oven Byproduct Plants	11	20
Other Industrial	425	744
Waste Disposal	32	3
Total - Point Sources	**7,851**	**1,926**
Highway Mobile Sources	**5,108**	**8,956**
Non-Highway Area Sources		
Residential Fuel - Wood	7	121
Residential Fuel - Other	36	2
Commercial/Institutional Fuel	146	4
Industrial Fuel - Coal	111	0

(continued)

TABLE 1-2. SUMMER WEEKDAY EMISSIONS FOR 1985 BY SOURCE CATEGORY FOR THE U.S. PORTION OF THE ROMNET DOMAIN (tons/day)[2] (continued)

	NO_x	VOC
Non-Highway Area Sources, continued		
Industrial Fuel - Oil	64	3
Industrial Fuel - Gas	440	5
Incineration - Residential	3	46
Incineration - Other	17	5
Open Burning - Residential	53	279
Open Burning - Other	1	5
Off-Highway Vehicles	706	681
Railroad Locomotives	322	78
Aircraft	84	99
Vessels - Gasoline	7	161
Vessels - Other	69	17
Forest Wildfires	3	12
Structural Fire	6	47
Gasoline Marketed	0	1,298
Degreasing	0	495
Drycleaning	0	319
Graphics Arts/Printing	0	280
Rubber and Plastic Manufacture	0	590
Surface Coating		1,054
Architectural	0	222
Auto Body Repair	0	58
Motor Vehicle Manufacture	0	340
Paper Coating	0	107
Fabricated Metals	0	51
Machinery Manufacture	0	89
Furniture Manufacture	0	15
Flat Wood Products	0	3
Other Transportation Equipment	0	14
Electrical Equipment	0	11
Ship Building/Repair	0	847
Miscellaneous Industrial Manufacture	0	
Miscellaneous Industrial Solvent Use	0	2,230
POTWs	0	11
Cutback	0	130
Chemical Manufacture Fugitives	0	195
Bulk Terminals and Bulk Plants	0	405
Petroleum Refinery Fugitives	0	301
Process Emissions - Bakeries	0	48
Process Emissions - Pharmaceuticals	0	45
Process Emissions - Synthetic Fibers	0	93
Crude Oil/Gas Production Fields	0	70
Hazardous Waste TSDFs	0	787
Total - Other Area Sources	**0**	**11,676**
TOTAL - POINT, MOBILE, AREA	**15,035**	**22,557**

1. Because BEA economic forecasts for States are only released every five years, it was determined that BEA was not the best source for economic data. In lieu of economic data, it was proposed that sub-national economic models be included in E-GAS because models, rather than forecasts, would allow the user to base projections on the most up-to-date economic information available.

2. Because UAM requires estimates of source growth for ozone nonattainment areas, it was determined that E-GAS should include the capability to produce MSA-level economic growth factors. After contacting numerous economic modeling firms, Regional Economic Models, Inc. (REMI) was located. E-GAS uses REMI models to produce area-specifc growth factors, by source, for each of the nonattainment areas and attainment portions of States in E-GAS. These growth factors are applied to each county in the modeled area. The spatial resolution of the REMI model only allows area-specific growth factors, which are subsequently assigned to counties for use in photochemical grid models.

3. Regional economic models are driven by forecasts of national economic activity. Therefore, E-GAS needed a national economic forecasting capability. It was determined that the system would be most accurate if users were allowed to choose a national economic forecast. Therefore, the E-GAS system is designed to allow users to make this choice. However, it was determined that only two national forecasts would be supplied with the system, Bureau of Labor Statistics (BLS) and Wharton Econometrics Forecasting Associates (WEFA).

4. Based on the emission source strengths in the 1985 Northeast Transport Region inventory, it was determined that separate forecasting modules were needed for estimating emissions growth for the following categories: fuel consumption by electric utilities; industrial physical output for the major VOC-producing sources; vehicle miles travelled by highway vehicles; and fuel consumption by the commercial, residential, and industrial sectors.

5. Activity growth estimates should be developed at the level of disaggregation of the emission inventories to be projected by the growth estimates. Therefore, it was determined that growth factors would be developed for each of the point, area, and mobile Source Classification Codes. This level of disaggregation allows E-GAS users to apply model outputs to existing inventories to project emissions for both photochemical modeling demonstrations and ROP planning.

1.4.6 E-GAS Design

Figure 1-1 contains the flow chart for E-GAS. As the flowchart indicates, E-GAS is composed of three tiers: a national economic tier, a regional economic tier, and a growth factor tier. Each of these tiers will be discussed briefly.

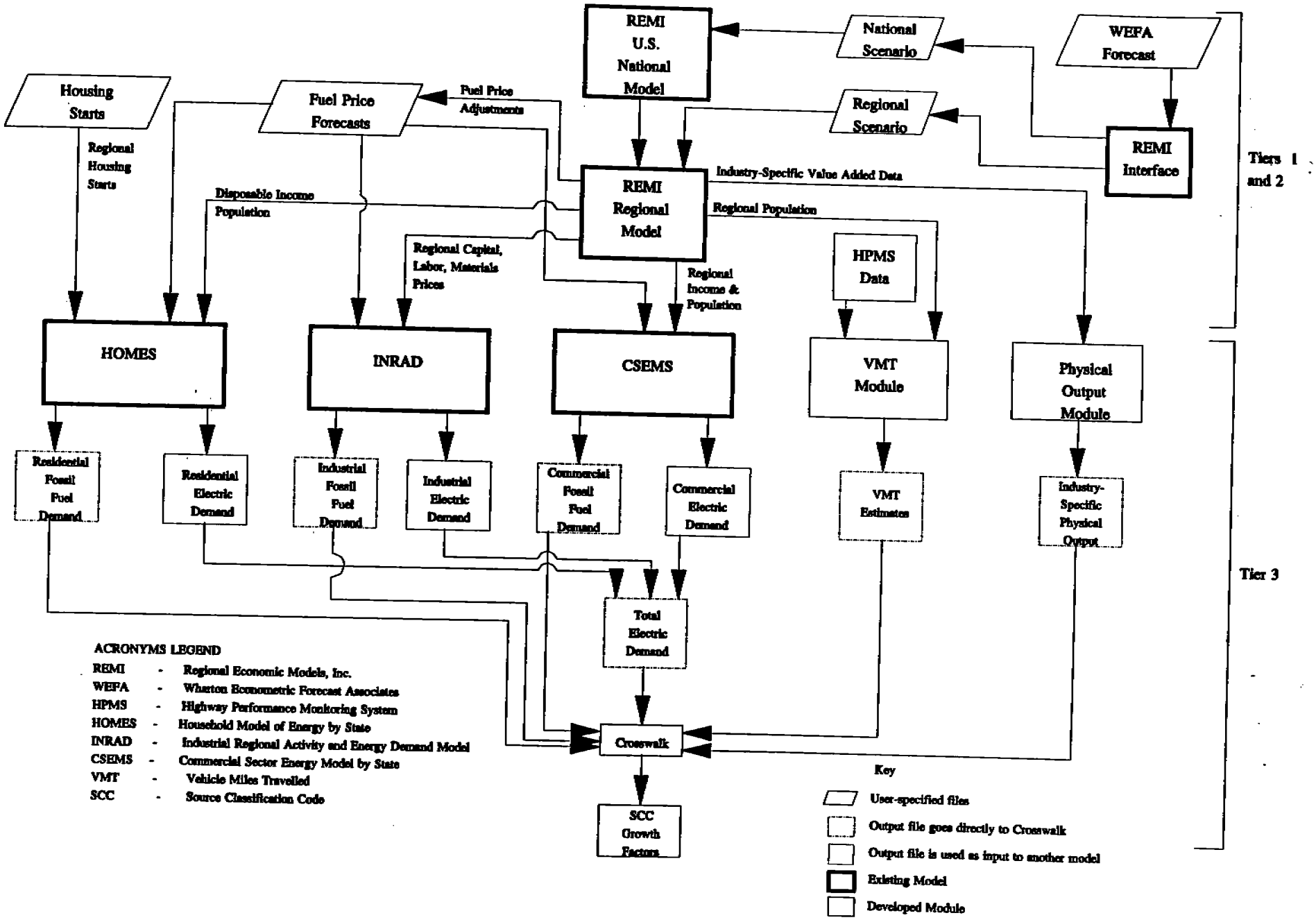

Figure 1-1. Flowchart for the Economic Growth Analysis System

1.4.6.1 *Tier 1: The National Economic Tier*

The national economic tier includes a REMI model of the United States which includes a baseline forecast calibrated to the one released by the BLS. Although the BLS forecast is updated every two years, REMI updates the forecast using data released annually by BEA. In addition, the E-GAS national economic tier contains the option to use economic forecasts from WEFA. WEFA forecasts national economic activity under low growth, base case, high growth, and cyclical growth scenarios.

The function of the national tier in E-GAS is two-fold. First, the inclusion of a national forecasting capability allows EPA to forecast urban and regional economic growth using a common assumption about national economic growth. Second, it provides users with the ability to use the most current national economic forecasts and to simulate the effects of different levels of national growth on emission-producing activity in nonattainment areas.

The national economic tier is discussed in detail in Chapter 4.

1.4.6.2 *Tier 2: The Regional Economic Tier*

The regional economic tier includes separate economic models for each of the nonattainment areas and attainment portions of States. The largest geographic area covered by an economic model is a State.

The regional economic models included in E-GAS were built by REMI. The models simulate interaction between the 14 major sectors of an economy and produce estimates of employment and value added for 210 sectors. The 210-sector outputs are identified by BLS industrial codes. The BLS codes are closely related to three-digit SIC codes. Outputs from the regional models are used as input data for the growth factor tier.

The REMI models are designed to forecast future activity in an area and to simulate the effects of a policy change in an area. The models come with a capability for the user to simulate the effects of changes in almost 400 economic policy variables and over 70 demographic variables. The list of policy variables included with E-GAS was reduced to 84 variables. Two criteria were used for choosing which policy would be included in the system: whether the policy variable relates to the implementation of the CAAA; and whether the variable is one which local personnel using E-GAS would be knowledgeable of, particularly changes or proposed changes. For example, industrial capital costs were included as a variable because that variable satisfies

the first criterion. This variable will allow users to simulate the effects of control costs associated with the CAAA. Policy variables that satisfy the second criterion include local tax rates and State and local government spending. Policy variables which do not satisfy either criterion, and therefore are not in E-GAS, include demographic variables such as birth and survival rates, and economic variables such as demand for goods not affected by the CAAA. Table 1-3 lists the policy variables included in E-GAS.

The REMI models and outputs contribute to the development of credible growth factors for future-year inventories in the following ways:

1. Forecasts of activity from emission-producing sources were to be developed for both the attainment and nonattainment portions of States, allowing growth rates to differ between rural and urban portions of a State.

2. Outputs from the models are used to produce area-level estimates of fuel consumption, VMT, and physical output.

3. The effects of a nonattainment area policy on the surrounding areas can be assessed.

4. Information on local policies can be entered directly into the REMI models. This ability allows users to include the effects of local policies when developing forecasts.

REMI outputs and the growth factor tier are linked in the following specific ways.

- REMI models provide income forecasts for estimating residential fuel consumption.

- REMI models provide population and personal income forecasts for estimating commercial energy consumption.

- REMI models provide the forecasts of the relative costs of capital, labor, and materials for estimating industrial fuel consumption.

- REMI models provide industry-specific employment and value added forecasts for estimating physical output.

TABLE 1-3. POLICY VARIABLES INCLUDED IN E-GAS

Employment Variables
Change in Employment in Durable Goods
Change in Employment in Nondurable Goods
Change in Employment in Mining
Change in Employment in Construction
Change in Employment in Transportation and Public Utilities
Change in Employment in Finance, Insurance, and Real Estate
Change in Employment in Retail Trade
Change in Employment in Wholesale Trade
Change in Employment in Services
Change in Employment in Agriculture, Farm, and Fishing Services
Change in Employment in State and Local Government
Change in Employment in Federal Civilian Government
Change in Employment in Federal Military
Change in Employment in Agriculture

Demand Variables
Final Demand for Durable Goods
Final Demand for Nondurable Goods
Final Demand for Mining
Final Demand for Construction
Final Demand for Transportation and Public Utilities
Final Demand for Finance, Insurance, and Real Estate
Final Demand for Retail Trade
Final Demand for Wholesale Trade
Final Demand for Services
Final Demand for Agriculture, Farm, and Fishing Services

Personal Consumption Expenditure (PCE)
PCE - Autos and Parts
PCE - Furniture and Household Equipment
PCE - Other Durables
PCE - Food and Beverages
PCE - Clothing and Shoes
PCE - Gasoline and Fuel
PCE - Fuel Oil and Coal
PCE - Other Nondurables
PCE - Housing
PCE - Household Operation
PCE - Transportation and Public Utilities
PCE - Health Services
PCE - Other Services
PCE - Electricity
PCE - Natural Gas
PCE - Bus and Trolley Car Transportation
PCE - Taxicabs
PCE - Commuter Railway Transportation
PCE - Railway Transportation
PCE - Intercity Bus

(continued)

TABLE 1-3. POLICY VARIABLES INCLUDED IN E-GAS (continued)

Investment
Residential Investment
Nonresidential Investment
Durable Equipment Investment

Fuel Costs
Relative Price of Commercial Electricity
Relative Price of Industrial Electricity
Relative Price of Commercial Natural Gas
Relative Price of Industrial Natural Gas
Relative Price of Commercial Oil
Relative Price of Industrial Oil

State and Local Government Spending
Elementary and Secondary Education
Higher Education
Other Education and Libraries
Health and Hospitals
Public Assistance and Relief
Sewerage
Sanitation
Police
Fire
Corrections
Highways
Water and Air Facilities
Transit Utilities
Other Commerce and Transportation
Gas and Electric Utilities
Water
Urban Renewal and Community Facilities
Natural and Agricultural Resources and Recreation
Other General Government

Local Facilities
New Communications Facilities
New Electric Utility Facilities
New Water and Sewer Supply Facilities
New Gas Utility and Pipeline Facilities
New Roads
New Local Transit Facilities
New Conservation and Development Facilities

Other
Change in Purchasing Power
Corporate Profit Tax Rate
Equipment Tax Rate
Personal Taxes
Property Tax Rate

- REMI models provide population forecasts for use in estimating VMT.

The regional economic tier is discussed in Chapter 4.

1.4.6.3 *Tier 3: The Growth Factor Tier*

The third tier of E-GAS is the largest portion of the system. Housed within the third tier are commercial, residential, industrial, and utility energy models; a VMT module; a physical output module; and a Crosswalk. Each of these will be discussed.

The energy models in the system were developed by Argonne National Laboratories (ANL) and are currently being used for the National Acid Precipitation Assessment Program (NAPAP). The residential energy model, the Household Model of Energy (HOMES), was modified for use in the NAPAP model set in the mid-1980s. In 1989-1990, ANL updated HOMES to include the capability to model residential fuel consumption at the State, rather than Census, level. For use in E-GAS, two changes were made to HOMES. First, the base year of the model projections was updated to 1990 using data from the *State Energy Data Report (SEDS).*[4] Additionally, the capability to estimate growth in residential fuel consumption at the sub-State level was developed. REMI forecasts of population data for nonattainment areas and attainment portions of States are input with State-level fuel price forecasts to develop estimates of residential fuel consumption growth for seven fuels for each of the nonattainment areas and attainment portions of States in E-GAS.

The commercial energy model, the Commercial Sector Energy Model (CSEMS), was also developed for use in the NAPAP model set in the mid-1980s and updated in 1989-1990 to estimate commercial fuel consumption at the State level. Like HOMES, the model was modified for use in E-GAS to estimate commercial energy consumption growth for six fuels for nonattainment areas and surrounding attainment portions of States. The base year for the model projections was updated to 1990 using data from SEDS. Inputs to CSEMS include State-level fuel price forecasts and REMI forecasts of population and personal income at the sub-State level.

The industrial energy model, the Industrial Regional Activity and Energy Demand Model (INRAD), was developed to predict how energy use will be influenced by energy prices and the general level of economic activity.[5] INRAD was developed to model energy consumption of

fossil fuels and electricity for seven energy-intensive industries and an eighth "other" category which aggregates the non-energy-intensive industries. Two modifications to INRAD were made for use in E-GAS. First, additional industrial categories were modeled. Second, INRAD was modified to estimate fossil fuel consumption by fuel type. With these modifications, INRAD can estimate coal, oil, gas, and electricity consumption for the following sectors: food, textiles, upstream paper products, downstream paper products, upstream chemicals, downstream chemicals, glass, glass products, and metals. Inputs to INRAD include State-level forecasts of fuel prices and REMI forecasts of the relative costs of capital, labor, and materials at the sub-State level.

The VMT module projects growth in VMT for the modeled areas. EPA guidance indicates that a single VMT projection may be applied to the entire mobile source category. The E-GAS VMT projection method (1990-1996) is based on Federal Aid Urbanized Area HPMS data for 1985-1990. The methodology uses regression analysis of these data to establish short-term non-attainment area-level trends in VMT growth. For projections beyond 1996, E-GAS allocates national VMT growth as projected by the EPA MOBILE4.1 Fuel Consumption Model to individual areas based on population growth.

The physical output module estimates physical output from value added data generated by the REMI models. Industrial VOC sources were ranked by their contributions to industrial VOC emissions and equations were developed for the largest VOC sources. These equations relate changes in physical output by three-digit SIC categories (as identified by BLS code) with changes in value added and a time trend to capture technological change. These equations provide better estimates of VOC-producing activity than value added alone because they estimate change in actual material output, which is related to the use of VOC producing materials, such as surface coatings and degreasers. For industrial VOC categories for which equations were not developed, activity levels are forecast using value added forecasts from the REMI models.

Electricity generation by electric utilities is forecast by the Neural Network Electric Utility Model (NUMOD). NUMOD is a behavioral model which uses 3 embedded neural networks to calculate annual generation activity indices and annual generation resulting from combustion of coal, oil, and natural gas in each of the 48 contiguous states. Although NUMOD forecasts state aggregate generation, it assumes that states are grouped into power pools. It also assumes that generation needed to meet demand in any state may be partially located in other states in the

power pool. In contrast to traditional electric utility models, NUMOD uses artificial intelligence to learn to relate the amount of electricity generated from data describing generating capacity, climate, peak loads, fuel prices, and power pool effects. The model operates by reading input records, each of which describes one state for one year. Each record is independent of every other record, allowing NUMOD to run any number of scenarios during a single model run.

The Crosswalk is the final component of the E-GAS system. The Crosswalk translates growth factors from the energy, VMT, and physical output modules into growth by SCC. The growth factors from the industrial energy and physical output modules are disaggregated to the two-, three-, and sometimes four-digit SIC level, while growth factors from the electric utility model can be disaggregated to the plant or county level by type of fuel consumption. The commercial and residential sector energy models disaggregate consumption by fuel type only. The Crosswalk was developed by individually matching each of the approximately 7000 SCCs with the appropriate growth factor from the modules. This allows different growth factors to be applied to different emission sources from the same industrial category. For example, forecasts of fuel consumption in upstream chemical manufacturing are developed by INRAD, while forecasts of physical output of upstream chemical products are developed in the physical output module. This methodology takes into account that future emissions associated with an SIC code will vary by type of emission. This is consistent with the SCC system of classification which differentiates according to not only industrial category, but also to processes within that category.

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CHAPTER 2

STATUTORY BACKGROUND AND USER REQUIREMENTS FOR USING E-GAS TO PROJECT EMISSIONS

2.1 INTRODUCTION

Title I of the CAAA requires that ozone nonattainment areas classified as serious, severe, extreme and multi-State moderate use photochemical grid modeling to demonstrate future attainment with the ozone national ambient air quality standard [Section 182(E)(2)(A)]. In addition to photochemical grid modeling, Section 182(b)(1)(A) requires that moderate, serious, severe and extreme ozone nonattainment areas submit a rate of progress plan to demonstrate how the area will achieve the 15 percent reduction in VOC emissions by 1996. Areas classified as serious, severe and extreme are also required to demonstrate how the area will achieve a three percent annual reduction (averaged over three years) in VOC or NO_x from 1996 until the area reaches attainment [Section 182(c)(2)(B)].

EPA is currently drafting guidance to aid States in the development of the rate of progress plans. The rate of progress plan (due in 1993) must include the 15 percent demonstration, the control strategy, adopted rules identified in the control strategy and an attainment demonstration for moderate areas. The post-1996 rate of progress plan (due in 1994) will include the above information and the attainment demonstration for serious and above areas.

Section 182(b)(1)(A) specifies that the 15 percent reduction from baseline emissions accounts for any growth in emissions after 1990. A key component of these rate of progress plans is the projection of emissions that will be required to determine growth in the area. E-GAS can provide the growth factors necessary to project future emissions.

This chapter discusses potential E-GAS user groups; statutory requirements of the CAAA for which E-GAS may be used; and system requirements identified during the development of E-GAS.

2.2 POTENTIAL E-GAS USERS

States that have ozone nonattainment areas classified moderate and above are required to submit rate of progress plans that will include projections of emissions for all source categories within the nonattainment area. In order for the States to prepare accurate estimates of emissions, appropriate emission growth factors must be developed. E-GAS will support that development. Potential E-GAS user groups include the following:

- State and Local Air Agencies
- EPA Regional Offices
- EPA Office of Air Quality Planning and Standards (OAQPS)
  OAQPS Air Quality Management Division (AQMD)
  OAQPS Technical Support Division (TSD)

2.3 TERMINOLOGY

The following terms will be used in this report and in discussions concerning the use of E-GAS to project emission inventories for modeling and rate of progress plans.

Rate of Progress EPA has defined rate of progress as the 15 percent emissions reduction from 1990 emissions required by November 15, 1996 [Section 182(b)(1)].

Reasonable Further Progress Reasonable further progress is defined in Section 182(c)(2) as the three percent per year averaged over consecutive three year periods from November 15, 1996 until the areas are redesignated.

Rate of Progress Plan The rate of progress plan is the portion of the State implementation plan (SIP) revision (due in 1993) that illustrates the plan for the achievement of the 15 percent emissions reduction.

Post-1996 Rate of Progress Plan The post-1996 rate of progress plan is the portion of the SIP revision (due in 1994) that illustrates the plan for the achievement of the nine percent emissions reductions every three years.

Base Year Emission Inventory Section 182(a)(1) defines this inventory as a "comprehensive, accurate, current inventory of actual emissions from all sources", which includes 1990 emissions of VOC, NO_x, and CO.

Baseline Emissions Section 182(b)(1)(B) defines baseline emissions as the total amount of VOC or NO_x emissions from all anthropogenic sources in the area excluding emissions that would be eliminated under the regulations described in Section 182(b)(1)(D)(i) and (ii).

1990 Actual Inventory This inventory reflects only emissions within the designated nonattainment area. EPA has interpreted that the 15 percent reduction must be from sources within the nonattainment area.

Projected Emission Inventory This inventory is necessary to determine the control strategy that an area will need to meet the required emission reductions and eventually attain the standard.

1996 Target Level of Emissions EPA has defined this to be the level of emissions in a nonattainment area necessary for the area to meet the rate of progress requirements.

Milestone Demonstration Demonstrating achievement of the 15 percent VOC reduction in the first 6 years after enactment and then subsequently demonstrating achievement of the 3 percent VOC reduction per year averaged over 3 years from November 15, 1996, are defined as milestone demonstrations. Milestone demonstrations must be submitted to EPA within 90 days of the milestone date in accordance with Section 182(g)(2).

User Requirements Analysis The description of user needs in terms of input and output capabilities.

2.4 OVERVIEW OF REASONABLE FURTHER PROGRESS REQUIREMENTS

Section 182(b)(1) of the CAAA requires all ozone nonattainment areas classified moderate and above to submit SIP revision to provide for reductions in VOC emissions of at least 15 percent during the first 6 years after enactment.[a] The purpose of this specified rate of reduction program is to establish a consistent requirement for all ozone nonattainment areas classified moderate and above. The 15 percent reduction requirement is intended to set a minimum level for emission reductions. The baseline from which the 15 percent reduction is calculated is defined as all anthropogenic emissions (VOC and NO_x) during calendar year 1990 excluding the emissions that would be eliminated by Federal Motor Vehicle Control Program (FMVCP)

[a]This submission was required by November 15, 1993.

regulations promulgated by January 1, 1990 and Reid vapor pressure (RVP) regulations promulgated by November 15, 1990, or regulations required to be promulgated under section 211(h) which requires RVP no greater than 9.0 pounds per square inch (psi) during the high ozone season (7.8 psi in the southern portions of the United States) [Section 182(b)(1)(B)]. These expected emission reductions are removed from the baseline prior to calculating the required 15 percent emission reduction.

Emission reductions from the following types of regulations are not creditable toward the 15 percent progress requirement:

- FMVCP regulations promulgated by EPA by January 1, 1990
- RVP regulations promulgated by EPA by November 15, 1990 or required to be promulgated under Section 211(h) which requires RVP no greater than 9.0 psi during the high ozone season (7.8 psi in the southern portions of the United States)
- Regulations submitted to correct deficiencies in existing VOC reasonably available control technology (RACT) regulations as required under Section 182(a)(2)(A)
- Regulations submitted to correct deficiencies in inspection and maintenance (I/M) programs as required under Section 182(a)(2)(B)

All other emission reductions are creditable.

The expected reductions from FMVCP and RVP are adjusted out of the baseline prior to calculating the required 15 percent reduction (via the development of the adjusted base year inventory). By adjusting the baseline for these two programs, States lower the 15 percent emission reduction requirement. Congress allowed this adjustment to ensure that States would be fully credited for relevant reductions (*i.e.*, the adjustment recognizes that the reductions from these programs should have already occurred and therefore lowers the inventory from which the 15 percent requirement is calculated).

A nonattainment area can achieve less than the 15 percent required reductions if the State can demonstrate that: (1) the area has a New Source Review program equivalent to the requirements in extreme areas [Section 182(e)], except that "major source" must include any source which emits, or has the potential to emit, 5 tons per year of VOC; and (2) all major sources (those which emit 5 or more tons per year) in the area must have RACT level controls.

The plan must also include all measures which can be feasibly implemented in the area. Finally, the State must demonstrate that the plan includes all measures achieved in practice by sources in the same source category in nonattainment areas of the next higher classification. The waiver for the 15 percent progress requirement cannot apply to nonattainment areas classified as extreme.

Section 182(c)(2)(B) requires that serious, severe and extreme ozone nonattainment areas submit a post-1996 rate of progress plan by November 15, 1994. The plan must provide reductions in VOC emissions of at least three percent per year averaged over three consecutive years beginning November 15, 1996 until the area reaches attainment. A nonattainment area can achieve less than the three percent per year required reductions if the State can demonstrate that the plan includes all measures which can be feasibly implemented in the area, in light of technological achievability. Additionally, the State must demonstrate that the plan includes all measures achieved in practice by sources in the same source category in nonattainment areas of the next higher classification. The waiver for the three percent per year progress requirement cannot apply to nonattainment areas classified as extreme. A determination of the waiver from the three percent per year requirement will be reviewed at each milestone under Section 182(g) and revised to reflect the availability of any new technologies or other control measures for sources in the same category. The baseline for the three percent per year reductions and creditability requirements is the same as for the 15 percent progress requirement under Section 182(b)(1).

2.5 OVERVIEW OF ATTAINMENT DEMONSTRATION REQUIREMENTS

Section 182(b)(1)(A) requires a SIP revision for a moderate ozone nonattainment area to provide for reductions in VOC and NO_x emissions "as necessary to attain the national primary ambient air quality standard for ozone." This requirement can be met through applying EPA-approved modeling techniques described in the current version of EPA's *Guideline on Air Quality Models* (Revised).[1] The Urban Airshed Model, a photochemical grid model, is recommended for modeling applications involving entire urban areas. In addition, for moderate areas contained solely in one State, the city-specific Empirical Kinetic Modeling Approach (EKMA) may be an acceptable modeling technique. The State should consult with EPA prior to selection of a modeling technique. If EKMA is used, the attainment demonstration is due by November 1993.

In other cases, a State might choose to use a photochemical grid model instead of EKMA. Grid modeling will generally provide a better tool for decision makers and the necessary additional time may, therefore, be justified. In such cases, States should consult with EPA on a case-by-case basis on an acceptable approach to meeting the Section 182(b)(1)(A) requirement through an interim SIP submittal by November 1993 and a completed attainment demonstration by November 1994. The interim submittal would include, at a minimum, evidence that the grid modeling has begun and a commitment, with schedule, to complete the modeling and submit it as a SIP revision by November 1994. The completed attainment demonstration would include any additional controls needed for attainment. Separate attainment demonstration requirements apply to multi-State moderate areas, as described below.

Moderate and above multi-State ozone nonattainment areas must submit attainment demonstrations which use photochemical grid modeling (or equivalent) (Section 182(j)(1)(B)). The Urban Airshed Model is recommended for modeling applications involving entire urban areas. Care should be taken to coordinate strategies and assumptions in a modeled area with those in other, nearby modeled areas in order to ensure that consistent, plausible strategies are developed. EPA has further interpreted the requirements of Section 182(j) to supersede the requirements of 182(b). This means that a State must submit a SIP revision providing for the 15 percent reduction in VOC emissions from 1990 through 1996 by November 15, 1993. A second SIP revision including the necessary provisions to demonstrate attainment of the NAAQS is due November 15, 1994. The timing of these submittals is identical to the requirements for serious ozone nonattainment areas.

Section 182(c)(2)(A) requires a SIP for a serious ozone nonattainment area to provide an attainment demonstration by November 15, 1994. The "attainment demonstration must be based on photochemical grid modeling or any other analytical method determined by the Administrator, in the Administrator's discretion, to be at least as effective" (Section 182(c)(2)(A)). This requirement can be met through applying EPA-approved modeling techniques for SIP revisions.[1] The Urban Airshed Model is recommended for modeling applications involving entire urban areas.

Serious areas generally must meet all requirements of moderate ozone nonattainment areas. As previously discussed, moderate areas are required to provide for reductions in VOC and NO_x emissions "as necessary to attain the national primary ambient air quality standard for

ozone" (Section 182(b)(1)(A)). To determine the "necessary" emission reductions, an attainment demonstration is generally required by November 1993, if a photochemical grid model is not used. Serious (and higher) areas, however, must complete photochemical grid modeling analyses and have longer attainment deadlines. In consideration of the additional time necessary to gather data to support and to perform a grid modeling analysis, Congress provided an additional year for serious (and higher) areas to submit their demonstrations of attainment. Due to Congress' allowance of this additional year, EPA believes that the Section 182(c) requirement for serious and higher ozone nonattainment areas to submit photochemical grid modeling by November 1994 supersedes the attainment demonstration otherwise applicable under Section 182(b).

2.6 USE OF E-GAS

In developing strategies for complying with the CAAA deadlines, States will examine an array of complex compliance strategies, and will estimate the impact of these strategies on future ozone air quality in nonattainment areas. These assessments will be accomplished by first estimating future emissions of VOC, NO_x, and CO, (all ozone precursors) and then estimating ambient air quality impacts with atmospheric chemistry models such as the Urban Airshed Model and the Regional Oxidant Model. Emission forecasts, which are a critical component in both UAM and ROM analyses, will be estimated both on the anticipated effectiveness of emission control strategies and on national and local economic growth assumptions.

The primary purpose of E-GAS is to allow State and EPA staff to forecast future growth in the activity levels of ozone precursor emissions sources. These activity growth estimates can then be used to project future activity levels and conduct control strategy analyses using emission estimation models. E-GAS will estimate source-specific growth factors which can serve as input to the Emissions Preprocessor System (EPS) for UAM, which was developed by the Office of Air Quality Planning and Standards. E-GAS estimates economic growth projections, employment growth projections, growth in production and energy consumption, changes in demographic variables, and other parameters. Outputs from the model were developed in a format that is compatible with AIRS formats, so that it is possible to use E-GAS outputs to grow AIRS emission inventories.

2.7 SYSTEM REQUIREMENTS

Requirements for E-GAS have been organized into the following categories:

- Functional requirements - Capabilities identified by customers that could be provided by the system which can directly support control strategy development activities.
- System attributes - General operating requirements describing user interaction with the system.

2.7.1 Functional Requirements

The functional requirements discussed in this section are those that have been suggested by customers that could directly support control strategy development.

Output is in a form consistent with the Emission Preprocessor System (EPS). EPA has already developed EPS to manipulate the emission inventory data provided by a State to make them usable for UAM inputs. E-GAS outputs are also in a generic ASCII file that can be input into AIRS and other systems.

2.7.2 Required System Attributes

In addition to the functional requirements previously described, the following system attributes have been identified.

2.7.2.1 *Easy Data Entry*

The need for simple data entry for front-line personnel was identified since data entry personnel are often responsible for entering only a small subset of data, specific to their function. They need to be able to quickly view, edit, and update only those data that are important to them, instead of scrolling through dozens of screens in order to locate the five or six data elements that they need to update. Customized user-views of the data are needed to present only pertinent information to front-line data entry personnel.

2.7.2.2 *User Friendly*

In addition, user friendliness and state-of-the-art help features are important since users are accustomed to PC-type help features (or the help features in a system such as TRIS), such as the use of the F1 key for field sensitive help, pop-up tables to identify codes and descriptors, on-line look-up tables to identify acronyms and descriptors, and standard query languages. Users consider these features critical to the successful use of the system.

2.7.2.3 *Quality Assurance*

A variety of quality assurance (QA) tools will be needed by State agencies to verify that data reported by industry are both complete and correct. Typical types of data QA tools would include edit checks, completeness checks, and reasonableness checks.

2.7.2.4 *Data Security*

In terms of data security, States often bear the prime responsibility for ensuring that confidential information supplied by industry is protected. Extreme precautions are needed to guard against unauthorized access.

2.7.2.5 *State-owned Data*

States often collect and use data for their own purposes and do not want EPA personnel to have access to these data. A capability must exist to allow States to protect State-owned data if desired.

2.8 CONCLUSIONS

The statutory requirements for Rate-of-Progress plans and demonstrating attainment clearly point to the need for a system which will project activity growth factors. E-GAS was developed to serve that purpose and to aid State and local agencies in the development of their control strategies for meeting those requirements.

emissions projection guidance also indicates that for the purposes of projecting SIP inventories, States are expected to use earnings, value added, or product output data.[1]

3.2 POINT SOURCES

3.2.1 EPA Point Source Projection Guidance

Sources of information for projecting point source emissions include the facilities where the sources are located and local planning agencies. The permit application process may also yield information on planned construction or expansion of existing capacity.[2] However, the emission projection guidance suggests that plant-specific surveys may not always be a reliable source of information because much of the information that is relevant to emission projections (*e.g.*, growth or decline in output, plans for expansion) may be confidential. EPA suggests that a survey of individual point sources only be performed if the following certain circumstances apply: (1) the industry is a dominant industry in the region; (2) the industry's growth may not be captured in the regional projections; and (3) it is expected that the industry may experience significant growth or decline.[1] Finally, emissions growth at a plant may be projected from information obtained for other point sources in that area and category. This procedure uses a growth trend developed from information from a group of facilities and applies it to a facility for which there is no available information.

When information is not available from plants, permit applications, or local planning agencies, projected economic variables may be used to estimate emission source growth. These factors were previously discussed in Section 1.4.

3.2.2 E-GAS Point Source Growth Factors

E-GAS will be used to project the AIRS point source inventories which are housed in the AIRS Facility Subsystem (AIRS/FS). These projected inventories will be used in photochemical grid modeling and RFP inventories. Because the AIRS/FS inventories will be projected on a source-specific basis, the user will be able to choose each growth factor. For example, if a user has information from permits or plant surveys about the expected growth of a point source, the

user may use that information to predict future growth of that source within E-GAS. The ability of the user to override default growth factors may be most important for electric utilities, which are permitted sources and are major emitters of NO_x. E-GAS produces default growth factors for commercial and industrial energy consumption, fuel consumption by electric utilities, and physical output by Bureau of Labor Statistics code, which represent groups of three- and four-digit SICs. These growth factors are then translated, via the E-GAS CROSSWALK, into default growth factors by SCC. Because there is no direct linkage between E-GAS and AIRS, users may alter the E-GAS growth factor file based on information that they have on specific emission sources.

E-GAS uses the following information for projecting point source growth factors:

1. Value added estimates for 210 non-farm industrial categories
2. Physical output estimates for some major VOC-emitting sources
3. Estimates of fuel consumption by type of fuel for the commercial, industrial, and electric utility sectors

The CROSSWALK, which translates economic and energy consumption forecasts into activity growth by SCC, is discussed in detail in Chapter 9.

3.3 AREA SOURCES

3.3.1 EPA Area Source Projection Guidance

The major difference between area and point source projection is the need for the area source growth to be allocated to grid cells. E-GAS does not project growth factors by grid cell, but provides area source growth factors for each nonattainment area, the remaining portion of surrounding State(s), and each State in one of the ROM domains. However, it is beyond the scope of this portion of the projection methodology to allocate these growth factors to sub-MSA areas.

EPA guidance on projecting inventories includes growth indicators for area sources. These indicators are listed in Table 3-1, along with potential information sources provided by EPA. Because area sources are not individually projected, information from permits or specific plants cannot be used directly. Local studies or surveys, however, may provide information that can be used to develop surrogate growth factors.[1]

3.3.2 E-GAS Area Source Growth Factors

Growth indicators from the *Procedures for Preparing Emissions Projections*[1] are listed in Table 3-1. In Table 3-2, these indicators are listed along with E-GAS outputs which can be used as growth factors. As Table 3-1 shows, metropolitan planning organizations (MPOs) will probably be the best source of information for some of these sources. There are sources for which E-GAS does not provide growth factors because there are no outputs from E-GAS which match or can approximate a recommended EPA growth indicator. These sources are primarily biogenic sources. When there is no appropriate growth factor for a source, E-GAS assigns a factor of 1.0 (no growth).

E-GAS uses the following information for projecting area source categories:

1. Value added estimates for 210 non-farm industrial categories
2. Physical output estimates for some major VOC-emitting sources
3. Estimates of fuel consumption by type of fuel for the commercial, industrial, and electric utility sectors
4. Vehicle miles travelled
5. Population

Each emission source in the AIRS Area and Mobile Source (AIRS/AMS) inventories is matched by the CROSSWALK with the appropriate growth factor. These growth factors correspond to the E-GAS outputs identified in Table 3-2. As with the point sources, the user may override an SIC or SCC growth factor and enter his/her preferred value.

TABLE 3-1. EPA GROWTH INDICATORS FOR PROJECTING EMISSIONS FOR AREA SOURCE CATEGORIES[1]

Source Category	Growth Indicators	Information Sources
Gasoline Marketing	projected gasoline consumption	MOBILE4 fuel consumption model
Dry Cleaning	population; retail service employment	solvent suppliers; trade associations
Degreasing (Cold Cleaning)	industrial employment	trade associations
Architectural Surface Coating	population or residential dwelling units	local Metropolitan Planning Organization (MPO)
Automobile Refinishing	industrial employment	BEA
Small Industrial Surface Coating	industrial employment	BEA
Graphic Arts	population	State planning agencies; local MPO
Asphalt Use - Paving	consult industry	consult industry
Asphalt Use - Roofing	industrial employment; construction employment	local industry representatives
Pesticide Applications	historical trends in agricultural operations	State department of agriculture; local MPO
Commercial/Consumer Solvent Use	population	local MPO; State planning agencies
Publicly Owned Treatment Works (POTWs)	site-specific information	State planning agencies
Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs)	State planning forecasts	State planning agencies; local MPO
Municipal Solid Waste Landfills	State waste disposal plan	local MPO; State planning agencies
Residential Fuel Combustion	residential housing units or population	local MPO
Commercial/Institutional Fuel Combustion	commercial/institutional employment; population	local MPO; land use map projections
Industrial Fuel Combustion	industrial employment (SIC 10-14, 50-51); or industrial land use	local MPO; land use projections; State planning agencies
Aircraft (Commercial and General)	site-specific forecasts	local airport authority and commercial carriers
Aircraft, Military	site-specific forecasts	local airport authorities; appropriate military agencies
Railroads	revenue ton-miles	American Association of Railroads and local carriers
Ocean-going and River Cargo Vessels	cargo tonnage	local port authorities; U.S. Maritime Administration; U.S. Army Corps of Engineers
Vessels, Small Pleasure Craft	population	local MPO
Off-Highway Motorcycles	population	local MPO
Agricultural Equipment	agricultural land use; agricultural employment	local MPO; Census of Agriculture

(continued)

TABLE 3-1. EPA GROWTH INDICATORS FOR PROJECTING EMISSIONS FOR AREA SOURCE CATEGORIES (continued)

Source Category	Growth Indicators	Information Sources
Construction Equipment	industry growth (SIC Code 16)	local MPO
Industrial Equipment	industrial employment (SIC codes 10-14, 20-39, 50-51) or industrial land use areas	local MPO
Lawn and Garden Equipment	single-unit housing	local MPO
On-site Incineration	based on information gathered from local regulatory agencies	local regulating agencies and MPO; State planning agencies
Open Burning	based on information gathered from local regulatory agencies	local agencies; State planning agencies; local MPO
Fires: Managed Burning, Agricultural Field Burning, Frost Control (Orchard Heaters)	areas where these activities occur	U.S. Forest Service, State agricultural extension office
Forest Wildfires	historical average	local, State, and federal forest management officials
Structural Fires	population	local MPO; State planning agencies

TABLE 3-2. E-GAS GROWTH FACTORS FOR PROJECTING AREA SOURCE EMISSIONS

Source Category	Growth Indicators from *Procedures for Preparing Emissions Projections* [1]	Relevant E-GAS Growth Factors
Gasoline Marketing	projected gasoline consumption	value added in petroleum refinery
Dry Cleaning	population; retail service employment	value added in laundry and cleaning services
Degreasing (Cold Cleaning)	industrial employment	value added in specific industry
Architectural Surface Coating	population or residential dwelling units	population
Automobile Refinishing	industrial employment	value added in automobile repair
Small Industrial Surface Coating	industrial employment	value added in specific industry
Graphic Arts	population	value added in commercial printing
Asphalt Use - Paving	consult industry	value added in asphalt, paving, and roofing materials
Asphalt Use - Roofing	industrial employment; construction employment	value added in asphalt, paving, and roofing materials
Pesticide Applications	historical trends in agricultural operations	value added in non-manufacturing services
Commercial/Consumer Solvent Use	population	population (consumer)
Publicly Owned Treatment Works (POTWs)	site-specific information	value added in sanitary services
Hazardous Waste Treatment, Storage and Disposal Facilities (TSDFs)	State planning forecasts	population
Municipal Solid Waste Landfills	State waste disposal plan	population
Residential Fuel Combustion	residential housing units or population	estimate from E-GAS fuel module
Commercial/Institutional Fuel Combustion	commercial/institutional employment; population	commercial fuel consumption estimates from E-GAS fuel module
Industrial Fuel Combustion	industrial employment (SIC 10-14, 50-51); or industrial land use	industrial fuel consumption estimates for 2-digit SICs from E-GAS fuel module
On-site Incineration	based on information gathered from local regulatory agencies	population
Open Burning	based on information gathered from local regulatory agencies	population
Fires: Managed Burning, Agricultural Field Burning, Frost Control (Orchard Heaters)	areas where these activities occur	---
Forest Wildfires	historical average	---
Structural Fires	population	population

3.3.3 E-GAS Nonroad Growth Factors

The full text of the EPA guidance on projection of emissions from nonroad sources may be found in an EPA memo entitled "Guidance on Projection of Nonroad Inventories to Future Years,"[6] dated February 4, 1994. This guidance builds on a previously released report[7] and subsequent development of nonroad inventories for use in 33 ozone and/or carbon monoxide nonattainment areas. These inventories were estimated as a product of equipment populations, activity rates and emission factors.

EPA guidance recommends that states use one of the following five alternative methodologies to project nonroad inventories:

1. Project the original or state-modified (A+B)/2 inventory for 1990 to future years by projecting the indicator variables used to estimate the population and activity level of each engine-equipment type within the current A inventory.

2. Develop surrogates for the indicator variable(s) used to develop equipment populations estimates for inventory A and use projections of the surrogate variables to project the indicator variables required under the first approach.

3. Project the 1990 inventory by multiplying 1990 emissions by the ratio of future to 1990 human population within the same nonattainment area.

4. Project the 1990 inventory by multiplying 1990 emissions by the growth factors developed for E-GAS.

5. Project the 1990 inventory by using other projected data on equipment populations and activity levels specific to the nonattainment area in question in conjunction with EPA-provided in-use emission factors.

Within E-GAS, the surrogate indicators for nonroad sources are value added or population as identified in Table 3-3.

TABLE 3-3. E-GAS SURROGATE INDICATORS FOR PROJECTING GROWTH IN NONROAD SOURCES.

Source Category	Relevant E-GAS Growth Factors
Agricultural Equipment	Value Added: Farm
Aircraft	Value Added: Air Transportation
Airport Service Equipment	Value Added: Air Transportation
Commercial Marine	Value Added: Water Transportation
Construction Equipment	Value Added: Construction
Industrial Equipment	Value Added: Durable & Nondurable Mfg.
Lawn & Garden Equipment	Population
Light Commercial Equipment	Value Added: Retail, Wholesale, Services
Logging Equipment	Value Added: Logging
Military Vessels	Total Government
Railroads	Value Added: Railroad Transportation
Recreational Equipment	Population
Recreational Marine	Population

While these indicators appear to be the most appropriate considering the general application of E-GAS, other area-specific factors may influence growth in these nonroad categories. For example, water surface area constraints may affect growth in marine vessel use, and population density and climatic conditions may affect emissions from lawn and garden equipment.

3.4 MOBILE SOURCES

3.4.1 EPA Guidance on Projection of Mobile Sources

EPA guidance on projection of mobile source emissions can be found in *Procedures for Preparing Emissions Projections.*[1] This guidance covers highway vehicles as well as some non-highway mobile sources (aircraft and railroads). Additional guidance specific to highway mobile

source inventory forecasting and tracking for CO nonattainment areas is contained in *Section 187 VMT Forecasting and Tracking Guidance*[8], a document required by Section 187 of the Clean Air Act Amendments. These two documents discuss the same basic methods and sources for mobile source projections. In order of preference, these include:

1. Use of projections based on a network-type travel demand model for the area of concern
2. Use of projections based on data generated by the Federal Highway Administration (FHWA) Highway Performance Monitoring System (HPMS) for the subject area
3. Use of "any reasonable methodology" for areas not covered by HPMS

Details on the information presented in the two guidance documents are discussed below. The *Procedures for Preparing Emissions Projections*[1] states that the preferred method for performing VMT projections for on-road mobile sources is to use a validated travel demand model. Travel demand models are locality-specific computerized models which simulate travel on a network representing an area's transportation system. The number of cities with a current travel demand model is limited and there are many nonattainment areas without such models. Resources involved in developing a model are substantial, and creating a model for inventory purposes alone may not be warranted. For areas that do not have a validated travel demand model, this guidance permits VMT projections to be based on the FHWA's HPMS. For areas outside the domain of a travel demand model and/or HPMS reporting area, the use of an historically-based extrapolation method is allowed. An example trend projection method, requiring the quantifying of road mileage and associated VMT, is outlined; however, details on these methodologies are not provided.

The *Section 187 VMT Forecasting and Tracking Guidance*[8] makes the following specific recommendations for procedures for CO nonattainment areas, distinguishing between the baseline inventory, forecasting and estimates to be made in the future for tracking purposes. Only the forecasting requirements are directly relevant to the projections of concern to E-GAS, but the other requirements are included for clarity.

1990 Baseline CO Inventory Use of HPMS to develop the 1990 baseline CO inventory, with alternate use of a travel demand model permitted only if the model available is believed to be strong and the HPMS data for the area are weak and only after receiving approval from EPA.

VMT Forecasting Preferred use of a travel demand model to forecast VMT, based on the assertion that these models are the best predictors of VMT growth (but not necessarily of absolute VMT). If a model cannot be made available, an "historical area-wide VMT" method can be used, based on a regression analysis of the area's 1985 to 1990 HPMS-reported data. However, States forecasting beyond 1996 are required to use a travel demand forecast. States may use "any reasonable methodology" to forecast VMT for the portion of the VMT Tracking Area outside of the Federal Aid Urbanized Area.

VMT Tracking Annually, beginning in 1993, estimates of actual VMT for each CO nonattainment area are to be made for tracking against the forecast VMT. Since repeated use of a travel demand model is very costly, EPA recommends use of each year's HPMS data for tracking.

Specific guidance has not been issued for forecasting and tracking mobile source emissions in ozone nonattainment areas, but it is stated in the CO guidance[8] that these procedures, when issued, "are expected to be consistent" with the CO guidance described above.

Guidance for SIP inventory projections for nonhighway mobile sources[1] is as follows. For aircraft, major commercial airports should be surveyed individually to determine their specific growth plans. The best source of information on potential growth in rail travel is the railroad companies themselves, along with the American Association of Railroads. Similar sources are recommended for obtaining data on projected growth in commercial water vessel activity. Guidance on gasoline marketing provides fuel efficiency ratios that allow forecasting based on fuel economy changes due to fleet turnover, as well as changes in the total number of vehicle miles traveled in the area under consideration.

3.4.2 E-GAS Highway Source Growth Factors

Although the first choice in the EPA VMT projection guidance is the use of locality-specific travel demand models, it is beyond the scope of E-GAS to include these models in the system. The main difficulties are the variety of model types and data formats, and the amount of interaction that would be required to accomplish this task for the relatively small number of areas with current travel demand models. The system, however, includes the capability to insert area-specific modeling results from travel demand models. When this option is chosen, results from the E-GAS VMT module are replaced by user-specified growth factors. The user may provide an overall VMT growth estimate, VMT estimates by road type, or VMT estimates by road and vehicle type.

To conform with the next level of the EPA guidance, the E-GAS mobile source projection method through 1996 is based on Federal Aid Urbanized Area HPMS data for 1985 to 1990. The methodology uses regression analysis of these data to establish short-term State-level trends in VMT. The methodology and data are discussed in detail in Chapter 8.

For projections beyond 1996, E-GAS, allocates national VMT growth as projected by the EPA MOBILE4.1 Fuel Consumption Model to individual areas based on population growth.

For the "rest-of-State" areas outside the nonattainment areas, EPA guidance indicates that VMT can be projected by a method such as (1) performing similar regressions of historic HPMS State-level VMT statistics; (2) obtaining "rest-of-State" projections by subtracting out individual projections for any cities (obtained as described above); and (3) bounding the "rest-of-State" projection as done for the REMI cities. A discussion of the methodology used to project "rest-of-State" VMT is presented in Chapter 8.

3.5 EPA GUIDANCE ON PROJECTING EMISSIONS FROM UTILITIES

3.5.1 General

EPA guidance on projecting emissions from electric utilities includes projection methodologies for existing, planned, and additional electricity-generating units. The guidance is summarized in Table 3-4.

TABLE 3-4. ELECTRIC UTILITY NO_x PROJECTIONS SUMMARY

Estimate emissions from existing units:
- determine State-level growth factors
- estimate unit-level future year capacity factors
- determine unit-level NO_x control requirements

Estimate emissions from planned units:
- obtain listing of planned units
- determine most likely siting for undesignated units
- determine applicable unit-level NO_x emission rates (and default data)

Estimate emissions from generic units:
- determine amount of additional generation needed (if any)
- estimate NO_x emission rate
- determine siting for generic units

The guidance requires that the methodology for projecting emissions from existing units should be based on State-level electricity growth factors, estimated unit-level capacity factors, and unit-level NO_x control requirements. The estimated unit-level capacity factors for any future year should not exceed 80 percent, unless the 1990 capacity factor exceeded 80 percent. The emission rate requirements should be based on the most stringent regulation (local, State, or federal) which applies to the unit.[1]

For planned units, the guidance requires the use of announced plants; the Department of Energy annually publishes a list of plants that are expected to come on line in the next ten years. In addition, for announced plants without a designated site location, it should be assumed that any future unit whose pollutant contribution would exceed the amounts retired in a nonattainment area would be located outside the boundaries of the nonattainment area. The NO_x emission rate assigned to new units will depend on the year that the unit comes on line, as future standards [*e.g.*, the revised new source performance standard (NSPS) for 1994] will determine the most stringent standard which applies to the unit.[1]

For "generic" units (the term given to estimated future electricity generation which cannot be met by existing or planned capacity) the first step in calculating future emissions is the determination of the amount of expected future generation from these units. Expected generation from these units will equal the difference between expected demand and the amount of electricity

that will be generated by existing and planned capacity. The NO_x emission rate for these units should be assumed to equal the revised NSPS standards required by the CAAA. These units also need to be sited; the assumptions which should be used are the same as those for planned units, which were discussed in the previous paragraph.

3.6 REFERENCES

1. U.S. Environmental Protection Agency. *Procedures for Preparing Emissions Projections.* EPA-450/4-91-019 (NTIS PB91-242404). Office of Air Quality Planning and Standards. Research Triangle Park, NC. July 1991.

2. Gardner, L., L.R.Chinkin, and J.G. Heiken. *Procedures for the Preparation of Emission Inventories for Carbon Monoxide and Precursors of Ozone, Volume II: Emission Inventory Requirements for Photochemical Air Quality Simulation Models.* EPA-450/4-91-014 (NTIS PB91-216176). Office of Air Quality Planning and Standards. Research Triangle Park, NC. May 1991.

3. U.S. Department of Commerce. *BEA Regional Projections to 2040, Volume 1: States.* Bureau of Economic Analysis. Washington, DC. 1990.

4. U.S. Department of Commerce. *BEA Regional Projections to 2040, Volume 2: Metropolitan Statistical Areas.* Bureau of Economic Analysis. Washington, DC. 1990.

5. U.S. Department of Commerce. *BEA Regional Projections to 2040, Volume 3: BEA Economic Areas.* Bureau of Economic Analysis. Washington, DC. 1990.

6. U.S. Environmental Protection Agency. *Guidance on Projection of Nonroad Inventories to Future Years,* Memo from Phil Lorang, Director, Emission Planning and Strategies Division, Office of Mobile Sources to Air Directors, Regions 1-10. February 4, 1994.

7. U.S. Environmental Protection Agency. *Nonroad Engine and Vehicle Emission Study — Report & Appendices.* EPA 21A-2001 (PB92-104462). Office of Mobile Sources. Ann Arbor, MI. November 1991.

8. U.S. Environmental Protection Agency. *VMT Forecasting and Tracking Guidance, Section 187.* NTIS PB92-164961. Office of Mobile Sources. Ann Arbor, MI. January 1992.

CHAPTER 4

NATIONAL AND REGIONAL ECONOMIC FORECASTS IN E-GAS

4.1 NATIONAL MACROECONOMIC MODELS

4.1.1 Overview

National macroeconomic models are used to forecast and simulate economic behavior at the national level. These models are useful for predicting the level of future economic activity for industries and consumers as well as explaining past economic behavior. In the public sector, macroeconomic models are used to estimate the effects of potential and actual government policies on the United States' economy. In the private sector, the models can be used to predict future levels of demand for products, interest rates, and cost of factor inputs.

The E-GAS model allows the user to specify national macroeconomic forecasts rather than allowing the user a full national economic modeling capability.[1] Although E-GAS does not contain options for allowing users to develop their own forecasts using a national economic model, the REMI U.S. model is embedded in E-GAS. This model is included because the regional REMI models need forecasts of specific national economic indicators. The REMI U.S. model calibrates national forecasts specified by the user to produce the outputs necessary to run the regional models. This calibration is performed using an interface procedure developed by REMI to accommodate the use of various national forecasts.

E-GAS is designed such that emission projection scenarios for each nonattainment area and attainment portion of States can be made using a common assumption about future U.S. economic activity. This chapter discusses these assumptions, or forecasts, and provides information on available national forecasts, their characteristics, and the role and effects of the national forecasts on final emission projections. In addition, this chapter discusses regional economic models and their use in E-GAS.

The role of national forecasts in E-GAS is discussed in Section 4.1.2. Section 4.1.3 compares forecasts from a REMI model of Pittsburgh using different national forecasts. In Section 4.1.4, selected national forecasts are discussed. In Section 4.1.5, available information on the track record of forecasts is summarized. Section 4.1.6 contains a summary of the national

economic forecasts, while Section 4.1.7 discusses decisions regarding the choice of forecasts for inclusion in E-GAS. Section 4.2. of this chapter focuses on regional economic models. Section 4.2.1 gives an overview of regional economic models. Section 4.2.2 discusses the REMI regional economic models. Section 4.2.3 discusses the use of REMI models in E-GAS.

4.1.2 The Role of National Economic Forecasts in E-GAS

The use of a national macroeconomic model to drive a regional forecast model reflects the inter-relationships between national and regional economies. National forecasts of final demand provide estimates of national consumption demand; regional models capture the amount of this consumption that is located in the regional economies and, perhaps more importantly, the amount of demand that will be satisfied by each regional economy. The use of U.S. forecasts provides consistency by assuring that regional final demands and supplies sum to the national final demand and supply for goods and services.

The primary purpose of national economic forecasts in E-GAS is to provide a common forecast with which to forecast regional economic growth. The nature of ozone formation dictates that attention be paid to not only the level of economic activity, but also the location of activity. A national forecast will provide an estimate of total economic activity. The regional models will partition this activity between U.S. urban areas, States, and regions. The geographic level of the regional forecasts will be dictated by the needs of the photochemical models used by the ozone non-attainment areas.

The primary purpose of E-GAS is to project emission inventories for use in UAM and ROM modeling, as well as Reasonable Further Progress inventories required by the CAAA. This will require the use of emissions inventories, emission source growth projections, and estimates of future emission controls. The inclusion of a national economic forecasting capability in E-GAS allows EPA to forecast urban and regional growth under a common assumption about national growth (*i.e.*, GNP) and provides State users with the ability to simulate the effects of different levels of national growth on ozone attainment regions.

4.1.3 The Effects of the Choice of National Model on Regional Forecasts

EPA will have the capability to develop ozone precursor emission projection scenarios for each of the nonattainment areas using a common GNP assumption. This will ensure that the levels of estimated future VOC and NO_x emissions are not based on inconsistent assumptions about each region's growth. The REMI U.S. model and interface procedure allow the EPA and State users to base estimates of economic growth on GNP forecasts from respected economic firms. State users of E-GAS may use their own assumptions about national economic activity or may base their estimates of economic growth on forecasts from respected economic firms. EPA may then compare baseline scenarios submitted by the States with baseline scenarios developed by EPA. The results of a study using a REMI model of Pittsburgh suggest that the choice of GNP scenario can significantly affect regional economic, and therefore, emission forecasts.

In the REMI regional models, growth is affected by a number of factors, including the performance of the national economy and the relative costs of doing business in the modeled region. The relative costs of doing business are determined endogenously, although the user may simulate policies which would affect the relative costs in a region. The growth or decline of the national economy, however, is determined outside of the regional model. The choice of national forecast is left solely to the user. This choice can have a large impact on the estimates of growth in the region being modeled.

As part of a 1989 study performed at the University of Pittsburgh, a REMI model of Pittsburgh was run using two forecasts, the Bureau of Labor Statistics (BLS) forecast and the WEFA forecast.[2] Although the BLS forecast is in part based on the WEFA national model, the forecasts are based on different assumptions. The BLS forecast explicitly models national economic cycles and includes in its forecast a recession in the early 1990s. The WEFA forecast does not try to capture cycles in the national economy but instead uses a trend forecast. A comparison of the BLS and WEFA forecasts is presented in Table 4-1.

Table 4-2 compares the Pittsburgh forecasts produced using the BLS and WEFA forecasts. The WEFA and BLS forecasts of United States' manufacturing employment differed by 5 percent; this 5 percent difference resulted in a 10 percent difference in estimated manufacturing

TABLE 4-1. COMPARISON OF BLS AND WEFA AGGREGATE, EMPLOYMENT FORECASTS FOR THE UNITED STATES, 1995

	Employment in Thousands		
	US BLS 1995	US WEFA 1995	Percent Difference
Manufacturing	18,769	19,704	5.0
Durables	11,146	11,542	3.6
Nondurables	7,623	8,162	7.1
Nonmanufacturing	98,591	103,487	5.0
Mining	1,027	1,019	-0.8
Construction	7,477	8,314	11.2
Transport and Public Utilities	6,574	6,588	0.2
Retail Trade	23,710	24,222	2.2
Finance, Insurance, and Real Estate	11,121	11,746	5.6
Wholesale Trade	6,996	7,148	2.2
Services	40,331	43,005	6.6
Agriculture, Forestry, and Fishing	1,355	1,445	6.6
Total Government	20,938	21,686	3.6
State and Local Government	15,004	15,788	5.2
Federal Government--Civilian	3,115	3,096	-0.6
Federal Government--Military	2,819	2,802	-0.6
Farm Employment	3,071	3,071	0.0
Total Employment	**141,369**	**147,948**	**4.7**

employment in Pittsburgh. Over all, differences in the national forecasts were magnified in the forecasts of economic behavior in Pittsburgh. There are two important issues to note:

1. The BLS and WEFA forecasts both use the WEFA model as a basis for their projections of U.S. economic activity. However, the use of different assumptions, including the inclusion of business cycles in one of the forecasts, resulted in an almost 5 percent difference in the forecasts of total employment in 1995. The differences in the two forecasts for the construction sector were over 11 percent[2].

2. The almost 5 percent difference in estimates of total national employment was magnified into a 7.6 percent difference in the estimates of total employment in Pittsburgh. The sensitivity of the Pittsburgh estimates to the national estimates held for all sectors. The national forecasts of manufacturing and non-manufacturing employment differed by 5 percent. The Pittsburgh forecasts for these sectors differed by 9.8 and 7.9 percent, respectively.[2]

TABLE 4-2. COMPARISON OF BLS AND WEFA AGGREGATE, EMPLOYMENT FORECASTS FOR THE PITTSBURGH REGION, 1995

	PGH BLS 1995	PGH WEFA 1995	Percent Difference
Manufacturing	129,658	142,426	9.8
Durables	85,343	93,947	10.1
Nondurables	44,315	48,479	9.4
Nonmanufacturing	913,441	985,809	7.9
Mining	6,518	6,492	-0.4
Construction	61,316	70,716	15.3
Transport and Public Utilities	57,912	58,179	0.5
Retail Trade	224,329	234,315	4.5
Finance, Insurance, and Real Estate	82,331	89,417	8.6
Wholesale Trade	66,567	69,795	4.9
Services	409,846	451,655	10.2
Agriculture, Forestry, and Fishing	4,621	5,240	13.4
Total Government	129,756	134,749	3.9
State and Local Government	95,970	101,170	5.4
Federal Government--Civilian	20,070	19,947	-0.6
Federal Government--Military	13,716	13,632	-0.6
Farm Employment	8,431	8,431	0.0
Total Employment	**1,181,285**	**1,271,414**	**7.6**

4.1.4 National Macroeconomic Forecasts

This section reviews forecasts from the Council of Economic Advisors to the President; Data Resources, Incorporated; Research Seminar on Quantitative Economics (RSQE); REMI; and Wharton Econometrics Forecasting Associates. The emphasis of this section is on national economic forecasts rather than the national economic models which produce the forecasts. However, the E-GAS model plan may be consulted for brief summaries of the modeling techniques, input assumptions, and theoretical rationale of the national economic models used by REMI; Data Resources, Incorporated; and the U.S. Bureau of Labor Statistics.[1]

4.1.4.1 *The REMI U.S. Forecast*

Regional Economic Models, Inc. has developed a U.S. model for use in a national and regional economic forecasting and simulation framework. Regional models developed by REMI include models for each of the 50 States, as well as sub-national (region, State, or sub-State area) models as requested by clients. The REMI U.S. forecast is based on the BLS Trend-2000 forecast and will be referred to as the REMI/BLS forecast for the remainder of this report. The BLS forecast also provides "fundamental information" for use in the REMI national and regional models. This information includes historical and forecast data about technologies employed by specific industries and the resulting "production recipe" (the type and amount of inputs) and inter-industry relationships.[3] The information on technology for each industry, which is implicit in the production recipe, is contained in the U.S. input-output tables in the Trend-2000 forecast. These input-output tables capture the inter-industry relationships in 1982 and 1986, and project the relationships for 2000. The input-output tables are used to determine the technical coefficients matrix for each industry. The technical coefficients represent the amount of intermediate goods (*e.g.*, products from other industries, fuel) required to produce a given amount of output from each industry.

The methodology for projecting U.S. final demand by industry relies on the creation of technical coefficients matrices for each historical and forecasted year. This methodology involves developing an input-output model for the years for which BLS provides input-output accounts (1982, 1986, and 2000).[3] The BLS forecasts include employment and output by industry, as well as Gross National Product (GNP). The final demand components of the BLS forecast are used to drive the input-output models, resulting in a prediction of intermediate demand for and output by industries. The REMI national model may also take forecasts from other national economic models to project industry-specific output estimates. The use of other forecasts to drive the REMI national model will be discussed in a later section.

4.1.4.2 *Council of Economic Advisors*

The Council of Economic Advisors (CEA) was established by Congress through the Employment Act of 1946 to provide economic advice and analysis to the President. Each year, the CEA submits an annual report on the state of the U.S. economy; this report is contained in

the *Economic Report of the President (ERP)*[4], which is delivered to Congress in February of each year.

The CEA provides the Administration with forecasts of the major components of economic growth. These projections "are not intended to be year-to-year forecasts; rather, they are meant to reflect underlying economic trends and Administration policies".[4] The forecasts cover a five-year period and project growth or decline in real GNP, real compensation per hour, output per hour (productivity), inflation, employment and unemployment, and are accompanied by a short essay from the President and a report by CEA staff on economic issues of the past year.

E-GAS users may formulate regional economic forecasts using GNP forecasts. The REMI national forecast uses information from the Bureau of Labor Statistics' fifteen-year forecast. This forecast serves as the default national forecast for the REMI regional models. Thus, the GNP projections reported in the *ERP* could be included as an option for E-GAS users because the REMI national-regional interface can calibrate the REMI national forecast to a user-specified GNP. The *ERP* does not forecast final demand components, so the forecasts cannot be used to provide a detailed alternative forecast for E-GAS users. The CEA projections are available to E-GAS at no cost and could be updated annually. The CEA forecasts do not include other variables required by E-GAS such as housing starts and energy prices; forecasted values of these variables must be taken from other sources.

4.1.4.3 *Data Resources, Inc. (DRI)*

The DRI quarterly forecasts contain over 1200 variables. The forecasts include short- and long-term forecasts. The long-term forecasts typically extend 15 years, but DRI will produce longer forecasts at a client's request. Each forecast is released with an accompanying report which explains the forecast assumptions and results for various sectors of the U.S. economy. These forecasts may be purchased separately or may be received as part of a yearly subscription. A subscription includes forecasts and publications, as well as client support and on-line access to DRI economic databases.[5]

The DRI quarterly model houses the 1200 model equations in ten major sectors:

1.	private domestic spending	6.	inflation and productivity
2.	production and income	7.	supply
3.	government	8.	expectations
4.	international transactions	9.	population
5.	financial	10.	aggregates and miscellaneous

The forecasts are issued with an accompanying report which discusses the forecast results, reviews the sector results, and provides tables detailing the sector forecasts. Three forecasts are released: base case, low, and high forecasts.[5]

Housing and energy variables in the forecast include energy production, demand, taxes, and price variables, and existing housing stock, start, and price variables.

The REMI models may be run using 92 forecasted variables from DRI. These 92 variables include 25 final-demand variables. Other variables in the DRI forecasts which may be used in E-GAS include energy and housing variables. The DRI quarterly model forecasts nine categories of energy variables including energy price, spending, and production variables. The model also forecasts housing variables including housing starts, sales, stocks, and prices.

4.1.4.4 *Research Seminar in Quantitative Economics (RSQE)*

RSQE declined to participate in supplying forecasts for E-GAS.

4.1.4.5 *Wharton Econometric Forecasting Associates (WEFA)*

The WEFA Group produces short- and long-term economic forecasts of U.S. economic activity. The short-term forecasts range from 10 to 13 quarters (2.5 to 3.25 years) and are issued monthly. The long-term forecasts are 25-year forecasts which are issued quarterly. In addition to the baseline short-term forecast, the WEFA Group provides two alternative forecasts focusing on macroeconomic risks and their probable effects on industries. The 25-year forecasts include trend, cycle, and two alternative forecasts.[6]

The WEFA Group uses Mark 9, a quarterly economic model developed at WEFA, to produce its short- and long-term forecasts. The model is comprised of over 1200 equations and

contains a "satellite" industry model which produces detailed industrial forecasts using outputs from the core macroeconomic model.[7] The Mark 9 model contains nine major sectors:

1. personal consumption expenditures
2. fixed investment
3. inventory investment
4. government
5. international trade
6. labor market
7. wages and prices
8. financial market
9. income

Variables in the model include consumption, investment, income, and inflation data from the National Income and Product Accounts; population, employment, and wage rate data from the BLS; industrial production data from the Federal Reserve Board; and demand, production, and price data for the auto, housing, and energy sectors of the economy.[7]

The long-term economic forecasts are issued in a two-volume report. The first volume of the report covers the trend or moderate growth scenario and contains an overview of the forecast results and detailed sector reviews of the population, housing, investment, government, inflation, labor market, industrial activity, and energy forecasts in addition to tables detailing the sector forecasts.[7]

The REMI models may be run using 92 forecasted variables from WEFA. These 92 variables include 25 final demand variables. WEFA also forecasts housing and energy variables which may be used in E-GAS development and simulations. Mark 9 forecasts detailed energy price, supply, demand, and consumption variables. The model also forecasts housing variables including housing starts, sales, stocks, and prices. A REMI interface for WEFA data has been developed and tested.

4.1.5 Forecasting Records of the Models

Rating the track records of economic forecasters is difficult. There is no systematic method for comparing the records of economic forecasters; the availability of published forecasts varies and the forecasts often contain different variables.[8,9] When forecast comparisons are published, they often neglect the track record of newer or lesser-known forecasters. However, published comparisons do exist; these will be summarized in this section.

In the effort to compare forecasts, each of the forecasters discussed in Section 4.1.4 was contacted and a literature search of all journal articles on economic forecasting published between 1984 and 1991 was performed. DRI did not provide any materials on forecasting history. RSQE declined to participate in providing information. WEFA provided a copy of a forecast for 1990 to 2005 along with the accompanying report provided to subscribers, but did not provide a forecast history or materials comparing their forecasts with other forecasts.

This section will focus on the forecasting records of DRI and WEFA for two reasons. First, the other forecasts examined in Section 4.1.4 are not appropriate for inclusion in E-GAS for reasons discussed in that section. Second, published comparisons on the track records of the forecasters were found for DRI, WEFA, and CEA, but not for RSQE.

A 1987 study of the forecasting records of fifteen of the "best-known forecasters" ranked the forecasters according to the percentage of absolute error (*i.e.*, the absolute value of the difference between the forecast and actual values as a percent of actual value) for four commonly-forecast economic indicators: GNP, Consumer Price Index (CPI), unemployment rate, and three-month Treasury Bill rate. The forecasters were rated for each year from 1983 to 1986 and were awarded an overall ranking based on the sum of the errors for the four indicators for the four-year period. The fifteen forecasts ranked included forecasts from DRI and WEFA. Two government forecasters, the Congressional Budget Office (CBO) (the Congressional economic agency) and Office of Management and Budget (OMB) are included in the rankings.[8] OMB, like the Council of Economic Advisors, is controlled by the President and Executive Branch. The forecast provided by CEA for the annual *Economic Report of the President*[4] was not included in the rankings, nor were forecasts from RSQE.

DRI and WEFA ranked first and second, respectively, while CBO ranked fourth and OMB ranked fifteenth. The third-rated forecaster, DuPont, is not discussed in this report because it is not on the list of potential forecasters for E-GAS. Although DuPont's track record for 1983-86 is strong, it is probably not appropriate to use an industry forecaster for E-GAS. The score for DRI for the four-year period was 2.898, which translates into a total error of 290 percent for the four indicators for the four years. This implies an average error of 18.1 percent per indicator per year. The cumulative error for the WEFA forecast was 293 percent, implying an average error of 18.3 percent per indicator per year.[8] The difference between the average errors of the forecast

is one percent. The average error of the CBO and OMB forecasts was 19.6 and 34.0 percent, respectively.

Another study, published in 1988, compared DRI, WEFA, and Chase Manhattan forecasts of GNP and CPI for the years 1980 through 1984 (Chase Manhattan's forecasting division is not discussed because it has merged with WEFA). WEFA had the lowest forecast error in 1981, 1982, and 1983 while DRI had the lowest forecast error in 1984. Again, the difference in the forecast errors between WEFA and DRI was about one percent.[10]

Finally, a related study concerning the bias in government forecasts was examined. The forecasts released by CEA, as mentioned in Section 4.1.4.2 of this report, are "not intended to be year-to-year forecasts; rather, they are meant to reflect underlying economic trends and Administration policies." As such, these forecasts are sometimes characterized as biased or optimistic. Based on a statistical analysis of GNP, CPI, and unemployment forecasts from CEA and CBO for the 1976 to 1987 period, it was concluded that the null hypothesis that the forecasts are unbiased could not be rejected, *i.e.*, the study did not find evidence that the forecasts were biased.[11]

4.1.6 Summary

This chapter is intended to summarize the characteristics of macroeconomic forecasts from CEA, DRI, RSQE, and WEFA. Table 4-3 summarizes the relevant information on the forecasts. This table includes length of forecast, and variables included in the forecast. The REMI national forecast, which uses information from the BLS 15-year forecast, is included in the table. This forecast is referred to as the REMI/BLS forecast in Table 4-3.

The BLS forecast, from which the REMI national model extracts information for developing a national forecast, is a 15-year forecast which is updated every 2 years. Because the forecast is in the public domain, there is no cost for using it. The latest forecast was released in November, 1991; this bi-annual forecast will not be updated by BLS until November, 1993. REMI, however, updates its forecast by including national data from the Bureau of Economic Analysis when data become available each year.

TABLE 4-3. SUMMARY OF ECONOMIC FORECASTS SURVEYED

Forecast	Release	Number of Forecasts	Length of Forecast	Response	Proprietary Issues	Final Demand Variable	Housing, Energy Variables
REMI/BLS	Bi-annual	1	15 years	N/A	N/A	Y	N
CEA	Annual	1	5 years	N/A	N/A	N	N
DRI	Quarterly	3	15 years[1]	D	Uncertain	Y	Y
RSQE	N/A	N/A	N/A	D	N/A	N/A	N/A
WEFA	Monthly/ Quarterly	4	25 years	A	No	Y	Y

[1]Can be extended at client's request.

The CEA forecast published in the *Economic Report of the President* extends five years and, therefore, could be used by E-GAS users whose forecast horizons are five years or less. The forecast does not contain final demand variables or housing and energy forecasts. The forecast contains assumptions about the Administration's policies and their effects and is not intended as a "year-to-year forecast." The forecast's short forecasting period and purpose make it an inappropriate choice for an alternative forecast for E-GAS. However, if CEA forecasts were chosen as a national forecast for E-GAS, EPA could request forecasts for a longer time horizon. CEA has developed a 40-year forecast of general economic indicators such as GNP and productivity growth which could be used in E-GAS if the forecast were updated annually and released to EPA.[12] However, other characteristics of CEA forecasts (purpose, lack of final demand variables) indicate that even if longer forecasts could be secured, CEA is not a good choice for a national forecast to drive E-GAS.

The DRI forecast, though typically 15 years, may be extended at a client's request. The forecast provides three scenarios (low growth, base case, and high growth) and contains housing and energy variables which could be used in the growth factor tier of E-GAS. A yearly subscription includes quarterly forecasts and reports, on-line access to DRI economic databases, and client support. Finally, the participation of DRI as a supplier of national forecasts for E-GAS

may be considered a conflict of interest with other groups at DRI. Due to these problems, DRI is not included in E-GAS.

The Research Seminar in Quantitative Economics at the University of Michigan was contacted for information on their model and forecasts. The Director of RSQE declined to participate in providing information or to be considered as a source for national forecasts for E-GAS.

The WEFA long-term forecast extends 25 years and contains four scenarios: low growth, base case, high growth, and cyclical growth. The cyclical growth forecast has recessions for 1991 and 1996 built into the forecast. The forecast contains final demand variables, as well as housing and energy variables. The yearly subscription price is $18,200 and includes four quarterly long-term forecasts and accompanying reports explaining the forecasts, monthly short-term forecasts, on-line access to WEFA economic databases, two on-site presentations by WEFA senior staff, an annual historical data book, and invitations to two of the four yearly U.S. Economic Outlook Conferences. The use of WEFA forecasts in E-GAS will not involve proprietary issues as WEFA allows subscribers to use purchased forecasts as a tool for analysis; proprietary rights are a concern to WEFA only if the forecasts are being used by a client for monetary gain.[6]

4.1.7 Conclusions

Sections 4.1.4 and 4.1.5 of this chapter summarized the characteristics and track record of selected model forecasts. Summaries were developed from information provided by forecast vendors, conversations with personnel at the forecasting firms, and journal articles discussing forecasts and track records of the best-known forecasters. Based on this information, it is concluded that the forecasts most appropriate for use in E-GAS are those provided by WEFA.

A first-generation E-GAS model was completed on September 30, 1992. This model was sent to States for testing, but did not include the individual regional economic models being developed by REMI. The use of the REMI/BLS national forecasts in the first-generation model was sufficient for testing purposes, although dummy data sets for other national forecast options were included to allow the user to test the ease of use of the E-GAS national tier.

This version of the model will be used by States for Reasonable Further Progress demonstrations and photochemical modeling requirements, as specified in the Clean Air Act Amendments of 1990. The inclusion of an up-to-date respected national economic forecast will allow States to derive the best possible estimates of national and regional economic activity and emission estimates.

Section 4.1.3 of this chapter compared forecasted economic activity in the Pittsburgh area using a REMI model of Pittsburgh with different national forecasts. The comparison showed that differences in projected national economic activity lead to even larger differences in regional economic forecasts. This suggests that the best available national forecast should be used to drive the E-GAS modeling system to achieve the best estimates of future emission levels for non-attainment areas and States in ROM regions.

Final information from DRI on conflict-of-interest concerns was not received, so a complete comparison of DRI and WEFA forecasts could not be made. Comparing the forecast outputs and track records suggests that the better forecast for E-GAS cannot be clearly determined. Both forecasts have very good track records and both contain over 1000 variables, including variables which may be used in the growth factor tier of E-GAS. However, the confirmation from WEFA personnel that the use of its forecasts would not cause proprietary or conflict-of-interest concerns resulted in the decision that WEFA forecasts should be used to drive E-GAS.

4.2 REGIONAL ECONOMIC MODELS

4.2.1 Overview

Regional economic models were developed by REMI for use in the E-GAS system. Models were developed for each of the nonattainment areas and remaining (attainment) portions of the State, as well as for each State in one of the ROM modeling regions. This detailed level of geographic separation for economic activity is an important component of the E-GAS system, as it will allow the user to distinguish between growth in a nonattainment area and growth in the surrounding areas. Because the outputs of E-GAS will be used in ROM and UAM modeling, this

ability translates into a more precise breakout between growth in UAM modeling areas and growth in ROM modeling areas, which is important in ozone formation and transportation issues. This type of modeling system explicitly recognizes that while ozone formation is a local phenomenon, ozone transport is a regional phenomenon.

The economic projections from the REMI models are used to estimate growth in physical output of industries, fuel consumption, and VMT. The estimates of nonattainment area economic growth, along with the estimates for the remaining portions of the State(s), will be used to estimate fuel consumption and VMT for nonattainment and attainment areas. The existing fuel consumption and VMT models do not project sub-State estimates. The REMI outputs will allow sub-State estimates to be extracted from State estimates of fuel consumption and VMT.

Finally, the regional models are used to simulate the effects of policies in the non-attainment areas on the surrounding area. A policy which increases the cost of doing business in a nonattainment area will reduce economic activity in that area. Ozone concentrations in the area, however, will be affected less if businesses move from the nonattainment area to locations immediately outside the nonattainment area than if businesses were to leave the region. Although the REMI models do not specifically trace industrial movements (*i.e.*, though economic location decisions are implicit in the models, the models do not capture movements of businesses from one location to another), the user will be able to examine the relative costs of doing business for each area, and will be able to determine the net effect of a policy on an area.

4.2.2 REMI Models

The REMI models were developed by Regional Economic Models, Inc. located in Amherst, MA. The company was established in 1980 in response to the demand for regional economic models for use in forecasting and policy simulation. The methodology used in building the models pre-dates the establishment of REMI. In the mid-1970s, the methodology was developed by George Treyz, Ann Friedlander, and Benjamin Stevens. The methodology, which was named the TFS methodology after its authors, was implemented in 1977 in the Massachusetts Economic Policy Analysis model, and has been used extensively since. REMI currently has clients in over 20 States. They analyze a variety of policies including environmental, transportation, energy, utility, and taxation policies. REMI recently developed a model for

California's South Coast Air Basin which was used to analyze the costs and benefits of the air quality management plan for achieving federal and State air quality standards.

REMI models can be developed for any combination of counties and States in the United States. The standard REMI economic-demographic model (the EDFS-14) forecasts supply and demand for conditions for 14 sectors, 17 occupations, 25 final demand sectors, and 202 age/gender cohorts.[13] In addition, employment estimates are produced for 210 sectors, and value added and earnings are forecast for 14 sectors. With the addition of (purchased) input-output and occupation matrices, value added can be estimated for 446 sectors and employment by 585 occupations.

In addition to forecasting, the REMI models are developed to allow the user to simulate the effects of a policy change on an area. A large variety of economic and demographic policy variables may be changed by the user, including almost 400 economic policy variables and over 70 demographic policy variables. The effects of these results can be determined by examining the 664 economic and 849 demographic variables which are forecast by the REMI models.

While many regional models rely solely on regional data, the REMI models use regional and national data in their model development. The use of national data provides a longer time series of data and a larger set of data. The national data are used to construct national econometric response functions which can be calibrated to each region based on regional data. The philosophy behind this approach is summarized in a description of the TFS methodology:

> ...there is little reason to believe that economic units in one part of the country have measurably different behavioral characteristics from those in another. The differences among regions in their reactions to external event are substantial; but they are mainly due to differences in industrial composition, regional purchase coefficients and other variables which can be modelled, rather than to `unique' interregional differences in firm or household motivation and behavior.[14]

4.2.3 The Use of REMI Models in E-GAS

The REMI models are a key component of E-GAS. The inclusion of REMI models for each nonattainment area, "rest-of-State" (*i.e.*, surrounding attainment portion of the State), and State in a ROM region provides distinct capabilities which can be used to assess emission-

producing activity in UAM and ROM modeling areas. The REMI models and outputs will contribute to the development of credible growth factors for future-year UAM and ROM inventories in the following ways:

- Forecasts of emission-producing activities will be developed for both the attainment and nonattainment portions of States, allowing growth rates to differ between the rural and urban portions of a State.
- Outputs from the REMI models will be used to produce State-level estimates of fuel consumption and VMT, and regional (sub-State) estimates of physical output.
- Information on the relative economic growth rates of attainment and nonattainment portions of States will provide a basis for sharing State-level fuel consumption and VMT estimates.
- The effects of a policy implemented in a nonattainment area on the surrounding areas can be assessed.
- The effects of different GNP assumptions on nonattainment activity and emissions growth can be determined.
- Information on local policies (*e.g.*, tax increase) can be entered directly into the REMI model. This ability allows users to update forecasts based on new information.

Specific linkages between REMI outputs and the fuel choice, VMT, and physical output modules include:

- REMI models supply personal income forecasts which are used as input to the fuel choice module for estimating residential fuel consumption
- REMI models supply population and personal income forecasts to the fuel choice module for estimating commercial fuel consumption
- REMI models supply forecasts of the relative costs of capital, labor, value added, materials, and energy to the fuel choice module for estimating industrial fuel consumption
- REMI models provide industry-specific employment forecasts to the physical output module for estimating physical output

4.3 REFERENCES

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CHAPTER 5

ESTIMATING FUEL CHOICE IN E-GAS

5.1 INTRODUCTION

As part of the E-GAS model system, fuel choice modules were developed to provide growth factors for emissions from energy consumption. The approach chosen for development of the modules was based on a review of existing energy data and models, and the structure and function of E-GAS. The structure of E-GAS includes economic models for each of the nonattainment areas required to use photochemical modeling and for each of the States in the ROM modeling region. The outputs from these models include detailed economic forecasts of industrial and commercial employment and factor costs, and population. These factors are used to estimate energy consumption in the residential, commercial, and industrial sectors.

Section 5.2 describes available fuel consumption data. Section 5.3 describes existing energy models. Section 5.4 discusses options considered for the fuel choice portion of E-GAS. Section 5.5 describes the methodology used to estimate fuel choice in E-GAS.

5.2 FUEL CONSUMPTION DATA

5.2.1 Manufacturing Energy Consumption Survey

The *Manufacturing Energy Consumption Survey*[1] (MECS) provides detailed energy consumption data by industry for the United States and the four Census regions. MECS is a triennial survey which began in 1985. Most data in MECS are at the two-digit SIC level, although there are data for the energy-intensive four-digit SIC categories. Data for 1985 did not cover smaller establishments. However, the level of detail of the 1988 data is sufficient for estimating future energy consumption patterns. Finally, although the 1988 MECS data have sufficient detail for analyzing energy choice and consumption patterns, there are no historical values for these data. Because annual data are not available, MECS could not be used in E-GAS.

5.2.2 Annual Survey of Manufactures (ASM)

The *Annual Survey of Manufactures*[2] (ASM) published figures on purchased fuels and electric energy used for heat, power, and electricity generation for the years 1974 to 1981. The industrial breakout includes fuel consumption data by four-digit SIC for 1974 to 1981. However, these data do not include total (purchased and produced) consumption of fuels and electric energy for heat, power, and electricity generation. Because emissions are related to energy consumption, not amount of energy purchased, these data may not be useful in E-GAS development.

The ASM does not present a complete series of data because information on purchase of specific fuels is not covered in the post-1981 period. The 1982 and 1987 *Census of Manufactures*[3] published data on purchased fuels. Data on the energy purchases are currently being developed by staff at the U.S. Department of Energy's Energy Information Agency. These data must be estimated for 1983, 1984, 1985, and 1986, which are the post-1981 years in which neither MECS nor ASM was published. Because annual data are not available, ASM could not be used in E-GAS.

5.2.3 National Energy Accounts

The *National Energy Accounts*[4] (NEA), prepared by Jack Faucett Associates for the U.S. Department of Commerce, report annual national time series data for 35 energy products for 1958-1985. The NEA data use data from MECS and ASM. The 1985 MECS data were used to allocate total four-digit SIC fuel expenditure data from ASM to specific fuels. This was done by trending 1981 ASM fuel shares by four-digit SIC to 1985 based on trends in fuel shares at the two-digit SIC level.[4] Other energy consumption data sources that were used in the construction of the NEA include the 1982 *Census of Manufacturers*[3], the 1982 to 1985 ASM, the 1985 MECS, and the 1985 *State Energy Price and Expenditure Report*.[5]

NEA includes a complete data set for many categories of energy use for 1958-1985, and is considered to be the best source for industrial energy-use data. For these reasons, NEA was chosen to be a source of energy data for E-GAS.

5.3 ENERGY MODELS REVIEWED

5.3.1 NAPAP Model Set

5.3.1.1 *Industrial Regional Activity and Energy Demand (INRAD) Model*

INRAD provides estimates of industrial electricity and fossil fuel demand. INRAD was developed to predict how energy use will be influenced by fuel prices and the general level of economic activity. The model also accounts for technological change. In two sectors, steel and pulp and paper, the technological change estimates are specific to the industries. For the other sectors, a general declining energy intensity (due to technological change) is employed. Specifically, INRAD accounts for the increasing use of electric arc furnaces in the steel industry and thermochemical pulping in the pulp and paper industry. The model uses the econometric technique of seemingly unrelated regressions and uses national data from 1958 to 1985 to build industry-specific equations for eight industrial categories. The eight categories include seven industries and an eighth "other" category which aggregates the non-energy-intensive industries. The seven industries modeled at the two-digit SIC level are food, textiles, paper, chemicals, glass, glass products, and metals.[6]

The model estimates electricity and fossil fuel consumption in each sector as a function of energy costs, capital, labor, materials cost, and capacity utilization in the industry. The model predicts how energy consumption in the eight industrial sectors changes with changes to prices in factor inputs. Simulated energy use from INRAD for 1985 was compared to 1985 data from MECS. INRAD estimates were within five percent of actual electricity consumption and within six percent of actual fossil fuel demand.[6] The model's overall results are better than the industry-specific results. For State- and urban-level modeling, the estimates of energy use will depend significantly on the industrial composition of the area. If an area has large segments of an industry for which INRAD may over- or underestimate fuel consumption, the model results could be biased for that area. Modifications to the INRAD model which were made to improve the model's ability to estimate industry-specific and State-level fuel consumption are discussed in Section 5.5.

5.3.1.2 *Commercial Sector Energy Model by State (CSEMS)*

The Commercial Sector Energy Model (CSEM) was chosen in the mid-1980s by Argonne National Laboratory for use in the NAPAP model set. CSEM forecasts commercial energy consumption by census region, and develops State estimates using a sharing algorithm. In 1989-1990, ANL modified CSEM to directly forecast commercial energy consumption at the State level; this version of the model was termed CSEMS. The CSEMS forecasts energy consumption in the commercial sector for seven fuels.[7]

The input data to CSEMS include fuel prices, disposable personal income, and population. Outputs include consumption of electricity, natural gas, distillate and residual fuel oil, and liquefied petroleum gas (LPG) for warehouse, institution, office, hotel/motel, retail/wholesale, and miscellaneous building types for three vintages of buildings. Kerosene, coal, and motor gas can also be modeled but are usually omitted from model runs due to the insignificant amounts of these fuels that are consumed in the commercial sector.[7]

5.3.1.3 *Household Model of Energy by State (HOMES)*

The Household Model of Energy (HOME) was chosen in the mid-1980s by Argonne National Laboratory for use in the NAPAP model set. HOME forecasts residential energy consumption for seven fuels by census region, and develops State estimates using a sharing algorithm. In 1989-1990, ANL modified HOME to directly forecast residential energy consumption at the State level; this version of the model was termed HOMES.[8]

The input data to HOMES include housing starts and income per household. Outputs from HOMES include consumption of electricity, natural gas, distillate and residual fuel oil, wood, and liquefied petroleum gas (LPG) for single and multi-family buildings end-use. Kerosene, coal, and motor gas can also be modeled but are usually omitted from model runs due to the insignificant amounts of these fuels that are consumed in the residential sector.[8]

5.3.2 REMI Model

5.3.2.1 *Commercial and Industrial Fuel Use*

The REMI model does not estimate commercial and industrial fuel consumption explicitly, but uses fuel price in capital and labor factor demand equations. The price of fuel is a factor in

the capital and labor demand equation in recognition that fuel, capital, and labor are inputs to the production process, and that substitution possibilities exist among the three inputs. The optimal level of fuel consumption is determined by the relative prices of capital, labor and fuel.

The REMI models calculate each region's costs of labor, capital, and fuel relative to the entire United States. These relative costs are used to determine the amount of labor demanded by each industry in a region. The relative costs of labor and capital, as well as anticipated employment, are then used to estimate capital demands in a region. The demand for fuel is not explicitly estimated. The cost of fuel, however, directly enters the labor demand equation and indirectly enters the capital demand equations.

The "fuel price" used in REMI is a weighted average of the costs of natural gas, electricity, and residual oil. The price of coal is not included in the fuel price except as it indirectly affects the price of electricity.

E-GAS requires estimates of changing fuel consumption patterns in the commercial and industrial sectors. While REMI provides information that may be useful in estimating future fuel consumption, REMI does not provide estimates of commercial and industrial coal, gas, oil, and electricity consumption. Because of this, the fuel consumption module must be developed independently of REMI. A feedback loop between estimates of energy costs and consumption with the REMI models could be included in E-GAS. This feedback would allow the user to utilize the relationships between capital, labor, and fuel which are specified in the REMI models and could improve the REMI estimates of labor and capital demand.

REMI outputs that may be useful for estimating industrial fuel consumption by fuel type include relative (regional) costs of labor, capital, and fuel, as well as relative costs of total factor inputs and intermediate inputs.

5.3.2.2 *Residential Fuel Consumption*

The REMI model produces estimates for one residential fuel category, fuel oil and coal. These estimates are a function of two factors. The first factor that determines the amount of fuel oil and coal consumption is the real disposable income of the region. The second factor is the area's consumption of fuel oil and coal as a proportion of its real disposable income. This factor is based on a consumer survey performed by the Department of Labor. The results of this survey are published in the *Consumer Expenditure Survey*.[9]

These estimates capture the income effect on residential oil and coal consumption and may be a good indicator of the income effect on all household heating expenditures. However, the REMI estimates cannot capture three other components of household energy demand: substitution and conservation of fuels caused by a change in the price or relative price of a fuel; change in heating efficiency as older heating units are replaced; and, the use of energy in the household for purposes other than heating. Finally, because REMI models do not produce estimates of residential electricity and natural gas consumption, the models are not sufficiently detailed for use in E-GAS.

5.3.2.3 *Transportation Fuel Consumption*

The REMI model estimates consumption, in dollars, of gasoline and oil (motor). This estimate is derived using the same basic methodology that is used to estimate residential fuel consumption. The estimate is a function of two factors. The first factor that determines the amount of gasoline and motor oil consumption is the real disposable income of the region. The second factor is the area's consumption of gasoline and motor oil as a proportion of its real disposable income. This factor is based on a consumer survey performed by the Department of Labor. The results of this survey are published in the *Consumer Expenditure Survey*.[9]

The growth in real disposable income drives changes in gasoline and motor oil consumption. Changes in real disposable income in a region depend on changes in population and per capita real disposable income. Changes in motor oil and gasoline expenditures may be a fairly good proxy of changes in VMT growth in the short-run. The guidance on projecting VMT suggests that a time trend of VMT growth may be used to project VMT. REMI estimates of gasoline and motor oil consumption capture changes in real disposable income and population, both of which are related to VMT.

5.3.3 PC-Annual Energy Outlook (AEO) Model

5.3.3.1 *Residential Fuel Consumption*

The PC-AEO model uses the Residential Energy End-Use Model (REEM) to project residential energy consumption for the *Annual Energy Outlook*.[10] The REEM model projects fuel consumption by Census region, type of service demand, type and vintage of residential structure,

fuel, and year. Projected fuels include distillate oil, natural gas, LPG, electricity, kerosene, and other fuels, and projections are made for each year through 2010.

There are four models within REEM; housing stock, service demand, service capacity, and technology choice. The housing stock model uses new housing projections from Data Resources, Incorporated and estimates annual housing starts by three housing types and three vintages for each of the Census regions. The service demand model estimates the demand for energy services. These services include heating and cooling, hot water, and refrigeration and appliances. Service demands are modeled for each housing type, vintage and region. The service capacity model calculates the amount of new and existing energy demand that must be met and the technology choice model estimates the shares of each technology which will be used to meet this demand.[10]

5.3.3.2 *Commercial Fuel Consumption*

The PC-AEO framework estimates commercial energy consumption using the Building Energy End-Use Model (BEEM). BEEM is based on the Nonresidential Buildings Energy Consumption Survey (NBECS-86), a 1986 Department of Energy survey on energy use in commercial buildings. The model forecasts consumption of eight fuel types by year through 2010. The forecasted fuels are residual and distillate oil, natural gas, electricity, LPG, coal, motor gasoline, and kerosene.

The four basic components of BEEM are models of building floorspace, service demand, service capacity, and technology choice. The floorspace model is considered a key component of BEEM because of the sensitivity of commercial energy consumption to the amount of floorspace. The floorspace model projects new and existing floorspace by year for each of the four Census regions.

The NBECS-86 includes data on total commercial consumption by fuel, measured in Btus, and uses "conditional demand analysis" to estimate the amount of fuel that is consumed for each energy service (*e.g.*, heating) per foot of floorspace.

Final energy demand by region is calculated from estimated service demand, average efficiency of each fuel used to meet service demand, fuel shares by type of service demand, and price and employment effects. Data on macroeconomic variables, fuel prices and elasticities are from the PC-AEO model.

BEEM can run as part of the PC-AEO model or can serve as a stand-alone model. Macroeconomic data and fuel prices would need to be fed to BEEM if it were to be run alone. However, the usefulness of BEEM in E-GAS might be limited by the level of disaggregation (Census region) of the output.[10]

5.3.3.3 *Industrial Fuel Consumption*

The PC-AEO industrial model estimates fuel consumption for eight industries. Five of these industries are two-digit SIC industries and three industries are aggregations of two-digit SIC industries. Fuels that are modeled include purchased electricity, natural gas, steam coal, residual oil, and distillate oil. The model forecasts energy consumption at the national level through 2010.

The general form used to estimate fuel consumption specifies an industry's fuel consumption as a function of output in the industry, the price of the fuel being modeled, and the price(s) of competing fuel(s). The national equations are used to forecast Census region forecasts by benchmarking the national equations to aggregations of State Energy Data Systems data. Regional fuel consumption can then be forecast using regional macroeconomic and price forecasts provided by the PC-AEO macroeconomic model. The use of benchmarking assumes that sensitivities of energy consumption to changes in fuel prices and output are the same for all regions.

5.3.4 ENERGY2020

One model that can simulate energy demand (and supply) at the sub-State level using detailed economic inputs is the ENERGY2020 model. Early versions of this model were developed for DOE. Total investment in the model exceeds 250 experience-years of model development and usage and $15,000,000 of model development and testing. A 1989 California Energy Commission study concluded that ENERGY2020 was the best energy and planning analysis model of the 26 models tested.[11] A more detailed description of the ENERGY2020 model can be found in the E-GAS preliminary model development plan.

The model is fairly large and a demonstration model was tested on two machines. First, the model was run on a 386SX/20 without a math co-processor. The model reached solutions

for all fuels and sectors for 1990-2000 in 95 minutes. The model was then run on a 486/33 with a math co-processor and the model reached the final solutions in 35 minutes.

Though ENERGY2020 is a respected model and could be calibrated to analyze fuel choice in the areas modeled in E-GAS, the model is very sophisticated and may be costly. Based on this information, it was determined that the use of a purchased model had three drawbacks: the cost would be higher than the cost associated with using the NAPAP models with an improved version of INRAD; there will be an additional cost associated with learning the model; and the model has not been peer-reviewed by EPA.

5.4 OPTIONS CONSIDERED FOR E-GAS FUEL CHOICE MODULE

In the preliminary E-GAS research plan, two general options were presented for the fuel choice module. The first option was to modify and use an existing model set. The second option was to build a fuel choice module by developing equations for each urban area to be modeled in E-GAS. Both of these options were considered for the model plan. Section 5.3 presented reviews of the NAPAP models, ENERGY2020, and the fuel consumption modeling in the REMI model. The criteria for ranking the models are the ability of the model to forecast at the State or sub-State level; the input data required to run the models; the resources needed to modify the model for use in E-GAS; and finally, an assessment of the quality of the model.

The models that met all of the above criteria are the NAPAP and ENERGY2020 models. NAPAP and ENERGY2020 can forecast at the State level and could be modified to estimate sub-State energy consumption. In addition, neither model requires technological inputs which may be difficult for the user to estimate (*e.g.*, future energy intensity of commercial floorspace). Both models have strong theoretical frameworks that have been modified and improved since their initial development. While both models could be used in E-GAS, NAPAP was deemed the better choice because of cost, familiarity to the E-GAS team members, and its status as an EPA peer-reviewed model. The other alternatives were rejected for a number of reasons.

Electric Power Research Institute (EPRI) models (i.e., Residential End-Use Energy Planning System (REEPS), Commercial End-Use Energy Planning System, and Industrial End-Use Planning Methodology - Econometric Models) and the related Electric and Gas Utility Modeling System were reviewed, but were not considered appropriate for E-GAS for three

reasons: (1) the models currently forecast at the NERC-region level; (2) the required inputs to the commercial and residential models are technological in nature and may be difficult to estimate for sub-national regions; and (3) the Electric and Gas Utility Modeling System was never finalized. The PC-AEO models from DOE appear similar in technique and structure to the NAPAP models. However, the models forecast at the Census-region, rather than at State, level. The REMI models are economic models which model energy costs and consumption of fuel oil and natural gas in the residential sector and motor oil and gasoline in the transportation sector. The models, however, do not explicitly forecast commercial and industrial fuel use and therefore could not be used in E-GAS.

The second approach introduced in the preliminary model plan was to develop MSA-level equations for fuel consumption. However, data needs were researched and it was determined that the data needed to estimate energy elasticities were not available. The *Annual Survey of Manufacturers* has data for 1974-1981 on energy consumption by two-digit SIC for each MSA in the United States, but the data set is not complete for the 1980s. In addition to incomplete energy data, employment and value added may not be available for two-digit SIC codes for MSAs. These data are collected, but are often suppressed due to plant disclosure concerns.

Even if complete energy and employment data were available or could be estimated for each MSA and "rest-of-State" area, this approach would probably not be appropriate for the E-GAS modeling system. E-GAS will include economic models and emission projection capabilities for 28 ozone nonattainment areas, as well as each State in a ROM modeling area. Development of energy consumption estimates for SICs 20 through 39 for just the 28 nonattainment areas would involve estimating 532 sets of equations. Each set of equations would include consumption estimates for coal, oil, natural gas, electricity, and "other" fuel. Therefore approximately 2600 equations would have to be developed to estimate fuel choice in the nonattainment areas in E-GAS. Estimates for each State and "rest-of-State" in the ROM modeling region would also have to developed. This approach could not be completed within the schedule and budget constraints of the project.

Finally, the idea of developing equations for each of the nonattainment areas is based on the assumption that economic behavioral characteristics differ between regions of the United States. The theoretical structure of the REMI models (as well as the NAPAP and PC-AEO models) is based on the belief that behavioral characteristics are similar in all regions of the

country and that differences in regional economic factors, such as level of fuel consumption, are based on attributes, not consumer behaviors, of the regional economy.

5.5 THE E-GAS FUEL CHOICE MODULE

Based on the information presented in Sections 5.1, 5.2, and 5.3, it was determined that the NAPAP models would be the best option for estimating fuel consumption in E-GAS. It was also determined that significant modifications would be made to the models in order to use them in E-GAS. The following sections describe the modifications made to HOMES, CSEMS, and INRAD during the development of E-GAS and the use of the models in E-GAS.

5.5.1 Modifications Made to CSEMS

Three major modifications were made to CSEMS in order to include it in E-GAS. First, the model was re-coded to allow it to run in an MS-DOS environment. Second, the model was modified to predict commercial energy consumption at the sub-State level. Third, the base year of the model was updated to 1990.

The original version of CSEMS was coded to run on a mainframe computer; it was then modified to run in a UNIX environment; finally, for E-GAS, the model was re-coded to allow it to run in an MS-DOS environment. The programming language used is C.

During the re-coding of the model, CSEMS was updated to forecast commercial energy consumption growth for the modeling areas defined in E-GAS. In order to forecast sub-State energy consumption, CSEMS was modified to accept input data from the REMI models. These areas include nonattainment areas and attainment portions of States. Although the model was re-coded, the approach used in the CSEMS model in E-GAS is consistent with the model used for the NAPAP assessments. This approach relies on forecasting three factors: commercial floorspace, demand for commercial energy end-use services (*e.g.*, air conditioning) and the proportion of each fuel type which will be used to satisfy demand for an end use, and the efficiency with which fuel will be used in commercial buildings. Forecasts of these three factors are used to project consumption of energy, by fuel type, in the commercial sector.

CSEMS produces sub-State commercial consumption estimates using State-level fuel prices, and sub-State forecasts of population and disposable personal income from the REMI models. CSEMS produces growth factors for electricity, coal, fuel oil (distillate and residual oils), liquefied petroleum gas (LPG), motor gasoline, kerosene, and natural gas for nonattainment areas and attainment portions of States. The growth factors for the fossil fuels are used by the Crosswalk to grow the appropriate SCCs for each region. The growth factors for electricity are sent to an electric utility model pre-processor, where they are used to develop an electric demand growth factor using a weighted average of regional electricity demand growth for the residential, commercial, and industrial sectors.

5.5.2 Modifications Made to HOMES

Three major modifications were made to HOMES to include it in E-GAS. These modifications parallel the modifications made to CSEMS. The model was re-coded, modified to predict residential energy consumption growth at the sub-State level, and the base year of the model was updated to 1990.

The original version of HOMES was coded to run on a mainframe computer; it was then modified to run in a UNIX environment; finally, for E-GAS, the model was re-coded to allow the model to run in an MS-DOS environment. The programming language used is C. During the re-coding of the model, HOMES was updated to forecast residential energy consumption for the modeling areas defined in E-GAS. These areas include nonattainment areas and attainment portions of States.

During the re-coding of HOMES, the approach used to estimate residential fuel consumption remained consistent with the techniques used for the NAPAP assessments. This approach relied on forecasting three factors: housing stock, demand for residential energy end-use services (*e.g.*, water heating) and the proportion of each fuel type which will be used to satisfy demand for an end use, and the efficiency with which fuel will be used in residential housing units. Forecasts of these three factors are used to project consumption of energy by fuel type in the residential sector.

HOMES produces sub-State residential consumption estimates using State-level fuel prices, and sub-State forecasts of household income from the REMI models. HOMES produces

growth factors for electricity, coal, fuel oil, liquefied petroleum gas (LPG), natural gas, motor gasoline, and wood for nonattainment areas and attainment portions of States. The growth factors for the fossil fuels are used by the Crosswalk to grow the appropriate SCCs for each region. The growth factors for electricity are sent to an electric utility model pre-processor where they are used to develop an electric demand growth factor using a weighted average of regional electricity demand growth for the residential, commercial, and industrial sectors.

5.5.3 Modifications Made to INRAD

Three modifications were made to INRAD for its use in E-GAS. First, the model, which had been written to run in a UNIX environment, was re-coded to run in an MS-DOS environment, the programming language used is C. Second, the model was modified to accept sub-State level inputs from the REMI models and to forecast industrial fuel consumption growth at the sub-State level. Third, equations for disaggregating fossil fuel consumption into coal, oil, and natural gas consumption were added to the model.

5.5.3.1 *Modifications to INRAD to Include Fossil Fuel Choice*

The INRAD model is based on factor demand equations derived from the Generalized Leontief (GL) flexible functional form. They are estimated for seven energy intensive industries. Only electricity and total fossil fuel are forecast by INRAD. To support E-GAS, a second level of hierarchical equations was developed to forecast fuel use by fuel type. These fuel share equations can then be used in conjunction with INRAD to forecast growth in individual fuel types. The general issues and methodology for the INRAD/E-GAS fuel share equations are discussed in this section.

To maintain simplicity, equations are developed for three fuel types only: coal, total oil (aggregated mostly from residual and distillate fuel oil use), and total gas (mostly natural gas, but also including some LPG). As was the case for INRAD, national data series for the three different fuel types were drawn from the National Energy Accounts for the years 1958-1985. The same level of industrial disaggregation was used, *i.e.*, SIC 20, 22, and 32, upstream production sectors of SIC's 26, 28, and 33, and an "other" sector which includes all non-energy-

intensive industries.[a] An index of natural gas curtailments was also used to control for the gas shortages in the early seventies.

INRAD predicts the level of fossil fuel use, given all factor prices. The fuel choice equations give the predicted share of energy use by type. The methodology assumes the fossil fuel choice follows a GL cost function. The GL approach generates a system of equations that predict the ith share of fossil fuel use, f_i/F, as a function of the relative prices of each fuel type. The form of the equations is:

$$\frac{f_i}{F} = \beta_{ii} + \sum_{j \neq i}^{n} \beta_{ij} \times \left(\frac{P_j}{P_i}\right)^{0.5} + \tau_i T + \gamma_i Z, \qquad (1)$$

where,

f_i is the ith fuel

i represents the 3 fuels i = c,o, and g (coal, oil, and gas)

j represents the 3 fuels i = c,o, and g (coal, oil, and gas)

F is total fossil fuel use

P_i and P_j are the fuel prices

T is a technology trend

Z represents non-price influences

β_{ij} , τ_i, and γ_i are parameters that are estimated, with β_{ij} representing the cross-price elasticity of fuels i and j

τ_i representing the technology elasticity of fuel i demand

Y_i representing the non-price elasticity of fuel i demand

For forecasting, there are no non-price terms, therefore Equation (1) can be written as:

[a]In INRAD, the aluminum sector was also a separate sector. Almost all energy use in that sector is electricity. The remainder is included in "other" for purposes of forecasting fuel shares.

$$\frac{f_i}{F}=\beta_{ii}+\sum_{j\neq i}^{n}\beta_{ij}\times(\frac{P_j}{P_i})^{0.5}+\tau_i T_{i,t} \tag{2}$$

where,

$$T_{i,t}=T_{i,t-1}+S_{i,t} \tag{3}$$

Unfortunately, there is no guarantee that the predicted values for the fuel share will sum to one. One approach is to drop one of the equations, *e.g.*, the oil equation. The equation would then be written:

$$\frac{f_o}{F}=1-(\frac{f_c}{F}+\frac{f_g}{F}) \tag{4}$$

The other alternative is to renormalize the equations:

$$\frac{f_i}{F}=\frac{f_i/F}{\sum_{i=1}^{3}f_i/F} \tag{5}$$

Equation 5, while not based on any economic theory, is the recommended choice since it does require that a particular fuel be singled out and treated differently. This is the approach used in E-GAS.

Due to the paucity of State-level data on energy use by 2-digit SIC and due to the need to aggregate the total energy use by fuel type to apply to the boiler SCC records, which may not reliably identify the SIC code of the point source, a method to forecast regional fuel use by fuel type and industry in 1990 and beyond is required.

Two alternatives to implementing these equations are available. The first is to use regional price data to predict $s_i=f_i/F$ (i=c,o,g) normalize using Equation (5), and apply these predicted fuel shares to the State-level predictions of total fossil fuel use. The second choice is

to construct a new base year file of State-level fossil fuel use by type and SIC. The forecast for any year t would then be:

$$f_{i,t} = F_t \times s_{i,t} \tag{6}$$

where,

$$s_i = \frac{f_{i,t}}{F} + \left(\rho_i \times (s_{i,t-1} - \frac{f_{i,t-1}}{F}) \right) \tag{7}$$

and $\hat{F}_t / \hat{F}_{t-1}$ is based on the fossil fuel forecasts from the original INRAD equations. This approach better accounts for State-level variations in fuel choice, but requires slightly more data and programming. This approach is taken in E-GAS because the energy consumption numbers need to be applied to benchmark consumption estimates developed for the nonattainment areas and attainment portions of States. The model will be run using 1980 energy consumption data; from these output, 1990 benchmark data will be estimated. The 1980 estimates of State-level energy use by 2-digit SIC and fuel type are available from the Purchased Heat and Power Systems (PURHAPS) model and database. Argonne National Laboratory supplied this benchmark data for E-GAS. No other more recent data are available.[b]

The growth rate equation used in E-GAS is:

$$\dot{f}_{i,t} = \frac{\left(\frac{s_{i,t}}{\sum_{i=1}^{3} s_{i,t}} \right)}{\dot{s}_{i,1990}} \tag{8}$$

where:

$\dot{f}_{i,t}$ represents growth rates

$S_{i,t}$ represents fuel shares for present year

$S_{i,1990}$ represents fuel shares for 1990 base year.

[b]There are 1981 data available in PURHAPS and for the INRAD benchmark year. However, this year was the beginning of a severe recession in many energy intensive sectors and would not be a good choice for a benchmark.

5.6 REFERENCES

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CHAPTER 6

ESTIMATING ELECTRIC UTILITY GENERATION

6.1 INTRODUCTION

Electricity generation by electric utilities is estimated/forecast by the Neural Network Electric Utility Model (NUMOD). NUMOD is a behavioral model which uses three embedded neural networks to calculate annual generation activity indices (where the base year, 1990, is assigned an index of 100) and annual generation resulting from combustion of coal, oil, and natural gas in each of the 48 contiguous States.

Although NUMOD estimates/forecasts State aggregate generation, it assumes that States are grouped into power pools. It also assumes that generation needed to meet demand (or "load") in any State may be partially located in other States in the power pool. Accordingly, it is very important when using NUMOD to run an input scenario for the entire power pool and to analyze results for the entire power pool.

In contrast to traditional electric utility models, NUMOD used artificial intelligence to *learn* how utilities generate electricity from data describing generating capacity, climate, peak loads, fuel prices, and power pool effects. It executes rapidly, uses less than 70 kBytes of memory, and supports a variety of alternative scenarios. The model operates by reading input records, each of which describes one State for one year. Each record is independent of every other record, allowing NUMOD to run any number of scenarios during a single model run. This capability supports hypothetical scenarios such as a sensitivity analysis. However, users are responsible for ensuring the validity of NUMOD inputs.

This chapter describes NUMOD, its inputs, outputs, and much of the design philosophy behind the model. Information needed to set up an input file and run the model is found in the E-GAS *User's Guide*.

NUMOD was designed to meet the following objectives:

- *Minimum RAM requirements and economic execution*: The electric utility component of E-GAS was designed to operate on a personal computer within the same memory and other hardware constraints as the other E-GAS components. No use was made of

proprietary software or of software requiring excessive memory. It was necessary for NUMOD to execute very rapidly, making a small impact on E-GAS execution speed.

- *Based on publicly available data:* All data were to be publicly available and recognized without independent validation.

- *Behavioral model:* In order to be validated under a potentially unknown number of scenarios, it was necessary for the model to be a behavioral model rather than a normative model, because normative models are potentially difficult to validate.

- *Validation during development:* NUMOD was validated during development to assure operation as designed and reliable output production.

6.2 SCC AND GEOGRAPHIC COVERAGE

NUMOD estimates/forecasts generation by fuel type: coal, oil, and gas. This breakdown of generation was determined in part by the needs of E-GAS, in part by electric utility practice, and in part by the availability of suitable data. Generation is estimated/forecast at the State level for each of the 48 contiguous States. States are grouped into regions which approximate NERC regions to include effects which are specific to each power pool.

6.2.1 Applicable SCCs

Thirteen SCCs or SCC groups cover the vast majority of electric utility operations. These are summarized in Table 6-1.

TABLE 6-1 MAJOR ELECTRIC UTILITY SCCs

SCC	Description
n/a	Hydro-electric
n/a	Nuclear
101002XX, 2101002XXX	Bituminous & Sub-bituminous boilers
201002XX 101003XX, 2101003XXX	Lignite boilers
101005XX, 201001XX, 2101004XXX	Distillate boilers and ICs
101004XX, 2101005XXX	Residual boilers
101006XX, 2101006001	Gas boilers
2101006002	Gas ICs

SCCs shown in the above table account for nearly 100 percent of electric utility generation.[1] There is no SCC for either hydro-electric or nuclear generating units. However, they account for a significant fraction of utility generation and are therefore added to this table.

Additional SCCs, shown in Table 6-2, account for a very small amount of generation and are not included in the model.

TABLE 6-2 ELECTRIC UTILITY SCCs

SCC	Description
101007XX, 2011007XX, 2101010XXX	Process gas boilers and ICs
101008XX, 2101009XXX	Coke boilers and ICs
101009XX, 2101008XXX	Wood boilers and ICs
101010XX, 2101007XXX	LPG boilers and ICs
101011XX, 2101011XXX	Bagasse boilers
101012XX, 2101012XXX	MSW boilers
101013XX, 2101013XXX	Liquid waste combustors

With the possible exception of municipal solid waste (MSW) boilers, none of these is likely to provide significant generation. Although they may be important locally or in unique circumstances, their use tends to be very limited and difficult to predict. Data are too limited to allow statistically significant generalization or modelling.

MSW units are still few in number and data are too limited to support modelling of MSW plants. Municipalities sometimes turn to MSW plants as a way of disposing of solid waste while creating a useful by-product in the form of electricity and/or steam. However, it is very difficult to predict when and where MSW plants will be built.

6.2.2 NUMOD SCC Coverage

NUMOD's output, discussed in Section 6.5, consists of activity indices and generation by coal, oil, and gas. These approximate to the SCCs shown in Table 6-3.

TABLE 6-3 NUMOD SCC COVERAGE

Descriptor	SCC	Description
Coal	101001XX, 101002XX, 101003XX, 2101001XXX,2101002XXX, 2101003XXX	Coal-fired boilers of all types
Oil	101004XX, 101005XX, 201001XX, 2101004XXX, 2101005XXX	Distillate-fired and residual-fired boilers and ICs
Gas	101006XX, 201002XX, 2101006XXX	Gas-fired boilers and ICs

All coal-fired units are grouped as "coal" units, regardless of coal rank. Lignite-fired boilers (SCC 101003XX and 2101003XXX) are grouped with bituminous and sub-bituminous-fired boilers (SCC 101002 and 2101002) because there are few of them, they are located in very few States, and no new units are likely to be built. The latest NURF database contains a total of 66 lignite-fired units with an aggregate nameplate capacity of 16,825 MW and an average capacity factor of 30 percent.[2] Although lignite is a significant fuel in some areas, it represents 10 percent or less of national coal generation.[a] Nearly all of these plants are mine-mouth plants because lignite is difficult to transport safely. Most data sources do not distinguish coal units by coal rank in their data.

Distillate and residual oil plants are grouped as "oil" units. Residual oil is used primarily as a boiler fuel and a standby fuel in some coal units. It is not used as a turbine fuel. Distillate is used primarily as a turbine fuel and as a standby and flame stabilization fuel in some coal units. It is not used as a boiler fuel. Both are used sparingly in normal utility operations due to their relatively high cost. Moreover, they tend to be used in emergency situations and to cover unexpected demand surges. Data availability and condition, discussed in Section 6.3.1, dictated grouping residual and distillate units.

Gas-fired external combustion boilers (boilers) and internal combustion engines (ICs) are grouped as "gas" units. Because there was no need to distinguish boilers from ICs and due to data availability and condition, no attempt was made to separate gas boilers from gas ICs within NUMOD.

[a]It is difficult to classify coal units as lignite-fired because coal is seldom reported by rank. Usually, only the coal's heat content is reported in Btu/lb or MMBtu/ton. Experts frequently differ on the dividing line between lignite and sub-bituminous coal, with some placing it as low as 6,500 Btu/lb and some placing it higher. Moreover, coal quality may or may not be reported on a consistent basis.

6.2.3 North American Electric Reliability Council (NERC) Region Assignments

Each electric utility is part of a power pool set up to share generating resources to meet various contingencies and to engage in the buying and selling of electricity. Real-world power pools generally conform to utility service territories and the location of individual electric circuits. Because State boundaries are used as NUMOD's fundamental spacial unit, power pools were adjusted slightly to conform to State boundaries. NERC regions were used to delineate power pools because they approximate the larger pooling units and because critical data on historic and predicted peak loads are reported that way. Table 6-4 shows power pool assignments for each State.[3,4] A numeric code, which is discussed in Section 6.4.1, is also shown.

TABLE 6-4 STATE POWER POOL MEMBERSHIP

Power Pool	Region Code	States in Pool
Northeast Power Coordinating Council	0	ME, NH, VT, MA, NY, CT, RI
Mid-Atlantic Area Council	1	PA, NJ, DE, MD
East Central Area Reliability Coordination Agreement	2	WV, KY, MI, OH, IN
Southeastern Electric Reliability Council	3	VA, SC, FL, AL, NC, GA, TN, MS
Mid-America Interconnected Network	4	WI, IL
Mid-Continent Area Power Pool	5	MN, IA, SD, NE, ND
Southwest Power Pool	6	LA, MO, KA, AR, OK
Electric Reliability Council of Texas	7	TX
Western Systems Coordinating Council	8	WA, CA, AZ, CO, MT, ID, OR, NV, NM, UT, WY

6.3 MODELING STRATEGY

Review of the available data, E-GAS SCC coverage, and NUMOD's potential applications resulted in adopting a structure which uses one neural network to estimate/forecast coal generation, combines coal generation estimates/forecasts with the other explanatory variables, and then uses two additional neural networks to estimate/forecast oil and gas generation; producing a total of three neural networks.

6.3.1 Review of Generation Data and Selection of Input Variables

Data describing each State and the power pool to which it belongs were reviewed to identify statistically significant determinants of electricity generation. Coal accounts for most of the fossil fuel generation in the U.S. except in certain States where oil and gas are important (oil and gas account for equal shares). Of the potential explanatory variables, none has a high correlation with generation, but each is important for network training or as a scenario or policy variable. Table 6-5 summarizes major reasons for including variables in NUMOD.

6.3.1.1 *Data Sources*

Electric utility data are collected by the U.S. Department of Energy's Energy Information Administration (EIA) and the Federal Energy Regulatory Commission (FERC) under various statutory authorities. Data are collected via a number of forms which are submitted to EIA or FERC. These are tabulated and presented in a number of publications and, where confidentiality requirements permit, original data are made available to the public. Several forms were of particular importance to this project:

- EIA-759 Monthly Power Plant Report
- FERC-423 Monthly Report of Cost and Quality of Fuels for Electric Plants
- EIA-767 Steam-Electric Plant Operation and Design Report

TABLE 6-5 USES FOR NUMOD INPUT VARIABLES

Variable(s)	Reasons for including in model	Potential scenario use
Region identifier	Allows network to learn individual region characteristics and operating rules.	N/A
Summer and winter peak loads	Defines load duration curve (LDC) shape. Allows network to learn dispatch patterns resulting from peak, cycling, and base loads	Models changes in end use demand and changes in LDC shape.
Heating and cooling degree days		N/A
State steam, IC and hydro/nuclear capacity	Capacity imposes limits on generation. Allows network to learn fuel use by prime mover.	Models effects of capacity additions and retirements and changes in prime mover shares.
Region steam, IC and hydro/nuclear capacity		Models effects of capacity additions, retirements, and prime mover shares in other power pool members.
State end-user demand	Demand determines generation. Allows network to learn relationship of demand to generation in State and region.	Models demand growth in state.
Region end-user demand		Models demand growth in other power pool members.
State average coal, oil and gas prices	Fuel price and fuel price differences help determine generation choices.	Models changes in real fuel prices and differential fuel price changes.

The Edison Electric Institute (EEI) collates and tabulates these data as needed to summarize by State. Data are contained in the *Statistical Yearbook of the Electric Utility Industry* (referred to as "the yearbook"),[1] which is published annually. Yearbook data were used for two reasons: EEI has already processed EIA/FERC data and presented them in a useable form; in its role as an industry representative, EEI publishes data which accurately describe the activities of its constituents.

EEI generation data are presented in two ways: by prime mover and by fuel. Generation data by prime mover combine coal-, oil-, and gas-fired conventional steam units. Generation data

by fuel separate coal, oil, and gas but group coal by rank and group the two oil types. Even though some SCC combination results, the data on generation by fuel are much closer to the E-GAS SCC requirements and were used for that reason.

Data on peak loads for power pools are compiled and published by the North American Electric Reliability Council. Both historic and predicted summer and winter peak loads in Megawatt (MW) for each NERC region are published in *Electricity Supply and Demand.*[3]

The U.S. Department of Commerce Economics and Statistics Administration publishes price indices for fuels, which were used to convert nominal (current year) fuel prices to constant dollars. Weather data, in the form of heating and cooling degree days, are compiled and published by the National Oceanic and Atmospheric Administration (NOAA). These are further tabulated in the *Statistical Abstract of the United States.*[5]

Data used to develop NUMOD are tabulated in Appendix A. The following data were assembled in record format. Each record represents one State for one year and there is one record for each State during 1980 - 1991, for a total of 576 records.

- Heating degree days
- Cooling degree days
- Regional summer peak load
- Current year winter peak load
- Prior year winter peak load
- State steam generating capacity
- State IC generating capacity
- State hydro and nuclear capacity
- Region steam generating capacity
- Region IC generating capacity
- Region hydro and nuclear capacity
- State demand
- Region demand
- Average State coal price
- Average State oil price
- Average State gas price
- State coal-fired generation
- State oil-fired generation
- State gas-fired generation

Units of measure and descriptions of computations are included in Appendix A.

6.3.1.2 *Fuel Shares and Determinants of Utility Generation*

Statistical review of the database shows that approximately 85 percent of national total generation depends on coal for its fuel source. Oil and gas each account for approximately 8.5 percent.[1,2] Some areas, notably the Gulf States, parts of New England, and California, tend to use more oil and/or gas than most other States. This reliance on oil and gas is largely due to either the proximity of supply in the form of oil/gas fields and refineries, or a relative scarcity of coal, as in parts of New England. Air pollution regulation also plays a part in some areas, as in California.

In order to select explanatory variables in NUMOD, simple correlations were calculated for generation and each of 15 variables. Table 6-6 contains coal, gas, and oil generation correlation coefficients with each of the NUMOD explanatory variables.[4]

TABLE 6-6 CORRELATION COEFFICIENTS FOR GENERATION AND EXPLANATORY VARIABLES

Explanatory Variable	Coal Generation	Oil Generation	Gas Generation
Heating degree days	-0.210	-0.133	-0.401
Cooling degree days	0.245	0.068	0.313
Summer peak load	0.163	-0.035	-0.079
Winter peak load	0.130	-0.012	-0.092
State demand	0.557	0.396	0.698
Region demand	0.122	-0.011	-0.060
Region hydro/nuclear capacity	-0.234	-0.007	-0.101
Region steam capacity	0.438	-0.084	0.002
Region IC capacity	0.004	0.027	-0.135
State hydro/nuclear capacity	0.023	0.253	0.149
State steam capacity	0.748	0.300	0.759
State IC capacity	0.179	0.341	0.071
Coal price	-0.362	0.012	0.094
Oil price	-0.118	-0.095	-0.044
Gas price	-0.269	-0.269	-0.104

These correlation coefficients are notable for their generally small magnitudes. Although each variable has been included in one or more of the traditional utility models, correlation

analysis does not indicate that any one of them is particularly strongly linked to generation. Nonetheless, each was included in each of the NUMOD neural network engines because of their potential policy and/or scenario importance and because each is readily available to anyone wishing to run NUMOD. Additionally, electric utility forecasting practice has illustrated the importance of these variables.

6.3.2 Implications for Model Design

The data review clearly indicates that an adequate utility model should focus on coal because coal is responsible for most electricity generation. This has special importance for a model using a machine learning technology like a neural network. One neural network was trained to estimate/forecast coal generation using explanatory variables (described in more detail below) and historic coal generation. Output from the coal network was then used with the same explanatory variables and historic oil and gas generation to train two additional networks: one for oil generation and one for gas generation.

Within the NUMOD's structure as depicted in Figure 6-1, each record is read from the input file and pre-processed as described in Section 6.4. The coal network is run to produce a coal generation estimate/forecast, which is printed to the output file and also combined with the explanatory variables by a second pre-processor. The second pre-processor sets up input for the oil and gas networks. These two networks produce oil and gas generation estimates/forecasts which are also printed to the output file. Post-processing consists of two steps: calculating activity indices and calculating generation.

6.3.3 Traditional Utility Model Inputs and Their Use in NUMOD

NUMOD uses the same variables as traditional electric utility models but in a different way: instead of using the variables to develop an objective function, constraints, bounds, and data in a linear program or as variables in a system of *a priori* equations, three different neural networks *learn* how explanatory variables are related to generation. Each group of variables is used to account for one or more important effects.

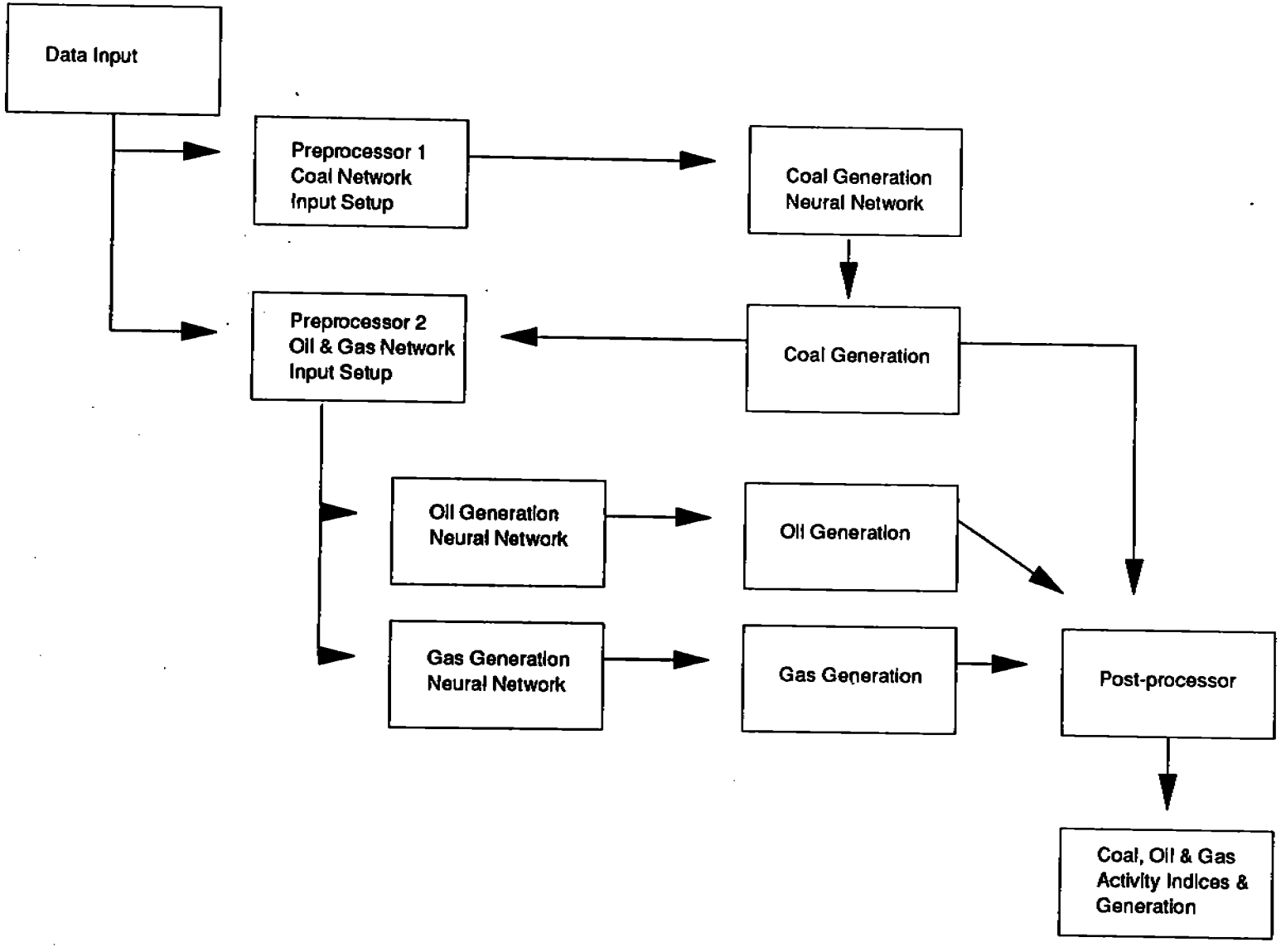

Figure 6-1 NUMOD Data Flow Diagram

6.3.3.1 *The Effect of Power Pools*

As described above, electric utilities belong to power pools in order to share generating resources during peak load periods, when generating units are out of service, or when one utility can offer inexpensive electricity to its pool-mates.[3,6] Pooling assures the security and quality of the electricity supply and contributes to cost control.

Pool effects are included in NUMOD through the use of the following *regional* variables:

- region identifier (see above)
- steam capacity (MW)
- IC capacity (MW)
- hydro-nuclear capacity (MW)
- demand (MWH)
- summer peak (MW)
- current and prior year winter peaks (MW)

Each region develops its own operating rules and procedures to account for regional peculiarities and the desires of member utilities. Developing data on these rules would be expensive and difficult. However, by including a regional identifier among the training data, the neural networks are allowed to learn the effects of these rules without ever specifying them. Section 6.4.1 describes how this is done.

The three capacity variables tell the network how much capacity is available within the pool to dispatch against both regional and State loads (see below). Summer and winter peaks are most important at the region level because all capacity within the region can be used to meet peaks no matter where they occur within the region. Section 6.3.3.3 enlarges this concept.

Demand within the region, together with peak demands and State demand (see below), provides information about the amount of electricity which is either imported from or exported to the State. Because the network is shown data about every State in the region during training, it learns import/export patterns and how to relate them to capacity and fuel prices.

Three variables are used to describe region peaks: the summer peak, the current winter peak and the prior year winter peak. Two winter peaks are needed because winter peaks occur

during the months of December, January, February, and March. This makes it very difficult to assign a winter peak to a given calendar year. For example, the winter peak for 1993 may occur during the winter of 1992-93 or during the winter of 1993-94. Including both as variables removes this difficulty. This problem does not impinge on the summer peak, which generally occurs during August.

6.3.3.2 *End User Demand*

End-user demand is the amount of electricity actually sold to customers, including electricity sold to other power pool members. Two kinds of demand are included in NUMOD:

- State demand Megawatt-hours (MWH)
- Region demand (MWH)

State demand is included with region demand in order for the neural network to learn how capacity is related to generation.

Demand in any State may be either higher or lower than generation or the potential generation from all of the State's capacity. Some States e.g., the mid-Atlantic States, import electricity because they cannot meet demand from native sources. Others, like West Virginia, export more than they consume because they have substantial fuel resources, water, etc. NUMOD uses State and region demand in conjunction with capacity and peak load information to learn how a State dispatches its native capacity to meet demand.

Generation, which is an output, is greater than demand within a region due to transmission and distribution losses and a need to maintain a reserve. It is also greater than demand within States with low imports or exports. This difference varies from State to State and region to region depending on differences in electricity systems, geography, operating practices, etc. In general, losses range from 5 to 8 percent.[1] In contrast to traditional models, NUMOD learns about losses during training of the neural networks. More importantly, it learns how the three kinds of generation are related to demand.

6.3.3.3 *Load Duration Curve Shape*

Utilities dispatch their generating resources to meet a load (MW) which varies over time. This varying load is most commonly summarized for a one year period by the load-duration curve (LDC), which shows the load which is met or exceeded for each number of hours in a year. Each region will experience its maximum load for a very small number of hours each year. Lesser loads are experienced for more hours. By definition, LDCs have a negative slope.

Traditional models often subdivide the continuous LDC into a series of step functions which approximate the continuous curve. The approximation can be made as close as needed by decreasing the width, or "mesh", of each step. Computational constraints generally restrict the number of steps which can be used to fewer than 10, each accounting for between 800 and 900 hours. Some models use as few as three steps.

Demand is given by the area under the LDC. If the LDC is integrated over the interval [0, 8760], the result is demand measured in MWH. For a given demand, the LDC can have a prominent peak, where base load is relatively smaller, or it can be relatively flat, where peaks are not as important as base load.

NUMOD uses regional peaks loads for two reasons: first, experimentation during this project has shown that a neural network is capable of learning how units are dispatched from information about peak loads (the height of the LDC) and demand (the area under the LDC).[4] Second, peak loads and demands constitute all of the readily available information. Going beyond this, as would be required in developing a step function approximation, requires a number of assumptions about the underlying LDC shape. NUMOD therefore makes fewer *a priori* assumptions by not using a step function.

Weather data, in the form of State heating and cooling degree days, is used to further define the LDC. Heating and cooling loads are one determinant of the peaking and cycling portion of the LDC.

6.3.3.4 *Generating Capacity*

NUMOD uses three kinds of capacity for each state and the state's region:

- conventional steam (MW)
- internal combustion (IC) (MW)
- hydro plus nuclear (MW)

Conventional steam capacity includes all generating units using boilers to create steam. This includes coal (all ranks) and residual oil, and gas, where residual oil and gas are used as boiler fuel. IC capacity includes gas and oil turbines. Hydro and nuclear have been combined for computational convenience. Both kinds of unit tend to be base load units due to their relatively low operating (variable) cost.

Generating capacity imposes an upper limit on generation, whether in a State or a region, because no generating unit can produce more electricity than it is designed to produce. If State demand is greater than its capacity, it must import electricity from its pool-mates. Alternatively, if its capacity is greater than its demand, it may sell the surplus to its pool-mates. EEI Yearbooks list capacity by prime mover for each State, and these were used to allow the networks to learn how capacity is related to generation in each State and region.

6.3.3.5 *Fuel Prices*

Traditional utility models have shown that fuel prices and price differences among fuels are important in determining each fuel's share of total generation. State average fuel prices, denominated in constant dollars per MMBtu, are input for these broad fuel categories:

- coal (all ranks)
- oil (residual and distillate)
- natural gas

EEI data tabulate historic prices using these broad categories. Although data on prices by fuel quality (heat and sulfur content) are available from FERC Form 423, experimentation showed that they are not needed in training neural networks to estimate/forecast generation.

6.4 PRE-PROCESSING AND TRANSFORMING NUMOD INPUTS

NUMOD uses 20 input variables for each state record to estimate/forecast six outputs. In addition, it reads a reference file of 48 records. The following sections describe the inputs. Details of the record format, units of measure, and related matters are included in the E-GAS *User's Guide.*

6.4.1 State Identifier and Classification Variables

Each input record is identified using the two letter state abbreviation. This identifier tells NUMOD the State for which it is estimating/forecasting generation. The state identifier is followed by three classification variables:

- NERC region code (see above)
- Coal generation code
- Gas penetration code

The NERC region code tells NUMOD to which of the nine power pools the state belongs, allowing the model to include effects which are peculiar to each pool.

Coal generation codes tell the model the *proportion* of fossil fuel generation provided by coal. The coal generation code serves two purposes. First, it was found that States can be clustered according to their fractional generation. Second, this variable can be used to control scenarios in which coal will provide more (less) generation in some future year. Table 6-7 shows coal generation codes.

TABLE 6-7 COAL GENERATION CODES

Coal Generation Code	Coal Share of Fossil Fuel Generation
0	0% – 30%
1	30% – 65%
2	65% – 90%
3	90% – 98%
4	98% – 100%

A similar code is used for the proportion of oil plus gas generation represented by gas. Table 6-8 shows gas penetration codes.

TABLE 6-8 GAS PENETRATION CODES

Gas Penetration Code	Gas Share of Oil Plus Gas Generation
0	0% – 10%
1	10% – 50%
2	50% – 90%
3	90% – 100%

Nominal State code assignments are found in the E-GAS *User's Guide*.

6.4.2 Explanatory Variables and Data Transformation

In addition to the 3 classification variables, there are 16 explanatory variables for the coal network:

- Heating degree days
- Cooling degree days
- Regional summer peak load
- Current year winter peak load

- Prior year winter peak load
- State IC generating capacity
- Region steam generating capacity
- Region hydro and nuclear capacity
- Region demand
- Average State oil price
- State steam generating capacity
- State hydro and nuclear capacity
- Region IC generating capacity
- State demand
- Average State coal price
- Average State gas price

The State and Region demand data required as input to NUMOD must be calculated from the commercial, residential, and industrial electricity growth factors produced by the E-GAS modules CSEMS, HOMES, and INRAD, respectively. Since E-GAS produces growth by non-attainment areas instead of States, a methodology was formulated to allocate generation from the E-GAS areas to the State-level and to calculate the projected consumption values.

In order to do this, the State Energy Data Report electricity consumption for 1990 by State and sector is allocated to the E-GAS areas.[7] This allocation factor was determined by calculating the number of electric utilities in a State and dividing that into the number of electric utilities in the State which are also in the E-GAS area.[8] This factor is then applied to the States consumption to determine the consumption in the E-GAS area from the State. For E-GAS areas encompassing more than one State, this approach is applied to each State and the resulting values area totaled resulting in the consumption for that E-GAS area. Table 6-9 lists the 1990 electricity consumption by State and sector, while Table 6-10 lists the factors used to allocate State electricity consumption to the E-GAS area. This consumption data is used as the base year value for the projection calculations.

TABLE 6-9 1990 SEDS ELECTRICITY CONSUMPTION BY STATE

STATE	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
Alabama	20,719	11,589	27,618
Arizona	15,378	16,058	10,034
Arkansas	10,558	6,681	10,126
California	66,575	88,389	55,892
Colorado	9,787	14,420	6,587
Connecticut	10,376	10,711	6,100
Delaware	2,651	2,361	3,272
Florida	71,115	55,776	16,605
Georgia	29,933	23,726	26,717
Idaho	5,626	5,212	7,165
Illinois	32,871	39,042	39,299
Indiana	22,111	16,128	35,743
Iowa	10,513	7,532	11,392
Kansas	9,515	9,547	8,087
Kentucky	16,814	11,740	32,543
Louisiana	21,434	16,529	25,862
Maine	3,932	2,847	4,750
Maryland	19,102	11,044	19,308
Massachusetts	15,581	19,531	10,157
Michigan	25,319	21,986	35,062

(continued)

TABLE 6-9 1990 SEDS ELECTRICITY CONSUMPTION BY STATE (continued)

STATE	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
Minnesota	14,858	8,813	23,497
Mississippi	12,266	7,407	12,454
Missouri	21,652	19,335	12,937
Montana	3,358	3,237	6,529
Nebraska	6,800	6,451	8,847
Nevada	5,540	4,550	6,263
New Hampshire	3,444	2,117	3,418
New Jersey	20,498	27,213	15,041
New Mexico	3,566	5,842	4,413
New York	38,574	56,377	31,929
North Carolina	33,144	25,516	31,265
North Dakota	2,954	2,300	1,760
Ohio	37,889	34,852	69,682
Oklahoma	17,077	13,663	11,764
Oregon	15,380	12,092	15,498
Pennsylvania	38,164	30,238	45,992
Rhode Island	2,376	2,688	1,354
South Carolina	16,258	12,693	24,701
South Dakota	2,866	1,811	1,657

(continued)

TABLE 6-9 1990 SEDS ELECTRICITY CONSUMPTION BY STATE (continued)

STATE	RESIDENTIAL	COMMERCIAL	INDUSTRIAL
Tennessee	28,757	13,075	35,313
Texas	82,548	70,781	84,087
Utah	4,246	5,389	5,766
Vermont	1,809	1,526	1,381
Virginia	28,130	28,092	16,399
Washington	28,809	21,512	40,712
West Virginia	7,578	5,085	10,469
Wisconsin	16,385	13,408	19,405
Wyoming	1,720	2,319	7,729

TABLE 6-10 STATE TO E-GAS AREA ALLOCATION FACTORS

E-GAS AREA	STATE	FACTOR
Boston-Lawrence-Worcester (NE1)	Massachusetts	0.6020408
	New Hampshire	0.0930233
Greater Connecticut (NE2)	Connecticut	0.5747126
Portsmouth-Dover-Rochester (NE3)	New Hampshire	0.0697674
Providence (NE4)	Rhode Island	1.0000000
Springfield (NE5)	Massachusetts	0.3979592

(continued)

TABLE 6-10 STATE TO E-GAS AREA ALLOCATION FACTORS (continued)

E-GAS AREA	STATE	FACTOR
Rest of New Hampshire (NE6)	New Hampshire	0.8372093
Maine (NE7)	Maine	1.0000000
Vermont (NE8)	Vermont	1.0000000
New York-New Jersey-Long Island (M1)	Connecticut	0.4252874
	New Jersey	0.6302521
	New York	0.3615635
Baltimore (M2)	Maryland	0.3333333
Philadelphia-Wilmington-Trenton (M3)	Delaware	0.5925926
	Maryland	0.0990991
	New Jersey	0.2521008
	Pennsylvania	0.2051282
Washington, DC (M4)	Maryland	0.0234234
	Virginia	0.1032258
Huntington-Ashland (M5)	Kentucky	0.0000000
	West Virginia	0.0000000
Rest of New York (M6)	New York	0.6384364
Rest of New Jersey (M7)	New Jersey	0.1176470
Rest of Pennsylvania (M8)	Pennsylvania	0.7948717
Rest of Delaware (M9)	Delaware	0.4074074
Rest of Virginia (M10)	Virginia	0.8967741

(continued)

TABLE 6-10 STATE TO E-GAS AREA ALLOCATION FACTORS (continued)

E-GAS AREA	STATE	FACTOR
Rest of West Virginia (M11)	West Virginia	1.0000000
Rest of Maryland (M12)	Maryland	0.3333333
Atlanta (S1)	Georgia	0.0970873
Louisville (S2)	Indiana	0.0258064
	Kentucky	0.2000000
Rest of Kentucky (S3)	Kentucky	0.7818181
Rest of Georgia (S4)	Georgia	0.9029126
Tennessee (S5)	Tennessee	1.0000000
North Carolina (S6)	North Carolina	1.0000000
Mississippi (S7)	Mississippi	1.0000000
Alabama (S8)	Alabama	1.0000000
South Carolina (S9)	South Carolina	1.0000000
Florida (S10)	Florida	1.0000000
Chicago-Gary-Lake County	Illinois	0.3003003
(G1)	Indiana	0.0645161
Milwaukee-Racine (G2)	Wisconsin	0.0485933
Muskegon (G3)	Michigan	0.0035778
Sheboygan (G4)	Wisconsin	0.0076773
Cincinnati-Hamilton (G5)	Kentucky	0.0181818
	Ohio	0.1908713

(continued)

TABLE 6-10 STATE TO E-GAS AREA ALLOCATION FACTORS (continued)

E-GAS AREA	STATE	FACTOR
St. Louis (G6)	Illinois	0.1171171
	Missouri	0.0409356
Rest of Illinois (G7)	Illinois	0.5825825
Rest of Indiana (G8)	Indiana	0.9096774
Rest of Wisconsin (G9)	Wisconsin	0.9437340
Rest of Ohio (G10)	Ohio	0.8091286
Rest of Michigan (G11)	Michigan	0.9964221
Minnesota (G12)	Minnesota	1.0000000
Houston-Galveston-Brazoria (SW1)	Texas	0.1331828
Baton Rouge (SW2)	Louisiana	0.2293577
Beaumont-Port Arthur (SW3)	Texas	0.0203160
El Paso (SW4)	Texas	0.0158013
Rest of Texas (SW5)	Texas	0.8306997
Rest of Louisiana (SW6)	Louisiana	0.7706422
New Mexico (SW7)	New Mexico	1.0000000
Oklahoma (SW8)	Oklahoma	1.0000000
Arkansas (SW9)	Arkansas	1.0000000
Missouri (PL1)	Missouri	0.9590643

(continued)

TABLE 6-10 STATE TO E-GAS AREA ALLOCATION FACTORS (continued)

E-GAS AREA	STATE	FACTOR
Kansas (PL2)	Kansas	1.0000000
Nebraska (PL3)	Nebraska	1.0000000
Iowa (PL4)	Iowa	1.0000000
Colorado (RM1)	Colorado	1.0000000
Utah (RM2)	Utah	1.0000000
Wyoming (RM3)	Wyoming	1.0000000
North Dakota (RM4)	North Dakota	1.0000000
South Dakota (RM5)	South Dakota	1.0000000
Montana (RM6)	Montana	1.0000000
Idaho (RM7)	Idaho	1.0000000
Oregon (RM8)	Oregon	1.0000000
Washington (RM9)	Washington	1.0000000
Los Angeles (FW1)	California	0.2802450
San Diego (FW2)	California	0.0459418
Ventura County (FW3)	California	0.0076569
Sacramento Metro (FW4)	California	0.0735068
San Joaquin Valley (FW5)	California	0.1546707
Rest of California (FW6)	California	0.4364471
Nevada (FW7)	Nevada	1.0000000
Arizona (FW8)	Arizona	1.0000000

The next step is to calculate projected consumption by E-GAS area and sector. The following equation is used to do this:

$$Consumption_{i,j,y} = Consumption_{i,j,1990} * Growth\ Factor_{i,j,y}$$

where i = sector (commercial, residential, industrial)

j = E-GAS area

y = year

The calculated sector-specific consumption values are then summed to give the total electricity consumption for the E-GAS area.

The next step is to apportion the E-GAS area consumption to the States. Factors were developed based on the number of utilities in a State which were also in the E-GAS area.[8] This number was divided by the total number of utilities in the E-GAS area to indicate the amount of E-GAS area consumption that could be attributed to the State. Table 6-11 lists the factors by E-GAS area and State. The factors are multiplied by the E-GAS area consumption to give the State consumption value. For States which are contained in multiple E-GAS areas, the calculated State consumption values are totaled.

TABLE 6-11 E-GAS AREA TO STATE ALLOCATION FACTORS

STATE	E-GAS AREA	FACTOR
Alabama	Alabama (S8)	1.0000
Arizona	Arizona (FW9)	1.0000
Arkansas	Arkansas (SW9)	1.0000
California	Los Angeles-South Coast (FW1)	1.0000
	San Diego (FW2)	1.0000
	Ventura County (FW3)	1.0000
	Sacramento Metro (FW4)	1.0000
	San Joaquin Valley (FW5)	1.0000
	Rest of California (FW6)	1.0000
Colorado	Colorado (RM1)	1.0000
Connecticut	Greater Connecticut (NE2)	1.0000
	New York-New Jersey (M1)	0.1108
Delaware	Philadelphia (M3)	0.1524
	Rest of Delaware (M9)	1.0000
Florida	Florida (S10)	1.0000
Georgia	Atlanta (S1)	1.0000
	Rest of Georgia (S4)	1.0000
Idaho	Idaho (RM7)	1.0000
Illinois	Chicago (G1)	0.9091
	St. Louis (G6)	0.7358
	Rest of Illinois (G7)	1.0000

(continued)

TABLE 6-11 E-GAS AREA TO STATE ALLOCATION FACTORS (continued)

STATE	E-GAS AREA	FACTOR
Indiana	Louisville (S2)	0.1539
	Chicago (G1)	0.0909
	Rest of Indiana (G8)	1.0000
Iowa	Iowa (PL4)	1.0000
Kansas	Kansas (PL2)	1.0000
Kentucky	Huntington-Ashland (M5)	0.0000
	Louisville (S2)	0.8461
	Rest of Kentucky (S3)	1.0000
	Cincinnati-Hamilton (G5)	0.0417
Louisiana	Baton Rouge (SW2)	1.0000
	Rest of Louisiana (SW6)	1.0000
Maine	Maine (NE7)	1.0000
Maryland	Baltimore (M2)	1.0000
	Washington, DC (M4)	0.6190
	Rest of Maryland (M12)	1.0000
Massachusetts	Boston-Lawrence-Worcester (NE1)	0.9672
	Springfield (NE5)	1.0000
Michigan	Muskegon (G3)	1.0000
	Rest of Michigan (G11)	1.0000
Minnesota	Minnesota (G12)	1.0000
Mississippi	Mississippi (S7)	1.0000

(continued)

TABLE 6-11 E-GAS AREA TO STATE ALLOCATION FACTORS (continued)

STATE	E-GAS AREA	FACTOR
Missouri	St. Louis (G6)	0.2642
	Rest of Missouri (PL1)	1.0000
Montana	Montana (RM6)	1.0000
Nebraska	Nebraska (PL3)	1.0000
Nevada	Nevada (FW7)	1.0000
New Hampshire	Boston-Lawrence-Worcester (NE1)	0.0328
	Portsmouth-Dover-Rochester (NE3)	1.0000
	Rest of New Hampshire (NE6)	1.0000
New Jersey	New York-New Jersey (M1)	0.2245
	Philadelphia (M3)	0.2857
	Rest of New Jersey (M7)	1.0000
New Mexico	New Mexico (SW7)	1.0000
New York	New York-New Jersey (M1)	0.6647
	Rest of New York (M6)	1.0000
North Carolina	North Carolina (S6)	1.0000
North Dakota	North Dakota (RM4)	1.0000
Ohio	Cincinnati-Hamilton (G5)	0.9583
	Rest of Ohio (G10)	1.0000
Oklahoma	Oklahoma (SW8)	1.0000
Oregon	Oregon (RM8)	1.0000

(continued)

TABLE 6-11 E-GAS AREA TO STATE ALLOCATION FACTORS (continued)

STATE	E-GAS AREA	FACTOR
Pennsylvania	Philadelphia (M3)	0.4571
	Rest of Pennsylvania (M8)	1.0000
Rhode Island	Providence (NE4)	1.0000
South Carolina	South Carolina (S9)	1.0000
South Dakota	South Dakota (RM5)	1.0000
Tennessee	Tennessee (S5)	1.0000
Texas	Houston (SW1)	1.0000
	Beaumont-Port Arthur (SW3)	1.0000
	El Paso (SW4)	1.0000
	Rest of Texas (SW5)	1.0000
Utah	Utah (RM2)	1.0000
Vermont	Vermont (NE8)	1.0000
Virginia	Washington, DC (M4)	0.3810
	Rest of Virginia (M10)	1.0000
Washington	Washington (RM9)	1.0000
West Virginia	Huntington-Ashland (M5)	0.0000
	Rest of West Virginia (M11)	1.0000
Wisconsin	Milwaukee-Racine (G2)	1.0000
	Sheboygan (G4)	1.0000
	Rest of Wisconsin (G9)	1.0000
Wyoming	Wyoming (RM3)	1.0000

Finally, growth factors are calculated from the calculated State values. These factors are then applied to the base year consumption values from the NUMOD training file in order to develop the final consumption values used as input to NUMOD.

Once State-level consumption values are calculated, the NERC Region consumption is calculated by summing the consumption for all States in the Region. This Region demand is then used to calculate the peak load values for summer and winter from the equation:

$$P_{r,y,s} = (\zeta_{r,s} * D_{r,y} * 1000) / (8760 * LF_{r,y})$$

where	s	=	season (winter or summer)
	r	=	NERC region
	y	=	year
	$P_{r,y,s}$	=	peak load in region r during season s in year y
	$D_{r,y}$	=	demand in region r during year y
	$LF_{r,y}$	=	annual load factor in region r during year y
	$\zeta_{r,s}$	=	ratio of the peak load in season s to the average annual load factor in region r

Table 6-12 lists the load factors and ratios for each NERC Region.

NUMOD also requires the input of fuel prices for each State in each year. These values are calculated by averaging the fuel prices used by CSEMS, HOMES, and INRAD for the State and year. Fuel-specific price growth factors are then calculated and applied to the base year prices from the NUMOD training file.

The remaining inputs are taken from files developed during the training of the neural network.

The oil and gas networks each use these 16 explanatory variables plus coal generation output from the coal network, for a total of 17.[b] Each variable has been discussed above. However, before NUMOD can use these variables, they are first transformed to eliminate

[b]The oil and gas networks use the same inputs but each was trained to output a different estimate/forecast: the oil network was trained with oil generation and the gas network was trained with gas generation. In every other respect, the networks are identical.

skewness and the effects of scale. All of these operations are performed by NUMOD's internal pre-processors in the following three steps:

(1) Natural logarithms are taken to reduce skewness

(2) All variables are normalized using the following z-transform equation:

$$z(X_i) = \frac{X_i - \overline{X}}{s_X}$$

where: X_i = natural logarithm of the ith observation of variable X,

X bar = mean of the natural logarithms of variable X, and

s_X = standard deviation of the natural logarithms of variable X.

(3) Z-normalized variables are mapped to the surface of a 17-dimension sphere of radius 2.300 by intersecting a line originating at the "north pole" of the sphere and passing through the vector defined by the coordinates 0 and the 16 z-normalized variables with the surface of the sphere. Equations for this operation are:

$$Y_i = r(1 - t_i)$$

$$P(X_{i,j}) = -t_i z(X_{i,j})$$

where: r = radius,

Yi = Y coordinate of the ith observation,

P(Xi,j) = coordinate of the jth variable of the ith observation, and

$$t_i = \frac{-2r^2}{r^2 + \sum_j z(X_{i,j})^2}$$

Step 3 is important for a number of reasons: first, it groups similar inputs into regions on the surface of a hypersphere, allowing the neural network to learn more easily. Second, it gives equal weight to all training vectors by forcing them to have equal lengths, reducing the potential for bias during neural network training. Third, it ensures that no input will ever be so large as to "saturate" the neural network, exceeding its dynamic range. Taken together, these factors assure that the neural network can be used for data which differ from the training data.

6.5 REFERENCE PARAMETERS AND NUMOD OUTPUTS

Parameters used to calculate activity indices and generation are read from a parameter file which contains 1990 reference data for each State. Activity indices are calculated for each of the three kinds of generation using the following general equation:

$$FA_{i,s,j} = e^{(LA_{i,s,j} - LA_{i,s,1990})}$$

where:

FAi, s,j	=	activity index for fuel i in State s during year j
LAi, s,j	=	neural network estimate/forecast of the natural log of generation for fuel i in State s during year j.

Generation is calculated from the activity indices by looking up 1990 generation for each State and multiplying by the activity index. The following general equation is used:

$$G_{i,s,j} = FA_{i,s,j} G_{i,s,1990}$$

where: $G_{i,s,j}$ = generation for fuel i in State s during year j.

NUMOD's built-in post-processors handle all of these operations and write results to the output file. Parameter values for each State are tabulated in Appendix B.

Once NUMOD has produced State-level generation by fuel, E-GAS needs to allocate this value to the E-GAS areas. The first step in this process is to calculate generation shares for each generating unit. The following equation is used to calculate the generation share:

$$S_{i,f,s,y} = (CF_{i,s,y} * C_{i,f,s,y}) / \Sigma (CF_{i,s,y} * C_{i,f,s,y})$$

where $S_{i,f,s,y}$ = share of generation by fuel f given to unit i in State s during year y

$CF_{i,s,y}$ = average capacity factor for unit i in State s during year y

$C_{i,f,s,y}$ = capacity of unit i burning fuel f in State s during year y

Next the actual generation for each unit is calculated as follows:

$$GU_{i,f,s,y} = Minimum((S_{i,f,s,y} * GS_{f,s,y}), (8760 * MCF_{i,s,y} * C_{i,s,y}))$$

where $GU_{i,f,s,y}$ = generation by unit i using fuel f in State s during year y

$S_{i,f,s,y}$ = share of generation by fuel f given to unit i in State s during year y

$GS_{f,s,y}$ = total generation by fuel f in State s during year y

$MCF_{i,s,y}$ = maximum capacity factor for unit i in State s during year y

$C_{i,s,y}$ = capacity for unit i in State s during year y

Unit capacities, average capacity factors, and maximum capacity factors were taken from the National Utility Reference File (NURF).[2]

It is possible that some electricity which would have been allocated to a given unit is in excess of the limit imposed by the maximum capacity factor. This amount is calculated as:

$$SE_{i,f,s,y} = (S_{i,f,s,y} * GS_{i,f,s,y}) - GU_{i,f,s,y}$$

where $SE_{i,f,s,y}$ = amount of electricity shifted to other units due to the maximum capacity factor limitation

$S_{i,f,s,y}$	=	share of generation by fuel f given to unit i in State s during year y
$GS_{f,s,y}$	=	total generation by fuel f in State s during year y
$GU_{i,f,s,y}$	=	generation by unit i using fuel f in State s during year y

This value should be zero, but in cases where the calculated value is greater than zero, capacity values are increased to reduce each unit's share. The NUMOD input file is then revised to include the new capacities, and NUMOD is rerun.

Once unit-specific generation is calculated, the units in each E-GAS area are totaled to give the E-GAS area generation for coal, oil, and gas. These values are output to the Crosswalk input file ELEC.DAT by E-GAS area, year, and fuel.

6.6 NEURAL NETWORK DESIGN, TRAINING, AND VALIDATION

Unlike traditional models, neural networks are trained to produce their outputs through repeated exposure to historic data and allowing them to learn from their mistakes. This process continues until the network achieves a satisfactory level of accuracy. After training is complete, networks are ready to be used as estimating/forecasting tools either on their own or as part of larger models, as is the case with NUMOD. Once a neural network has been trained, further training is usually not required unless new and/or better quality data become available.[9]

Neural networks are periodically evaluated during the training cycle by using them to estimate/forecast output for historic data *which were not used for training*. Called an "out-of-sample test", this procedure determines whether the neural network is actually learning to estimate/forecast or only memorizing the data. The out-of-sample test is therefore a type of independent test which is used as a validation tool.

6.6.1 Neural Network Training

All three neural networks were trained by the extended delta-bar-delta backpropagation paradigm[9] using a training procedure with two stages:

- Stage 1: Networks were trained using 426 randomly selected records from the 576 available. The remaining 150 records were used for out-of-sample testing. Training and testing continued until an acceptable value for Pearson's r was achieved and further learning stopped. Out-of-sample testing validated training success and proved that no data memorization occurred. Pearson's r was also calculated for all of the evaluation data and was found to be within the acceptable range determined by previous testing of the random sample.

- Stage 2: Networks were retrained using all 576 data records. Training was halted after Pearson's r values approximately equal to Stage 1 were achieved for all three networks.

This procedure was adopted under the reasonable assumption that a network which learns well with 426 records and shows no tendency to memorize the data will learn at least as well from 576 (one third more) records and will not memorize data. Networks benefited from exposure to the additional variety in the larger data set.[4]

The coal generation network was trained first and its output, coal generation, was used as input to the oil and gas networks during their training. By doing this, the oil and gas networks were taught to work with the coal network.

6.6.2 Training, Out-of-sample Test, and Evaluation Results

Stage 1 values of Pearson's r are shown in Table 6-12 for each of the three neural networks for learning, out-of-sample test, and all data evaluation, in which all 576 data records were run through the network. The number of training repetitions, called the number of "presentations", is also shown.

TABLE 6-12 STAGE 1 NEURAL NETWORK TRAINING RESULTS

Neural Network	Number of Presentations	Pearson's r		
		Training	Out-of-Sample Test	All-Data Evaluation
Coal Generation	50,000	0.993	0.992	0.993
Oil Generation	70,000	0.961	0.928	0.970
Gas Generation	70,000	0.983	0.980	0.982

Stage 2 values of Pearson's r are shown in Table 6-13. Because all 576 data records were used in training, out-of-sample and all-data tests were redundant and were not performed.

TABLE 6-13 STAGE 2 NEURAL NETWORK TRAINING RESULTS

Neural Network	Number of Presentations	Pearson's r
Coal Generation	70,000	0.992
Oil Generation	90,000	0.970
Gas Generation	90,000	0.981

In all three cases, results of Stage 2 were very close to results of Stage 1. Slight differences are due to the fact that there is a greater variety among 576 data records than 426 records. The neural networks will learn somewhat differently because of this. However, differences are no more than 0.001, which is quite small.

6.6.3 Backcast Results

Figure 6-2 is a scatter plot of a backcast for all states for 1985 - 1991. Coal, oil, and gas generation results are plotted and log-log axes are used to accommodate differences in scale. Historic data are on the horizontal axis and corresponding NUMOD backcast data on the vertical axis. A 45 degree reference line is shown. If NUMOD had backcast historic generation perfectly all points would lie exactly on the reference line. Deviation from the reference line is one way of measuring error. However, the log-log plot accentuates error for low generation values, which appear toward the left portion of the horizontal axis and the lower portion of the vertical axis.

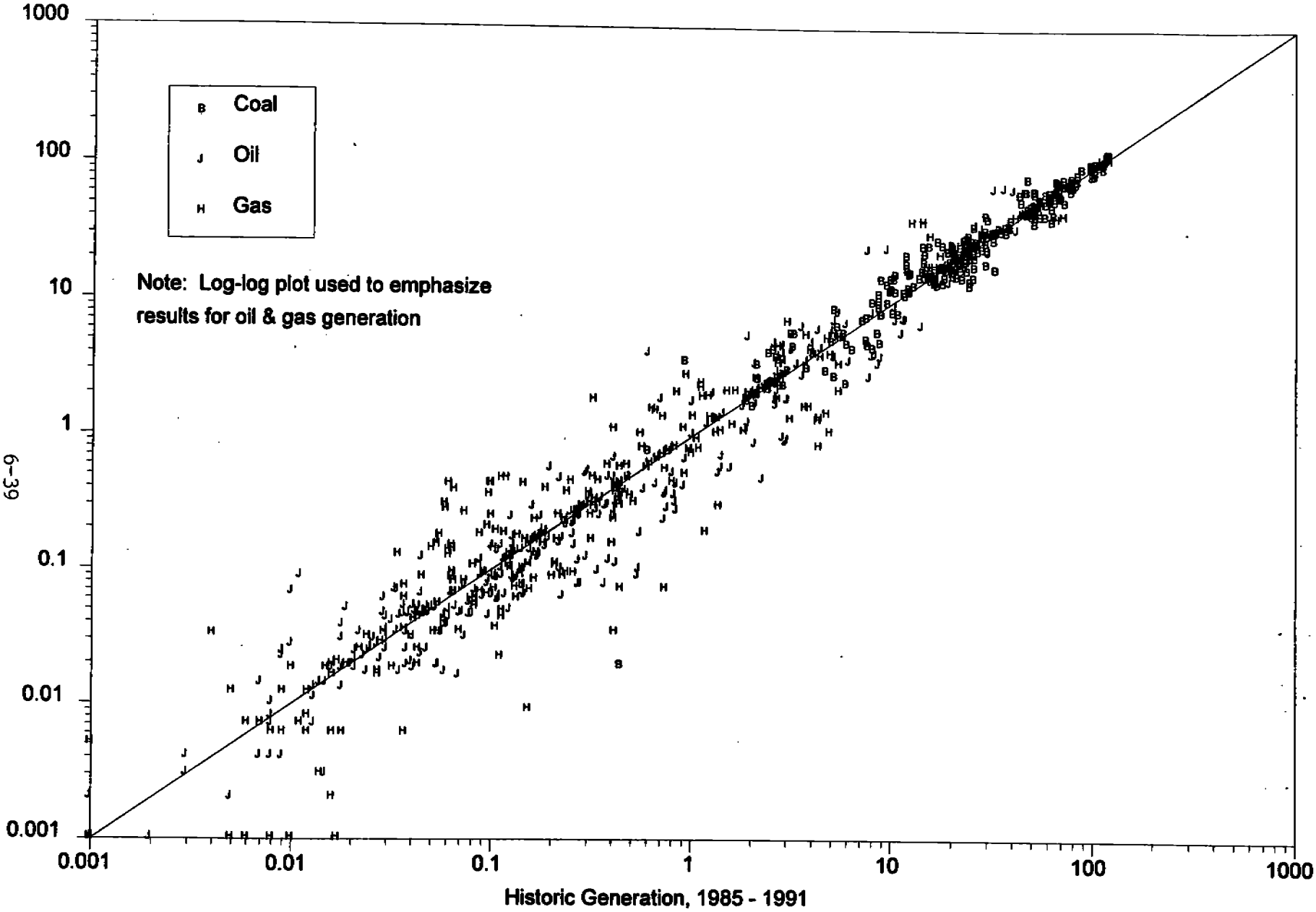

Figure 6-2. NUMOD Backcast, 1985 - 1991

6.7 REFERENCES

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CHAPTER 7

ESTIMATING PHYSICAL OUTPUT IN E-GAS

7.1 PHYSICAL OUTPUT: DEFINITION AND DATA SOURCES

EPA guidance suggests that, when possible, physical output be used to forecast emission source growth.[1] Physical output is measured using direct physical units such as tons of steel, barrels of motor gasoline, numbers of computers, etc. When these data are not available, indexes of physical production must be calculated. The ability to forecast physical output is particularly important for VOC sources where the emissions are related to materials used in the production process, such as surface coating operations. These emissions are directly related to the amount of physical output produced and, therefore, growth in physical output is a better indicator of emissions growth than value added, industrial earnings, or employment.

There are two ways that physical output is measured. The first is simply the direct measure of actual physical output of an industry (*e.g.*, tons of steel). The second method is indirect and is used when direct measures data are not available. This measure is termed "constant dollar output" and is calculated by converting value of shipments and inventory change into constant dollars. The value of shipments added to an industry's inventory change over the course of a year equals the value of goods produced in that year. These dollar output values are then translated to dollar outputs for a base year (*e.g.*, 1982) using price deflators (the ratios of the price of the output in the current year divided by the price of the output in 1982) developed for each year. These data series are usually termed industrial production or constant dollar indexes.

The *Survey of Current Business*, which is considered a comprehensive source for physical output data, compiles available physical output data on an annual basis.[2] A sample of the industries and products for which data are compiled is presented in Table 7-1. A second source of physical output data is the Federal Reserve Board (FRB). The FRB has completed an index of industrial production which contains data from 1977 to the present. This index is a compilation of both actual physical output data and constant dollar indexes. The index is constructed using data obtained from the Federal Reserve System, various government agencies,

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS*

Transportation and Communication

- Air Carriers
- Domestic Operations
  - Scheduled service
    - Revenue passenger-miles (billions)
    - Cargo ton-miles (millions)
    - Mail ton-miles (millions)
- Air Carriers - International Operations
  - Scheduled service
    - Revenue passenger-miles (billions)
    - Cargo ton-miles (millions)
    - Mail ton-miles (millions)
- Urban Transit Industry - Passengers carried (millions)
- Motor Carriers
  - Tonnage hauled (revenue) (millions of tons)
- Railroads and Travel
  - Traffic
    - Revenue ton-miles (net) of freight (billions)

Chemicals and Allied Products

- Chemicals
- Inorganic Chemicals
  - Production (thousands of short tons)
    - Aluminum sulfate, commercial
    - Chlorine gas
    - Hydrochloric acid
    - Phosphorus, elemental
    - Sodium hydroxide
    - Sodium silicate, anhydrous
    - Sodium sulfate
    - Titanium dioxide, composite and pure
  - Sulfur, native (Frasch) and recovered (thousands of metric tons)
    - Production
    - Stocks (producers'), end of period
- Inorganic Fertilizer Materials
  - Production
    - Ammonia, synthetic anhydrous
    - Ammonium nitrate original solution
    - Ammonium sulfate
    - Nitric acid

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

- Nitrogen solutions
- Phosphoric acid
- Sulfuric acid
- Superphosphate and other phosphate fertilizers
  - Production
  - Stocks, end of period
- Potash sales
- Imports
  - Ammonium nitrate
  - Ammonium sulfate
  - Potassium chloride
  - Sodium nitrate

Chemicals and Alcohol

Industrial Gases - Production (millions of cubic feet)
- Acetylene
- Hydrogen - high and low purity
- Nitrogen - high and low purity
- Oxygen - high and low purity

Organic Chemicals - Production (millions of pounds, except as noted)
- Acetylsalicylic acid (aspirin)
- Ethyl acetate
- Formaldehyde
- Glycerin - refined, all grades
- Methanol - synthetic (millions of tax gallons)
- Phthalic anhydride

Ethyl Alcohol and Spirits (millions of tax gallons)
- Production
- Stocks, end of period

Alcohol, Plastics Materials, Paints, Varnish and Lacquer

Denatured Alcohol (millions of wine gallons)
- Production
- Consumption (withdrawals)
  - Total
  - For fuel use
- Stocks, end of period

Plastics and Resin Materials, Production (millions of pounds)
- Phenolic resins
- Polyethylene and copolymers

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Polypropylene
Polystyrene and copolymers
Polyvinyl chloride and copolymers
Paints, Varnish, and Lacquer, Shipments (millions of $), total

Food and Kindred Products; Tobacco

Alcoholic Beverages
Beer (millions of barrels)
Production
Distilled Spirits (millions of tax gallons, except as noted)
Total Production
Whisky
Production
Effervescent Wines (millions of wine gallons - 231 cubic inches)
Production
Still wines (millions of wine gallons)
Production
Distilling materials produced at wineries

Dairy Products (millions of pounds, except as noted)
Butter
Production (factory)
Cheese
Production (factory), total
Condensed and evaporated milk
Production, case goods
Fluid milk
Production on farms
Dry milk
Production

Grain and Grain Products
Barley (millions of bushels - 48 pounds, except as noted)
Production - crop estimate for the year
Corn (millions of bushels - 56 pounds, except as noted)
Production - crop estimate for the year, grain only
Oats (millions of bushels - 32 pounds, except as noted)
Production - crop estimate for the year
Rice (millions of pounds, except as noted)
Production - crop estimate for the year (millions of bags-100 lb.)
Rye (millions of bushels - 56 pounds)
Production - crop estimate for the year

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Wheat (millions of bushels - 60 pounds, except as noted)
  Production (crop estimate for the year), total
Wheat Flour (thousands of sacks - 100 pounds, except as noted)
  Production
Poultry (millions of pounds)
  Slaughter
Eggs (millions of cases)
  Production on farms
Cattle and Calves (thousands of animals)
  Slaughter - federally inspected
Hogs (thousands of animals)
  Slaughter, federally inspected
Sheep and Lambs (thousands of animals)
  Slaughter, federally inspected
Tobacco (millions of pounds)
  Leaf Production - crop estimate for year
  Manufactured products

Leather and Products

Leather
  Exports (thousands of square feet)
Footwear
  Production (thousands of pairs), total

Lumber and Products

Lumber (all types) (millions of board ft.)
  Production, total
Softwoods (millions of board ft.)
Douglas Fir
  Production
Southern Pine
  Production
Softwoods and Hardwood Flooring (millions of board ft.)
Softwoods
  Western pine
    Production
Hardwood Flooring - Oak flooring
  Shipments

Metals and Manufactures

Iron and Steel (thousands of short tons, except as noted)
Iron and Steel Scrap
  Production

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Iron Ore - Operations in all U.S. Districts (thousands of long tons)
  Mine production
Pig Iron
  Production
Iron Products - castings (thousands of short tons)
  Gray and ductile iron - shipments, total
  Malleable iron - shipments, total
Steel, Raw and Semifinished (thousands of short tons)
  Steel, raw - Production, total
Steel Products, Net Shipments - By Product (thousands of short tons)
  Total (all grades)
  Bars and tool steel, total
  Sheets and strip, total
Aluminum (thousands of metric tons, except as noted)
  Production, primary (from domestic and foreign areas)
Aluminum Products (millions of pounds)
  Shipments
Copper (thousands of metric tons, except as noted)
  Copper production
Copper-Base Mill and Foundry Products - Shipments (millions of pounds)
  Brass mill (copper mill) products
  Copper wire mill products (copper content)
  Brass and bronze foundry products
Lead (thousands of metric tons, except as noted)
  Production
Tin (metric tons)
  Recovery from scrap (tin content), total
Zinc (thousands of metric tons, except as noted)
  Mine production, recoverable zinc
  Slab zinc
    Production
Heating, Combustion, and Atmosphere Equipment - New orders (domestic), net (millions of $), total
Industrial Supplies, Machinery, Equipment (1977 = 100)
  Industrial suppliers distribution
    Sales index, seas. adj.
    Inflation index, not seas. adj.
Fluid Power Products, Shipments, (Index, 1985 = 100)
  Hydraulic
  Pneumatic

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Tractors Used in Construction Industry, Shipments
  Tracklaying
    Units
  Tractor shovel loaders (integral units), wheel and tracklaying
Electrical Equipment (thousands)
  Batteries (automotive replacement type), shipments
  Radio sets, total market, production
  Television sets, total market production
  Household major appliances, factory sales, total
  Vacuum cleaners
Gas Equipment - Residential equipment sales
  Furnaces (warm air)
  Ranges
  Water heaters (storage)

Pulp, Paper, and Paper Products

Pulpwood (thousands of cords - 128 cu. ft.)
  Consumption
Waste Paper (thousands of short tons)
  Consumption
Woodpulp (thousands of short tons)
  Production, total
Paper and Board (thousands of short tons)
  Production, All grades, total
Selected Types of Paper (thousands of short tons)
  Groundwood paper, uncoated
    Orders
  Tissue paper - Production
Newsprint (thousands of metric tons, except as noted)
  Production

Rubber and Rubber Products

Natural Rubber (thousands of metric tons)
  Consumption
Synthetic Rubber (thousands of metric tons)
  Production
Pneumatic Casings (thousands)
  Production
Inner Tubes, Exports (thousands)

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Stone, Clay, and Glass Products

- Portland Cement - Shipments (thousands of barrels)
- Clay Construction Products
  - Shipments
    - Brick (mil. of standard brick)
    - Structural tile, except facing (thousands of short tons)
    - Sewer pipe and fittings, vitrified (thousands of short tons)
    - Floor and wall tile and accessories (mil. of sq. ft.)
- Glass Containers (thousands of gross)
  - Production
- Gypsum and Products (thousands of short tons)
  - Production

Textile Products

- Woven Fabrics, Finishing Plants (millions of linear yards)
  - Production, total
- Cotton Fiber (thousands of running bales)
  - Production (ginnings)
- Cotton Cloth
  - Broadwoven goods over 12 inches in width
    - Production (millions of sq. yards)
- Manmade Fibers (millions of pounds)
  - Production
    - Acetate filament yarn
    - Staple, including tow (rayon)
    - Noncellulosic, exc. textile glass
      - Yarn and monofilaments
      - Staple, including tow
    - Textile glass fiber
- Manmade Fiber Manufacturers
- Production - Fabrics (broadwoven), manmade fiber (millions of square yards)
  - Manmade fiber and silk fabrics, gray, total
  - Filament yarn (100%) fabrics, total
  - Spun yarn (100%) fabrics, total
  - Acetate filament and spun yarn fabrics
- Wool and Manufactures
  - Production - Woolen and worsted woven goods (Mil. of sq. yds.)
- Floor Coverings - Carpet, rugs, carpeting - shipments (mil. of sq. yds.)
- Apparel (thousands of units, except as noted)
  - Women's
  - Men's

(continued)

TABLE 7-1. SAMPLE OF PHYSICAL OUTPUT DATA AVAILABLE FROM THE *SURVEY OF CURRENT BUSINESS* (continued)

Transportation Equipment

- Aircraft (complete) (millions of $)
  - Shipments
    - Value
    - Airframe weight (thous. of pounds)
- Passenger Cars (new) (thousands of units, except as noted)
- Trucks and Buses (new) (thousands of units)
- Truck Trailers, New - Shipments (Number)
  - Trailers and chassis, Total complete units
  - Trailer bodies (containers) - Detachable, sold separately
  - Trailer chassis and running gear - Detachable, sold separately
- Freight cars, new (excluding rebuilt), (Number)

trade associations, and the Bureau of Labor Statistics, compiled at the three- and four-digit SIC levels. The indexes have been updated to reflect the most recent available data.[3]

The FRB index uses direct physical measures where they are available. For industries lacking comprehensive physical-product data, changes in physical output are estimated using production indexes published every five years by the Census Bureau. These indexes are constructed by converting dollar output values into constant dollar values, yielding comparable indicators of physical production for 1977, 1982, and 1987. If, for example, the constant dollar outputs for the chemical industry were 100 and 105 in 1982 and 1987, respectively, this means that the amount of physical output was five percent greater in 1987 than in 1982.

In order to develop production estimates for 1978-81, 1983-86, and 1988-89, physical product indexes were developed by FRB staff. These indexes are conceptually similar to the indexes of production developed by the Census Bureau and use dollar output data from the *Annual Survey of Manufacturers* and price deflators from the Bureau of Economic Analysis.

In order to develop physical production indexes for the 250 individual manufacturing sectors, a technique has been developed to estimate the proportion of value added that is attributable to each of the individual sectors. This technique uses physical product data, industrial electricity consumption, and total production-worker hours.[3] Details of the technique are not discussed here. For a detailed description of the technique see *The Federal Reserve Bulletin*, April, 1990.[3]

7.2 FORECASTING PHYSICAL OUTPUT

There are two general approaches that can be used to forecast physical output. The first method correlates changes in employment with changes in physical output. The second method correlates changes in value added with changes in physical output. Both of these methods are discussed in this section.

7.2.1 Forecasting Physical Output Using Employment Data

When physical output is forecast using employment data, three factors need to be considered: (1) the number of workers, (2) the productivity of the labor force; and (3) the number

of direct physical units per dollar of material produced by an industry. The relationship between physical output and these variables is given in Equation 1:

$$units_n = \left(LAB_n \ x \ PROD_n \ x \ \frac{unit_n}{LAB_n \ x \ PROD_n} \right) \tag{1}$$

where:

$units_n$	=	the physical output of industry n
LAB_n	=	the number of workers in industry n
$PROD_n$	=	the productivity of workers in industry n, where productivity is measured as dollar value added per worker in industry n
$(unit_n/LAB_n \ x \ PROD_n)$	=	units of physical output in industry n per dollar of value added in industry n

The effect of the first of these factors, number of workers, is obvious: a change in the amount of labor employed must lead to a change in the total value of an industry, otherwise hiring decisions would not be rational. The second factor, productivity of the labor force, accounts for the historical increase in the amount of output (typically measured in dollar value added) per worker. The product of these factors, number of workers and value added per worker, equals the value added of an industry. Both of these factors are relatively easy to forecast. Forecasts of the number of workers in an industry are based on a number of identifiable factors; most economic models produce forecasts of industrial employment. In the post-World War II period, output per worker has increased, on average, about two percent per year, and this trend is expected to continue.[4] For the purposes of forecasting productivity increases, the forecasts by the President's Council of Economic Advisors can be used. CEA estimates that annual productivity will grow by 2.2 percent over the 1990-2030 time period, with component annual increases of 2.8 and 1.7 percent for 1990-2010 and 2010-2030, respectively.[4]

The third factor affecting physical output is the number of physical units per dollar of value added in an industry. Although physical output will be forecast at the three- and four-digit SIC level where product classification is fairly narrow, there can still be considerable changes in output over time which are not easily modeled. For example, SIC 357 is defined as office and

computing machines and includes computers, typewriters, calculators, and other office machines. This sector experienced tremendous growth between 1977 and 1987 when value added more than doubled in the sector. However, the physical production index more than tripled during the same period, which means that the unit output per dollar value added increased significantly in this period. Rapid movements in output per dollar can be difficult to explain precisely, but there are identifiable general factors which will cause such movements.

The number of physical units per dollar value added in SIC 357 will be affected by two factors: the proportion of each product type to total production and the average price per product type. In the example above, the proportion of product types is simply the percent that computers, typewriters, calculators, and other machinery contribute to the value added of the sector. The increase in the units per dollar value (or, equivalently, the decrease in the price per unit) in the 1982-87 period could have been caused by an increasing percentage of less expensive items (*e.g.*, calculators) being produced or a decrease in the price of one or more goods in the sector. Changes in units per dollar value added are difficult to explain without a detailed examination of the sector and may be very difficult to forecast. However, the general movement of units per dollar value added may be captured with a time trend.

There are two types of physical output data. The first is the direct physical measure of output (*e.g.*, tons of steel) and the second is a physical production index, such as those constructed by FRB. These two measures of physical output must be forecast using different methods. The factors affecting physical measures of output were described in Equation 1. This equation expresses physical output as a function of the number of workers in an industry, the productivity of the workers, and units per dollar value added in an industry. Regression equations can be developed from the relationship in Equation 2. This form is:

$$Q_{physcial\ n} = A\left(labor\ x\ \frac{VA_n^a}{labor_n}\ e^{Tb}\right) \qquad (2)$$

where:

$labor_n$	=	the number of workers in industry n
VA_n	=	the value added in industry a
A	=	the intercept of the equation,
T	=	a time variable used to capture the change in physical output per dollar value added
a,b	=	estimated parameters

Growth factors for physical output in industry "n" and year "t" can then be calculated using Equation 3:

$$G.F.\ (Q_{physical\ n,t}) = A\left[(LAB_{n,t} - LAB_{n,90})\ x\ \frac{PROD_t}{PROD_{90}}\right]^a e^{b(T-1990)} \qquad (3)$$

where:

G.F. ($Q_{physical\ n,t}$)	=	the physical output growth factor for industry "n" in year "t"
A, a, and b	=	the estimated parameters derived from Equation 2
$[(LAB_{n,t} - LAB_{n,90})*(PROD_t / PROD_{90})]$	=	the change in productivity from 1990 to the year "t"

7.2.2 Forecasting Physical Output Using Value Added Data

To develop a physical output forecast using value added data, two factors are considered directly: (1) value added; and (2) physical units per dollar value added. This approach differs from forecasting physical output using employment data in one way. The use of employment forecasts requires the use of productivity forecasts in order to develop value added forecasts. This approach uses actual value added forecasts rather than constructing them from employment and productivity forecasts. The relationship between physical output and value added is given in Equation 4:

$$units_n = \left(VA_n \times \frac{unit_n}{VA_n} \right) \tag{4}$$

where:

$units_n$ = the physical output of industry n
VA_n = value added in industry n

The effects of changes in value added and units per value added were described in the previous section which discussed forecasting value added with employment data.

Equation 4 expresses physical output as a function of value added and units of output per unit of value added. In developing regression equations using value added output, an additional variable, capacity utilization, was included. The addition of the capacity utilization variable helps control for fluctuations in physical output and value which occurred in certain industries in the 1970s and 1980s.[5] The form of these regression equations can be described as:

$$Q_{physical\ n} = (A \times VA_n^a \times e^{bT} \times e^{BCu}) \tag{5}$$

where:

A	=	the intercept of the equation
VA_n	=	value added in industry n
T	=	a time variable used to capture the change in physical output per dollar value added
CU	=	capacity utilization
a,b,B	=	estimated parameters

Growth factors for physical output in industry "n" and year "t" can then be calculated using Equation 6:

$$G.F.\ (Q_{physical\ n,t}) = (VA_{n,t}/VA_{n,1990})^a \times e^{b(T-1990)} \tag{6}$$

where:

G.F. ($Q_{physical\ n,t}$)	=	the physical output growth factor for industry "n" in year "t", where 1990 is the base year
a and b	=	the estimated parameters derived from Equation 5
($VA_{n,t}$ / $VA_{n,90}$)]	=	the growth in value added in industry n from 1990 to the year "t"

This growth factor does not include the capacity utilization factor. While capacity utilization helps explain changes in physical output in the 1970s and 1980s, the REMI models do not forecast capacity utilization. Therefore, the capacity utilization is assumed to remain constant over the forecast period, *i.e.*, the ratio of capacity utilization in any forecast year to capacity utilization will always equal one and, therefore, will not affect the growth factor.

7.3 PHYSICAL OUTPUT IN E-GAS

7.3.1 Forecasting

The physical output module in E-GAS uses value added to forecast physical output for two reasons. First, EPA guidance suggests that value added be used to forecast physical output when the data are available. For sectors for which physical output bridge equations are not developed, growth in value added will be used as a proxy for growth in physical output. Thus, the use of value added data in the bridge equations maintains consistency within the physical output module. Second, the concurrent version of the REMI models, used when the E-GAS model plan was being developed, only forecasts value added for 14 sectors. The structure of the bridge equations which used employment data was developed during this time. However, the generation of REMI models which are used in E-GAS include the capability of forecasting value added for 210 sectors. For these reasons, E-GAS uses value added data to forecast physical output.

Sectors for which physical output equations have been developed will also be forecast using Equation (6). The development of equations for these sectors uses regression techniques to define the parameters "a" and "b" for the specific sector. In the absence of sector-specific parameters, a default value of one is used for "a" and a default factor of zero is used for "b."

This results in physical output growth estimates which are proportional to growth in value added in the sector.

7.3.2 Sources for Which Physical Output Equations Are Developed

Equations have been estimated for eleven VOC categories. The source used to compile the series of physical production data is the *Survey of Current Business*.[2] Point source categories for which physical output equations were developed include auto surface coating, paper surface, and rubber and synthetic fibers. The area source categories for which equations were developed include petroleum refinery fugitives, surface coating of fabricated metals, gasoline marketed, asphalt, auto surface coating, paper surface coating, rubber and synthetic fibers, and general surface coating.

7.4 REFERENCES

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CHAPTER 8
METHODOLOGY USED TO FORECAST VEHICLE MILES TRAVELED IN E-GAS

8.1 INTRODUCTION

Several options for projecting activity for highway mobile sources were considered for E-GAS. This chapter discusses these options and describes the approach used in E-GAS for projecting mobile source activity. The primary activity measurement used for highway mobile source inventory purposes is vehicle miles traveled (VMT) by road and vehicle type. Thus, the projection methods studied during E-GAS development concentrated on estimating area- and State-specific growth factors for VMT.

The options considered can be divided into two general groups: relatively simple trend-based approaches; or more sophisticated models, which are comprised of detailed national-level projections based on econometric methods, followed by allocation from the national to State level.

8.2 TREND-BASED APPROACHES

The only available uniform national data source for VMT data that could be used in trend-based approaches to VMT projections is the Highway Performance Monitoring System. Other specific trend-based approaches could be used to develop area-specific VMT projections using HPMS and other simple data sources. Approaches considered include: direct regression-based projection of historic HPMS VMT for an area; bounding of historic VMT trend projections with demographic and/or economic projections; and use of trends in indexes such as VMT per capita and per unit of industrial output. The first option was included since it is the second method (after local travel demand modeling) specified in the EPA projection guidance. The second option represents an attempt to bound longer-term projections using the first option, since the EPA guidance prescribes using only six years of HPMS data due to previous changes in HPMS area coverage. The third option uses indices of VMT/population and VMT/economic activity to

address concerns raised by observations that VMT growth rates have been increasing faster than the growth in population or vehicle ownership over the past 40 years.

8.2.1 The Highway Performance Monitoring System

The HPMS is a large transportation data collection, analysis and reporting system which is a cooperative effort involving State transportation agencies and the Federal Highway Administration (FHWA). The purpose of the HPMS is to provide a procedure in which the nation's functional system of highways is analyzed based on data annually sampled by all States. HPMS is composed of two major components, data collection and analytical process, which are described below. These descriptions are derived from two publications documenting HPMS Version 2.1, the *Technical Manual* and the *User's Guide*.[1]

8.2.1.1 *HPMS Data Collection*

Three types of data are reported in the HPMS. First, universe mileage data include a complete inventory of mileage classified by system, jurisdiction, and selected operational characteristics. Second, sample data include specific inventory, condition, and operational data obtained for the sample panels of highway sections. These data are expanded to represent the universe of highway mileage, permitting evaluation of the performance of the various highway systems. Finally, area-wide data are reported annually for rural, total small urban, and individual urbanized areas. These are used in conjunction with universe and sample data. Area-wide data consist of totals for mileage, daily vehicle miles of travel, accidents, local system data, land area, population, and travel activity by vehicle type.

The HPMS is based on approximately 110,000 samples of functional system mileage. Data collected from these samples or "sections" represent extensive information on pavement attributes, geometries, traffic conditions, and operating characteristics. Seventy-eight attributes are collected through HPMS. Some of the operating characteristics that are collected include: functional system, type of facility, average annual daily traffic (AADT), future AADT (user estimated), speed limit, peak capacity, K factor (design hour volume as a percentage of the annual average daily traffic), percent commercial vehicles, signalization, green time, and peak parking.

Prior to 1993 States had two options for collecting HPMS data. Option one allows States to aggregate or group data into three classifications: rural, small urban, and grouped urbanized area. All urbanized areas are treated as an aggregate regardless of the number of individual urbanized areas in the State. In this option, there are fewer total sections sampled; each functional class and corresponding volume group is statistically represented at the statewide level for each of the classifications. Data in option one are collected at an 80 percent confidence level with a 10 percent estimate of allowable error for the following facility types: interstates, other freeways and expressways, other principal arterials, minor arterials, and collectors.

The second option consists of sampling individual urbanized areas on a statistically valid basis. Sampling individual urbanized areas requires that more sections be sampled. For States with three or fewer urbanized areas, the design precision for all functional classes and volume strata is an 80 percent confidence level at a 10 percent allowable error. For States with more than three urbanized areas, the sampling precision is a 70 percent confidence level at a 15 percent allowable error for minor arterials and collectors. For principal arterials and above, the sampling precision represents an 80 percent confidence level with a 10 percent allowable error. For States choosing this option, the following facility types are required to be sampled: interstates, other freeways and expressways, other principal arterials, minor arterials, and collectors. Currently, there are over 190 urbanized areas that are sampled on an individual basis under this approach.

Local roads are not sampled on a section-by-section basis. However, States are required to submit aggregate summary area-wide tables for each individual urbanized area for mileage and daily vehicle miles traveled (DVMT) for each functional class.

The FHWA issued revised HPMS data collection requirements in the August 30, 1993 update to the Highway Performance Monitoring System (HPMS) Field Manual that essentially requires full sample panels for all urban areas with a population of 50,000 or more. In addition, coordination of consistent sampling approaches is being promoted for multi-State urbanized areas.

Estimates of DVMT by functional system are prepared for rural, small urban, and individual urbanized areas of the State on an annual basis. These DVMT estimates are important to the analyses of vehicle operating costs, travel time, fuel consumption, and emissions. Development of HPMS estimates of highway travel by functional system are derived using count-based traffic data. The procedures entail traffic counting one-third of the sample sections and one-sixth of the non-sample interstate universe sections each year, and the application of

correction factors, such as weekday/weekend and seasonal, to machine-generated counts. Growth factors are applied to sections not counted in the current year.

8.2.1.2 *HPMS Analytical Process*

The HPMS analytical process provides information on future highway system conditions based on the level of funding provided for capital improvements. The analytical process analyzes data for each highway section and expands the results to represent each functional system. These functional systems are as follows:

Rural	Urban
Principal arterial - Interstate	Principal arterial - Interstate
Other principal arterial	Principal arterial - Other freeway
Minor arterial	Other principal arterial
Major collector	Minor arterial
Minor collector	Collector
Local	Local

The HPMS analytical process consists of six modules: (1) Needs, (2) Investments, (3) Impact, (4) Composite Index, (5) Multiple Deficiency, and (6) Deferred Cost. All but the Impact Module are concerned with transportation system analysis and planning. The Impact analysis module simulates the operation of vehicles on the highway and produces some key performance measures, such as operating cost, fuel consumption, average overall travel speed, and emissions. All can be calculated by functional system for rural and urban areas. The purpose of the impact analysis is to provide comparison of vehicle performance measures under various scenarios. These comparisons can be made among the target years for several scenarios or between a base year and a target year for a particular scenario. The emissions component of this module is not applicable to the contexts currently required by EPA SIP inventory guidance.

Thus, the major HPMS asset for emission inventory projection is the historical database of VMT estimates available for all States and for approximately 400 individually reported areas which include whole urban areas and fractions of multi-State urban areas. These data cover a total of about 190 urban areas. Annual VMT data for these areas, broken down by functional

road type and vehicle type, can be obtained in electronic media from the FHWA Office of Highway Information Management.

8.3 TRENDS IN VMT INDEXES

With historic HPMS and Census data, it is possible to create regression-based extrapolations of area-specific trends in car VMT per capita and truck VMT per total area industrial or economic output. These indexes could then be used with area-specific population and industrial/economic output from the REMI models to produce overall VMT projections. This type of approach would have the advantage of directly considering the national trends in population, automobile ownership, and automobile-related VMT illustrated in Figures 8-1 and 8-2 while accounting for possible local variations[2]. Existing detailed analyses of these types of indexes have not been identified, so there may be some unanticipated aspects or problems with applying this principle on a small scale which would not be revealed until VMT indexes have actually been created for a variety of areas.

8.4 ECONOMETRIC APPROACHES

Many econometric and statistical or analytical approaches have been developed for the projection of VMT at various levels and for different types of applications. These include a number of computer-based modeling systems that are suitable for application in mobile source emission inventory projection. Examples of such modeling systems include the ANL/NAPAP developed Transportation Energy and Emissions Modeling System (TEEMS), the U.S. EPA MOBILE3 Fuel Consumption Model, the Department of Energy's similar Highway Fuel Consumption Model, the Alternative Motor Fuel Use Model developed by Oak Ridge National Laboratory and the FHWA/Faucett VMT Forecasting Model.[3-6]

While it is beyond the scope of E-GAS to include a transportation demand model in the system, many areas which use E-GAS may also use a computer-based VMT model. Descriptions of some of these modeling systems were included in the E-GAS model plan.

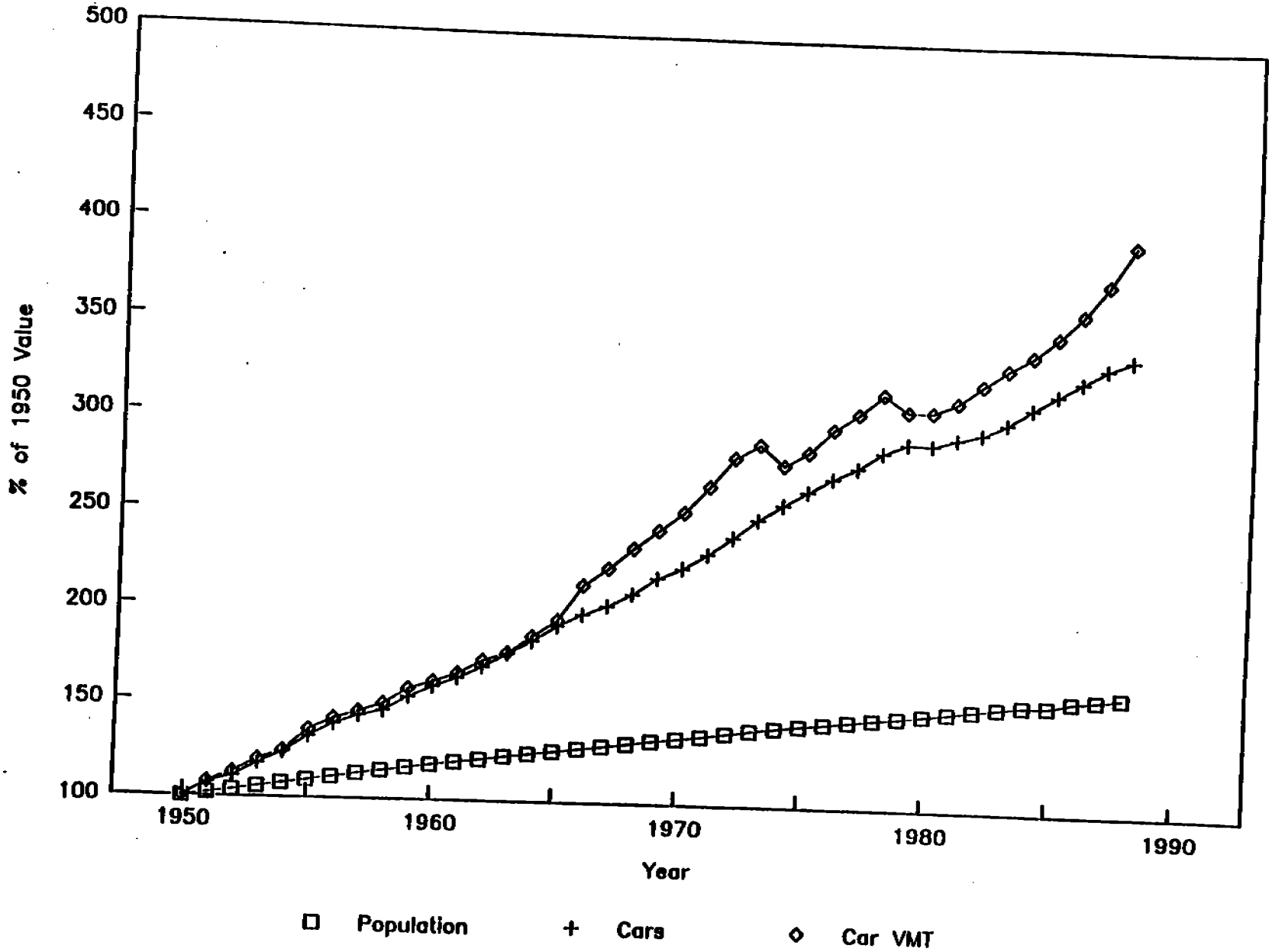

Figure 8-1. Normalized national personal transportation trends.

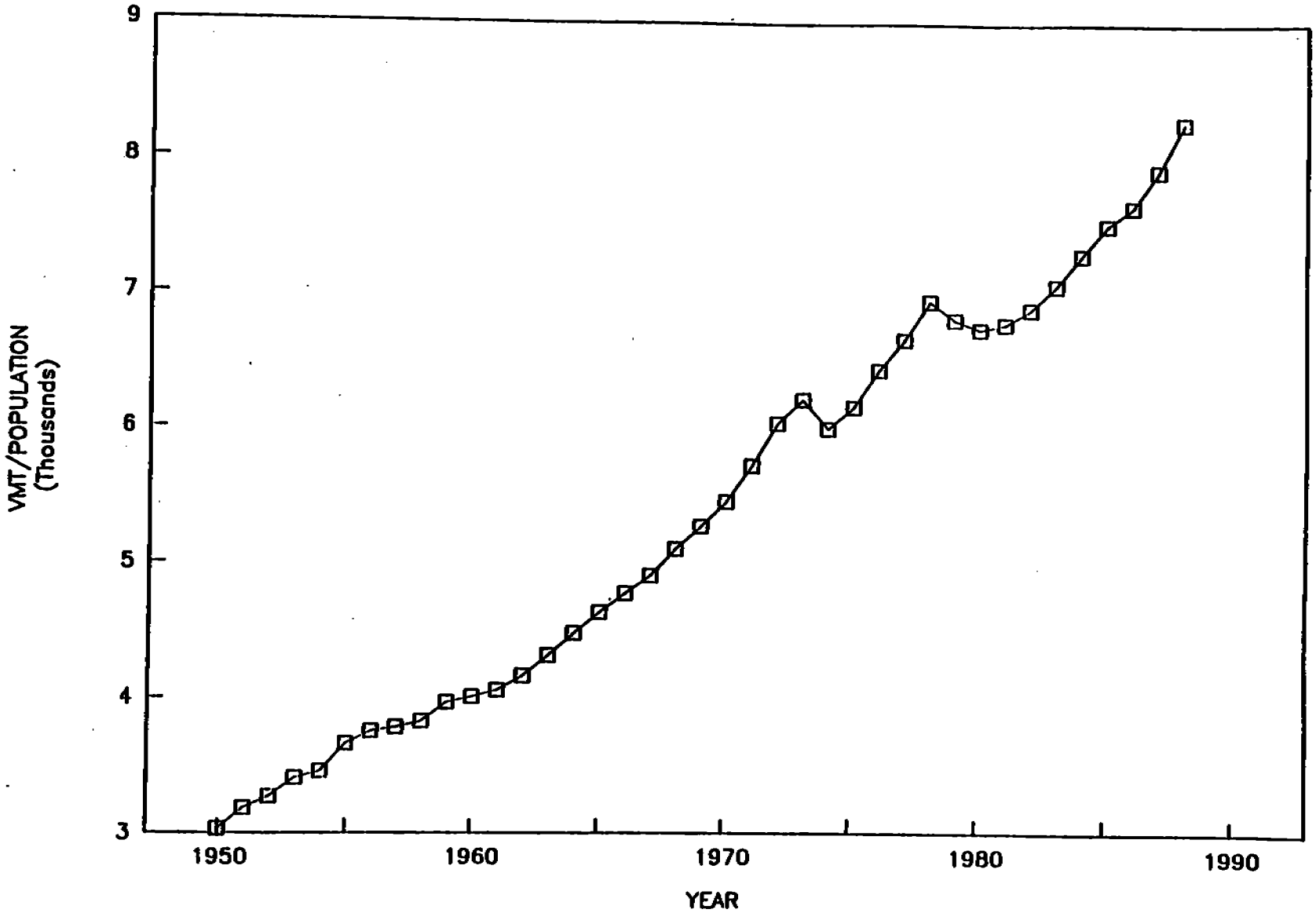

Figure 8-2. Historic VMT per capita.

8.5 METHODOLOGY USED IN E-GAS

The methodology used in E-GAS to develop VMT growth factors is a two-phase methodology. As described below, the first phase extends to 1996 and the second forecasts from 1997 to 2015.

In the first phase, linear regression of HPMS VMT data for 1985 through 1990 is used to project VMT for each year through 1996. Growth factors based on 1990 are then calculated based on the future projections and the actual 1990 VMT from HPMS. This is based on the "Historical Area-Wide VMT Method" in EPA's guidance which calls for an ordinary least squares linear regression extrapolation of the area's 1985-1990 HPMS reports for the Federal Aid Urbanized Area (FAUA) according to the following equations:[7]

$$VMT_{i,j} = \text{Constant} + (\text{Trend} * \text{Year Index})$$

and

$$Growth_{i,j} = VMT_{i,j} / VMT_{i,1990}$$

where:	i	=	E-GAS area
	j	=	year (1991-1996)
	Constant	=	regression constant
	Trend	=	regression X-coefficient
	Year Index	=	year - 1985(0=1985, 1=1986,...,30=2015)

Table 8-1 contains the constant and trend values for each E-GAS area as well as the resulting coefficient of determination (r^2). Since this method relies on a fairly limited historical data set,the EPA guidance restricts its usage to short-term projections. For E-GAS purposes, it was felt that extension beyond 1996 would be inappropriate. Thus, a second phase of E-GAS VMT growth factors was developed to cover beyond 1996.

TABLE 8-1. VMT COEFFICIENTS, TREND VARIABLES, AND R^2 VALUES

E-GAS Area	Constant	Trend	r^2
Boston	-2,213,233	1139.83	0.953
Greater Connecticut	-1,003,097	511.94	0.889
Portsmouth	-271,649	137.83	0.776
Providence	-1,570,166	795.94	0.792
Springfield	-651,598	332.23	0.939
Rest of New Hampshire	-2,450,632	1244.25	0.891
Maine	-3,391,881	1721.41	0.899
Vermont	-1,420,744	722.11	0.949
New York-New Jersey-Long Island	-12,915,602	6605.77	0.925
Baltimore	-219,729	1122.29	0.980
Philadelphia-Wilmington-Trenton	-3,703,887	1894.97	0.916
Washington, DC	-3,841,940	1963.34	0.911
Huntington-Ashland	-143,023	73.20	0.727
Rest of New York	-10,620,763	5419.70	0.984
Rest of New Jersey	-1,106,799	579.84	0.499
Rest of Pennsylvania	-7,878,636	4053.68	0.957
Rest of Delaware	-1,272,241	648.53	0.919
Rest of Virginia	-11,214,229	5706.14	0.974

(continued)

TABLE 8-1. VMT COEFFICIENTS, TREND VARIABLES, AND R^2 VALUES
(continued)

E-GAS Area	Constant	Trend	r^2
Rest of West Virginia	-2,831,907	1443.36	0.973
Rest of Maryland	-3,668,540	1866.77	0.992
Atlanta	-8,183,122	4146.97	0.736
Louisville	-892,771	457.63	0.886
Rest of Kentucky	-10,211,133	5167.91	0.881
Rest of Georgia	-10,039,952	5107.20	0.903
Tennessee	-11,153,189	5670.14	0.964
North Carolina	-14,251,206	7248.38	0.991
Mississippi	-6,014,090	3055.34	0.954
Alabama	-9,045,252	4603.76	0.918
South Carolina	-8,258,006	4197.26	0.993
Florida	-2,877,134	14612.52	0.902
Chicago-Gary-Lake County	-7,789,887	3976.20	0.976
Milwaukee-Racine	-1,725,723	881.77	0.962
Muskegon	-131,930	67.31	0.911
Sheboygan	-59,050	30.11	0.981
Cincinnati-Hamilton	-1,895,943	965.26	0.831
St. Louis	-4,123,265	2094.94	0.965

(continued)

TABLE 8-1. VMT COEFFICIENTS, TREND VARIABLES, AND R^2 VALUES (continued)

E-GAS Area	Constant	Trend	r^2
Rest of Illinois	-5,937,736	3039.00	0.990
Rest of Indiana	-17,145,192	8686.59	0.849
Rest of Wisconsin	-6,539,633	3332.81	0.979
Rest of Ohio	-14,406,296	7351.84	0.940
Rest of Michigan	-14,341,830	7319.38	0.949
Rest of Minnesota	-6,643,399	3391.86	0.997
Houston-Galveston-Brazoria	-6,067,689	3086.20	0.935
Baton Rouge	-735,082	373.63	0.624
Beaumont-Port Arthur	-227,636	116.26	0.902
El Paso	-838,881	426.34	0.982
Rest of Texas	-8,836,962	4617.31	0.763
Rest of Louisiana	-6,119,160	3121.40	0.560
New Mexico	-3,470,198	1766.42	0.884
Oklahoma	-2,493,519	1298.71	0.906
Arkansas	-4,457,528	2268.88	0.984
Rest of Missouri	-10,779,339	5510.64	0.894
Kansas	-3,792,573	1937.06	0.993
Nebraska	-2,031,430	1040.23	0.973

(continued)

TABLE 8-1. VMT COEFFICIENTS, TREND VARIABLES, AND R^2 VALUES (continued)

E-GAS Area	Constant	Trend	r^2
Iowa	-3,298,974	1689.47	0.963
Colorado	-1,395,027	739.10	0.664
Utah	-2,863,363	1458.79	0.971
Wyoming	-542,501	280.63	0.842
North Dakota	-356,115	187.08	0.991
South Dakota	-785,782	404.38	0.929
Montana	-977,401	502.78	0.887
Idaho	-1,941,484	988.34	0.738
Oregon	-5,769,205	2936.13	0.982
Washington	-11,810,281	5997.10	0.982
Los Angeles-South Coast Air Basin	-23,253,892	11813.17	0.979
San Diego	-5,152,668	2615.51	0.984
Ventura County	-27,223,362	13865.27	0.989
Sacramento Metro	-1,943,996	988.80	0.979
San Joaquin Valley	-1,156,461	588.94	0.960
Rest of California	-27,223,362	13865.27	0.989
Nevada	-2,777,337	1409.47	0.986
Arizona	-16,774,539	8481.49	0.844

The second phase is based on overall national VMT growth as projected by the EPA MOBILE4.1 Highway Fuel Consumption Model (HFCM), with allocation of this national growth to individual E-GAS areas using the relative population growth predicted by that area's REMI population projection as follows:

$$Growth_{i,j} = (VMT_{US,j}/VMT_{US,1990}) * (POP_{i,j}/POP_{i,1990}) / (POP_{US,j}/POP_{US,1990})$$

where: i = E-GAS area

j = year (1997 - 2015)

Table 8-2 and Figure 8-3 show the national projections from the HFCM. HFCM is based on longer-term VMT trends and thus is not effected as much be short-term fluctuations in VMT. Since this trend is essentially linear, only the overall (i.e., linear) growth rate to 2015 was used in E-GAS.

TABLE 8-2. NATIONAL VMT FROM MOBILE 4.1 FUEL CONSUMPTION MODEL

Year	Total VMT	Year	Total VMT
1990	1799.55	2003	2418.46
1991	1845.65	2004	2467.49
1992	1892.30	2005	2517.29
1993	1939.42	2006	2566.97
1994	1987.10	2007	2617.10
1995	2035.45	2008	2667.72
1996	2082.04	2009	2718.81
1997	2129.14	2010	2770.22
1998	2176.71	2011	2822.23
1999	2224.78	2012	2874.74
2000	2273.36	2013	2927.71
2001	2321.19	2014	2981.11
2002	2369.60	2015	3035.01

Due to differences in the phase 1 and phase 2 methods and data, there are some ares in which these approaches yield different results. To provide some perspective on the magnitude of these differences, Table 8-3 gives the phase 1 growth factor for 1996, the phase 2 growth factor for 1999 (the next year likely to be used in most inventory applications), and the difference (growth or decline) between these two factors. For E-GAS purposes, HPMS data for individual areas were obtained directly from the Federal Highway Administration (FHWA) and totals for States were obtained from published tables in *Highway Statistics*.[8] In the development of E-GAS projections, these data were examined in detail and coefficient of determination values for each area's data set for 1985-1999 were obtained when regressions were run. In a small number of cases, the FHWA data indicate sudden increases or decreases in the VMT reported for an area. Such changes may be due to a redefinition of the boundaries of the urbanized area or a reclassification of some roadway segments. Improvements in data collection methods may also be reflected in the VMT reported from year to year. If an area has information that will allow improvements in accuracy to be applied consistently to earlier VMT data, it may want to adjust the VMT reported to HPMS. Such an adjustment should be sent for peer review and comment to the Federal Highway Administration regional office having jurisdiction.

In some cases, VMT growth between 1985 and 1990 is somewhat uneven. For example, VMT might have grown rapidly from 1985 to 1988 and then leveled off between 1989 and 1990 due to the recession. This results in a low regression r^2. In this case, it may not be appropriate to use the regression results if future VMT growth is expected to follow the 1985 to 1988 trend. EPA's Office of Mobile Sources will work with any area that finds itself in this situation.

For many areas, the projections from the first and second E-GAS projection phases are reasonably consistent. In so far as differences exist, they are generally due to the influences of short-term economic fluctuations affecting the underlying HPMS data used to construct the Phase 1 growth factors. In any case, it should be emphasized that these methods and data should be examined closely by E-GAS users. E-GAS is intended to be used as an additional tool in the projection process, and use of local knowledge related to VMT trends and projection is preferred, as stated in the EPA guidance. To the extent that revised HPMS or other verified local VMT data sets are available and believed to be more reliable than those used in E-GAS, the user should consider their use in creation of projections to be submitted for any E-GAS VMT projection. Use of the "Network-Based Travel Demand Modeling Process Methodology" cited

in the *Section 187 VMT Forecasting and Tracking Guidance*[7] is definitely preferable to use of E-GAS projection factors in any area where an appropriate model exists (according to criteria in the guidance document).

TABLE 8-3. 1996 PHASE 1 GROWTH, 1999 PHASE 2 GROWTH, AND DIFFERENCES

E-GAS Area	1996	1999	% Difference
Boston	1.13	1.16	3.0
Greater Connecticut	1.22	1.20	- 2.0
Portsmouth	1.39	1.23	- 16.0
Providence	1.32	1.16	- 16.0
Springfield	1.22	1.15	- 7.0
Rest of New Hampshire	1.34	1.21	- 13.0
Maine	1.35	1.19	- 16.0
Vermont	1.29	1.23	- 6.0
New York-New Jersey-Long Island	1.20	1.21	1.0
Baltimore	1.18	1.29	11.0
Philadelphia-Wilmington-Trenton	1.19	1.19	0.0
Washington, DC	1.20	1.27	7.0
Huntington-Ashland	1.13	1.14	1.0
Rest of New York	1.10	1.15	5.0
Rest of New Jersey	1.11	1.25	14.0

(continued)

TABLE 8-3. 1996 PHASE 1 GROWTH, 1999 PHASE 2 GROWTH, AND DIFFERENCES (continued)

E-GAS Area	1996	1999	% Difference
Rest of Pennsylvania	1.12	1.21	9.0
Rest of Delaware	1.24	1.32	8.0
Rest of Virginia	1.26	1.26	0.0
Rest of West Virginia	1.21	1.09	- 12.0
Rest of Maryland	1.25	1.24	- 1.0
Atlanta	1.45	1.35	- 10.0
Louisville	1.17	1.21	4.0
Rest of Kentucky	1.48	1.14	- 34.0
Rest of Georgia	1.21	1.16	- 5.0
Tennessee	1.28	1.25	- 3.0
North Carolina	1.26	1.23	- 3.0
Mississippi	1.09	1.13	4.0
Alabama	1.24	1.36	12.0
South Carolina	1.27	1.23	- 4.0
Florida	1.31	1.45	14.0
Chicago-Gary-Lake County	1.19	1.23	4.0
Milwaukee-Racine	1.20	1.21	1.0
Muskegon	1.22	1.15	- 7.0

(continued)

TABLE 8-3. 1996 PHASE 1 GROWTH, 1999 PHASE 2 GROWTH, AND DIFFERENCES (continued)

E-GAS Area	1996	1999	% Difference
Sheboygan	1.22	1.16	- 6.0
Cincinnati-Hamilton	1.18	1.22	4.0
St. Louis	1.29	1.21	- 8.0
Rest of Illinois	1.17	1.17	0.0
Rest of Indiana	1.44	1.19	- 25.0
Rest of Wisconsin	1.23	1.20	- 3.0
Rest of Ohio	1.17	1.20	3.0
Rest of Michigan	1.22	1.20	- 2.0
Rest of Minnesota	1.19	1.24	5.0
Houston-Galveston-Brazoria	1.29	1.34	5.0
Baton Rouge	1.22	1.24	2.0
Beaumont-Port Arthur	1.21	1.19	- 2.0
El Paso	1.28	1.29	1.0
Rest of Texas	1.10	1.25	15.0
Rest of Louisiana	1.17	1.14	- 3.0
New Mexico	1.26	1.30	4.0
Oklahoma	1.09	1.13	4.0
Arkansas	1.24	1.20	- 4.0

(continued)

TABLE 8-3. 1996 PHASE 1 GROWTH, 1999 PHASE 2 GROWTH, AND DIFFERENCES (continued)

E-GAS Area	1996	1999	% Difference
Rest of Missouri	1.20	1.18	- 2.0
Kansas	1.18	1.19	1.0
Nebraska	1.17	1.16	- 1.0
Iowa	1.16	1.14	- 2.0
Colorado	1.08	1.28	20.0
Utah	1.21	1.31	10.0
Wyoming	1.10	1.16	6.0
North Dakota	1.07	1.11	4.0
South Dakota	1.12	1.18	6.0
Montana	1.15	1.17	2.0
Idaho	1.16	1.25	9.0
Oregon	1.25	1.25	0.0
Washington	1.31	1.28	- 3.0
Los Angeles-South Coast Air Basin	1.30	1.22	- 8.0
San Diego	1.32	1.29	- 3.0
Ventura County	1.23	1.27	4.0
Sacramento Metro	1.26	1.43	17.0
San Joaquin Valley	1.22	1.30	8.0

(continued)

TABLE 8-3. 1996 PHASE 1 GROWTH, 1999 PHASE 2 GROWTH, AND DIFFERENCES (continued)

E-GAS Area	1996	1999	% Difference
Rest of California	1.23	1.27	4.0
Nevada	1.29	1.55	26.0
Arizona	1.59	1.42	-17.0

8.6 REFERENCES

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CHAPTER 9
E-GAS CROSSWALK

9.1 OVERVIEW

CROSSWALK, the final component in E-GAS, is a module which assigns growth factors from other E-GAS modules to point, area, and mobile source SCCs for each county in each E-GAS modeling region. The growth factors used by the CROSSWALK are those generated by the models and modules in Tier 3, which were described in detail in Chapters 5, 6, and 7 of this report.

E-GAS activity growth factors will ultimately be applied to inventories in the AIRS sub-systems, AFS and AMS. The appropriate growth factor for each source in each inventory is determined by information given in the SCC description. For example, SCC descriptions may include the general economic sector associated with the emission (*e.g.*, residential, commercial, industrial); the specific economic sector associated with the emission (*e.g.*, the chemical industry); and the process associated with the emission (*e.g.*, fuel combustion, solvent application). The CROSSWALK was developed to associate each SCC in AFS and AMS with the appropriate growth factor from E-GAS based on similarities in E-GAS growth factors and SCC definitions. Using CROSSWALK, energy, economic, and VMT growth factors are converted to point, area, and mobile source SCCs growth factors for each county in each E-GAS modeling region.

After growth factors have been calculated by models and modules in Tier 3, E-GAS automatically calls CROSSWALK. CROSSWALK then connects each of the SCCs with its matching E-GAS growth factor. A list of CROSSWALK matches and the justification for the assignment is given in Appendix C. For example, the existing files for fossil fuels and electricity will be converted to SCC growth factors based upon the fuel type and economic sector associated with the emissions. After CROSSWALK has converted the growth factor files from E-GAS to the appropriate SCC growth factors, the output is compiled in output files. CROSSWALK creates separate output files for residential, commercial, industrial, and utility fuel consumption, industrial physical output, and VMT. After the files are compiled, they are stored in the E-GAS directory.

9.2 SICs AND SCCs

SICs and SCCs are two distinct classification systems that were developed for different purposes. SIC codes were developed by the U.S. Office of Management and Budget (OMB) for use by the Department of Commerce (DOC). The DOC required a classification of establishments by type of activity or primary business. The general activities include agriculture, mining, construction, manufacturing, transportation, communication, electricity, gas, and sanitary services.

Source Classification Codes were developed by the EPA Office of Air Quality Planning and Standards (OAQPS) for use by EPA. EPA required a classification of processes within establishments. OAQPS developed AIRS and its precursor, the National Emissions Database System (NEDS). Since AIRS stores emissions inventories, it was necessary to classify process information at the point-source level.

The following example illustrates the differences between SICs and SCCs. SICs are four-digit codes which correspond to industrial categories.. The first digit corresponds to a division of SICs. The first two digits together correspond to a major grouping, and each of the next two digits further refine the SIC grouping.

2	=	Manufacturing
28	=	Chemicals and Allied Products
286	=	Industrial Organic Chemicals
2865	=	Includes over 100 different chemical processes including coal, tar, dyes and organic pigments

SCC codes are either eight or ten digits in length. Point sources are classified using eight-digit codes, while area and mobile sources are classified using ten-digit codes. The eight-digit are hyphenated after the first, third, and sixth digits. The ten-digit codes are hyphenated after the second, fourth, and seventh digits. Each set of digits between hyphens contains information about the type of emission associated with the code. The following are examples of point and area source codes and their format.

Point source :	2	Internal combustion engine
	2-01	Internal combustion electrical generation
	2-01-002	Internal combustion electrical generation using natural gas
	2-01-002-01	Internal combustion electrical generation using natural gas and a turbine engine
Area source :	21	Stationary source fuel combustion
	21-01	Stationary source fuel combustion at electric utilities
	21-01-004	Stationary source fuel combustion at electric utilities using distillate oil
	21-01-004-002	Stationary source fuel combustion at electric utilities using distillate oil and internal combustion engine

The SCCs associated with the SIC above (SIC 28) are too numerous to list in this section. However, some associations are possible as a brief illustration. A great number of the point source SCCs beginning with a 3 are chemical manufacturing codes, and would correspond to SIC 28. Those SCCs for organic chemicals would correspond to SIC 286. A smaller number of SCCs would correspond to SIC 2865.

9.3 FOSSIL FUELS

The growth factors for fossil fuel consumption are generated by HOMES, CSEMS, and INRAD. The output files containing growth factor information are used as input files to CROSSWALK. This section describes the specific information contained in the fuel consumption input files to CROSSWALK.

9.3.1 Residential Fossil Fuels

Residential fossil fuel demands are generated by HOMES. Growth factors are developed for each fuel type by year, State, and county. The fields in a HOMES input file to CROSSWALK include:

STATE
COUNTY
YEAR
FUEL TYPE
GROWTH FACTOR

The three-digit codes preceding the fuel type is the code used in E-GAS to identify the fuel. The fuel type field can contain the fuels in the following list.

001	Coal
004	Distillate oil
005	Residual oil
006	Natural gas
007	Liquefied petroleum gas
009	Wood

CROSSWALK attaches the proper SCC to the records in the file by fuel type. The SCCs for residential fossil fuels are the AMS codes 21-04-***-***.

9.3.2 Industrial Fossil Fuels

Industrial fossil fuel demands are generated by INRAD. The growth factors are by State, county, year and fuel type. The fields in an INRAD input file to CROSSWALK are listed below:

STATE
COUNTY
YEAR
FUEL TYPE
INDUSTRY TYPE
GROWTH FACTOR

The fuel type field can contain the following fuels :

001	Coal
004	Oil
006	Gas
999	Electricity

The industry field contains one of the eight INRAD industrial categories. CROSSWALK

attaches the proper growth factor to each SCC using information on fuel and industry type associated with the growth factor.

9.3.3 Commercial Fossil Fuels

Commercial fossil fuel demands are generated by CSEMS. The growth factors are developed for each fuel type by State, county, and year. The fields in a CSEMS input file to CROSSWALK are listed below:

STATE
COUNTY
YEAR
FUEL TYPE
GROWTH FACTOR

The fuel type field can contain the following fuels:

001	Coal
004	Distillate oil
005	Residual oil
006	Natural gas
007	Liquefied petroleum gas

CROSSWALK attaches the proper SCC to the records in the file by matching them to the fuel type. The SCCs for commercial fossil fuels are the AMS codes 21-03-***-*** and AFS codes 1-03-***-** and 2-03-***-**.

9.3.4 Fossil Fuel Consumption at Utilities

Electric demands are generated by a two-step process. Initial residential, commercial, and industrial demands are generated by HOMES, CSEMS, and INRAD respectively. The three output files are read by an electric model preprocessor which prepares an input file for CROSSWALK. The growth factors are listed by fuel type, State, county, and year. The fields in the input file to CROSSWALK are listed below:

STATE
COUNTY
YEAR
FUEL TYPE
GROWTH FACTOR

The fuel type field can contain one of the following fuels:

001	Anthracite coal
002	Bituminous coal
002	Subbituminous coal
003	Lignite
004	Residual oil
005	Distillate oil
006	Natural gas
007	Process gas
008	Coke
009	Wood/bark waste
010	Liquefied petroleum gas
011	Bagasse
012	Solid waste
013	Liquid waste
014	Landfill gas
015	Kerosene/naphtha jet fuel
016	Geysers/geothermal

CROSSWALK attaches the proper SCC to the records in the file by matching them to the fuel type.

9.4 VMT ESTIMATES

Growth factors for vehicle miles traveled are generated by the VMT module. Growth factors are listed by State, county, year, road, and vehicle type.

STATE
COUNTY
YEAR
ROAD TYPE
VEHICLE TYPE
GROWTH FACTOR

The vehicle type and road type fields correspond exactly to the numerous AMS highway mobile source vehicle types and road types. CROSSWALK will attach SCC codes corresponding to the proper road and vehicle type.

9.5 INDUSTRY-SPECIFIC PHYSICAL OUTPUT

The physical output module in E-GAS generates an input file for CROSSWALK which contains physical output growth factors for 210 sectors. Each growth factor is listed by State, county, BLS code, and year.

Below is the PHYSICAL OUTPUT input file to CROSSWALK:

STATE
COUNTY
YEAR
BLS CODE
GROWTH FACTOR

The BLS code field can contain any of the 210 BLS codes. CROSSWALK matches SCCs using BLS codes.

9.6 OTHER SCCs

In some instances, SCCs do not have a corresponding growth factor from E-GAS. For example, area source codes 27-**-***-*** correspond to biogenic emissions; there are no outputs from E-GAS which logically relate to future growth in emissions from these sources. For SCCs for which a logical growth rate could not be determined from E-GAS outputs, the code will be stored in the OTHER.SCC file and assigned a growth rate of 1.0, (*i.e.*, no growth in emission-generating activity) for all forecast years.

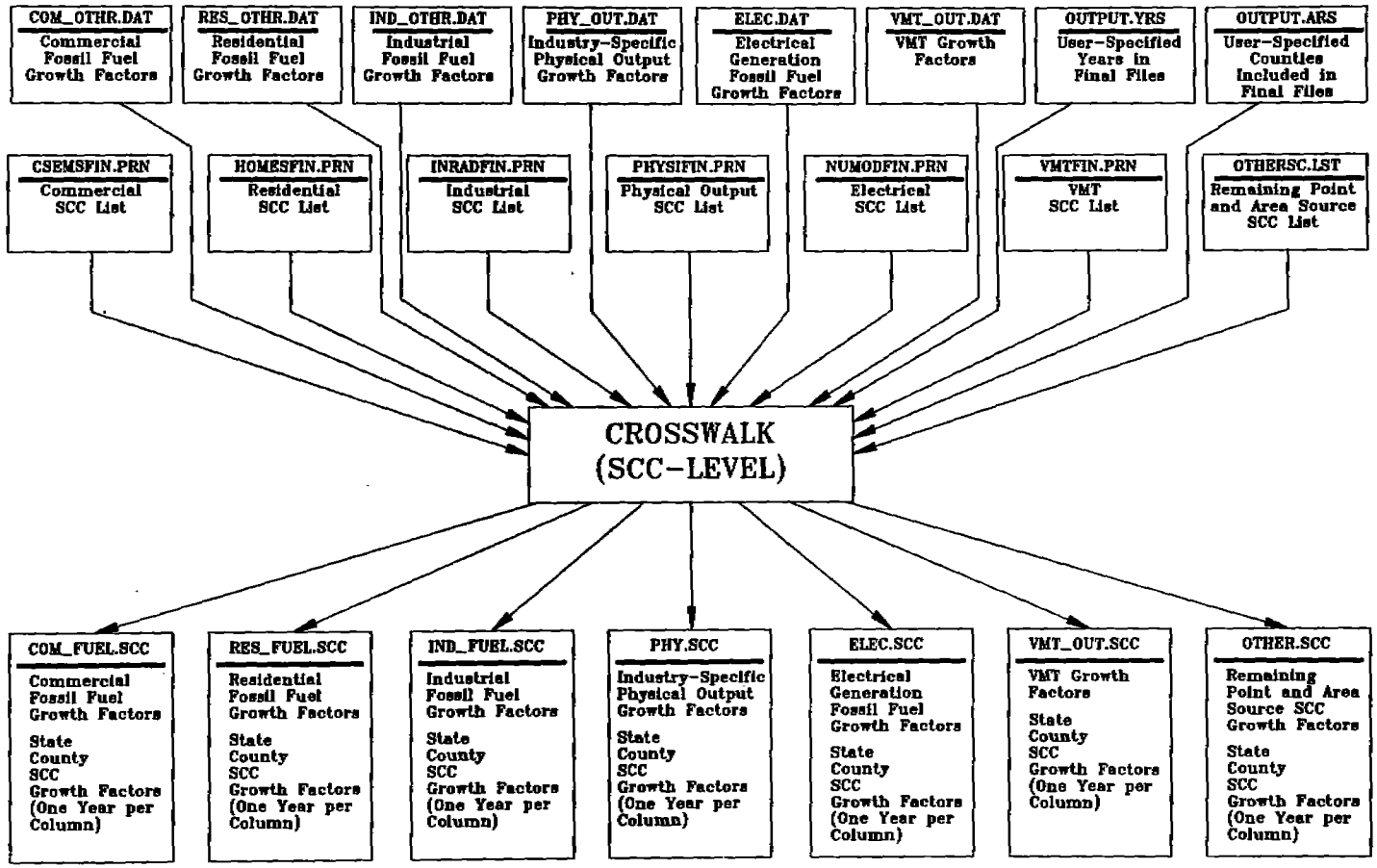

Figure 9-1. CROSSWALK design.

9.7 CROSSWALK FILES

CROSSWALK assigns SCCs as described above and creates a set of output files. These files are in ASCII format and are automatically saved in the user directory. It is the user's responsibility to maintain her/his file directory.

The output files all contain five fields : State, county, SCC, year, and growth factor. Example output files are presented in Appendix D for the years 1993 through 1997. The format of the files generated by CROSSWALK will be the same regardless of the sources included or the years forecast. The example output files in Appendix D illustrate the format of the CROSSWALK output files.

The output files are identified as follows:

RES_FUEL.SCC	HOMES, residential fossil fuel
COM_FUEL.SCC	CSEMS, commercial fossil fuel
IND_FUEL.SCC	INRAD, industrial fossil fuel
ELECTRIC.SCC	electric growth factors
VMT.SCC	VMT, transportation
PHY.SCC	PHYSICAL OUTPUT, industrial output
OTHER.SCC	Growth for unclassified SCCs

CROSSWALK generates the seven files listed above. Examples of these files are presented in Appendix C. After exiting E-GAS, the user can view and print these ASCII files using any standard ASCII file reader. The files are stored in the E-GAS user's directory.

The generic CROSSWALK output file format is as follows:

STATE	numeric (2)	State code
COUNTY	numeric (3)	county code
SCC	numeric (10)	SCC code
GROWTH FACTOR	numeric (8)	

The years corresponding to the growth factors will be listed at the top of the file. Figure 9-1 depicts CROSSWALK file handling capabilities and input and output file characteristics. The fields in the input and output files correspond to the fields described throughout this report.

APPENDIX A

DATA USED TO DEVELOP NUMOD

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
AL	1980	3	4	2	1702	2627	33894	26297	26631	11316	0	6932	92475	292	31183	51907	438807	194.7	407.9	375.3	45242	63	108
AR	1980	6	0	2	3155	2005	89815	87360	90354	4206	52	2932	47547	1295	4743	23030	175998	158.4	424.8	296.4	2941	1969	5249
AZ	1980	8	2	2	1350	4162	72891	69756	68224	7251	4	2112	57252	435	47458	26173	386531	110.9	449.9	337.8	21702	867	4486
CA	1980	8	0	2	2120	983	72891	69756	68224	26855	102	10875	57252	435	47458	164496	386531	N/A	561.9	488.0	0	39276	50273
CO	1980	8	2	3	6020	679	72891	69756	68224	4960	75	1114	57252	435	47458	21198	386531	109.2	511.4	371.1	18594	158	2502
CT	1980	0	0	0	6151	677	63021	61262	62225	3993	21	2305	35739	405	16443	21332	183145	N/A	516.1	N/A	0	12613	0
DE	1980	1	1	1	4937	1046	31722	22531	23962	1633	11	0	46385	169	11240	5750	187979	186.2	477.7	431.1	2408	3576	678
FL	1980	3	0	1	817	3375	33894	26297	26631	25459	248	3291	92475	292	31183	90596	438807	218.0	412.2	203.2	19737	44352	14860
GA	1980	3	4	1	2991	1667	33894	26297	26631	12906	5	3433	92475	292	31183	51711	438807	180.5	368.7	267.1	49674	546	287
IA	1980	5	3	2	6497	1036	36831	35481	35340	5969	577	727	19494	1366	5974	24938	82530	160.2	482.1	314.4	17755	69	438
ID	1980	8	0	3	5861	754	72891	69756	68224	50	12	1917	57252	435	47458	15388	386531	N/A	284.4	525.5	0	0	4
IL	1980	4	2	1	6342	867	19376	17332	17420	23922	282	5749	32519	379	7781	96457	133559	193.6	598.2	448.7	66910	7237	1406
IN	1980	2	4	1	5615	1014	34525	28734	29730	16964	52	93	88080	641	7395	55892	310486	146.9	561.1	343.8	69635	348	160
KS	1980	6	1	3	4791	1628	89815	87360	90354	7823	521	2	47547	1295	4743	22096	175998	124.1	308.0	244.2	16210	438	8474
KY	1980	2	4	2	4514	1288	34525	28734	29730	12891	13	746	88080	641	7395	51696	310486	154.7	407.1	294.8	53883	124	158
LA	1980	6	0	2	1513	2655	89815	87360	90354	12666	189	0	47547	1295	4743	59444	175998	N/A	424.9	283.0	0	4787	40952
MA	1980	0	0	0	5641	678	63021	61262	62225	7002	171	2478	35739	405	16443	33072	183145	204.0	423.4	391.1	1792	29297	427
MD	1980	1	2	0	4707	1137	31722	22531	23962	6803	63	2321	46385	169	11240	32602	187979	186.2	477.7	431.1	14589	5024	344
ME	1980	0	0	0	7378	268	63021	61262	62225	1114	55	1211	35739	405	16443	7957	183145	N/A	451.0	N/A	0	2054	0
MI	1980	2	2	1	7942	378	34525	28734	29730	16809	400	5492	88080	641	7395	67935	310486	189.7	451.8	380.2	50449	5602	1822
MN	1980	5	3	2	8890	431	36831	35481	35340	6518	346	1897	19494	1366	5974	33377	82530	119.7	456.8	301.8	20066	208	592
MO	1980	6	3	2	5076	1411	89815	87360	90354	12628	374	844	47547	1295	4743	40335	175998	137.6	447.1	306.0	46964	244	1161
MS	1980	3	1	2	2467	2215	33894	26297	26631	5535	0	0	92475	292	31183	23707	438807	211.9	342.0	294.3	6958	3346	8196
MT	1980	8	3	3	7741	388	72891	69756	68224	1114	3	2066	57252	435	47458	10761	386531	56.2	563.3	511.6	5140	22	352
NC	1980	3	4	1	3399	1500	33894	26297	26631	12017	5	3583	92475	292	31183	62820	438807	179.7	606.3	441.0	60463	249	97
ND	1980	5	4	0	8968	488	36831	35481	35340	2933	87	430	19494	1366	5974	5214	82530	71.6	391.5	348.4	13286	29	0
NE	1980	5	2	2	6300	1072	36831	35481	35340	3364	241	1537	19494	1366	5974	14163	82530	138.6	425.3	257.5	8122	124	944
NH	1980	0	1	0	7554	328	63021	61262	62225	1188	0	378	35739	405	16443	6060	183145	183.6	413.0	N/A	2733	2367	0
NJ	1980	1	0	1	5169	826	31722	22531	23962	10470	2	2109	46385	169	11240	49851	187979	217.3	535.9	422.6	6425	6758	6902
NM	1980	8	2	3	4425	1244	72891	69756	68224	4887	114	24	57252	435	47458	9331	386531	71.5	438.3	337.0	19331	189	5061
NV	1980	8	2	2	5674	508	72891	69756	68224	3110	66	682	57252	435	47458	9446	386531	122.1	400.6	365.1	7755	1473	2523
NY	1980	0	0	1	6149	693	63021	61262	62225	22021	111	9312	35739	405	16443	105927	183145	176.7	461.7	410.3	14471	37834	10765
OH	1980	2	4	1	5719	805	34525	28734	29730	26266	176	964	88080	641	7395	114107	310486	170.9	533.3	399.4	106800	1036	281
OK	1980	6	0	3	3659	1859	89815	87360	90354	10224	159	965	47547	1295	4743	31093	175998	144.5	475.7	239.1	9711	28	33580
OR	1980	8	2	1	4522	371	72891	69756	68224	1599	6	6904	57252	435	47458	37936	386531	18.8	673.8	503.6	725	57	28
PA	1980	1	3	0	5461	878	31722	22531	23962	27479	93	6810	46385	169	11240	99776	187979	156.9	513.7	477.5	98756	10727	200
RI	1980	0	0	1	5884	606	63021	61262	62225	257	26	2	35739	405	16443	5080	183145	N/A	434.0	369.1	0	825	137
SC	1980	3	3	1	2649	1966	33894	26297	26631	5978	1	5695	92475	292	31183	37795	438807	180.1	379.9	329.4	19521	1550	407
SD	1980	5	4	1	7809	744	36831	35481	35340	710	115	1383	19494	1366	5974	4838	82530	92.9	335.3	350.2	2808	24	13
TN	1980	3	4	1	3406	1867	33894	26297	26631	12124	0	3755	92475	292	31183	72056	438807	180.7	391.4	326.9	50618	198	114
TX	1980	7	1	3	2239	2466	44981	29355	30681	52508	252	519	52508	252	519	177945	177945	134.1	352.5	253.1	62053	949	138929
UT	1980	8	3	2	5765	1047	72891	69756	68224	1902	34	197	57252	435	47458	10903	386531	131.8	531.8	279.6	10870	63	358
VA	1980	3	1	0	5633	1385	33894	26297	26631	7140	33	4494	92475	292	31183	48215	438807	204.0	451.2	362.6	13384	8419	171
VT	1980	0	0	1	7771	388	63021	61262	62225	164	21	757	35739	405	16443	3717	183145	243.2	550.0	664.2	13	22	12
WA	1980	8	3	1	5875	294	72891	69756	68224	1641	4	21347	57252	435	47458	74181	386531	92.2	560.7	503.6	7129	98	75

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
WI	1980	4	3	2	7324	479	19378	17332	17420	8597	97	2032	32519	379	7781	37102	133559	164.6	562.1	382.6	24943	248	816
WV	1980	2	4	0	4646	1031	34525	28734	29730	15150	0	100	88080	641	7395	20858	310486	161.2	666.9	505.6	69956	408	8
WY	1980	8	4	1	7326	285	72891	69756	68224	3883	15	220	57252	435	47458	6718	386531	67.2	633.0	397.5	21150	62	33
AL	1981	3	4	2	1702	2627	32561	26631	26965	11316	0	7821	95410	307	34618	51251	434864	207.8	380.3	324.6	44888	45	182
AR	1981	6	1	3	3155	2005	90513	90354	93348	5006	52	2932	51606	1302	4743	24266	180032	170.5	416.1	297.0	9476	461	5059
AZ	1981	8	2	3	1350	4162	75655	68224	66692	8801	4	2112	60935	435	48151	29368	408602	109.8	433.2	300.5	28123	268	5896
CA	1981	8	0	2	2120	983	75655	68224	66692	26815	102	11263	60935	435	48151	172824	408602	N/A	629.9	445.1	0	27753	63559
CO	1981	8	3	3	6020	679	75655	68224	66692	4960	75	1214	60935	435	48151	22976	408602	114.9	665.0	345.1	22171	85	996
CT	1981	0	0	0	6151	677	64150	62225	63188	3827	21	2305	35489	404	16195	21466	184109	N/A	520.4	N/A	0	10851	0
DE	1981	1	1	1	4937	1046	32535	23962	25393	1633	11	0	47032	169	12410	5771	189079	203.7	486.0	388.3	4637	3128	556
FL	1981	3	0	1	817	3375	32561	26631	26965	26471	264	3291	95410	307	34618	95444	434864	231.0	442.8	191.5	21096	47442	15828
GA	1981	3	4	1	2991	1667	32561	26631	26965	12906	5	3433	95410	307	34618	56435	434864	186.2	367.7	362.9	51790	419	205
IA	1981	5	4	2	6497	1036	35648	35340	35199	6855	577	727	20916	1369	6012	25197	86327	153.7	518.1	331.7	19136	65	216
ID	1981	8	0	3	5861	754	75655	68224	66692	50	9	1920	60935	435	48151	16289	408602	N/A	274.9	467.3	0	0	1
IL	1981	4	3	1	6342	867	18985	17420	17508	23905	276	5746	32821	373	7777	97330	135471	201.9	648.2	470.0	62986	5334	948
IN	1981	2	4	2	5615	1014	33633	29730	30726	16802	52	93	89647	659	7395	56248	311318	153.4	597.7	334.3	66428	363	470
KS	1981	6	2	3	4791	1628	90513	90354	93348	8024	542	2	51606	1302	4743	21818	180032	128.3	262.7	248.9	17587	324	6619
KY	1981	2	4	2	4514	1288	33633	29730	30726	14730	13	746	89647	659	7395	51689	311318	162.0	425.1	286.2	57071	183	238
LA	1981	6	0	3	1513	2655	90513	90354	93348	13784	193	0	51606	1302	4743	61304	180032	228.5	495.8	306.1	1529	2634	39948
MA	1981	0	0	0	5641	678	64150	62225	63188	6985	171	2505	35489	404	16195	33128	184109	273.2	466.9	445.1	2250	25422	561
MD	1981	1	2	0	4707	1137	32535	23962	25393	7461	63	2321	47032	169	12410	33119	189079	203.7	486.0	388.3	12782	4049	363
ME	1981	0	0	0	7378	268	64150	62225	63188	1104	54	1211	35489	404	16195	8166	184109	N/A	503.6	N/A	0	2158	0
MI	1981	2	3	1	7942	376	33633	29730	30726	16746	418	5492	89647	659	7395	67843	311318	195.2	519.6	374.8	53185	3083	1141
MN	1981	5	3	2	8890	431	35648	35340	35199	6559	352	1900	20916	1369	6012	35079	86327	123.1	457.6	297.7	20025	83	412
MO	1981	6	4	2	5076	1411	90513	90354	93348	13781	376	844	51606	1302	4743	40184	180032	145.1	443.8	273.9	47400	144	585
MS	1981	3	1	2	2467	2215	32561	26631	26965	6084	0	0	95410	307	34618	23517	434864	234.2	371.4	289.6	6606	1767	6423
MT	1981	8	3	3	7741	388	75655	68224	66692	1114	3	2068	60935	435	48151	11033	408602	60.5	458.4	500.3	5046	13	176
NC	1981	3	4	1	3399	1500	32561	26631	26965	12762	4	4803	95410	307	34618	64721	434864	194.6	568.7	488.5	62568	213	51
ND	1981	5	4	0	8968	488	35648	35340	35199	3363	85	430	20916	1369	6012	5570	86327	85.7	510.9	313.0	13774	37	0
NE	1981	5	3	2	6300	1072	35648	35340	35199	3429	247	1572	20916	1369	6012	15517	86327	133.8	595.9	265.2	8482	44	347
NH	1981	0	1	0	7554	328	64150	62225	63188	1188	0	378	35489	404	16195	6090	184109	191.2	464.5	402.0	2197	2150	9
NJ	1981	1	1	2	5169	826	32535	23962	25393	10459	2	3279	47032	169	12410	49562	189079	226.6	532.6	456.4	6982	6166	7145
NM	1981	8	2	3	4425	1244	75655	68224	66692	4847	117	24	60935	435	48151	10417	408602	82.0	348.0	313.8	17885	83	4956
NV	1981	8	2	3	5674	508	75655	68224	66692	3380	66	682	60935	435	48151	10285	408602	119.4	368.3	372.0	9549	143	4304
NY	1981	0	0	1	6149	693	64150	62225	63188	21964	111	9037	35489	404	16195	106224	184109	188.7	486.9	412.3	14403	36755	11564
OH	1981	2	4	1	5719	805	33633	29730	30726	26219	176	964	89647	659	7395	114587	311318	179.8	543.3	384.1	106762	439	133
OK	1981	6	1	3	3659	1859	90513	90354	93348	11011	139	965	51606	1302	4743	32460	180032	154.4	557.2	212.4	13660	22	29270
OR	1981	8	4	2	4522	371	75655	68224	66692	1599	6	7104	60935	435	48151	38523	408602	196.5	361.0	777.0	1679	12	18
PA	1981	1	3	0	5461	678	32535	23962	25393	27479	93	6810	47032	169	12410	100627	189079	178.5	526.3	447.9	92059	9377	225
RI	1981	0	0	1	5884	606	64150	62225	63188	257	26	2	35489	404	16195	5027	184109	N/A	474.4	369.1	0	605	215
SC	1981	3	3	1	2649	1966	32561	26631	26965	6608	1	5695	95410	307	34618	40003	434864	191.6	374.5	368.3	21081	1216	414
SD	1981	5	4	1	7809	744	35648	35340	35199	710	108	1383	20916	1369	6012	4964	86327	105.9	619.5	334.2	2662	14	2
TN	1981	3	4	1	3406	1867	32561	26631	26965	12124	0	4978	95410	307	34618	71063	434864	185.8	366.7	326.0	48150	164	24
TX	1981	7	1	3	2238	2466	44623	30681	32007	54180	248	517	54180	248	517	187215	187215	148.1	326.4	275.1	70904	709	134424
UT	1981	8	3	2	5765	1047	75655	68224	66692	2349	34	199	60935	435	48151	11845	408602	127.3	562.0	256.7	10868	39	230

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
VA	1981	3	2	0	5633	1385	32561	26631	26965	7139	33	4599	95410	307	34618	32430	434864	211.0	473.7	361.5	15381	3797	149
VT	1981	0	1	2	7771	388	64150	62225	63188	164	21	757	35489	404	16195	4008	184109	214.2	610.8	538.6	21	8	11
WA	1981	8	4	2	5875	294	75655	68224	66692	1997	4	21347	60935	435	48151	76761	408602	100.8	810.9	539.7	6985	13	37
WI	1981	4	3	2	7324	479	18985	17420	17508	8916	97	2031	32821	373	7777	38141	135471	174.8	607.4	370.5	24821	162	412
WV	1981	2	4	0	4646	1031	33633	29730	30728	15150	0	100	89647	659	7395	20951	311318	178.2	657.5	505.6	72632	481	26
WY	1981	8	4	1	7326	285	75655	68224	66692	5023	15	220	60935	435	48151	8281	408602	82.0	558.0	555.2	25500	71	9
AL	1982	3	4	2	1702	2627	31394	26965	24303	11235	0	7633	97038	301	36083	46275	446654	217.7	394.6	300.5	36170	30	72
AR	1982	6	2	3	3155	2005	86229	93348	85664	4979	38	2931	53812	1253	4823	22288	179222	184.7	533.9	296.2	10856	89	2945
AZ	1982	8	3	3	1350	4162	71580	66692	67934	8746	4	2113	62758	373	48709	25649	387268	103.6	461.8	388.9	28670	214	2837
CA	1982	8	0	2	2120	983	71580	66692	67934	26985	44	11427	62758	373	48709	164646	387268	N/A	743.2	501.0	0	9470	50034
CO	1982	8	3	2	6020	679	71580	66692	67934	5492	74	1220	62758	373	48709	22455	387268	119.4	686.0	363.8	22879	74	405
CT	1982	0	0	0	6151	677	59688	63188	56559	3789	20	2305	36616	402	16216	20966	182475	N/A	478.8	N/A	0	10428	0
DE	1982	1	1	1	4937	1046	33231	25393	25347	2022	11	0	46841	148	12309	5457	181341	193.6	505.4	408.6	4354	2136	526
FL	1982	3	0	1	817	3375	31394	26965	24303	27477	259	3290	97038	301	36083	95079	446654	229.2	433.6	209.9	21694	33857	16917
GA	1982	3	4	1	2991	1667	31394	26965	24303	13781	5	3651	97038	301	36083	54848	446654	190.7	488.0	383.0	49464	183	134
IA	1982	5	4	2	6497	1036	36427	35199	34755	6809	419	727	21555	1159	6009	24540	86354	158.4	553.9	348.8	18456	56	147
ID	1982	8	0	3	5861	754	71580	66692	67934	50	8	1944	62758	373	48709	15725	387268	N/A	366.7	545.0	0	0	1
IL	1982	4	3	1	6342	867	19479	17508	17816	23823	278	6892	32749	372	8924	93481	131931	206.9	726.0	467.6	61201	3988	738
IN	1982	2	4	1	5615	1014	33846	30726	28197	18656	53	93	92435	576	7423	55792	290102	158.4	694.9	355.6	62898	258	242
KS	1982	6	2	3	4791	1628	86229	93348	85664	7992	534	2	53812	1253	4823	22313	179222	136.1	349.9	249.6	17778	285	5150
KY	1982	2	4	1	4514	1288	33846	30726	28197	15270	14	747	92435	576	7423	49736	290102	161.1	645.5	307.7	54454	169	146
LA	1982	6	0	3	1513	2655	86229	93348	85664	14966	188	0	53812	1253	4823	58166	179222	225.4	576.7	307.0	4998	946	35590
MA	1982	0	0	0	5641	678	59688	63188	56559	7480	171	2502	36616	402	16216	33321	182475	263.5	455.2	404.9	8867	19353	1404
MD	1982	1	2	0	4707	1137	33231	25393	25347	7424	63	2322	46841	148	12309	32430	181341	193.6	505.4	408.6	14242	3757	70
ME	1982	0	0	0	7378	268	59688	63188	56559	1104	54	1226	36616	402	16216	8198	182475	N/A	495.2	N/A	0	1830	0
MI	1982	2	3	1	7942	378	33846	30726	28197	16655	392	5494	92435	576	7423	64236	290102	192.9	591.7	394.4	50488	1285	833
MN	1982	5	4	2	8890	431	36427	35199	34755	6487	328	1897	21555	1159	6009	34108	86354	132.0	364.5	289.5	17221	47	216
MO	1982	6	4	2	5076	1411	86229	93348	85664	14513	363	925	53812	1253	4823	40354	179222	144.0	526.8	359.9	46910	169	327
MS	1982	3	1	3	2467	2215	31394	26965	24303	6122	0	0	97038	301	36083	23049	446654	234.5	565.7	295.3	9259	205	7507
MT	1982	8	4	2	7741	388	71580	66692	67934	1115	3	2066	62758	373	48709	10435	387268	66.5	532.7	234.3	3853	10	33
NC	1982	3	4	0	3399	1500	31394	26965	24303	12774	2	4800	97038	301	36083	66412	446654	192.4	644.3	387.6	59804	159	1
ND	1982	5	4	0	8968	488	36427	35199	34755	3242	84	430	21555	1159	6009	6035	86354	70.5	589.0	328.3	15729	32	0
NE	1982	5	3	2	6300	1072	36427	35199	34755	4155	256	1572	21555	1159	6009	16660	86354	119.2	646.8	309.1	8120	65	120
NH	1982	0	1	0	7554	328	59688	63188	56559	1168	0	384	36616	402	16216	6140	182475	193.5	421.6	N/A	2289	1401	0
NJ	1982	1	1	2	5169	826	33231	25393	25347	10501	2	3279	46841	148	12309	48803	181341	226.9	538.3	440.6	7077	4828	5746
NM	1982	6	2	3	4425	1244	71580	66692	67934	5352	117	24	62758	373	48709	9992	387268	86.4	418.5	332.8	19431	146	4103
NV	1982	8	2	3	5674	508	71580	66692	67934	3517	64	682	62758	373	48709	10099	387268	122.0	440.7	407.4	12619	130	1415
NY	1982	0	0	1	6149	693	59688	63188	56559	22655	111	9038	36616	402	16216	104974	182475	191.6	484.5	424.4	15254	32932	13974
OH	1982	2	4	1	5719	805	33846	30726	28197	26705	117	988	92435	576	7423	100557	290102	172.9	633.8	417.0	101454	385	82
OK	1982	6	1	3	3659	1859	86229	93348	85664	11362	130	965	53812	1253	4823	36101	179222	157.4	346.3	203.5	17904	28	24905
OR	1982	8	4	1	4522	371	71580	66692	67934	1574	6	9267	62758	373	48709	36560	387268	192.1	585.0	2288.6	739	4	2
PA	1982	1	3	0	5461	878	33231	25393	25347	26894	72	6708	46841	148	12309	94651	181341	167.8	557.2	439.4	94179	6378	117
RI	1982	0	0	1	5884	606	59688	63188	56559	256	26	2	36616	402	16216	4937	182475	N/A	463.6	383.2	0	378	61
SC	1982	3	4	1	2649	1966	31394	26965	24303	6591	1	5694	97038	301	36083	41354	446654	194.2	458.2	394.2	20948	257	37
SD	1982	5	4	0	7809	744	36427	35199	34755	862	72	1383	21555	1159	6009	5011	86354	118.8	575.8	342.7	2513	12	0

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
TN	1982	3	4	0	3406	1867	31394	26965	24303	12054	0	6215	97038	301	36083	69332	446654	185.4	389.8	381.2	39479	153	0
TX	1982	7	1	3	2236	2466	43864	32007	32743	56828	214	515	56828	214	515	189680	189680	151.4	384.2	311.7	78752	1090	125463
UT	1982	8	3	2	5765	1047	71580	66692	67934	2347	34	197	62758	373	48709	12018	387268	154.5	630.9	239.1	10635	29	203
VA	1982	3	2	1	5633	1385	31394	26965	24303	7004	34	4600	97038	301	36083	50305	446654	204.7	476.1	403.5	16174	1849	243
VT	1982	0	2	1	7771	388	59688	63188	56559	164	20	759	36616	402	16216	3939	182475	215.4	686.5	568.2	44	8	6
WA	1982	8	4	1	5875	294	71580	66692	67934	1989	4	19537	62758	373	48709	71402	387268	108.9	788.5	1328.0	5464	12	9
WI	1982	4	4	2	7324	479	19479	17508	17816	6926	94	2032	32749	372	8924	38450	131931	177.6	697.8	349.2	24571	108	210
WV	1982	2	4	0	4646	1031	33846	30726	28197	15149	0	101	92435	576	7423	19781	290102	178.0	726.8	415.3	67514	325	17
WY	1982	8	4	1	7326	285	71580	66692	67934	5591	15	232	62758	373	48709	8287	387268	84.1	717.0	514.8	26617	57	11
AL	1983	3	4	1	1702	2627	34704	24303	28159	11235	0	7976	97759	335	38072	46645	459976	216.4	447.6	402.2	39787	64	35
AR	1983	6	2	3	3155	2005	97235	85664	91459	5815	38	2931	55894	1253	4905	23445	184942	180.9	663.2	294.8	16042	52	3017
AZ	1983	8	3	2	1350	4162	75580	67934	77065	8746	4	2113	63419	350	50199	27980	391461	119.9	540.3	289.3	24858	407	1637
CA	1983	8	0	2	2120	983	75580	67934	77065	27167	44	12634	63419	350	50199	166446	391461	N/A	846.6	472.4	0	6327	42826
CO	1983	8	4	2	6020	679	75580	67934	77065	5492	74	1231	63419	350	50199	23062	391461	105.0	554.7	353.5	22243	54	308
CT	1983	0	0	0	6151	677	65959	56559	63820	3789	20	2304	36577	403	16258	22092	190184	N/A	507.8	N/A	0	11940	0
DE	1983	1	2	1	4937	1046	34972	25347	29684	2022	11	0	46807	149	13461	6040	189626	194.1	531.7	425.8	6536	2419	517
FL	1983	3	1	1	817	3375	34704	24303	28159	27448	293	4140	97759	335	38072	99616	459976	238.4	478.8	233.9	28922	31195	16380
GA	1983	3	4	1	2991	1667	34704	24303	28159	13781	5	3731	97759	335	38072	55949	459976	193.9	576.3	408.6	54480	136	124
IA	1983	5	4	2	6497	1036	37627	34755	35836	7592	400	727	22338	1051	6009	25580	88728	201.9	735.6	359.5	18734	57	189
ID	1983	8	0	3	5861	754	75580	67934	77065	50	8	1969	63419	350	50199	16241	391461	N/A	588.0	478.4	0	0	0
IL	1983	4	3	1	6342	667	20785	17816	18807	23763	278	6915	32433	365	8948	96321	136001	211.4	854.6	486.2	66908	3143	970
IN	1983	2	4	2	5615	1014	34783	28197	30150	16478	53	93	92078	538	7448	58016	306202	158.9	651.1	392.0	70004	187	253
KS	1983	6	2	3	4791	1628	97235	85664	91459	9047	538	2	55894	1253	4905	23158	184942	146.8	363.0	275.9	19592	263	3913
KY	1983	2	4	1	4514	1288	34783	28197	30150	15195	14	747	92078	538	7448	50440	306202	163.5	722.2	346.3	54177	146	116
LA	1983	6	0	3	1513	2655	97235	85664	91459	15393	178	0	55894	1253	4905	57607	184942	235.6	768.7	292.0	8378	354	28310
MA	1983	0	1	1	5641	678	65959	56559	63820	7405	172	2502	36577	403	16258	35021	190184	245.9	480.2	367.7	9230	16911	2322
MD	1983	1	2	0	4707	1137	34972	25347	29684	7390	64	2322	46807	149	13461	36058	189626	194.1	531.7	425.8	15518	3559	127
ME	1983	0	0	0	7378	268	65959	56559	63820	1104	54	1234	36577	403	16258	9018	190184	N/A	528.0	N/A	0	2045	0
MI	1983	2	3	2	7942	378	34783	28197	30150	16767	365	5495	92078	538	7448	67421	306202	192.3	568.5	410.1	52016	666	733
MN	1983	5	4	2	8890	431	37627	34755	35836	6448	296	1897	22338	1051	6009	35385	88728	142.9	350.6	370.3	17054	28	207
MO	1983	6	4	2	5076	1411	97235	85664	91459	14340	364	1004	55894	1253	4905	43091	184942	155.1	597.7	432.4	50596	183	210
MS	1983	3	2	3	2467	2215	34704	24303	28159	6122	0	0	97759	335	38072	23868	459976	231.0	793.4	283.5	8882	81	4395
MT	1983	8	4	2	7741	388	75580	67934	77065	1108	5	2099	63419	350	50199	10063	391461	71.6	381.3	100.4	3452	10	34
NC	1983	3	4	0	3399	1500	34704	24303	28159	13533	2	4801	97759	335	38072	70223	459976	191.2	684.8	430.3	55946	238	5
ND	1983	5	4	0	8968	488	37627	34755	35836	3290	31	430	22338	1051	6009	6346	88728	85.7	577.9	406.1	17182	42	0
NE	1983	5	4	2	6300	1072	37627	34755	35836	4146	254	1572	22338	1051	6009	16128	88728	131.3	631.8	298.4	9471	40	114
NH	1983	0	1	0	7554	328	65959	56559	63820	1147	0	389	36577	403	16258	6385	190184	197.4	469.0	370.0	2656	1432	1
NJ	1983	1	1	2	5169	826	34972	25347	29684	10501	2	3279	46807	149	13461	50988	189626	213.6	545.7	378.7	7838	4718	8659
NM	1983	8	2	3	4425	1244	75580	67934	77065	5297	92	24	63419	350	50199	10232	391461	88.7	660.2	336.8	24128	111	2842
NV	1983	8	3	3	5674	508	75580	67934	77065	3787	64	682	63419	350	50199	10053	391461	126.0	668.4	861.4	12413	23	843
NY	1983	0	0	1	6149	693	65959	56559	63820	22725	111	9066	36577	403	16258	108511	190184	189.0	524.2	393.9	15585	34380	12428
OH	1983	2	4	1	5719	805	34783	28197	30150	26659	106	1012	92078	538	7448	110533	306202	175.3	630.6	487.2	100468	288	69
OK	1983	6	1	3	3659	1859	97235	85664	91459	11299	135	968	55894	1253	4905	37641	184942	170.0	578.3	219.9	19575	23	23613
OR	1983	8	4	0	4522	371	75580	67934	77065	1347	6	9257	63419	350	50199	34376	391461	229.9	675.5	N/A	443	4	0
PA	1983	1	2	0	5461	678	34972	25347	29684	26894	72	7860	46807	149	13461	96540	189626	158.8	547.2	493.5	96380	11204	133

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
RI	1983	0	0	1	5884	606	65959	56559	63820	243	26	2	36577	403	16258	5174	190184	N/A	497.8	347.4	0	333	248
SC	1983	3	4	1	2649	1966	34704	24303	28159	6619	1	6599	97759	335	38072	43328	459976	197.9	621.0	509.9	17213	72	51
SD	1983	5	4	0	7809	744	37627	34755	35836	862	70	1383	22338	1051	6009	5289	88728	119.9	507.6	369.5	2274	11	0
TN	1983	3	4	0	3406	1867	34704	24303	28159	12054	0	6215	97759	335	38072	67616	459976	179.7	427.7	351.0	45279	153	7
TX	1983	7	1	3	2238	2466	45881	32743	35799	56661	201	581	56661	201	581	192912	192912	168.3	339.4	292.8	87488	2020	115524
UT	1983	8	4	2	5765	1047	75580	67934	77065	2794	34	205	63419	350	50199	12608	391461	138.5	672.3	282.8	10921	40	69
VA	1983	3	2	1	5633	1385	34704	24303	28159	6967	34	4610	97759	335	38072	52731	459976	177.5	508.7	402.9	16055	1522	290
VT	1983	0	2	2	7771	388	65959	56559	63820	164	20	761	36577	403	16258	3983	190184	217.2	809.5	393.2	42	5	13
WA	1983	8	4	1	5875	294	75580	67934	77065	2040	4	19751	63419	350	50199	71118	391461	142.3	871.1	2682.4	6111	10	2
WI	1983	4	4	2	7324	479	20785	17816	18807	8650	87	2033	32433	365	8948	39680	136001	181.9	643.9	384.4	27393	118	181
WV	1983	2	4	0	4646	1031	34783	28197	30150	14979	0	101	92078	538	7448	19792	306202	174.4	727.7	420.5	71767	275	15
WY	1983	8	4	1	7326	285	75580	67934	77065	5591	15	234	63419	350	50199	9282	391461	97.8	721.0	441.9	25054	40	12
AL	1984	3	4	1	1702	2627	35186	28159	27805	11188	0	7984	101111	334	39329	51375	486676	214.9	478.6	361.4	42057	37	35
AR	1984	6	2	3	3155	2005	93400	91459	106837	6657	38	2931	57222	1164	4905	24949	190802	195.1	810.5	318.4	14350	10	2161
AZ	1984	8	3	2	1350	4162	80048	77065	77579	8746	4	2276	65226	284	53896	30543	425367	128.4	577.3	466.0	27479	409	2253
CA	1984	8	0	3	2120	983	80048	77065	77579	27035	44	14860	65226	284	53896	177569	425367	N/A	671.6	486.2	0	2410	54265
CO	1984	8	4	3	6020	679	80048	77065	77579	6169	74	1231	65226	284	53896	25241	425367	116.3	589.9	362.0	24869	30	316
CT	1984	0	0	0	6151	677	65851	63820	67349	3770	20	2304	37210	397	16279	23122	197543	220.7	555.1	354.0	32	12353	196
DE	1984	1	2	1	4937	1046	36851	29684	31937	2022	11	0	46950	147	12501	6298	199077	180.6	485.4	400.1	6399	2255	715
FL	1984	3	1	1	817	3975	35186	28159	27805	29258	292	4140	101111	334	39329	104735	486676	240.3	519.8	351.4	34188	19520	16371
GA	1984	3	4	1	2991	1667	35186	28159	27805	14672	5	3731	101111	334	39329	60465	486676	197.2	699.5	422.2	63821	88	46
IA	1984	5	4	2	6497	1036	38144	35836	37321	7552	393	727	22569	1049	6010	25646	91169	158.3	562.7	371.3	18907	47	145
ID	1984	8	0	0	5861	754	80048	77065	77579	50	7	1969	65226	284	53896	17197	425367	N/A	327.8	569.8	0	0	0
IL	1984	4	3	1	6342	867	20666	18807	18989	23787	267	7877	32343	358	9913	99620	140958	217.2	730.0	481.4	63233	2196	482
IN	1984	2	4	1	5615	1014	35442	30150	33384	20033	53	93	94132	541	7448	60171	324715	157.2	702.7	401.0	80246	162	120
KS	1984	6	2	3	4791	1628	93400	91459	106837	9046	543	2	57222	1164	4905	23899	190802	149.4	608.6	307.8	23339	119	2710
KY	1984	2	4	2	4514	1288	35442	30150	33384	15677	14	747	94132	541	7448	51466	324715	152.3	701.5	318.9	55072	172	172
LA	1984	6	0	3	1513	2655	93400	91459	106837	15289	137	0	57222	1164	4905	61603	190802	231.8	545.2	291.8	9828	139	29361
MA	1984	0	1	1	5641	678	65851	63820	67349	7405	173	2518	37210	397	16279	37174	197543	220.5	529.9	393.4	11260	17271	3078
MD	1984	1	2	0	4707	1137	36851	29684	31937	8010	64	2323	46950	147	12501	38372	199077	185.7	574.3	413.7	18775	3090	103
ME	1984	0	0	0	7378	268	65851	63820	67349	1104	47	1229	37210	397	16279	9626	197543	N/A	570.4	N/A	0	2090	0
MI	1984	2	3	2	7942	378	35442	30150	33384	17259	368	5495	94132	541	7448	70311	324715	187.0	634.2	437.0	55629	598	704
MN	1984	5	4	2	8890	431	38144	35836	37321	6327	297	1898	22569	1049	6010	37696	91169	139.9	499.1	362.2	19139	20	139
MO	1984	6	4	2	5076	1411	93400	91459	106837	14330	311	1004	57222	1164	4905	44529	190802	151.6	715.0	373.4	53241	98	169
MS	1984	3	1	3	2467	2215	35186	28159	27805	6122	0	0	101111	334	39329	25692	486676	247.6	760.0	246.0	9485	58	5676
MT	1984	8	4	2	7741	388	80048	77065	77579	1835	5	2204	65226	284	53896	11639	425367	69.9	698.4	272.2	7650	36	40
NC	1984	3	4	0	3399	1500	35186	28159	27805	13721	2	6020	101111	334	39329	73363	486676	192.5	665.2	414.0	52276	178	2
ND	1984	5	4	0	8968	488	38144	35836	37321	3728	28	430	22569	1049	6010	6656	91169	92.3	654.0	441.0	19439	71	0
NE	1984	5	4	2	6300	1072	38144	35836	37321	4100	268	1572	22569	1049	6010	15762	91169	133.8	643.4	346.9	10717	19	117
NH	1984	0	1	0	7554	328	65851	63820	67349	1147	0	369	37210	397	16279	6784	197543	199.9	501.5	374.5	3281	1926	5
NJ	1984	1	1	2	5169	826	36851	29684	31937	10092	0	3279	46950	147	12501	52691	199077	198.2	583.8	417.7	7366	5130	8485
NM	1984	8	2	3	4425	1244	80048	77065	77579	5597	26	24	65226	284	53896	11117	425367	92.7	365.0	309.3	23898	60	2839
NV	1984	8	3	3	5674	508	80048	77065	77579	3787	64	682	65226	284	53896	10857	425367	135.0	519.1	427.9	14003	35	808
NY	1984	0	0	1	6149	693	65851	63820	67349	23318	111	9071	37210	397	16279	111231	197543	184.5	565.8	405.6	17070	28891	15395
OH	1984	2	4	1	5719	805	35442	30150	33384	26184	106	1012	94132	541	7448	121553	324715	198.2	641.8	564.0	103263	261	46

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
OK	1984	6	1	3	3659	1859	93400	91459	106837	11900	135	968	57222	1164	4905	35822	190802	170.2	435.7	252.2	20383	30	22330
OR	1984	8	4	0	4522	371	80048	77065	77579	1311	6	9256	65226	284	53896	38103	425367	228.1	N/A	N/A	721	0	0
PA	1984	1	3	0	5461	878	36851	29684	31937	26826	72	6899	46950	147	12501	101716	199077	169.0	566.8	454.0	98132	9544	219
RI	1984	0	0	1	5884	606	65851	63820	67349	243	26	2	37210	397	16279	5374	197543	N/A	533.0	375.9	0	319	282
SC	1984	3	4	1	2649	1966	35186	28159	27805	7129	1	6653	101111	334	39329	45461	486676	188.7	639.6	558.0	18522	82	21
SD	1984	5	4	1	7809	744	38144	35836	37321	862	63	1383	22569	1049	6010	5409	91169	118.1	615.8	555.5	2462	4	1
TN	1984	3	4	0	3406	1867	35186	28159	27805	12054	0	6191	101111	334	39329	70600	486676	167.5	409.7	332.0	45963	119	0
TX	1984	7	1	3	2238	2466	45562	35799	35112	56532	199	581	56532	199	581	210796	210796	171.0	529.9	352.5	91901	454	124604
UT	1984	8	4	1	5765	1047	80048	77065	77579	2799	34	211	65226	284	53896	13365	425367	132.8	700.7	354.4	12321	30	8
VA	1984	3	3	1	5633	1385	35186	28159	27805	6967	34	4610	101111	334	39329	54985	486676	182.7	552.4	410.1	18069	1580	303
VT	1984	0	2	2	7771	388	65851	63820	67349	223	20	766	37210	397	16279	4232	197543	215.9	767.3	389.5	50	11	15
WA	1984	8	4	1	5875	294	80048	77065	77579	2287	4	20949	65226	284	53896	79930	425367	146.7	700.8	359.7	6441	8	2
WI	1984	4	4	2	7324	479	20666	18807	18989	6556	91	2036	32343	358	9913	41338	140958	177.5	735.8	399.7	28743	92	114
WV	1984	2	4	0	4646	1031	35442	30150	33384	14979	0	101	94132	541	7448	21214	324715	162.3	710.6	480.0	77166	254	15
WY	1984	8	4	1	7326	285	80048	77065	77579	5590	16	234	65226	284	53896	9806	425367	95.2	734.1	490.0	30187	60	8
AL	1985	3	4	2	1702	2627	32432	27805	29060	11894	0	8087	102241	327	43516	50035	497316	211.3	624.2	320.1	51375	45	73
AR	1985	6	3	3	3155	2005	98572	106837	102894	6624	38	2931	56640	1175	8640	23856	191954	177.4	818.6	276.9	20275	11	954
AZ	1985	8	2	3	1350	4162	83119	77579	77997	9203	4	2369	66343	291	55684	32645	432777	147.6	619.4	364.2	29076	177	3872
CA	1985	8	0	3	2120	983	83119	77579	77997	27524	46	16127	66343	291	55684	183978	432777	N/A	664.3	452.4	0	2667	64518
CO	1985	8	4	3	6020	679	83119	77579	77997	6189	74	1334	66343	291	55684	26227	432777	114.5	666.0	369.3	26128	21	335
CT	1985	0	0	0	6151	677	66293	67349	65667	3741	20	2304	37151	372	16286	23449	201369	233.2	514.9	343.2	1861	10252	135
DE	1985	1	2	1	4937	1046	38062	31937	29776	2022	11	0	46420	147	13763	6335	199589	177.8	448.4	373.0	5866	1878	726
FL	1985	3	1	2	817	3375	32432	27805	29060	29719	295	4149	102241	327	43516	110934	497316	228.8	497.6	329.2	43525	13870	15334
GA	1985	3	4	1	2991	1667	32432	27805	29060	14672	5	4064	102241	327	43516	66573	497316	193.6	665.9	441.9	67828	130	65
IA	1985	5	4	2	6497	1036	40010	37321	38233	7463	382	727	22568	1039	6058	25558	92263	149.9	703.6	368.7	20350	44	105
ID	1985	8	0	2	5861	754	83119	77579	77997	50	7	1968	66343	291	55684	16288	432777	N/A	315.6	559.9	0	1	2
IL	1985	4	3	1	6342	867	19936	18989	18803	23447	266	9102	32994	361	11139	99128	140704	217.5	742.4	532.4	62983	998	460
IN	1985	2	4	1	5615	1014	37053	33384	31652	19786	241	110	94023	724	7539	57979	327677	163.9	708.8	429.6	77762	196	99
KS	1985	6	3	3	4791	1628	98572	106837	102894	8853	538	1240	56640	1175	8640	27181	191954	141.8	616.9	294.8	21917	101	1629
KY	1985	2	4	1	4514	1288	37053	33384	31652	15452	14	817	94023	724	7539	52639	327677	153.0	690.9	386.8	59839	157	110
LA	1985	6	1	3	1513	2655	98572	106837	102894	15327	136	1200	56640	1175	8640	60460	191954	211.8	598.3	273.3	13968	100	27736
MA	1985	0	1	1	5641	678	66293	67349	65667	7338	151	2519	37151	372	16286	38079	201369	207.7	518.5	351.9	10577	15017	4333
MD	1985	1	2	0	4707	1137	38062	31937	29776	8010	64	2323	46420	147	13763	39323	199589	183.7	542.3	370.0	17613	3134	88
ME	1985	0	0	0	7378	268	66293	67349	65667	1104	42	1237	37151	372	16286	9827	201369	N/A	518.9	N/A	0	2063	0
MI	1985	2	4	1	7942	378	37053	33384	31652	17695	368	5499	94023	724	7539	72075	327677	192.6	661.9	470.0	59202	537	413
MN	1985	5	4	2	8890	431	40010	37321	38233	6339	298	1896	22568	1039	6058	38687	92263	142.9	601.8	383.1	18449	18	86
MO	1985	6	4	2	5076	1411	98572	106837	102894	13868	332	2301	56640	1175	8640	45081	191954	163.4	657.7	312.5	46122	90	99
MS	1985	3	2	3	2467	2215	32432	27805	29060	6122	0	1373	102241	327	43516	26426	497316	251.1	863.9	278.7	10015	37	4801
MT	1985	8	4	2	7741	388	83119	77579	77997	1828	5	2204	66343	291	55684	12070	432777	69.7	702.8	95.5	8465	16	58
NC	1985	3	4	1	3399	1500	32432	27805	29060	13708	2	6020	102241	327	43516	72409	497316	196.0	666.7	412.7	50845	219	34
ND	1985	5	4	0	8968	486	40010	37321	38233	3753	27	430	22568	1039	6058	6757	92263	87.0	419.6	451.1	19873	25	0
NE	1985	5	4	2	6300	1072	40010	37321	38233	4151	269	1622	22568	1039	6058	15657	92263	119.7	632.6	316.3	10232	24	103
NH	1985	0	2	0	7554	328	66293	67349	65667	1147	0	389	37151	372	16286	7098	201369	216.0	466.2	N/A	3691	1368	0
NJ	1985	1	1	2	5169	826	38062	31937	29776	10102	0	3277	46420	147	13763	53814	199589	199.9	568.9	407.3	8571	2921	5340
NM	1985	8	2	3	4425	1244	83119	77579	77997	5572	26	24	66343	291	55684	11765	432777	110.1	598.8	357.6	24280	41	2679

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
NV	1985	8	3	3	5674	508	83119	77579	77997	4062	64	682	66343	291	55684	11253	432777	166.1	465.9	399.4	11642	55	704
NY	1985	0	1	1	6149	693	66293	67349	65667	23355	112	9065	37151	372	16286	113128	201369	177.6	541.5	378.5	18811	25927	15995
OH	1985	2	4	1	5719	805	37053	33384	31652	26111	101	1012	94023	724	7539	124290	327677	172.4	688.8	472.6	108029	306	45
OK	1985	6	1	3	3659	1859	98572	106837	102894	11968	131	968	56640	1175	8640	35376	191954	172.1	482.3	296.4	20430	39	19690
OR	1985	6	4	0	4522	371	83119	77579	77997	1260	6	9310	66343	291	55684	35781	432777	215.8	648.0	N/A	592	0	0
PA	1985	1	3	0	5461	878	38062	31937	29776	26286	72	8163	46420	147	13763	100117	199589	163.2	553.0	432.4	N/A3	7682	140
RI	1985	0	0	1	5884	606	66293	67349	65667	243	26	2	37151	372	16286	5429	201369	N/A	530.0	342.0	0	346	201
SC	1985	3	4	1	2649	1966	32432	27805	29060	7129	1	7942	102241	327	43516	46204	497316	187.6	705.5	518.4	19814	97	32
SD	1985	5	4	0	7809	744	40010	37321	38233	862	63	1383	22568	1039	6058	5604	92263	117.7	763.8	443.4	2513	8	0
TN	1985	3	4	0	3406	1867	32432	27805	29060	12054	0	6221	102241	327	43516	67567	497316	159.3	481.9	350.1	50242	128	0
TX	1985	7	1	3	2238	2466	45026	35112	34618	58703	174	581	58703	174	581	212459	212459	154.2	535.2	319.9	98058	810	117942
UT	1985	8	4	1	5765	1047	83119	77579	77997	2778	41	210	66343	291	55684	13590	432777	130.3	642.2	422.8	14229	40	14
VA	1985	3	3	1	5633	1385	32432	27805	29060	6943	24	5660	102241	327	43516	57168	497316	187.7	571.5	395.2	17811	1008	144
VT	1985	0	2	1	7771	388	66293	67349	65667	223	21	770	37151	372	16286	4359	201369	221.9	817.1	491.4	39	9	5
WA	1985	8	4	1	5875	294	83119	77579	77997	2287	4	21214	66343	291	55684	78710	432777	153.1	706.1	378.9	7884	8	5
WI	1985	4	4	1	7324	479	19936	18989	18803	9547	95	2037	32994	361	11139	41576	140704	185.0	652.4	417.8	27663	108	69
WV	1985	2	4	0	4646	1031	37053	33384	31652	14979	0	101	94023	724	7539	20694	327677	166.6	758.7	483.8	78905	248	15
WY	1985	8	4	1	7326	285	83119	77579	77997	5590	14	242	66343	291	55684	10470	432777	96.2	731.1	447.1	34509	72	9
AL	1986	3	4	2	1702	2627	35943	29060	28036	11963	0	8093	103654	330	45725	51621	520242	202.9	505.8	350.0	51693	34	59
AR	1986	6	2	3	3155	2005	105570	102894	101849	6308	36	2931	57389	1154	9675	22650	188145	178.5	837.6	187.1	20676	10	2759
AZ	1986	8	2	3	1350	4162	81787	77997	76171	9108	3	4569	67936	312	60202	33742	432034	135.2	1208.3	279.9	23958	123	2672
CA	1986	8	0	3	2120	983	81787	77997	76171	27584	47	17397	67936	312	60202	184765	432034	N/A	862.6	341.8	0	2976	41050
CO	1986	8	4	3	6020	679	81787	77997	76171	5855	74	1335	67936	312	60202	26824	432034	119.5	899.6	370.0	25630	23	309
CT	1986	0	0	0	6151	677	69606	65667	64561	3493	326	3558	36527	729	17600	24504	207757	227.4	511.7	251.1	1985	11103	65
DE	1986	1	2	0	4937	1046	39335	29776	28730	1892	8	0	45050	397	16235	6859	207329	195.4	502.6	329.2	5582	2623	206
FL	1986	3	1	1	817	3375	35943	29060	28036	30447	297	4152	103654	330	45725	116282	520242	219.8	443.0	248.0	42632	27416	16168
GA	1986	3	4	2	2991	1667	35943	29060	28036	15501	5	4129	103654	330	45725	68386	520242	189.1	533.3	240.4	64883	270	421
IA	1986	5	4	2	6497	1036	39026	38233	37976	7461	387	727	22990	1006	6259	26282	93887	145.8	860.2	398.4	19993	42	87
ID	1986	8	0	0	5861	754	81787	77997	76171	50	8	1983	67936	312	60202	15798	432034	N/A	476.3	566.2	0	0	0
IL	1986	4	3	1	6342	867	21039	18803	18850	22794	642	9089	32239	741	11131	101654	144375	213.5	1283.3	561.8	61634	2036	483
IN	1986	2	4	1	5615	1014	37564	31652	32807	21199	242	94	95451	731	9950	59907	329048	161.6	960.5	548.6	76446	295	96
KS	1986	6	3	3	4791	1628	105570	102894	101849	8668	560	1240	57389	1154	9675	24103	188145	137.8	742.3	301.6	21362	84	1117
KY	1986	2	4	1	4514	1288	37564	31652	32807	16016	13	746	95451	731	9950	50473	329048	143.6	850.9	435.0	64012	127	43
LA	1986	6	1	3	1513	2655	105570	102894	101849	15975	107	2236	57389	1154	9675	59486	188145	176.1	685.7	224.4	15586	419	26202
MA	1986	0	1	0	5641	678	69606	65667	64561	7267	206	2519	36527	729	17600	40023	207757	194.3	457.3	284.3	9755	20665	1311
MD	1986	1	2	0	4707	1137	39335	29776	28730	7779	307	2360	45050	397	16235	41935	207329	176.0	600.8	328.6	20195	2653	142
ME	1986	0	0	0	7378	268	69606	65667	64561	1104	44	1243	36527	729	17600	10177	207757	N/A	483.5	N/A	0	2615	0
MI	1986	2	3	1	7942	378	37564	31652	32807	17180	363	6601	95451	731	9950	74142	329048	186.5	700.4	446.0	61613	799	788
MN	1986	5	4	2	8890	431	39026	38233	37976	6322	278	1895	22990	1006	6259	39148	93887	147.3	849.1	348.9	16267	22	124
MO	1986	6	4	1	5076	1411	105570	102894	101849	13974	320	2300	57389	1154	9675	47149	188145	150.1	567.1	326.6	44856	100	79
MS	1986	3	2	2	2467	2215	35943	29060	28036	5789	0	1308	103654	330	45725	26682	520242	246.6	419.4	272.0	9806	836	4251
MT	1986	8	4	2	7741	388	81787	77997	76171	2683	0	2220	67936	312	60202	12163	432034	67.3	913.3	149.4	11469	9	52
NC	1986	3	4	1	3399	1500	35943	29060	28036	13709	4	6122	103654	330	45725	76406	520242	188.6	853.6	344.1	53758	171	64
ND	1986	5	4	0	8968	488	39026	38233	37976	4141	25	490	22990	1006	6259	6667	93887	84.1	835.2	523.1	19835	20	0
NE	1986	5	4	2	6300	1072	39026	38233	37976	4173	256	1520	22990	1006	6259	16041	93887	110.9	511.8	393.4	9319	54	131

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
NH	1986	0	1	0	7554	328	69606	65667	64561	1143	0	241	36527	729	17600	7540	207757	219.6	393.2	N/A	2392	2621	0
NJ	1986	1	1	1	5169	826	39335	29776	28730	10089	8	4457	45050	397	16235	56027	207329	193.0	556.6	319.2	6288	4953	3061
NM	1986	8	3	3	4425	1244	81787	77997	76171	5491	26	25	67936	312	60202	11970	432034	112.8	607.1	379.9	21505	38	1892
NV	1986	8	3	2	5674	508	81787	77997	76171	4039	63	1444	67936	312	60202	11589	432034	137.3	580.5	364.5	14490	226	558
NY	1986	0	0	1	6149	693	69606	65667	64561	23091	107	9106	36527	729	17600	115400	207757	171.7	537.6	293.9	15349	31911	12471
OH	1986	2	4	1	5719	805	37584	31652	32807	26079	113	2334	95451	731	9950	123937	329048	167.3	953.0	517.2	100719	275	37
OK	1986	6	1	3	3659	1859	105570	102894	101849	12464	131	968	57389	1154	9675	34757	188145	162.9	541.7	322.4	18696	35	19391
OR	1986	8	0	0	4522	371	81787	77997	76171	1260	6	9313	67936	312	60202	35318	432034	N/A	1209.2	N/A	0	0	0
PA	1986	1	3	0	5461	678	39335	29776	28730	25290	74	9418	45050	397	16235	102508	207329	156.3	523.9	514.7	97730	8522	61
RI	1986	0	0	0	5884	606	69606	65667	64561	243	26	2	36527	729	17600	5657	207757	N/A	521.8	291.7	0	724	0
SC	1986	3	4	2	2649	1986	35943	29060	28036	7177	1	9147	103654	330	45725	49338	520242	186.8	1104.3	332.9	19504	67	133
SD	1986	5	4	1	7809	744	39026	38233	37976	893	60	1627	22990	1006	6259	5749	93887	125.5	887.4	421.9	2095	7	1
TN	1986	3	4	0	3406	1867	35943	29060	28036	12124	0	6142	103654	330	45725	68244	520242	147.7	724.4	367.2	51108	126	0
TX	1986	7	1	3	2238	2466	47123	34618	33877	59457	170	597	59457	170	597	212944	212944	157.3	814.5	263.7	100855	410	109305
UT	1986	8	4	0	5765	1047	81787	77997	76171	4005	63	210	67936	312	60202	13492	432034	137.2	808.3	912.9	15155	74	6
VA	1986	3	2	0	5633	1385	35943	29060	28036	6944	23	6632	103654	330	45725	63283	520242	178.3	602.4	588.7	18132	3176	73
VT	1986	0	1	0	7771	388	69606	65667	64561	186	20	931	36527	729	17600	4456	207757	143.9	1143.2	836.5	17	15	0
WA	1986	8	4	1	5875	294	81787	77997	76171	2271	4	21464	67936	312	60202	75769	432034	158.7	783.8	391.7	5058	8	5
WI	1986	4	4	1	7324	479	21039	18803	18850	9445	99	2042	32239	741	11131	42721	144375	176.8	784.2	434.3	29100	109	105
WV	1986	2	4	0	4846	1031	37564	31652	32807	14977	0	175	95451	731	9950	20589	329048	157.0	940.0	483.9	76876	256	27
WY	1986	8	4	1	7328	285	81787	77997	76171	5590	18	242	67936	312	60202	10604	432034	90.9	864.8	455.3	27562	59	12
AL	1987	3	4	2	1702	2627	37458	28036	30618	11900	0	8090	104353	406	47973	54410	543742	208.7	507.7	352.3	50549	33	58
AR	1987	6	2	3	3155	2005	109798	101849	105476	6235	35	2931	56886	1194	9673	24415	190912	177.7	855.1	200.4	19851	10	2649
AZ	1987	8	2	3	1350	4162	82967	76171	81182	9155	3	6574	68536	329	62171	36584	446834	147.7	910.3	302.3	25095	129	2799
CA	1987	8	0	3	2120	983	82967	76171	81182	27504	47	17836	68536	329	62171	192533	446834	N/A	643.8	384.6	0	5095	70284
CO	1987	6	4	3	6020	679	82967	76171	81182	5808	77	1346	68536	329	62171	27435	446834	120.6	748.1	364.8	26476	24	319
CT	1987	0	0	0	6151	677	72561	64561	68118	3493	326	3558	36230	740	18726	25679	216076	240.7	455.3	283.9	1856	10379	61
DE	1987	1	2	0	4937	1046	39339	28730	31399	1892	8	0	45304	423	17241	7013	217799	197.1	453.6	335.7	5648	2654	208
FL	1987	3	1	1	817	3375	37458	28036	30618	31214	295	4152	104353	406	47973	120948	543742	215.7	411.8	281.6	45381	29184	17210
GA	1987	3	4	2	2991	1667	37458	28036	30618	15501	5	5345	104353	406	47973	71771	543742	191.2	591.8	327.9	66715	278	433
IA	1987	5	4	2	6497	1036	42651	37976	41902	7461	366	727	23634	996	6341	26976	96751	140.7	738.4	366.3	21915	46	95
ID	1987	8	0	0	5861	754	82967	76171	81182	50	7	1991	68536	329	62171	16056	446834	N/A	661.1	N/A	0	0	0
IL	1987	4	3	1	6342	867	23162	18850	19335	22796	642	12523	32194	836	14514	104750	149613	207.3	903.7	528.1	57263	1892	449
IN	1987	2	4	1	5615	1014	40526	32807	35775	21192	242	94	94169	724	10065	62465	341810	161.9	888.4	472.2	77672	300	98
KS	1987	6	3	3	4791	1628	109798	101849	105476	8382	565	1238	56886	1194	9673	24456	190912	138.1	616.7	307.4	23046	91	1205
KY	1987	2	4	1	4514	1288	40526	32807	35775	15848	13	746	94169	724	10065	50840	341810	141.8	646.7	400.7	64335	128	43
LA	1987	6	1	3	1513	2655	109798	101849	105476	15858	134	2236	56886	1194	9673	58808	190912	174.0	784.8	238.1	14396	387	24202
MA	1987	0	1	0	5641	678	72561	64561	68118	7280	214	2519	36230	740	18726	42182	216076	196.7	424.4	312.5	10253	21721	1378
MD	1987	1	2	0	4707	1137	39339	28730	31399	7790	307	2360	45304	423	17241	44912	217799	177.2	522.0	362.2	21581	2835	152
ME	1987	0	0	0	7378	268	72561	64561	68118	1104	44	1204	36230	740	18726	10718	216076	N/A	439.2	N/A	0	2601	0
MI	1987	2	3	1	7942	378	40526	32807	35775	17026	352	6716	94169	724	10065	76961	341810	186.8	587.4	423.6	71160	923	910
MN	1987	5	4	2	8890	431	42651	37976	41902	7103	265	1894	23634	996	6341	41614	96751	140.8	717.0	332.7	21934	30	167
MO	1987	6	4	1	5076	1411	109798	101849	105476	13926	331	2300	56886	1194	9673	48229	190912	151.4	612.1	363.0	47167	105	83
MS	1987	3	2	2	2467	2215	37458	28036	30618	5702	79	1373	104353	406	47973	27285	543742	222.1	507.0	279.1	9660	824	4188
MT	1987	8	4	2	7741	388	82967	76171	81182	2660	0	2207	68536	329	62171	12184	446834	64.2	818.0	186.9	11896	9	54

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
NC	1987	3	4	1	3399	1500	37458	28036	30618	13751	4	7073	104353	406	47973	81223	543742	189.8	750.6	385.2	44931	143	53
ND	1987	5	4	0	8968	488	42651	37976	41902	4141	25	517	23634	996	6341	6339	96751	81.2	789.9	569.9	20617	21	0
NE	1987	5	4	2	6300	1072	42651	37976	41902	4036	260	1520	23634	996	6341	16131	96751	105.8	504.1	400.5	10132	59	142
NH	1987	0	1	0	7554	328	72561	64561	68118	1143	0	262	36230	740	18726	8042	216076	212.8	352.9	N/A	2457	2692	0
NJ	1987	1	1	1	5169	826	39339	28730	31399	10089	34	4547	45304	423	17241	58736	217799	193.1	520.2	359.4	7447	5866	3625
NM	1987	8	3	3	4425	1244	82967	76171	81182	5468	19	25	68536	329	62171	12154	446834	119.1	664.6	354.3	23327	41	2052
NV	1987	8	3	2	5674	508	82967	76171	81182	4039	62	729	68536	329	62171	12682	446834	149.2	499.4	362.8	14151	221	545
NY	1987	0	0	1	6149	693	72561	64561	68118	22797	107	10268	36230	740	18726	118891	216076	169.7	486.5	325.4	17258	35879	14022
OH	1987	2	4	1	5719	805	40526	32807	35775	25126	117	2334	94169	724	10065	130502	341810	167.9	749.3	508.1	111608	277	37
OK	1987	6	1	3	3659	1859	109798	101849	105476	12485	129	968	56886	1194	9673	35004	190912	161.0	395.9	366.3	19514	37	20239
OR	1987	8	0	0	4522	371	82967	76171	81182	1272	6	9089	68536	329	62171	36745	446834	N/A	N/A	N/A	0	0	0
PA	1987	1	3	0	5461	878	39339	28730	31399	25533	74	10334	45304	423	17241	107138	217799	159.4	472.7	486.2	100429	8757	63
RI	1987	0	0	0	5884	606	72561	64561	68118	243	29	2	36230	740	18726	5934	216076	N/A	454.4	285.9	0	837	0
SC	1987	3	4	2	2649	1966	37458	28036	30618	7177	1	9147	104353	406	47973	51966	543742	188.9	950.0	357.3	22727	78	155
SD	1987	5	4	1	7809	744	42651	37976	41902	893	60	1683	23634	996	6341	5691	96751	129.6	809.6	391.7	908	3	0
TN	1987	3	4	0	3406	1867	37458	28036	30618	12124	0	6155	104353	406	47973	69461	543742	149.5	673.2	N/A	50729	125	0
TX	1987	7	1	3	2238	2468	47723	33877	34472	59253	176	599	59253	176	599	211769	211769	159.8	734.6	289.0	100803	410	109249
UT	1987	8	4	0	5765	1047	82967	76171	81182	4777	86	223	68536	329	62171	13920	446834	134.5	739.7	760.1	25356	124	10
VA	1987	3	2	0	5633	1385	37458	28036	30618	6984	22	6638	104353	406	47973	66678	543742	173.4	539.6	493.5	20138	3527	81
VT	1987	0	1	0	7771	388	72561	64561	68118	170	20	913	36230	740	18726	4630	216076	179.6	949.0	N/A	92	81	0
WA	1987	8	4	1	5875	294	82967	76171	81182	2213	4	21909	68536	329	62171	75901	446834	156.7	758.5	389.9	8507	13	8
WI	1987	4	4	1	7324	479	23162	18850	19335	9398	196	1991	32194	838	14514	44863	149613	173.1	711.6	440.9	31172	117	112
WV	1987	2	4	0	4646	1031	40526	32807	35775	14977	0	175	94169	724	10065	21042	341810	158.1	867.4	531.2	77771	259	27
WY	1987	8	4	1	7326	285	82967	76171	81182	5590	18	242	68536	329	62171	10640	446834	90.9	768.2	503.6	36509	78	16
AL	1988	3	4	2	1702	2627	41139	30618	30361	11821	0	8090	104579	1306	47972	56739	567097	210.5	570.9	323.4	48835	107	236
AR	1988	6	2	3	3155	2005	115168	105476	108649	6766	35	2963	58069	1177	9705	25505	197036	173.1	975.5	197.9	19873	145	2065
AZ	1988	8	3	3	1350	4162	90551	81182	88523	9163	4	6756	68740	320	62399	38717	469665	157.8	726.0	301.3	28391	119	2341
CA	1988	8	0	2	2120	983	90551	81182	88523	27499	47	18397	68740	320	62399	200404	469665	N/A	505.4	400.0	0	7503	54010
CO	1988	8	3	3	6020	679	90551	81182	88523	5808	80	1375	68740	320	62399	28782	469665	119.2	688.7	326.1	27801	39	647
CT	1988	0	0	0	6151	677	79149	68118	68977	3512	345	3558	36234	774	18738	26897	228095	249.8	454.5	296.8	2094	11356	111
DE	1988	1	1	1	4937	1046	40843	31399	34628	1892	7	0	45291	395	17147	7527	230440	194.8	459.9	313.2	5788	2848	317
FL	1988	3	1	1	817	3375	41139	30618	30361	30699	1196	4152	104579	1306	47972	128570	567097	206.8	430.6	295.7	57516	25390	14744
GA	1988	3	4	1	2991	1667	41139	30618	30361	16392	5	5344	104579	1306	47972	74291	567097	189.5	721.0	400.4	64833	260	121
IA	1988	5	4	2	6497	1036	45245	41902	42951	7391	373	727	23576	978	6358	28767	104474	132.3	707.2	295.9	22613	49	404
ID	1988	8	0	0	5861	754	90551	81182	88523	50	7	2031	68740	320	62399	17073	469665	N/A	923.2	N/A	0	0	0
IL	1988	4	3	1	6342	867	24899	19335	20162	22471	643	13748	31581	744	15778	109750	157468	196.3	638.0	441.5	52994	697	435
IN	1988	2	4	1	5615	1014	43110	35775	36363	21193	242	94	94292	729	10018	66112	359417	158.8	924.3	340.9	82813	383	317
KS	1988	6	3	3	4791	1628	115168	105476	108649	8937	566	1238	58069	1177	9705	25795	197036	135.4	567.2	286.7	23089	147	1489
KY	1988	2	4	1	4514	1288	43110	35775	36363	15841	14	746	94292	729	10018	54121	359417	137.0	523.2	324.9	73847	126	40
LA	1988	6	1	3	1513	2655	115168	105476	108649	15869	111	2236	58069	1177	9705	59121	197036	168.1	779.8	232.6	18431	272	24288
MA	1988	0	1	0	5641	678	79149	68118	68977	7265	221	2519	36234	774	18738	44675	228095	195.0	443.0	317.4	11687	19908	1802
MD	1988	1	2	1	4707	1137	40843	31399	34628	7790	306	2323	45291	395	17147	47561	230440	174.8	507.2	368.9	23316	3547	402
ME	1988	0	0	0	7378	268	79149	68118	68977	1104	44	1218	36234	774	18738	11265	228095	N/A	448.4	N/A	0	2944	0
MI	1988	2	3	1	7942	378	43110	35775	36363	17127	356	6669	94292	729	10018	82541	359417	183.2	546.8	359.5	68577	1414	589
MN	1988	5	3	2	8890	431	45245	41902	42951	7199	262	1900	23576	978	6358	45639	104474	130.9	673.1	284.0	24803	142	410

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
MO	1988	6	4	1	5076	1411	115168	105476	108649	14012	329	2300	58069	1177	9705	50363	197036	149.7	730.2	372.8	49051	131	112
MS	1988	3	3	1	2467	2215	41139	30618	30361	5702	79	1373	104579	1306	47972	28276	567097	191.6	654.7	262.5	12051	659	280
MT	1988	8	4	2	7741	388	90551	81182	88523	2659	0	2277	68740	320	62399	12624	469665	59.6	822.6	213.9	16462	30	37
NC	1988	3	4	1	3399	1500	41139	30618	30361	13810	4	7073	104579	1306	47972	83858	567097	187.1	739.5	398.5	46090	225	55
ND	1988	5	4	0	8968	488	45245	41902	42951	4141	25	517	23576	978	6358	6649	104474	76.3	840.4	552.7	25450	18	0
NE	1988	5	4	2	6300	1072	45245	41902	42951	3952	258	1520	23576	978	6358	17192	104474	98.2	557.3	372.8	12225	69	163
NH	1988	0	1	0	7554	328	79149	68118	68977	1143	0	262	36234	774	18738	8510	228095	201.2	355.7	294.1	3197	2828	5
NJ	1988	1	1	1	5169	826	40843	31399	34628	10076	8	4547	45291	395	17147	62483	230440	189.2	546.9	373.9	7319	5097	4276
NM	1988	8	3	3	4425	1244	90551	81182	88523	5526	18	55	68740	320	62399	12703	469665	123.3	801.5	292.6	24245	45	1979
NV	1988	8	3	2	5674	508	90551	81182	88523	4039	62	892	68740	320	62399	13461	469665	158.6	479.6	369.7	16764	542	899
NY	1988	0	0	1	6149	693	79149	68118	68977	22797	115	10258	36234	774	18738	125675	228095	163.9	494.8	332.9	22761	39865	14012
OH	1988	2	4	1	5719	805	43110	35775	36363	25143	117	2334	94292	729	10018	134272	359417	164.9	638.6	452.0	114564	415	63
OK	1988	6	1	3	3659	1859	115168	105476	108649	12485	136	968	58069	1177	9705	36252	197036	155.6	299.6	384.6	24273	29	17638
OR	1988	8	0	0	4522	371	90551	81182	88523	1272	6	9089	68740	320	62399	38187	469665	N/A	N/A	N/A	0	0	0
PA	1988	1	3	0	5461	878	40843	31399	34628	25533	74	10277	45291	395	17147	112869	230440	159.3	479.2	409.5	106239	7915	211
RI	1988	0	0	0	5884	606	79149	68118	68977	243	29	2	36234	774	18738	6220	228095	N/A	442.7	253.5	0	749	15
SC	1988	3	4	2	2649	1966	41139	30618	30361	7117	1	9147	104579	1306	47972	52733	567097	187.1	912.2	353.6	23485	96	226
SD	1988	5	4	1	7809	744	45245	41902	42951	893	60	1694	23576	978	6358	6227	104474	131.2	830.4	321.4	2605	15	11
TN	1988	3	4	0	3406	1867	41139	30618	30361	12054	0	6155	104579	1306	47972	72259	567097	148.2	703.7	344.5	51122	187	16
TX	1988	7	1	3	2238	2466	49356	34472	35649	60729	175	1961	60729	175	1961	219435	219435	159.1	744.3	292.6	112931	743	102442
UT	1988	8	4	0	5765	1047	90551	81182	88523	4921	74	226	68740	320	62399	15064	469665	128.8	761.2	513.9	28806	59	5
VA	1988	3	2	0	5633	1385	41139	30618	30361	6984	21	6638	104579	1306	47972	70371	567097	164.6	542.7	338.2	21413	2838	102
VT	1988	0	0	0	7771	388	79149	68118	68977	170	20	921	36234	774	18738	4853	228095	N/A	871.8	N/A	0	26	0
WA	1988	8	4	3	5875	294	90551	81182	88523	2213	4	21059	68740	320	62399	81555	469665	151.4	824.9	352.9	8670	8	153
WI	1988	4	4	2	7324	479	24899	19335	20162	9110	101	2030	31581	744	15778	47718	157468	165.6	725.8	409.1	31867	97	180
WV	1988	2	4	0	4646	1031	43110	35775	36363	14988	0	175	94292	729	10018	22371	359417	155.9	900.4	545.1	80747	260	10
WY	1988	8	4	1	7326	285	90551	81182	88523	5590	18	242	68740	320	62399	11095	469665	89.1	765.5	514.7	38279	62	18
AL	1989	3	4	2	1702	2627	39460	30361	33770	12457		0 609	105475	1708	49270	55822	585579	209.6	655.2	284.6	52601	128	185
AR	1989	6	2	3	3155	2005	117051	108649	121995	6791	37	3005	57974	1210	9747	26198	200227	173.3	721.6	220.1	18604	144	2723
AZ	1989	8	2	3	1350	4162	90657	88523	84768	9213	4	6895	68368	313	62587	40431	482183	156.9	772.7	290.8	32364	194	4840
CA	1989	8	0	2	2120	983	90657	88523	84768	27341	45	18487	68368	313	62587	203432	482183	N/A	483.0	394.4	0	9327	51734
CO	1989	8	3	3	6020	679	90657	88523	84768	5585	60	1039	68368	313	62587	29406	482183	115.1	738.2	310.4	29406	30	627
CT	1989	0	0	0	6151	677	75442	68977	73080	3491	382	3558	36495	814	18760	27343	233319	231.5	459.8	336.1	2095	11575	336
DE	1989	1	1	1	4937	1046	40402	34628	38388	2122	9	0	45631	402	18239	8004	234802	199.2	445.9	333.1	5066	2566	826
FL	1989	3	1	1	817	3375	39460	30361	33770	30793	1265	4153	105475	1708	49270	136160	585579	206.8	439.9	323.5	59418	26287	17418
GA	1989	3	4	1	2991	1667	39460	30361	33770	16150	339	6563	105475	1708	49270	76737	585579	192.1	816.3	420.2	63405	157	50
IA	1989	5	4	2	6497	1036	45031	42951	42588	7391	373	727	23377	973	6362	28641	104670	121.8	685.0	333.7	24089	43	163
ID	1989	8	0	0	5861	754	90657	88523	84768	50	5	2008	68368	313	62587	17705	482183	N/A	720.4	N/A	0	2	0
IL	1989	4	4	2	6342	667	24336	20162	21360	22405	719	13746	31265	822	15776	108936	156900	198.2	535.3	435.9	51124	339	508
IN	1989	2	4	1	5615	1014	41614	36363	38161	22651	158	92	95793	648	9942	67259	372655	149.9	672.9	339.6	87330	409	374
KS	1989	6	3	3	4791	1628	117051	108649	121995	8978	568	1238	57974	1210	9747	25807	200227	131.9	630.7	262.2	22907	109	1486
KY	1989	2	4	1	4514	1288	41614	36363	38161	16016	14	746	95793	648	9942	58364	372655	128.9	455.6	305.7	66214	112	29
LA	1989	6	1	3	1513	2655	117051	108649	121995	15664	112	2236	57974	1210	9747	61330	200227	169.8	644.6	230.7	18081	298	21900
MA	1989	0	1	1	5641	678	75442	68977	73080	7322	224	2511	36495	814	18760	45627	233319	162.7	441.8	322.2	12088	19139	4690
MD	1989	1	2	1	4707	1137	40402	34628	38388	7789	320	2323	45631	402	18239	49188	234802	176.8	460.3	355.2	23627	6044	1577

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
ME	1989	0	0	0	7378	268	75442	68977	73080	1104	44	1248	36495	814	18760	11446	233319	N/A	447.9	N/A	0	3002	0
MI	1989	2	3	1	7942	378	41614	36363	38161	17073	359	6669	95793	648	9942	82737	372655	179.5	601.3	262.9	67618	1407	432
MN	1989	5	3	1	8890	431	45031	42951	42588	7039	259	1892	23377	973	6362	45568	104670	130.3	588.2	361.8	28009	407	306
MO	1989	6	4	1	5076	1411	117051	108649	121995	14055	357	2300	57974	1210	9747	50561	200227	142.9	590.2	321.0	49748	114	82
MS	1989	3	2	2	2467	2215	39460	30361	33770	5734	79	1373	105475	1708	49270	29675	585579	186.2	464.4	251.8	8724	738	3767
MT	1989	6	4	2	7741	388	90657	88523	84768	2859		0 226	68368	313	62587	12790	482183	62.7	615.4	175.8	16129	30	43
NC	1989	3	4	1	3399	1500	39460	30361	33770	13824	4	7073	105475	1708	49270	86169	585579	189.2	703.8	376.1	50524	256	115
ND	1989	5	4	0	8968	488	45031	42951	42588	4135	25	517	23377	973	6362	6848	104670	76.5	760.3	511.8	23774	38	0
NE	1989	5	3	2	6300	1072	45031	42951	42588	3919	258	1521	23377	973	6362	17330	104670	91.3	490.5	327.5	11592	57	215
NH	1989	0	1	0	7554	328	75442	68977	73080	1143		0 262	36495	814	18760	8744	233319	186.6	368.5	318.9	3065	2970	1
NJ	1989	1	1	1	5169	826	40402	34628	38388	10216	8	4547	45631	402	18239	63725	234802	189.0	508.8	385.9	8376	5351	4611
NM	1989	6	3	3	4425	1244	90657	88523	84768	5492	15	55	68368	313	62587	13119	482183	125.3	1135.8	282.5	25446	41	2630
NV	1989	8	2	2	5674	508	90657	88523	84768	4039	62	984	68368	313	62587	14864	482183	159.9	436.8	295.2	15382	377	2063
NY	1989	0	1	1	6149	693	75442	68977	73080	23022	115	10264	36495	814	18760	128828	233319	169.8	500.3	338.1	25224	41323	17141
OH	1989	2	4	1	5719	805	41614	36363	38161	25074	117	2334	95793	648	9942	141460	372655	160.4	539.2	397.5	117619	442	64
OK	1989	6	1	3	3659	1859	117051	108649	121995	12486	136	968	57974	1210	9747	36331	200227	146.4	484.5	378.6	24122	29	17905
OR	1989	8	0	3	4522	371	90657	88523	84768	1272	6	9329	68368	313	62587	39432	482183	190.4	737.7	223.5	440	35	1347
PA	1989	1	3	0	5461	876	40402	34628	38388	25504	65	11369	45631	402	18239	113885	234802	159.6	488.9	398.0	105913	8109	312
RI	1989	0	0	1	5884	606	75442	68977	73080	243	29	2	36495	814	18760	6359	233319	N/A	442.3	320.6	0	333	163
SC	1989	3	4	2	2649	1966	39460	30361	33770	7161	1	9147	105475	1708	49270	53612	585579	183.6	881.4	356.7	23800	134	255
SD	1989	5	4	1	7809	744	45031	42951	42588	893	58	1705	23377	973	6362	6283	104670	129.6	669.9	343.3	2387	9	6
TN	1989	3	4	0	3406	1867	39460	30361	33770	12054		0 615	105475	1708	49270	73790	585579	151.3	542.3	655.2	46324	178	1
TX	1989	7	1	3	2238	2466	49439	35649	42268	61268	168	3329	61268	168	3329	224273	224273	153.2	681.4	288.6	118566	2245	99861
UT	1989	8	4	1	5765	1047	90657	88523	84768	4914	74	222	68368	313	62587	15460	482183	123.5	677.8	282.3	29676	48	37
VA	1989	3	2	0	5633	1385	39460	30361	33770	7302	20	6713	105475	1708	49270	73614	585579	163.7	467.6	307.8	24059	4237	399
VT	1989	0	0	1	7771	388	75442	68977	73080	170	20	915	36495	814	18760	4972	233319	N/A	771.2	318.9	0	18	4
WA	1989	8	3	2	5875	294	90657	88523	84768	2213	4	21041	68368	313	62587	84042	482183	154.5	552.9	288.6	8519	85	729
WI	1989	4	4	2	7324	479	24336	20162	21360	8860	103	2030	31265	822	15776	47964	156900	160.7	639.2	379.9	31796	70	147
WV	1989	2	4	0	4646	1031	41614	36363	38161	14977		0 101	95793	648	9942	22835	372655	156.3	781.9	609.3	82105	264	16
WY	1989	6	4	1	7326	285	90657	88523	84768	5590	18	258	68368	313	62587	11502	482183	92.1	753.8	462.9	36003	59	9
AL	1990	3	4	2	1702	2627	40740	33770	32461	13163	0	6090	106215	2211	49270	59285	600017	188.7	620.7	278.4	53301	92	42
AR	1990	6	2	3	3155	2005	121149	121995	117231	6791	37	3005	57952	1230	9747	26988	205814	166.6	727.6	196.0	19161	74	2839
AZ	1990	8	3	3	1350	4162	97389	84768	94252	9586	4	6895	68741	315	61631	41220	496245	154.8	840.3	289.9	31636	116	2272
CA	1990	8	0	3	2120	983	97389	84768	94252	27341	45	17524	68741	315	61631	210172	496245	N/A	464.4	369.5	0	4385	45222
CO	1990	8	4	3	6020	679	97389	84768	94252	5585	80	1039	68741	315	61631	30129	496245	117.5	616.5	278.9	29603	25	409
CT	1990	0	0	0	6151	677	79258	73080	67097	3491	382	3558	36495	813	20044	27155	233323	224.1	391.1	350.6	2351	8633	472
DE	1990	1	2	1	4937	1046	42737	38388	35815	2122	9	0	45631	577	18239	8235	235744	194.6	422.4	327.8	4904	1436	759
FL	1990	3	1	1	817	3375	40740	33770	32461	30756	1265	4153	106215	2211	49270	139968	600017	203.5	400.1	327.7	59073	25170	17427
GA	1990	3	4	1	2991	1667	40740	33770	32461	16150	339	6563	106215	2211	49270	79203	600017	193.6	602.0	396.8	67565	165	152
IA	1990	5	4	2	6497	1036	44116	42588	40545	7390	479	727	23376	1073	6362	29250	106960	119.3	614.3	348.1	24880	51	231
ID	1990	8	0	0	5861	754	97389	84768	94252	50	5	2008	68741	315	61631	17893	496245	N/A	825.1	N/A	0	1	0
IL	1990	4	3	2	6342	867	24994	21360	21113	22404	719	13746	31264	822	15776	110999	159782	197.6	482.8	316.8	53866	423	741
IN	1990	2	4	1	5615	1014	42613	38161	36551	22651	158	92	96438	645	9942	68283	375661	144.4	631.7	312.8	96013	674	611
KS	1990	6	3	3	4791	1628	121149	121995	117231	8956	570	1238	57952	1230	9747	26787	205814	122.9	490.6	229.3	23720	66	2196
KY	1990	2	4	1	4514	1288	42613	38161	36551	16584	14	746	96438	645	9942	60717	375661	130.7	642.7	350.4	70500	119	28

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
LA	1990	6	1	3	1513	2655	121149	121995	117231	15664	112	2236	57952	1230	9747	62829	205814	182.4	535.6	215.0	17800	130	26061
MA	1990	0	1	1	5641	678	79258	73080	67097	7322	223	2511	36495	813	20044	45399	233323	183.4	403.3	316.9	11273	14556	5280
MD	1990	1	2	1	4707	1137	42737	38388	35815	7789	404	2323	45631	577	18239	49522	235744	176.5	428.0	316.1	23299	3328	1320
ME	1990	0	0	0	7378	268	79258	73080	67097	1104	44	1273	36495	813	20044	11523	233323	N/A	372.6	N/A	0	2093	0
MI	1990	2	3	1	7942	378	42613	38161	36551	17073	358	6669	96438	645	9942	82066	375661	168.9	453.7	186.9	65296	689	665
MN	1990	5	3	1	8890	431	44116	42588	40545	7039	256	1892	23376	1073	6362	46808	106960	135.6	572.5	247.4	26004	441	326
MO	1990	6	4	2	5076	1411	121149	121995	117231	14055	376	2300	57952	1230	9747	51563	205814	142.4	563.8	213.3	48502	89	266
MS	1990	3	1	2	2467	2215	40740	33770	32461	5734	79	1373	106215	2211	49270	31633	600017	188.4	377.3	227.2	9446	793	5389
MT	1990	8	4	2	7741	388	97389	84768	94252	2659	0	2269	68741	315	61631	12866	496245	62.1	711.8	213.6	14903	27	41
NC	1990	3	4	1	3399	1500	40740	33770	32461	13824	2	7073	106215	2211	49270	87684	600017	187.0	632.6	356.1	46631	187	165
ND	1990	5	4	0	8968	488	44116	42588	40545	4135	25	517	23376	1073	6362	6920.9	106960	72.3	640.8	505.8	25093	21	0
NE	1990	5	3	3	6300	1072	44116	42588	40545	3919	256	1521	23376	1073	6362	17596	106960	88.7	584.1	464.0	12658	13	308
NH	1990	0	1	0	7554	328	79258	73080	67097	1143	0	1504	36495	813	20044	8647.6	233323	180.0	299.0	N/A	2959	2293	0
NJ	1990	1	1	2	5169	826	42737	38388	35815	10216	99	4547	45631	577	18239	63251	235744	200.1	471.7	357.7	7058	1832	3988
NM	1990	8	3	3	4425	1244	97389	84768	94252	5492	15	55	68741	315	61631	13437	496245	129.7	436.9	265.0	25827	34	2425
NV	1990	8	2	2	5674	508	97389	84768	94252	4039	62	984	68741	315	61631	16144	496245	165.2	444.2	255.2	15053	284	2217
NY	1990	0	1	1	6149	693	79258	73080	67097	23022	115	10276	36495	813	20044	129249	233323	168.8	483.0	339.9	24617	33404	21263
OH	1990	2	4	1	5719	805	42613	38161	36551	25153	117	2334	96438	645	9942	141486	375661	160.8	607.2	336.1	115014	301	91
OK	1990	6	1	3	3659	1859	121149	121995	117231	12486	136	968	57952	1230	9747	37646	205814	147.0	415.4	380.2	25189	49	17075
OR	1990	8	1	3	4522	371	97389	84768	94252	1272	6	9329	68741	315	61631	41044	496245	132.8	698.3	217.4	1298	27	811
PA	1990	1	3	0	5461	878	42737	38388	35815	25504	65	11369	45631	577	18239	114736	235744	162.4	469.8	398.7	101998	4014	183
RI	1990	0	0	2	5884	606	79258	73080	67097	243	29	2	36495	813	20044	6419	233323	N/A	480.2	276.5	0	158	434
SC	1990	3	3	3	2649	1966	40740	33770	32461	7161	1	9147	106215	2211	49270	54410	600017	189.9	661.4	256.9	22875	72	703
SD	1990	5	4	2	7809	744	44116	42588	40545	893	55	1705	23376	1073	6362	6384.7	106960	113.6	549.0	236.2	2473	8	12
TN	1990	3	4	1	3406	1867	40740	33770	32461	12054	0	6158	106215	2211	49270	75504	600017	143.3	574.5	271.1	50187	134	41
TX	1990	7	1	3	2238	2468	52541	42268	38949	61423	188	4544	61423	188	4544	231542	231542	149.9	690.9	270.7	118789	481	97280
UT	1990	8	4	2	5765	1047	97389	84768	94252	4914	76	222	68741	315	61631	15868	496245	104.4	733.2	249.2	31519	49	54
VA	1990	3	3	1	5633	1385	40740	33770	32461	7374	525	6713	106215	2211	49270	72329	600017	161.2	461.7	274.8	21000	1194	745
VT	1990	0	0	3	7771	388	79258	73080	67097	170	20	920	36495	813	20044	4930.6	233323	N/A	512.8	241.5	0	3	65
WA	1990	8	4	2	5875	294	97389	84768	94252	2213	4	21048	68741	315	61631	85553	496245	154.4	770.3	87.9	7352	14	16
WI	1990	4	4	2	7324	479	24994	21360	21113	8860	103	2030	31264	822	15776	48784	159782	148.3	582.7	346.1	32145	47	169
WV	1990	2	4	0	4646	1031	42613	38161	36551	14977	0	101	96438	645	9942	23108	375661	154.5	762.3	654.7	76636	274	19
WY	1990	8	4	1	7328	285	97389	84768	94252	5590	18	258	68741	315	61631	11920	496245	91.7	687.5	398.7	38681	46	7
AL	1991	3	4	2	1702	2627	41598	32461	33420	13273		0 809	104046	2912	50150	61748	619797	187.5	831.6	236.4	57905	104	410
AR	1991	6	2	3	3155	2005	124688	117231	119575	6814	37	3006	58125	1197	9776	28217	213557	170.3	1304.5	181.4	19574	64	2504
AZ	1991	8	3	3	1350	4162	92026	94252	86097	9515	4	6895	69347	284	61286	41820	502192	149.1	856.9	276.6	32306	89	2178
CA	1991	8	0	3	2120	983	92026	94252	86097	27316	45	17115	69347	284	61286	209560	502192	N/A	538.5	370.4	0	598	43929
CO	1991	8	4	3	6020	679	92026	94252	86097	5607	80	1034	69347	284	61286	30634	502192	131.1	696.3	287.1	28923	38	415
CT	1991	0	0	0	6151	677	81224	67097	71181	3491	383	3558	36422	794	20004	27152	232628	224.4	399.3	268.5	2118	7890	468
DE	1991	1	1	1	4937	1046	41870	35815	35448	2276	9	0	47074	400	18239	8507	239770	192.3	432.1	307.5	4598	1899	1106
FL	1991	3	1	1	817	3375	41598	32461	33420	29533	2492	4153	104046	2912	50150	144276	619797	205.7	376.6	281.5	61123	30116	18735
GA	1991	3	4	1	2991	1667	41598	32461	33420	14554	320	6393	104046	2912	50150	81191	619797	188.8	768.0	402.5	59985	108	61
IA	1991	5	4	2	6497	1036	46594	40545	41866	7649	376	727	23822	955	6363	30835	112133	118.9	726.3	325.0	25870	47	262
ID	1991	8	0	0	5861	754	92026	94252	86097	50	5	2009	69347	284	61286	18001	502192	N/A	625.6	N/A	0	0	0
IL	1991	4	3	2	6342	867	25498	21113	21432	22405	773	13746	31326	876	15776	116515	167478	202.6	484.6	266.9	53955	906	1072

State	Year	NERC Region	Coal Generation Code	Gas Penetration Code	Degree Days		Peak Load (MW)			State Generating Capacity (MW)			Region Generating Capacity (MW)			Electricity Demand (MWH)		Average State Fuel Prices (Constant Dollars/ MMBTu)			Electric Generation (MWH)		
					Heating	Cooling	Regional Summer	Current Year Winter	Prior Year Winter	Steam	IC	Hydro/ Nuclear	Steam	IC	Hydro/ Nuclear	State	Region	Coal	Oil	Gas	Coal	Oil	Gas
IN	1991	2	4	2	5615	1014	45937	36551	37983	22714	158	92	98204	645	9905	71361	387414	149.7	825.4	297.3	96527	354	920
KS	1991	6	2	3	4791	1628	124688	117231	119575	8988	579	1236	58125	1197	9776	28426	213557	129.6	670.7	237.1	23435	53	2959
KY	1991	2	4	1	4514	1288	45937	36551	37983	16584	14	746	98204	645	9905	62655	387414	129.2	773.6	360.7	71714	112	22
LA	1991	6	1	3	1513	2655	124688	117231	119575	15785	72	2236	58125	1197	9776	64189	213557	178.9	652.3	204.3	18912	45	24223
MA	1991	0	1	1	5641	678	81224	67097	71181	7365	204	2511	36422	794	20004	44761	232628	178.5	394.3	284.6	11861	15612	3679
MD	1991	1	2	1	4707	1137	41870	35815	35448	8986	318	2323	47074	400	18239	51118	239770	178.1	405.8	301.3	22623	3935	1214
ME	1991	0	0	0	7378	268	81224	67097	71181	1104	42	1276	36422	794	20004	11383	232628	N/A	386.4	N/A	0	1269	0
MI	1991	2	3	2	7942	378	45937	36551	37983	17088	356	6663	98204	645	9905	84632	387414	159.4	454.8	301.1	65138	554	998
MN	1991	5	3	1	8890	431	46594	40545	41866	7098	252	1893	23822	955	6363	49167	112133	128.2	633.6	224.7	24689	577	426
MO	1991	6	3	2	5076	1411	124688	117231	119575	13985	384	2300	58125	1197	9776	54434	213557	141.2	570.3	200.6	47908	119	1044
MS	1991	3	1	3	2467	2215	41598	32461	33420	5734	79	1373	104046	2912	50150	32500	619797	178.5	417.6	206.2	8750	370	5052
MT	1991	8	4	2	7741	388	92026	94252	86097	2659		0 227	69347	284	61286	13052	502192	64.5	662.5	377.6	16132	16	24
NC	1991	3	4	2	3399	1500	41598	32461	33420	13824		0 705	104046	2912	50150	90553	619797	188.8	750.5	368.7	46762	174	247
ND	1991	5	4	0	8968	488	46594	40545	41866	4135	25	517	23822	955	6363	7144	112133	74.6	611.5	553.5	25751	28	0
NE	1991	5	3	3	6300	1072	46594	40545	41866	3966	253	1521	23822	955	6363	18302	112133	84.1	645.2	250.8	13563	13	303
NH	1991	0	2	0	7554	328	81224	67097	71181	1143		0 145	36422	794	20004	8640	232628	197.1	318.7	N/A	3168	1561	0
NJ	1991	1	1	2	5169	826	41870	35815	35448	10438	8	4547	47074	400	18239	64637	239770	209.8	552.8	320.5	5237	1799	5342
NM	1991	8	2	3	4425	1244	92026	94252	86097	5432	15	55	69347	284	61286	13881	502192	137.3	584.2	224.0	22129	32	2866
NV	1991	8	2	2	5674	508	92026	94252	86097	4309	33	1031	69347	284	61286	16522	502192	150.3	576.4	250.2	15901	238	1957
NY	1991	0	1	1	6149	693	81224	67097	71181	22908	115	10278	36422	794	20004	129397	232628	169.4	464.7	344.6	24938	27754	20031
OH	1991	2	4	1	5719	805	45937	36551	37983	26841	117	2303	98204	645	9905	145153	387414	161.0	651.4	333.7	116813	369	235
OK	1991	6	1	3	3659	1859	124688	117231	119575	12553	125	996	58125	1197	9776	38291	213557	138.1	378.5	371.6	26028	19	16947
OR	1991	8	2	3	4522	371	92026	94252	86097	1272	6	9339	69347	284	61286	42418	502192	128.8	570.8	225.8	2814	10	1164
PA	1991	1	3	0	5461	878	41870	35815	35448	25374	65	11369	47074	400	18239	115508	239770	170.3	520.7	381.4	100359	3714	163
RI	1991	0	0	2	5884	606	81224	67097	71181	243	30	2	36422	794	20004	6401	232628	N/A	457.3	235.4	0	54	117
SC	1991	3	3	3	2649	1966	41598	32461	33420	7195	1	10212	104046	2912	50150	56892	619797	173.9	817.9	197.5	23166	83	984
SD	1991	5	4	2	7809	744	46594	40545	41866	974	49	1705	23822	955	6363	6685	112133	116.5	659.6	256.6	2727	8	9
TN	1991	3	4	0	3406	1867	41598	32461	33420	12054		0 615	104046	2912	50150	76965	619797	135.7	196.8	540.9	46671	160	17
TX	1991	7	1	3	2238	2466	51865	38949	38759	61447	169	4548	61447	169	4548	234514	234514	156.9	685.0	258.9	118085	219	97739
UT	1991	8	4	3	5765	1047	92026	94252	86097	4949	76	224	69347	284	61286	16562	502192	130.1	769.3	220.8	28884	48	436
VA	1991	3	2	1	5633	1385	41598	32461	33420	7679	20	6713	104046	2912	50150	75672	619797	157.8	476.3	211.8	21939	2036	1104
VT	1991	0	0	3	7771	388	81224	67097	71181	170	20	920	36422	794	20004	4894	232628	N/A	840.4	224.6	0	5	95
WA	1991	8	4	2	5875	294	92026	94252	86097	2343	4	21042	69347	284	61286	87963	502192	141.9	1050.1	393.2	7904	7	12
WI	1991	4	4	2	7324	479	25498	21113	21432	8921	103	2030	31326	876	15776	50963	167478	148.4	544.3	339.3	33489	62	180
WV	1991	2	4	0	4646	1031	45937	36551	37983	14977		0 101	98204	645	9905	23613	387414	159.9	918.2	472.4	70649	232	17
WY	1991	8	4	1	7326	285	92026	94252	86097	5895	15	266	69347	284	61286	11779	502192	90.2	869.8	434.7	37863	61	8

APPENDIX B

PARAMETER VALUES BY STATE

State	Values of LA(i,s,1990)			Generation (MWH)		
	Coal	Oil	Gas	Coal	Oil	Gas
AL	3.87071	-2.17748	-1.24195	53.301	0.092	0.420
AR	2.85575	-2.98516	1.29211	19.161	0.074	2.839
AZ	3.46156	-2.80438	1.24252	31.636	0.116	2.272
CA	-6.45196	0.58152	3.39194	0.000	4.385	45.222
CO	3.55208	-3.72985	-0.89531	29.603	0.025	0.409
CT	0.52289	2.45657	-1.10148	2.351	8.633	0.472
DE	2.13256	0.22882	-0.54975	4.904	1.436	0.759
FL	3.49764	3.32720	2.68725	59.073	25.170	17.427
GA	3.94867	-1.58771	-1.64948	67.565	0.165	0.152
IA	3.22286	-3.23513	-1.37668	24.880	0.051	0.231
ID	-8.49393	-7.82525	-8.56699	0.000	0.001	0.000
IL	4.18465	-0.59534	0.19778	53.866	0.423	0.741
IN	4.63475	-0.95554	-1.77829	96.013	0.674	0.611
KS	3.56278	-2.57967	0.34198	23.720	0.066	2.196
KY	4.44850	-1.53817	-2.57245	70.500	0.119	0.028
LA	2.99671	-2.58621	3.29284	17.800	0.130	26.061
MA	2.35928	2.30246	1.83044	11.273	14.556	5.280
MD	2.93491	1.41819	1.13326	23.299	3.328	1.320
ME	-7.91978	0.77622	-7.88515	0.000	2.093	0.000
MI	4.21590	0.37741	0.04342	65.296	0.689	0.665
MN	3.18760	-0.80700	-0.72991	26.004	0.441	0.326
MO	4.13170	-2.09879	-1.11215	48.502	0.089	0.266
MS	2.55816	-0.15064	2.33987	9.446	0.793	5.389
MT	2.36010	-3.96360	-3.21638	14.903	0.027	0.041
NC	3.83541	-1.76818	-2.32007	46.631	0.187	0.165
ND	2.99141	-3.41060	-7.37399	25.093	0.021	0.000
NE	2.41346	-3.88509	-0.88716	12.658	0.013	0.308
NH	0.20916	1.16898	-7.90688	2.959	2.293	0.000
NJ	2.60969	1.32574	2.30809	7.058	1.832	3.988
NM	3.56992	-2.49997	0.97247	25.827	0.034	2.425
NV	2.36271	-0.32849	0.49084	15.053	0.284	2.217
NY	3.40709	2.96783	2.43723	24.617	33.404	21.263
OH	4.57993	-1.23849	-2.05815	115.014	0.301	0.091
OK	3.05377	-2.69288	2.96180	25.189	0.049	17.075
OR	0.84985	-4.08411	1.03952	1.298	0.027	0.811
PA	4.46079	2.34483	-1.28661	101.996	4.014	0.183
RI	-8.67024	-1.46098	-0.51279	0.000	0.158	0.434
SC	3.08652	-2.76591	0.09097	22.875	0.072	0.703
SD	0.70401	-4.27164	-5.05253	2.473	0.008	0.012
TN	3.85467	-2.00808	-2.71180	50.187	0.134	0.041
TX	4.86511	-0.21763	4.75948	118.789	0.481	97.280
UT	3.29486	-3.10711	-1.34903	31.519	0.049	0.054
VA	3.40775	-0.49862	-0.51786	21.000	1.194	0.745
VT	-8.17165	-4.48263	-2.74107	0.000	0.003	0.065
WA	2.14878	-3.90558	-2.10883	7.352	0.014	0.016
WI	3.61549	-2.44085	-1.21678	32.145	0.047	0.169
WV	4.48520	-1.36787	-3.85139	76.636	0.274	0.019
WY	3.42201	-2.93168	-3.72575	38.681	0.046	0.007

Where : LA(i,s,1990) = Neural network estimate/forecast of the natural log of generation for fuel i in State s during 1990

APPENDIX C

CROSSWALK FILES: BLS AND SCC MATCHES

CROSSWALK TABLE FOR FILENAME: COMM_FUEL.SCC		
Stationary Source Fuel Combustion: Commercial		
	Fuel Type	SCC
Point Sources		
External Combustion Boilers	Anthracite Coal	10300101
External Combustion Boilers	Anthracite Coal	10300102
External Combustion Boilers	Anthracite Coal	10300103
External Combustion Boilers	Bituminous/Subbituminous Coal	10300203
External Combustion Boilers	Bituminous/Subbituminous Coal	10300205
External Combustion Boilers	Bituminous/Subbituminous Coal	10300206
External Combustion Boilers	Bituminous/Subbituminous Coal	10300207
External Combustion Boilers	Bituminous/Subbituminous Coal	10300208
External Combustion Boilers	Bituminous/Subbituminous Coal	10300209
External Combustion Boilers	Bituminous/Subbituminous Coal	10300211
External Combustion Boilers	Bituminous/Subbituminous Coal	10300214
External Combustion Boilers	Bituminous/Subbituminous Coal	10300216
External Combustion Boilers	Bituminous/Subbituminous Coal	10300217
External Combustion Boilers	Bituminous/Subbituminous Coal	10300221
External Combustion Boilers	Bituminous/Subbituminous Coal	10300222
External Combustion Boilers	Bituminous/Subbituminous Coal	10300223
External Combustion Boilers	Bituminous/Subbituminous Coal	10300224
External Combustion Boilers	Bituminous/Subbituminous Coal	10300225
External Combustion Boilers	Bituminous/Subbituminous Coal	10300226
External Combustion Boilers	Lignite Coal	10300305
External Combustion Boilers	Lignite Coal	10300306
External Combustion Boilers	Lignite Coal	10300307
External Combustion Boilers	Lignite Coal	10300309
External Combustion Boilers	Residual Oil	10300401
External Combustion Boilers	Residual Oil	10300402
External Combustion Boilers	Residual Oil	10300403
External Combustion Boilers	Residual Oil	10300404
External Combustion Boilers	Distillate Oil	10300501
External Combustion Boilers	Distillate Oil	10300502
External Combustion Boilers	Distillate Oil	10300503
External Combustion Boilers	Distillate Oil	10300504
External Combustion Boilers	Natural Gas	10300601
External Combustion Boilers	Natural Gas	10300602
External Combustion Boilers	Natural Gas	10300603
External Combustion Boilers	LPG	10301001
External Combustion Boilers	LPG	10301002
External Combustion Boilers	LPG	10301003
External Combustion Boilers: Space Heating	Bituminous Coal	10500202
External Combustion Boilers: Space Heating	Distillate Oil	10500205
External Combustion Boilers: Space Heating	Natural Gas	10500206
External Combustion Boilers: Space Heating	LPG	10500210
External Combustion Boilers: Space Heating	Waste Oil	10500213
External Combustion Boilers: Space Heating	Waste Oil	10500214
Internal Combustion Engines	Distillate Oil	20300101
Internal Combustion Engines	Distillate Oil	20300102
Internal Combustion Engines	Natural Gas	20300201

CROSSWALK TABLE FOR FILENAME: COMM_FUEL.SCC		
Stationary Source Fuel Combustion: Commercial		
	Fuel Type	SCC
Point Sources		
Internal Combustion Engines	Natural Gas	20300202
Internal Combustion Engines	Natural Gas	20300203
Internal Combustion Engines	Natural Gas	20300204
Internal Combustion Engines	Gasoline	20300301
Internal Combustion Engines	Landfill Gas	20300801
Internal Combustion Engines	Landfill Gas	20300802
Internal Combustion Engines	LPG	20301001
Internal Combustion Engines	LPG	20301002
Area Sources		
Stationary Source Fuel Combustion	Anthracite Coal	2103001000
Stationary Source Fuel Combustion	Bituminous/Subbituminous Coal	2103002000
Stationary Source Fuel Combustion	Distillate Oil	2103004000
Stationary Source Fuel Combustion	Residual Oil	2103005000
Stationary Source Fuel Combustion	Natural Gas	2103006000
Stationary Source Fuel Combustion	Natural Gas	2103006001
Stationary Source Fuel Combustion	Natural Gas	2103006002
Stationary Source Fuel Combustion	LPG	2103007000
Stationary Source Fuel Combustion	LPG	2103007005
Stationary Source Fuel Combustion	LPG	2103007010
Stationary Source Fuel Combustion	Kerosene	2103011000
Stationary Source Fuel Combustion	Kerosene	2103011005

CROSSWALK TABLE FOR FILENAME: ELECTRIC.SCC		
Stationary Source Fuel Combustion: Electric Utilities		
	Fuel Type	SCC
Point Sources		
External Combustion Boilers	Anthracite Coal	10100101
External Combustion Boilers	Anthracite Coal	10100102
External Combustion Boilers	Bituminous/Subbituminous Coal	10100201
External Combustion Boilers	Bituminous/Subbituminous Coal	10100202
External Combustion Boilers	Bituminous/Subbituminous Coal	10100203
External Combustion Boilers	Bituminous/Subbituminous Coal	10100204
External Combustion Boilers	Bituminous/Subbituminous Coal	10100205
External Combustion Boilers	Bituminous/Subbituminous Coal	10100212
External Combustion Boilers	Bituminous/Subbituminous Coal	10100217
External Combustion Boilers	Bituminous/Subbituminous Coal	10100221
External Combustion Boilers	Bituminous/Subbituminous Coal	10100222
External Combustion Boilers	Bituminous/Subbituminous Coal	10100223
External Combustion Boilers	Bituminous/Subbituminous Coal	10100224
External Combustion Boilers	Bituminous/Subbituminous Coal	10100225
External Combustion Boilers	Bituminous/Subbituminous Coal	10100226
External Combustion Boilers	Lignite Coal	10100301
External Combustion Boilers	Lignite Coal	10100302
External Combustion Boilers	Lignite Coal	10100303
External Combustion Boilers	Lignite Coal	10100304
External Combustion Boilers	Lignite Coal	10100306
External Combustion Boilers	Residual Oil	10100401
External Combustion Boilers	Residual Oil	10100404
External Combustion Boilers	Residual Oil	10100405
External Combustion Boilers	Residual Oil	10100406
External Combustion Boilers	Distillate Oil	10100501
External Combustion Boilers	Distillate Oil	10100504
External Combustion Boilers	Distillate Oil	10100505
External Combustion Boilers	Natural Gas	10100601
External Combustion Boilers	Natural Gas	10100602
External Combustion Boilers	Natural Gas	10100604
External Combustion Boilers	Wood	10100901
External Combustion Boilers	Wood	10100902
External Combustion Boilers	Wood	10100903
External Combustion Boilers	LPG	10101001
External Combustion Boilers	LPG	10101002
External Combustion Boilers	LPG	10101003
Internal Combustion Engines	Distillate Oil	20100101
Internal Combustion Engines	Distillate Oil	20100102
Internal Combustion Engines	Natural Gas	20100201
Internal Combustion Engines	Natural Gas	20100202
Internal Combustion Engines	Kerosene/Naphtha	20100901
Internal Combustion Engines	Kerosene/Naphtha	20100902
Area Sources		
Stationary Source Fuel Combustion: Electric Utility	Anthracite Coal	2101001000
Stationary Source Fuel Combustion: Electric Utility	Bituminous/Subbituminous Coal	2101002000
Stationary Source Fuel Combustion: Electric Utility	Lignite Coal	2101003000

CROSSWALK TABLE FOR FILENAME: ELECTRIC.SCC		
Stationary Source Fuel Combustion: Electric Utilities		
	Fuel Type	SCC
Stationary Source Fuel Combustion: Electric Utility	Distillate Oil	2101004000
Stationary Source Fuel Combustion: Electric Utility	Distillate Oil	2101004001
Stationary Source Fuel Combustion: Electric Utility	Distillate Oil	2101004002
Stationary Source Fuel Combustion: Electric Utility	Residual Oil	2101005000
Stationary Source Fuel Combustion: Electric Utility	Natural Gas	2101006000
Stationary Source Fuel Combustion: Electric Utility	Natural Gas	2101006001
Stationary Source Fuel Combustion: Electric Utility	Natural Gas	2101006002
Stationary Source Fuel Combustion: Electric Utility	LPG	2101007000
Stationary Source Fuel Combustion: Electric Utility	Wood	2101008000

CROSSWALK TABLE FOR FILENAME: IND_FUEL.SCC		
Stationary Source Fuel Combustion: Industrial		
	Fuel Type	SCC
Point Sources		
External Combustion Boilers	Anthracite Coal	10200101
External Combustion Boilers	Anthracite Coal	10200104
External Combustion Boilers	Anthracite Coal	10200107
External Combustion Boilers	Bituminous/Subbituminous Coal	10200201
External Combustion Boilers	Bituminous/Subbituminous Coal	10200202
External Combustion Boilers	Bituminous/Subbituminous Coal	10200203
External Combustion Boilers	Bituminous/Subbituminous Coal	10200204
External Combustion Boilers	Bituminous/Subbituminous Coal	10200205
External Combustion Boilers	Bituminous/Subbituminous Coal	10200206
External Combustion Boilers	Bituminous/Subbituminous Coal	10200210
External Combustion Boilers	Bituminous/Subbituminous Coal	10200212
External Combustion Boilers	Bituminous/Subbituminous Coal	10200213
External Combustion Boilers	Bituminous/Subbituminous Coal	10200217
External Combustion Boilers	Bituminous/Subbituminous Coal	10200219
External Combustion Boilers	Bituminous/Subbituminous Coal	10200221
External Combustion Boilers	Bituminous/Subbituminous Coal	10200222
External Combustion Boilers	Bituminous/Subbituminous Coal	10200223
External Combustion Boilers	Bituminous/Subbituminous Coal	10200224
External Combustion Boilers	Bituminous/Subbituminous Coal	10200225
External Combustion Boilers	Bituminous/Subbituminous Coal	10200226
External Combustion Boilers	Bituminous/Subbituminous Coal	10200229
External Combustion Boilers	Lignite Coal	10200301
External Combustion Boilers	Lignite Coal	10200302
External Combustion Boilers	Lignite Coal	10200303
External Combustion Boilers	Lignite Coal	10200304
External Combustion Boilers	Lignite Coal	10200306
External Combustion Boilers	Lignite Coal	10200307
External Combustion Boilers	Residual Oil	10200401
External Combustion Boilers	Residual Oil	10200402
External Combustion Boilers	Residual Oil	10200403
External Combustion Boilers	Residual Oil	10200404
External Combustion Boilers	Residual Oil	10200405
External Combustion Boilers	Distillate Oil	10200501
External Combustion Boilers	Distillate Oil	10200502
External Combustion Boilers	Distillate Oil	10200503
External Combustion Boilers	Distillate Oil	10200504
External Combustion Boilers	Distillate Oil	10200505
External Combustion Boilers	Natural Gas	10200601
External Combustion Boilers	Natural Gas	10200602
External Combustion Boilers	Natural Gas	10200603
External Combustion Boilers	Natural Gas	10200604
External Combustion Boilers	Coke	10200802
External Combustion Boilers	Coke	10200804
External Combustion Boilers	LPG	10201001
External Combustion Boilers	LPG	10201002

CROSSWALK TABLE FOR FILENAME: IND_FUEL.SCC		
Stationary Source Fuel Combustion: Industrial		
	Fuel Type	SCC
External Combustion Boilers	LPG	10201003
External Combustion Boilers: Space Heating	Bituminous Coal	10500102
External Combustion Boilers: Space Heating	Distillate Oil	10500105
External Combustion Boilers: Space Heating	Natural Gas	10500106
External Combustion Boilers: Space Heating	LPG	10500110
External Combustion Boilers: Space Heating	Waste Oil	10500113
External Combustion Boilers: Space Heating	Waste Oil	10500114
Internal Combustion Engines	Distillate Oil	20200101
Internal Combustion Engines	Distillate Oil	20200102
Internal Combustion Engines	Distillate Oil	20200103
Internal Combustion Engines	Distillate Oil	20200104
Internal Combustion Engines	Natural Gas	20200201
Internal Combustion Engines	Natural Gas	20200202
Internal Combustion Engines	Natural Gas	20200203
Internal Combustion Engines	Natural Gas	20200204
Internal Combustion Engines	Gasoline	20200301
Internal Combustion Engines	Diesel	20200401
Internal Combustion Engines	Dual Fuel (Oil/Gas)	20200402
Internal Combustion Engines	Cogeneration	20200403
Internal Combustion Engines	Residual/Crude Oil	20200501
Internal Combustion Engines	Process Gas	20200705
Internal Combustion Engines	Kerosene/Naphtha	20200901
Internal Combustion Engines	Kerosene/Naphtha	20200902
Internal Combustion Engines	LPG	20201001
Internal Combustion Engines	LPG	20201002
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30190001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30190002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30190003
Industrial Processes: Fuel Fired Equipment	Process Gas	30190004
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30190011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30190012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30190013
Industrial Processes: Fuel Fired Equipment	Process Gas	30190014
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30190021
Industrial Processes: Fuel Fired Equipment	Residual Oil	30190022
Industrial Processes: Fuel Fired Equipment	Natural Gas	30190023
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30290001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30290002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30290003
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30390001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30390002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30390003
Industrial Processes: Fuel Fired Equipment	Process Gas	30390004
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30390011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30390012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30390013

CROSSWALK TABLE FOR FILENAME: IND_FUEL.SCC		
Stationary Source Fuel Combustion: Industrial		
	Fuel Type	SCC
Industrial Processes: Fuel Fired Equipment	Process Gas	30390014
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30390021
Industrial Processes: Fuel Fired Equipment	Residual Oil	30390022
Industrial Processes: Fuel Fired Equipment	Natural Gas	30390023
Industrial Processes: Fuel Fired Equipment	Process Gas	30390024
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30590001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30590002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30590003
Industrial Processes: Fuel Fired Equipment	LPG	30590005
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30590011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30590012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30590013
Industrial Processes: Fuel Fired Equipment	Residual Oil	30590022
Industrial Processes: Fuel Fired Equipment	Natural Gas	30590023
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30790001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30790002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30790003
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30790011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30790012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30790013
Industrial Processes: Fuel Fired Equipment	Process Gas	30790014
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30790021
Industrial Processes: Fuel Fired Equipment	Residual Oil	30790022
Industrial Processes: Fuel Fired Equipment	Natural Gas	30790023
Industrial Processes: Fuel Fired Equipment	Process Gas	30790024
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30890001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30890002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30890003
Industrial Processes: Fuel Fired Equipment	Process Gas	30890004
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30890011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30890012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30890013
Industrial Processes: Fuel Fired Equipment	Natural Gas	30890023
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30990001
Industrial Processes: Fuel Fired Equipment	Residual Oil	30990002
Industrial Processes: Fuel Fired Equipment	Natural Gas	30990003
Industrial Processes: Fuel Fired Equipment	Distillate Oil	30990011
Industrial Processes: Fuel Fired Equipment	Residual Oil	30990012
Industrial Processes: Fuel Fired Equipment	Natural Gas	30990013
Industrial Processes: Fuel Fired Equipment	Natural Gas	30990023
Industrial Processes: Fuel Fired Equipment	Distillate Oil	31390001
Industrial Processes: Fuel Fired Equipment	Residual Oil	31390002
Industrial Processes: Fuel Fired Equipment	Natural Gas	31390003
Industrial Processes: In-Process Fuel Use	Anthracite Coal	39000189
Industrial Processes: In-Process Fuel Use	Anthracite Coal	39000199
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	39000201

CROSSWALK TABLE FOR FILENAME: IND_FUEL.SCC		
Stationary Source Fuel Combustion: Industrial		
	Fuel Type	SCC
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	39000203
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	39000288
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	39000289
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	39000299
Industrial Processes: In-Process Fuel Use	Lignite Coal	39000389
Industrial Processes: In-Process Fuel Use	Lignite Coal	39000399
Industrial Processes: In-Process Fuel Use	Residual Oil	39000402
Industrial Processes: In-Process Fuel Use	Residual Oil	39000403
Industrial Processes: In-Process Fuel Use	Residual Oil	39000489
Industrial Processes: In-Process Fuel Use	Residual Oil	39000499
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000501
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000502
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000503
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000589
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000598
Industrial Processes: In-Process Fuel Use	Distillate Oil	39000599
Industrial Processes: In-Process Fuel Use	Natural Gas	39000602
Industrial Processes: In-Process Fuel Use	Natural Gas	39000603
Industrial Processes: In-Process Fuel Use	Natural Gas	39000605
Industrial Processes: In-Process Fuel Use	Natural Gas	39000689
Industrial Processes: In-Process Fuel Use	Natural Gas	39000699
Industrial Processes: In-Process Fuel Use	Wood	39000889
Industrial Processes: In-Process Fuel Use	Coke	39000899
Industrial Processes: In-Process Fuel Use	LPG	39000989
Industrial Processes: In-Process Fuel Use	Wood	39000999
Industrial Processes: In-Process Fuel Use	LPG	39001089
Industrial Processes: In-Process Fuel Use	LPG	39001099
Misc. Industrial Processes: Fuel Fired Equipment	Distillate Oil	39990001
Misc. Industrial Processes: Fuel Fired Equipment	Residual Oil	39990002
Misc. Industrial Processes: Fuel Fired Equipment	Natural Gas	39990003
Misc. Industrial Processes: Fuel Fired Equipment	Distillate Oil	39990011
Misc. Industrial Processes: Fuel Fired Equipment	Residual Oil	39990012
Misc. Industrial Processes: Fuel Fired Equipment	Natural Gas	39990013
Misc. Industrial Processes: Fuel Fired Equipment	Process Gas	39990014
Misc. Industrial Processes: Fuel Fired Equipment	Distillate Oil	39990021
Misc. Industrial Processes: Fuel Fired Equipment	Residual Oil	39990022
Misc. Industrial Processes: Fuel Fired Equipment	Natural Gas	39990023
Misc. Industrial Processes: Fuel Fired Equipment	Process Gas	39990024
Area Sources		
Stationary Source Fuel Combustion: Industrial	Anthracite Coal	2102001000
Stationary Source Fuel Combustion: Industrial	Bituminous Coal	2102002000
Stationary Source Fuel Combustion: Industrial	Distillate Oil	2102004000
Stationary Source Fuel Combustion: Industrial	Residual Oil	2102005000
Stationary Source Fuel Combustion: Industrial	Natural Gas	2102006000
Stationary Source Fuel Combustion: Industrial	Natural Gas	2102006001
Stationary Source Fuel Combustion: Industrial	Natural Gas	2102006002

CROSSWALK TABLE FOR FILENAME: IND_FUEL.SCC		
Stationary Source Fuel Combustion: Industrial		
	Fuel Type	SCC
Stationary Source Fuel Combustion: Industrial	LPG	2102007000
Stationary Source Fuel Combustion: Industrial	Wood	2102008020
Stationary Source Fuel Combustion: Industrial	Coke	2102009000
Stationary Source Fuel Combustion: Industrial	Process Gas	2102010000
Stationary Source Fuel Combustion: Industrial	Kerosene	2102011000
Stationary Source Fuel Combustion: Industrial	Waste Oil	2102012000
Industrial Processes: In-Process Fuel Use	Anthracite Coal	2390001000
Industrial Processes: In-Process Fuel Use	Bituminous/Subbituminous Coal	2390002000
Industrial Processes: In-Process Fuel Use	Distillate Oil	2390004000
Industrial Processes: In-Process Fuel Use	Residual Oil	2390005000
Industrial Processes: In-Process Fuel Use	Natural Gas	2390006000
Industrial Processes: In-Process Fuel Use	LPG	2390007000
Industrial Processes: In-Process Fuel Use	Process Gas	2390010000

CROSSWALK TABLE FOR FILENAME: OTHER.SCC		
Miscellaneous Point and Area Source Processes: Not Elsewhere Listed		
		SCC
Point Sources		
External Combustion Boilers	Industrial: Process Gas	10200701
External Combustion Boilers	Industrial: Process Gas	10200704
External Combustion Boilers	Industrial: Process Gas	10200707
External Combustion Boilers	Industrial: Process Gas	10200710
External Combustion Boilers	Industrial: Process Gas	10200799
External Combustion Boilers	Industrial: Wood	10200901
External Combustion Boilers	Industrial: Wood	10200902
External Combustion Boilers	Industrial: Wood	10200903
External Combustion Boilers	Industrial: Wood	10200904
External Combustion Boilers	Industrial: Wood	10200905
External Combustion Boilers	Industrial: Wood	10200906
External Combustion Boilers	Industrial: Wood	10200907
External Combustion Boilers	Industrial: Bagasse	10201101
External Combustion Boilers	Industrial: Solid Waste	10201201
External Combustion Boilers	Industrial: Solid Waste	10201202
External Combustion Boilers	Industrial: Liquid Waste	10201301
External Combustion Boilers	Industrial: Liquid Waste	10201302
External Combustion Boilers	Industrial: CO Boiler	10201401
External Combustion Boilers	Industrial: CO Boiler	10201402
External Combustion Boilers	Industrial: CO Boiler	10201403
External Combustion Boilers	Industrial: CO Boiler	10201404
External Combustion Boilers	Commercial: Process Gas	10300701
External Combustion Boilers	Commercial: Process Gas	10300799
External Combustion Boilers	Commercial: Wood	10300901
External Combustion Boilers	Commercial: Wood	10300902
External Combustion Boilers	Commercial: Wood	10300903
External Combustion Boilers	Commercial: Solid Waste	10301201
External Combustion Boilers	Commercial: Solid Waste	10301202
External Combustion Boilers	Commercial: Liquid Waste	10301301
External Combustion Boilers	Commercial: Liquid Waste	10301302
External Combustion Boilers	Commercial: Liquid Waste	10301303
External Combustion Boilers: Space Heating	Bituminous Coal	10500209
Internal Combustion Engines	Electric Generation: Geysers/Geothermal	20101010
Internal Combustion Engines	Electric Generation: Geysers/Geothermal	20101020
Internal Combustion Engines	Electric Generation: Geysers/Geothermal	20101021
Internal Combustion Engines	Electric Generation: Geysers/Geothermal	20101030
Internal Combustion Engines	Electric Generation: Geysers/Geothermal	20101031
Internal Combustion Engines	Electric Generation: Flares	20190099
Internal Combustion Engines	Commercial: POTW Digester Gas	20300702
Internal Combustion Engines	Engine Testing	20400101
Internal Combustion Engines	Engine Testing	20400102
Internal Combustion Engines	Engine Testing	20400110
Internal Combustion Engines	Engine Testing	20400111
Internal Combustion Engines	Engine Testing	20400112
Internal Combustion Engines	Engine Testing	20400201
Internal Combustion Engines	Engine Testing	20400202

CROSSWALK TABLE FOR FILENAME: OTHER.SCC		
Miscellaneous Point and Area Source Processes: Not Elsewhere Listed		
		SCC
Internal Combustion Engines	Engine Testing	20400301
Internal Combustion Engines	Engine Testing	20400302
Internal Combustion Engines	Engine Testing	20400401
Internal Combustion Engines	Engine Testing	20400402
Internal Combustion Engines	Fugitive Emissions	28888801
Internal Combustion Engines	Fugitive Emissions	28888802
Internal Combustion Engines	Fugitive Emissions	28888803
Industrial Processes	Wood Products: Fugitive Emissions	30788801
Industrial Processes	Wood Products: Fugitive Emissions	30788802
Industrial Processes	Wood Products: Fugitive Emissions	30788803
Industrial Processes	Wood Products: Fugitive Emissions	30788804
Industrial Processes	Wood Products: Fugitive Emissions	30788805
Industrial Processes	Wood Products: Fugitive Emissions	30788898
Industrial Processes	Wood Products: NEC	30799998
Industrial Processes	Wood Products: NEC	30799999
Industrial Processes	Rubber & Misc. Plastics: NEC	30899999
Industrial Processes	Fabricated Metal Products: NEC	30999997
Industrial Processes	Fabricated Metal Products: NEC	30999998
Industrial Processes	Fabricated Metal Products: NEC	30999999
Industrial Processes	Process Cooling Towers	38500101
Industrial Processes	Process Cooling Towers	38500102
Industrial Processes	Process Cooling Towers	38500110
Industrial Processes	Process Cooling Towers	38500120
Industrial Processes	Comfort Cooling Towers	38500202
Industrial Processes	In-Process Fuel: Process Gas	39000701
Industrial Processes	In-Process Fuel: Process Gas	39000702
Industrial Processes	In-Process Fuel: Process Gas	39000788
Industrial Processes	In-Process Fuel: Process Gas	39000789
Industrial Processes	In-Process Fuel: Process Gas	39000797
Industrial Processes	In-Process Fuel: Process Gas	39000798
Industrial Processes	In-Process Fuel: Process Gas	39000799
Industrial Processes	In-Process Fuel: Solid Waste	39001299
Industrial Processes	In-Process Fuel: Liquid Waste	39001389
Industrial Processes	In-Process Fuel: Liquid Waste	39001399
Industrial Processes	Industrial Processes: NEC, Process Heater	39990004
Industrial Processes	Industrial Processes: NEC	39999989
Industrial Processes	Industrial Processes: NEC	39999991
Industrial Processes	Industrial Processes: NEC	39999993
Industrial Processes	Industrial Processes: NEC	39999994
Industrial Processes	Industrial Processes: NEC	39999995
Industrial Processes	Industrial Processes: NEC	39999996
Industrial Processes	Industrial Processes: NEC	39999998
Industrial Processes	Industrial Processes: NEC	39999999
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188801
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188802
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188803
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188804

CROSSWALK TABLE FOR FILENAME: OTHER.SCC		
Miscellaneous Point and Area Source Processes: Not Elsewhere Listed		
		SCC
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188805
Industrial Processes	Organic Solvent Evap.: Fugitive Emissions	40188898
Industrial Processes	Surface Coating: Oven Heaters	40201001
Industrial Processes	Surface Coating: Oven Heaters	40201002
Industrial Processes	Surface Coating: Oven Heaters	40201003
Industrial Processes	Surface Coating: Oven Heaters	40201004
Industrial Processes	Surface Coating: Fugitive Emissions	40288801
Industrial Processes	Surface Coating: Fugitive Emissions	40288802
Industrial Processes	Surface Coating: Fugitive Emissions	40288803
Industrial Processes	Surface Coating: Fugitive Emissions	40288804
Industrial Processes	Surface Coating: Fugitive Emissions	40288805
Industrial Processes	Surface Coating: Incinerators	40290011
Industrial Processes	Surface Coating: Incinerators	40290012
Industrial Processes	Surface Coating: Incinerators	40290013
Industrial Processes	Surface Coating: Incinerators	40290023
Industrial Processes	Surface Coating: NEC	40299995
Industrial Processes	Surface Coating: NEC	40299996
Industrial Processes	Surface Coating: NEC	40299997
Industrial Processes	Surface Coating: NEC	40299998
Industrial Processes	Surface Coating: NEC	40299999
Industrial Processes	Petroleum Product Storage: NEC	40399999
Waste Disposal	Government: Incineration	50100101
Waste Disposal	Government: Incineration	50100102
Waste Disposal	Government: Incineration	50100506
Waste Disposal	Commercial: Incineration	50200101
Waste Disposal	Commercial: Incineration	50200102
Waste Disposal	Commercial: Incineration	50200103
Waste Disposal	Commercial: Open Burning	50200202
Waste Disposal	Commercial: Incineration	50200301
Waste Disposal	Commercial: Incineration	50200505
Waste Disposal	Commercial: Incineration	50200506
Waste Disposal	Industrial: Incineration	50300101
Waste Disposal	Industrial: Incineration	50300102
Waste Disposal	Industrial: Incineration	50300103
Waste Disposal	Industrial: Incineration	50300105
Waste Disposal	Industrial: Open Burning	50300202
Waste Disposal	Industrial: Open Burning	50300204
Waste Disposal	Industrial: Incineration	50300506
Waste Disposal	Industrial: Incineration	50300701
Waste Disposal	Industrial: Auxillary Fuel	50390005
Area Sources		
Stationary Source Fuel Combustion	Industrial: Wood	2102008000
Stationary Source Fuel Combustion	Commercial: Wood	2103008000
Total Area Source Fuel Combustion	Anthracite Coal	2199001000
Total Area Source Fuel Combustion	Bituminous/Subbituminous Coal	2199002000
Total Area Source Fuel Combustion	Lignite Coal	2199003000
Total Area Source Fuel Combustion	Distillate Oil	2199004000

CROSSWALK TABLE FOR FILENAME: OTHER.SCC		
Miscellaneous Point and Area Source Processes: Not Elsewhere Listed		
		SCC
Total Area Source Fuel Combustion	Distillate Oil	2199004001
Total Area Source Fuel Combustion	Distillate Oil	2199004002
Total Area Source Fuel Combustion	Residual Oil	2199005000
Total Area Source Fuel Combustion	Natural Gas	2199006000
Total Area Source Fuel Combustion	Natural Gas	2199006001
Total Area Source Fuel Combustion	Natural Gas	2199006002
Total Area Source Fuel Combustion	LPG	2199007000
Total Area Source Fuel Combustion	Wood	2199008000
Total Area Source Fuel Combustion	Coke	2199009000
Total Area Source Fuel Combustion	Process Gas	2199010000
Total Area Source Fuel Combustion	Kerosene	2199011000
Total Area Source Fuel Combustion	Waste Oil	2199012000
Industrial Processes	In-Process Fuel Use: Wood	2390008000
Industrial Processes	In-Process Fuel Use: Coke	2390009000
Industrial Processes	Industrial Processes: NEC	2399000000
Waste Disposal	Waste Water Treatment: POTW	2630020000
Natural Sources	Biogenic	2701001000
Natural Sources	Biogenic	2701010000
Natural Sources	Biogenic	2701020000
Natural Sources	Biogenic	2701030000
Natural Sources	Biogenic	2701200000
Natural Sources	Biogenic	2701220000
Natural Sources	Biogenic	2701220001
Natural Sources	Biogenic	2701220002
Natural Sources	Biogenic	2701220003
Natural Sources	Biogenic	2701220004
Natural Sources	Biogenic	2701220005
Natural Sources	Biogenic	2701220006
Natural Sources	Biogenic	2701220007
Natural Sources	Biogenic	2701220008
Natural Sources	Biogenic	2701220009
Natural Sources	Biogenic	2701220999
Natural Sources	Biogenic	2701240000
Natural Sources	Biogenic	2701260000
Natural Sources	Biogenic	2701280000
Natural Sources	Biogenic	2701290000
Natural Sources	Biogenic	2701400000
Natural Sources	Biogenic	2701420000
Natural Sources	Biogenic	2701440000
Natural Sources	Biogenic	2701460000
Natural Sources	Biogenic	2701480000
Natural Sources	Geogenic	2730001000
Natural Sources	Geogenic	2730050000
Natural Sources	Geogenic	2730100000
Natural Sources	Geogenic	2730100001
Natural Sources	Miscellaneous	2740001000
Natural Sources	Miscellaneous	2740020000

CROSSWALK TABLE FOR FILENAME: OTHER.SCC		
Miscellaneous Point and Area Source Processes: Not Elsewhere Listed		
		SCC
Natural Sources	Miscellaneous	2740020010
Natural Sources	Miscellaneous	2740030000
Natural Sources	Miscellaneous	2740030010
Natural Sources	Miscellaneous	2740040000
Natural Sources	Miscellaneous	2740040010
Miscellaneous Area Sources	Other Combustion	2810001000
Miscellaneous Area Sources	Other Combustion	2810010000
Miscellaneous Area Sources	Other Combustion	2810015000
Miscellaneous Area Sources	Other Combustion	2810025000
Miscellaneous Area Sources	Other Combustion	2810030000
Miscellaneous Area Sources	Other Combustion	2810035000
Miscellaneous Area Sources	Other Combustion	2810040000
Miscellaneous Area Sources	Cooling Towers	2820000000
Miscellaneous Area Sources	Cooling Towers	2820010000
Miscellaneous Area Sources	Cooling Towers	2820020000
Miscellaneous Area Sources	Catastrophic/Accidental Releases	2830000000
Miscellaneous Area Sources	Catastrophic/Accidental Releases	2830001000
Miscellaneous Area Sources	Catastrophic/Accidental Releases	2830010000

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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Point Sources				
Chemical Mfg				
Adipic Acid	30100101	131	Industrial Chemicals	2
Adipic Acid	30100102	131	Industrial Chemicals	2
Adipic Acid	30100103	131	Industrial Chemicals	2
Adipic Acid	30100104	131	Industrial Chemicals	2
Adipic Acid	30100105	131	Industrial Chemicals	2
Adipic Acid	30100106	131	Industrial Chemicals	2
Adipic Acid	30100107	131	Industrial Chemicals	2
Adipic Acid	30100108	131	Industrial Chemicals	2
Adipic Acid	30100109	131	Industrial Chemicals	2
Adipic Acid	30100110	131	Industrial Chemicals	2
Adipic Acid	30100180	131	Industrial Chemicals	2
Adipic Acid	30100199	131	Industrial Chemicals	2
Ammonia	30100305	136	Agricultural Chemicals	2
Ammonia	30100306	136	Agricultural Chemicals	2
Ammonia	30100307	136	Agricultural Chemicals	2
Ammonia	30100308	136	Agricultural Chemicals	2
Ammonia	30100309	136	Agricultural Chemicals	2
Ammonia	30100399	136	Agricultural Chemicals	2
Carbon Black	30100501	137	Misc. Chemcial Products	1
Carbon Black	30100502	137	Misc. Chemcial Products	1
Carbon Black	30100503	137	Misc. Chemcial Products	1
Carbon Black	30100504	137	Misc. Chemcial Products	1
Carbon Black	30100506	137	Misc. Chemcial Products	1
Carbon Black	30100507	137	Misc. Chemcial Products	1
Carbon Black	30100508	137	Misc. Chemcial Products	1
Carbon Black	30100509	137	Misc. Chemcial Products	1
Carbon Black	30100599	137	Misc. Chemcial Products	1
Charcoal	30100601	131	Industrial Chemicals	2
Charcoal	30100603	131	Industrial Chemicals	2
Charcoal	30100604	131	Industrial Chemicals	2
Charcoal	30100605	131	Industrial Chemicals	2
Charcoal	30100606	131	Industrial Chemicals	2
Charcoal	30100607	131	Industrial Chemicals	2
Charcoal	30100608	131	Industrial Chemicals	2
Charcoal	30100699	131	Industrial Chemicals	2
Carbon Reactivation	30100701	131	Industrial Chemicals	2
Carbon Reactivation	30100702	131	Industrial Chemicals	2
Carbon Reactivation	30100703	131	Industrial Chemicals	2
Carbon Reactivation	30100704	131	Industrial Chemicals	2
Carbon Reactivation	30100705	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Carbon Reactivation	30100706	131	Industrial Chemicals	2
Carbon Reactivation	30100707	131	Industrial Chemicals	2
Carbon Reactivation	30100708	131	Industrial Chemicals	2
Carbon Reactivation	30100709	131	Industrial Chemicals	2
Carbon Reactivation	30100799	131	Industrial Chemicals	2
Chloro-Alkali	30100801	131	Industrial Chemicals	1
Chloro-Alkali	30100802	131	Industrial Chemicals	1
Chloro-Alkali	30100803	131	Industrial Chemicals	1
Chloro-Alkali	30100804	131	Industrial Chemicals	1
Chloro-Alkali	30100805	131	Industrial Chemicals	1
Chloro-Alkali	30100899	131	Industrial Chemicals	1
Cleaning Chemicals	30100901	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100902	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100905	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100906	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100907	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100908	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100909	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100910	134	Soap, cleaners, & toilet goods	1
Cleaning Chemicals	30100999	134	Soap, cleaners, & toilet goods	1
Trinitrotoluene	30101011	137	Misc. Chemcial Products	1
Trinitrotoluene	30101012	137	Misc. Chemcial Products	1
Trinitrotoluene	30101013	137	Misc. Chemcial Products	1
Trinitrotoluene	30101014	137	Misc. Chemcial Products	1
Trinitrotoluene	30101015	137	Misc. Chemcial Products	1
Trinitrotoluene	30101021	137	Misc. Chemcial Products	1
Trinitrotoluene	30101022	137	Misc. Chemcial Products	1
Trinitrotoluene	30101023	137	Misc. Chemcial Products	1
Trinitrotoluene	30101030	137	Misc. Chemcial Products	1
Trinitrotoluene	30101099	137	Misc. Chemcial Products	1
Hydrochloric Acid	30101101	131	Industrial Chemicals	2
Hydrochloric Acid	30101198	131	Industrial Chemicals	2
Hydrochloric Acid	30101199	131	Industrial Chemicals	2
Hydrofluoric Acid	30101202	131	Industrial Chemicals	2
Hydrofluoric Acid	30101203	131	Industrial Chemicals	2
Hydrofluoric Acid	30101204	131	Industrial Chemicals	2
Hydrofluoric Acid	30101205	131	Industrial Chemicals	2
Hydrofluoric Acid	30101206	131	Industrial Chemicals	2
Hydrofluoric Acid	30101299	131	Industrial Chemicals	2
Nitric Acid	30101301	136	Agricultural Chemicals	2
Nitric Acid	30101302	136	Agricultural Chemicals	2
Nitric Acid	30101303	136	Agricultural Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Nitric Acid	30101304	136	Agricultural Chemicals	2
Nitric Acid	30101399	136	Agricultural Chemicals	2
Paint	30101401	135	Paint & Allied Products	1
Paint	30101402	135	Paint & Allied Products	1
Paint	30101403	135	Paint & Allied Products	1
Paint	30101404	135	Paint & Allied Products	1
Paint	30101498	135	Paint & Allied Products	1
Paint	30101499	135	Paint & Allied Products	1
Varnish	30101501	135	Paint & Allied Products	1
Varnish	30101502	135	Paint & Allied Products	1
Varnish	30101503	135	Paint & Allied Products	1
Varnish	30101505	135	Paint & Allied Products	1
Varnish	30101599	135	Paint & Allied Products	1
Phosphoric Acid	30101601	136	Agricultural Chemicals	2
Phosphoric Acid	30101602	136	Agricultural Chemicals	2
Phosphoric Acid	30101603	136	Agricultural Chemicals	2
Phosphoric Acid	30101699	136	Agricultural Chemicals	2
Phosphoric Acid	30101702	136	Agricultural Chemicals	2
Phosphoric Acid	30101703	136	Agricultural Chemicals	2
Phosphoric Acid	30101704	136	Agricultural Chemicals	2
Phosphoric Acid	30101705	136	Agricultural Chemicals	2
Phosphoric Acid	30101706	136	Agricultural Chemicals	2
Phosphoric Acid	30101707	136	Agricultural Chemicals	2
Phosphoric Acid	30101708	136	Agricultural Chemicals	2
Phosphoric Acid	30101799	136	Agricultural Chemicals	2
Plastics Production	30101801	132	Plastics Materials & Synthetics	2
Plastics Production	30101802	132	Plastics Materials & Synthetics	2
Plastics Production	30101803	132	Plastics Materials & Synthetics	2
Plastics Production	30101805	132	Plastics Materials & Synthetics	2
Plastics Production	30101807	132	Plastics Materials & Synthetics	2
Plastics Production	30101808	132	Plastics Materials & Synthetics	2
Plastics Production	30101809	132	Plastics Materials & Synthetics	2
Plastics Production	30101810	132	Plastics Materials & Synthetics	2
Plastics Production	30101811	132	Plastics Materials & Synthetics	2
Plastics Production	30101812	132	Plastics Materials & Synthetics	2
Plastics Production	30101813	132	Plastics Materials & Synthetics	2
Plastics Production	30101814	132	Plastics Materials & Synthetics	2
Plastics Production	30101815	132	Plastics Materials & Synthetics	2
Plastics Production	30101816	132	Plastics Materials & Synthetics	2
Plastics Production	30101817	132	Plastics Materials & Synthetics	2
Plastics Production	30101818	132	Plastics Materials & Synthetics	2
Plastics Production	30101819	132	Plastics Materials & Synthetics	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Plastics Production	30101820	132	Plastics Materials & Synthetics	2
Plastics Production	30101821	132	Plastics Materials & Synthetics	2
Plastics Production	30101822	132	Plastics Materials & Synthetics	2
Plastics Production	30101827	132	Plastics Materials & Synthetics	2
Plastics Production	30101832	132	Plastics Materials & Synthetics	2
Plastics Production	30101837	132	Plastics Materials & Synthetics	2
Plastics Production	30101838	132	Plastics Materials & Synthetics	2
Plastics Production	30101839	132	Plastics Materials & Synthetics	2
Plastics Production	30101840	132	Plastics Materials & Synthetics	2
Plastics Production	30101842	132	Plastics Materials & Synthetics	2
Plastics Production	30101847	132	Plastics Materials & Synthetics	2
Plastics Production	30101849	132	Plastics Materials & Synthetics	2
Plastics Production	30101852	132	Plastics Materials & Synthetics	2
Polyethylene	30101860	132	Plastics Materials & Synthetics	2
Polyethylene	30101861	132	Plastics Materials & Synthetics	2
Polyethylene	30101863	132	Plastics Materials & Synthetics	2
Polyethylene	30101864	132	Plastics Materials & Synthetics	2
Polyethylene	30101865	132	Plastics Materials & Synthetics	2
Polyethylene	30101866	132	Plastics Materials & Synthetics	2
Polyether Resins	30101870	132	Plastics Materials & Synthetics	2
Polyether Resins	30101871	132	Plastics Materials & Synthetics	2
Polyether Resins	30101872	132	Plastics Materials & Synthetics	2
Polyurethane	30101880	132	Plastics Materials & Synthetics	2
Polyurethane	30101881	132	Plastics Materials & Synthetics	2
Polyurethane	30101882	132	Plastics Materials & Synthetics	2
Polyurethane	30101883	132	Plastics Materials & Synthetics	2
Polyurethane	30101884	132	Plastics Materials & Synthetics	2
Polyurethane	30101885	132	Plastics Materials & Synthetics	2
Plastics Production	30101890	132	Plastics Materials & Synthetics	2
Plastics Production	30101891	132	Plastics Materials & Synthetics	2
Plastics Production	30101892	132	Plastics Materials & Synthetics	2
Plastics Production	30101893	132	Plastics Materials & Synthetics	2
Plastics Production	30101894	132	Plastics Materials & Synthetics	2
Plastics Production	30101899	132	Plastics Materials & Synthetics	2
Phthalic Anhydride	30101901	131	Industrial Chemicals	2
Phthalic Anhydride	30101902	131	Industrial Chemicals	2
Phthalic Anhydride	30101904	131	Industrial Chemicals	2
Phthalic Anhydride	30101905	131	Industrial Chemicals	2
Phthalic Anhydride	30101906	131	Industrial Chemicals	2
Phthalic Anhydride	30101907	131	Industrial Chemicals	2
Phthalic Anhydride	30101908	131	Industrial Chemicals	2
Phthalic Anhydride	30101909	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Printing Ink	30102001	137	Misc. Chemcial Products	1
Printing Ink	30102002	137	Misc. Chemcial Products	1
Printing Ink	30102003	137	Misc. Chemcial Products	1
Printing Ink	30102004	137	Misc. Chemcial Products	1
Printing Ink	30102005	137	Misc. Chemcial Products	1
Printing Ink	30102099	137	Misc. Chemcial Products	1
Sodium Carbonate	30102101	131	Industrial Chemicals	2
Sodium Carbonate	30102102	131	Industrial Chemicals	2
Sodium Carbonate	30102103	131	Industrial Chemicals	2
Sodium Carbonate	30102104	131	Industrial Chemicals	2
Sodium Carbonate	30102105	131	Industrial Chemicals	2
Sodium Carbonate	30102106	131	Industrial Chemicals	2
Sodium Carbonate	30102107	131	Industrial Chemicals	2
Sodium Carbonate	30102108	131	Industrial Chemicals	2
Sodium Carbonate	30102110	131	Industrial Chemicals	2
Sodium Carbonate	30102111	131	Industrial Chemicals	2
Sodium Carbonate	30102112	131	Industrial Chemicals	2
Sodium Carbonate	30102113	131	Industrial Chemicals	2
Sodium Carbonate	30102114	131	Industrial Chemicals	2
Sodium Carbonate	30102120	131	Industrial Chemicals	2
Sodium Carbonate	30102121	131	Industrial Chemicals	2
Sodium Carbonate	30102122	131	Industrial Chemicals	2
Sodium Carbonate	30102199	131	Industrial Chemicals	2
Sulfuric Acid	30102201	131	Industrial Chemicals	2
Sulfuric Acid	30102301	131	Industrial Chemicals	2
Sulfuric Acid	30102304	131	Industrial Chemicals	2
Sulfuric Acid	30102306	131	Industrial Chemicals	2
Sulfuric Acid	30102308	131	Industrial Chemicals	2
Sulfuric Acid	30102310	131	Industrial Chemicals	2
Sulfuric Acid	30102312	131	Industrial Chemicals	2
Sulfuric Acid	30102314	131	Industrial Chemicals	2
Sulfuric Acid	30102316	131	Industrial Chemicals	2
Sulfuric Acid	30102318	131	Industrial Chemicals	2
Sulfuric Acid	30102319	131	Industrial Chemicals	2
Sulfuric Acid	30102320	131	Industrial Chemicals	2
Sulfuric Acid	30102321	131	Industrial Chemicals	2
Sulfuric Acid	30102322	131	Industrial Chemicals	2
Sulfuric Acid	30102323	131	Industrial Chemicals	2
Sulfuric Acid	30102324	131	Industrial Chemicals	2
Sulfuric Acid	30102325	131	Industrial Chemicals	2
Sulfuric Acid	30102331	131	Industrial Chemicals	2
Sulfuric Acid	30102332	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Sulfuric Acid	30102399	131	Industrial Chemicals	2
Synthetic Organic Fiber	30102401	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102402	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102403	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102404	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102405	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102406	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102407	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102408	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102409	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102410	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102411	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102412	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102413	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102414	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102415	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102416	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102417	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102418	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102419	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102421	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102422	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102423	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102424	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102425	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102426	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102427	132	Plastics Materials & Synthetics	1
Synthetic Organic Fiber	30102499	132	Plastics Materials & Synthetics	1
Cellulosic Fiber	30102501	132	Plastics Materials & Synthetics	1
Cellulosic Fiber	30102505	132	Plastics Materials & Synthetics	1
Cellulosic Fiber	30102506	132	Plastics Materials & Synthetics	1
Cellulosic Fiber	30102599	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102601	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102602	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102608	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102609	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102610	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102611	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102612	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102613	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102614	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102615	132	Plastics Materials & Synthetics	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Synthetic Rubber	30102616	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102617	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102618	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102619	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102620	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102621	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102622	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102623	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102624	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102625	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102626	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102627	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102628	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102630	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102641	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102642	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102643	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102644	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102645	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102646	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102650	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102651	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102652	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102653	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102654	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102655	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102656	132	Plastics Materials & Synthetics	1
Synthetic Rubber	30102699	132	Plastics Materials & Synthetics	1
Ammonium Nitrate	30102701	136	Agricultural Chemicals	1
Ammonium Nitrate	30102704	136	Agricultural Chemicals	1
Ammonium Nitrate	30102705	136	Agricultural Chemicals	1
Ammonium Nitrate	30102706	136	Agricultural Chemicals	1
Ammonium Nitrate	30102707	136	Agricultural Chemicals	1
Ammonium Nitrate	30102708	136	Agricultural Chemicals	1
Ammonium Nitrate	30102709	136	Agricultural Chemicals	1
Ammonium Nitrate	30102710	136	Agricultural Chemicals	1
Ammonium Nitrate	30102711	136	Agricultural Chemicals	1
Ammonium Nitrate	30102712	136	Agricultural Chemicals	1
Ammonium Nitrate	30102713	136	Agricultural Chemicals	1
Ammonium Nitrate	30102714	136	Agricultural Chemicals	1
Ammonium Nitrate	30102717	136	Agricultural Chemicals	1
Ammonium Nitrate	30102718	136	Agricultural Chemicals	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Ammonium Nitrate	30102720	136	Agricultural Chemicals	1
Ammonium Nitrate	30102721	136	Agricultural Chemicals	1
Ammonium Nitrate	30102722	136	Agricultural Chemicals	1
Ammonium Nitrate	30102723	136	Agricultural Chemicals	1
Ammonium Nitrate	30102724	136	Agricultural Chemicals	1
Ammonium Nitrate	30102725	136	Agricultural Chemicals	1
Ammonium Nitrate	30102727	136	Agricultural Chemicals	1
Ammonium Nitrate	30102728	136	Agricultural Chemicals	1
Ammonium Nitrate	30102729	136	Agricultural Chemicals	1
Ammonium Nitrate	30102730	136	Agricultural Chemicals	1
Normal Superphosphate	30102801	136	Agricultural Chemicals	1
Normal Superphosphate	30102803	136	Agricultural Chemicals	1
Normal Superphosphate	30102804	136	Agricultural Chemicals	1
Normal Superphosphate	30102805	136	Agricultural Chemicals	1
Normal Superphosphate	30102806	136	Agricultural Chemicals	1
Normal Superphosphate	30102807	136	Agricultural Chemicals	1
Normal Superphosphate	30102820	136	Agricultural Chemicals	1
Normal Superphosphate	30102821	136	Agricultural Chemicals	1
Normal Superphosphate	30102822	136	Agricultural Chemicals	1
Normal Superphosphate	30102823	136	Agricultural Chemicals	1
Normal Superphosphate	30102824	136	Agricultural Chemicals	1
Normal Superphosphate	30102825	136	Agricultural Chemicals	1
Normal Superphosphate	30102826	136	Agricultural Chemicals	1
Triple Superphosphate	30102903	136	Agricultural Chemicals	1
Triple Superphosphate	30102904	136	Agricultural Chemicals	1
Triple Superphosphate	30102905	136	Agricultural Chemicals	1
Triple Superphosphate	30102906	136	Agricultural Chemicals	1
Triple Superphosphate	30102907	136	Agricultural Chemicals	1
Triple Superphosphate	30102908	136	Agricultural Chemicals	1
Triple Superphosphate	30102909	136	Agricultural Chemicals	1
Triple Superphosphate	30102910	136	Agricultural Chemicals	1
Triple Superphosphate	30102920	136	Agricultural Chemicals	1
Triple Superphosphate	30102921	136	Agricultural Chemicals	1
Triple Superphosphate	30102922	136	Agricultural Chemicals	1
Triple Superphosphate	30102923	136	Agricultural Chemicals	1
Triple Superphosphate	30102924	136	Agricultural Chemicals	1
Triple Superphosphate	30102925	136	Agricultural Chemicals	1
Ammonium Phosphates	30103001	136	Agricultural Chemicals	1
Ammonium Phosphates	30103002	136	Agricultural Chemicals	1
Ammonium Phosphates	30103003	136	Agricultural Chemicals	1
Ammonium Phosphates	30103004	136	Agricultural Chemicals	1
Ammonium Phosphates	30103020	136	Agricultural Chemicals	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Ammonium Phosphates	30103021	136	Agricultural Chemicals	1
Ammonium Phosphates	30103022	136	Agricultural Chemicals	1
Ammonium Phosphates	30103023	136	Agricultural Chemicals	1
Ammonium Phosphates	30103024	136	Agricultural Chemicals	1
Ammonium Phosphates	30103025	136	Agricultural Chemicals	1
Ammonium Phosphates	30103099	136	Agricultural Chemicals	1
Terephthalic Acid	30103101	131	Industrial Chemicals	2
Terephthalic Acid	30103102	131	Industrial Chemicals	2
Terephthalic Acid	30103103	131	Industrial Chemicals	2
Terephthalic Acid	30103104	131	Industrial Chemicals	2
Terephthalic Acid	30103105	131	Industrial Chemicals	2
Terephthalic Acid	30103106	131	Industrial Chemicals	2
Terephthalic Acid	30103107	131	Industrial Chemicals	2
Terephthalic Acid	30103108	131	Industrial Chemicals	2
Terephthalic Acid	30103109	131	Industrial Chemicals	2
Terephthalic Acid	30103180	131	Industrial Chemicals	2
Terephthalic Acid	30103199	131	Industrial Chemicals	2
Elemental Sulfur	30103201	131	Industrial Chemicals	2
Elemental Sulfur	30103202	131	Industrial Chemicals	2
Elemental Sulfur	30103203	131	Industrial Chemicals	2
Elemental Sulfur	30103204	131	Industrial Chemicals	2
Elemental Sulfur	30103205	131	Industrial Chemicals	2
Elemental Sulfur	30103299	131	Industrial Chemicals	2
Pesticides	30103301	136	Agricultural Chemicals	2
Pesticides	30103311	136	Agricultural Chemicals	2
Pesticides	30103312	136	Agricultural Chemicals	2
Pesticides	30103399	136	Agricultural Chemicals	2
Ethanolamines	30103402	131	Industrial Chemicals	2
Ethanolamines	30103403	131	Industrial Chemicals	2
Ethanolamines	30103404	131	Industrial Chemicals	2
Ethanolamines	30103405	131	Industrial Chemicals	2
Ethanolamines	30103406	131	Industrial Chemicals	2
Ethanolamines	30103410	131	Industrial Chemicals	2
Ethanolamines	30103411	131	Industrial Chemicals	2
Ethanolamines	30103412	131	Industrial Chemicals	2
Ethanolamines	30103414	131	Industrial Chemicals	2
Ethanolamines	30103415	131	Industrial Chemicals	2
Ethanolamines	30103420	131	Industrial Chemicals	2
Ethanolamines	30103425	131	Industrial Chemicals	2
Ethanolamines	30103430	131	Industrial Chemicals	2
Ethanolamines	30103435	131	Industrial Chemicals	2
Ethanolamines	30103499	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Inorganic Pigments	30103501	131	Industrial Chemicals	1
Inorganic Pigments	30103502	131	Industrial Chemicals	1
Inorganic Pigments	30103503	131	Industrial Chemicals	1
Inorganic Pigments	30103506	131	Industrial Chemicals	1
Inorganic Pigments	30103507	131	Industrial Chemicals	1
Inorganic Pigments	30103510	131	Industrial Chemicals	1
Inorganic Pigments	30103515	131	Industrial Chemicals	1
Inorganic Pigments	30103520	131	Industrial Chemicals	1
Inorganic Pigments	30103550	131	Industrial Chemicals	1
Inorganic Pigments	30103551	131	Industrial Chemicals	1
Inorganic Pigments	30103552	131	Industrial Chemicals	1
Inorganic Pigments	30103553	131	Industrial Chemicals	1
Inorganic Pigments	30103554	131	Industrial Chemicals	1
Inorganic Pigments	30103599	131	Industrial Chemicals	1
Sodium Bicarbonate	30103801	131	Industrial Chemicals	2
Hydrogen Cyanide	30103901	131	Industrial Chemicals	2
Hydrogen Cyanide	30103902	131	Industrial Chemicals	2
Hydrogen Cyanide	30103903	131	Industrial Chemicals	2
Urea	30104001	136	Agricultural Chemicals	2
Urea	30104002	136	Agricultural Chemicals	2
Urea	30104003	136	Agricultural Chemicals	2
Urea	30104004	136	Agricultural Chemicals	2
Urea	30104005	136	Agricultural Chemicals	2
Urea	30104006	136	Agricultural Chemicals	2
Urea	30104007	136	Agricultural Chemicals	2
Urea	30104008	136	Agricultural Chemicals	2
Urea	30104009	136	Agricultural Chemicals	2
Urea	30104010	136	Agricultural Chemicals	2
Urea	30104011	136	Agricultural Chemicals	2
Urea	30104012	136	Agricultural Chemicals	2
Urea	30104013	136	Agricultural Chemicals	2
Nitrocellulose	30104101	137	Misc. Chemcial Products	1
Nitrocellulose	30104102	137	Misc. Chemcial Products	1
Nitrocellulose	30104103	137	Misc. Chemcial Products	1
Nitrocellulose	30104104	137	Misc. Chemcial Products	1
Nitrocellulose	30104199	137	Misc. Chemcial Products	1
Lead Alkyl	30104201	131	Industrial Chemicals	2
Lead Alkyl	30104202	131	Industrial Chemicals	2
Lead Alkyl	30104203	131	Industrial Chemicals	2
Lead Alkyl	30104204	131	Industrial Chemicals	2
Lead Alkyl	30104301	131	Industrial Chemicals	2
Organic Fertilizer	30104501	136	Agricultural Chemicals	1

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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
General Processes	30105001	137	Misc. Chemcial Products	1
Pharmaceuticals	30106001	133	Drugs	1
Pharmaceuticals	30106002	133	Drugs	1
Pharmaceuticals	30106003	133	Drugs	1
Pharmaceuticals	30106004	133	Drugs	1
Pharmaceuticals	30106005	133	Drugs	1
Pharmaceuticals	30106006	133	Drugs	1
Pharmaceuticals	30106007	133	Drugs	1
Pharmaceuticals	30106008	133	Drugs	1
Pharmaceuticals	30106009	133	Drugs	1
Pharmaceuticals	30106010	133	Drugs	1
Pharmaceuticals	30106011	133	Drugs	1
Pharmaceuticals	30106012	133	Drugs	1
Pharmaceuticals	30106013	133	Drugs	1
Pharmaceuticals	30106021	133	Drugs	1
Pharmaceuticals	30106022	133	Drugs	1
Pharmaceuticals	30106023	133	Drugs	1
Pharmaceuticals	30106099	133	Drugs	1
General Processes	30107001	131	Industrial Chemicals	2
General Processes	30107002	131	Industrial Chemicals	2
Acetone	30109101	131	Industrial Chemicals	2
Ketones	30109105	131	Industrial Chemicals	2
Ketones	30109110	131	Industrial Chemicals	2
Acetone	30109151	131	Industrial Chemicals	2
Acetone	30109152	131	Industrial Chemicals	2
Acetone	30109153	131	Industrial Chemicals	2
Acetone	30109154	131	Industrial Chemicals	2
Acetone	30109180	131	Industrial Chemicals	2
Ketones	30109199	131	Industrial Chemicals	2
Maleic Anhydride	30110002	131	Industrial Chemicals	2
Maleic Anhydride	30110003	131	Industrial Chemicals	2
Maleic Anhydride	30110004	131	Industrial Chemicals	2
Maleic Anhydride	30110005	131	Industrial Chemicals	2
Maleic Anhydride	30110080	131	Industrial Chemicals	2
Maleic Anhydride	30110099	131	Industrial Chemicals	2
Bauxite	30111103	131	Industrial Chemicals	2
Bauxite	30111199	131	Industrial Chemicals	2
Elemental Phosphorous	30111201	131	Industrial Chemicals	2
Elemental Phosphorous	30111202	131	Industrial Chemicals	2
Elemental Phosphorous	30111299	131	Industrial Chemicals	2
Boric Acid	30111301	131	Industrial Chemicals	2
Potassium Chloride	30111401	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Formaldehyde	30112001	131	Industrial Chemicals	2
Formaldehyde	30112002	131	Industrial Chemicals	2
Formaldehyde	30112005	131	Industrial Chemicals	2
Formaldehyde	30112006	131	Industrial Chemicals	2
Formaldehyde	30112007	131	Industrial Chemicals	2
Acetaldehyde	30112011	131	Industrial Chemicals	2
Acetaldehyde	30112012	131	Industrial Chemicals	2
Acetaldehyde	30112013	131	Industrial Chemicals	2
Acetaldehyde	30112014	131	Industrial Chemicals	2
Acetaldehyde	30112017	131	Industrial Chemicals	2
Butyraldehyde	30112021	131	Industrial Chemicals	2
Acrolein	30112031	131	Industrial Chemicals	2
Acrolein	30112032	131	Industrial Chemicals	2
Acrolein	30112033	131	Industrial Chemicals	2
Acrolein	30112034	131	Industrial Chemicals	2
Acrolein	30112037	131	Industrial Chemicals	2
Acrolein	30112099	131	Industrial Chemicals	2
Organic Dyes/Pigments	30112199	131	Industrial Chemicals	2
Chloroprene	30112401	131	Industrial Chemicals	2
Chloroprene	30112402	131	Industrial Chemicals	2
Chloroprene	30112403	131	Industrial Chemicals	2
Chloroprene	30112404	131	Industrial Chemicals	2
Chloroprene	30112405	131	Industrial Chemicals	2
Chloroprene	30112406	131	Industrial Chemicals	2
Chloroprene	30112407	131	Industrial Chemicals	2
Chloroprene	30112480	131	Industrial Chemicals	2
Ethylene Dichloride	30112501	131	Industrial Chemicals	2
Ethylene Dichloride	30112502	131	Industrial Chemicals	2
Ethylene Dichloride	30112504	131	Industrial Chemicals	2
Ethylene Dichloride	30112505	131	Industrial Chemicals	2
Ethylene Dichloride	30112506	131	Industrial Chemicals	2
Ethylene Dichloride	30112509	131	Industrial Chemicals	2
Chloromethanes	30112510	131	Industrial Chemicals	2
Chloromethanes	30112511	131	Industrial Chemicals	2
Chloromethanes	30112512	131	Industrial Chemicals	2
Chloromethanes	30112514	131	Industrial Chemicals	2
Ethyl Chloride	30112515	131	Industrial Chemicals	2
Perchloroethylene	30112520	131	Industrial Chemicals	2
Perchloroethylene	30112521	131	Industrial Chemicals	2
Perchloroethylene	30112522	131	Industrial Chemicals	2
Perchloroethylene	30112524	131	Industrial Chemicals	2
1,1,1-Trichloroethane	30112525	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
1,1,1-Trichloroethane	30112526	131	Industrial Chemicals	2
1,1,1-Trichloroethane	30112527	131	Industrial Chemicals	2
1,1,1-Trichloroethane	30112528	131	Industrial Chemicals	2
1,1,1-Trichloroethane	30112529	131	Industrial Chemicals	2
Trichloroethylene	30112530	131	Industrial Chemicals	2
Trichloroethylene	30112531	131	Industrial Chemicals	2
Trichloroethylene	30112532	131	Industrial Chemicals	2
Trichloroethylene	30112533	131	Industrial Chemicals	2
Trichloroethylene	30112534	131	Industrial Chemicals	2
Chlorobenzene	30112535	131	Industrial Chemicals	2
Vinyl Chloride	30112540	131	Industrial Chemicals	2
Vinyl Chloride	30112541	131	Industrial Chemicals	2
Vinyl Chloride	30112542	131	Industrial Chemicals	2
Vinyl Chloride	30112543	131	Industrial Chemicals	2
Vinyl Chloride	30112544	131	Industrial Chemicals	2
Vinyl Chloride	30112545	131	Industrial Chemicals	2
Vinyl Chloride	30112546	131	Industrial Chemicals	2
Vinyl Chloride	30112547	131	Industrial Chemicals	2
Vinyl Chloride	30112550	131	Industrial Chemicals	2
Vinylidene Chloride	30112551	131	Industrial Chemicals	2
Vinylidene Chloride	30112552	131	Industrial Chemicals	2
Vinylidene Chloride	30112553	131	Industrial Chemicals	2
Vinylidene Chloride	30112555	131	Industrial Chemicals	2
Chlorinated Organics	30112599	131	Industrial Chemicals	2
Brominated Organics	30112699	131	Industrial Chemicals	2
Fluorocarbons	30112701	131	Industrial Chemicals	2
Fluorocarbons	30112702	131	Industrial Chemicals	2
Fluorocarbons	30112703	131	Industrial Chemicals	2
Fluorocarbons	30112720	131	Industrial Chemicals	2
Fluorocarbons	30112730	131	Industrial Chemicals	2
Fluorocarbons	30112740	131	Industrial Chemicals	2
Fluorocarbons	30112780	131	Industrial Chemicals	2
Ammonium Sulfate	30113004	136	Agricultural Chemicals	2
Ammonium Sulfate	30113005	136	Agricultural Chemicals	2
Acetic Acid	30113201	131	Industrial Chemicals	2
Acetic Acid	30113205	131	Industrial Chemicals	2
Acetic Acid	30113210	131	Industrial Chemicals	2
Acetic Acid	30113221	131	Industrial Chemicals	2
Acetic Acid	30113222	131	Industrial Chemicals	2
Acetic Acid	30113223	131	Industrial Chemicals	2
Acetic Acid	30113224	131	Industrial Chemicals	2
Acetic Acid	30113227	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Acetic Acid	30113299	131	Industrial Chemicals	2
Acetic Anhydride	30113301	131	Industrial Chemicals	2
Acetic Anhydride	30113302	131	Industrial Chemicals	2
Acetic Anhydride	30113303	131	Industrial Chemicals	2
Acetic Anhydride	30113380	131	Industrial Chemicals	2
Esters Production	30113701	131	Industrial Chemicals	2
Esters Production	30113710	131	Industrial Chemicals	2
Esters Production	30113799	131	Industrial Chemicals	2
Acetylene	30114001	131	Industrial Chemicals	2
Acetylene	30114002	131	Industrial Chemicals	2
Acetylene	30114003	131	Industrial Chemicals	2
Acetylene	30114004	131	Industrial Chemicals	2
Acetylene	30114005	131	Industrial Chemicals	2
Bisphenol A	30115201	131	Industrial Chemicals	2
Butadiene	30115301	131	Industrial Chemicals	2
Butadiene	30115310	131	Industrial Chemicals	2
Butadiene	30115311	131	Industrial Chemicals	2
Butadiene	30115312	131	Industrial Chemicals	2
Butadiene	30115320	131	Industrial Chemicals	2
Butadiene	30115321	131	Industrial Chemicals	2
Butadiene	30115322	131	Industrial Chemicals	2
Butadiene	30115380	131	Industrial Chemicals	2
Cumene	30115601	131	Industrial Chemicals	2
Cumene	30115602	131	Industrial Chemicals	2
Cumene	30115603	131	Industrial Chemicals	2
Cumene	30115604	131	Industrial Chemicals	2
Cumene	30115605	131	Industrial Chemicals	2
Cumene	30115606	131	Industrial Chemicals	2
Cumene	30115607	131	Industrial Chemicals	2
Cumene	30115680	131	Industrial Chemicals	2
Cyclohexane	30115701	131	Industrial Chemicals	2
Cyclohexane	30115702	131	Industrial Chemicals	2
Cyclohexane	30115703	131	Industrial Chemicals	2
Cyclohexane	30115704	131	Industrial Chemicals	2
Cyclohexane	30115780	131	Industrial Chemicals	2
Cyclohexanone/ol	30115801	131	Industrial Chemicals	2
Cyclohexanone/ol	30115802	131	Industrial Chemicals	2
Cyclohexanone/ol	30115803	131	Industrial Chemicals	2
Cyclohexanone/ol	30115821	131	Industrial Chemicals	2
Cyclohexanone/ol	30115822	131	Industrial Chemicals	2
Cyclohexanone/ol	30115880	131	Industrial Chemicals	2
Vinyl Acetate	30116701	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Vinyl Acetate	30116702	131	Industrial Chemicals	2
Vinyl Acetate	30116703	131	Industrial Chemicals	2
Vinyl Acetate	30116704	131	Industrial Chemicals	2
Vinyl Acetate	30116780	131	Industrial Chemicals	2
Vinyl Acetate	30116799	131	Industrial Chemicals	2
Ethyl Benzene	30116901	131	Industrial Chemicals	2
Ethyl Benzene	30116902	131	Industrial Chemicals	2
Ethyl Benzene	30116903	131	Industrial Chemicals	2
Ethyl Benzene	30116904	131	Industrial Chemicals	2
Ethyl Benzene	30116905	131	Industrial Chemicals	2
Ethyl Benzene	30116906	131	Industrial Chemicals	2
Ethyl Benzene	30116980	131	Industrial Chemicals	2
Ethylene Oxide	30117401	131	Industrial Chemicals	2
Ethylene Oxide	30117402	131	Industrial Chemicals	2
Ethylene Oxide	30117410	131	Industrial Chemicals	2
Ethylene Oxide	30117411	131	Industrial Chemicals	2
Ethylene Oxide	30117421	131	Industrial Chemicals	2
Ethylene Oxide	30117480	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117601	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117610	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117611	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117612	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117613	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117614	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117615	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117616	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117617	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117618	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117630	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117631	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117632	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117633	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117634	131	Industrial Chemicals	2
Glycerin (Glycerol)	30117680	131	Industrial Chemicals	2
Toluene Diisocyanate	30118101	131	Industrial Chemicals	2
Toluene Diisocyanate	30118102	131	Industrial Chemicals	2
Toluene Diisocyanate	30118103	131	Industrial Chemicals	2
Toluene Diisocyanate	30118104	131	Industrial Chemicals	2
Toluene Diisocyanate	30118105	131	Industrial Chemicals	2
Toluene Diisocyanate	30118106	131	Industrial Chemicals	2
Toluene Diisocyanate	30118107	131	Industrial Chemicals	2
Toluene Diisocyanate	30118108	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Toluene Diisocyanate	30118109	131	Industrial Chemicals	2
Toluene Diisocyanate	30118110	131	Industrial Chemicals	2
Toluene Diisocyanate	30118180	131	Industrial Chemicals	2
Methyl Methacrylate	30119001	131	Industrial Chemicals	2
Methyl Methacrylate	30119002	131	Industrial Chemicals	2
Methyl Methacrylate	30119003	131	Industrial Chemicals	2
Methyl Methacrylate	30119004	131	Industrial Chemicals	2
Methyl Methacrylate	30119010	131	Industrial Chemicals	2
Methyl Methacrylate	30119011	131	Industrial Chemicals	2
Methyl Methacrylate	30119012	131	Industrial Chemicals	2
Methyl Methacrylate	30119013	131	Industrial Chemicals	2
Methyl Methacrylate	30119014	131	Industrial Chemicals	2
Methyl Methacrylate	30119080	131	Industrial Chemicals	2
Nitrobenzene	30119501	131	Industrial Chemicals	2
Nitrobenzene	30119502	131	Industrial Chemicals	2
Nitrobenzene	30119503	131	Industrial Chemicals	2
Nitrobenzene	30119504	131	Industrial Chemicals	2
Nitrobenzene	30119505	131	Industrial Chemicals	2
Nitrobenzene	30119506	131	Industrial Chemicals	2
Nitrobenzene	30119580	131	Industrial Chemicals	2
Propylene	30119701	131	Industrial Chemicals	2
Propylene	30119705	131	Industrial Chemicals	2
Propylene	30119706	131	Industrial Chemicals	2
Propylene	30119707	131	Industrial Chemicals	2
Propylene	30119708	131	Industrial Chemicals	2
Propylene	30119709	131	Industrial Chemicals	2
Butylene	30119710	131	Industrial Chemicals	2
Ethylene	30119741	131	Industrial Chemicals	2
Ethylene	30119742	131	Industrial Chemicals	2
Ethylene	30119743	131	Industrial Chemicals	2
Ethylene	30119744	131	Industrial Chemicals	2
Ethylene	30119745	131	Industrial Chemicals	2
Ethylene	30119749	131	Industrial Chemicals	2
Olefins: General	30119799	131	Industrial Chemicals	2
Phenol	30120201	131	Industrial Chemicals	2
Phenol	30120202	131	Industrial Chemicals	2
Phenol	30120203	131	Industrial Chemicals	2
Phenol	30120204	131	Industrial Chemicals	2
Phenol	30120205	131	Industrial Chemicals	2
Phenol	30120206	131	Industrial Chemicals	2
Phenol	30120210	131	Industrial Chemicals	2
Phenol	30120211	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Phenol	30120280	131	Industrial Chemicals	2
Propylene Oxide	30120501	131	Industrial Chemicals	2
Propylene Oxide	30120502	131	Industrial Chemicals	2
Propylene Oxide	30120503	131	Industrial Chemicals	2
Propylene Oxide	30120504	131	Industrial Chemicals	2
Propylene Oxide	30120505	131	Industrial Chemicals	2
Propylene Oxide	30120506	131	Industrial Chemicals	2
Propylene Oxide	30120507	131	Industrial Chemicals	2
Propylene Oxide	30120508	131	Industrial Chemicals	2
Propylene Oxide	30120509	131	Industrial Chemicals	2
Propylene Oxide	30120520	131	Industrial Chemicals	2
Propylene Oxide	30120521	131	Industrial Chemicals	2
Propylene Oxide	30120522	131	Industrial Chemicals	2
Propylene Oxide	30120523	131	Industrial Chemicals	2
Propylene Oxide	30120524	131	Industrial Chemicals	2
Propylene Oxide	30120525	131	Industrial Chemicals	2
Propylene Oxide	30120526	131	Industrial Chemicals	2
Propylene Oxide	30120527	131	Industrial Chemicals	2
Propylene Oxide	30120528	131	Industrial Chemicals	2
Propylene Oxide	30120529	131	Industrial Chemicals	2
Propylene Oxide	30120530	131	Industrial Chemicals	2
Propylene Oxide	30120531	131	Industrial Chemicals	2
Propylene Oxide	30120532	131	Industrial Chemicals	2
Propylene Oxide	30120540	131	Industrial Chemicals	2
Propylene Oxide	30120541	131	Industrial Chemicals	2
Propylene Oxide	30120542	131	Industrial Chemicals	2
Propylene Oxide	30120543	131	Industrial Chemicals	2
Propylene Oxide	30120544	131	Industrial Chemicals	2
Propylene Oxide	30120545	131	Industrial Chemicals	2
Propylene Oxide	30120546	131	Industrial Chemicals	2
Propylene Oxide	30120547	131	Industrial Chemicals	2
Propylene Oxide	30120548	131	Industrial Chemicals	2
Propylene Oxide	30120549	131	Industrial Chemicals	2
Propylene Oxide	30120550	131	Industrial Chemicals	2
Propylene Oxide	30120551	131	Industrial Chemicals	2
Propylene Oxide	30120552	131	Industrial Chemicals	2
Propylene Oxide	30120553	131	Industrial Chemicals	2
Propylene Oxide	30120554	131	Industrial Chemicals	2
Propylene Oxide	30120555	131	Industrial Chemicals	2
Propylene Oxide	30120580	131	Industrial Chemicals	2
Styrene	30120601	131	Industrial Chemicals	2
Styrene	30120602	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Styrene	30120603	131	Industrial Chemicals	2
Styrene	30120680	131	Industrial Chemicals	2
Caprolactum	30121001	131	Industrial Chemicals	2
Caprolactum	30121002	131	Industrial Chemicals	2
Caprolactum	30121003	131	Industrial Chemicals	2
Caprolactum	30121004	131	Industrial Chemicals	2
Caprolactum	30121005	131	Industrial Chemicals	2
Caprolactum	30121006	131	Industrial Chemicals	2
Caprolactum	30121007	131	Industrial Chemicals	2
Caprolactum	30121008	131	Industrial Chemicals	2
Caprolactum	30121009	131	Industrial Chemicals	2
Caprolactum	30121010	131	Industrial Chemicals	2
Caprolactum	30121080	131	Industrial Chemicals	2
Linear Alkylbenzene	30121101	131	Industrial Chemicals	2
Linear Alkylbenzene	30121102	131	Industrial Chemicals	2
Linear Alkylbenzene	30121103	131	Industrial Chemicals	2
Linear Alkylbenzene	30121104	131	Industrial Chemicals	2
Linear Alkylbenzene	30121121	131	Industrial Chemicals	2
Linear Alkylbenzene	30121122	131	Industrial Chemicals	2
Linear Alkylbenzene	30121123	131	Industrial Chemicals	2
Linear Alkylbenzene	30121124	131	Industrial Chemicals	2
Linear Alkylbenzene	30121125	131	Industrial Chemicals	2
Linear Alkylbenzene	30121180	131	Industrial Chemicals	2
Methanol	30125001	131	Industrial Chemicals	2
Methanol	30125002	131	Industrial Chemicals	2
Methanol	30125003	131	Industrial Chemicals	2
Methanol	30125004	131	Industrial Chemicals	2
Alcohols	30125005	131	Industrial Chemicals	2
Alcohols	30125010	131	Industrial Chemicals	2
Alcohols	30125015	131	Industrial Chemicals	2
Alcohols	30125020	131	Industrial Chemicals	2
Alcohols	30125025	131	Industrial Chemicals	2
Alcohols	30125099	131	Industrial Chemicals	2
Ethylene Glycol	30125101	131	Industrial Chemicals	2
Ethylene Glycol	30125102	131	Industrial Chemicals	2
Ethylene Glycol	30125103	131	Industrial Chemicals	2
Ethylene Glycol	30125104	131	Industrial Chemicals	2
Ethylene Glycol	30125180	131	Industrial Chemicals	2
Ether Production	30125201	131	Industrial Chemicals	2
Glycol Ethers	30125301	131	Industrial Chemicals	2
Glycol Ethers	30125302	131	Industrial Chemicals	2
Glycol Ethers	30125305	131	Industrial Chemicals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Glycol Ethers	30125306	131	Industrial Chemicals	2
Glycol Ethers	30125315	131	Industrial Chemicals	2
Glycol Ethers	30125316	131	Industrial Chemicals	2
Glycol Ethers	30125325	131	Industrial Chemicals	2
Glycol Ethers	30125326	131	Industrial Chemicals	2
Glycol Ethers	30125380	131	Industrial Chemicals	2
Nitriles Production	30125401	131	Industrial Chemicals	2
Acrylonitrile	30125405	131	Industrial Chemicals	2
Acrylonitrile	30125406	131	Industrial Chemicals	2
Acrylonitrile	30125407	131	Industrial Chemicals	2
Acrylonitrile	30125408	131	Industrial Chemicals	2
Acrylonitrile	30125409	131	Industrial Chemicals	2
Adiponitrile	30125410	131	Industrial Chemicals	2
Adiponitrile	30125411	131	Industrial Chemicals	2
Adiponitrile	30125412	131	Industrial Chemicals	2
Adiponitrile	30125413	131	Industrial Chemicals	2
Adiponitrile	30125415	131	Industrial Chemicals	2
Adiponitrile	30125416	131	Industrial Chemicals	2
Adiponitrile	30125417	131	Industrial Chemicals	2
Adiponitrile	30125418	131	Industrial Chemicals	2
Adiponitrile	30125420	131	Industrial Chemicals	2
Nitriles Production	30125499	131	Industrial Chemicals	2
Benzene	30125801	131	Industrial Chemicals	2
Benzene	30125802	131	Industrial Chemicals	2
Benzene	30125803	131	Industrial Chemicals	2
Toluene	30125805	131	Industrial Chemicals	2
Toluene	30125806	131	Industrial Chemicals	2
Toluene	30125807	131	Industrial Chemicals	2
Aromatics Production	30125810	131	Industrial Chemicals	2
Mixed Xylenes	30125815	131	Industrial Chemicals	2
Mixed Xylenes	30125816	131	Industrial Chemicals	2
Mixed Xylenes	30125817	131	Industrial Chemicals	2
Aromatics Production	30125880	131	Industrial Chemicals	2
Aromatics Production	30125899	131	Industrial Chemicals	2
Chlorobenzene	30130101	131	Industrial Chemicals	2
Chlorobenzene	30130102	131	Industrial Chemicals	2
Chlorobenzene	30130103	131	Industrial Chemicals	2
Chlorobenzene	30130104	131	Industrial Chemicals	2
Chlorobenzene	30130105	131	Industrial Chemicals	2
Chlorobenzene	30130106	131	Industrial Chemicals	2
Chlorobenzene	30130107	131	Industrial Chemicals	2
Chlorobenzene	30130108	131	Industrial Chemicals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Chlorobenzene	30130110	131	Industrial Chemicals	2
Chlorobenzene	30130180	131	Industrial Chemicals	2
Carbon Tetrachloride	30130201	131	Industrial Chemicals	2
Carbon Tetrachloride	30130202	131	Industrial Chemicals	2
Carbon Tetrachloride	30130203	131	Industrial Chemicals	2
Carbon Tetrachloride	30130280	131	Industrial Chemicals	2
Allyl Chloride	30130301	131	Industrial Chemicals	2
Allyl Chloride	30130302	131	Industrial Chemicals	2
Allyl Chloride	30130303	131	Industrial Chemicals	2
Allyl Chloride	30130304	131	Industrial Chemicals	2
Allyl Chloride	30130305	131	Industrial Chemicals	2
Allyl Chloride	30130380	131	Industrial Chemicals	2
Allyl Alcohol	30130401	131	Industrial Chemicals	2
Allyl Alcohol	30130402	131	Industrial Chemicals	2
Allyl Alcohol	30130403	131	Industrial Chemicals	2
Allyl Alcohol	30130404	131	Industrial Chemicals	2
Allyl Alcohol	30130405	131	Industrial Chemicals	2
Allyl Alcohol	30130480	131	Industrial Chemicals	2
Epichlorohydrin	30130501	131	Industrial Chemicals	2
Epichlorohydrin	30130502	131	Industrial Chemicals	2
Epichlorohydrin	30130503	131	Industrial Chemicals	2
Epichlorohydrin	30130504	131	Industrial Chemicals	2
Epichlorohydrin	30130505	131	Industrial Chemicals	2
Epichlorohydrin	30130580	131	Industrial Chemicals	2
Nitroglycerin	30140101	131	Industrial Chemicals	2
Nitroglycerin	30140102	131	Industrial Chemicals	2
Nitroglycerin	30140103	131	Industrial Chemicals	2
General Processes	30180001	131	Industrial Chemicals	2
General Processes	30181001	131	Industrial Chemicals	2
General Processes	30182001	131	Industrial Chemicals	2
General Processes	30182002	131	Industrial Chemicals	2
General Processes	30182003	131	Industrial Chemicals	2
General Processes	30183001	131	Industrial Chemicals	2
General Processes	30184001	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187001	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187002	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187003	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187004	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187005	131	Industrial Chemicals	2
Inorganic Chemical Storage	30187006	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187007	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187008	131	Industrial Chemicals	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Inorganic Chemical Storage	30187009	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187010	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187011	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187012	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187013	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187014	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187015	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187016	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187097	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187098	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187501	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187502	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187511	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187512	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187513	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187514	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187515	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187516	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187597	131	Industrial Chemicals	4
Inorganic Chemical Storage	30187598	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188501	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188502	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188503	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188504	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188505	131	Industrial Chemicals	4
Inorganic Chemical Storage	30188599	131	Industrial Chemicals	4
Fugitive Emissions	30188801	131	Industrial Chemicals	4
Fugitive Emissions	30188802	131	Industrial Chemicals	4
Fugitive Emissions	30188803	131	Industrial Chemicals	4
Fugitive Emissions	30188804	131	Industrial Chemicals	4
Fugitive Emissions	30188805	131	Industrial Chemicals	4
Fugitive Emissions	30188806	131	Industrial Chemicals	4
Fugitive Emissions	30188807	131	Industrial Chemicals	4
Waste Gas Flares	30190099	131	Industrial Chemicals	4
Chem. Processes: NEC	30199998	131	Industrial Chemicals	4
Chem. Processes: NEC	30199999	131	Industrial Chemicals	4
Food & Kindred Products				
Alfalfa Dehydration	30200101	107	Grain Mill Products, & Fats & Oils	2
Alfalfa Dehydration	30200102	107	Grain Mill Products, & Fats & Oils	2
Alfalfa Dehydration	30200103	107	Grain Mill Products, & Fats & Oils	2
Alfalfa Dehydration	30200104	107	Grain Mill Products, & Fats & Oils	2
Alfalfa Dehydration	30200199	107	Grain Mill Products, & Fats & Oils	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Coffee Roasting	30200201	112	Misc. Food & Kindred Products	2
Coffee Roasting	30200202	112	Misc. Food & Kindred Products	2
Coffee Roasting	30200203	112	Misc. Food & Kindred Products	2
Coffee Roasting	30200299	112	Misc. Food & Kindred Products	2
Instant Coffee	30200301	112	Misc. Food & Kindred Products	2
Cotton Ginning	30200401	3	Agricultural Services	2
Cotton Ginning	30200402	3	Agricultural Services	2
Cotton Ginning	30200403	3	Agricultural Services	2
Cotton Ginning	30200404	3	Agricultural Services	2
Cotton Ginning	30200405	3	Agricultural Services	2
Cotton Ginning	30200406	3	Agricultural Services	2
Cotton Ginning	30200407	3	Agricultural Services	2
Cotton Ginning	30200408	3	Agricultural Services	2
Cotton Ginning	30200409	3	Agricultural Services	2
Cotton Ginning	30200410	3	Agricultural Services	2
Cotton Ginning	30200411	3	Agricultural Services	2
Cotton Ginning	30200412	3	Agricultural Services	2
Cotton Ginning	30200415	3	Agricultural Services	2
Cotton Ginning	30200499	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200501	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200502	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200503	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200504	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200505	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200506	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200507	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200508	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200509	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200510	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200511	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200512	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200513	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200514	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200515	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200516	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200517	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200518	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200519	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200520	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200521	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200522	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200524	3	Agricultural Services	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Feed & Grain Terminal Elevators	30200525	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200526	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200531	3	Agricultural Services	2
Feed & Grain Terminal Elevators	30200532	3	Agricultural Services	2
Feed & Grain Country Elevators	30200601	3	Agricultural Services	2
Feed & Grain Country Elevators	30200602	3	Agricultural Services	2
Feed & Grain Country Elevators	30200603	3	Agricultural Services	2
Feed & Grain Country Elevators	30200604	3	Agricultural Services	2
Feed & Grain Country Elevators	30200605	3	Agricultural Services	2
Feed & Grain Country Elevators	30200606	3	Agricultural Services	2
Feed & Grain Country Elevators	30200607	3	Agricultural Services	2
Feed & Grain Country Elevators	30200608	3	Agricultural Services	2
Feed & Grain Country Elevators	30200609	3	Agricultural Services	2
Feed & Grain Country Elevators	30200610	3	Agricultural Services	2
Feed & Grain Country Elevators	30200611	3	Agricultural Services	2
Feed & Grain Country Elevators	30200699	3	Agricultural Services	2
General	30200701	107	Grain Mill Products, & Fats & Oils	2
General	30200702	107	Grain Mill Products, & Fats & Oils	2
Barley Milling	30200703	107	Grain Mill Products, & Fats & Oils	2
Milo Milling	30200704	107	Grain Mill Products, & Fats & Oils	2
Barley Milling	30200705	107	Grain Mill Products, & Fats & Oils	2
Barley Milling	30200706	107	Grain Mill Products, & Fats & Oils	2
Barley Milling	30200707	107	Grain Mill Products, & Fats & Oils	2
Milo Milling	30200710	107	Grain Mill Products, & Fats & Oils	2
Durum Milling	30200711	107	Grain Mill Products, & Fats & Oils	2
Durum Milling	30200712	107	Grain Mill Products, & Fats & Oils	2
Durum Milling	30200713	107	Grain Mill Products, & Fats & Oils	2
Durum Milling	30200714	107	Grain Mill Products, & Fats & Oils	2
Rye Milling	30200721	107	Grain Mill Products, & Fats & Oils	2
Rye Milling	30200722	107	Grain Mill Products, & Fats & Oils	2
Rye Milling	30200723	107	Grain Mill Products, & Fats & Oils	2
Rye Milling	30200724	107	Grain Mill Products, & Fats & Oils	2
General Processes	30200730	107	Grain Mill Products, & Fats & Oils	2
Wheat Milling	30200731	107	Grain Mill Products, & Fats & Oils	2
Wheat Milling	30200732	107	Grain Mill Products, & Fats & Oils	2
Wheat Milling	30200733	107	Grain Mill Products, & Fats & Oils	2
Wheat Milling	30200734	107	Grain Mill Products, & Fats & Oils	2
Corn: Dry Milling	30200741	107	Grain Mill Products, & Fats & Oils	2
Corn: Dry Milling	30200742	107	Grain Mill Products, & Fats & Oils	2
Corn: Dry Milling	30200743	107	Grain Mill Products, & Fats & Oils	2
Corn: Dry Milling	30200744	107	Grain Mill Products, & Fats & Oils	2
Corn: Dry Milling	30200745	107	Grain Mill Products, & Fats & Oils	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Corn: Dry Milling	30200746	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200751	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200752	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200753	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200754	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200755	107	Grain Mill Products, & Fats & Oils	2
Corn: Wet Milling	30200756	107	Grain Mill Products, & Fats & Oils	2
Oat Milling	30200760	107	Grain Mill Products, & Fats & Oils	2
Rice Milling	30200771	107	Grain Mill Products, & Fats & Oils	2
Rice Milling	30200772	107	Grain Mill Products, & Fats & Oils	2
Rice Milling	30200773	107	Grain Mill Products, & Fats & Oils	2
Rice Milling	30200774	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200781	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200782	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200783	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200784	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200785	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200786	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200787	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200788	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200789	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200790	107	Grain Mill Products, & Fats & Oils	2
Soybean Milling	30200791	107	Grain Mill Products, & Fats & Oils	2
Milling: NEC	30200799	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200801	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200802	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200803	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200804	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200805	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200806	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200807	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200808	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200809	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200810	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200811	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200812	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200813	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200815	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200816	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200821	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200822	107	Grain Mill Products, & Fats & Oils	2
Feed Mfg.	30200823	107	Grain Mill Products, & Fats & Oils	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Feed Mfg.	30200899	107	Grain Mill Products, & Fats & Oils	2
Beer Production	30200901	110	Alcoholic Beverages	1
Beer Production	30200902	110	Alcoholic Beverages	1
Beer Production	30200903	110	Alcoholic Beverages	1
Beer Production	30200904	110	Alcoholic Beverages	1
Beer Production	30200905	110	Alcoholic Beverages	1
Beer Production	30200906	110	Alcoholic Beverages	1
Beer Production	30200910	110	Alcoholic Beverages	1
Beer Production	30200911	110	Alcoholic Beverages	1
Beer Production	30200912	110	Alcoholic Beverages	1
Beer Production	30200920	110	Alcoholic Beverages	1
Beer Production	30200998	110	Alcoholic Beverages	1
Beer Production	30200999	110	Alcoholic Beverages	1
Whiskey Fermentation	30201001	110	Alcoholic Beverages	1
Whiskey Fermentation	30201002	110	Alcoholic Beverages	1
Whiskey Fermentation	30201003	110	Alcoholic Beverages	1
Whiskey Fermentation	30201004	110	Alcoholic Beverages	1
Whiskey Fermentation	30201005	110	Alcoholic Beverages	1
Whiskey Fermentation	30201006	110	Alcoholic Beverages	1
Whiskey Fermentation	30201010	110	Alcoholic Beverages	1
Whiskey Fermentation	30201011	110	Alcoholic Beverages	1
Whiskey Fermentation	30201012	110	Alcoholic Beverages	1
Whiskey Fermentation	30201020	110	Alcoholic Beverages	1
Whiskey Fermentation	30201099	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201101	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201102	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201103	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201104	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201105	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201106	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201110	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201120	110	Alcoholic Beverages	1
Wines, Brandy, & Brandy Spirits	30201199	110	Alcoholic Beverages	1
Fish Processing	30201201	104	Meat Products	2
Fish Processing	30201202	104	Meat Products	2
Fish Processing	30201203	104	Meat Products	2
Fish Processing	30201204	104	Meat Products	2
Fish Processing	30201205	104	Meat Products	2
Fish Processing	30201206	104	Meat Products	2
Fish Processing	30201299	104	Meat Products	2
Meat Smokehouses	30201301	104	Meat Products	1
Starch Mfg.	30201401	107	Grain Mill Products, & Fats & Oils	2

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Starch Mfg.	30201402	107	Grain Mill Products, & Fats & Oils	2
Starch Mfg.	30201403	107	Grain Mill Products, & Fats & Oils	2
Starch Mfg.	30201405	107	Grain Mill Products, & Fats & Oils	2
Starch Mfg.	30201406	107	Grain Mill Products, & Fats & Oils	2
Starch Mfg.	30201421	107	Grain Mill Products, & Fats & Oils	2
Starch Mfg.	30201422	107	Grain Mill Products, & Fats & Oils	2
Sugar Cane Processing	30201501	109	Sugar & Confectionary Products	1
Sugar Cane Processing	30201599	109	Sugar & Confectionary Products	1
Sugar Beet Processing	30201601	109	Sugar & Confectionary Products	1
Sugar Beet Processing	30201699	109	Sugar & Confectionary Products	1
Peanut Processing	30201701	109	Sugar & Confectionary Products	2
Peanut Processing	30201702	109	Sugar & Confectionary Products	2
Peanut Processing	30201703	109	Sugar & Confectionary Products	2
Peanut Processing	30201704	109	Sugar & Confectionary Products	2
Peanut Processing	30201799	109	Sugar & Confectionary Products	2
Candy Mfg.	30201899	109	Sugar & Confectionary Products	2
Vegtable Oil Processing	30201901	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201902	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201903	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201904	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201905	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201906	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201907	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201908	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201909	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201911	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201912	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201913	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201914	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201915	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201916	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201917	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201918	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201919	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201920	107	Grain Mill Products, & Fats & Oils	1
Vegtable Oil Processing	30201999	107	Grain Mill Products, & Fats & Oils	2
Beef Cattle Feedlots	30202001	3	Agricultural Services	3
Beef Cattle Feedlots	30202002	3	Agricultural Services	3
Poultry & Egg Production	30202101	3	Agricultural Services	3
Poultry & Egg Production	30202102	3	Agricultural Services	3
Poultry & Egg Production	30202105	3	Agricultural Services	3
Poultry & Egg Production	30202106	3	Agricultural Services	3

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Cotton Seed Delinting	30202201	3	Agricultural Services	2
Seed Production	30202601	3	Agricultural Services	2
Mushroom Growing	30202801	3	Agricultural Services	5
Dairy Products	30203001	3	Agricultural Services	3
Dairy Products	30203099	3	Agricultural Services	3
Export Grain Elevators	30203103	3	Agricultural Services	2
Export Grain Elevators	30203104	3	Agricultural Services	2
Export Grain Elevators	30203105	3	Agricultural Services	2
Export Grain Elevators	30203106	3	Agricultural Services	2
Export Grain Elevators	30203107	3	Agricultural Services	2
Export Grain Elevators	30203108	3	Agricultural Services	2
Export Grain Elevators	30203109	3	Agricultural Services	2
Export Grain Elevators	30203110	3	Agricultural Services	2
Export Grain Elevators	30203111	3	Agricultural Services	2
Bakeries	30203201	108	Bakery Products	1
Bakeries	30203202	108	Bakery Products	1
Bakeries	30203299	108	Bakery Products	1
Tobacco Processing	30203399	113	Tobacco Products	1
Deep Fat Frying	30203601	107	Grain Mill Products, & Fats & Oils	4
Animal/Poultry Rendering	30203801	104	Meat Products	3
Carob Kibble	30203901	109	Sugar & Confectionary Products	3
Carob Kibble	30203902	109	Sugar & Confectionary Products	3
Cereal	30204001	107	Grain Mill Products, & Fats & Oils	4
Cereal	30204201	107	Grain Mill Products, & Fats & Oils	4
Fugitive Emissions	30288801	107	Grain Mill Products, & Fats & Oils	4
Fugitive Emissions	30288802	107	Grain Mill Products, & Fats & Oils	4
Fugitive Emissions	30288803	107	Grain Mill Products, & Fats & Oils	4
Fugitive Emissions	30288804	107	Grain Mill Products, & Fats & Oils	4
Fugitive Emissions	30288805	107	Grain Mill Products, & Fats & Oils	4
Fuel Fired Equipment	30290005	3	Agricultural Services	4
Food Broiling	30291001	112	Misc. Food & Kindred Products	4
Food & Kindred Products: NEC	30299998	3	Agricultural Services	4
Food & Kindred Products: NEC	30299999	3	Agricultural Services	4
Primary Metals				
Bauxite Processing	30300001	6	Metal Mining	2
Bauxite Processing	30300002	6	Metal Mining	2
Bauxite Processing	30300003	6	Metal Mining	2
Bauxite Processing	30300004	6	Metal Mining	2
Aluminum Ore	30300101	45	Primary Nonferrous Metals	1
Aluminum Ore	30300102	45	Primary Nonferrous Metals	1
Aluminum Ore	30300103	45	Primary Nonferrous Metals	1
Aluminum Ore	30300104	45	Primary Nonferrous Metals	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Aluminum Ore	30300105	45	Primary Nonferrous Metals	1
Aluminum Ore	30300106	45	Primary Nonferrous Metals	1
Aluminum Ore	30300107	45	Primary Nonferrous Metals	1
Aluminum Ore	30300108	45	Primary Nonferrous Metals	1
Aluminum Ore	30300109	45	Primary Nonferrous Metals	1
Aluminum Ore	30300110	45	Primary Nonferrous Metals	1
Aluminum Ore	30300111	45	Primary Nonferrous Metals	1
Aluminum Ore	30300199	45	Primary Nonferrous Metals	1
Aluminum Hydroxide	30300201	45	Primary Nonferrous Metals	1
By-Product Coke Mfg.	30300302	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300303	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300304	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300305	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300306	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300307	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300308	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300309	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300310	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300311	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300312	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300313	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300314	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300315	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300316	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300331	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300332	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300333	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300334	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300335	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300336	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300341	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300342	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300343	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300344	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300351	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300352	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300353	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300361	43	Blast Furnaces & Basic Steel Prod.	1
By-Product Coke Mfg.	30300399	43	Blast Furnaces & Basic Steel Prod.	1
Primary Copper Smelting	30300502	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300503	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300504	45	Primary Nonferrous Metals	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Primary Copper Smelting	30300505	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300506	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300507	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300508	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300509	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300510	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300511	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300512	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300513	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300514	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300515	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300516	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300517	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300518	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300519	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300521	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300522	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300523	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300524	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300525	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300526	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300527	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300528	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300529	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300530	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300531	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300532	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300533	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300534	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300535	45	Primary Nonferrous Metals	1
Primary Copper Smelting	30300599	45	Primary Nonferrous Metals	1
Ferroalloy Production	30300601	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300602	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300603	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300604	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300605	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300606	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300607	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300608	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300609	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300610	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300611	43	Blast Furnaces & Basic Steel Prod.	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Ferroalloy Production	30300613	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300614	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300615	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300616	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300617	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300618	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300619	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300621	43	Blast Furnaces & Basic Steel.Prod.	1
Ferroalloy Production	30300622	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300623	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300624	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300625	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300651	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300652	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300653	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300654	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300699	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300701	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300702	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300703	43	Blast Furnaces & Basic Steel Prod.	1
Ferroalloy Production	30300704	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300801	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300802	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300804	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300805	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300808	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300809	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300811	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300812	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300813	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300814	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300815	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300816	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300817	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300818	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300819	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300820	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300821	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300822	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300823	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300824	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300825	43	Blast Furnaces & Basic Steel Prod.	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Iron Production	30300826	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300827	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300828	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300829	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300831	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300832	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300833	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300834	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300841	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300842	43	Blast Furnaces & Basic Steel Prod.	1
Iron Production	30300899	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300901	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300904	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300906	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300907	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300908	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300910	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300911	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300912	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300913	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300914	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300915	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300916	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300917	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300918	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300919	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300920	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300921	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300922	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300923	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300924	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300925	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300930	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300931	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300932	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300933	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300934	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300935	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300936	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300998	43	Blast Furnaces & Basic Steel Prod.	1
Steel Production	30300999	43	Blast Furnaces & Basic Steel Prod.	1
Lead Production	30301001	45	Primary Nonferrous Metals	2

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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Lead Production	30301002	45	Primary Nonferrous Metals	2
Lead Production	30301003	45	Primary Nonferrous Metals	2
Lead Production	30301004	45	Primary Nonferrous Metals	2
Lead Production	30301005	45	Primary Nonferrous Metals	2
Lead Production	30301006	45	Primary Nonferrous Metals	2
Lead Production	30301007	45	Primary Nonferrous Metals	2
Lead Production	30301008	45	Primary Nonferrous Metals	2
Lead Production	30301009	45	Primary Nonferrous Metals	2
Lead Production	30301010	45	Primary Nonferrous Metals	2
Lead Production	30301011	45	Primary Nonferrous Metals	2
Lead Production	30301012	45	Primary Nonferrous Metals	2
Lead Production	30301013	45	Primary Nonferrous Metals	2
Lead Production	30301014	45	Primary Nonferrous Metals	2
Lead Production	30301015	45	Primary Nonferrous Metals	2
Lead Production	30301016	45	Primary Nonferrous Metals	2
Lead Production	30301017	45	Primary Nonferrous Metals	2
Lead Production	30301018	45	Primary Nonferrous Metals	2
Lead Production	30301019	45	Primary Nonferrous Metals	2
Lead Production	30301020	45	Primary Nonferrous Metals	2
Lead Production	30301021	45	Primary Nonferrous Metals	2
Lead Production	30301022	45	Primary Nonferrous Metals	2
Lead Production	30301023	45	Primary Nonferrous Metals	2
Lead Production	30301024	45	Primary Nonferrous Metals	2
Lead Production	30301025	45	Primary Nonferrous Metals	2
Lead Production	30301026	45	Primary Nonferrous Metals	2
Lead Production	30301027	45	Primary Nonferrous Metals	2
Lead Production	30301099	45	Primary Nonferrous Metals	2
Molydedenum Ore Mining	30301101	6	Metal Mining	2
Molydedenum Ore Mining	30301102	6	Metal Mining	2
Molydedenum Ore Mining	30301199	6	Metal Mining	2
Titanium Processing	30301201	6	Metal Mining	2
Titanium Processing	30301202	6	Metal Mining	2
Titanium Processing	30301299	6	Metal Mining	2
Gold Processing	30301301	6	Metal Mining	1
Barium Ore Processing	30301401	6	Metal Mining	2
Barium Ore Processing	30301402	6	Metal Mining	2
Barium Ore Processing	30301403	6	Metal Mining	2
Barium Ore Processing	30301499	6	Metal Mining	2
Taconite Ore Processing	30302301	6	Metal Mining	2
Taconite Ore Processing	30302302	6	Metal Mining	2
Taconite Ore Processing	30302303	6	Metal Mining	2
Taconite Ore Processing	30302304	6	Metal Mining	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Taconite Ore Processing	30302305	6	Metal Mining	2
Taconite Ore Processing	30302306	6	Metal Mining	2
Taconite Ore Processing	30302307	6	Metal Mining	2
Taconite Ore Processing	30302308	6	Metal Mining	2
Taconite Ore Processing	30302309	6	Metal Mining	2
Taconite Ore Processing	30302310	6	Metal Mining	2
Taconite Ore Processing	30302311	6	Metal Mining	2
Taconite Ore Processing	30302312	6	Metal Mining	2
Taconite Ore Processing	30302313	6	Metal Mining	2
Taconite Ore Processing	30302314	6	Metal Mining	2
Taconite Ore Processing	30302315	6	Metal Mining	2
Taconite Ore Processing	30302316	6	Metal Mining	2
Taconite Ore Processing	30302321	6	Metal Mining	2
Taconite Ore Processing	30302322	6	Metal Mining	2
Metal Mining: General	30302401	6	Metal Mining	2
Metal Mining: General	30302402	6	Metal Mining	2
Metal Mining: General	30302403	6	Metal Mining	2
Metal Mining: General	30302404	6	Metal Mining	2
Metal Mining: General	30302405	6	Metal Mining	2
Metal Mining: General	30302406	6	Metal Mining	2
Metal Mining: General	30302407	6	Metal Mining	2
Metal Mining: General	30302408	6	Metal Mining	2
Metal Mining: General	30302409	6	Metal Mining	2
Metal Mining: General	30302410	6	Metal Mining	2
Metal Mining: General	30302411	6	Metal Mining	2
Zinc Production	30303002	45	Primary Nonferrous Metals	2
Zinc Production	30303003	45	Primary Nonferrous Metals	2
Zinc Production	30303005	45	Primary Nonferrous Metals	2
Zinc Production	30303006	45	Primary Nonferrous Metals	2
Zinc Production	30303007	45	Primary Nonferrous Metals	2
Zinc Production	30303008	45	Primary Nonferrous Metals	2
Zinc Production	30303009	45	Primary Nonferrous Metals	2
Zinc Production	30303010	45	Primary Nonferrous Metals	2
Zinc Production	30303011	45	Primary Nonferrous Metals	2
Zinc Production	30303012	45	Primary Nonferrous Metals	2
Zinc Production	30303014	45	Primary Nonferrous Metals	2
Zinc Production	30303015	45	Primary Nonferrous Metals	2
Zinc Production	30303016	45	Primary Nonferrous Metals	2
Zinc Production	30303017	45	Primary Nonferrous Metals	2
Zinc Production	30303018	45	Primary Nonferrous Metals	2
Zinc Production	30303019	45	Primary Nonferrous Metals	2
Zinc Production	30303020	45	Primary Nonferrous Metals	2

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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Zinc Production	30303021	45	Primary Nonferrous Metals	2
Zinc Production	30303022	45	Primary Nonferrous Metals	2
Zinc Production	30303023	45	Primary Nonferrous Metals	2
Zinc Production	30303099	45	Primary Nonferrous Metals	2
Fugitive Emissions	30388801	45	Primary Nonferrous Metals	2
Fugitive Emissions	30388802	45	Primary Nonferrous Metals	2
Fugitive Emissions	30388803	45	Primary Nonferrous Metals	2
Fugitive Emissions	30388804	45	Primary Nonferrous Metals	2
Fugitive Emissions	30388805	45	Primary Nonferrous Metals	2
Primary Metals: NEC	30399999	45	Primary Nonferrous Metals	2
Secondary Metals				
Secondary Aluminum	30400101	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400102	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400103	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400104	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400105	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400106	46	Misc. Primary & Secondary Metals	2
Secondary Aluminum	30400107	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400108	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400109	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400110	47	Nonferrous Rolling & Drawing	1
Secondary Aluminum	30400111	47	Nonferrous Rolling & Drawing	1
Secondary Aluminum	30400112	47	Nonferrous Rolling & Drawing	1
Secondary Aluminum	30400113	47	Nonferrous Rolling & Drawing	1
Secondary Aluminum	30400114	48	Nonferrous Foundries	1
Secondary Aluminum	30400115	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400116	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400117	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400118	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400120	49	Metal Cans & Shipping Containers	1
Secondary Aluminum	30400121	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400130	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400131	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400132	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400133	46	Misc. Primary & Secondary Metals	1
Secondary Aluminum	30400150	47	Nonferrous Rolling & Drawing	1
Secondary Aluminum	30400199	47	Nonferrous Rolling & Drawing	2
Secondary Copper	30400204	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400207	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400208	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400209	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400210	46	Misc. Primary & Secondary Metals	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Secondary Copper	30400211	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400212	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400214	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400215	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400216	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400217	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400219	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400220	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400221	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400223	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400224	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400230	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400231	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400232	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400233	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400234	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400235	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400236	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400237	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400238	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400239	48	Nonferrous Foundries	2
Secondary Copper	30400240	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400241	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400250	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400251	46	Misc. Primary & Secondary Metals	2
Secondary Copper	30400299	46	Misc. Primary & Secondary Metals	2
Gray Iron Foundries	30400301	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400302	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400303	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400304	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400305	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400310	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400314	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400315	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400316	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400317	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400320	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400325	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400330	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400331	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400332	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400333	44	Iron & Steel Foundries	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Gray Iron Foundries	30400340	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400341	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400342	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400350	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400351	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400352	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400353	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400354	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400355	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400356	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400357	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400358	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400360	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400370	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400371	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400398	44	Iron & Steel Foundries	1
Gray Iron Foundries	30400399	44	Iron & Steel Foundries	1
Secondary Lead	30400401	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400402	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400403	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400404	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400405	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400406	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400407	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400408	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400409	48	Nonferrous Foundries	2
Secondary Lead	30400410	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400411	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400412	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400413	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400414	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400415	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400416	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400417	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400418	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400419	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400420	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400421	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400422	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400423	46	Misc. Primary & Secondary Metals	2
Secondary Lead	30400499	46	Misc. Primary & Secondary Metals	2
Lead Battery Mfg.	30400501	82	Storage Batteries & Engine Electrical	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Lead Battery Mfg.	30400504	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400505	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400506	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400507	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400508	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400509	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400510	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400511	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400512	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400513	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400514	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400521	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400522	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400523	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400524	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400525	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400526	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400527	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400528	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400529	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400530	82	Storage Batteries & Engine Electrical	1
Lead Battery Mfg.	30400599	82	Storage Batteries & Engine Electrical	1
Magnesium	30400601	45	Primary Nonferrous Metals	2
Magnesium	30400699	45	Primary Nonferrous Metals	2
Steel Foundries	30400701	44	Iron & Steel Foundries	1
Steel Foundries	30400702	44	Iron & Steel Foundries	1
Steel Foundries	30400703	44	Iron & Steel Foundries	1
Steel Foundries	30400704	44	Iron & Steel Foundries	1
Steel Foundries	30400705	44	Iron & Steel Foundries	1
Steel Foundries	30400706	44	Iron & Steel Foundries	1
Steel Foundries	30400707	44	Iron & Steel Foundries	1
Steel Foundries	30400708	44	Iron & Steel Foundries	1
Steel Foundries	30400709	44	Iron & Steel Foundries	1
Steel Foundries	30400710	44	Iron & Steel Foundries	1
Steel Foundries	30400711	44	Iron & Steel Foundries	1
Steel Foundries	30400712	44	Iron & Steel Foundries	1
Steel Foundries	30400713	44	Iron & Steel Foundries	1
Steel Foundries	30400714	44	Iron & Steel Foundries	1
Steel Foundries	30400715	44	Iron & Steel Foundries	1
Steel Foundries	30400716	44	Iron & Steel Foundries	1
Steel Foundries	30400717	44	Iron & Steel Foundries	1
Steel Foundries	30400718	44	Iron & Steel Foundries	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Steel Foundries	30400720	44	Iron & Steel Foundries	1
Steel Foundries	30400721	44	Iron & Steel Foundries	1
Steel Foundries	30400722	44	Iron & Steel Foundries	1
Steel Foundries	30400723	44	Iron & Steel Foundries	1
Steel Foundries	30400724	44	Iron & Steel Foundries	1
Steel Foundries	30400725	44	Iron & Steel Foundries	1
Steel Foundries	30400726	44	Iron & Steel Foundries	1
Steel Foundries	30400730	44	Iron & Steel Foundries	1
Steel Foundries	30400731	44	Iron & Steel Foundries	1
Steel Foundries	30400732	44	Iron & Steel Foundries	1
Steel Foundries	30400733	44	Iron & Steel Foundries	1
Steel Foundries	30400735	44	Iron & Steel Foundries	1
Steel Foundries	30400736	44	Iron & Steel Foundries	1
Steel Foundries	30400737	44	Iron & Steel Foundries	1
Steel Foundries	30400739	44	Iron & Steel Foundries	1
Steel Foundries	30400740	44	Iron & Steel Foundries	1
Steel Foundries	30400741	44	Iron & Steel Foundries	1
Steel Foundries	30400742	44	Iron & Steel Foundries	1
Steel Foundries	30400743	44	Iron & Steel Foundries	1
Steel Foundries	30400744	44	Iron & Steel Foundries	1
Steel Foundries	30400745	44	Iron & Steel Foundries	1
Steel Foundries	30400760	44	Iron & Steel Foundries	1
Steel Foundries	30400765	44	Iron & Steel Foundries	1
Steel Foundries	30400768	44	Iron & Steel Foundries	1
Steel Foundries	30400770	44	Iron & Steel Foundries	1
Steel Foundries	30400775	44	Iron & Steel Foundries	1
Steel Foundries	30400780	44	Iron & Steel Foundries	1
Steel Foundries	30400785	44	Iron & Steel Foundries	1
Steel Foundries	30400799	44	Iron & Steel Foundries	1
Secondary Zinc	30400801	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400802	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400803	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400805	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400806	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400807	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400809	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400810	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400811	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400812	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400814	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400818	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400824	46	Misc. Primary & Secondary Metals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Secondary Zinc	30400828	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400834	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400838	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400840	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400841	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400842	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400843	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400851	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400852	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400853	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400854	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400855	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400861	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400862	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400863	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400864	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400865	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400866	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400867	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400868	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400869	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400870	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400871	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400872	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400873	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400874	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400875	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400876	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400877	46	Misc. Primary & Secondary Metals	2
Secondary Zinc	30400899	46	Misc. Primary & Secondary Metals	2
Malleable Iron	30400901	44	Iron & Steel Foundries	2
Malleable Iron	30400999	44	Iron & Steel Foundries	2
Nickel Production	30401001	45	Primary Nonferrous Metals	2
Nickel Production	30401002	45	Primary Nonferrous Metals	2
Nickel Production	30401004	45	Primary Nonferrous Metals	2
Nickel Production	30401005	45	Primary Nonferrous Metals	2
Nickel Production	30401006	45	Primary Nonferrous Metals	2
Nickel Production	30401007	45	Primary Nonferrous Metals	2
Nickel Production	30401008	45	Primary Nonferrous Metals	2
Nickel Production	30401010	45	Primary Nonferrous Metals	2
Nickel Production	30401011	45	Primary Nonferrous Metals	2
Nickel Production	30401015	45	Primary Nonferrous Metals	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Nickel Production	30401016	45	Primary Nonferrous Metals	2
Nickel Production	30401017	45	Primary Nonferrous Metals	2
Nickel Production	30401018	45	Primary Nonferrous Metals	2
Nickel Production	30401019	45	Primary Nonferrous Metals	2
Nickel Production	30401061	45	Primary Nonferrous Metals	2
Nickel Production	30401062	45	Primary Nonferrous Metals	2
Nickel Production	30401063	45	Primary Nonferrous Metals	2
Nickel Production	30401099	45	Primary Nonferrous Metals	2
Furnace Electrode Mfg.	30402001	74	Electrical Industrial Apparatus	2
Furnace Electrode Mfg.	30402002	74	Electrical Industrial Apparatus	2
Furnace Electrode Mfg.	30402003	74	Electrical Industrial Apparatus	2
Furnace Electrode Mfg.	30402004	74	Electrical Industrial Apparatus	2
Furnace Electrode Mfg.	30402099	74	Electrical Industrial Apparatus	2
Metal Heat Treating	30402201	46	Misc. Primary & Secondary Metals	2
Metal Heat Treating	30402210	46	Misc. Primary & Secondary Metals	4
Metal Heat Treating	30402211	46	Misc. Primary & Secondary Metals	4
Lead Cable Coating	30404001	57	Metal Services	2
Misc. Casting & Fabricating	30404901	48	Nonferrous Foundries	1
Misc. Casting & Fabricating	30404902	48	Nonferrous Foundries	1
Misc. Casting & Fabricating	30404999	48	Nonferrous Foundries	4
Misc. Casting & Fabricating	30405001	48	Nonferrous Foundries	4
Misc. Casting & Fabricating	30405099	47	Nonferrous Rolling & Drawing	4
Fugitive Emissions	30488801	47	Nonferrous Rolling & Drawing	4
Fugitive Emissions	30488802	47	Nonferrous Rolling & Drawing	4
Fugitive Emissions	30488803	47	Nonferrous Rolling & Drawing	4
Fugitive Emissions	30488804	47	Nonferrous Rolling & Drawing	4
Fugitive Emissions	30488805	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490001	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490002	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490003	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490004	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490011	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490012	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490013	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490014	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490021	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490022	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490023	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490024	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490031	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490032	47	Nonferrous Rolling & Drawing	4
Fuel Fired Equipment	30490033	47	Nonferrous Rolling & Drawing	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Fuel Fired Equipment	30490034	47	Nonferrous Rolling & Drawing	4
Secondary Metals: NEC	30499999	47	Nonferrous Rolling & Drawing	4
Mineral Products				
Asphalt Roofing	30500101	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500102	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500103	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500104	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500105	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500106	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500107	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500108	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500110	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500111	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500112	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500113	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500114	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500115	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500120	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500121	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500130	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500131	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500132	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500133	139	Misc. Petroleum & Coal Products	1
Asphalt Roofing	30500198	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500201	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500202	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500203	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500204	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500205	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500206	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500207	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500208	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500209	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500210	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500211	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500212	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500213	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500214	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500215	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500290	139	Misc. Petroleum & Coal Products	1
Asphaltic Concrete	30500299	139	Misc. Petroleum & Coal Products	1
Brick Mfg.	30500301	42	Stone, Clay, & Misc. Mineral Prod.	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Brick Mfg.	30500302	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500303	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500304	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500307	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500308	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500309	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500310	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500311	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500312	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500313	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500314	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500315	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500316	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500317	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500318	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500321	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500397	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500398	42	Stone, Clay, & Misc. Mineral Prod.	1
Brick Mfg.	30500399	42	Stone, Clay, & Misc. Mineral Prod.	1
Calcium Carbide	30500401	131	Industrial Chemicals	3
Calcium Carbide	30500402	131	Industrial Chemicals	3
Calcium Carbide	30500403	131	Industrial Chemicals	3
Calcium Carbide	30500404	131	Industrial Chemicals	3
Calcium Carbide	30500405	131	Industrial Chemicals	3
Calcium Carbide	30500406	131	Industrial Chemicals	3
Calcium Carbide	30500499	131	Industrial Chemicals	3
Castable Refractory	30500501	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500502	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500503	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500504	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500505	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500598	42	Stone, Clay, & Misc. Mineral Prod.	1
Castable Refractory	30500599	42	Stone, Clay, & Misc. Mineral Prod.	1
Cement Mfg.: Dry Process	30500606	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500607	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500608	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500609	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500610	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500611	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500612	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500613	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500614	41	Cement, Concrete, Gypsum, etc.	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Cement Mfg.: Dry Process	30500615	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500616	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500617	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500618	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500619	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500620	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Dry Process	30500699	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500706	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500707	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500708	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500709	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500710	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500711	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500712	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500714	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500715	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500716	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500717	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500718	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500719	41	Cement, Concrete, Gypsum, etc.	1
Cement Mfg.: Wet Process	30500799	41	Cement, Concrete, Gypsum, etc.	1
Ceramic Clay Mfg.	30500801	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500802	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500803	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500804	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500805	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500806	42	Stone, Clay, & Misc. Mineral Prod.	2
Ceramic Clay Mfg.	30500899	42	Stone, Clay, & Misc. Mineral Prod.	2
Clay & Fly Ash Sintering	30500901	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500902	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500903	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500904	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500905	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500906	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500907	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500908	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500909	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500910	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500915	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500916	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500917	42	Stone, Clay, & Misc. Mineral Prod.	4
Clay & Fly Ash Sintering	30500999	42	Stone, Clay, & Misc. Mineral Prod.	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Mining Operations	30501001	7	Coal Mining	1
Surface Mining Operations	30501002	7	Coal Mining	1
Surface Mining Operations	30501003	7	Coal Mining	1
Surface Mining Operations	30501004	7	Coal Mining	1
Surface Mining Operations	30501005	7	Coal Mining	1
Surface Mining Operations	30501006	7	Coal Mining	1
Surface Mining Operations	30501007	7	Coal Mining	1
Surface Mining Operations	30501008	7	Coal Mining	1
Surface Mining Operations	30501009	7	Coal Mining	1
Surface Mining Operations	30501010	7	Coal Mining	1
Surface Mining Operations	30501011	7	Coal Mining	1
Surface Mining Operations	30501012	7	Coal Mining	1
Surface Mining Operations	30501013	7	Coal Mining	1
Surface Mining Operations	30501014	7	Coal Mining	1
Surface Mining Operations	30501015	7	Coal Mining	1
Surface Mining Operations	30501016	7	Coal Mining	1
Surface Mining Operations	30501017	7	Coal Mining	1
Surface Mining Operations	30501021	7	Coal Mining	1
Surface Mining Operations	30501022	7	Coal Mining	1
Surface Mining Operations	30501023	7	Coal Mining	1
Surface Mining Operations	30501024	7	Coal Mining	1
Surface Mining Operations	30501030	7	Coal Mining	1
Surface Mining Operations	30501031	7	Coal Mining	1
Surface Mining Operations	30501032	7	Coal Mining	1
Surface Mining Operations	30501033	7	Coal Mining	1
Surface Mining Operations	30501034	7	Coal Mining	1
Surface Mining Operations	30501035	7	Coal Mining	1
Surface Mining Operations	30501036	7	Coal Mining	1
Surface Mining Operations	30501037	7	Coal Mining	1
Surface Mining Operations	30501038	7	Coal Mining	1
Surface Mining Operations	30501039	7	Coal Mining	1
Surface Mining Operations	30501040	7	Coal Mining	1
Surface Mining Operations	30501041	7	Coal Mining	1
Surface Mining Operations	30501042	7	Coal Mining	1
Surface Mining Operations	30501043	7	Coal Mining	1
Surface Mining Operations	30501044	7	Coal Mining	1
Surface Mining Operations	30501045	7	Coal Mining	1
Surface Mining Operations	30501046	7	Coal Mining	1
Surface Mining Operations	30501047	7	Coal Mining	1
Surface Mining Operations	30501048	7	Coal Mining	1
Surface Mining Operations	30501049	7	Coal Mining	1
Surface Mining Operations	30501050	7	Coal Mining	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Mining Operations	30501051	7	Coal Mining	1
Surface Mining Operations	30501060	7	Coal Mining	1
Surface Mining Operations	30501061	7	Coal Mining	1
Surface Mining Operations	30501062	7	Coal Mining	1
Surface Mining Operations	30501090	7	Coal Mining	1
Surface Mining Operations	30501099	7	Coal Mining	1
Concrete Batching	30501101	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501106	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501107	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501108	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501109	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501110	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501111	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501112	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501113	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501114	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501115	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501120	41	Cement, Concrete, Gypsum, etc.	1
Concrete Batching	30501199	41	Cement, Concrete, Gypsum, etc.	1
Fiberglass Mfg.	30501201	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501202	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501203	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501204	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501205	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501206	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501207	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501208	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501209	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501211	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501212	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501213	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501214	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501215	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501221	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501222	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501223	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501224	42	Stone, Clay, & Misc. Mineral Prod.	2
Fiberglass Mfg.	30501299	42	Stone, Clay, & Misc. Mineral Prod.	2
Frit Mfg.	30501301	42	Stone, Clay, & Misc. Mineral Prod.	2
Frit Mfg.	30501399	42	Stone, Clay, & Misc. Mineral Prod.	2
Glass Mfg.	30501401	40	Glass & Glass Products	1
Glass Mfg.	30501402	40	Glass & Glass Products	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Glass Mfg.	30501403	40	Glass & Glass Products	1
Glass Mfg.	30501404	40	Glass & Glass Products	1
Glass Mfg.	30501405	40	Glass & Glass Products	1
Glass Mfg.	30501406	40	Glass & Glass Products	1
Glass Mfg.	30501407	40	Glass & Glass Products	1
Glass Mfg.	30501408	40	Glass & Glass Products	1
Glass Mfg.	30501410	40	Glass & Glass Products	1
Glass Mfg.	30501411	40	Glass & Glass Products	1
Glass Mfg.	30501412	40	Glass & Glass Products	1
Glass Mfg.	30501413	40	Glass & Glass Products	1
Glass Mfg.	30501414	40	Glass & Glass Products	1
Glass Mfg.	30501415	40	Glass & Glass Products	1
Glass Mfg.	30501416	40	Glass & Glass Products	1
Glass Mfg.	30501417	40	Glass & Glass Products	1
Glass Mfg.	30501418	40	Glass & Glass Products	1
Glass Mfg.	30501420	40	Glass & Glass Products	1
Glass Mfg.	30501421	40	Glass & Glass Products	1
Glass Mfg.	30501499	40	Glass & Glass Products	1
Gypsum Mfg.	30501501	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501502	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501503	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501504	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501505	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501506	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501507	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501508	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501509	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501510	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501511	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501512	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501513	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501514	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501515	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501516	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501517	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501518	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501519	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501520	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501521	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501522	41	Cement, Concrete, Gypsum, etc.	1
Gypsum Mfg.	30501599	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501601	41	Cement, Concrete, Gypsum, etc.	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Lime Mfg.	30501602	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501603	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501604	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501605	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501606	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501607	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501608	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501609	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501610	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501611	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501612	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501613	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501614	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501615	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501616	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501617	41	Cement, Concrete, Gypsum, etc.	1
Lime Mfg.	30501699	41	Cement, Concrete, Gypsum, etc.	1
Mineral Wool	30501701	42	Stone, Clay, & Misc. Mineral Prod.	2
Mineral Wool	30501702	42	Stone, Clay, & Misc. Mineral Prod.	2
Mineral Wool	30501703	42	Stone, Clay, & Misc. Mineral Prod.	2
Mineral Wool	30501704	42	Stone, Clay, & Misc. Mineral Prod.	2
Mineral Wool	30501705	42	Stone, Clay, & Misc. Mineral Prod.	2
Mineral Wool	30501799	42	Stone, Clay, & Misc. Mineral Prod.	2
Perlite Mfg.	30501801	42	Stone, Clay, & Misc. Mineral Prod.	2
Perlite Mfg.	30501899	42	Stone, Clay, & Misc. Mineral Prod.	2
Phosphate Rock	30501901	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501902	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501903	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501904	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501905	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501906	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501907	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501908	10	Nonmetallic minerals, except fuels	1
Phosphate Rock	30501999	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502001	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502002	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502003	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502004	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502005	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502006	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502007	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502008	10	Nonmetallic minerals, except fuels	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Stone Quarrying/Processing	30502009	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502010	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502011	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502012	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502013	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502014	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502015	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502016	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502017	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502018	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502020	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502031	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502032	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502033	10	Nonmetallic minerals, except fuels	1
Stone Quarrying/Processing	30502099	10	Nonmetallic minerals, except fuels	1
Salt Mining	30502101	10	Nonmetallic minerals, except fuels	2
Salt Mining	30502102	10	Nonmetallic minerals, except fuels	2
Salt Mining	30502103	10	Nonmetallic minerals, except fuels	2
Salt Mining	30502104	10	Nonmetallic minerals, except fuels	2
Salt Mining	30502105	10	Nonmetallic minerals, except fuels	2
Salt Mining	30502106	10	Nonmetallic minerals, except fuels	2
Potash Production	30502201	10	Nonmetallic minerals, except fuels	1
Potash Production	30502299	10	Nonmetallic minerals, except fuels	1
Magnesium Carbonate	30502401	10	Nonmetallic minerals, except fuels	2
Magnesium Carbonate	30502499	10	Nonmetallic minerals, except fuels	2
Sand/Gravel	30502501	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502502	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502503	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502504	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502505	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502506	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502507	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502508	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502509	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502510	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502511	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502512	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502513	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502514	10	Nonmetallic minerals, except fuels	1
Sand/Gravel	30502599	10	Nonmetallic minerals, except fuels	1
Diatomacous Earth	30502601	10	Nonmetallic minerals, except fuels	2
Diatomacous Earth	30502699	10	Nonmetallic minerals, except fuels	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Ceramic Electric Parts	30503099	10	Nonmetallic minerals, except fuels	1
Asbestos Mining	30503101	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503102	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503103	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503104	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503105	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503106	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503107	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503108	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503109	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503110	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503111	10	Nonmetallic minerals, except fuels	3
Asbestos Mining	30503199	10	Nonmetallic minerals, except fuels	3
Asbestos Milling	30503201	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503202	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503203	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503204	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503205	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503206	10	Nonmetallic minerals, except fuels	1
Asbestos Milling	30503299	10	Nonmetallic minerals, except fuels	1
Vermiculite	30503301	10	Nonmetallic minerals, except fuels	2
Feldspar	30503401	10	Nonmetallic minerals, except fuels	2
Feldspar	30503402	10	Nonmetallic minerals, except fuels	2
Pyrrhotite	30503901	10	Nonmetallic minerals, except fuels	2
Pyrrhotite	30503902	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504001	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504002	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504003	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504010	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504020	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504021	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504022	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504023	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504024	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504025	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504030	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504031	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504032	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504033	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504034	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504036	10	Nonmetallic minerals, except fuels	2
Mining & Quarrying: Nonmetallic	30504099	10	Nonmetallic minerals, except fuels	2

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Mica	30509001	10	Nonmetallic minerals, except fuels	2
Mica	30509002	10	Nonmetallic minerals, except fuels	2
Sandspar	30509101	10	Nonmetallic minerals, except fuels	2
Bulk Materials Elevators	30510001	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510002	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510003	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510004	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510005	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510006	10	Nonmetallic minerals, except fuels	4
Bulk Materials Elevators	30510007	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510101	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510102	41	Cement, Concrete, Gypsum, etc.	4
Bulk Materials Conveyors	30510103	7	Coal Mining	4
Bulk Materials Conveyors	30510104	7	Coal Mining	4
Bulk Materials Conveyors	30510105	7	Coal Mining	4
Bulk Materials Conveyors	30510106	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510107	42	Stone, Clay, & Misc. Mineral Prod.	2
Bulk Materials Conveyors	30510108	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510196	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510197	10	Nonmetallic minerals, except fuels	4
Bulk Materials Conveyors	30510198	40	Glass & Glass Products	1
Bulk Materials Conveyors	30510199	42	Stone, Clay, & Misc. Mineral Prod.	2
Bulk Materials Storage Bins	30510201	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510202	41	Cement, Concrete, Gypsum, etc.	4
Bulk Materials Storage Bins	30510203	7	Coal Mining	4
Bulk Materials Storage Bins	30510204	7	Coal Mining	4
Bulk Materials Storage Bins	30510205	7	Coal Mining	4
Bulk Materials Storage Bins	30510206	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510207	42	Stone, Clay, & Misc. Mineral Prod.	2
Bulk Materials Storage Bins	30510208	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510209	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510296	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510297	10	Nonmetallic minerals, except fuels	4
Bulk Materials Storage Bins	30510298	40	Glass & Glass Products	1
Bulk Materials Storage Bins	30510299	42	Stone, Clay, & Misc. Mineral Prod.	2
Bulk Materials Open Stockpiles	30510301	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510302	41	Cement, Concrete, Gypsum, etc.	4
Bulk Materials Open Stockpiles	30510303	7	Coal Mining	4
Bulk Materials Open Stockpiles	30510304	7	Coal Mining	4
Bulk Materials Open Stockpiles	30510305	7	Coal Mining	4
Bulk Materials Open Stockpiles	30510306	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510307	42	Stone, Clay, & Misc. Mineral Prod.	3

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Bulk Materials Open Stockpiles	30510308	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510309	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510310	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510396	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510397	10	Nonmetallic minerals, except fuels	4
Bulk Materials Open Stockpiles	30510398	40	Glass & Glass Products	1
Bulk Materials Open Stockpiles	30510399	42	Stone, Clay, & Misc. Mineral Prod.	3
Bulk Materials Unloading Operation	30510401	136	Agricultural Chemicals	4
Bulk Materials Unloading Operation	30510402	41	Cement, Concrete, Gypsum, etc.	4
Bulk Materials Unloading Operation	30510403	7	Coal Mining	4
Bulk Materials Unloading Operation	30510404	7	Coal Mining	4
Bulk Materials Unloading Operation	30510405	7	Coal Mining	4
Bulk Materials Unloading Operation	30510406	10	Nonmetallic minerals, except fuels	4
Bulk Materials Unloading Operation	30510407	42	Stone, Clay, & Misc. Mineral Prod.	4
Bulk Materials Unloading Operation	30510408	10	Nonmetallic minerals, except fuels	4
Bulk Materials Unloading Operation	30510496	10	Nonmetallic minerals, except fuels	4
Bulk Materials Unloading Operation	30510497	10	Nonmetallic minerals, except fuels	4
Bulk Materials Unloading Operation	30510498	40	Glass & Glass Products	1
Bulk Materials Unloading Operation	30510499	42	Stone, Clay, & Misc. Mineral Prod.	4
Bulk Materials Loading Operation	30510501	10	Nonmetallic minerals, except fuels	4
Bulk Materials Loading Operation	30510502	41	Cement, Concrete, Gypsum, etc.	4
Bulk Materials Loading Operation	30510503	7	Coal Mining	4
Bulk Materials Loading Operation	30510504	7	Coal Mining	4
Bulk Materials Loading Operation	30510505	7	Coal Mining	4
Bulk Materials Loading Operation	30510506	10	Nonmetallic minerals, except fuels	4
Bulk Materials Loading Operation	30510507	42	Stone, Clay, & Misc. Mineral Prod.	4
Bulk Materials Loading Operation	30510508	10	Nonmetallic minerals, except fuels	4
Bulk Materials Loading Operation	30510596	10	Nonmetallic minerals, except fuels	4
Bulk Materials Loading Operation	30510597	10	Nonmetallic minerals, except fuels	4
Bulk Materials Loading Operation	30510598	40	Glass & Glass Products	4
Bulk Materials Loading Operation	30510599	42	Stone, Clay, & Misc. Mineral Prod.	4
Calcining: General	30515001	42	Stone, Clay, & Misc. Mineral Prod.	2
Calcining: General	30515002	42	Stone, Clay, & Misc. Mineral Prod.	2
Calcining: General	30515003	42	Stone, Clay, & Misc. Mineral Prod.	2
Calcining: General	30515004	42	Stone, Clay, & Misc. Mineral Prod.	2
Calcining: General	30515005	42	Stone, Clay, & Misc. Mineral Prod.	2
Fugitive Emissions	30588801	42	Stone, Clay, & Misc. Mineral Prod.	4
Fugitive Emissions	30588802	42	Stone, Clay, & Misc. Mineral Prod.	4
Fugitive Emissions	30588803	42	Stone, Clay, & Misc. Mineral Prod.	4
Fugitive Emissions	30588804	42	Stone, Clay, & Misc. Mineral Prod.	4
Fugitive Emissions	30588805	42	Stone, Clay, & Misc. Mineral Prod.	4
Mineral Products: NEC	30599999	42	Stone, Clay, & Misc. Mineral Prod.	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Refining				
Process Heaters	30600101	138	Petroleum Refining	1
Process Heaters	30600102	138	Petroleum Refining	1
Process Heaters	30600103	138	Petroleum Refining	1
Process Heaters	30600104	138	Petroleum Refining	1
Process Heaters	30600105	138	Petroleum Refining	1
Process Heaters	30600106	138	Petroleum Refining	1
Process Heaters	30600107	138	Petroleum Refining	1
Process Heaters	30600108	138	Petroleum Refining	1
Process Heaters	30600111	138	Petroleum Refining	1
Process Heaters	30600199	138	Petroleum Refining	1
Fluid Catalytic Cracking	30600201	138	Petroleum Refining	1
Fluid Catalytic Cracking	30600202	138	Petroleum Refining	1
Thermal Catalytic Cracking	30600301	138	Petroleum Refining	1
Blowdown Systems	30600401	138	Petroleum Refining	1
Blowdown Systems	30600402	138	Petroleum Refining	1
Fugitive Emissions	30600503	138	Petroleum Refining	4
Fugitive Emissions	30600504	138	Petroleum Refining	4
Fugitive Emissions	30600505	138	Petroleum Refining	4
Fugitive Emissions	30600506	138	Petroleum Refining	4
Vacuum Disitllation Column	30600602	138	Petroleum Refining	1
Vacuum Disitllation Column	30600603	138	Petroleum Refining	1
Cooling Towers	30600701	138	Petroleum Refining	1
Cooling Towers	30600702	138	Petroleum Refining	1
Fugitive Emissions	30600801	138	Petroleum Refining	4
Fugitive Emissions	30600802	138	Petroleum Refining	4
Fugitive Emissions	30600803	138	Petroleum Refining	4
Fugitive Emissions	30600804	138	Petroleum Refining	4
Fugitive Emissions	30600805	138	Petroleum Refining	4
Fugitive Emissions	30600806	138	Petroleum Refining	4
Fugitive Emissions	30600807	138	Petroleum Refining	4
Fugitive Emissions	30600811	138	Petroleum Refining	4
Fugitive Emissions	30600812	138	Petroleum Refining	4
Fugitive Emissions	30600813	138	Petroleum Refining	4
Fugitive Emissions	30600814	138	Petroleum Refining	4
Fugitive Emissions	30600815	138	Petroleum Refining	4
Fugitive Emissions	30600816	138	Petroleum Refining	4
Fugitive Emissions	30600817	138	Petroleum Refining	4
Fugitive Emissions	30600818	138	Petroleum Refining	4
Fugitive Emissions	30600819	138	Petroleum Refining	4
Fugitive Emissions	30600820	138	Petroleum Refining	4
Fugitive Emissions	30600821	138	Petroleum Refining	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Fugitive Emissions	30600822	138	Petroleum Refining	4
Flares	30600901	138	Petroleum Refining	4
Flares	30600902	138	Petroleum Refining	4
Flares	30600903	138	Petroleum Refining	4
Flares	30600904	138	Petroleum Refining	4
Flares	30600905	138	Petroleum Refining	4
Flares	30600999	138	Petroleum Refining	4
Sludge Converter	30601001	138	Petroleum Refining	4
Asphalt Blowing	30601101	138	Petroleum Refining	4
Fluid Coking Units	30601201	138	Petroleum Refining	4
Petroleum Coke Calcining	30601401	138	Petroleum Refining	4
Petroleum Coke Calcining	30601402	138	Petroleum Refining	4
Bauxite Burning	30601599	138	Petroleum Refining	4
Incinerators	30609901	138	Petroleum Refining	4
Incinerators	30609902	138	Petroleum Refining	4
Incinerators	30609903	138	Petroleum Refining	4
Incinerators	30609904	138	Petroleum Refining	4
Incinerators	30609905	138	Petroleum Refining	4
Lube Oil Refining	30610001	138	Petroleum Refining	4
Fugitive Emissions	30688801	138	Petroleum Refining	4
Fugitive Emissions	30688802	138	Petroleum Refining	4
Fugitive Emissions	30688803	138	Petroleum Refining	4
Fugitive Emissions	30688804	138	Petroleum Refining	4
Fugitive Emissions	30688805	138	Petroleum Refining	4
Petroleum Refining: NEC	30699998	138	Petroleum Refining	4
Petroleum Refining: NEC	30699999	138	Petroleum Refining	4
Wood & Wood Products				
Sulfate (Kraft) Pulping	30700101	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700102	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700103	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700104	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700105	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700106	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700107	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700108	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700109	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700110	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700111	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700112	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700113	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700114	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700115	120	Pulp Paper & Paperboard Mills	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Sulfate (Kraft) Pulping	30700116	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700117	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700118	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700119	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700120	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700121	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700122	120	Pulp Paper & Paperboard Mills	1
Sulfate (Kraft) Pulping	30700199	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700203	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700211	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700212	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700213	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700214	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700215	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700221	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700222	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700223	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700231	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700232	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700233	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700234	120	Pulp Paper & Paperboard Mills	1
Sulfite Pulping	30700299	120	Pulp Paper & Paperboard Mills	1
Neutral Sulfite Semichemical	30700301	120	Pulp Paper & Paperboard Mills	1
Neutral Sulfite Semichemical	30700302	120	Pulp Paper & Paperboard Mills	1
Neutral Sulfite Semichemical	30700303	120	Pulp Paper & Paperboard Mills	1
Neutral Sulfite Semichemical	30700304	120	Pulp Paper & Paperboard Mills	1
Pulpboard Mfg.	30700401	120	Pulp Paper & Paperboard Mills	1
Pulpboard Mfg.	30700402	120	Pulp Paper & Paperboard Mills	1
Pulpboard Mfg.	30700499	120	Pulp Paper & Paperboard Mills	1
Wood Pressure Treating	30700501	34	Wood Containers & Misc. Wood Prod.	2
Wood Pressure Treating	30700597	34	Wood Containers & Misc. Wood Prod.	2
Wood Pressure Treating	30700598	34	Wood Containers & Misc. Wood Prod.	2
Wood Pressure Treating	30700599	34	Wood Containers & Misc. Wood Prod.	2
Plywood/Particleboard Operations	30700701	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700702	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700703	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700704	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700705	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700706	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700707	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700708	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700709	33	Veneer & Plywood	1

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Plywood/Particleboard Operations	30700710	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700711	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700712	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700713	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700714	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700715	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700716	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700717	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700718	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700720	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700725	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700727	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700730	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700798	33	Veneer & Plywood	1
Plywood/Particleboard Operations	30700799	33	Veneer & Plywood	1
Sawmill Operations	30700801	31	Sawmills & Planning Mills	1
Sawmill Operations	30700802	31	Sawmills & Planning Mills	1
Sawmill Operations	30700803	31	Sawmills & Planning Mills	1
Sawmill Operations	30700804	31	Sawmills & Planning Mills	1
Sawmill Operations	30700805	31	Sawmills & Planning Mills	1
Sawmill Operations	30700806	31	Sawmills & Planning Mills	1
Sawmill Operations	30700807	31	Sawmills & Planning Mills	1
Sawmill Operations	30700808	31	Sawmills & Planning Mills	1
Sawmill Operations	30700820	31	Sawmills & Planning Mills	1
Sawmill Operations	30700821	31	Sawmills & Planning Mills	1
Sawmill Operations	30700822	31	Sawmills & Planning Mills	1
Sawmill Operations	30700895	31	Sawmills & Planning Mills	1
Sawmill Operations	30700896	31	Sawmills & Planning Mills	1
Sawmill Operations	30700897	31	Sawmills & Planning Mills	1
Sawmill Operations	30700898	31	Sawmills & Planning Mills	1
Sawmill Operations	30700899	31	Sawmills & Planning Mills	1
Paper Coating	30701199	122	Converted Paper Prod., except Containers	2
Misc. Paper Processes	30701201	120	Pulp Paper & Paperboard Mills	2
Misc. Paper Processes	30701220	120	Pulp Paper & Paperboard Mills	2
Misc. Paper Products	30701301	122	Converted Paper Prod., except Containers	2
Misc. Paper Products	30701399	122	Converted Paper Prod., except Containers	2
Furniture Mfg.	30702001	37	Household Furniture	1
Furniture Mfg.	30702002	37	Household Furniture	1
Furniture Mfg.	30702003	39	Office & Misc. Furniture/Fixtures	1
Furniture Mfg.	30702004	39	Office & Misc. Furniture/Fixtures	1
Furniture Mfg.	30702098	39	Office & Misc. Furniture/Fixtures	1
Furniture Mfg.	30702099	37	Household Furniture	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Misc. Woodworking Operations	30703001	34	Wood Containers & Misc. Wood Prod.	2
Misc. Woodworking Operations	30703002	34	Wood Containers & Misc. Wood Prod.	2
Misc. Woodworking Operations	30703096	34	Wood Containers & Misc. Wood Prod.	2
Misc. Woodworking Operations	30703097	34	Wood Containers & Misc. Wood Prod.	2
Misc. Woodworking Operations	30703098	34	Wood Containers & Misc. Wood Prod.	2
Misc. Woodworking Operations	30703099	34	Wood Containers & Misc. Wood Prod.	2
Pulp, Paper, Wood Prod. Handling	30704001	31	Sawmills & Planning Mills	1
Pulp, Paper, Wood Prod. Handling	30704002	31	Sawmills & Planning Mills	1
Pulp, Paper, Wood Prod. Handling	30704003	31	Sawmills & Planning Mills	1
Pulp, Paper, Wood Prod. Handling	30704004	31	Sawmills & Planning Mills	1
Pulp, Paper, Wood Prod. Handling	30704005	31	Sawmills & Planning Mills	1
Rubber & Plastic Products				
Rubber & Misc. Plastic Products	30800101	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800102	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800103	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800104	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800105	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800106	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800107	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800108	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800109	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800110	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800120	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800121	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800122	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800123	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800197	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800198	140	Tires and Inner Tubes	1
Rubber & Misc. Plastic Products	30800199	140	Tires and Inner Tubes	1
Tire Retreading	30800501	140	Tires and Inner Tubes	1
Other Fabricated Plastic Products	30800699	140	Tires and Inner Tubes	1
Fabricated Plastic Products	30800701	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800702	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800703	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800704	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800705	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800720	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800721	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800722	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800723	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800724	142	Misc. Plastic Products	2
Fabricated Plastic Products	30800799	142	Misc. Plastic Products	2

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Plastic Foam Products	30800801	142	Misc. Plastic Products	5
Plastic Foam Products	30800802	142	Misc. Plastic Products	5
Plastic Foam Products	30800803	142	Misc. Plastic Products	5
Fabricated Plastic Products	30800901	142	Misc. Plastic Products	5
Fabricated Metal Products				
General Processes	30900198	54	Forgings	1
General Processes	30900199	54	Forgings	1
Abrasive Blasting	30900201	57	Metal Services	1
Abrasive Blasting	30900202	57	Metal Services	1
Abrasive Blasting	30900203	57	Metal Services	1
Abrasive Blasting	30900204	57	Metal Services	1
Abrasive Blasting	30900205	57	Metal Services	1
Abrasive Blasting	30900206	57	Metal Services	1
Abrasive Blasting	30900207	57	Metal Services	1
Abrasive Blasting	30900208	57	Metal Services	1
Abrasive Blasting	30900298	57	Metal Services	1
Abrasive Blasting	30900299	57	Metal Services	1
Abrasive Cleaning	30900301	57	Metal Services	1
Abrasive Cleaning	30900302	57	Metal Services	1
Abrasive Cleaning	30900303	57	Metal Services	1
Abrasive Cleaning	30900304	57	Metal Services	1
Welding	30900501	52	Fabricated Structured Metal Products	4
Welding	30900502	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901001	57	Metal Services	1
Electroplating Operations	30901002	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901003	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901004	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901005	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901006	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901007	52	Fabricated Structured Metal Products	4
Electroplating Operations	30901097	57	Metal Services	1
Electroplating Operations	30901098	57	Metal Services	1
Electroplating Operations	30901099	57	Metal Services	1
Conversion Coating	30901101	57	Metal Services	1
Conversion Coating	30901102	57	Metal Services	1
Conversion Coating	30901103	57	Metal Services	1
Conversion Coating	30901104	57	Metal Services	1
Conversion Coating	30901199	57	Metal Services	1
Chemical Milling	30901501	57	Metal Services	1
Metal Pipe Coating	30901601	57	Metal Services	2
Metal Pipe Coating	30901602	57	Metal Services	2
Metal Pipe Coating	30901603	57	Metal Services	2

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Metal Pipe Coating	30901604	57	Metal Services	2
Metal Pipe Coating	30901605	57	Metal Services	2
Metal Pipe Coating	30901606	57	Metal Services	2
Metal Pipe Coating	30901607	57	Metal Services	2
General Processes	30902099	49	Metal Cans & Shipping Containers	1
Drum Cleaning/Reclamation	30902501	49	Metal Cans & Shipping Containers	1
Machining Operations	30903004	52	Fabricated Structured Metal Products	4
Machining Operations	30903005	52	Fabricated Structured Metal Products	4
Machining Operations	30903006	52	Fabricated Structured Metal Products	4
Machining Operations	30903007	52	Fabricated Structured Metal Products	4
Machining Operations	30903099	52	Fabricated Structured Metal Products	4
Metal Deposition Processes	30904001	57	Metal Services	2
Metal Deposition Processes	30904010	57	Metal Services	2
Metal Deposition Processes	30904020	57	Metal Services	2
Metal Deposition Processes	30904030	57	Metal Services	2
Porcelain Enamel	30906001	57	Metal Services	2
Porcelain Enamel	30906099	57	Metal Services	2
Fugitive Emissions	30988801	52	Fabricated Structured Metal Products	4
Fugitive Emissions	30988802	52	Fabricated Structured Metal Products	4
Fugitive Emissions	30988803	52	Fabricated Structured Metal Products	4
Fugitive Emissions	30988804	52	Fabricated Structured Metal Products	4
Fugitive Emissions	30988805	52	Fabricated Structured Metal Products	4
Fugitive Emissions	30988806	52	Fabricated Structured Metal Products	4
Oil & Gas Production				
Crude Oil Production	31000101	8	Crude petroleum, natural gas	4
Crude Oil Production	31000102	8	Crude petroleum, natural gas	4
Crude Oil Production	31000103	8	Crude petroleum, natural gas	4
Crude Oil Production	31000104	8	Crude petroleum, natural gas	4
Crude Oil Production	31000105	8	Crude petroleum, natural gas	4
Crude Oil Production	31000121	8	Crude petroleum, natural gas	4
Crude Oil Production	31000122	8	Crude petroleum, natural gas	4
Crude Oil Production	31000123	8	Crude petroleum, natural gas	4
Crude Oil Production	31000124	8	Crude petroleum, natural gas	4
Crude Oil Production	31000125	8	Crude petroleum, natural gas	4
Crude Oil Production	31000126	8	Crude petroleum, natural gas	4
Crude Oil Production	31000127	8	Crude petroleum, natural gas	4
Crude Oil Production	31000128	8	Crude petroleum, natural gas	4
Crude Oil Production	31000129	8	Crude petroleum, natural gas	4
Crude Oil Production	31000140	8	Crude petroleum, natural gas	4
Crude Oil Production	31000141	8	Crude petroleum, natural gas	4
Crude Oil Production	31000142	8	Crude petroleum, natural gas	4
Crude Oil Production	31000143	8	Crude petroleum, natural gas	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Crude Oil Production	31000144	8	Crude petroleum, natural gas	4
Crude Oil Production	31000145	8	Crude petroleum, natural gas	4
Crude Oil Production	31000146	8	Crude petroleum, natural gas	4
Crude Oil Production	31000160	8	Crude petroleum, natural gas	4
Crude Oil Production	31000199	8	Crude petroleum, natural gas	4
Natural Gas Production	31000201	8	Crude petroleum, natural gas	4
Natural Gas Production	31000202	8	Crude petroleum, natural gas	4
Natural Gas Production	31000203	8	Crude petroleum, natural gas	4
Natural Gas Production	31000204	8	Crude petroleum, natural gas	4
Natural Gas Production	31000205	8	Crude petroleum, natural gas	4
Natural Gas Production	31000206	8	Crude petroleum, natural gas	4
Natural Gas Production	31000207	8	Crude petroleum, natural gas	4
Natural Gas Production	31000221	8	Crude petroleum, natural gas	4
Natural Gas Production	31000222	8	Crude petroleum, natural gas	4
Natural Gas Production	31000223	8	Crude petroleum, natural gas	4
Natural Gas Production	31000224	8	Crude petroleum, natural gas	4
Natural Gas Production	31000225	8	Crude petroleum, natural gas	4
Natural Gas Production	31000226	8	Crude petroleum, natural gas	4
Natural Gas Production	31000227	8	Crude petroleum, natural gas	4
Natural Gas Production	31000228	8	Crude petroleum, natural gas	4
Natural Gas Production	31000229	8	Crude petroleum, natural gas	4
Natural Gas Production	31000230	8	Crude petroleum, natural gas	4
Natural Gas Production	31000299	8	Crude petroleum, natural gas	4
Natural Gas Production	31000301	8	Crude petroleum, natural gas	4
Natural Gas Production	31000302	8	Crude petroleum, natural gas	4
Natural Gas Production	31000303	8	Crude petroleum, natural gas	4
Natural Gas Production	31000304	8	Crude petroleum, natural gas	4
Natural Gas Production	31000305	8	Crude petroleum, natural gas	4
Natural Gas Production	31000306	8	Crude petroleum, natural gas	4
Natural Gas Production	31000307	8	Crude petroleum, natural gas	4
Natural Gas Production	31000308	8	Crude petroleum, natural gas	4
Natural Gas Production	31000309	8	Crude petroleum, natural gas	4
Natural Gas Production	31000310	8	Crude petroleum, natural gas	4
Natural Gas Production	31000311	8	Crude petroleum, natural gas	4
Process Heaters	31000401	8	Crude petroleum, natural gas	4
Process Heaters	31000402	8	Crude petroleum, natural gas	4
Process Heaters	31000403	8	Crude petroleum, natural gas	4
Process Heaters	31000404	8	Crude petroleum, natural gas	4
Process Heaters	31000405	8	Crude petroleum, natural gas	4
Process Heaters	31000411	8	Crude petroleum, natural gas	4
Process Heaters	31000412	8	Crude petroleum, natural gas	4
Process Heaters	31000413	8	Crude petroleum, natural gas	4

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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Process Heaters	31000414	8	Crude petroleum, natural gas	4
Process Heaters	31000415	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088801	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088802	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088803	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088804	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088805	8	Crude petroleum, natural gas	4
Fugitive Emissions	31088811	8	Crude petroleum, natural gas	4
Building Construction				
Building Contractors	31100101	304	Construction	6
Building Contractors	31100102	304	Construction	6
Building Contractors	31100103	304	Construction	6
Building Contractors	31100199	304	Construction	6
Demolition	31100201	304	Construction	6
Demolition	31100202	304	Construction	6
Demolition	31100203	304	Construction	6
Demolition	31100204	304	Construction	6
Demolition	31100205	304	Construction	6
Demolition	31100206	304	Construction	6
Demolition	31100299	304	Construction	6
Machinery, Miscellaneous				
Miscellaneous Machinery	31299999	72	Industrial Machinery	2
Electrical Equipment				
Circuit Board Mfg.	31303001	80	Semiconductors & Related Devices	2
General Processes	31303501	81	Misc. Electronic Components	2
General Processes	31303502	81	Misc. Electronic Components	2
Integrated Circuit/Semi-Conductor	31306500	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306501	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306505	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306510	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306520	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306530	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306531	80	Semiconductors & Related Devices	2
Integrated Circuit/Semi-Conductor	31306599	80	Semiconductors & Related Devices	2
Electrical Winding Reclamation	31307001	74	Electrical Industrial Apparatus	2
Electrical Winding Reclamation	31307002	74	Electrical Industrial Apparatus	2
Electrical Equipment: NEC	31399999	74	Electrical Industrial Apparatus	2
Transportation Equipment				
Automobile/Truck Assembly	31400901	84	Motor Vehicles & Car Bodies	4
Brake Shoe Debonding	31401001	182	Automobile Parking, Repair & Services	5
Brake Shoe Debonding	31401002	182	Automobile Parking, Repair & Services	5
Auto Body Shredding	31401101	182	Automobile Parking, Repair & Services	5

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Auto Body Shredding	31401102	182	Automobile Parking, Repair & Services	5
Automotive Repair	31401201	182	Automobile Parking, Repair & Services	5
Transportation Equipment: NEC	31499999	84	Motor Vehicles & Car Bodies	2
Photographic Equipment				
Photocopying Equipment	31501001	100	Photographic Equipment & Supplies	2
Photocopying Equipment	31501002	100	Photographic Equipment & Supplies	2
Photocopying Equipment	31501003	100	Photographic Equipment & Supplies	2
Health Services				
Hospitals	31502001	194	Hospitals, Private	1
Hospitals	31502002	194	Hospitals, Private	1
Hospitals	31502003	194	Hospitals, Private	1
Hospitals	31502088	194	Hospitals, Private	1
Hospitals	31502089	194	Hospitals, Private	1
Misc. Industries				
Laboratory Activities	31503001	195	Health Services	2
Laboratory Activities	31503002	195	Health Services	2
Laboratory Activities	31503003	195	Health Services	2
Medical: General	31503101	194	Hospitals, Private	1
Medical: General	31503102	194	Hospitals, Private	1
Swimming Pool Chlorination	31504001	191	Amusement & Recreation Services	4
Air Conditioning/Refrigeration	31505001	185	Misc. Repair Shops	4
Air Conditioning/Refrigeration	31505002	185	Misc. Repair Shops	4
Air Conditioning/Refrigeration	31505003	185	Misc. Repair Shops	4
Leather & Leather Products				
Leather & Leather Products: NEC	32099997	144	Luggage, Handbags, & Leather Products	4
Leather & Leather Products: NEC	32099998	144	Luggage, Handbags, & Leather Products	1
Leather & Leather Products: NEC	32099999	144	Luggage, Handbags, & Leather Products	1
Textile Products				
Misc. General Fabric Operations	33000101	114	Weaving, Finishing, Yarn & Thread	1
Misc. General Fabric Operations	33000102	114	Weaving, Finishing, Yarn & Thread	2
Misc. General Fabric Operations	33000103	114	Weaving, Finishing, Yarn & Thread	2
Misc. General Fabric Operations	33000104	114	Weaving, Finishing, Yarn & Thread	2
Misc. General Fabric Operations	33000105	114	Weaving, Finishing, Yarn & Thread	2
Misc. General Fabric Operations	33000198	114	Weaving, Finishing, Yarn & Thread	2
Misc. General Fabric Operations	33000199	114	Weaving, Finishing, Yarn & Thread	2
Rubberized Fabric	33000201	115	Knitting Mills	1
Rubberized Fabric	33000202	115	Knitting Mills	1
Rubberized Fabric	33000203	115	Knitting Mills	1
Rubberized Fabric	33000211	115	Knitting Mills	1
Rubberized Fabric	33000212	115	Knitting Mills	1
Rubberized Fabric	33000213	115	Knitting Mills	1
Rubberized Fabric	33000214	115	Knitting Mills	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Rubberized Fabric	33000297	117	Misc. Textile Goods	1
Rubberized Fabric	33000298	117	Misc. Textile Goods	1
Rubberized Fabric	33000299	117	Misc. Textile Goods	1
Carpet Operations	33000399	116	Carpets & Rugs	1
Fabric Finishing	33000499	114	Weaving, Finishing, Yarn & Thread	1
Fabric Finishing	33000599	118	Apparel	1
Fugitive Emissions	33088801	117	Misc. Textile Goods	4
Fugitive Emissions	33088802	117	Misc. Textile Goods	4
Fugitive Emissions	33088803	117	Misc. Textile Goods	4
Fugitive Emissions	33088804	117	Misc. Textile Goods	4
Fugitive Emissions	33088805	117	Misc. Textile Goods	4
Printing & Publishing				
Typsetting (Lead Remelting)	36000101	130	Printing Trade Services	1
Organic Solvent Evaporation				
Dry Cleaning	40100101	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100102	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100103	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100104	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100105	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100106	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100146	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100147	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100160	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100161	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100162	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100163	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100198	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	40100199	169	Laundry, Cleaning, & Shoe Repair	1
Degreasing	40100201	131	Industrial Chemicals	5
Degreasing	40100202	131	Industrial Chemicals	5
Degreasing	40100203	131	Industrial Chemicals	5
Degreasing	40100204	131	Industrial Chemicals	5
Degreasing	40100205	131	Industrial Chemicals	5
Degreasing	40100206	131	Industrial Chemicals	5
Degreasing	40100207	131	Industrial Chemicals	5
Degreasing	40100208	131	Industrial Chemicals	5
Degreasing	40100209	131	Industrial Chemicals	5
Degreasing	40100215	131	Industrial Chemicals	5
Degreasing	40100216	131	Industrial Chemicals	5
Degreasing	40100217	131	Industrial Chemicals	5
Degreasing	40100221	131	Industrial Chemicals	5
Degreasing	40100222	131	Industrial Chemicals	5

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	40100223	131	Industrial Chemicals	5
Degreasing	40100224	131	Industrial Chemicals	5
Degreasing	40100225	131	Industrial Chemicals	5
Degreasing	40100235	131	Industrial Chemicals	5
Degreasing	40100236	131	Industrial Chemicals	5
Degreasing	40100251	131	Industrial Chemicals	5
Degreasing	40100252	131	Industrial Chemicals	5
Degreasing	40100253	131	Industrial Chemicals	5
Degreasing	40100254	131	Industrial Chemicals	5
Degreasing	40100255	131	Industrial Chemicals	5
Degreasing	40100256	131	Industrial Chemicals	5
Degreasing	40100257	131	Industrial Chemicals	5
Degreasing	40100258	131	Industrial Chemicals	5
Degreasing	40100259	131	Industrial Chemicals	5
Degreasing	40100295	131	Industrial Chemicals	5
Degreasing	40100296	131	Industrial Chemicals	5
Degreasing	40100297	131	Industrial Chemicals	5
Degreasing	40100298	131	Industrial Chemicals	5
Degreasing	40100299	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100301	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100302	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100303	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100304	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100305	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100306	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100307	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100308	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100309	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100310	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100335	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100336	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100398	131	Industrial Chemicals	5
Cold Solvent Cleaning/Stripping	40100399	131	Industrial Chemicals	5
Knit Fabric Scouring	40100401	114	Weaving, Finishing, Yarn & Thread	4
Knit Fabric Scouring	40100499	114	Weaving, Finishing, Yarn & Thread	4
General Processes	40100501	137	Misc. Chemcial Products	6
General Processes	40100550	137	Misc. Chemcial Products	6
Surface Coating	40200101	135	Paint & Allied Products	5
Surface Coating	40200110	135	Paint & Allied Products	5
Surface Coating	40200201	135	Paint & Allied Products	5
Surface Coating	40200210	135	Paint & Allied Products	5
Surface Coating	40200301	135	Paint & Allied Products	5

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	40200310	135	Paint & Allied Products	5
Surface Coating	40200401	135	Paint & Allied Products	5
Surface Coating	40200410	135	Paint & Allied Products	5
Surface Coating	40200501	135	Paint & Allied Products	5
Surface Coating	40200510	135	Paint & Allied Products	5
Surface Coating	40200601	135	Paint & Allied Products	5
Surface Coating	40200610	135	Paint & Allied Products	5
Surface Coating	40200701	135	Paint & Allied Products	5
Surface Coating	40200706	135	Paint & Allied Products	5
Surface Coating	40200707	135	Paint & Allied Products	5
Surface Coating	40200710	135	Paint & Allied Products	5
Surface Coating	40200801	135	Paint & Allied Products	5
Surface Coating	40200802	135	Paint & Allied Products	5
Surface Coating	40200803	135	Paint & Allied Products	5
Surface Coating	40200810	135	Paint & Allied Products	5
Surface Coating	40200898	135	Paint & Allied Products	5
Surface Coating	40200899	135	Paint & Allied Products	5
Surface Coating	40200901	135	Paint & Allied Products	5
Surface Coating	40200902	135	Paint & Allied Products	5
Surface Coating	40200903	135	Paint & Allied Products	5
Surface Coating	40200904	135	Paint & Allied Products	5
Surface Coating	40200905	135	Paint & Allied Products	5
Surface Coating	40200906	135	Paint & Allied Products	5
Surface Coating	40200907	135	Paint & Allied Products	5
Surface Coating	40200908	135	Paint & Allied Products	5
Surface Coating	40200909	135	Paint & Allied Products	5
Surface Coating	40200910	135	Paint & Allied Products	5
Surface Coating	40200911	135	Paint & Allied Products	5
Surface Coating	40200912	135	Paint & Allied Products	5
Surface Coating	40200913	135	Paint & Allied Products	5
Surface Coating	40200914	135	Paint & Allied Products	5
Surface Coating	40200915	135	Paint & Allied Products	5
Surface Coating	40200916	135	Paint & Allied Products	5
Surface Coating	40200917	135	Paint & Allied Products	5
Surface Coating	40200918	135	Paint & Allied Products	5
Surface Coating	40200919	135	Paint & Allied Products	5
Surface Coating	40200920	135	Paint & Allied Products	5
Surface Coating	40200921	135	Paint & Allied Products	5
Surface Coating	40200922	135	Paint & Allied Products	5
Surface Coating	40200923	135	Paint & Allied Products	5
Surface Coating	40200924	135	Paint & Allied Products	5
Surface Coating	40200925	135	Paint & Allied Products	5

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	40200926	135	Paint & Allied Products	5
Surface Coating	40200927	135	Paint & Allied Products	5
Surface Coating	40200928	135	Paint & Allied Products	5
Surface Coating	40200929	135	Paint & Allied Products	5
Surface Coating	40200930	135	Paint & Allied Products	5
Surface Coating	40200931	135	Paint & Allied Products	5
Surface Coating	40200998	135	Paint & Allied Products	5
Fabric Coating	40201101	117	Misc. Textile Goods	2
Fabric Coating	40201103	117	Misc. Textile Goods	2
Fabric Coating	40201104	117	Misc. Textile Goods	2
Fabric Coating	40201105	117	Misc. Textile Goods	2
Fabric Coating	40201111	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201112	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201113	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201114	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201115	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201116	114	Weaving, Finishing, Yarn & Thread	2
Fabric Coating	40201122	117	Misc. Textile Goods	2
Fabric Coating	40201197	117	Misc. Textile Goods	2
Fabric Coating	40201198	117	Misc. Textile Goods	2
Fabric Coating	40201199	117	Misc. Textile Goods	2
Fabric Dyeing	40201201	114	Weaving, Finishing, Yarn & Thread	2
Fabric Dyeing	40201210	114	Weaving, Finishing, Yarn & Thread	2
Paper Coating	40201301	122	Converted Paper Prod., except Containers	1
Paper Coating	40201303	122	Converted Paper Prod., except Containers	1
Paper Coating	40201304	122	Converted Paper Prod., except Containers	1
Paper Coating	40201305	122	Converted Paper Prod., except Containers	1
Paper Coating	40201399	122	Converted Paper Prod., except Containers	1
Large Appliances	40201401	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201402	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201403	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201404	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201405	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201406	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201431	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201432	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201433	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201434	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201435	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201436	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201437	71	Refrigeration & Service Industry Mach.	2
Large Appliances	40201438	71	Refrigeration & Service Industry Mach.	2

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Large Appliances	40201499	71	Refrigeration & Service Industry Mach.	2
Magnet Wire	40201501	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201502	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201503	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201504	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201505	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201531	60	Misc. Fabricated Metal Products	4
Magnet Wire	40201599	60	Misc. Fabricated Metal Products	4
Autos & Light Trucks	40201601	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201602	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201603	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201604	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201605	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201606	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201619	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201620	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201621	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201622	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201623	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201624	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201625	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201626	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201627	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201628	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201629	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201630	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201631	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201632	84	Motor Vehicles & Car Bodies	5
Autos & Light Trucks	40201699	84	Motor Vehicles & Car Bodies	5
Metal Can Coating	40201702	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201703	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201704	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201705	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201721	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201722	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201723	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201724	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201725	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201726	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201727	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201728	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201731	49	Metal Cans & Shipping Containers	1

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1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Metal Can Coating	40201732	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201733	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201734	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201735	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201736	49	Metal Cans & Shipping Containers	1
Metal Can Coating	40201799	49	Metal Cans & Shipping Containers	1
Metal Coil Coating	40201801	57	Metal Services	2
Metal Coil Coating	40201803	57	Metal Services	2
Metal Coil Coating	40201804	57	Metal Services	2
Metal Coil Coating	40201805	57	Metal Services	2
Metal Coil Coating	40201806	57	Metal Services	2
Metal Coil Coating	40201899	57	Metal Services	2
Wood Furniture	40201901	37	Household Furniture	2
Wood Furniture	40201903	37	Household Furniture	2
Wood Furniture	40201904	37	Household Furniture	4
Wood Furniture	40201999	37	Household Furniture	4
Metal Furniture	40202001	37	Household Furniture	4
Metal Furniture	40202002	37	Household Furniture	4
Metal Furniture	40202003	37	Household Furniture	4
Metal Furniture	40202004	37	Household Furniture	4
Metal Furniture	40202005	37	Household Furniture	4
Metal Furniture	40202031	37	Household Furniture	4
Metal Furniture	40202032	37	Household Furniture	4
Metal Furniture	40202033	37	Household Furniture	4
Metal Furniture	40202034	37	Household Furniture	4
Metal Furniture	40202099	37	Household Furniture	4
Flatwood Products	40202101	33	Veneer & Plywood	2
Flatwood Products	40202103	33	Veneer & Plywood	2
Flatwood Products	40202104	33	Veneer & Plywood	2
Flatwood Products	40202105	33	Veneer & Plywood	2
Flatwood Products	40202106	33	Veneer & Plywood	2
Flatwood Products	40202107	33	Veneer & Plywood	2
Flatwood Products	40202108	33	Veneer & Plywood	2
Flatwood Products	40202109	33	Veneer & Plywood	2
Flatwood Products	40202131	33	Veneer & Plywood	2
Flatwood Products	40202132	33	Veneer & Plywood	2
Flatwood Products	40202133	33	Veneer & Plywood	2
Flatwood Products	40202199	33	Veneer & Plywood	2
Plastic Parts	40202201	142	Misc. Plastic Products	5
Plastic Parts	40202202	142	Misc. Plastic Products	5
Plastic Parts	40202203	142	Misc. Plastic Products	5
Plastic Parts	40202204	142	Misc. Plastic Products	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Plastic Parts	40202205	142	Misc. Plastic Products	5
Plastic Parts	40202206	142	Misc. Plastic Products	5
Plastic Parts	40202207	142	Misc. Plastic Products	5
Plastic Parts	40202208	142	Misc. Plastic Products	5
Plastic Parts	40202209	142	Misc. Plastic Products	5
Plastic Parts	40202210	142	Misc. Plastic Products	5
Plastic Parts	40202211	142	Misc. Plastic Products	5
Plastic Parts	40202212	142	Misc. Plastic Products	5
Plastic Parts	40202213	142	Misc. Plastic Products	5
Plastic Parts	40202214	142	Misc. Plastic Products	5
Plastic Parts	40202215	142	Misc. Plastic Products	5
Plastic Parts	40202299	142	Misc. Plastic Products	5
Large Ships	40202301	91	Ship Building & Repairing	1
Large Ships	40202302	91	Ship Building & Repairing	1
Large Ships	40202303	91	Ship Building & Repairing	1
Large Ships	40202304	91	Ship Building & Repairing	1
Large Ships	40202305	91	Ship Building & Repairing	1
Large Ships	40202306	91	Ship Building & Repairing	1
Large Ships	40202399	91	Ship Building & Repairing	1
Large Aircraft	40202401	87	Aircraft	5
Large Aircraft	40202402	87	Aircraft	5
Large Aircraft	40202403	87	Aircraft	5
Large Aircraft	40202404	87	Aircraft	5
Large Aircraft	40202405	87	Aircraft	5
Large Aircraft	40202406	87	Aircraft	5
Large Aircraft	40202499	87	Aircraft	5
Misc. Metal Parts	40202501	57	Metal Services	2
Misc. Metal Parts	40202502	57	Metal Services	2
Misc. Metal Parts	40202503	57	Metal Services	2
Misc. Metal Parts	40202504	57	Metal Services	2
Misc. Metal Parts	40202505	57	Metal Services	2
Misc. Metal Parts	40202531	57	Metal Services	2
Misc. Metal Parts	40202532	57	Metal Services	2
Misc. Metal Parts	40202533	57	Metal Services	2
Misc. Metal Parts	40202534	57	Metal Services	2
Misc. Metal Parts	40202535	57	Metal Services	2
Misc. Metal Parts	40202536	57	Metal Services	2
Misc. Metal Parts	40202537	57	Metal Services	2
Misc. Metal Parts	40202599	57	Metal Services	2
Steel Drums	40202601	49	Metal Cans & Shipping Containers	1
Steel Drums	40202602	49	Metal Cans & Shipping Containers	1
Steel Drums	40202603	49	Metal Cans & Shipping Containers	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Steel Drums	40202604	49	Metal Cans & Shipping Containers	1
Steel Drums	40202605	49	Metal Cans & Shipping Containers	1
Steel Drums	40202606	49	Metal Cans & Shipping Containers	1
Steel Drums	40202607	49	Metal Cans & Shipping Containers	1
Steel Drums	40202699	49	Metal Cans & Shipping Containers	1
Mirror Backing	40202701	40	Glass & Glass Products	4
Mirror Backing	40202710	40	Glass & Glass Products	4
Petroleum Product Storage				
Refineries, Oil, & Gas Fields	40300101	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300102	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300103	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300104	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300105	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300106	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300107	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300108	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300109	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300110	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300111	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300112	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300113	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300114	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300115	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300116	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300150	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300151	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300152	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300153	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300154	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300155	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300156	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300157	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300158	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300159	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300160	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300161	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300198	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300199	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300201	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300202	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300203	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300204	138	Petroleum Refining	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Refineries, Oil, & Gas Fields	40300205	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300207	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300208	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300209	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300210	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300211	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300212	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300213	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300214	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300215	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300216	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300299	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40300302	138	Petroleum Refining	4
Refineries, Oil, & Gas Fields	40301001	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301002	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301003	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301004	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301005	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301006	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301007	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301008	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301009	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301010	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301011	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301012	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301013	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301014	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301015	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301016	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301017	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301018	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301019	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301020	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301021	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301022	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301023	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301024	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301025	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301026	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301027	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301028	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301029	138	Petroleum Refining	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Refineries, Oil, & Gas Fields	40301065	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301067	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301068	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301069	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301075	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301076	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301077	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301078	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301079	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301097	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301098	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301099	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301101	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301102	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301103	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301104	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301105	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301106	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301107	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301108	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301109	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301110	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301111	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301112	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301113	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301114	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301115	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301116	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301117	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301118	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301119	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301120	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301125	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301126	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301127	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301128	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301129	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301130	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301131	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301132	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301133	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301134	138	Petroleum Refining	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Refineries, Oil, & Gas Fields	40301135	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301140	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301141	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301142	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301143	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301144	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301145	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301150	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301151	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301152	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301153	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301154	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301155	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301165	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301166	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301167	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301168	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301169	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301175	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301176	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301177	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301178	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301179	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301180	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301181	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301182	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301197	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301198	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301199	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301201	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301202	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301203	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301204	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301205	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301206	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301207	138	Petroleum Refining	5
Refineries, Oil, & Gas Fields	40301299	138	Petroleum Refining	5
Fugitive Emissions	40388801	138	Petroleum Refining	4
Fugitive Emissions	40388802	138	Petroleum Refining	4
Fugitive Emissions	40388803	138	Petroleum Refining	4
Fugitive Emissions	40388804	138	Petroleum Refining	4
Fugitive Emissions	40388805	138	Petroleum Refining	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Bulk Terminals/Plants	40400101	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400102	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400103	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400104	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400105	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400106	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400107	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400108	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400109	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400110	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400111	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400112	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400113	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400114	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400115	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400116	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400117	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400118	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400119	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400120	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400130	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400131	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400132	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400133	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400140	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400141	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400142	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400143	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400148	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400149	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400150	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400151	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400152	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400153	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400154	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400160	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400161	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400162	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400163	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400170	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400171	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400172	147	Trucking and Warehousing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Bulk Terminals/Plants	40400173	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400178	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400179	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400199	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400201	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400202	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400203	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400204	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400205	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400206	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400207	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400208	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400209	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400210	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400211	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400212	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400213	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400230	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400231	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400232	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400233	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400240	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400241	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400242	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400243	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400248	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400249	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400250	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400251	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400252	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400253	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400254	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400260	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400261	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400262	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400263	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400270	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400271	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400272	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400273	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400278	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400279	147	Trucking and Warehousing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Bulk Terminals/Plants	40400301	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400302	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400303	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400304	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400305	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400306	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400307	9	Oil & Gas Field Services	1
Bulk Terminals/Plants	40400401	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400402	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400403	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400404	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400405	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400406	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400407	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400408	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400409	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400410	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400411	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400412	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400413	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400414	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400497	147	Trucking and Warehousing	4
Bulk Terminals/Plants	40400498	147	Trucking and Warehousing	4
Printing & Publishing				
Printing & Publishing	40500101	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500199	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500201	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500202	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500203	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500211	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500212	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500215	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500301	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500302	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500303	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500304	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500305	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500306	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500307	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500311	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500312	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500314	127	Commercial Printing & Business Forms	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Printing & Publishing	40500315	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500316	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500317	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500318	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500319	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500401	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500411	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500412	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500413	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500414	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500415	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500416	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500417	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500418	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500421	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500422	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500431	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500432	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500433	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500501	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500502	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500503	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500506	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500507	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500510	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500511	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500512	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500513	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500514	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500598	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500599	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500601	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500701	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500801	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500802	127	Commercial Printing & Business Forms	2
Printing & Publishing	40500812	127	Commercial Printing & Business Forms	2
Fugitive Emissions	40588801	125	Books	2
Fugitive Emissions	40588802	127	Commercial Printing & Business Forms	2
Fugitive Emissions	40588803	127	Commercial Printing & Business Forms	2
Fugitive Emissions	40588804	127	Commercial Printing & Business Forms	2
Fugitive Emissions	40588805	127	Commercial Printing & Business Forms	2
Transport/Marketing				

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Products	40600130	147	Trucking and Warehousing	4
Petroleum Products	40600131	147	Trucking and Warehousing	4
Petroleum Products	40600132	147	Trucking and Warehousing	4
Petroleum Products	40600133	147	Trucking and Warehousing	4
Petroleum Products	40600134	147	Trucking and Warehousing	4
Petroleum Products	40600135	147	Trucking and Warehousing	4
Petroleum Products	40600136	147	Trucking and Warehousing	4
Petroleum Products	40600137	147	Trucking and Warehousing	4
Petroleum Products	40600138	147	Trucking and Warehousing	4
Petroleum Products	40600139	147	Trucking and Warehousing	4
Petroleum Products	40600140	147	Trucking and Warehousing	4
Petroleum Products	40600141	147	Trucking and Warehousing	4
Petroleum Products	40600142	147	Trucking and Warehousing	4
Petroleum Products	40600143	147	Trucking and Warehousing	4
Petroleum Products	40600144	147	Trucking and Warehousing	4
Petroleum Products	40600145	147	Trucking and Warehousing	4
Petroleum Products	40600146	147	Trucking and Warehousing	4
Petroleum Products	40600147	147	Trucking and Warehousing	4
Petroleum Products	40600148	147	Trucking and Warehousing	4
Petroleum Products	40600149	147	Trucking and Warehousing	4
Petroleum Products	40600160	147	Trucking and Warehousing	4
Petroleum Products	40600161	147	Trucking and Warehousing	4
Petroleum Products	40600162	147	Trucking and Warehousing	4
Petroleum Products	40600163	147	Trucking and Warehousing	4
Petroleum Products	40600164	147	Trucking and Warehousing	4
Petroleum Products	40600165	147	Trucking and Warehousing	4
Petroleum Products	40600166	147	Trucking and Warehousing	4
Petroleum Products	40600167	147	Trucking and Warehousing	4
Petroleum Products	40600168	147	Trucking and Warehousing	4
Petroleum Products	40600169	147	Trucking and Warehousing	4
Petroleum Products	40600170	147	Trucking and Warehousing	4
Petroleum Products	40600171	147	Trucking and Warehousing	4
Petroleum Products	40600197	147	Trucking and Warehousing	4
Petroleum Products	40600198	147	Trucking and Warehousing	4
Petroleum Products	40600199	147	Trucking and Warehousing	4
Petroleum Products	40600231	148	Water Transportation	4
Petroleum Products	40600232	148	Water Transportation	4
Petroleum Products	40600233	148	Water Transportation	4
Petroleum Products	40600234	148	Water Transportation	4
Petroleum Products	40600235	148	Water Transportation	4
Petroleum Products	40600236	148	Water Transportation	4
Petroleum Products	40600237	148	Water Transportation	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occthin BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Products	40600238	148	Water Transportation	4
Petroleum Products	40600239	148	Water Transportation	4
Petroleum Products	40600240	148	Water Transportation	4
Petroleum Products	40600241	148	Water Transportation	4
Petroleum Products	40600242	148	Water Transportation	4
Petroleum Products	40600243	148	Water Transportation	4
Petroleum Products	40600244	148	Water Transportation	4
Petroleum Products	40600245	148	Water Transportation	4
Petroleum Products	40600246	148	Water Transportation	4
Petroleum Products	40600248	148	Water Transportation	4
Petroleum Products	40600249	148	Water Transportation	4
Petroleum Products	40600250	148	Water Transportation	4
Petroleum Products	40600251	148	Water Transportation	4
Petroleum Products	40600253	148	Water Transportation	4
Petroleum Products	40600254	148	Water Transportation	4
Petroleum Products	40600255	148	Water Transportation	4
Petroleum Products	40600256	148	Water Transportation	4
Petroleum Products	40600257	148	Water Transportation	4
Petroleum Products	40600259	148	Water Transportation	4
Petroleum Products	40600260	148	Water Transportation	4
Petroleum Products	40600261	148	Water Transportation	4
Petroleum Products	40600298	148	Water Transportation	4
Petroleum Products	40600299	148	Water Transportation	4
Petroleum Products	40600301	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600302	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600305	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600306	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600307	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600399	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600401	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600402	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600403	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600499	159	Retail Trade, excluding Restaurants	2
Petroleum Products	40600501	150	Pipelines, except Natural Gas	1
Petroleum Products	40600502	150	Pipelines, except Natural Gas	1
Petroleum Products	40600503	150	Pipelines, except Natural Gas	1
Petroleum Products	40600504	150	Pipelines, except Natural Gas	1
Petroleum Products	40688801	138	Petroleum Refining	4
Petroleum Products	40688802	138	Petroleum Refining	4
Petroleum Products	40688803	138	Petroleum Refining	4
Petroleum Products	40688804	138	Petroleum Refining	4
Petroleum Products	40688805	138	Petroleum Refining	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage				
Organic Chemical Storage	40700401	131	Industrial Chemicals	5
Organic Chemical Storage	40700402	131	Industrial Chemicals	5
Organic Chemical Storage	40700497	131	Industrial Chemicals	5
Organic Chemical Storage	40700498	131	Industrial Chemicals	5
Organic Chemical Storage	40700801	131	Industrial Chemicals	5
Organic Chemical Storage	40700802	131	Industrial Chemicals	5
Organic Chemical Storage	40700803	131	Industrial Chemicals	5
Organic Chemical Storage	40700804	131	Industrial Chemicals	5
Organic Chemical Storage	40700805	131	Industrial Chemicals	5
Organic Chemical Storage	40700806	131	Industrial Chemicals	5
Organic Chemical Storage	40700807	131	Industrial Chemicals	5
Organic Chemical Storage	40700808	131	Industrial Chemicals	5
Organic Chemical Storage	40700809	131	Industrial Chemicals	5
Organic Chemical Storage	40700810	131	Industrial Chemicals	5
Organic Chemical Storage	40700811	131	Industrial Chemicals	5
Organic Chemical Storage	40700812	131	Industrial Chemicals	5
Organic Chemical Storage	40700813	131	Industrial Chemicals	5
Organic Chemical Storage	40700814	131	Industrial Chemicals	5
Organic Chemical Storage	40700815	131	Industrial Chemicals	5
Organic Chemical Storage	40700816	131	Industrial Chemicals	5
Organic Chemical Storage	40700817	131	Industrial Chemicals	5
Organic Chemical Storage	40700818	131	Industrial Chemicals	5
Organic Chemical Storage	40700897	131	Industrial Chemicals	5
Organic Chemical Storage	40700898	131	Industrial Chemicals	5
Organic Chemical Storage	40701601	131	Industrial Chemicals	5
Organic Chemical Storage	40701602	131	Industrial Chemicals	5
Organic Chemical Storage	40701603	131	Industrial Chemicals	5
Organic Chemical Storage	40701604	131	Industrial Chemicals	5
Organic Chemical Storage	40701605	131	Industrial Chemicals	5
Organic Chemical Storage	40701606	131	Industrial Chemicals	5
Organic Chemical Storage	40701607	131	Industrial Chemicals	5
Organic Chemical Storage	40701608	131	Industrial Chemicals	5
Organic Chemical Storage	40701609	131	Industrial Chemicals	5
Organic Chemical Storage	40701610	131	Industrial Chemicals	5
Organic Chemical Storage	40701611	131	Industrial Chemicals	5
Organic Chemical Storage	40701612	131	Industrial Chemicals	5
Organic Chemical Storage	40701613	131	Industrial Chemicals	5
Organic Chemical Storage	40701614	131	Industrial Chemicals	5
Organic Chemical Storage	40701697	131	Industrial Chemicals	5
Organic Chemical Storage	40701698	131	Industrial Chemicals	5
Organic Chemical Storage	40702001	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40702002	131	Industrial Chemicals	5
Organic Chemical Storage	40702003	131	Industrial Chemicals	5
Organic Chemical Storage	40702004	131	Industrial Chemicals	5
Organic Chemical Storage	40702097	131	Industrial Chemicals	5
Organic Chemical Storage	40702098	131	Industrial Chemicals	5
Organic Chemical Storage	40702801	131	Industrial Chemicals	5
Organic Chemical Storage	40702802	131	Industrial Chemicals	5
Organic Chemical Storage	40703201	131	Industrial Chemicals	5
Organic Chemical Storage	40703202	131	Industrial Chemicals	5
Organic Chemical Storage	40703203	131	Industrial Chemicals	5
Organic Chemical Storage	40703204	131	Industrial Chemicals	5
Organic Chemical Storage	40703205	131	Industrial Chemicals	5
Organic Chemical Storage	40703206	131	Industrial Chemicals	5
Organic Chemical Storage	40703207	131	Industrial Chemicals	5
Organic Chemical Storage	40703208	131	Industrial Chemicals	5
Organic Chemical Storage	40703297	131	Industrial Chemicals	5
Organic Chemical Storage	40703298	131	Industrial Chemicals	5
Organic Chemical Storage	40703601	131	Industrial Chemicals	5
Organic Chemical Storage	40703602	131	Industrial Chemicals	5
Organic Chemical Storage	40703603	131	Industrial Chemicals	5
Organic Chemical Storage	40703604	131	Industrial Chemicals	5
Organic Chemical Storage	40703605	131	Industrial Chemicals	5
Organic Chemical Storage	40703606	131	Industrial Chemicals	5
Organic Chemical Storage	40703607	131	Industrial Chemicals	5
Organic Chemical Storage	40703608	131	Industrial Chemicals	5
Organic Chemical Storage	40703609	131	Industrial Chemicals	5
Organic Chemical Storage	40703610	131	Industrial Chemicals	5
Organic Chemical Storage	40703611	131	Industrial Chemicals	5
Organic Chemical Storage	40703612	131	Industrial Chemicals	5
Organic Chemical Storage	40703613	131	Industrial Chemicals	5
Organic Chemical Storage	40703614	131	Industrial Chemicals	5
Organic Chemical Storage	40703615	131	Industrial Chemicals	5
Organic Chemical Storage	40703616	131	Industrial Chemicals	5
Organic Chemical Storage	40703617	131	Industrial Chemicals	5
Organic Chemical Storage	40703618	131	Industrial Chemicals	5
Organic Chemical Storage	40703619	131	Industrial Chemicals	5
Organic Chemical Storage	40703620	131	Industrial Chemicals	5
Organic Chemical Storage	40703621	131	Industrial Chemicals	5
Organic Chemical Storage	40703622	131	Industrial Chemicals	5
Organic Chemical Storage	40703623	131	Industrial Chemicals	5
Organic Chemical Storage	40703624	131	Industrial Chemicals	5
Organic Chemical Storage	40703625	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40703626	131	Industrial Chemicals	5
Organic Chemical Storage	40703697	131	Industrial Chemicals	5
Organic Chemical Storage	40703698	131	Industrial Chemicals	5
Organic Chemical Storage	40704001	131	Industrial Chemicals	5
Organic Chemical Storage	40704002	131	Industrial Chemicals	5
Organic Chemical Storage	40704003	131	Industrial Chemicals	5
Organic Chemical Storage	40704004	131	Industrial Chemicals	5
Organic Chemical Storage	40704005	131	Industrial Chemicals	5
Organic Chemical Storage	40704006	131	Industrial Chemicals	5
Organic Chemical Storage	40704007	131	Industrial Chemicals	5
Organic Chemical Storage	40704008	131	Industrial Chemicals	5
Organic Chemical Storage	40704009	131	Industrial Chemicals	5
Organic Chemical Storage	40704010	131	Industrial Chemicals	5
Organic Chemical Storage	40704097	131	Industrial Chemicals	5
Organic Chemical Storage	40704098	131	Industrial Chemicals	5
Organic Chemical Storage	40704099	131	Industrial Chemicals	5
Organic Chemical Storage	40704401	131	Industrial Chemicals	5
Organic Chemical Storage	40704402	131	Industrial Chemicals	5
Organic Chemical Storage	40704403	131	Industrial Chemicals	5
Organic Chemical Storage	40704404	131	Industrial Chemicals	5
Organic Chemical Storage	40704405	131	Industrial Chemicals	5
Organic Chemical Storage	40704406	131	Industrial Chemicals	5
Organic Chemical Storage	40704407	131	Industrial Chemicals	5
Organic Chemical Storage	40704408	131	Industrial Chemicals	5
Organic Chemical Storage	40704409	131	Industrial Chemicals	5
Organic Chemical Storage	40704410	131	Industrial Chemicals	5
Organic Chemical Storage	40704411	131	Industrial Chemicals	5
Organic Chemical Storage	40704412	131	Industrial Chemicals	5
Organic Chemical Storage	40704413	131	Industrial Chemicals	5
Organic Chemical Storage	40704414	131	Industrial Chemicals	5
Organic Chemical Storage	40704415	131	Industrial Chemicals	5
Organic Chemical Storage	40704416	131	Industrial Chemicals	5
Organic Chemical Storage	40704417	131	Industrial Chemicals	5
Organic Chemical Storage	40704418	131	Industrial Chemicals	5
Organic Chemical Storage	40704419	131	Industrial Chemicals	5
Organic Chemical Storage	40704420	131	Industrial Chemicals	5
Organic Chemical Storage	40704421	131	Industrial Chemicals	5
Organic Chemical Storage	40704422	131	Industrial Chemicals	5
Organic Chemical Storage	40704423	131	Industrial Chemicals	5
Organic Chemical Storage	40704424	131	Industrial Chemicals	5
Organic Chemical Storage	40704497	131	Industrial Chemicals	5
Organic Chemical Storage	40704498	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40704801	131	Industrial Chemicals	5
Organic Chemical Storage	40704802	131	Industrial Chemicals	5
Organic Chemical Storage	40704897	131	Industrial Chemicals	5
Organic Chemical Storage	40704898	131	Industrial Chemicals	5
Organic Chemical Storage	40705201	131	Industrial Chemicals	5
Organic Chemical Storage	40705202	131	Industrial Chemicals	5
Organic Chemical Storage	40705203	131	Industrial Chemicals	5
Organic Chemical Storage	40705204	131	Industrial Chemicals	5
Organic Chemical Storage	40705205	131	Industrial Chemicals	5
Organic Chemical Storage	40705206	131	Industrial Chemicals	5
Organic Chemical Storage	40705207	131	Industrial Chemicals	5
Organic Chemical Storage	40705208	131	Industrial Chemicals	5
Organic Chemical Storage	40705209	131	Industrial Chemicals	5
Organic Chemical Storage	40705210	131	Industrial Chemicals	5
Organic Chemical Storage	40705211	131	Industrial Chemicals	5
Organic Chemical Storage	40705212	131	Industrial Chemicals	5
Organic Chemical Storage	40705213	131	Industrial Chemicals	5
Organic Chemical Storage	40705214	131	Industrial Chemicals	5
Organic Chemical Storage	40705215	131	Industrial Chemicals	5
Organic Chemical Storage	40705216	131	Industrial Chemicals	5
Organic Chemical Storage	40705217	131	Industrial Chemicals	5
Organic Chemical Storage	40705218	131	Industrial Chemicals	5
Organic Chemical Storage	40705297	131	Industrial Chemicals	5
Organic Chemical Storage	40705298	131	Industrial Chemicals	5
Organic Chemical Storage	40705601	131	Industrial Chemicals	5
Organic Chemical Storage	40705602	131	Industrial Chemicals	5
Organic Chemical Storage	40705603	131	Industrial Chemicals	5
Organic Chemical Storage	40705604	131	Industrial Chemicals	5
Organic Chemical Storage	40705605	131	Industrial Chemicals	5
Organic Chemical Storage	40705606	131	Industrial Chemicals	5
Organic Chemical Storage	40705607	131	Industrial Chemicals	5
Organic Chemical Storage	40705608	131	Industrial Chemicals	5
Organic Chemical Storage	40705609	131	Industrial Chemicals	5
Organic Chemical Storage	40705610	131	Industrial Chemicals	5
Organic Chemical Storage	40705697	131	Industrial Chemicals	5
Organic Chemical Storage	40705698	131	Industrial Chemicals	5
Organic Chemical Storage	40706001	131	Industrial Chemicals	5
Organic Chemical Storage	40706002	131	Industrial Chemicals	5
Organic Chemical Storage	40706003	131	Industrial Chemicals	5
Organic Chemical Storage	40706004	131	Industrial Chemicals	5
Organic Chemical Storage	40706005	131	Industrial Chemicals	5
Organic Chemical Storage	40706006	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40706007	131	Industrial Chemicals	5
Organic Chemical Storage	40706008	131	Industrial Chemicals	5
Organic Chemical Storage	40706009	131	Industrial Chemicals	5
Organic Chemical Storage	40706010	131	Industrial Chemicals	5
Organic Chemical Storage	40706011	131	Industrial Chemicals	5
Organic Chemical Storage	40706012	131	Industrial Chemicals	5
Organic Chemical Storage	40706013	131	Industrial Chemicals	5
Organic Chemical Storage	40706014	131	Industrial Chemicals	5
Organic Chemical Storage	40706015	131	Industrial Chemicals	5
Organic Chemical Storage	40706016	131	Industrial Chemicals	5
Organic Chemical Storage	40706017	131	Industrial Chemicals	5
Organic Chemical Storage	40706018	131	Industrial Chemicals	5
Organic Chemical Storage	40706019	131	Industrial Chemicals	5
Organic Chemical Storage	40706020	131	Industrial Chemicals	5
Organic Chemical Storage	40706021	131	Industrial Chemicals	5
Organic Chemical Storage	40706022	131	Industrial Chemicals	5
Organic Chemical Storage	40706023	131	Industrial Chemicals	5
Organic Chemical Storage	40706024	131	Industrial Chemicals	5
Organic Chemical Storage	40706027	131	Industrial Chemicals	5
Organic Chemical Storage	40706028	131	Industrial Chemicals	5
Organic Chemical Storage	40706029	131	Industrial Chemicals	5
Organic Chemical Storage	40706030	131	Industrial Chemicals	5
Organic Chemical Storage	40706097	131	Industrial Chemicals	5
Organic Chemical Storage	40706098	131	Industrial Chemicals	5
Organic Chemical Storage	40706401	131	Industrial Chemicals	5
Organic Chemical Storage	40706402	131	Industrial Chemicals	5
Organic Chemical Storage	40706403	131	Industrial Chemicals	5
Organic Chemical Storage	40706404	131	Industrial Chemicals	5
Organic Chemical Storage	40706497	131	Industrial Chemicals	5
Organic Chemical Storage	40706498	131	Industrial Chemicals	5
Organic Chemical Storage	40706801	131	Industrial Chemicals	5
Organic Chemical Storage	40706802	131	Industrial Chemicals	5
Organic Chemical Storage	40706803	131	Industrial Chemicals	5
Organic Chemical Storage	40706804	131	Industrial Chemicals	5
Organic Chemical Storage	40706806	131	Industrial Chemicals	5
Organic Chemical Storage	40706807	131	Industrial Chemicals	5
Organic Chemical Storage	40706808	131	Industrial Chemicals	5
Organic Chemical Storage	40706813	131	Industrial Chemicals	5
Organic Chemical Storage	40706814	131	Industrial Chemicals	5
Organic Chemical Storage	40706897	131	Industrial Chemicals	5
Organic Chemical Storage	40706898	131	Industrial Chemicals	5
Organic Chemical Storage	40707601	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40707602	131	Industrial Chemicals	5
Organic Chemical Storage	40707697	131	Industrial Chemicals	5
Organic Chemical Storage	40707698	131	Industrial Chemicals	5
Organic Chemical Storage	40708001	131	Industrial Chemicals	5
Organic Chemical Storage	40708002	131	Industrial Chemicals	5
Organic Chemical Storage	40708097	131	Industrial Chemicals	5
Organic Chemical Storage	40708098	131	Industrial Chemicals	5
Organic Chemical Storage	40708401	131	Industrial Chemicals	5
Organic Chemical Storage	40708402	131	Industrial Chemicals	5
Organic Chemical Storage	40708403	131	Industrial Chemicals	5
Organic Chemical Storage	40708404	131	Industrial Chemicals	5
Organic Chemical Storage	40708497	131	Industrial Chemicals	5
Organic Chemical Storage	40708498	131	Industrial Chemicals	5
Organic Chemical Storage	40714697	131	Industrial Chemicals	5
Organic Chemical Storage	40714698	131	Industrial Chemicals	5
Organic Chemical Storage	40715401	131	Industrial Chemicals	5
Organic Chemical Storage	40715402	131	Industrial Chemicals	5
Organic Chemical Storage	40715801	131	Industrial Chemicals	5
Organic Chemical Storage	40715802	131	Industrial Chemicals	5
Organic Chemical Storage	40715809	131	Industrial Chemicals	5
Organic Chemical Storage	40715810	131	Industrial Chemicals	5
Organic Chemical Storage	40715811	131	Industrial Chemicals	5
Organic Chemical Storage	40715812	131	Industrial Chemicals	5
Organic Chemical Storage	40715817	131	Industrial Chemicals	5
Organic Chemical Storage	40715818	131	Industrial Chemicals	5
Organic Chemical Storage	40717201	131	Industrial Chemicals	5
Organic Chemical Storage	40717202	131	Industrial Chemicals	5
Organic Chemical Storage	40717203	131	Industrial Chemicals	5
Organic Chemical Storage	40717204	131	Industrial Chemicals	5
Organic Chemical Storage	40717205	131	Industrial Chemicals	5
Organic Chemical Storage	40717206	131	Industrial Chemicals	5
Organic Chemical Storage	40717207	131	Industrial Chemicals	5
Organic Chemical Storage	40717208	131	Industrial Chemicals	5
Organic Chemical Storage	40717209	131	Industrial Chemicals	5
Organic Chemical Storage	40717210	131	Industrial Chemicals	5
Organic Chemical Storage	40717211	131	Industrial Chemicals	5
Organic Chemical Storage	40717212	131	Industrial Chemicals	5
Organic Chemical Storage	40717297	131	Industrial Chemicals	5
Organic Chemical Storage	40717298	131	Industrial Chemicals	5
Organic Chemical Storage	40717601	131	Industrial Chemicals	5
Organic Chemical Storage	40717602	131	Industrial Chemicals	5
Organic Chemical Storage	40717603	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40717604	131	Industrial Chemicals	5
Organic Chemical Storage	40717605	131	Industrial Chemicals	5
Organic Chemical Storage	40717606	131	Industrial Chemicals	5
Organic Chemical Storage	40717611	131	Industrial Chemicals	5
Organic Chemical Storage	40717612	131	Industrial Chemicals	5
Organic Chemical Storage	40717614	131	Industrial Chemicals	5
Organic Chemical Storage	40717697	131	Industrial Chemicals	5
Organic Chemical Storage	40717698	131	Industrial Chemicals	5
Organic Chemical Storage	40718001	131	Industrial Chemicals	5
Organic Chemical Storage	40718002	131	Industrial Chemicals	5
Organic Chemical Storage	40718003	131	Industrial Chemicals	5
Organic Chemical Storage	40718004	131	Industrial Chemicals	5
Organic Chemical Storage	40718005	131	Industrial Chemicals	5
Organic Chemical Storage	40718006	131	Industrial Chemicals	5
Organic Chemical Storage	40718007	131	Industrial Chemicals	5
Organic Chemical Storage	40718008	131	Industrial Chemicals	5
Organic Chemical Storage	40718009	131	Industrial Chemicals	5
Organic Chemical Storage	40718010	131	Industrial Chemicals	5
Organic Chemical Storage	40718097	131	Industrial Chemicals	5
Organic Chemical Storage	40718098	131	Industrial Chemicals	5
Organic Chemical Storage	40718801	131	Industrial Chemicals	5
Organic Chemical Storage	40718802	131	Industrial Chemicals	5
Organic Chemical Storage	40719207	131	Industrial Chemicals	5
Organic Chemical Storage	40719208	131	Industrial Chemicals	5
Organic Chemical Storage	40719615	131	Industrial Chemicals	5
Organic Chemical Storage	40719616	131	Industrial Chemicals	5
Organic Chemical Storage	40719619	131	Industrial Chemicals	5
Organic Chemical Storage	40719620	131	Industrial Chemicals	5
Organic Chemical Storage	40719621	131	Industrial Chemicals	5
Organic Chemical Storage	40719622	131	Industrial Chemicals	5
Organic Chemical Storage	40719697	131	Industrial Chemicals	5
Organic Chemical Storage	40719698	131	Industrial Chemicals	5
Organic Chemical Storage	40720401	131	Industrial Chemicals	5
Organic Chemical Storage	40720402	131	Industrial Chemicals	5
Organic Chemical Storage	40720405	131	Industrial Chemicals	5
Organic Chemical Storage	40720406	131	Industrial Chemicals	5
Organic Chemical Storage	40720801	131	Industrial Chemicals	5
Organic Chemical Storage	40720802	131	Industrial Chemicals	5
Organic Chemical Storage	40720803	131	Industrial Chemicals	5
Organic Chemical Storage	40720804	131	Industrial Chemicals	5
Organic Chemical Storage	40720897	131	Industrial Chemicals	5
Organic Chemical Storage	40720898	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			*6 = General growth indicator*2t3b0s9.50v1P	
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40721205	131	Industrial Chemicals	5
Organic Chemical Storage	40721206	131	Industrial Chemicals	5
Organic Chemical Storage	40721207	131	Industrial Chemicals	5
Organic Chemical Storage	40721208	131	Industrial Chemicals	5
Organic Chemical Storage	40721217	131	Industrial Chemicals	5
Organic Chemical Storage	40721218	131	Industrial Chemicals	5
Organic Chemical Storage	40721603	131	Industrial Chemicals	5
Organic Chemical Storage	40721604	131	Industrial Chemicals	5
Organic Chemical Storage	40722001	131	Industrial Chemicals	5
Organic Chemical Storage	40722002	131	Industrial Chemicals	5
Organic Chemical Storage	40722003	131	Industrial Chemicals	5
Organic Chemical Storage	40722004	131	Industrial Chemicals	5
Organic Chemical Storage	40722005	131	Industrial Chemicals	5
Organic Chemical Storage	40722006	131	Industrial Chemicals	5
Organic Chemical Storage	40722007	131	Industrial Chemicals	5
Organic Chemical Storage	40722008	131	Industrial Chemicals	5
Organic Chemical Storage	40722009	131	Industrial Chemicals	5
Organic Chemical Storage	40722010	131	Industrial Chemicals	5
Organic Chemical Storage	40722011	131	Industrial Chemicals	5
Organic Chemical Storage	40722012	131	Industrial Chemicals	5
Organic Chemical Storage	40722021	131	Industrial Chemicals	5
Organic Chemical Storage	40722022	131	Industrial Chemicals	5
Organic Chemical Storage	40722029	131	Industrial Chemicals	5
Organic Chemical Storage	40722030	131	Industrial Chemicals	5
Organic Chemical Storage	40722097	131	Industrial Chemicals	5
Organic Chemical Storage	40722098	131	Industrial Chemicals	5
Organic Chemical Storage	40722801	131	Industrial Chemicals	5
Organic Chemical Storage	40722802	131	Industrial Chemicals	5
Organic Chemical Storage	40722803	131	Industrial Chemicals	5
Organic Chemical Storage	40722804	131	Industrial Chemicals	5
Organic Chemical Storage	40722805	131	Industrial Chemicals	5
Organic Chemical Storage	40722806	131	Industrial Chemicals	5
Organic Chemical Storage	40722897	131	Industrial Chemicals	5
Organic Chemical Storage	40722898	131	Industrial Chemicals	5
Organic Chemical Storage	40723201	131	Industrial Chemicals	5
Organic Chemical Storage	40723202	131	Industrial Chemicals	5
Organic Chemical Storage	40723297	131	Industrial Chemicals	5
Organic Chemical Storage	40723298	131	Industrial Chemicals	5
Organic Chemical Storage	40729697	131	Industrial Chemicals	5
Organic Chemical Storage	40729698	131	Industrial Chemicals	5
Organic Chemical Storage	40781201	131	Industrial Chemicals	5
Organic Chemical Storage	40781202	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	40781601	131	Industrial Chemicals	5
Organic Chemical Storage	40781602	131	Industrial Chemicals	5
Organic Chemical Storage	40781603	131	Industrial Chemicals	5
Organic Chemical Storage	40781604	131	Industrial Chemicals	5
Organic Chemical Storage	40781605	131	Industrial Chemicals	5
Organic Chemical Storage	40781606	131	Industrial Chemicals	5
Organic Chemical Storage	40781607	131	Industrial Chemicals	5
Organic Chemical Storage	40781699	131	Industrial Chemicals	5
Organic Chemical Storage	40782001	131	Industrial Chemicals	5
Organic Chemical Storage	40782002	131	Industrial Chemicals	5
Organic Chemical Storage	40782003	131	Industrial Chemicals	5
Organic Chemical Storage	40782004	131	Industrial Chemicals	5
Organic Chemical Storage	40782005	131	Industrial Chemicals	5
Organic Chemical Storage	40782006	131	Industrial Chemicals	5
Organic Chemical Storage	40782007	131	Industrial Chemicals	5
Organic Chemical Storage	40782008	131	Industrial Chemicals	5
Organic Chemical Storage	40782009	131	Industrial Chemicals	5
Organic Chemical Storage	40782010	131	Industrial Chemicals	5
Organic Chemical Storage	40782011	131	Industrial Chemicals	5
Organic Chemical Storage	40782099	131	Industrial Chemicals	5
Organic Chemical Storage	40782401	131	Industrial Chemicals	5
Organic Chemical Storage	40782499	131	Industrial Chemicals	5
Organic Chemical Storage	40783201	131	Industrial Chemicals	5
Organic Chemical Storage	40783202	131	Industrial Chemicals	5
Organic Chemical Storage	40783203	131	Industrial Chemicals	5
Organic Chemical Storage	40783299	131	Industrial Chemicals	5
Organic Chemical Storage	40784801	131	Industrial Chemicals	5
Organic Chemical Storage	40784899	131	Industrial Chemicals	5
Organic Chemical Storage	40786001	131	Industrial Chemicals	5
Organic Chemical Storage	40786002	131	Industrial Chemicals	5
Organic Chemical Storage	40786003	131	Industrial Chemicals	5
Organic Chemical Storage	40786004	131	Industrial Chemicals	5
Organic Chemical Storage	40786005	131	Industrial Chemicals	5
Organic Chemical Storage	40786099	131	Industrial Chemicals	5
Organic Chemical Storage	40786401	131	Industrial Chemicals	5
Organic Chemical Storage	40786499	131	Industrial Chemicals	5
Organic Chemical Storage	40787201	131	Industrial Chemicals	5
Organic Chemical Storage	40787299	131	Industrial Chemicals	5
Organic Chemical Storage	40799997	131	Industrial Chemicals	5
Organic Chemical Storage	40799998	131	Industrial Chemicals	5
Organic Chemical Transport				
Organic Chemical Transport	40899995	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Transport	40899997	131	Industrial Chemicals	5
Organic Chemical Transport	40899999	131	Industrial Chemicals	5
Petroleum Prod. Storage				
Industrial/Comml.	42500101	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42500102	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42500201	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42500202	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42500301	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42500302	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42505001	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42505002	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42505101	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42505102	321	Durable & Nondurable Manufacturing	6
Industrial/Comml.	42505202	321	Durable & Nondurable Manufacturing	6
Organic Solvent Evap.				
Miscellaneous	49000101	131	Industrial Chemicals	5
Miscellaneous	49000102	131	Industrial Chemicals	5
Miscellaneous	49000103	131	Industrial Chemicals	5
Miscellaneous	49000104	131	Industrial Chemicals	5
Miscellaneous	49000105	131	Industrial Chemicals	5
Miscellaneous	49000199	131	Industrial Chemicals	5
Miscellaneous	49000201	131	Industrial Chemicals	5
Miscellaneous	49000202	131	Industrial Chemicals	5
Miscellaneous	49000203	131	Industrial Chemicals	5
Miscellaneous	49000204	131	Industrial Chemicals	5
Miscellaneous	49000205	131	Industrial Chemicals	5
Miscellaneous	49000206	131	Industrial Chemicals	5
Miscellaneous	49000207	131	Industrial Chemicals	5
Miscellaneous	49000208	131	Industrial Chemicals	5
Miscellaneous	49000209	131	Industrial Chemicals	5
Miscellaneous	49000299	131	Industrial Chemicals	5
Miscellaneous	49000301	131	Industrial Chemicals	5
Miscellaneous	49000302	131	Industrial Chemicals	5
Miscellaneous	49000303	131	Industrial Chemicals	5
Miscellaneous	49000304	131	Industrial Chemicals	5
Miscellaneous	49000399	131	Industrial Chemicals	5
Miscellaneous	49000401	131	Industrial Chemicals	5
Miscellaneous	49000402	131	Industrial Chemicals	5
Miscellaneous	49000403	131	Industrial Chemicals	5
Miscellaneous	49000404	131	Industrial Chemicals	5
Miscellaneous	49000405	131	Industrial Chemicals	5
Miscellaneous	49000499	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Miscellaneous	49000501	131	Industrial Chemicals	5
Miscellaneous	49000502	131	Industrial Chemicals	5
Miscellaneous	49000503	131	Industrial Chemicals	5
Miscellaneous	49000504	131	Industrial Chemicals	5
Miscellaneous	49000599	131	Industrial Chemicals	5
Miscellaneous	49000601	185	Misc. Repair Shops	4
Miscellaneous	49090011	131	Industrial Chemicals	5
Miscellaneous	49090012	131	Industrial Chemicals	5
Miscellaneous	49090013	131	Industrial Chemicals	5
Miscellaneous	49090021	131	Industrial Chemicals	5
Miscellaneous	49090022	131	Industrial Chemicals	5
Miscellaneous	49090023	131	Industrial Chemicals	5
Miscellaneous	49099998	138	Petroleum Refining	5
Miscellaneous	49099999	138	Petroleum Refining	5
	Area Sources			
Mobile Sources - Non-Road				
Gasoline: 2-Stroke Engines	2260000000	399	Population	6
Gasoline: 2-Stroke Engines	2260001000	399	Population	6
Gasoline: 2-Stroke Engines	2260001010	399	Population	6
Gasoline: 2-Stroke Engines	2260001020	399	Population	6
Gasoline: 2-Stroke Engines	2260001030	399	Population	6
Gasoline: 2-Stroke Engines	2260001040	399	Population	6
Gasoline: 2-Stroke Engines	2260001050	399	Population	6
Gasoline: 2-Stroke Engines	2260001060	399	Population	6
Gasoline: 2-Stroke Engines	2260002000	304	Construction	6
Gasoline: 2-Stroke Engines	2260002003	304	Construction	6
Gasoline: 2-Stroke Engines	2260002006	304	Construction	6
Gasoline: 2-Stroke Engines	2260002009	304	Construction	6
Gasoline: 2-Stroke Engines	2260002012	304	Construction	6
Gasoline: 2-Stroke Engines	2260002015	304	Construction	6
Gasoline: 2-Stroke Engines	2260002018	304	Construction	6
Gasoline: 2-Stroke Engines	2260002021	304	Construction	6
Gasoline: 2-Stroke Engines	2260002024	304	Construction	6
Gasoline: 2-Stroke Engines	2260002027	304	Construction	6
Gasoline: 2-Stroke Engines	2260002030	304	Construction	6
Gasoline: 2-Stroke Engines	2260002033	304	Construction	6
Gasoline: 2-Stroke Engines	2260002036	304	Construction	6
Gasoline: 2-Stroke Engines	2260002039	304	Construction	6
Gasoline: 2-Stroke Engines	2260002042	304	Construction	6
Gasoline: 2-Stroke Engines	2260002045	304	Construction	6
Gasoline: 2-Stroke Engines	2260002048	304	Construction	6
Gasoline: 2-Stroke Engines	2260002051	304	Construction	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Gasoline: 2-Stroke Engines	2260002054	304	Construction	6
Gasoline: 2-Stroke Engines	2260002057	304	Construction	6
Gasoline: 2-Stroke Engines	2260002060	304	Construction	6
Gasoline: 2-Stroke Engines	2260002063	304	Construction	6
Gasoline: 2-Stroke Engines	2260002066	304	Construction	6
Gasoline: 2-Stroke Engines	2260002069	304	Construction	6
Gasoline: 2-Stroke Engines	2260002072	304	Construction	6
Gasoline: 2-Stroke Engines	2260002075	304	Construction	6
Gasoline: 2-Stroke Engines	2260002078	304	Construction	6
Gasoline: 2-Stroke Engines	2260002081	304	Construction	6
Gasoline: 2-Stroke Engines	2260003000	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260003010	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260003020	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260003030	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260003040	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260003050	321	Durable & Nondurable Manufacturing	6
Gasoline: 2-Stroke Engines	2260004000	399	Population	6
Gasoline: 2-Stroke Engines	2260004010	399	Population	6
Gasoline: 2-Stroke Engines	2260004015	399	Population	6
Gasoline: 2-Stroke Engines	2260004020	399	Population	6
Gasoline: 2-Stroke Engines	2260004025	399	Population	6
Gasoline: 2-Stroke Engines	2260004030	399	Population	6
Gasoline: 2-Stroke Engines	2260004035	399	Population	6
Gasoline: 2-Stroke Engines	2260004040	399	Population	6
Gasoline: 2-Stroke Engines	2260004045	399	Population	6
Gasoline: 2-Stroke Engines	2260004050	399	Population	6
Gasoline: 2-Stroke Engines	2260004055	399	Population	6
Gasoline: 2-Stroke Engines	2260004060	399	Population	6
Gasoline: 2-Stroke Engines	2260004065	399	Population	6
Gasoline: 2-Stroke Engines	2260004070	399	Population	6
Gasoline: 2-Stroke Engines	2260004075	399	Population	6
Gasoline: 2-Stroke Engines	2260005000	399	Population	6
Gasoline: 2-Stroke Engines	2260005010	399	Population	6
Gasoline: 2-Stroke Engines	2260005015	399	Population	6
Gasoline: 2-Stroke Engines	2260005020	399	Population	6
Gasoline: 2-Stroke Engines	2260005025	314	Farm	6
Gasoline: 2-Stroke Engines	2260005030	399	Population	6
Gasoline: 2-Stroke Engines	2260005035	399	Population	6
Gasoline: 2-Stroke Engines	2260005040	399	Population	6
Gasoline: 2-Stroke Engines	2260005045	399	Population	6
Gasoline: 2-Stroke Engines	2260005050	399	Population	6
Gasoline: 2-Stroke Engines	2260005055	399	Population	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Gasoline: 2-Stroke Engines	2260006000	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006005	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006010	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006015	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006020	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006025	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260006030	323	Retail, Wholesale, & Services	3
Gasoline: 2-Stroke Engines	2260007000	30	Logging	1
Gasoline: 2-Stroke Engines	2260007005	30	Logging	1
Gasoline: 2-Stroke Engines	2260007010	30	Logging	1
Gasoline: 2-Stroke Engines	2260007015	30	Logging	1
Gasoline: 2-Stroke Engines	2260007020	30	Logging	1
Gasoline: 2-Stroke Engines	2260008000	149	Air Transportation	4
Gasoline: 2-Stroke Engines	2260008005	149	Air Transportation	4
Gasoline: 2-Stroke Engines	2260008010	149	Air Transportation	4
Gasoline: 4-Stroke Engines	2265000000	399	Population	6
Gasoline: 4-Stroke Engines	2265001000	399	Population	6
Gasoline: 4-Stroke Engines	2265001010	399	Population	6
Gasoline: 4-Stroke Engines	2265001020	399	Population	6
Gasoline: 4-Stroke Engines	2265001030	399	Population	6
Gasoline: 4-Stroke Engines	2265001040	399	Population	6
Gasoline: 4-Stroke Engines	2265001050	399	Population	6
Gasoline: 4-Stroke Engines	2265001060	399	Population	6
Gasoline: 4-Stroke Engines	2265002000	304	Construction	6
Gasoline: 4-Stroke Engines	2265002003	304	Construction	6
Gasoline: 4-Stroke Engines	2265002006	304	Construction	6
Gasoline: 4-Stroke Engines	2265002009	304	Construction	6
Gasoline: 4-Stroke Engines	2265002012	304	Construction	6
Gasoline: 4-Stroke Engines	2265002015	304	Construction	6
Gasoline: 4-Stroke Engines	2265002018	304	Construction	6
Gasoline: 4-Stroke Engines	2265002021	304	Construction	6
Gasoline: 4-Stroke Engines	2265002024	304	Construction	6
Gasoline: 4-Stroke Engines	2265002027	304	Construction	6
Gasoline: 4-Stroke Engines	2265002030	304	Construction	6
Gasoline: 4-Stroke Engines	2265002033	304	Construction	6
Gasoline: 4-Stroke Engines	2265002036	304	Construction	6
Gasoline: 4-Stroke Engines	2265002039	304	Construction	6
Gasoline: 4-Stroke Engines	2265002042	304	Construction	6
Gasoline: 4-Stroke Engines	2265002045	304	Construction	6
Gasoline: 4-Stroke Engines	2265002048	304	Construction	6
Gasoline: 4-Stroke Engines	2265002051	304	Construction	6
Gasoline: 4-Stroke Engines	2265002054	304	Construction	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Gasoline: 4-Stroke Engines	2265002057	304	Construction	6
Gasoline: 4-Stroke Engines	2265002060	304	Construction	6
Gasoline: 4-Stroke Engines	2265002063	304	Construction	6
Gasoline: 4-Stroke Engines	2265002066	304	Construction	6
Gasoline: 4-Stroke Engines	2265002069	304	Construction	6
Gasoline: 4-Stroke Engines	2265002072	304	Construction	6
Gasoline: 4-Stroke Engines	2265002075	304	Construction	6
Gasoline: 4-Stroke Engines	2265002078	304	Construction	6
Gasoline: 4-Stroke Engines	2265002081	304	Construction	6
Gasoline: 4-Stroke Engines	2265003000	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265003010	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265003020	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265003030	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265003040	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265003050	321	Durable & Nondurable Manufacturing	6
Gasoline: 4-Stroke Engines	2265004000	399	Population	6
Gasoline: 4-Stroke Engines	2265004010	399	Population	6
Gasoline: 4-Stroke Engines	2265004015	399	Population	6
Gasoline: 4-Stroke Engines	2265004020	399	Population	6
Gasoline: 4-Stroke Engines	2265004025	399	Population	6
Gasoline: 4-Stroke Engines	2265004030	399	Population	6
Gasoline: 4-Stroke Engines	2265004035	399	Population	6
Gasoline: 4-Stroke Engines	2265004040	399	Population	6
Gasoline: 4-Stroke Engines	2265004045	399	Population	6
Gasoline: 4-Stroke Engines	2265004050	399	Population	6
Gasoline: 4-Stroke Engines	2265004055	399	Population	6
Gasoline: 4-Stroke Engines	2265004060	399	Population	6
Gasoline: 4-Stroke Engines	2265004065	399	Population	6
Gasoline: 4-Stroke Engines	2265004070	399	Population	6
Gasoline: 4-Stroke Engines	2265004075	399	Population	6
Gasoline: 4-Stroke Engines	2265005000	314	Farm	6
Gasoline: 4-Stroke Engines	2265005010	314	Farm	6
Gasoline: 4-Stroke Engines	2265005015	314	Farm	6
Gasoline: 4-Stroke Engines	2265005020	314	Farm	6
Gasoline: 4-Stroke Engines	2265005025	314	Farm	6
Gasoline: 4-Stroke Engines	2265005030	314	Farm	6
Gasoline: 4-Stroke Engines	2265005035	314	Farm	6
Gasoline: 4-Stroke Engines	2265005040	314	Farm	6
Gasoline: 4-Stroke Engines	2265005045	314	Farm	6
Gasoline: 4-Stroke Engines	2265005050	314	Farm	6
Gasoline: 4-Stroke Engines	2265005055	314	Farm	6
Gasoline: 4-Stroke Engines	2265006000	323	Retail, Wholesale, & Services	3

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Gasoline: 4-Stroke Engines	2265006005	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265006010	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265006015	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265006020	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265006025	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265006030	323	Retail, Wholesale, & Services	3
Gasoline: 4-Stroke Engines	2265007000	30	Logging	1
Gasoline: 4-Stroke Engines	2265007005	30	Logging	1
Gasoline: 4-Stroke Engines	2265007010	30	Logging	1
Gasoline: 4-Stroke Engines	2265007015	30	Logging	1
Gasoline: 4-Stroke Engines	2265007020	30	Logging	1
Gasoline: 4-Stroke Engines	2265008000	149	Air Transportation	4
Gasoline: 4-Stroke Engines	2265008005	149	Air Transportation	4
Gasoline: 4-Stroke Engines	2265008010	149	Air Transportation	4
Diesel Engines	2270000000	399	Population	6
Diesel Engines	2270001000	399	Population	6
Diesel Engines	2270001010	399	Population	6
Diesel Engines	2270001020	399	Population	6
Diesel Engines	2270001030	399	Population	6
Diesel Engines	2270001040	399	Population	6
Diesel Engines	2270001050	399	Population	6
Diesel Engines	2270001060	399	Population	6
Diesel Engines	2270002000	304	Construction	6
Diesel Engines	2270002003	304	Construction	6
Diesel Engines	2270002006	304	Construction	6
Diesel Engines	2270002009	304	Construction	6
Diesel Engines	2270002012	304	Construction	6
Diesel Engines	2270002015	304	Construction	6
Diesel Engines	2270002018	304	Construction	6
Diesel Engines	2270002021	304	Construction	6
Diesel Engines	2270002024	304	Construction	6
Diesel Engines	2270002027	304	Construction	6
Diesel Engines	2270002030	304	Construction	6
Diesel Engines	2270002033	304	Construction	6
Diesel Engines	2270002036	304	Construction	6
Diesel Engines	2270002039	304	Construction	6
Diesel Engines	2270002042	304	Construction	6
Diesel Engines	2270002045	304	Construction	6
Diesel Engines	2270002048	304	Construction	6
Diesel Engines	2270002051	304	Construction	6
Diesel Engines	2270002054	304	Construction	6
Diesel Engines	2270002057	304	Construction	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Diesel Engines	2270002060	304	Construction	6
Diesel Engines	2270002063	304	Construction	6
Diesel Engines	2270002066	304	Construction	6
Diesel Engines	2270002069	304	Construction	6
Diesel Engines	2270002072	304	Construction	6
Diesel Engines	2270002075	304	Construction	6
Diesel Engines	2270002078	304	Construction	6
Diesel Engines	2270002081	304	Construction	6
Diesel Engines	2270003000	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270003010	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270003020	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270003030	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270003040	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270003050	321	Durable & Nondurable Manufacturing	6
Diesel Engines	2270004000	399	Population	6
Diesel Engines	2270004010	399	Population	6
Diesel Engines	2270004015	399	Population	6
Diesel Engines	2270004020	399	Population	6
Diesel Engines	2270004025	399	Population	6
Diesel Engines	2270004030	399	Population	6
Diesel Engines	2270004035	399	Population	6
Diesel Engines	2270004040	399	Population	6
Diesel Engines	2270004045	399	Population	6
Diesel Engines	2270004050	399	Population	6
Diesel Engines	2270004055	399	Population	6
Diesel Engines	2270004060	399	Population	6
Diesel Engines	2270004065	399	Population	6
Diesel Engines	2270004070	399	Population	6
Diesel Engines	2270004075	399	Population	6
Diesel Engines	2270005000	314	Farm	6
Diesel Engines	2270005010	314	Farm	6
Diesel Engines	2270005015	314	Farm	6
Diesel Engines	2270005020	314	Farm	6
Diesel Engines	2270005025	314	Farm	6
Diesel Engines	2270005030	314	Farm	6
Diesel Engines	2270005035	314	Farm	6
Diesel Engines	2270005040	314	Farm	6
Diesel Engines	2270005045	314	Farm	6
Diesel Engines	2270005050	314	Farm	6
Diesel Engines	2270005055	314	Farm	6
Diesel Engines	2270006000	323	Retail, Wholesale, & Services	3
Diesel Engines	2270006005	323	Retail, Wholesale, & Services	3

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Diesel Engines	2270006010	323	Retail, Wholesale, & Services	3
Diesel Engines	2270006015	323	Retail, Wholesale, & Services	3
Diesel Engines	2270006020	323	Retail, Wholesale, & Services	3
Diesel Engines	2270006025	323	Retail, Wholesale, & Services	3
Diesel Engines	2270006030	323	Retail, Wholesale, & Services	3
Diesel Engines	2270007000	30	Logging	1
Diesel Engines	2270007005	30	Logging	1
Diesel Engines	2270007010	30	Logging	1
Diesel Engines	2270007015	30	Logging	1
Diesel Engines	2270007020	30	Logging	1
Diesel Engines	2270008000	149	Air Transportation	4
Diesel Engines	2270008005	149	Air Transportation	4
Diesel Engines	2270008010	149	Air Transportation	4
Aircraft	2275000000	149	Air Transportation	1
Aircraft	2275001000	149	Air Transportation	1
Aircraft	2275020000	149	Air Transportation	1
Aircraft	2275050000	149	Air Transportation	1
Aircraft	2275060000	149	Air Transportation	1
Aircraft	2275070000	149	Air Transportation	1
Aircraft	2275085000	149	Air Transportation	1
Aircraft	2275900000	149	Air Transportation	1
Aircraft	2275900101	149	Air Transportation	1
Aircraft	2275900102	149	Air Transportation	1
Aircraft	2275900103	149	Air Transportation	1
Aircraft	2275900201	149	Air Transportation	1
Aircraft	2275900202	149	Air Transportation	1
Marine Vessels: Commercial	2280001000	148	Water Transportation	4
Marine Vessels: Commercial	2280001010	148	Water Transportation	4
Marine Vessels: Commercial	2280001020	148	Water Transportation	4
Marine Vessels: Commercial	2280001030	148	Water Transportation	4
Marine Vessels: Commercial	2280002000	148	Water Transportation	4
Marine Vessels: Commercial	2280002010	148	Water Transportation	4
Marine Vessels: Commercial	2280002020	148	Water Transportation	4
Marine Vessels: Commercial	2280002030	148	Water Transportation	4
Marine Vessels: Commercial	2280003000	148	Water Transportation	4
Marine Vessels: Commercial	2280003010	148	Water Transportation	4
Marine Vessels: Commercial	2280003020	148	Water Transportation	4
Marine Vessels: Commercial	2280003030	148	Water Transportation	4
Marine Vessels: Commercial	2280004000	148	Water Transportation	4
Marine Vessels: Commercial	2280004010	148	Water Transportation	4
Marine Vessels: Commercial	2280004020	148	Water Transportation	4
Marine Vessels: Commercial	2280004030	148	Water Transportation	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Marine Vessels: Recreational	2282005000	399	Population	6
Marine Vessels: Recreational	2282005005	399	Population	6
Marine Vessels: Recreational	2282005010	399	Population	6
Marine Vessels: Recreational	2282005015	399	Population	6
Marine Vessels: Recreational	2282005020	399	Population	6
Marine Vessels: Recreational	2282005025	399	Population	6
Marine Vessels: Recreational	2282010000	399	Population	6
Marine Vessels: Recreational	2282010005	399	Population	6
Marine Vessels: Recreational	2282010010	399	Population	6
Marine Vessels: Recreational	2282010015	399	Population	6
Marine Vessels: Recreational	2282010020	399	Population	6
Marine Vessels: Recreational	2282010025	399	Population	6
Marine Vessels: Recreational	2282020000	399	Population	6
Marine Vessels: Recreational	2282020005	399	Population	6
Marine Vessels: Recreational	2282020010	399	Population	6
Marine Vessels: Recreational	2282020015	399	Population	6
Marine Vessels: Recreational	2282020020	399	Population	6
Marine Vessels: Recreational	2282020025	399	Population	6
Marine Vessels: Military	2283000000	325	Total Government	6
Marine Vessels: Military	2283001000	325	Total Government	6
Marine Vessels: Military	2283001010	325	Total Government	6
Marine Vessels: Military	2283001020	325	Total Government	6
Marine Vessels: Military	2283002000	325	Total Government	6
Marine Vessels: Military	2283002010	325	Total Government	6
Marine Vessels: Military	2283002020	325	Total Government	6
Marine Vessels: Military	2283003000	325	Total Government	6
Marine Vessels: Military	2283003010	325	Total Government	6
Marine Vessels: Military	2283003020	325	Total Government	6
Marine Vessels: Military	2283004000	325	Total Government	6
Marine Vessels: Military	2283004010	325	Total Government	6
Marine Vessels: Military	2283004020	325	Total Government	6
Railroads	2285002000	145	Railroad Transportation	1
Railroads	2285002005	93	Railroad Equipment	1
Railroads	2285002010	93	Railroad Equipment	1
Industrial Processes				
Chemical Mfg.	2301000000	131	Industrial Chemicals	1
Chemical Mfg.	2301010000	131	Industrial Chemicals	1
Chemical Mfg.	2301010010	131	Industrial Chemicals	5
Food & Kindred Products	2302000000	112	Misc. Food & Kindred Products	1
Food & Kindred Products	2302002000	160	Eating & Drinking Places	4
Food & Kindred Products	2302010000	104	Meat Products	1
Food & Kindred Products	2302040000	107	Grain Mill Products, & Fats & Oils	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Food & Kindred Products	2302050000	108	Bakery Products	1
Food & Kindred Products	2302070000	110	Alcoholic Beverages	1
Food & Kindred Products	2302070001	110	Alcoholic Beverages	1
Food & Kindred Products	2302070005	110	Alcoholic Beverages	1
Food & Kindred Products	2302070010	110	Alcoholic Beverages	1
Food & Kindred Products	2302080000	112	Misc. Food & Kindred Products	1
Primary Metals	2303000000	46	Misc. Primary & Secondary Metals	4
Primary Metals	2303020000	44	Iron & Steel Foundries	1
Secondary Metals	2304000000	46	Misc. Primary & Secondary Metals	1
Secondary Metals	2304050000	48	Nonferrous Foundries	1
Mineral Processes	2305000000	42	Stone, Clay, & Misc. Mineral Prod.	1
Mineral Processes	2305070000	41	Cement, Concrete, Gypsum, etc.	1
Mineral Processes	2305080000	42	Stone, Clay, & Misc. Mineral Prod.	1
Petroleum Refining	2306000000	138	Petroleum Refining	1
Petroleum Refining	2306010000	139	Misc. Petroleum & Coal Products	1
Wood Products	2307000000	31	Sawmills & Planning Mills	1
Wood Products	2307010000	30	Logging	1
Wood Products	2307020000	31	Sawmills & Planning Mills	1
Wood Products	2307030000	32	Millwork & Structured Wood Members	1
Wood Products	2307060000	34	Wood Containers & Misc. Wood Prod.	2
Rubber/Plastics	2308000000	141	Rubber Products & Plastic Hose/Footwear	2
Fabricated Metals	2309000000	52	Fabricated Structured Metal Products	1
Fabricated Metals	2309100000	57	Metal Services	1
Fabricated Metals	2309100010	57	Metal Services	1
Fabricated Metals	2309100030	57	Metal Services	1
Fabricated Metals	2309100050	57	Metal Services	1
Fabricated Metals	2309100080	57	Metal Services	1
Fabricated Metals	2309100110	57	Metal Services	1
Fabricated Metals	2309100140	57	Metal Services	1
Fabricated Metals	2309100170	57	Metal Services	1
Fabricated Metals	2309100200	57	Metal Services	1
Fabricated Metals	2309100230	57	Metal Services	1
Fabricated Metals	2309100260	57	Metal Services	1
Oil & Gas Production	2310000000	8	Crude petroleum, natural gas	1
Oil & Gas Production	2310010000	8	Crude petroleum, natural gas	1
Oil & Gas Production	2310020000	8	Crude petroleum, natural gas	1
Oil & Gas Production	2310030000	8	Crude petroleum, natural gas	1
Construction	2311000000	304	Construction	6
Construction	2311000010	304	Construction	6
Construction	2311000020	304	Construction	6
Construction	2311000030	304	Construction	6
Construction	2311000040	304	Construction	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Construction	2311000050	304	Construction	6
Construction	2311000060	304	Construction	6
Construction	2311000070	304	Construction	6
Construction	2311000080	304	Construction	6
Construction	2311000100	304	Construction	6
Construction	2311010000	304	Construction	6
Construction	2311010010	304	Construction	6
Construction	2311010020	304	Construction	6
Construction	2311010030	304	Construction	6
Construction	2311010040	304	Construction	6
Construction	2311010050	304	Construction	6
Construction	2311010060	304	Construction	6
Construction	2311010070	304	Construction	6
Construction	2311010080	304	Construction	6
Construction	2311010100	304	Construction	6
Construction	2311020000	304	Construction	6
Construction	2311020010	304	Construction	6
Construction	2311020020	304	Construction	6
Construction	2311020030	304	Construction	6
Construction	2311020040	304	Construction	6
Construction	2311020050	304	Construction	6
Construction	2311020060	304	Construction	6
Construction	2311020070	304	Construction	6
Construction	2311020080	304	Construction	6
Construction	2311020100	304	Construction	6
Construction	2311030000	304	Construction	6
Construction	2311030010	304	Construction	6
Construction	2311030020	304	Construction	6
Construction	2311030030	304	Construction	6
Construction	2311030040	304	Construction	6
Construction	2311030050	304	Construction	6
Construction	2311030060	304	Construction	6
Construction	2311030070	304	Construction	6
Construction	2311030080	304	Construction	6
Construction	2311030100	304	Construction	6
Construction	2311040000	304	Construction	6
Construction	2311040080	304	Construction	6
Construction	2311040100	304	Construction	6
Machinery	2312000000	68	General Industrial Machinery	2
Machinery	2312050000	66	Metal Working Machinery	2
Mining & Quarrying	2325000000	10	Nonmetallic minerals, except fuels	1
Mining & Quarrying	2325010000	10	Nonmetallic minerals, except fuels	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Mining & Quarrying	2325020000	10	Nonmetallic minerals, except fuels	1
Mining & Quarrying	2325030000	10	Nonmetallic minerals, except fuels	1
Mining & Quarrying	2325040000	10	Nonmetallic minerals, except fuels	1
Mining & Quarrying	2325050000	10	Nonmetallic minerals, except fuels	1
Solvent Utilization				
Surface Coating	2401001000	399	Population	6
Surface Coating	2401001030	399	Population	6
Surface Coating	2401001055	399	Population	6
Surface Coating	2401001060	399	Population	6
Surface Coating	2401001065	399	Population	6
Surface Coating	2401001070	399	Population	6
Surface Coating	2401001125	399	Population	6
Surface Coating	2401001130	399	Population	6
Surface Coating	2401001135	399	Population	6
Surface Coating	2401001170	399	Population	6
Surface Coating	2401001200	399	Population	6
Surface Coating	2401001210	399	Population	6
Surface Coating	2401001215	399	Population	6
Surface Coating	2401001235	399	Population	6
Surface Coating	2401001250	399	Population	6
Surface Coating	2401001275	399	Population	6
Surface Coating	2401001285	399	Population	6
Surface Coating	2401001370	399	Population	6
Surface Coating	2401001999	399	Population	6
Surface Coating	2401005000	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005030	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005055	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005060	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005065	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005070	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005125	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005130	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005135	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005170	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005200	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005210	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005215	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005235	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005250	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005275	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005285	182	Automobile Parking, Repair & Services	4
Surface Coating	2401005370	182	Automobile Parking, Repair & Services	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401005999	182	Automobile Parking, Repair & Services	4
Surface Coating	2401008000	399	Population	6
Surface Coating	2401008030	399	Population	6
Surface Coating	2401008055	399	Population	6
Surface Coating	2401008060	399	Population	6
Surface Coating	2401008065	399	Population	6
Surface Coating	2401008070	399	Population	6
Surface Coating	2401008125	399	Population	6
Surface Coating	2401008130	399	Population	6
Surface Coating	2401008135	399	Population	6
Surface Coating	2401008170	399	Population	6
Surface Coating	2401008200	399	Population	6
Surface Coating	2401008210	399	Population	6
Surface Coating	2401008215	399	Population	6
Surface Coating	2401008235	399	Population	6
Surface Coating	2401008250	399	Population	6
Surface Coating	2401008275	399	Population	6
Surface Coating	2401008285	399	Population	6
Surface Coating	2401008370	399	Population	6
Surface Coating	2401008999	399	Population	6
Surface Coating	2401010000	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010030	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010055	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010060	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010065	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010070	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010125	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010130	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010135	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010170	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010200	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010210	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010215	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010235	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010250	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010275	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010285	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010370	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401010999	114	Weaving, Finishing, Yarn & Thread	4
Surface Coating	2401015000	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015030	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015055	34	Wood Containers & Misc. Wood Prod.	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401015060	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015065	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015070	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015125	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015130	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015135	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015170	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015200	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015210	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015215	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015235	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015250	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015275	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015285	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015370	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401015999	34	Wood Containers & Misc. Wood Prod.	4
Surface Coating	2401020000	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020030	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020055	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020060	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020065	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020070	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020125	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020130	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020135	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020170	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020200	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020210	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020215	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020235	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020250	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020275	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020285	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020370	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401020999	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025000	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025030	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025055	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025060	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025065	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025070	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025125	39	Office & Misc. Furniture/Fixtures	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401025130	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025135	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025170	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025200	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025210	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025215	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025235	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025250	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025275	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025285	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025370	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401025999	39	Office & Misc. Furniture/Fixtures	4
Surface Coating	2401030000	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030030	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030055	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030060	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030065	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030070	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030125	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030130	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030135	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030170	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030200	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030210	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030215	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030235	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030250	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030275	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030285	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030370	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401030999	120	Pulp Paper & Paperboard Mills	4
Surface Coating	2401035000	142	Misc. Plastic Products	4
Surface Coating	2401035030	142	Misc. Plastic Products	4
Surface Coating	2401035055	142	Misc. Plastic Products	4
Surface Coating	2401035060	142	Misc. Plastic Products	4
Surface Coating	2401035065	142	Misc. Plastic Products	4
Surface Coating	2401035070	142	Misc. Plastic Products	4
Surface Coating	2401035125	142	Misc. Plastic Products	4
Surface Coating	2401035130	142	Misc. Plastic Products	4
Surface Coating	2401035135	142	Misc. Plastic Products	4
Surface Coating	2401035170	142	Misc. Plastic Products	4
Surface Coating	2401035200	142	Misc. Plastic Products	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401035210	142	Misc. Plastic Products	4
Surface Coating	2401035215	142	Misc. Plastic Products	4
Surface Coating	2401035235	142	Misc. Plastic Products	4
Surface Coating	2401035250	142	Misc. Plastic Products	4
Surface Coating	2401035275	142	Misc. Plastic Products	4
Surface Coating	2401035285	142	Misc. Plastic Products	4
Surface Coating	2401035370	142	Misc. Plastic Products	4
Surface Coating	2401035999	142	Misc. Plastic Products	4
Surface Coating	2401040000	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040030	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040055	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040060	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040065	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040070	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040125	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040130	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040135	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040170	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040200	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040210	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040215	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040235	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040250	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040275	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040285	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040370	49	Metal Cans & Shipping Containers	4
Surface Coating	2401040999	49	Metal Cans & Shipping Containers	4
Surface Coating	2401045000	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045030	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045055	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045060	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045065	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045070	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045125	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045130	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045135	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045170	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045200	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045210	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045215	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045235	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045250	60	Misc. Fabricated Metal Products	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401045275	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045285	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045370	60	Misc. Fabricated Metal Products	4
Surface Coating	2401045999	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050000	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050030	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050055	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050060	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050065	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050070	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050125	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050130	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050135	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050170	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050200	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050210	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050215	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050235	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050250	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050275	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050285	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050370	60	Misc. Fabricated Metal Products	4
Surface Coating	2401050999	68	General Industrial Machinery	2
Surface Coating	2401055000	68	General Industrial Machinery	4
Surface Coating	2401055030	68	General Industrial Machinery	4
Surface Coating	2401055055	68	General Industrial Machinery	4
Surface Coating	2401055060	68	General Industrial Machinery	4
Surface Coating	2401055065	68	General Industrial Machinery	4
Surface Coating	2401055070	68	General Industrial Machinery	4
Surface Coating	2401055125	68	General Industrial Machinery	4
Surface Coating	2401055130	68	General Industrial Machinery	4
Surface Coating	2401055135	68	General Industrial Machinery	4
Surface Coating	2401055170	68	General Industrial Machinery	4
Surface Coating	2401055200	68	General Industrial Machinery	4
Surface Coating	2401055210	68	General Industrial Machinery	4
Surface Coating	2401055215	68	General Industrial Machinery	4
Surface Coating	2401055235	68	General Industrial Machinery	4
Surface Coating	2401055250	68	General Industrial Machinery	4
Surface Coating	2401055275	68	General Industrial Machinery	4
Surface Coating	2401055285	68	General Industrial Machinery	4
Surface Coating	2401055370	68	General Industrial Machinery	4
Surface Coating	2401055999	68	General Industrial Machinery	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401060000	75	Household Appliances	4
Surface Coating	2401060030	75	Household Appliances	4
Surface Coating	2401060055	75	Household Appliances	4
Surface Coating	2401060060	75	Household Appliances	4
Surface Coating	2401060065	75	Household Appliances	4
Surface Coating	2401060070	75	Household Appliances	4
Surface Coating	2401060125	75	Household Appliances	4
Surface Coating	2401060130	75	Household Appliances	4
Surface Coating	2401060135	75	Household Appliances	4
Surface Coating	2401060170	75	Household Appliances	4
Surface Coating	2401060200	75	Household Appliances	4
Surface Coating	2401060210	75	Household Appliances	4
Surface Coating	2401060215	75	Household Appliances	4
Surface Coating	2401060235	75	Household Appliances	4
Surface Coating	2401060250	75	Household Appliances	4
Surface Coating	2401060275	75	Household Appliances	4
Surface Coating	2401060285	75	Household Appliances	4
Surface Coating	2401060370	75	Household Appliances	4
Surface Coating	2401060999	75	Household Appliances	4
Surface Coating	2401065000	81	Misc. Electronic Components	4
Surface Coating	2401065030	81	Misc. Electronic Components	4
Surface Coating	2401065055	81	Misc. Electronic Components	4
Surface Coating	2401065060	81	Misc. Electronic Components	4
Surface Coating	2401065065	81	Misc. Electronic Components	4
Surface Coating	2401065070	81	Misc. Electronic Components	4
Surface Coating	2401065125	81	Misc. Electronic Components	4
Surface Coating	2401065130	81	Misc. Electronic Components	4
Surface Coating	2401065135	81	Misc. Electronic Components	4
Surface Coating	2401065170	81	Misc. Electronic Components	4
Surface Coating	2401065200	81	Misc. Electronic Components	4
Surface Coating	2401065210	81	Misc. Electronic Components	4
Surface Coating	2401065215	81	Misc. Electronic Components	4
Surface Coating	2401065235	81	Misc. Electronic Components	4
Surface Coating	2401065250	81	Misc. Electronic Components	4
Surface Coating	2401065275	81	Misc. Electronic Components	4
Surface Coating	2401065285	81	Misc. Electronic Components	4
Surface Coating	2401065370	81	Misc. Electronic Components	4
Surface Coating	2401065999	81	Misc. Electronic Components	4
Surface Coating	2401070000	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070030	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070055	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070060	84	Motor Vehicles & Car Bodies	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401070065	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070070	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070125	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070130	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070135	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070170	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070200	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070210	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070215	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070235	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070250	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070275	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070285	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070370	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401070999	84	Motor Vehicles & Car Bodies	4
Surface Coating	2401075000	87	Aircraft	4
Surface Coating	2401075030	87	Aircraft	4
Surface Coating	2401075055	87	Aircraft	4
Surface Coating	2401075060	87	Aircraft	4
Surface Coating	2401075065	87	Aircraft	4
Surface Coating	2401075070	87	Aircraft	4
Surface Coating	2401075125	87	Aircraft	4
Surface Coating	2401075130	87	Aircraft	4
Surface Coating	2401075135	87	Aircraft	4
Surface Coating	2401075170	87	Aircraft	4
Surface Coating	2401075200	87	Aircraft	4
Surface Coating	2401075210	87	Aircraft	4
Surface Coating	2401075215	87	Aircraft	4
Surface Coating	2401075235	87	Aircraft	4
Surface Coating	2401075250	87	Aircraft	4
Surface Coating	2401075275	87	Aircraft	4
Surface Coating	2401075285	87	Aircraft	4
Surface Coating	2401075370	87	Aircraft	4
Surface Coating	2401075999	87	Aircraft	4
Surface Coating	2401080000	91	Ship Building & Repairing	4
Surface Coating	2401080030	91	Ship Building & Repairing	4
Surface Coating	2401080055	91	Ship Building & Repairing	4
Surface Coating	2401080060	91	Ship Building & Repairing	4
Surface Coating	2401080065	91	Ship Building & Repairing	4
Surface Coating	2401080070	91	Ship Building & Repairing	4
Surface Coating	2401080125	91	Ship Building & Repairing	4
Surface Coating	2401080130	91	Ship Building & Repairing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401080135	91	Ship Building & Repairing	4
Surface Coating	2401080170	91	Ship Building & Repairing	4
Surface Coating	2401080200	91	Ship Building & Repairing	4
Surface Coating	2401080210	91	Ship Building & Repairing	4
Surface Coating	2401080215	91	Ship Building & Repairing	4
Surface Coating	2401080235	91	Ship Building & Repairing	4
Surface Coating	2401080250	91	Ship Building & Repairing	4
Surface Coating	2401080275	91	Ship Building & Repairing	4
Surface Coating	2401080285	91	Ship Building & Repairing	4
Surface Coating	2401080370	91	Ship Building & Repairing	4
Surface Coating	2401080999	91	Ship Building & Repairing	4
Surface Coating	2401085000	93	Railroad Equipment	4
Surface Coating	2401085030	93	Railroad Equipment	4
Surface Coating	2401085055	93	Railroad Equipment	4
Surface Coating	2401085060	93	Railroad Equipment	4
Surface Coating	2401085065	93	Railroad Equipment	4
Surface Coating	2401085070	93	Railroad Equipment	4
Surface Coating	2401085125	93	Railroad Equipment	4
Surface Coating	2401085130	93	Railroad Equipment	4
Surface Coating	2401085135	93	Railroad Equipment	4
Surface Coating	2401085170	93	Railroad Equipment	4
Surface Coating	2401085200	93	Railroad Equipment	4
Surface Coating	2401085210	93	Railroad Equipment	4
Surface Coating	2401085215	93	Railroad Equipment	4
Surface Coating	2401085235	93	Railroad Equipment	4
Surface Coating	2401085250	93	Railroad Equipment	4
Surface Coating	2401085275	93	Railroad Equipment	4
Surface Coating	2401085285	93	Railroad Equipment	4
Surface Coating	2401085370	93	Railroad Equipment	4
Surface Coating	2401085999	93	Railroad Equipment	4
Surface Coating	2401090000	302	Nondurable Manufacturing	6
Surface Coating	2401090030	302	Nondurable Manufacturing	6
Surface Coating	2401090055	302	Nondurable Manufacturing	6
Surface Coating	2401090060	302	Nondurable Manufacturing	6
Surface Coating	2401090065	302	Nondurable Manufacturing	6
Surface Coating	2401090070	302	Nondurable Manufacturing	6
Surface Coating	2401090125	302	Nondurable Manufacturing	6
Surface Coating	2401090130	302	Nondurable Manufacturing	6
Surface Coating	2401090135	302	Nondurable Manufacturing	6
Surface Coating	2401090170	302	Nondurable Manufacturing	6
Surface Coating	2401090200	302	Nondurable Manufacturing	6
Surface Coating	2401090210	302	Nondurable Manufacturing	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401090215	302	Nondurable Manufacturing	6
Surface Coating	2401090235	302	Nondurable Manufacturing	6
Surface Coating	2401090250	302	Nondurable Manufacturing	6
Surface Coating	2401090275	302	Nondurable Manufacturing	6
Surface Coating	2401090285	302	Nondurable Manufacturing	6
Surface Coating	2401090370	302	Nondurable Manufacturing	6
Surface Coating	2401090999	302	Nondurable Manufacturing	6
Surface Coating	2401100000	301	Durables Manufacturing	6
Surface Coating	2401100030	301	Durables Manufacturing	6
Surface Coating	2401100055	301	Durables Manufacturing	6
Surface Coating	2401100060	301	Durables Manufacturing	6
Surface Coating	2401100065	301	Durables Manufacturing	6
Surface Coating	2401100070	301	Durables Manufacturing	6
Surface Coating	2401100125	301	Durables Manufacturing	6
Surface Coating	2401100130	301	Durables Manufacturing	6
Surface Coating	2401100135	301	Durables Manufacturing	6
Surface Coating	2401100170	301	Durables Manufacturing	6
Surface Coating	2401100200	301	Durables Manufacturing	6
Surface Coating	2401100210	301	Durables Manufacturing	6
Surface Coating	2401100215	301	Durables Manufacturing	6
Surface Coating	2401100235	301	Durables Manufacturing	6
Surface Coating	2401100250	301	Durables Manufacturing	6
Surface Coating	2401100275	301	Durables Manufacturing	6
Surface Coating	2401100285	301	Durables Manufacturing	6
Surface Coating	2401100370	301	Durables Manufacturing	6
Surface Coating	2401100999	301	Durables Manufacturing	6
Surface Coating	2401200000	301	Durables Manufacturing	4
Surface Coating	2401200030	301	Durables Manufacturing	4
Surface Coating	2401200055	301	Durables Manufacturing	4
Surface Coating	2401200060	301	Durables Manufacturing	4
Surface Coating	2401200065	301	Durables Manufacturing	4
Surface Coating	2401200070	301	Durables Manufacturing	4
Surface Coating	2401200125	301	Durables Manufacturing	4
Surface Coating	2401200130	301	Durables Manufacturing	4
Surface Coating	2401200135	301	Durables Manufacturing	4
Surface Coating	2401200170	301	Durables Manufacturing	4
Surface Coating	2401200200	301	Durables Manufacturing	4
Surface Coating	2401200210	301	Durables Manufacturing	4
Surface Coating	2401200215	301	Durables Manufacturing	4
Surface Coating	2401200235	301	Durables Manufacturing	4
Surface Coating	2401200250	301	Durables Manufacturing	4
Surface Coating	2401200275	301	Durables Manufacturing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Surface Coating	2401200285	301	Durables Manufacturing	4
Surface Coating	2401200370	301	Durables Manufacturing	4
Surface Coating	2401200999	301	Durables Manufacturing	4
Surface Coating	2401990000	301	Durables Manufacturing	4
Surface Coating	2401990030	301	Durables Manufacturing	4
Surface Coating	2401990055	301	Durables Manufacturing	4
Surface Coating	2401990060	301	Durables Manufacturing	4
Surface Coating	2401990065	301	Durables Manufacturing	4
Surface Coating	2401990070	301	Durables Manufacturing	4
Surface Coating	2401990125	301	Durables Manufacturing	4
Surface Coating	2401990130	301	Durables Manufacturing	4
Surface Coating	2401990135	301	Durables Manufacturing	4
Surface Coating	2401990170	301	Durables Manufacturing	4
Surface Coating	2401990200	301	Durables Manufacturing	4
Surface Coating	2401990210	301	Durables Manufacturing	4
Surface Coating	2401990215	301	Durables Manufacturing	4
Surface Coating	2401990235	301	Durables Manufacturing	4
Surface Coating	2401990250	301	Durables Manufacturing	4
Surface Coating	2401990275	301	Durables Manufacturing	4
Surface Coating	2401990285	301	Durables Manufacturing	4
Surface Coating	2401990370	301	Durables Manufacturing	4
Surface Coating	2401990999	301	Durables Manufacturing	4
Degreasing	2415000000	301	Durables Manufacturing	6
Degreasing	2415000300	301	Durables Manufacturing	6
Degreasing	2415000350	301	Durables Manufacturing	6
Degreasing	2415000370	301	Durables Manufacturing	6
Degreasing	2415000385	301	Durables Manufacturing	6
Degreasing	2415000999	301	Durables Manufacturing	6
Degreasing	2415005000	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415005300	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415005350	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415005370	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415005385	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415005999	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415010000	44	Iron & Steel Foundries	4
Degreasing	2415010300	44	Iron & Steel Foundries	4
Degreasing	2415010350	44	Iron & Steel Foundries	4
Degreasing	2415010370	44	Iron & Steel Foundries	4
Degreasing	2415010385	44	Iron & Steel Foundries	4
Degreasing	2415010999	44	Iron & Steel Foundries	4
Degreasing	2415015000	46	Misc. Primary & Secondary Metals	4
Degreasing	2415015300	46	Misc. Primary & Secondary Metals	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415015350	46	Misc. Primary & Secondary Metals	4
Degreasing	2415015370	46	Misc. Primary & Secondary Metals	4
Degreasing	2415015385	46	Misc. Primary & Secondary Metals	4
Degreasing	2415015999	46	Misc. Primary & Secondary Metals	4
Degreasing	2415020000	57	Metal Services	4
Degreasing	2415020300	57	Metal Services	4
Degreasing	2415020350	57	Metal Services	4
Degreasing	2415020370	57	Metal Services	4
Degreasing	2415020385	57	Metal Services	4
Degreasing	2415020999	57	Metal Services	4
Degreasing	2415025000	67	Special Industry Machinery	4
Degreasing	2415025300	67	Special Industry Machinery	4
Degreasing	2415025350	67	Special Industry Machinery	4
Degreasing	2415025370	67	Special Industry Machinery	4
Degreasing	2415025385	67	Special Industry Machinery	4
Degreasing	2415025999	67	Special Industry Machinery	4
Degreasing	2415030000	75	Household Appliances	4
Degreasing	2415030300	75	Household Appliances	4
Degreasing	2415030350	75	Household Appliances	4
Degreasing	2415030370	75	Household Appliances	4
Degreasing	2415030385	75	Household Appliances	4
Degreasing	2415030999	75	Household Appliances	4
Degreasing	2415035000	84	Motor Vehicles & Car Bodies	4
Degreasing	2415035300	84	Motor Vehicles & Car Bodies	4
Degreasing	2415035350	84	Motor Vehicles & Car Bodies	4
Degreasing	2415035370	84	Motor Vehicles & Car Bodies	4
Degreasing	2415035385	84	Motor Vehicles & Car Bodies	4
Degreasing	2415035999	84	Motor Vehicles & Car Bodies	4
Degreasing	2415040000	96	Measuring & Controlling Devices	4
Degreasing	2415040300	96	Measuring & Controlling Devices	4
Degreasing	2415040350	96	Measuring & Controlling Devices	4
Degreasing	2415040370	96	Measuring & Controlling Devices	4
Degreasing	2415040385	96	Measuring & Controlling Devices	4
Degreasing	2415040999	96	Measuring & Controlling Devices	4
Degreasing	2415045000	103	Manufactured Products	4
Degreasing	2415045300	103	Manufactured Products	4
Degreasing	2415045350	103	Manufactured Products	4
Degreasing	2415045370	103	Manufactured Products	4
Degreasing	2415045385	103	Manufactured Products	4
Degreasing	2415045999	103	Manufactured Products	4
Degreasing	2415050000	146	Local & Interurban Passenger Transit	4
Degreasing	2415050300	146	Local & Interurban Passenger Transit	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415050350	146	Local & Interurban Passenger Transit	4
Degreasing	2415050370	146	Local & Interurban Passenger Transit	4
Degreasing	2415050385	146	Local & Interurban Passenger Transit	4
Degreasing	2415050999	146	Local & Interurban Passenger Transit	4
Degreasing	2415055000	159	Retail Trade, excluding Restaurants	4
Degreasing	2415055300	159	Retail Trade, excluding Restaurants	4
Degreasing	2415055350	159	Retail Trade, excluding Restaurants	4
Degreasing	2415055370	159	Retail Trade, excluding Restaurants	4
Degreasing	2415055385	159	Retail Trade, excluding Restaurants	4
Degreasing	2415055999	159	Retail Trade, excluding Restaurants	4
Degreasing	2415060000	183	Electrical Repair Shops	4
Degreasing	2415060300	183	Electrical Repair Shops	4
Degreasing	2415060350	183	Electrical Repair Shops	4
Degreasing	2415060370	183	Electrical Repair Shops	4
Degreasing	2415060385	183	Electrical Repair Shops	4
Degreasing	2415060999	183	Electrical Repair Shops	4
Degreasing	2415065000	182	Automobile Parking, Repair & Services	4
Degreasing	2415065300	182	Automobile Parking, Repair & Services	4
Degreasing	2415065350	182	Automobile Parking, Repair & Services	4
Degreasing	2415065370	182	Automobile Parking, Repair & Services	4
Degreasing	2415065385	182	Automobile Parking, Repair & Services	4
Degreasing	2415065999	182	Automobile Parking, Repair & Services	4
Degreasing	2415100000	301	Durables Manufacturing	6
Degreasing	2415100300	301	Durables Manufacturing	6
Degreasing	2415100350	301	Durables Manufacturing	6
Degreasing	2415100370	301	Durables Manufacturing	6
Degreasing	2415100385	301	Durables Manufacturing	6
Degreasing	2415100999	301	Durables Manufacturing	6
Degreasing	2415105000	37	Household Furniture	4
Degreasing	2415105300	37	Household Furniture	4
Degreasing	2415105350	37	Household Furniture	4
Degreasing	2415105370	37	Household Furniture	4
Degreasing	2415105385	37	Household Furniture	4
Degreasing	2415105999	37	Household Furniture	4
Degreasing	2415110000	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415110300	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415110350	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415110370	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415110385	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415110999	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415115000	46	Misc. Primary & Secondary Metals	4
Degreasing	2415115300	46	Misc. Primary & Secondary Metals	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415115350	46	Misc. Primary & Secondary Metals	4
Degreasing	2415115370	46	Misc. Primary & Secondary Metals	4
Degreasing	2415115385	46	Misc. Primary & Secondary Metals	4
Degreasing	2415115999	46	Misc. Primary & Secondary Metals	4
Degreasing	2415120000	52	Fabricated Structured Metal Products	4
Degreasing	2415120300	52	Fabricated Structured Metal Products	4
Degreasing	2415120350	52	Fabricated Structured Metal Products	4
Degreasing	2415120370	52	Fabricated Structured Metal Products	4
Degreasing	2415120385	52	Fabricated Structured Metal Products	4
Degreasing	2415120999	52	Fabricated Structured Metal Products	4
Degreasing	2415125000	67	Special Industry Machinery	4
Degreasing	2415125300	67	Special Industry Machinery	4
Degreasing	2415125350	67	Special Industry Machinery	4
Degreasing	2415125370	67	Special Industry Machinery	4
Degreasing	2415125385	67	Special Industry Machinery	4
Degreasing	2415125999	67	Special Industry Machinery	4
Degreasing	2415130000	75	Household Appliances	4
Degreasing	2415130300	75	Household Appliances	4
Degreasing	2415130350	75	Household Appliances	4
Degreasing	2415130370	75	Household Appliances	4
Degreasing	2415130385	75	Household Appliances	4
Degreasing	2415130999	75	Household Appliances	4
Degreasing	2415135000	84	Motor Vehicles & Car Bodies	4
Degreasing	2415135300	84	Motor Vehicles & Car Bodies	4
Degreasing	2415135350	84	Motor Vehicles & Car Bodies	4
Degreasing	2415135370	84	Motor Vehicles & Car Bodies	4
Degreasing	2415135385	84	Motor Vehicles & Car Bodies	4
Degreasing	2415135999	84	Motor Vehicles & Car Bodies	4
Degreasing	2415140000	96	Measuring & Controlling Devices	4
Degreasing	2415140300	96	Measuring & Controlling Devices	4
Degreasing	2415140350	96	Measuring & Controlling Devices	4
Degreasing	2415140370	96	Measuring & Controlling Devices	4
Degreasing	2415140385	96	Measuring & Controlling Devices	4
Degreasing	2415140999	96	Measuring & Controlling Devices	4
Degreasing	2415145000	103	Manufactured Products	4
Degreasing	2415145300	103	Manufactured Products	4
Degreasing	2415145350	103	Manufactured Products	4
Degreasing	2415145370	103	Manufactured Products	4
Degreasing	2415145385	103	Manufactured Products	4
Degreasing	2415145999	103	Manufactured Products	4
Degreasing	2415150000	146	Local & Interurban Passenger Transit	4
Degreasing	2415150300	146	Local & Interurban Passenger Transit	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415150350	146	Local & Interurban Passenger Transit	4
Degreasing	2415150370	146	Local & Interurban Passenger Transit	4
Degreasing	2415150385	146	Local & Interurban Passenger Transit	4
Degreasing	2415150999	146	Local & Interurban Passenger Transit	4
Degreasing	2415155000	159	Retail Trade, excluding Restaurants	4
Degreasing	2415155300	159	Retail Trade, excluding Restaurants	4
Degreasing	2415155350	159	Retail Trade, excluding Restaurants	4
Degreasing	2415155370	159	Retail Trade, excluding Restaurants	4
Degreasing	2415155385	159	Retail Trade, excluding Restaurants	4
Degreasing	2415155999	159	Retail Trade, excluding Restaurants	4
Degreasing	2415160000	182	Automobile Parking, Repair & Services	4
Degreasing	2415160300	182	Automobile Parking, Repair & Services	4
Degreasing	2415160350	182	Automobile Parking, Repair & Services	4
Degreasing	2415160370	182	Automobile Parking, Repair & Services	4
Degreasing	2415160385	182	Automobile Parking, Repair & Services	4
Degreasing	2415160999	182	Automobile Parking, Repair & Services	4
Degreasing	2415165000	183	Electrical Repair Shops	4
Degreasing	2415165300	183	Electrical Repair Shops	4
Degreasing	2415165350	183	Electrical Repair Shops	4
Degreasing	2415165370	183	Electrical Repair Shops	4
Degreasing	2415165385	183	Electrical Repair Shops	4
Degreasing	2415165999	183	Electrical Repair Shops	4
Degreasing	2415200000	301	Durables Manufacturing	4
Degreasing	2415200300	301	Durables Manufacturing	4
Degreasing	2415200350	301	Durables Manufacturing	4
Degreasing	2415200370	301	Durables Manufacturing	4
Degreasing	2415200385	301	Durables Manufacturing	4
Degreasing	2415200999	301	Durables Manufacturing	4
Degreasing	2415205000	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415205300	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415205350	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415205370	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415205385	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415205999	39	Office & Misc. Furniture/Fixtures	4
Degreasing	2415210000	44	Iron & Steel Foundries	4
Degreasing	2415210300	44	Iron & Steel Foundries	4
Degreasing	2415210350	44	Iron & Steel Foundries	4
Degreasing	2415210370	44	Iron & Steel Foundries	4
Degreasing	2415210385	44	Iron & Steel Foundries	4
Degreasing	2415210999	44	Iron & Steel Foundries	4
Degreasing	2415215000	46	Misc. Primary & Secondary Metals	4
Degreasing	2415215300	46	Misc. Primary & Secondary Metals	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend[1]*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415215350	46	Misc. Primary & Secondary Metals	4
Degreasing	2415215370	46	Misc. Primary & Secondary Metals	4
Degreasing	2415215385	46	Misc. Primary & Secondary Metals	4
Degreasing	2415215999	46	Misc. Primary & Secondary Metals	4
Degreasing	2415220000	57	Metal Services	4
Degreasing	2415220300	57	Metal Services	4
Degreasing	2415220350	57	Metal Services	4
Degreasing	2415220370	57	Metal Services	4
Degreasing	2415220385	57	Metal Services	4
Degreasing	2415220999	57	Metal Services	4
Degreasing	2415225000	67	Special Industry Machinery	4
Degreasing	2415225300	67	Special Industry Machinery	4
Degreasing	2415225350	67	Special Industry Machinery	4
Degreasing	2415225370	67	Special Industry Machinery	4
Degreasing	2415225385	67	Special Industry Machinery	4
Degreasing	2415225999	67	Special Industry Machinery	4
Degreasing	2415230000	75	Household Appliances	4
Degreasing	2415230300	75	Household Appliances	4
Degreasing	2415230350	75	Household Appliances	4
Degreasing	2415230370	75	Household Appliances	4
Degreasing	2415230385	75	Household Appliances	4
Degreasing	2415230999	75	Household Appliances	4
Degreasing	2415235000	84	Motor Vehicles & Car Bodies	4
Degreasing	2415235300	84	Motor Vehicles & Car Bodies	4
Degreasing	2415235350	84	Motor Vehicles & Car Bodies	4
Degreasing	2415235370	84	Motor Vehicles & Car Bodies	4
Degreasing	2415235385	84	Motor Vehicles & Car Bodies	4
Degreasing	2415235999	84	Motor Vehicles & Car Bodies	4
Degreasing	2415240000	96	Measuring & Controlling Devices	4
Degreasing	2415240300	96	Measuring & Controlling Devices	4
Degreasing	2415240350	96	Measuring & Controlling Devices	4
Degreasing	2415240370	96	Measuring & Controlling Devices	4
Degreasing	2415240385	96	Measuring & Controlling Devices	4
Degreasing	2415240999	96	Measuring & Controlling Devices	4
Degreasing	2415245000	103	Manufactured Products	4
Degreasing	2415245300	103	Manufactured Products	4
Degreasing	2415245350	103	Manufactured Products	4
Degreasing	2415245370	103	Manufactured Products	4
Degreasing	2415245385	103	Manufactured Products	4
Degreasing	2415245999	103	Manufactured Products	4
Degreasing	2415250000	146	Local & Interurban Passenger Transit	4
Degreasing	2415250300	146	Local & Interurban Passenger Transit	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415250350	146	Local & Interurban Passenger Transit	4
Degreasing	2415250370	146	Local & Interurban Passenger Transit	4
Degreasing	2415250385	146	Local & Interurban Passenger Transit	4
Degreasing	2415250999	146	Local & Interurban Passenger Transit	4
Degreasing	2415255000	159	Retail Trade, excluding Restaurants	4
Degreasing	2415255300	159	Retail Trade, excluding Restaurants	4
Degreasing	2415255350	159	Retail Trade, excluding Restaurants	4
Degreasing	2415255370	159	Retail Trade, excluding Restaurants	4
Degreasing	2415255385	159	Retail Trade, excluding Restaurants	4
Degreasing	2415255999	159	Retail Trade, excluding Restaurants	4
Degreasing	2415260000	182	Automobile Parking, Repair & Services	4
Degreasing	2415260300	182	Automobile Parking, Repair & Services	4
Degreasing	2415260350	182	Automobile Parking, Repair & Services	4
Degreasing	2415260370	182	Automobile Parking, Repair & Services	4
Degreasing	2415260385	182	Automobile Parking, Repair & Services	4
Degreasing	2415260999	182	Automobile Parking, Repair & Services	4
Degreasing	2415265000	183	Electrical Repair Shops	4
Degreasing	2415265300	183	Electrical Repair Shops	4
Degreasing	2415265350	183	Electrical Repair Shops	4
Degreasing	2415265370	183	Electrical Repair Shops	4
Degreasing	2415265385	183	Electrical Repair Shops	4
Degreasing	2415265999	183	Electrical Repair Shops	4
Degreasing	2415300000	301	Durables Manufacturing	4
Degreasing	2415300300	301	Durables Manufacturing	4
Degreasing	2415300350	301	Durables Manufacturing	4
Degreasing	2415300370	301	Durables Manufacturing	4
Degreasing	2415300385	301	Durables Manufacturing	4
Degreasing	2415300999	301	Durables Manufacturing	4
Degreasing	2415305000	37	Household Furniture	4
Degreasing	2415305300	37	Household Furniture	4
Degreasing	2415305350	37	Household Furniture	4
Degreasing	2415305370	37	Household Furniture	4
Degreasing	2415305385	37	Household Furniture	4
Degreasing	2415305999	37	Household Furniture	4
Degreasing	2415310000	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415310300	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415310350	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415310370	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415310385	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415310999	43	Blast Furnaces & Basic Steel Prod.	4
Degreasing	2415315000	46	Misc. Primary & Secondary Metals	4
Degreasing	2415315300	46	Misc. Primary & Secondary Metals	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415315350	46	Misc. Primary & Secondary Metals	4
Degreasing	2415315370	46	Misc. Primary & Secondary Metals	4
Degreasing	2415315385	46	Misc. Primary & Secondary Metals	4
Degreasing	2415315999	46	Misc. Primary & Secondary Metals	4
Degreasing	2415320000	52	Fabricated Structured Metal Products	4
Degreasing	2415320300	52	Fabricated Structured Metal Products	4
Degreasing	2415320350	52	Fabricated Structured Metal Products	4
Degreasing	2415320370	52	Fabricated Structured Metal Products	4
Degreasing	2415320385	52	Fabricated Structured Metal Products	4
Degreasing	2415320999	52	Fabricated Structured Metal Products	4
Degreasing	2415325000	67	Special Industry Machinery	4
Degreasing	2415325300	67	Special Industry Machinery	4
Degreasing	2415325350	67	Special Industry Machinery	4
Degreasing	2415325370	67	Special Industry Machinery	4
Degreasing	2415325385	67	Special Industry Machinery	4
Degreasing	2415325999	67	Special Industry Machinery	4
Degreasing	2415330000	75	Household Appliances	4
Degreasing	2415330300	75	Household Appliances	4
Degreasing	2415330350	75	Household Appliances	4
Degreasing	2415330370	75	Household Appliances	4
Degreasing	2415330385	75	Household Appliances	4
Degreasing	2415330999	75	Household Appliances	4
Degreasing	2415335000	84	Motor Vehicles & Car Bodies	4
Degreasing	2415335300	84	Motor Vehicles & Car Bodies	4
Degreasing	2415335350	84	Motor Vehicles & Car Bodies	4
Degreasing	2415335370	84	Motor Vehicles & Car Bodies	4
Degreasing	2415335385	84	Motor Vehicles & Car Bodies	4
Degreasing	2415335999	84	Motor Vehicles & Car Bodies	4
Degreasing	2415340000	96	Measuring & Controlling Devices	4
Degreasing	2415340300	96	Measuring & Controlling Devices	4
Degreasing	2415340350	96	Measuring & Controlling Devices	4
Degreasing	2415340370	96	Measuring & Controlling Devices	4
Degreasing	2415340385	96	Measuring & Controlling Devices	4
Degreasing	2415340999	96	Measuring & Controlling Devices	4
Degreasing	2415345000	103	Manufactured Products	4
Degreasing	2415345300	103	Manufactured Products	4
Degreasing	2415345350	103	Manufactured Products	4
Degreasing	2415345370	103	Manufactured Products	4
Degreasing	2415345385	103	Manufactured Products	4
Degreasing	2415345999	103	Manufactured Products	4
Degreasing	2415350000	146	Local & Interurban Passenger Transit	4
Degreasing	2415350300	146	Local & Interurban Passenger Transit	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Degreasing	2415350350	146	Local & Interurban Passenger Transit	4
Degreasing	2415350370	146	Local & Interurban Passenger Transit	4
Degreasing	2415350385	146	Local & Interurban Passenger Transit	4
Degreasing	2415350999	146	Local & Interurban Passenger Transit	4
Degreasing	2415355000	159	Retail Trade, excluding Restaurants	4
Degreasing	2415355300	159	Retail Trade, excluding Restaurants	4
Degreasing	2415355350	159	Retail Trade, excluding Restaurants	4
Degreasing	2415355370	159	Retail Trade, excluding Restaurants	4
Degreasing	2415355385	159	Retail Trade, excluding Restaurants	4
Degreasing	2415355999	159	Retail Trade, excluding Restaurants	4
Degreasing	2415360000	182	Automobile Parking, Repair & Services	4
Degreasing	2415360300	182	Automobile Parking, Repair & Services	4
Degreasing	2415360350	182	Automobile Parking, Repair & Services	4
Degreasing	2415360370	182	Automobile Parking, Repair & Services	4
Degreasing	2415360385	182	Automobile Parking, Repair & Services	4
Degreasing	2415360999	182	Automobile Parking, Repair & Services	4
Degreasing	2415365000	183	Electrical Repair Shops	4
Degreasing	2415365300	183	Electrical Repair Shops	4
Degreasing	2415365350	183	Electrical Repair Shops	4
Degreasing	2415365370	183	Electrical Repair Shops	4
Degreasing	2415365385	183	Electrical Repair Shops	4
Degreasing	2415365999	183	Electrical Repair Shops	4
Dry Cleaning	2420000000	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420000055	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420000370	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420000999	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420010000	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420010055	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420010370	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420010999	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420020000	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420020055	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420020370	169	Laundry, Cleaning, & Shoe Repair	1
Dry Cleaning	2420020999	169	Laundry, Cleaning, & Shoe Repair	1
Graphic Arts	2425000000	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425000055	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425000370	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425000999	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425010000	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425010055	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425010370	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425010999	179	Photocopying, Commercial Art, Photofinish	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Graphic Arts	2425020000	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425020055	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425020370	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425020999	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425030000	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425030055	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425030370	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425030999	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425040000	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425040055	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425040370	179	Photocopying, Commercial Art, Photofinish	1
Graphic Arts	2425040999	179	Photocopying, Commercial Art, Photofinish	1
Rubber/Plastics	2430000000	142	Misc. Plastic Products	4
Rubber/Plastics	2430000170	142	Misc. Plastic Products	4
Rubber/Plastics	2430000340	142	Misc. Plastic Products	4
Rubber/Plastics	2430000350	142	Misc. Plastic Products	4
Rubber/Plastics	2430000370	142	Misc. Plastic Products	4
Rubber/Plastics	2430000999	142	Misc. Plastic Products	4
Miscellaneous Industrial	2440000000	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000060	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000065	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000070	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000100	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000125	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000130	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000135	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000165	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000200	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000210	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000215	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000235	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000250	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000260	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000275	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000285	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000300	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000330	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000350	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000370	301	Durables Manufacturing	4
Miscellaneous Industrial	2440000999	301	Durables Manufacturing	4
Miscellaneous Industrial	2440020000	301	Durables Manufacturing	4
Misc. Non-Industrial: All Classes	2460000000	306	Finance, Insurance, & Real Estate	2

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Misc. Non-Industrial: All Classes	2460000030	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000055	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000060	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000065	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000070	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000165	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000170	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000185	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000250	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000260	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000285	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000300	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000330	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000340	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000345	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000350	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000370	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000385	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: All Classes	2460000999	306	Finance, Insurance, & Real Estate	2
Misc. Non-Industrial: Commercial	2461000000	309	Services	6
Misc. Non-Industrial: Commercial	2461020000	309	Services	6
Misc. Non-Industrial: Commercial	2461020370	309	Services	6
Misc. Non-Industrial: Commercial	2461020999	309	Services	6
Misc. Non-Industrial: Commercial	2461021000	309	Services	6
Misc. Non-Industrial: Commercial	2461021370	309	Services	6
Misc. Non-Industrial: Commercial	2461021999	309	Services	6
Misc. Non-Industrial: Commercial	2461022000	309	Services	6
Misc. Non-Industrial: Commercial	2461022370	309	Services	6
Misc. Non-Industrial: Commercial	2461022999	309	Services	6
Misc. Non-Industrial: Commercial	2461023000	309	Services	6
Misc. Non-Industrial: Commercial	2461023370	309	Services	6
Misc. Non-Industrial: Commercial	2461023999	309	Services	6
Misc. Non-Industrial: Commercial	2461024000	309	Services	6
Misc. Non-Industrial: Commercial	2461024370	309	Services	6
Misc. Non-Industrial: Commercial	2461024999	309	Services	6
Misc. Non-Industrial: Commercial	2461050000	309	Services	6
Misc. Non-Industrial: Commercial	2461100000	309	Services	6
Misc. Non-Industrial: Commercial	2461160000	309	Services	6
Misc. Non-Industrial: Commercial	2461600000	309	Services	6
Misc. Non-Industrial: Commercial	2461700000	399	Population	6
Misc. Non-Industrial: Commercial	2461800000	309	Services	6
Misc. Non-Industrial: Commercial	2461800999	309	Services	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Misc. Non-Industrial: Commercial	2461850000	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850001	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850002	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850003	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850004	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850005	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850006	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850051	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850052	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850053	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850054	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850055	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461850056	136	Agricultural Chemicals	6
Misc. Non-Industrial: Commercial	2461900000	309	Services	6
Misc. Non-Industrial: Consumer	2465000000	399	Population	6
Misc. Non-Industrial: Consumer	2465000030	399	Population	6
Misc. Non-Industrial: Consumer	2465000055	399	Population	6
Misc. Non-Industrial: Consumer	2465000060	399	Population	6
Misc. Non-Industrial: Consumer	2465000065	399	Population	6
Misc. Non-Industrial: Consumer	2465000070	399	Population	6
Misc. Non-Industrial: Consumer	2465000165	399	Population	6
Misc. Non-Industrial: Consumer	2465000170	399	Population	6
Misc. Non-Industrial: Consumer	2465000185	399	Population	6
Misc. Non-Industrial: Consumer	2465000250	399	Population	6
Misc. Non-Industrial: Consumer	2465000260	399	Population	6
Misc. Non-Industrial: Consumer	2465000285	399	Population	6
Misc. Non-Industrial: Consumer	2465000300	399	Population	6
Misc. Non-Industrial: Consumer	2465000330	399	Population	6
Misc. Non-Industrial: Consumer	2465000340	399	Population	6
Misc. Non-Industrial: Consumer	2465000345	399	Population	6
Misc. Non-Industrial: Consumer	2465000350	399	Population	6
Misc. Non-Industrial: Consumer	2465000370	399	Population	6
Misc. Non-Industrial: Consumer	2465000385	399	Population	6
Misc. Non-Industrial: Consumer	2465000999	399	Population	6
Misc. Non-Industrial: Consumer	2465100000	399	Population	6
Misc. Non-Industrial: Consumer	2465200000	399	Population	6
Misc. Non-Industrial: Consumer	2465400000	399	Population	6
Misc. Non-Industrial: Consumer	2465600000	399	Population	6
Misc. Non-Industrial: Consumer	2465800000	399	Population	6
Misc. Non-Industrial: Consumer	2465900000	399	Population	6
All Solvent User Categories	2495000000	399	Population	6
All Solvent User Categories	2495000001	399	Population	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
All Solvent User Categories	2495000005	399	Population	6
All Solvent User Categories	2495000010	399	Population	6
All Solvent User Categories	2495000015	399	Population	6
All Solvent User Categories	2495000020	399	Population	6
All Solvent User Categories	2495000025	399	Population	6
All Solvent User Categories	2495000030	399	Population	6
All Solvent User Categories	2495000035	399	Population	6
All Solvent User Categories	2495000040	399	Population	6
All Solvent User Categories	2495000045	399	Population	6
All Solvent User Categories	2495000050	399	Population	6
All Solvent User Categories	2495000055	399	Population	6
All Solvent User Categories	2495000060	399	Population	6
All Solvent User Categories	2495000065	399	Population	6
All Solvent User Categories	2495000070	399	Population	6
All Solvent User Categories	2495000075	399	Population	6
All Solvent User Categories	2495000080	399	Population	6
All Solvent User Categories	2495000085	399	Population	6
All Solvent User Categories	2495000090	399	Population	6
All Solvent User Categories	2495000095	399	Population	6
All Solvent User Categories	2495000100	399	Population	6
All Solvent User Categories	2495000105	399	Population	6
All Solvent User Categories	2495000110	399	Population	6
All Solvent User Categories	2495000115	399	Population	6
All Solvent User Categories	2495000120	399	Population	6
All Solvent User Categories	2495000125	399	Population	6
All Solvent User Categories	2495000130	399	Population	6
All Solvent User Categories	2495000135	399	Population	6
All Solvent User Categories	2495000140	399	Population	6
All Solvent User Categories	2495000145	399	Population	6
All Solvent User Categories	2495000150	399	Population	6
All Solvent User Categories	2495000155	399	Population	6
All Solvent User Categories	2495000160	399	Population	6
All Solvent User Categories	2495000165	399	Population	6
All Solvent User Categories	2495000170	399	Population	6
All Solvent User Categories	2495000175	399	Population	6
All Solvent User Categories	2495000180	399	Population	6
All Solvent User Categories	2495000185	399	Population	6
All Solvent User Categories	2495000190	399	Population	6
All Solvent User Categories	2495000195	399	Population	6
All Solvent User Categories	2495000200	399	Population	6
All Solvent User Categories	2495000205	399	Population	6
All Solvent User Categories	2495000210	399	Population	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
All Solvent User Categories	2495000215	399	Population	6
All Solvent User Categories	2495000220	399	Population	6
All Solvent User Categories	2495000225	399	Population	6
All Solvent User Categories	2495000230	399	Population	6
All Solvent User Categories	2495000235	399	Population	6
All Solvent User Categories	2495000240	399	Population	6
All Solvent User Categories	2495000245	399	Population	6
All Solvent User Categories	2495000250	399	Population	6
All Solvent User Categories	2495000255	399	Population	6
All Solvent User Categories	2495000260	399	Population	6
All Solvent User Categories	2495000265	399	Population	6
All Solvent User Categories	2495000270	399	Population	6
All Solvent User Categories	2495000275	399	Population	6
All Solvent User Categories	2495000280	399	Population	6
All Solvent User Categories	2495000285	399	Population	6
All Solvent User Categories	2495000290	399	Population	6
All Solvent User Categories	2495000295	399	Population	6
All Solvent User Categories	2495000300	399	Population	6
All Solvent User Categories	2495000305	399	Population	6
All Solvent User Categories	2495000310	399	Population	6
All Solvent User Categories	2495000315	399	Population	6
All Solvent User Categories	2495000320	399	Population	6
All Solvent User Categories	2495000325	399	Population	6
All Solvent User Categories	2495000330	399	Population	6
All Solvent User Categories	2495000335	399	Population	6
All Solvent User Categories	2495000340	399	Population	6
All Solvent User Categories	2495000345	399	Population	6
All Solvent User Categories	2495000350	399	Population	6
All Solvent User Categories	2495000355	399	Population	6
All Solvent User Categories	2495000360	399	Population	6
All Solvent User Categories	2495000365	399	Population	6
All Solvent User Categories	2495000370	399	Population	6
All Solvent User Categories	2495000375	399	Population	6
All Solvent User Categories	2495000380	399	Population	6
All Solvent User Categories	2495000385	399	Population	6
All Solvent User Categories	2495000390	399	Population	6
All Solvent User Categories	2495000395	399	Population	6
All Solvent User Categories	2495000400	399	Population	6
All Solvent User Categories	2495000405	399	Population	6
All Solvent User Categories	2495000999	399	Population	6
Storage & Transport				
Petroleum Product Storage	2501000000	138	Petroleum Refining	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
		BLS		*Justification*
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Product Storage	2501000030	138	Petroleum Refining	5
Petroleum Product Storage	2501000060	138	Petroleum Refining	5
Petroleum Product Storage	2501000090	138	Petroleum Refining	5
Petroleum Product Storage	2501000120	138	Petroleum Refining	5
Petroleum Product Storage	2501000150	138	Petroleum Refining	5
Petroleum Product Storage	2501000180	138	Petroleum Refining	5
Petroleum Product Storage	2501000900	138	Petroleum Refining	5
Petroleum Product Storage	2501010000	158	Wholesale Trade	5
Petroleum Product Storage	2501010030	158	Wholesale Trade	5
Petroleum Product Storage	2501010060	158	Wholesale Trade	5
Petroleum Product Storage	2501010090	158	Wholesale Trade	5
Petroleum Product Storage	2501010120	158	Wholesale Trade	5
Petroleum Product Storage	2501010150	158	Wholesale Trade	5
Petroleum Product Storage	2501010180	158	Wholesale Trade	5
Petroleum Product Storage	2501010900	158	Wholesale Trade	5
Petroleum Product Storage	2501050000	138	Petroleum Refining	5
Petroleum Product Storage	2501050030	138	Petroleum Refining	5
Petroleum Product Storage	2501050060	138	Petroleum Refining	5
Petroleum Product Storage	2501050090	138	Petroleum Refining	5
Petroleum Product Storage	2501050120	138	Petroleum Refining	5
Petroleum Product Storage	2501050150	138	Petroleum Refining	5
Petroleum Product Storage	2501050180	138	Petroleum Refining	5
Petroleum Product Storage	2501050900	138	Petroleum Refining	5
Petroleum Product Storage	2501060000	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060050	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060051	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060052	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060053	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060100	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060101	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060102	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060103	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060200	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501060201	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070000	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070050	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070051	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070052	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070053	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070100	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070101	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070102	159	Retail Trade, excluding Restaurants	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
			3 = BLS represents SCC end use	
			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Product Storage	2501070103	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070200	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501070201	159	Retail Trade, excluding Restaurants	4
Petroleum Product Storage	2501995000	138	Petroleum Refining	5
Petroleum Product Storage	2501995030	138	Petroleum Refining	5
Petroleum Product Storage	2501995060	138	Petroleum Refining	5
Petroleum Product Storage	2501995090	138	Petroleum Refining	5
Petroleum Product Storage	2501995120	138	Petroleum Refining	5
Petroleum Product Storage	2501995150	138	Petroleum Refining	5
Petroleum Product Storage	2501995180	138	Petroleum Refining	5
Petroleum Product Transport	2505000000	138	Petroleum Refining	5
Petroleum Product Transport	2505000030	138	Petroleum Refining	5
Petroleum Product Transport	2505000060	138	Petroleum Refining	5
Petroleum Product Transport	2505000090	138	Petroleum Refining	5
Petroleum Product Transport	2505000120	138	Petroleum Refining	5
Petroleum Product Transport	2505000150	138	Petroleum Refining	5
Petroleum Product Transport	2505000180	138	Petroleum Refining	5
Petroleum Product Transport	2505000900	138	Petroleum Refining	5
Petroleum Product Transport	2505010000	145	Railroad Transportation	1
Petroleum Product Transport	2505010030	145	Railroad Transportation	1
Petroleum Product Transport	2505010060	145	Railroad Transportation	1
Petroleum Product Transport	2505010090	145	Railroad Transportation	1
Petroleum Product Transport	2505010120	145	Railroad Transportation	1
Petroleum Product Transport	2505010150	145	Railroad Transportation	1
Petroleum Product Transport	2505010180	145	Railroad Transportation	1
Petroleum Product Transport	2505010900	145	Railroad Transportation	1
Petroleum Product Transport	2505020000	148	Water Transportation	4
Petroleum Product Transport	2505020030	148	Water Transportation	4
Petroleum Product Transport	2505020060	148	Water Transportation	4
Petroleum Product Transport	2505020090	148	Water Transportation	4
Petroleum Product Transport	2505020120	148	Water Transportation	4
Petroleum Product Transport	2505020150	148	Water Transportation	4
Petroleum Product Transport	2505020180	148	Water Transportation	4
Petroleum Product Transport	2505020900	148	Water Transportation	4
Petroleum Product Transport	2505030000	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030030	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030060	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030090	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030120	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030150	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030180	147	Trucking and Warehousing	4
Petroleum Product Transport	2505030900	147	Trucking and Warehousing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Petroleum Product Transport	2505040000	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040030	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040060	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040090	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040120	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040150	150	Pipelines, except Natural Gas	1
Petroleum Product Transport	2505040180	150	Pipelines, except Natural Gas	1
Organic Chemical Storage	2510000000	131	Industrial Chemicals	5
Organic Chemical Storage	2510000030	131	Industrial Chemicals	5
Organic Chemical Storage	2510000060	131	Industrial Chemicals	5
Organic Chemical Storage	2510000065	131	Industrial Chemicals	5
Organic Chemical Storage	2510000070	131	Industrial Chemicals	5
Organic Chemical Storage	2510000100	131	Industrial Chemicals	5
Organic Chemical Storage	2510000165	131	Industrial Chemicals	5
Organic Chemical Storage	2510000185	131	Industrial Chemicals	5
Organic Chemical Storage	2510000195	131	Industrial Chemicals	5
Organic Chemical Storage	2510000220	131	Industrial Chemicals	5
Organic Chemical Storage	2510000235	131	Industrial Chemicals	5
Organic Chemical Storage	2510000240	131	Industrial Chemicals	5
Organic Chemical Storage	2510000250	131	Industrial Chemicals	5
Organic Chemical Storage	2510000260	131	Industrial Chemicals	5
Organic Chemical Storage	2510000265	131	Industrial Chemicals	5
Organic Chemical Storage	2510000270	131	Industrial Chemicals	5
Organic Chemical Storage	2510000275	131	Industrial Chemicals	5
Organic Chemical Storage	2510000285	131	Industrial Chemicals	5
Organic Chemical Storage	2510000295	131	Industrial Chemicals	5
Organic Chemical Storage	2510000310	131	Industrial Chemicals	5
Organic Chemical Storage	2510000320	131	Industrial Chemicals	5
Organic Chemical Storage	2510000345	131	Industrial Chemicals	5
Organic Chemical Storage	2510000350	131	Industrial Chemicals	5
Organic Chemical Storage	2510000370	131	Industrial Chemicals	5
Organic Chemical Storage	2510000380	131	Industrial Chemicals	5
Organic Chemical Storage	2510000385	131	Industrial Chemicals	5
Organic Chemical Storage	2510000405	131	Industrial Chemicals	5
Organic Chemical Storage	2510000900	131	Industrial Chemicals	5
Organic Chemical Storage	2510010000	131	Industrial Chemicals	5
Organic Chemical Storage	2510010030	131	Industrial Chemicals	5
Organic Chemical Storage	2510010060	131	Industrial Chemicals	5
Organic Chemical Storage	2510010065	131	Industrial Chemicals	5
Organic Chemical Storage	2510010070	131	Industrial Chemicals	5
Organic Chemical Storage	2510010100	131	Industrial Chemicals	5
Organic Chemical Storage	2510010165	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	2510010185	131	Industrial Chemicals	5
Organic Chemical Storage	2510010195	131	Industrial Chemicals	5
Organic Chemical Storage	2510010220	131	Industrial Chemicals	5
Organic Chemical Storage	2510010235	131	Industrial Chemicals	5
Organic Chemical Storage	2510010240	131	Industrial Chemicals	5
Organic Chemical Storage	2510010250	131	Industrial Chemicals	5
Organic Chemical Storage	2510010260	131	Industrial Chemicals	5
Organic Chemical Storage	2510010265	131	Industrial Chemicals	5
Organic Chemical Storage	2510010270	131	Industrial Chemicals	5
Organic Chemical Storage	2510010275	131	Industrial Chemicals	5
Organic Chemical Storage	2510010285	131	Industrial Chemicals	5
Organic Chemical Storage	2510010295	131	Industrial Chemicals	5
Organic Chemical Storage	2510010310	131	Industrial Chemicals	5
Organic Chemical Storage	2510010320	131	Industrial Chemicals	5
Organic Chemical Storage	2510010345	131	Industrial Chemicals	5
Organic Chemical Storage	2510010350	131	Industrial Chemicals	5
Organic Chemical Storage	2510010370	131	Industrial Chemicals	5
Organic Chemical Storage	2510010380	131	Industrial Chemicals	5
Organic Chemical Storage	2510010385	131	Industrial Chemicals	5
Organic Chemical Storage	2510010405	131	Industrial Chemicals	5
Organic Chemical Storage	2510010900	131	Industrial Chemicals	5
Organic Chemical Storage	2510050000	131	Industrial Chemicals	5
Organic Chemical Storage	2510050030	131	Industrial Chemicals	5
Organic Chemical Storage	2510050060	131	Industrial Chemicals	5
Organic Chemical Storage	2510050065	131	Industrial Chemicals	5
Organic Chemical Storage	2510050070	131	Industrial Chemicals	5
Organic Chemical Storage	2510050100	131	Industrial Chemicals	5
Organic Chemical Storage	2510050165	131	Industrial Chemicals	5
Organic Chemical Storage	2510050185	131	Industrial Chemicals	5
Organic Chemical Storage	2510050195	131	Industrial Chemicals	5
Organic Chemical Storage	2510050220	131	Industrial Chemicals	5
Organic Chemical Storage	2510050235	131	Industrial Chemicals	5
Organic Chemical Storage	2510050240	131	Industrial Chemicals	5
Organic Chemical Storage	2510050250	131	Industrial Chemicals	5
Organic Chemical Storage	2510050260	131	Industrial Chemicals	5
Organic Chemical Storage	2510050265	131	Industrial Chemicals	5
Organic Chemical Storage	2510050270	131	Industrial Chemicals	5
Organic Chemical Storage	2510050275	131	Industrial Chemicals	5
Organic Chemical Storage	2510050285	131	Industrial Chemicals	5
Organic Chemical Storage	2510050295	131	Industrial Chemicals	5
Organic Chemical Storage	2510050310	131	Industrial Chemicals	5
Organic Chemical Storage	2510050320	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Storage	2510050345	131	Industrial Chemicals	5
Organic Chemical Storage	2510050350	131	Industrial Chemicals	5
Organic Chemical Storage	2510050370	131	Industrial Chemicals	5
Organic Chemical Storage	2510050380	131	Industrial Chemicals	5
Organic Chemical Storage	2510050385	131	Industrial Chemicals	5
Organic Chemical Storage	2510050405	131	Industrial Chemicals	5
Organic Chemical Storage	2510050900	131	Industrial Chemicals	5
Organic Chemical Storage	2510995000	131	Industrial Chemicals	5
Organic Chemical Storage	2510995030	131	Industrial Chemicals	5
Organic Chemical Storage	2510995060	131	Industrial Chemicals	5
Organic Chemical Storage	2510995065	131	Industrial Chemicals	5
Organic Chemical Storage	2510995070	131	Industrial Chemicals	5
Organic Chemical Storage	2510995100	131	Industrial Chemicals	5
Organic Chemical Storage	2510995165	131	Industrial Chemicals	5
Organic Chemical Storage	2510995185	131	Industrial Chemicals	5
Organic Chemical Storage	2510995195	131	Industrial Chemicals	5
Organic Chemical Storage	2510995220	131	Industrial Chemicals	5
Organic Chemical Storage	2510995235	131	Industrial Chemicals	5
Organic Chemical Storage	2510995240	131	Industrial Chemicals	5
Organic Chemical Storage	2510995250	131	Industrial Chemicals	5
Organic Chemical Storage	2510995260	131	Industrial Chemicals	5
Organic Chemical Storage	2510995265	131	Industrial Chemicals	5
Organic Chemical Storage	2510995270	131	Industrial Chemicals	5
Organic Chemical Storage	2510995275	131	Industrial Chemicals	5
Organic Chemical Storage	2510995285	131	Industrial Chemicals	5
Organic Chemical Storage	2510995295	131	Industrial Chemicals	5
Organic Chemical Storage	2510995310	131	Industrial Chemicals	5
Organic Chemical Storage	2510995320	131	Industrial Chemicals	5
Organic Chemical Storage	2510995345	131	Industrial Chemicals	5
Organic Chemical Storage	2510995350	131	Industrial Chemicals	5
Organic Chemical Storage	2510995370	131	Industrial Chemicals	5
Organic Chemical Storage	2510995380	131	Industrial Chemicals	5
Organic Chemical Storage	2510995385	131	Industrial Chemicals	5
Organic Chemical Storage	2510995405	131	Industrial Chemicals	5
Organic Chemical Transport	2515000000	131	Industrial Chemicals	5
Organic Chemical Transport	2515000030	131	Industrial Chemicals	5
Organic Chemical Transport	2515000060	131	Industrial Chemicals	5
Organic Chemical Transport	2515000065	131	Industrial Chemicals	5
Organic Chemical Transport	2515000070	131	Industrial Chemicals	5
Organic Chemical Transport	2515000100	131	Industrial Chemicals	5
Organic Chemical Transport	2515000165	131	Industrial Chemicals	5
Organic Chemical Transport	2515000185	131	Industrial Chemicals	5

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Transport	2515000195	131	Industrial Chemicals	5
Organic Chemical Transport	2515000220	131	Industrial Chemicals	5
Organic Chemical Transport	2515000235	131	Industrial Chemicals	5
Organic Chemical Transport	2515000240	131	Industrial Chemicals	5
Organic Chemical Transport	2515000250	131	Industrial Chemicals	5
Organic Chemical Transport	2515000260	131	Industrial Chemicals	5
Organic Chemical Transport	2515000265	131	Industrial Chemicals	5
Organic Chemical Transport	2515000270	131	Industrial Chemicals	5
Organic Chemical Transport	2515000275	131	Industrial Chemicals	5
Organic Chemical Transport	2515000285	131	Industrial Chemicals	5
Organic Chemical Transport	2515000295	131	Industrial Chemicals	5
Organic Chemical Transport	2515000310	131	Industrial Chemicals	5
Organic Chemical Transport	2515000320	131	Industrial Chemicals	5
Organic Chemical Transport	2515000345	131	Industrial Chemicals	5
Organic Chemical Transport	2515000350	131	Industrial Chemicals	5
Organic Chemical Transport	2515000370	131	Industrial Chemicals	5
Organic Chemical Transport	2515000380	131	Industrial Chemicals	5
Organic Chemical Transport	2515000385	131	Industrial Chemicals	5
Organic Chemical Transport	2515000405	131	Industrial Chemicals	5
Organic Chemical Transport	2515000900	131	Industrial Chemicals	5
Organic Chemical Transport	2515010000	145	Railroad Transportation	1
Organic Chemical Transport	2515010030	145	Railroad Transportation	1
Organic Chemical Transport	2515010060	145	Railroad Transportation	1
Organic Chemical Transport	2515010065	145	Railroad Transportation	1
Organic Chemical Transport	2515010070	145	Railroad Transportation	1
Organic Chemical Transport	2515010100	145	Railroad Transportation	1
Organic Chemical Transport	2515010165	145	Railroad Transportation	1
Organic Chemical Transport	2515010185	145	Railroad Transportation	1
Organic Chemical Transport	2515010195	145	Railroad Transportation	1
Organic Chemical Transport	2515010220	145	Railroad Transportation	1
Organic Chemical Transport	2515010235	145	Railroad Transportation	1
Organic Chemical Transport	2515010240	145	Railroad Transportation	1
Organic Chemical Transport	2515010250	145	Railroad Transportation	1
Organic Chemical Transport	2515010260	145	Railroad Transportation	1
Organic Chemical Transport	2515010265	145	Railroad Transportation	1
Organic Chemical Transport	2515010270	145	Railroad Transportation	1
Organic Chemical Transport	2515010275	145	Railroad Transportation	1
Organic Chemical Transport	2515010285	145	Railroad Transportation	1
Organic Chemical Transport	2515010295	145	Railroad Transportation	1
Organic Chemical Transport	2515010310	145	Railroad Transportation	1
Organic Chemical Transport	2515010320	145	Railroad Transportation	1
Organic Chemical Transport	2515010345	145	Railroad Transportation	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Transport	2515010350	145	Railroad Transportation	1
Organic Chemical Transport	2515010370	145	Railroad Transportation	1
Organic Chemical Transport	2515010380	145	Railroad Transportation	1
Organic Chemical Transport	2515010385	145	Railroad Transportation	1
Organic Chemical Transport	2515010405	145	Railroad Transportation	1
Organic Chemical Transport	2515010900	145	Railroad Transportation	1
Organic Chemical Transport	2515020000	148	Water Transportation	4
Organic Chemical Transport	2515020030	148	Water Transportation	4
Organic Chemical Transport	2515020060	148	Water Transportation	4
Organic Chemical Transport	2515020065	148	Water Transportation	4
Organic Chemical Transport	2515020070	148	Water Transportation	4
Organic Chemical Transport	2515020100	148	Water Transportation	4
Organic Chemical Transport	2515020165	148	Water Transportation	4
Organic Chemical Transport	2515020185	148	Water Transportation	4
Organic Chemical Transport	2515020195	148	Water Transportation	4
Organic Chemical Transport	2515020220	148	Water Transportation	4
Organic Chemical Transport	2515020235	148	Water Transportation	4
Organic Chemical Transport	2515020240	148	Water Transportation	4
Organic Chemical Transport	2515020250	148	Water Transportation	4
Organic Chemical Transport	2515020260	148	Water Transportation	4
Organic Chemical Transport	2515020265	148	Water Transportation	4
Organic Chemical Transport	2515020270	148	Water Transportation	4
Organic Chemical Transport	2515020275	148	Water Transportation	4
Organic Chemical Transport	2515020285	148	Water Transportation	4
Organic Chemical Transport	2515020295	148	Water Transportation	4
Organic Chemical Transport	2515020310	148	Water Transportation	4
Organic Chemical Transport	2515020320	148	Water Transportation	4
Organic Chemical Transport	2515020345	148	Water Transportation	4
Organic Chemical Transport	2515020350	148	Water Transportation	4
Organic Chemical Transport	2515020370	148	Water Transportation	4
Organic Chemical Transport	2515020380	148	Water Transportation	4
Organic Chemical Transport	2515020385	148	Water Transportation	4
Organic Chemical Transport	2515020405	148	Water Transportation	4
Organic Chemical Transport	2515020900	148	Water Transportation	4
Organic Chemical Transport	2515030000	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030030	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030060	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030065	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030070	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030100	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030165	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030185	147	Trucking and Warehousing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Transport	2515030195	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030220	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030235	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030240	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030250	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030260	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030265	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030270	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030275	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030285	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030295	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030310	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030320	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030345	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030350	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030370	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030380	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030385	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030405	147	Trucking and Warehousing	4
Organic Chemical Transport	2515030900	147	Trucking and Warehousing	4
Organic Chemical Transport	2515040000	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040030	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040060	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040065	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040070	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040100	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040165	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040185	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040195	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040220	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040235	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040240	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040250	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040260	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040265	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040270	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040275	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040285	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040295	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040310	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040320	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040345	150	Pipelines, except Natural Gas	1

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			4 = SCC represents an ancillary process occuring within BLS industry	
			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Organic Chemical Transport	2515040350	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040370	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040380	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040385	150	Pipelines, except Natural Gas	1
Organic Chemical Transport	2515040405	150	Pipelines, except Natural Gas	1
Inorganic Chemical Storage	2520000000	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520000010	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520000020	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520000030	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520000040	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520000900	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010000	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010010	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010020	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010030	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010040	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520010900	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050000	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050010	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050020	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050030	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050040	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520050900	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520995000	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520995010	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520995020	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520995030	131	Industrial Chemicals	5
Inorganic Chemical Storage	2520995040	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000000	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000010	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000020	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000030	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000040	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525000900	131	Industrial Chemicals	5
Inorganic Chemical Transport	2525010000	145	Railroad Transportation	1
Inorganic Chemical Transport	2525010010	145	Railroad Transportation	1
Inorganic Chemical Transport	2525010020	145	Railroad Transportation	1
Inorganic Chemical Transport	2525010030	145	Railroad Transportation	1
Inorganic Chemical Transport	2525010040	145	Railroad Transportation	1
Inorganic Chemical Transport	2525010900	145	Railroad Transportation	1
Inorganic Chemical Transport	2525020000	148	Water Transportation	4
Inorganic Chemical Transport	2525020010	148	Water Transportation	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
			1 = Direct BLS/SCC correlation	
Point Source and Area Source Processes (Manufacturing)			*2 = SCC part of a larger BLS group*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Inorganic Chemical Transport	2525020020	148	Water Transportation	4
Inorganic Chemical Transport	2525020030	148	Water Transportation	4
Inorganic Chemical Transport	2525020040	148	Water Transportation	4
Inorganic Chemical Transport	2525020900	148	Water Transportation	4
Inorganic Chemical Transport	2525030000	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525030010	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525030020	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525030030	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525030040	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525030900	147	Trucking and Warehousing	4
Inorganic Chemical Transport	2525040000	150	Pipelines, except Natural Gas	1
Inorganic Chemical Transport	2525040010	150	Pipelines, except Natural Gas	1
Inorganic Chemical Transport	2525040020	150	Pipelines, except Natural Gas	1
Inorganic Chemical Transport	2525040030	150	Pipelines, except Natural Gas	1
Inorganic Chemical Transport	2525040040	150	Pipelines, except Natural Gas	1
Bulk Materials Storage	2530000000	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000020	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000040	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000060	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000080	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000100	147	Trucking and Warehousing	4
Bulk Materials Storage	2530000120	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010000	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010020	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010040	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010060	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010080	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010100	147	Trucking and Warehousing	4
Bulk Materials Storage	2530010120	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050000	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050020	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050040	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050060	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050080	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050100	147	Trucking and Warehousing	4
Bulk Materials Storage	2530050120	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000000	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000020	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000040	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000060	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000080	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000100	147	Trucking and Warehousing	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Bulk Materials Transport	2535000120	147	Trucking and Warehousing	4
Bulk Materials Transport	2535000140	147	Trucking and Warehousing	4
Bulk Materials Transport	2535010000	145	Railroad Transportation	5
Bulk Materials Transport	2535010020	145	Railroad Transportation	5
Bulk Materials Transport	2535010040	145	Railroad Transportation	5
Bulk Materials Transport	2535010060	145	Railroad Transportation	5
Bulk Materials Transport	2535010080	145	Railroad Transportation	5
Bulk Materials Transport	2535010100	145	Railroad Transportation	5
Bulk Materials Transport	2535010120	145	Railroad Transportation	5
Bulk Materials Transport	2535010140	145	Railroad Transportation	5
Bulk Materials Transport	2535020000	148	Water Transportation	4
Bulk Materials Transport	2535020020	148	Water Transportation	4
Bulk Materials Transport	2535020040	148	Water Transportation	4
Bulk Materials Transport	2535020060	148	Water Transportation	4
Bulk Materials Transport	2535020080	148	Water Transportation	4
Bulk Materials Transport	2535020100	148	Water Transportation	4
Bulk Materials Transport	2535020120	148	Water Transportation	4
Bulk Materials Transport	2535020140	148	Water Transportation	4
Bulk Materials Transport	2535030000	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030020	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030040	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030060	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030080	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030100	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030120	147	Trucking and Warehousing	4
Bulk Materials Transport	2535030140	147	Trucking and Warehousing	4
Waste Disposal, Treatment, & Recovery				
On-Site Incineration	2601000000	324	Gross Regional Product	6
On-Site Incineration	2601010000	321	Durable & Nondurable Manufacturing	6
On-Site Incineration	2601020000	322	Finance, Retail, Wholesale, & Services	4
On-Site Incineration	2601030000	399	Population	6
Open Burning	2610000000	324	Gross Regional Product	6
Open Burning	2610010000	321	Durable & Nondurable Manufacturing	6
Open Burning	2610020000	322	Finance, Retail, Wholesale, & Services	4
Open Burning	2610030000	399	Population	6
Landfills	2620000000	324	Gross Regional Product	6
Landfills	2620010000	321	Durable & Nondurable Manufacturing	6
Landfills	2620020000	322	Finance, Retail, Wholesale, & Services	4
Landfills	2620030000	399	Population	6
Wastewater Treatment	2630000000	399	Population	6
Wastewater Treatment	2630010000	321	Durable & Nondurable Manufacturing	6
TSDFs	2640010000	321	Durable & Nondurable Manufacturing	6

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
TSDFs	2640010001	321	Durable & Nondurable Manufacturing	6
TSDFs	2640010002	321	Durable & Nondurable Manufacturing	6
TSDFs	2640010003	321	Durable & Nondurable Manufacturing	6
TSDFs	2640010004	321	Durable & Nondurable Manufacturing	6
TSDFs	2640020000	322	Finance, Retail, Wholesale, & Services	4
TSDFs	2640020001	322	Finance, Retail, Wholesale, & Services	4
TSDFs	2640020002	322	Finance, Retail, Wholesale, & Services	4
TSDFs	2640020003	322	Finance, Retail, Wholesale, & Services	4
TSDFs	2640020004	322	Finance, Retail, Wholesale, & Services	4
Scrap & Waste Materials	2650000000	324	Gross Regional Product	6
Scrap & Waste Materials	2650000001	324	Gross Regional Product	6
Scrap & Waste Materials	2650000002	324	Gross Regional Product	6
Scrap & Waste Materials	2650000003	324	Gross Regional Product	6
Scrap & Waste Materials	2650000004	324	Gross Regional Product	6
Scrap & Waste Materials	2650000005	324	Gross Regional Product	6
Leaking Underground Storage0000		324	Gross Regional Product	6
Miscellaneous Area Sources				
Agriculture Production - Crops	2801000000	3	Agricultural Services	4
Agriculture Production - Crops	2801000001	3	Agricultural Services	4
Agriculture Production - Crops	2801000002	3	Agricultural Services	4
Agriculture Production - Crops	2801000003	3	Agricultural Services	4
Agriculture Production - Crops	2801000004	3	Agricultural Services	4
Agriculture Production - Crops	2801000005	3	Agricultural Services	4
Agriculture Production - Crops	2801000006	3	Agricultural Services	4
Agriculture Production - Crops	2801000007	3	Agricultural Services	4
Agriculture Production - Crops	2801000008	3	Agricultural Services	4
Agriculture Production - Crops	2801500000	3	Agricultural Services	4
Agriculture Production - Crops	2801520000	3	Agricultural Services	4
Agriculture Production - Crops	2801600000	3	Agricultural Services	4
Agriculture Production - Livestock	2805000000	3	Agricultural Services	3
Agriculture Production - Livestock	2805001000	3	Agricultural Services	3
Agriculture Production - Livestock	2805001001	3	Agricultural Services	3
Agriculture Production - Livestock	2805005000	3	Agricultural Services	3
Agriculture Production - Livestock	2805005001	3	Agricultural Services	3
Agriculture Production - Livestock	2805010000	3	Agricultural Services	1
Agriculture Production - Livestock	2805010001	3	Agricultural Services	3
Agriculture Production - Livestock	2805015000	3	Agricultural Services	3
Agriculture Production - Livestock	2805015001	3	Agricultural Services	3
Automotive Repair Shops	2840000000	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840000010	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840000020	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840000030	182	Automobile Parking, Repair & Services	4

CROSSWALK TABLE FOR FILENAME: PHY.SCC			*Justification Code Legend*	
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			5 = SCC assigned to BLS industry responsible for its manufacture	
			6 = General growth indicator	
		BLS		Justification
1st/2nd Level SCC Description	SCC	Code	BLS Description	Code
Automotive Repair Shops	2840000040	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840000050	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010000	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010010	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010020	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010030	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010040	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840010050	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020000	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020010	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020020	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020030	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020040	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840020050	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840030000	182	Automobile Parking, Repair & Services	4
Automotive Repair Shops	2840030010	182	Automobile Parking, Repair & Services	4
Miscellaneous Repair Shops	2841000000	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841000010	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841000020	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841000030	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841000040	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841000050	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010000	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010010	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010020	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010030	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010040	185	Misc. Repair Shops	1
Miscellaneous Repair Shops	2841010050	185	Misc. Repair Shops	1
Health Services	2850000000	194	Hospitals, Private	1
Health Services	2850000010	194	Hospitals, Private	1
Health Services	2850000030	194	Hospitals, Private	1

CROSSWALK TABLE FOR FILENAME: RES_FUEL.SCC		
Stationary Source Fuel Combustion: Residential		
	Fuel Type	SCC
AreaSources		
Stationary Source Fuel Combustion	Anthracite Coal	2104001000
Stationary Source Fuel Combustion	Bituminous/Subbituminous Coal	2104002000
Stationary Source Fuel Combustion	Distillate Oil	2104004000
Stationary Source Fuel Combustion	Kerosene	2104011000
Stationary Source Fuel Combustion	LPG	2104007000
Stationary Source Fuel Combustion	Natural Gas	2104006000
Stationary Source Fuel Combustion	Residual Oil	2104005000
Stationary Source Fuel Combustion	Wood	2104008000
Stationary Source Fuel Combustion	Wood	2104008001
Stationary Source Fuel Combustion	Wood	2104008010
Stationary Source Fuel Combustion	Wood	2104008030
Stationary Source Fuel Combustion	Wood	2104008050
Stationary Source Fuel Combustion	Wood	2104008051
Stationary Source Fuel Combustion	Wood	2104008052
Stationary Source Fuel Combustion	Wood	2104008053

APPENDIX D

EXAMPLE CROSSWALK OUTPUT FILES

1) **RES-FUEL.SCC** **HOMES Residential Fossil Fuels**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2104001000	1.1	1.3	1.4	1.4	1.1
01	005	2104001000	1.0	1.1	1.1	1.0	1.5

2) **COM-FUEL.SCC** **CSEMS Commercial Fossil Fuels**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2103005000	1.1	1.3	1.4	1.4	1.1
01	005	2103005000	1.0	1.1	1.1	1.0	1.5

3) **IND-FUEL.SCC** **INRAD Industrial Fossil Fuels**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2102003000	1.1	1.3	1.4	1.4	1.1
01	005	2102003000	1.0	1.1	1.1	1.0	1.5

4) **ELECTRIC.SCC** **Electric Demands**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2101004000	1.1	1.3	1.4	1.4	1.1
01	005	2101004000	1.0	1.1	1.1	1.0	1.5

5) **VMT.SCC** **VMT Transportation Demands**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2201001191	1.1	1.3	1.4	1.4	1.1
01	004	2201001000	1.0	1.1	1.1	1.0	1.5

6) **PHY.SCC** **PHYSICAL OUTPUT Demands**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
01	004	2304000000	1.1	1.3	1.4	1.4	1.1
01	005	2304000000	1.0	1.1	1.1	1.0	1.5

7) **OTHER.SCC** **Unmatched SSCs**

Years: 1993 - 1997

State	County	SCC	Growth Factor				
34	123	2304000000	1.0	1.0	1.0	1.0	1.0
34	124	2304000000	1.0	1.0	1.0	1.0	1.0

APPENDIX E

E-GAS OUTPUT FILES

STANDARD E-GAS OUTPUT	FILENAME.EXTENSION
Commercial Fuel Combustion File	COMM_FUEL.SCC
Electric Utility Fuel Combustion File	ELECTRIC.SCC
Industrial Fuel Combustion File	IND_FUEL.SCC
Miscellaneous Point and Area Source Processes File	OTHER.SCC
Point Source and Area Source Processes (Manufacturing) File	PHY.SCC
Residential Fuel Combustion File	RES_FUEL.SCC
Mobil Source (VMT) File	VMT_OUT.SCC

EPS OUTPUT	FILENAME.EXTENSION
Point Source File	PROJECT.PTS
Area/Mobile Source File	PROJECT.AMS

2-DIGIT SIC OUTPUT	FILENAME.EXTENSION
Commercial Fuel Combustion File	COM_FUEL.SIC
Electric Utility Fuel Combustion File	ELECTRIC.SIC
Industrial Fuel Combustion File	IND_FUEL.SIC
Point Source and Area Source Processes (Manufacturing) File	PHY.SIC

TECHNICAL REPORT DATA

(Please read Instructions on the reverse before completing)

1. REPORT NO. EPA-600/R-94-139b	2.	3. RECIPIENT'S ACCESSION NO.
4. TITLE AND SUBTITLE Economic Growth Analysis System: Reference Manual, Version 2.0		5. REPORT DATE August 1994
		6. PERFORMING ORGANIZATION CODE
7. AUTHOR(S) Randy Young, Karen [illegible], Randy [illegible], and Daniel [illegible]		8. PERFORMING ORGANIZATION REPORT NO.
9. PERFORMING ORGANIZATION NAME AND ADDRESS TRC Environmental Corporation 6340 Quadrangle Drive, Suite 200 Chapel Hill, North Carolina 27514		10. PROGRAM ELEMENT NO. [illegible]
		11. CONTRACT/GRANT NO. 68-D2-0181
12. SPONSORING AGENCY NAME AND ADDRESS EPA, Office of Research and Development Air and Energy Engineering Research Laboratory Research Triangle Park, NC 27711		13. TYPE OF REPORT AND PERIOD COVERED Final; [illegible]
		14. SPONSORING AGENCY CODE EPA/600/13

15. SUPPLEMENTARY NOTES AEERL project officer is [illegible]. The two-volume report [illegible] Reference Manual and a User's Guide [illegible] and appendices [illegible] related items.

16. ABSTRACT The two-volume report describes the development of, and provides information needed to operate, the Economic Growth Analysis System (E-GAS) Version 2.0 model. The model will be used to project emissions inventories of volatile organic compounds (VOCs), oxides of nitrogen (NOx), and carbon monoxide (CO) for ozone nonattainment areas and Regional Oxidant Model (ROM) modeling regions. The report details the design and development of E-GAS and includes detailed descriptions of the workings of the E-GAS [illegible] modeling software components and [illegible] software. The system is an economic and activity forecast model that [illegible] user's assumptions regarding regional economic [illegible] and [illegible] Source Classification Code (SCC) level growth factors. The [illegible] provides E-GAS users with sufficient background information to [illegible] and [illegible] the E-GAS model, as well as the [illegible] and [illegible] to [illegible] the system. The organization of the user's manual is [illegible] by the [illegible] of operating the system, providing images of sample screens as well as text.

17. KEY WORDS AND DOCUMENT ANALYSIS

a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
Pollution	Inventories	Pollution Control	13B
Forecasting	Nitrogen Oxides	Stationary Sources	[illegible]
Growth	Carbon Monoxide	Volatile Organic Com-	[illegible]
Analyzing	Ozone	pounds (VOCs)	[illegible]
Mathematical Models	Volatility		[illegible]
Emission	Organic Compounds		[illegible]

18. DISTRIBUTION STATEMENT Release to Public	19. SECURITY CLASS (This Report) Unclassified	21. NO. OF PAGES [illegible]
	20. SECURITY CLASS (This page) Unclassified	22. PRICE

EPA Form 2220-1 (9-73)

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