



State of Oregon  
Department of  
Environmental  
Quality

# Greenhouse Gas Emissions and Emissions Intensities for Consumption of Materials, Services, Fuels and Electricity

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*This report prepared by:*

*Oregon Department of Environmental Quality  
811 SW 6<sup>th</sup> Avenue  
Portland, OR 97204  
1-800-452-4011  
[www.oregon.gov/deq](http://www.oregon.gov/deq)*

*Contact:  
David Allaway  
503-229-5479*

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This technical report explores four related questions. It builds on the analysis conducted by Stockholm Environment Institute in its [Summary Report](#) and [Technical Report](#) and uses the same model (CBEI-LCA), with adjustments. The four questions are:

1. What greenhouse gas emissions are broadly associated with consumption (“final demand”) of electricity, fuels, materials and services?
2. What are the relative emissions intensities of electricity, fuels, materials and services?
3. How do the emissions intensities of materials compare with services?
4. Looking just at household consumption (final demand), which materials contribute higher-than-average GHG emissions and/or have higher-than-average emissions intensities?

# Question One

## What greenhouse gas emissions are broadly associated with final demand for electricity, fuels, materials and services?

All emissions in the consumption-based emissions inventory for Oregon can be traced back to final demand by households, governments and capital investment. Final demand is associated with 509 different commodities. These commodities can be grouped into four major groups: electricity, fuels, materials and services. Doing so provides a broad overview of how consumption contributes to emissions.

Grouping commodities into these four groups requires some effort, although “electricity” and “fuels” are relatively straightforward. “Electricity” includes all direct emissions associated with electricity use by consumers, as well as the estimate of pre-combustion emissions associated with the fuel cycle of fuels used to generate that electricity. “Fuels” include direct emissions associated with fuel use by consumers (the “use” phase, which is distinct from the three-phase LCA model), indirect (supply chain) emissions calculated by the three-phase LCA model, as well as three-phase LCA emissions for commodity sectors 396 (transportation: pipelines) and 407 (retail: gas stations). While some pipeline transportation is associated with electricity production and some gas station retail activities are associated with materials, these emissions are relatively small, so the consequence of any mis-allocation is also small.

Assigning the remaining emissions to either “materials” or “services” is a little more difficult. Several commodities are technically classified as “services,” although consumers purchase these services primarily for the materials associated with them. Restaurants and construction are two prime examples. Should these be classified as services or as materials? For these types of commodities, DEQ treated their emissions as potentially materials or services. In a “high materials emissions” approach, the emissions are all assigned to materials; in a “high services emissions” approach, these same emissions are all assigned to services.

A list of all 509 commodities and their associated major grouping is in the appendix to this report.

Figure 1 shows emissions. Consumption of materials is the largest contributor to consumption-based emissions (35 to 48 percent), followed by consumption of fuels (26 percent). Electricity consumption contributes 15 percent, while services contribute 11 to 24 percent. Please remember that “consumption” is not the same as “use.” “Consumption” is limited to purchases by households and government, and capital investments/inventory by businesses. It does not include other purchases by businesses. In the conventional GHG inventory for Oregon, use of electricity in 2005 contributed emissions (although only at the point of electricity generation) of 22.9 million metric tons of CO<sub>2</sub>e, considerably more than the 12.0 million metric tons associated with the smaller pool of what we call “consumption.”

**Figure 1.**  
**Oregon Consumption-Based Emissions from Consumption of Electricity, Fuels,**  
**Materials and Services**

<b>Major Group</b>	<b>2005 Consumption-Based Emissions (million MTCO<sub>2</sub>e)</b>	<b>Percent of Total Consumption-Based Emissions</b>
Electricity	12.0	15%
Fuels	20.1	26%
Materials		
High estimate	37.1	48%
Low estimate	27.5	35%
Midpoint	32.3	41%
Services		
High estimate	18.5	24%
Low estimate	8.8	11%
Midpoint	13.7	17%
<b>Total</b>	<b>78.1</b>	<b>100%</b>

## Question Two

### What are the relative emissions intensities of electricity, fuels, materials and services?

Using the same approach used to answer Question One, emissions intensities can also be calculated. Emissions intensities are the life-cycle emissions per dollar of consumption. Results are in Figure 2.

**Figure 2.**  
**Oregon Consumption-Based Emissions and Emissions Intensities from Consumption of Electricity, Fuels, Materials and Services**

Major Group	2005 Five-Phase Consumption-Based Emissions (million MTCO <sub>2e</sub> )	2005 Final Demand (million 2005\$)	Emissions Intensity (kg CO <sub>2e</sub> /2005\$)
Electricity	12.0	1,745	6.89
Fuels	20.1	3,466	5.81
Materials			
High estimate	37.1	68,322	0.54
Low estimate	27.5	49,445	0.56
Midpoint	32.3	58,883	0.55
Services			
High estimate	18.5	91,256	0.20
Low estimate	8.8	72,380	0.12
Midpoint	13.7	81,818	0.17
<b>Total</b>	<b>78.1</b>	<b>145,913</b>	<b>0.54</b>

Emissions and emissions intensities in Figure 2 above are five-phase (full life cycle), as opposed to the three-phase (upstream only, excluding use and disposal) emissions shown in Table 8 of Stockholm Environment Institute's Technical Report.

It is important to note that emissions intensities can change simply as commodity prices change. For example, fuel prices in 2011 are higher than they were in 2005, and so the emissions intensity of fuels has fallen (emissions per dollar are lower now, simply because one dollar doesn't purchase as much fuel as it did in 2005).

It is also interesting to observe that electricity and fuels – which traditionally have been the focus of climate action planning and outreach to consumers – have significantly higher emissions intensities than do materials or services (on average). This suggests that shifts in consumption from electricity and fuels to materials and services will result in overall reductions in emissions, with a relatively small rebound effect associated with the new consumption activity. Shifting consumption from average materials (0.55 kg CO<sub>2e</sub>/\$) to average services (0.16 kg CO<sub>2e</sub>/\$) will also result in overall reductions in emissions. Whether this is true in all cases is explored in the next question.

# Question Three

## How do the emissions intensities of materials compare with services?

Figure 2 shows that, on average, services have lower emissions intensities (0.12 – 0.20 kg CO<sub>2</sub>e/\$) than materials (0.54 – 0.56 kg CO<sub>2</sub>e/\$). But are there exceptions? Does a dollar spent on materials always lead to more emissions than a dollar spent on services?

To answer this question, DEQ examined emissions intensities of individual commodities, including 369 individual commodities classified as “materials” and 78 commodities classified as “services.” Within each of these two broad groups, commodities were ranked by emissions intensity, highest to lowest, then divided into quintiles.

Of the 78 “services,” only one (“waste management and remediation”) has an emissions intensity that overlaps with the top (highest) quintile of the 369 materials. All 77 other “services” have emissions intensities that overlap with the lowest (smallest) quintile of materials. In fact, all but the highest three ranking services overlap the lowest (smallest) decile (10 percent) of materials. Thus, most (90 percent or more) of materials have a higher emissions intensity than do most (75 of 78, or 96 percent) of the services evaluated.

One possible caveat is that emissions intensities for materials are calculated above use “producer prices,” without margins. Margins include wholesale, retail, and post-production transportation, and these activities add both to the cost, and the greenhouse gas impact, of materials. In Stockholm Environment Institute’s model, a consumer’s purchase of a cookie is treated as four (or more) separate purchases: a purchase from a cookie manufacturer, purchase of wholesale activity, purchase of retail activity, and purchase of one or more modes of freight (air, rail, truck, etc.). The actual emissions intensity for a consumer’s expenditure of \$1 on a cookie is thus a weighted average of the emissions intensity from the cookie maker, the wholesaler, the retailer and any pre-purchase transport. This is not the approach used above, which evaluated manufactured commodities independent of associated wholesale, retail and freight margins. In contrast to all of this, services are generally not margined. So the comparison above (comparing the emissions intensities of materials based on production emissions only, without margins, against the emissions intensities of services, which don’t have margins) is potentially misleading.

But does it matter? Not for transportation activities; transport has emissions intensities ranging from 0.61 kg CO<sub>2</sub>e/\$ (rail) to 2.12 kg CO<sub>2</sub>e/\$ (truck), well above all but the most intensive service, waste management (the second-highest emissions intensity, “other accommodations,” is only 0.43 kg CO<sub>2</sub>e/\$). The inclusion of transportation-related emissions would not lower the overall (weighted) emissions intensity of materials into the realm of overlapping any additional services. By contrast, the emissions intensity for wholesale is estimated at 0.14 kg CO<sub>2</sub>e/\$, while intensities for different retail sectors range from 0.11 to 0.20 kg CO<sub>2</sub>e/\$. These values overlap with the third and fourth quintiles for services.

Unless wholesale and retail margins are very large, weighted emissions intensities for most materials are still not expected to be lower than emissions intensities for most services. For example, consider the case where for every \$1 spent on materials, only \$0.55 goes to the producer (with the associated higher emissions intensities); \$0.15 goes to transport (for the purpose of example, assumed to be rail, with the lowest of all freight-related emissions intensities, at 0.61 kg CO<sub>2</sub>e/\$) and \$0.30 goes to wholesale and retail margins (with an average emissions intensity of

0.14 kg CO<sub>2e</sub>/\$. In this case, the “weighted” emissions intensities for materials fall considerably, but still not enough to substantially change the findings above. Of the 78 services, only one (waste management) still overlaps with the highest quintile for (weighted) materials; the service with the second-highest emissions intensity now overlaps with the fourth quintile for (weighted) materials, and the remaining 76 services still overlap with the lowest (smallest emissions intensity) quintile for weighted materials (with 73 of the 78 services overlapping with the lowest decile for materials).

Not included in this comparison are 21 commodities that DEQ classified as either “materials or services.” Most of these have emissions intensities that overlap with the top quintile of services and the bottom three quintiles of materials. The only exception is “air transportation,” which includes both air freight (“material”) and transport of people (“service”). With an emissions intensity of 2.0 kg CO<sub>2e</sub>/\$, it would fall squarely in the middle of the top quintile of materials.

## Question Four

### Looking just at household consumption (final demand), which materials contribute higher-than-average GHG emissions and/or have higher-than-average emissions intensities?

Emissions will differ between types of consumers. The scope of this question is limited just to households, as households are responsible for the large majority (81 percent) of consumption-based emissions. This analysis can be repeated for other consumers (government, business investment) if needed and as time allows.

DEQ examined household consumption for materials at both the subcategory and individual commodity levels. For example, 12 individual commodities were accounted for in one subcategory named ‘grains, baked goods, cereals.’

For this evaluation, only three-phase (pre-purchase) emissions are evaluated. Emissions associated with direct use by consumers and end-of-life management (disposal) are not included.

Broad subcategories of materials with the highest emissions include clothing (1.7 MMTCO<sub>2e</sub>), red meat (1.6 MMTCO<sub>2e</sub>), vehicles (1.4 MMTCO<sub>2e</sub>), dairy products (1.1 MMTCO<sub>2e</sub>), medicines (1.0 MMTCO<sub>2e</sub>) and household supplies (1.0 MMTCO<sub>2e</sub>).

Again, looking only at materials purchased by households, the subcategories of materials with the highest emissions intensities are “other animal products” (4.6 kg CO<sub>2e</sub>/), followed by dairy products (2.6 kg CO<sub>2e</sub>/), red meat (2.5 kg CO<sub>2e</sub>/), and a subcategory associated with mining of non-fuel minerals (2.4 kg CO<sub>2e</sub>/).

When 50 aggregated sub-categories that include materials are compared, only six sub-categories exceed both the average three-phase emissions and total emissions intensity:

- “Transportation services” have relatively high emissions intensity (1.91 kgCO<sub>2e</sub>/) and the highest overall three-phase emissions (2,740 thousand MTCO<sub>2e</sub>) of any subcategory involving materials consumed by households. This subcategory includes air, rail, water and truck transportation. It represents a hybrid of materials and services; not all of the emissions are associated with materials. But it is impossible to exactly parse out the contribution of materials (freight) from services (transport of people). Household emissions associated with water and truck transportation, which comprise 59 percent of the emissions, are largely related to consumption of materials, while household consumption of rail and air transportation is more divided between freight (materials) and personal travel.
- The sub-categories of “red meat” (emissions 1,630 thousand MTCO<sub>2e</sub>; intensity 2.5 kg CO<sub>2e</sub>/) and “dairy” (emissions 1,124 thousand MTCO<sub>2e</sub>; intensity 2.6 kg CO<sub>2e</sub>/) have relatively high emissions intensities and relatively high emissions.
- “Clothing” has high emissions (1,735 thousand MTCO<sub>2e</sub>) and above-average emissions intensity (1.1 kg CO<sub>2e</sub>/).
- “Fruit, nuts and vegetables” (emissions 734 thousand MTCO<sub>2e</sub>; intensity 1.1 kg CO<sub>2e</sub>/) and “poultry and eggs” (emissions 521 thousand MTCO<sub>2e</sub>; intensity 1.3 kg CO<sub>2e</sub>/) have above-average emissions and above-average emissions intensity.

When evaluating relevant materials as 230 individual commodities, model results are generally less precise. Regardless, materials with (non-use) household-related emissions in the highest quartile *and* emissions intensities also in the highest quartile include: several meats (beef, chicken, etc.), rice, several dairy products (milk, cheese, etc.), footwear, other leather products, fruit, vegetables, dolls/toys/games, paper and paperboard, greenhouse and nursery products, and pet food.

Although each of these commodities has both overall emissions and emissions intensities in the highest quartiles, there are still some significant differences among them. For example, rice milling has the highest emissions intensity (about 6.6 kg CO<sub>2</sub>e/\$), but emissions that are about 10 times smaller (107 thousand MTCO<sub>2</sub>e) than the three-phase emissions for non-poultry animal slaughtering (1,045 thousand MTCO<sub>2</sub>e). Full results for the materials in the top quartile for both household three-phase emissions and emissions intensities are shown in Figure 3.

**Figure 3.**  
**Three-phase Emissions and Emissions Intensities for Selected Commodities Consumed by Households**

Commodity name (IMPLAN commodity number)	Three-phase emissions (K MTCO <sub>2</sub> e)	Three-phase emissions intensity (kg CO <sub>2</sub> e/2005\$)
Animal (except poultry) slaughtering (67)	1,045	3.46
Rice milling (49)	107	6.62
Fluid milk manufacturing (62)	573	2.92
Animal production- except cattle and poultry (13)	122	4.59
Meat processed from carcasses (68)	585	1.69
Footwear manufacturing (110)	517	2.05
Cheese manufacturing (64)	368	2.82
Poultry processing (70)	454	1.24
Other leather product manufacturing (111)	162	2.03
Fruit farming (5)	205	1.57
Dry, condensed and evaporated dairy products (65)	127	1.77
Vegetable and melon farming (3)	215	1.36
Doll, toy and game manufacturing (382)	251	1.07
Paper and paperboard mills (125)	124	1.45
Greenhouse and nursery production (6)	137	1.30
Dog and cat food manufacturing (46)	132	1.05

In addition, air, truck and water transport, which all include the movement of freight, both contribute to emissions in the top quartile and have emissions intensities in the top quartile when compared against materials. As noted earlier, truck and water transportation are primarily associated with materials; air travel is associated with both freight and the movement of people. Freight-related emissions are associated with all freight for all commodities, including the many materials that are not otherwise included in the top quartile.

# **Appendix: Consumption Based Emissions Inventory Model Commodities Listed by Category**

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The following table lists all 509 commodities from the CBEI model, grouped first by category and then by subcategory, so that readers can easily understand which commodities contribute to each category and subcategory presented in this report. Categories and subcategories in this supplemental analysis are slightly different from SEI's reports. The table also shows for each commodity whether it was classified as "electricity", "fuels", "material", or "services" (or in a few cases, treated as either a "material" or a "service") for the purposes of answering the first two questions in this supplemental technical report.

ID	All commodities	DEQ Category	DEQ Sub-category	Material, Service, Electricity or Fuel
278	AC- refrigeration- and forced air heating	Appliances	Heating and cooling appliances	Material
277	Heating equipment- except warm air furnaces	Appliances	Heating and cooling appliances	Material
327	Electric housewares and household fan manufacturing	Appliances	Other appliances	Material
328	Household vacuum cleaner manufacturing	Appliances	Other appliances	Material
332	Other major household appliance manufacturing	Appliances	Other appliances	Material
329	Household cooking appliance manufacturing	Appliances	Ranges and microwaves	Material
330	Household refrigerator and home freezer manufactur	Appliances	Refrigerators and freezers	Material
331	Household laundry equipment manufacturing	Appliances	Washers and dryers	Material
108	Accessories and other apparel manufacturing	Clothing	Clothing	Material
107	Cut and sew apparel manufacturing	Clothing	Clothing	Material
110	Footwear manufacturing	Clothing	Clothing	Material
105	Other hosiery and sock mills	Clothing	Clothing	Material
111	Other leather product manufacturing	Clothing	Clothing	Material
104	Sheer hosiery mills	Clothing	Clothing	Material
191	Cement manufacturing	Construction	Concrete, cement and lime	Material
193	Concrete block and brick manufacturing	Construction	Concrete, cement and lime	Material
194	Concrete pipe manufacturing	Construction	Concrete, cement and lime	Material
196	Lime manufacturing	Construction	Concrete, cement and lime	Material
192	Ready-mix concrete manufacturing	Construction	Concrete, cement and lime	Material
38	Commercial and institutional buildings	Construction	Non-residential construction/remodeling	Material or service
39	Highway- street- bridge- and tunnel construction	Construction	Non-residential construction/remodeling	Material or service
42	Maintenance and repair of farm and nonfarm residen	Construction	Non-residential	Material or service

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Commodities Listed by Category**

ID	All commodities	DEQ Category	DEQ Sub-category	Material, Service, Electricity or Fuel
			construction/remodeling	
44	Maintenance and repair of highways- streets- bridg	Construction	Non-residential construction/remodeling	Material or service
43	Maintenance and repair of nonresidential buildings	Construction	Non-residential construction/remodeling	Material or service
37	Manufacturing and industrial buildings	Construction	Non-residential construction/remodeling	Material or service
45	Other maintenance and repair construction	Construction	Non-residential construction/remodeling	Material or service
41	Other new construction	Construction	Non-residential construction/remodeling	Material or service
40	Water- sewer- and pipeline construction	Construction	Non-residential construction/remodeling	Material or service
34	New multifamily housing structures- all	Construction	Residential construction and remodeling	Material or service
33	New residential 1-unit structures- all	Construction	Residential construction and remodeling	Material or service
35	New residential additions and alterations- all	Construction	Residential construction and remodeling	Material or service
442	Computer systems design Services	Electronics	Computer service and equipment	Service
304	Computer terminal manufacturing	Electronics	Computer service and equipment	Material
441	Custom computer programming Services	Electronics	Computer service and equipment	Service
424	Data processing Services	Electronics	Computer service and equipment	Service
443	Other computer related Services- including facilit	Electronics	Computer service and equipment	Service
322	Software reproducing	Electronics	Computer service and equipment	Service
303	Computer storage device manufacturing	Electronics	Computers and peripherals	Material
302	Electronic computer manufacturing	Electronics	Computers and peripherals	Material
305	Other computer peripheral equipment manufacturing	Electronics	Computers and peripherals	Material
309	Audio and video equipment manufacturing	Electronics	Other electronics	Material
307	Broadcast and wireless communications equipment	Electronics	Other electronics	Material
272	Photographic and photocopying equipment manufactur	Electronics	Other electronics	Material
306	Telephone apparatus manufacturing	Electronics	Other electronics	Material

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<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
86	Breweries	Food and beverages	Beverages	Material
80	Coffee and tea manufacturing	Food and beverages	Beverages	Material
88	Distilleries	Food and beverages	Beverages	Material
85	Soft drink and ice manufacturing	Food and beverages	Beverages	Material
87	Wineries	Food and beverages	Beverages	Material
54	Fats and oils refining and blending	Food and beverages	Condiments, oils and sweeteners	Material
82	Mayonnaise- dressing- and sauce manufacturing	Food and beverages	Condiments, oils and sweeteners	Material
53	Other oilseed processing	Food and beverages	Condiments, oils and sweeteners	Material
83	Spice and extract manufacturing	Food and beverages	Condiments, oils and sweeteners	Material
56	Sugar manufacturing	Food and beverages	Condiments, oils and sweeteners	Material
51	Wet corn milling	Food and beverages	Condiments, oils and sweeteners	Material
64	Cheese manufacturing	Food and beverages	Dairy	Material
63	Creamery butter manufacturing	Food and beverages	Dairy	Material
65	Dry- condensed- and evaporated dairy products	Food and beverages	Dairy	Material
62	Fluid milk manufacturing	Food and beverages	Dairy	Material
66	Ice cream and frozen dessert manufacturing	Food and beverages	Dairy	Material
72	Frozen cakes and other pastries manufacturing	Food and beverages	Frozen food	Material
60	Frozen food manufacturing	Food and beverages	Frozen food	Material
61	Fruit and vegetable canning and drying	Food and	Fruit, nuts and vegetables	Material

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		beverages		
5	Fruit farming	Food and beverages	Fruit, nuts and vegetables	Material
78	Roasted nuts and peanut butter manufacturing	Food and beverages	Fruit, nuts and vegetables	Material
4	Tree nut farming	Food and beverages	Fruit, nuts and vegetables	Material
3	Vegetable and melon farming	Food and beverages	Fruit, nuts and vegetables	Material
73	Bread and bakery product- except frozen- manufactu	Food and beverages	Grains, baked goods, cereals	Material
55	Breakfast cereal manufacturing	Food and beverages	Grains, baked goods, cereals	Material
58	Confectionery manufacturing from purchased chocola	Food and beverages	Grains, baked goods, cereals	Material
74	Cookie and cracker manufacturing	Food and beverages	Grains, baked goods, cereals	Material
76	Dry pasta manufacturing	Food and beverages	Grains, baked goods, cereals	Material
48	Flour milling	Food and beverages	Grains, baked goods, cereals	Material
2	Grain farming	Food and beverages	Grains, baked goods, cereals	Material
75	Mixes and dough made from purchased flour	Food and beverages	Grains, baked goods, cereals	Material
59	Nonchocolate confectionery manufacturing	Food and beverages	Grains, baked goods, cereals	Material
79	Other snack food manufacturing	Food and beverages	Grains, baked goods, cereals	Material
49	Rice milling	Food and beverages	Grains, baked goods, cereals	Material
77	Tortilla manufacturing	Food and beverages	Grains, baked goods, cereals	Material
13	Animal production- except cattle and poultry and e	Food and beverages	Other animal products	Material
10	All other crop farming	Food and beverages	Other food and agriculture	Material

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<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
84	All other food manufacturing	Food and beverages	Other food and agriculture	Material
57	Confectionery manufacturing from cacao beans	Food and beverages	Other food and agriculture	Material
8	Cotton farming	Food and beverages	Other food and agriculture	Material
1	Oilseed farming	Food and beverages	Other food and agriculture	Material
52	Soybean processing	Food and beverages	Other food and agriculture	Material
9	Sugarcane and sugar beet farming	Food and beverages	Other food and agriculture	Material
7	Tobacco farming	Food and beverages	Other food and agriculture	Material
89	Tobacco stemming and redrying	Food and beverages	Other food and agriculture	Material
46	Dog and cat food manufacturing	Food and beverages	Pet food	Material
47	Other animal food manufacturing	Food and beverages	Pet food	Material
12	Poultry and egg production	Food and beverages	Poultry and eggs	Material
70	Poultry processing	Food and beverages	Poultry and eggs	Material
67	Animal- except poultry- slaughtering	Food and beverages	Red meat	Material
68	Meat processed from carcasses	Food and beverages	Red meat	Material
481	Food Services and drinking places	Food and beverages	Restaurants	Material or service
16	Fishing	Food and beverages	Seafood	Material
71	Seafood product preparation and packaging	Food and beverages	Seafood	Material
227	All other forging and stamping	Foundries, metal processing	Foundries, metal processing	Material

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208	Alumina refining	Foundries, metal processing	Foundries, metal processing	Material
222	Aluminum foundries	Foundries, metal processing	Foundries, metal processing	Material
211	Aluminum sheet- plate- and foil manufacturing	Foundries, metal processing	Foundries, metal processing	Material
216	Copper rolling- drawing- and extruding	Foundries, metal processing	Foundries, metal processing	Material
204	Ferroalloy and related product manufacturing	Foundries, metal processing	Foundries, metal processing	Material
221	Ferrous metal foundaries	Foundries, metal processing	Foundries, metal processing	Material
224	Iron and steel forging	Foundries, metal processing	Foundries, metal processing	Material
203	Iron and steel mills	Foundries, metal processing	Foundries, metal processing	Material
245	Metal heat treating	Foundries, metal processing	Foundries, metal processing	Material
225	Nonferrous forging	Foundries, metal processing	Foundries, metal processing	Material
219	Nonferrous metal- except copper and aluminum- shap	Foundries, metal processing	Foundries, metal processing	Material
213	Other aluminum rolling and drawing	Foundries, metal processing	Foundries, metal processing	Material
209	Primary aluminum production	Foundries,	Foundries, metal processing	Material

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		metal processing		
215	Primary nonferrous metal- except copper and alumin	Foundries, metal processing	Foundries, metal processing	Material
214	Primary smelting and refining of copper	Foundries, metal processing	Foundries, metal processing	Material
220	Secondary processing of other nonferrous	Foundries, metal processing	Foundries, metal processing	Material
207	Steel wire drawing	Foundries, metal processing	Foundries, metal processing	Material
142	Petroleum refineries	Fuel and utilities	Gasoline, heating fuels, other petroleum products	Fuel
31	Natural gas distribution	Fuel and utilities	Natural gas distribution	Fuel
30	Power generation and supply	Fuel and utilities	Power generation and supply	Electricity
32	Water- sewage and other systems	Fuel and utilities	Water- sewage and other systems	Material or service
464	Home health care Services	Healthcare	Healthcare services	Service
467	Hospitals	Healthcare	Healthcare services	Service
468	Nursing and residential care facilities	Healthcare	Healthcare services	Service
465	Offices of physicians- dentists- and other health	Healthcare	Healthcare services	Service
466	Other ambulatory health care Services	Healthcare	Healthcare services	Service
160	Pharmaceutical and medicine manufacturing	Healthcare	Medicines	Material
135	All other converted paper product manufacturing	Manufactures	Forestries, mills, paper	Material
129	Coated and laminated paper and packaging materials	Manufactures	Forestries, mills, paper	Material
130	Coated and uncoated paper bag manufacturing	Manufactures	Forestries, mills, paper	Material
118	Cut stock- resawing lumber- and planing	Manufactures	Forestries, mills, paper	Material
131	Die-cut paper office supplies manufacturing	Manufactures	Forestries, mills, paper	Material

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132	Envelope manufacturing	Manufactures	Forestries, mills, paper	Material
15	Forest nurseries- forest products- and timber trac	Manufactures	Forestries, mills, paper	Material
14	Logging	Manufactures	Forestries, mills, paper	Material
126	Paperboard container manufacturing	Manufactures	Forestries, mills, paper	Material
124	Pulp mills	Manufactures	Forestries, mills, paper	Material
112	Sawmills	Manufactures	Forestries, mills, paper	Material
133	Stationery and related product manufacturing	Manufactures	Forestries, mills, paper	Material
289	Air and gas compressor manufacturing	Manufactures	Machinery manufacture	Material
275	Air purification equipment manufacturing	Manufactures	Machinery manufacture	Material
269	All other industrial machinery manufacturing	Manufactures	Machinery manufacture	Material
319	Analytical laboratory instrument manufacturing	Manufactures	Machinery manufacture	Material
315	Automatic environmental control manufacturing	Manufactures	Machinery manufacture	Material
485	Commercial machinery repair and maintenance	Manufactures	Machinery manufacture	Service
259	Construction machinery manufacturing	Manufactures	Machinery manufacture	Material
292	Conveyor and conveying equipment manufacturing	Manufactures	Machinery manufacture	Material
283	Cutting tool and machine tool accessory manufactur	Manufactures	Machinery manufacture	Material
333	Electric power and specialty transformer manufactu	Manufactures	Machinery manufacture	Material
318	Electricity and signal testing instruments	Manufactures	Machinery manufacture	Material
313	Electromedical apparatus manufacturing	Manufactures	Machinery manufacture	Material
257	Farm machinery and equipment manufacturing	Manufactures	Machinery manufacture	Material
299	Fluid power cylinder and actuator manufacturing	Manufactures	Machinery manufacture	Material
300	Fluid power pump and motor manufacturing	Manufactures	Machinery manufacture	Material
267	Food product machinery manufacturing	Manufactures	Machinery manufacture	Material
276	Industrial and commercial fan and blower manufactu	Manufactures	Machinery manufacture	Material
279	Industrial mold manufacturing	Manufactures	Machinery manufacture	Material
298	Industrial process furnace and oven manufacturing	Manufactures	Machinery manufacture	Material
316	Industrial process variable instruments	Manufactures	Machinery manufacture	Material
320	Irradiation apparatus manufacturing	Manufactures	Machinery manufacture	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
290	Measuring and dispensing pump manufacturing	Manufactures	Machinery manufacture	Material
280	Metal cutting machine tool manufacturing	Manufactures	Machinery manufacture	Material
281	Metal forming machine tool manufacturing	Manufactures	Machinery manufacture	Material
260	Mining machinery and equipment manufacturing	Manufactures	Machinery manufacture	Material
343	Miscellaneous electrical equipment manufacturing	Manufactures	Machinery manufacture	Material
270	Office machinery manufacturing	Manufactures	Machinery manufacture	Material
261	Oil and gas field machinery and equipment	Manufactures	Machinery manufacture	Material
271	Optical instrument and lens manufacturing	Manufactures	Machinery manufacture	Material
273	Other commercial and service industry machinery ma	Manufactures	Machinery manufacture	Material
308	Other communications equipment manufacturing	Manufactures	Machinery manufacture	Material
286	Other engine equipment manufacturing	Manufactures	Machinery manufacture	Material
297	Packaging machinery manufacturing	Manufactures	Machinery manufacture	Material
264	Paper industry machinery manufacturing	Manufactures	Machinery manufacture	Material
263	Plastics and rubber industry machinery	Manufactures	Machinery manufacture	Material
238	Power boiler and heat exchanger manufacturing	Manufactures	Machinery manufacture	Material
266	Printing machinery and equipment manufacturing	Manufactures	Machinery manufacture	Material
288	Pump and pumping equipment manufacturing	Manufactures	Machinery manufacture	Material
336	Relay and industrial control manufacturing	Manufactures	Machinery manufacture	Material
284	Rolling mill and other metalworking machinery	Manufactures	Machinery manufacture	Material
314	Search- detection- and navigation instruments	Manufactures	Machinery manufacture	Material
268	Semiconductor machinery manufacturing	Manufactures	Machinery manufacture	Material
311	Semiconductors and related device manufacturing	Manufactures	Machinery manufacture	Material
282	Special tool- die- jig- and fixture manufacturing	Manufactures	Machinery manufacture	Material
287	Speed changers and mechanical power transmission e	Manufactures	Machinery manufacture	Material
335	Switchgear and switchboard apparatus manufacturing	Manufactures	Machinery manufacture	Material
265	Textile machinery manufacturing	Manufactures	Machinery manufacture	Material
317	Totalizing fluid meters and counting devices	Manufactures	Machinery manufacture	Material
285	Turbine and turbine generator set units manufactur	Manufactures	Machinery manufacture	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
296	Welding and soldering equipment manufacturing	Manufactures	Machinery manufacture	Material
341	Wiring device manufacturing	Manufactures	Machinery manufacture	Material
352	Aircraft engine and engine parts manufacturing	Manufactures	Missiles, weapons	Material
351	Aircraft manufacturing	Manufactures	Aircraft manufacturing	Material
256	Ammunition manufacturing	Manufactures	Weapons and ammunition	Material
354	Guided missile and space vehicle manufacturing	Manufactures	Missiles, weapons	Material
345	Heavy duty truck manufacturing	Manufactures	Missiles, weapons	Material
294	Industrial truck- trailer- and stacker manufacturi	Manufactures	Missiles, weapons	Material
360	Military armored vehicles and tank parts manufactu	Manufactures	Missiles, weapons	Material
353	Other aircraft parts and equipment	Manufactures	Missiles, weapons	Material
251	Other ordnance and accessories manufacturing	Manufactures	Missiles, weapons	Material
293	Overhead cranes- hoists- and monorail systems	Manufactures	Missiles, weapons	Material
355	Propulsion units and parts for space vehicles and	Manufactures	Missiles, weapons	Material
356	Railroad rolling stock manufacturing	Manufactures	Missiles, weapons	Material
357	Ship building and repairing	Manufactures	Missiles, weapons	Material
347	Truck trailer manufacturing	Manufactures	Missiles, weapons	Material
121	Manufactured home- mobile home- manufacturing	Manufactures	Mobile homes	Material
295	Power-driven handtool manufacturing	Manufactures	Handtools	Material
198	Abrasive product manufacturing	Manufactures	Misc other manufactured goods	Material
162	Adhesive manufacturing	Manufactures	Misc other manufactured goods	Material
312	All other electronic component manufacturing	Manufactures	Misc other manufactured goods	Material
361	All other transportation equipment manufactur	Manufactures	Misc other manufactured goods	Material
212	Aluminum extruded product manufacturing	Manufactures	Misc other manufactured goods	Material
143	Asphalt paving mixture and block manufacturing	Manufactures	Misc other manufactured goods	Material
144	Asphalt shingle and coating materials manufacturin	Manufactures	Misc other manufactured goods	Material
323	Audio and video media reproduction	Manufactures	Misc other manufactured goods	Material
274	Automatic vending- commercial laundry and dryclean	Manufactures	Misc other manufactured goods	Material
249	Ball and roller bearing manufacturing	Manufactures	Misc other manufactured goods	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
138	Blankbook and looseleaf binder manufacturing	Manufactures	Office supplies	Material
137	Books printing	Manufactures	Misc other manufactured goods	Material
185	Brick and structural clay tile manufacturing	Manufactures	Misc other manufactured goods	Material
93	Broadwoven fabric mills	Manufactures	Fabric and textiles manufacturing	Material
388	Burial casket manufacturing	Manufactures	Misc other manufactured goods	Material
389	Buttons- pins- and all other miscellaneous manufac	Manufactures	Misc other manufactured goods	Material
342	Carbon and graphite product manufacturing	Manufactures	Misc other manufactured goods	Material
154	Cellulosic organic fiber manufacturing	Manufactures	Misc other manufactured goods	Material
186	Ceramic wall and floor tile manufacturing	Manufactures	Misc other manufactured goods	Material
188	Clay refractory and other structural clay products	Manufactures	Misc other manufactured goods	Material
139	Commercial printing	Manufactures	Misc other manufactured goods	Material
217	Copper wire- except mechanical- drawing	Manufactures	Misc other manufactured goods	Material
369	Custom architectural woodwork and millwork	Manufactures	Misc other manufactured goods	Material
169	Custom compounding of purchased resins	Manufactures	Misc other manufactured goods	Material
226	Custom roll forming	Manufactures	Misc other manufactured goods	Material
199	Cut stone and stone product manufacturing	Manufactures	Misc other manufactured goods	Material
416	Database- directory- and other publishers	Manufactures	Misc other manufactured goods	Material
377	Dental equipment and supplies manufacturing	Manufactures	Misc other manufactured goods	Material
379	Dental laboratories	Manufactures	Misc other manufactured goods	Material
310	Electron tube manufacturing	Manufactures	Misc other manufactured goods	Material
247	Electroplating- anodizing- and coloring metal	Manufactures	Misc other manufactured goods	Material
291	Elevator and moving stairway manufacturing	Manufactures	Misc other manufactured goods	Material
254	Enameled iron and metal sanitary ware manufacturin	Manufactures	Misc other manufactured goods	Material
116	Engineered wood member and truss manufacturing	Manufactures	Misc other manufactured goods	Material
168	Explosives manufacturing	Manufactures	Misc other manufactured goods	Material
98	Fabric coating mills	Manufactures	Misc other manufactured goods	Material
252	Fabricated pipe and pipe fitting manufacturing	Manufactures	Misc other manufactured goods	Material
233	Fabricated structural metal manufacturing	Manufactures	Misc other manufactured goods	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
158	Fertilizer- mixing only- manufacturing	Manufactures	Misc other manufactured goods	Material
339	Fiber optic cable manufacturing	Manufactures	Misc other manufactured goods	Material
92	Fiber- yarn- and thread mills	Manufactures	Fabric and textiles manufacturing	Material
81	Flavoring syrup and concentrate manufacturing	Manufactures	Misc other manufactured goods	Material
127	Flexible packaging foil manufacturing	Manufactures	Misc other manufactured goods	Material
178	Foam product manufacturing	Manufactures	Misc other manufactured goods	Material
385	Gasket- packing- and sealing device manufacturing	Manufactures	Misc other manufactured goods	Material
189	Glass container manufacturing	Manufactures	Misc other manufactured goods	Material
200	Ground or treated minerals and earths manufacturin	Manufactures	Misc other manufactured goods	Material
197	Gypsum product manufacturing	Manufactures	Misc other manufactured goods	Material
241	Hardware manufacturing	Manufactures	Misc other manufactured goods	Material
253	Industrial pattern manufacturing	Manufactures	Misc other manufactured goods	Material
366	Institutional furniture manufacturing	Manufactures	Furnishings	Material
205	Iron- steel pipe and tube from purchased steel	Manufactures	Misc other manufactured goods	Material
374	Laboratory apparatus and furniture manufacturing	Manufactures	Misc other manufactured goods	Material
174	Laminated plastics plate- sheet- and shapes	Manufactures	Misc other manufactured goods	Material
109	Leather and hide tanning and finishing	Manufactures	Misc other manufactured goods	Material
243	Machine shops	Manufactures	Misc other manufactured goods	Material
324	Magnetic and optical recording media manufacturing	Manufactures	Misc other manufactured goods	Material
50	Malt manufacturing	Manufactures	Misc other manufactured goods	Material
136	Manifold business forms printing	Manufactures	Office supplies	Material
240	Metal can- box- and other container manufacturing	Manufactures	Misc other manufactured goods	Material
246	Metal coating and nonprecious engraving	Manufactures	Misc other manufactured goods	Material
239	Metal tank- heavy gauge- manufacturing	Manufactures	Misc other manufactured goods	Material
248	Metal valve manufacturing	Manufactures	Misc other manufactured goods	Material
235	Metal window and door manufacturing	Manufactures	Misc other manufactured goods	Material
201	Mineral wool manufacturing	Manufactures	Misc other manufactured goods	Material
255	Miscellaneous fabricated metal product manufacturi	Manufactures	Misc other manufactured goods	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
202	Miscellaneous nonmetallic mineral products	Manufactures	Misc other manufactured goods	Material
123	Miscellaneous wood product manufacturing	Manufactures	Misc other manufactured goods	Material
334	Motor and generator manufacturing	Manufactures	Misc other manufactured goods	Material
346	Motor vehicle body manufacturing	Manufactures	Misc other manufactured goods	Material
94	Narrow fabric mills and schiffli embroidery	Manufactures	Fabric and textiles manufacturing	Material
36	New farm housing units	Manufactures	Misc other manufactured goods	Material
156	Nitrogenous fertilizer manufacturing	Manufactures	Lawn and garden	Material
155	Noncellulosic organic fiber manufacturing	Manufactures	Misc other manufactured goods	Material
187	Nonclay refractory manufacturing	Manufactures	Misc other manufactured goods	Material
223	Nonferrous foundries- except aluminum	Manufactures	Misc other manufactured goods	Material
95	Nonwoven fabric mills	Manufactures	Fabric and textiles manufacturing	Material
370	Office furniture- except wood- manufacturing	Manufactures	Misc other manufactured goods	Material
237	Ornamental and architectural metal work manufactur	Manufactures	Misc other manufactured goods	Material
106	Other apparel knitting mills	Manufactures	Misc other manufactured goods	Material
150	Other basic inorganic chemical manufacturing	Manufactures	Misc other manufactured goods	Material
151	Other basic organic chemical manufacturing	Manufactures	Misc other manufactured goods	Material
340	Other communication and energy wire manufacturing	Manufactures	Misc other manufactured goods	Material
195	Other concrete product manufacturing	Manufactures	Misc other manufactured goods	Material
367	Other household and institutional furniture	Manufactures	Furnishings	Material
119	Other millwork- including flooring	Manufactures	Misc other manufactured goods	Material
171	Other miscellaneous chemical product manufacturing	Manufactures	Misc other manufactured goods	Material
103	Other miscellaneous textile product mills	Manufactures	Fabric and textiles manufacturing	Material
181	Other rubber product manufacturing	Manufactures	Misc other manufactured goods	Material
161	Paint and coating manufacturing	Manufactures	Misc other manufactured goods	Material
157	Phosphatic fertilizer manufacturing	Manufactures	Lawn and garden	Material
170	Photographic film and chemical manufacturing	Manufactures	Misc other manufactured goods	Material
175	Plastics bottle manufacturing	Manufactures	Misc other manufactured goods	Material
152	Plastics material and resin manufacturing	Manufactures	Misc other manufactured goods	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
173	Plastics pipe- fittings- and profile shapes	Manufactures	Misc other manufactured goods	Material
177	Plastics plumbing fixtures and all other plastics	Manufactures	Misc other manufactured goods	Material
234	Plate work manufacturing	Manufactures	Misc other manufactured goods	Material
184	Porcelain electrical supply manufacturing	Manufactures	Misc other manufactured goods	Material
122	Prefabricated wood building manufacturing	Manufactures	Misc other manufactured goods	Material
167	Printing ink manufacturing	Manufactures	Misc other manufactured goods	Material
114	Reconstituted wood product manufacturing	Manufactures	Misc other manufactured goods	Material
69	Rendering and meat byproduct processing	Manufactures	Misc other manufactured goods	Material
176	Resilient floor covering manufacturing	Manufactures	Misc other manufactured goods	Material
206	Rolled steel shape manufacturing	Manufactures	Misc other manufactured goods	Material
180	Rubber and plastics hose and belting manufacturing	Manufactures	Misc other manufactured goods	Material
230	Saw blade and handsaw manufacturing	Manufactures	Handtools	Material
262	Sawmill and woodworking machinery	Manufactures	Misc other manufactured goods	Material
301	Scales- balances- and miscellaneous general purpos	Manufactures	Misc other manufactured goods	Material
218	Secondary processing of copper	Manufactures	Misc other manufactured goods	Material
210	Secondary smelting and alloying of aluminum	Manufactures	Misc other manufactured goods	Material
236	Sheet metal work manufacturing	Manufactures	Misc other manufactured goods	Material
371	Showcases- partitions- shelving- and lockers	Manufactures	Misc other manufactured goods	Material
384	Sign manufacturing	Manufactures	Misc other manufactured goods	Material
250	Small arms manufacturing	Manufactures	Weapons and ammunition	Material
242	Spring and wire product manufacturing	Manufactures	Misc other manufactured goods	Material
165	Surface active agent manufacturing	Manufactures	Misc other manufactured goods	Material
128	Surface-coated paperboard manufacturing	Manufactures	Misc other manufactured goods	Material
375	Surgical and medical instrument manufacturing	Manufactures	Misc other manufactured goods	Material
376	Surgical appliance and supplies manufacturing	Manufactures	Misc other manufactured goods	Material
149	Synthetic dye and pigment manufacturing	Manufactures	Misc other manufactured goods	Material
153	Synthetic rubber manufacturing	Manufactures	Misc other manufactured goods	Material
97	Textile and fabric finishing mills	Manufactures	Fabric and textiles manufacturing	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
101	Textile bag and canvas mills	Manufactures	Fabric and textiles manufacturing	Material
102	Tire cord and tire fabric mills	Manufactures	Misc other manufactured goods	Material
140	Tradebinding and related work	Manufactures	Misc other manufactured goods	Material
244	Turned product and screw- nut- and bolt manufactur	Manufactures	Misc other manufactured goods	Material
115	Veneer and plywood manufacturing	Manufactures	Misc other manufactured goods	Material
182	Vitreous china plumbing fixture manufacturing	Manufactures	Misc other manufactured goods	Material
120	Wood container and pallet manufacturing	Manufactures	Misc other manufactured goods	Material
362	Wood kitchen cabinet and countertop manufacturing	Manufactures	Misc other manufactured goods	Material
368	Wood office furniture manufacturing	Manufactures	Furnishings	Material
113	Wood preservation	Manufactures	Misc other manufactured goods	Material
117	Wood windows and door manufacturing	Manufactures	Misc other manufactured goods	Material
232	Prefabricated metal buildings and components	Manufactures	Misc other manufactured goods	Material
373	Blind and shade manufacturing	Media and furnishings	Furnishings	Material
99	Carpet and rug mills	Media and furnishings	Furnishings	Material
100	Curtain and linen mills	Media and furnishings	Furnishings	Material
372	Mattress manufacturing	Media and furnishings	Furnishings	Material
365	Metal household furniture manufacturing	Media and furnishings	Furnishings	Material
364	Nonupholstered wood household furniture manufactur	Media and furnishings	Furnishings	Material
363	Upholstered household furniture manufacturing	Media and furnishings	Furnishings	Material
387	Broom- brush- and mop manufacturing	Media and furnishings	Household supplies	Material
228	Cutlery and flatware- except precious- manufacturi	Media and furnishings	Household supplies	Material
325	Electric lamp bulb and part manufacturing	Media and furnishings	Household supplies	Material
190	Glass and glass products- except glass containers	Media and	Household supplies	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
		furnishings		
229	Hand and edge tool manufacturing	Media and furnishings	Household supplies	Material
380	Jewelry and silverware manufacturing	Media and furnishings	Household supplies	Material
231	Kitchen utensil- pot- and pan manufacturing	Media and furnishings	Household supplies	Material
378	Ophthalmic goods manufacturing	Media and furnishings	Household supplies	Material
172	Plastics packaging materials- film and sheet	Media and furnishings	Household supplies	Material
164	Polish and other sanitation good manufacturing	Media and furnishings	Household supplies	Material
338	Primary battery manufacturing	Media and furnishings	Household supplies	Material
134	Sanitary paper product manufacturing	Media and furnishings	Household supplies	Material
163	Soap and other detergent manufacturing	Media and furnishings	Household supplies	Material
337	Storage battery manufacturing	Media and furnishings	Household supplies	Material
166	Toilet preparation manufacturing	Media and furnishings	Household supplies	Material
183	Vitreous china and earthenware articles manufactur	Media and furnishings	Household supplies	Material
6	Greenhouse and nursery production	Media and furnishings	Lawn and garden	Material
258	Lawn and garden equipment manufacturing	Media and furnishings	Lawn and garden	Material
159	Pesticide and other agricultural chemical manufact	Media and furnishings	Lawn and garden	Material
326	Lighting fixture manufacturing	Media and furnishings	Lighting fixtures	Material
415	Book publishers	Media and furnishings	Media	Material
382	Doll- toy- and game manufacturing	Media and furnishings	Dolls, toys games, sporting goods, and musical instruments	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
418	Motion picture and video industries	Media and furnishings	Media	Material or service
413	Newspaper publishers	Media and furnishings	Media	Material
414	Periodical publishers	Media and furnishings	Media	Material
419	Sound recording industries	Media and furnishings	Media	Material or service
383	Office supplies- except paper- manufacturing	Media and furnishings	Office supplies	Material
125	Paper and paperboard mills	Media and furnishings	Office supplies	Material
417	Software publishers	Media and furnishings	Office supplies	Service
386	Musical instrument manufacturing	Media and furnishings	Dolls, toys games, sporting goods, and musical instruments	Material
381	Sporting and athletic goods manufacturing	Media and furnishings	Dolls, toys games, sporting goods, and musical instruments	Material
321	Watch- clock- and other measuring and controlling	Media and furnishings	Household supplies	Material
146	All other petroleum and coal products manufacturin	Mining, oil and gas	Oil and gas	Material
27	Drilling oil and gas wells	Mining, oil and gas	Oil and gas	Material
148	Industrial gas manufacturing	Mining, oil and gas	Oil and gas	Material
19	Oil and gas extraction	Mining, oil and gas	Oil and gas	Material
147	Petrochemical manufacturing	Mining, oil and gas	Oil and gas	Material
28	Support activities for oil and gas operations	Mining, oil and gas	Oil and gas	Material
20	Coal mining	Mining, oil and gas	Other mining	Material
22	Copper- nickel- lead- and zinc mining	Mining, oil and gas	Other mining	Material
23	Gold- silver- and other metal ore mining	Mining, oil and	Other mining	Material

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

ID	All commodities	DEQ Category	DEQ Sub-category	Material, Service, Electricity or Fuel
		gas		
21	Iron ore mining	Mining, oil and gas	Other mining	Material
26	Other nonmetallic mineral mining	Mining, oil and gas	Other mining	Material
25	Sand- gravel- clay- and refractory mining	Mining, oil and gas	Other mining	Material
24	Stone mining and quarrying	Mining, oil and gas	Other mining	Material
29	Support activities for other mining	Mining, oil and gas	Other mining	Material
11	Cattle ranching and farming	Other	Other	Material
90	Cigarette manufacturing	Other	Tobacco products	Material
495	Federal electric utilities	Other	Other	Service
505	Federal Military	Other	Other	Service
506	Federal Non-Military	Other	Other	Service
17	Hunting and trapping	Other	Other	Material
508	Inventory valuation adjustment	Other	Other	Service
96	Knit fabric mills	Other	Fabric and textiles manufacturing	Material
436	Lessors of nonfinancial intangible assets	Other	Other	Service
451	Management of companies and enterprises	Other	Other	Service
500	Noncomparable imports	Other	Other	Service
496	Other Federal Government enterprises	Other	Other	Service
91	Other tobacco product manufacturing	Other	Tobacco products	Material
509	Owner-occupied dwellings	Other	Other	Service
494	Private households	Other	Other	Service
507	Rest of the world adjustment to final uses	Other	Other	Service
501	Scrap	Other	Other	Material
503	State & Local Education	Other	Other	Service
504	State & Local Non-Education	Other	Other	Service

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Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
498	State and local government electric utilities	Other	Other	Service
497	State and local government passenger transit	Other	Other	Service
502	Used and secondhand goods	Other	Other	Service
404	Building material and garden supply stores	Retailers	Retailers	Material
408	Clothing and clothing accessories stores	Retailers	Retailers	Material
403	Electronics and appliance stores	Retailers	Retailers	Material
405	Food and beverage stores	Retailers	Retailers	Material
402	Furniture and home furnishings stores	Retailers	Retailers	Material
407	Gasoline stations	Retailers	Retailers	Fuel
410	General merchandise stores	Retailers	Retailers	Material
406	Health and personal care stores	Retailers	Retailers	Material
411	Miscellaneous store retailers	Retailers	Retailers	Material
401	Motor vehicle and parts dealers	Retailers	Retailers	Material
412	Nonstore retailers	Retailers	Retailers	Material
409	Sporting goods- hobby- book and music stores	Retailers	Retailers	Material
429	Funds- trusts- and other financial vehicles	Services	Banks and financial services	Service
430	Monetary authorities and depository credit interme	Services	Banks and financial services	Service
425	Nondepository credit intermediation and related a	Services	Banks and financial services	Service
426	Securities- commodity contracts- investments	Services	Banks and financial services	Service
458	Services to buildings and dwellings	Services	Building services	Service
432	Automotive equipment rental and leasing	Services	Car rental and leasing	Material
483	Automotive repair and maintenance- except car wash	Services	Car rental, repair and wash	Service
482	Car washes	Services	Car rental, repair and wash	Service
469	Child day care Services	Services	Education and day care	Service
462	Colleges- universities- and junior colleges	Services	Education and day care	Service
461	Elementary and secondary schools	Services	Education and day care	Service
421	Cable networks and program distribution	Services	Entertainment and media	Service
475	Museums- historical sites- zoos- and parks	Services	Entertainment and media	Service

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Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
471	Performing arts companies	Services	Entertainment and media	Service
472	Spectator sports	Services	Entertainment and media	Service
422	Telecommunications	Services	Entertainment and media	Service
433	Video tape and disc rental	Services	Equipment and product rental, leasing, repair and maintenance	Material
479	Hotels and motels- including casino hotels	Services	Hotels and motels	Service
427	Insurance carriers	Services	Legal, real estate, insurance	Service
437	Legal Services	Services	Legal, real estate, insurance	Service
431	Real estate	Services	Legal, real estate, insurance	Service
438	Accounting and bookkeeping Services	Services	Other services	Service
447	Advertising and related Services	Services	Other services	Service
18	Agriculture and forestry support activities	Services	Other services	Material or service
450	All other miscellaneous professional and technical	Services	Other services	Service
439	Architectural and engineering Services	Services	Other services	Service
477	Bowling centers	Services	Other services	Service
455	Business support Services	Services	Other services	Service
493	Civic- social- professional and similar organizati	Services	Other services	Service
399	Couriers and messengers	Services	Other services	Service
488	Death care Services	Services	Other services	Service
484	Electronic equipment repair and maintenance	Services	Equipment and product rental, leasing, repair and maintenance	Material
454	Employment Services	Services	Other services	Service
445	Environmental and other technical consulting servi	Services	Other services	Service
453	Facilities support Services	Services	Other services	Service
435	General and consumer goods rental except video tap	Services	Equipment and product rental, leasing, repair and maintenance	Material
492	Grantmaking and giving and social advocacy organiz	Services	Other services	Service
486	Household goods repair and maintenance	Services	Equipment and product rental, leasing, repair and maintenance	Material
473	Independent artists- writers- and performers	Services	Other services	Service

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
423	Information Services	Services	Other services	Service
428	Insurance agencies- brokerages- and related	Services	Other services	Service
457	Investigation and security Services	Services	Other services	Service
434	Machinery and equipment rental and leasing	Services	Equipment and product rental, leasing, repair and maintenance	Material
444	Management consulting Services	Services	Other services	Service
452	Office administrative Services	Services	Other services	Service
480	Other accommodations	Services	Other services	Service
478	Other amusement- gambling- and recreation industri	Services	Other services	Service
463	Other educational Services	Services	Other services	Service
490	Other personal Services	Services	Other services	Service
499	Other State and local government enterprises	Services	Other services	Service
459	Other support Services	Services	Other services	Service
448	Photographic Services	Services	Other services	Service
141	Prepress Services	Services	Other services	Material or service
474	Promoters of performing arts and sports and agents	Services	Other services	Service
420	Radio and television broadcasting	Services	Other services	Service
491	Religious organizations	Services	Other services	Service
446	Scientific research and development Services	Services	Other services	Service
470	Social assistance- except child day care Services	Services	Other services	Service
440	Specialized design Services	Services	Other services	Service
456	Travel arrangement and reservation Services	Services	Other services	Service
400	Warehousing and storage	Services	Other services	Material or service
489	Drycleaning and laundry Services	Services	Personal services	Service
476	Fitness and recreational sports centers	Services	Personal services	Service
487	Personal care Services	Services	Personal services	Service
398	Postal service	Services	Personal services	Service
449	Veterinary Services	Services	Personal services	Service

**Appendix: Consumption Based Emissions Inventory Model  
Commodities Listed by Category**

<b>ID</b>	<b>All commodities</b>	<b>DEQ Category</b>	<b>DEQ Sub-category</b>	<b>Material, Service, Electricity or Fuel</b>
460	Waste management and remediation Services	Services	Waste management	Service
391	Air transportation	Transportation services	Transportation services	Material or service
396	Pipeline transportation	Transportation services	Transportation services	Fuel
392	Rail transportation	Transportation services	Transportation services	Material or service
397	Scenic and sightseeing transportation and support	Transportation services	Transportation services	Service
395	Transit and ground passenger transportation	Transportation services	Transportation services	Service
394	Truck transportation	Transportation services	Transportation services	Material
393	Water transportation	Transportation services	Transportation services	Material
350	Motor vehicle parts manufacturing	Vehicles and parts	Vehicle parts	Material
145	Petroleum lubricating oil and grease manufacturing	Vehicles and parts	Vehicle parts	Material
179	Tire manufacturing	Vehicles and parts	Vehicle parts	Material
344	Automobile and light truck manufacturing	Vehicles and parts	Vehicles	Material
358	Boat building	Vehicles and parts	Vehicles	Material
348	Motor home manufacturing	Vehicles and parts	Vehicles	Material
359	Motorcycle- bicycle- and parts manufacturing	Vehicles and parts	Vehicles	Material
349	Travel trailer and camper manufacturing	Vehicles and parts	Vehicles	Material
390	Wholesale trade	Wholesale	Wholesale	Material