

Direct and Indirect Water Withdrawals for US Industrial Sectors

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Supplemental Material

Supplemental material consists of twelve pages, including a table of the estimated water withdrawals vector by economic sector.

Bureau of Economic Analysis (BEA) data referenced below come from (11). USGS water use estimates referenced below come from (16).

S1: Public Supply

All non-domestic *public supply* USGS withdrawal estimates were allocated by reported purchases (11) from the *water, sewage and other systems* (221300). Seventeen sectors report no purchases from *water, sewage and other systems*: nine of these sectors represent agricultural or mining activities; one is *water, sewage, and other systems*; one is *pipeline transportation*; and the remaining are government sectors included primarily for accounting reasons. While it is unlikely that these sectors purchased no water, an overwhelming majority of water withdrawals associated with these sectors is likely self-supplied.

Equation 3 summarizes the allocation of non-domestic public supply withdrawals. This allocation method assumes a geographically uniform price of water and that the price of water relative to sewer and stream is uniform across industries.

$$Public\ Supply\ Withdrawal_{IO\ Sector\ i} = \frac{Sector\ i\ Purchase\ from\ 221300}{Total\ Commodity\ Output\ of\ 221300} \times USGS_{Public\ Supply}$$

Eq.32: Input-Output Sector Allocation of Publicly Supplied Water

Where *Public Supply Withdrawals* is the estimated sector withdrawal for the public supply category, *Sector i Purchase from 221300* is the total amount of purchases by sector i from the water sewage and other systems sector, *Total Commodity Output of 221300* is the dollar output of the water, sewage and other systems sector, and the *USGS public supply* is the reported total of water withdrawals for public supply.

S2: Self-Supplied Withdrawals

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Most industrial water use is not purchased. Therefore, self-supplied water use was estimated for the following sector categories: power generation, agriculture, livestock, aquaculture, and mining.

S2.1 Power Generation

USGS water use estimates for self-supplied withdrawals for power generation were mapped directly to BEA EIO sectors *electric power generation, transmission, and distribution* (221100), *Federal electric utilities* (S00101), and *state and local government electric utilities* (S00202). These three sectors were consolidated into one power supply sector in the EIO-LCA model by summing the self-supplied water, publicly supplied water, and economic output.

S2.1 Agriculture Irrigation, Aquaculture, and Livestock Self-Supplied Withdrawals

USGS estimates of irrigation withdrawals for agriculture were allocated to the 10 agricultural and 4 animal production (livestock and aquaculture) EIO sectors using USDA estimates for irrigation rates (18) and harvested land totals by crop (17).

USDA has mapped most crops to their corresponding North American Industry Classification (NAICS) codes (17). Some additional mapping was done based upon crop description.

Irrigation rates, in units of volume of water per harvested area, were applied to total cropland estimates, in units of harvested area, to derive a total irrigation withdrawal estimate by NAICS code. NAICS codes irrigated water estimates were summed by EIO sector to derive sector estimates.

In cases where irrigation or cropland estimates were not reported for proprietary reasons, state-level estimates were scaled up to match national estimates. While this method preserves national level estimates, errors may be introduced if a disproportionate number of missing data pertains to states with extreme irrigation requirements or if the missing data is for a regionally specific crop.

For livestock, only total irrigated pastureland for all animal products is reported by the USDA. Total irrigated pastureland was allocated by total land in farms to estimate irrigated pastureland for individual NAICS codes.

“Other” uses of irrigated water (such as salt leaching, freeze prevention, and crop cooling) were not explicitly assigned to a NAICS code by the USDA. These uses were distributed evenly across all crops.

The following additional assumptions were made to estimate agricultural irrigation withdrawals:

- No irrigation rates for sugarcane farming are reported. Beet farming rates were used (18).
- No irrigation rates for canola, flaxseed, safflower, and sunflower are reported. Peanut farming irrigation rates were used (18).
- No irrigated water use is reported for nurseries. An irrigation rate of 2 acre* ft/acre was assumed based upon examination of similar crops.

Finally, the USDA EIO sector withdrawal estimates were scaled to match the USGS reported estimate for irrigation or livestock. Equation 4 summarizes the method used to derive agricultural irrigation withdrawals

$$Agriculture \text{ (or Animal Production)}_{IO \text{ Sector } i} = \sum_{\substack{NAICS \text{ in} \\ \text{Sector } i}} \overbrace{Irrig. Rate}^{Ref 16} \times \overbrace{Harvest Lane}^{Ref 15} \times \frac{USGS_{Irrigation \text{ (or Animal Product)}}}{\sum_i USDA \text{ Estimates}}$$

Eq. 4 Method for Estimating Self-Supplied Agricultural and Animal Product Withdrawals

Where *Agriculture* is the amount of self-supplied water used by agriculture sector *i*, *Irrig. Rate* is irrigation amount per harvest lane for sector *i*, *Harvest Lane* is amount of production and *USDA Estimates* are the total for this irrigation rate and harvest lane products for each sector.

S2.2 Industrial Self-Supplied Withdrawals

The USGS estimates of self supplied industrial water use were allocated to thirty sectors representing the food, textile, wood, paper, petroleum, chemical, plastic and primary metals industries. Industrial withdrawals per employee were determined using Canada's recent industrial water use survey (19, 20). We assume that domestic industrial practices are similar to those in Canada and scale the Canadian estimates by US employee to derive domestic industrial withdrawals (21). Where the Canadian data represent more than one US sector, the mathematical average Canadian per employee estimate was used. Estimates derived from the Canada data were scaled to match the USGS reported estimated for self-supplied industrial water use. The industrial withdrawal allocation method is summarized in Equation 5.

$$Industrial \text{ Withdrawal}_{IO \text{ Sector } i} = \frac{CA \text{ Withdrawals}_i}{CA \text{ Employees}_i} \times US \text{ Employees}_i \times \frac{USGS_{Industrial \text{ Self-Supplied}}}{\sum_i US \text{ Estimates}}$$

Eq.5 Method for Estimating Self-Supplied Industrial Withdrawals

Where *Industrial Withdrawal* is the estimated self-supplied water for industrial sector *i*, *CA Withdrawals/CA Employees* is the Canadian water withdrawals per employee in sector *i*, *US Employees* is the number of US employees in sector *i*, *US Estimates* for sector *i* is the Canadian withdrawals per employee multiplied by the number of US employees, and *USGS* is the total of industrial self-supplied water for this category.

S2.3 Mining Withdrawals

Process data and employee allocations were used to estimate the water withdrawals for 11 mining sectors:

- *Oil and gas extraction (211000)* water withdrawals were estimated using process data (22) and total commodity production estimates (23). No process estimates for off-shore extraction are reported. We assume withdrawals per energy content of product for off-shore drilling are the same as for those reported for on shore.

- *Coal mining (212100) and iron ore mining (212210)* withdrawals were estimated by scaling Canadian withdrawals per employee (24, 25, 26, 27) by US employees (21). Water withdrawals process data for iron ore mining is reported for both mining and milling. We assume that withdrawals are evenly split between mining and milling.
- *Gold, silver, and other metal ore mining (2122A0)* water withdrawals were estimated using process data (28) and total commodity production estimates (31). Process estimates are reported for gold only. Water use intensities for gold production are assumed to be similar for other metals.
- *Copper, nickel, lead, and zinc mining (212230)* water withdrawals were estimating by scaling the *iron ore mining (212210)* withdrawal by employees (21), assuming these sectors demonstrate similar water use patterns.
- *Sand, gravel, clay, and ceramic and refractory minerals mining and quarrying (212320)* withdrawals were estimated by scaling the reported water use for 15 facilities in the Tucson, AZ region by the total number of facilities in the US (30). This method assumes that regional production practices in Tucson, AZ are representative at the national scale.
- *Stone mining and quarrying (212310)* water withdrawals were estimating by scaling the *sand, gravel, clay, and minerals mining (212320)* withdrawal by employees (21), assuming these sectors demonstrate similar water use patterns.
- *Drilling oil and gas wells (213111)* water withdrawals were estimating by scaling the *oil and gas extraction (211000)* withdrawal by employees (21), assuming these sectors demonstrate similar water use patterns.
- *Other nonmetallic mineral mining and quarrying (212390), support activities for oil and gas operations (213112), and support activities for other mining (21311A)* withdrawals were estimated by allocating the USGS mining withdrawals by employees fraction within the 210000-level input-output sectors (21).

Input-Output Vector of 2002 Water Withdrawals for the United States

I-O code	I-O description	gal/\$M
1111A0	Oilseed farming	8.78E+06
1111B0	Grain farming	1.19E+09
111200	Vegetable & melon farming	2.36E+08
111335	Tree nut farming	4.63E+08
1113A0	Fruit farming	4.50E+08
111400	Greenhouse, nursery, & floriculture production	5.21E+07
111910	Tobacco farming	1.92E+07
111920	Cotton farming	1.24E+09
1119A0	Sugarcane & sugar beet farming	7.55E+08
1119B0	All other crop farming	3.85E+07
112120	Dairy cattle & milk production	4.95E+06
1121A0	Cattle ranching & farming	3.87E+07
112300	Poultry & egg production	1.30E+06
112A00	Animal production, except cattle & poultry & eggs	1.59E+07
113300	Logging	8.80E+03
113A00	Forest nurseries, forest products, & timber tracts	1.87E+05
114100	Fishing	0.00E+00
114200	Hunting & trapping	3.65E+05
115000	Support activities for agriculture & forestry	0.00E+00
211000	Oil & gas extraction	6.47E+04
212100	Coal mining	1.99E+05
212210	Iron ore mining	2.79E+07
212230	Copper, nickel, lead, & zinc mining	3.50E+07
2122A0	Gold, silver, & other metal ore mining	4.95E+07
212310	Stone mining & quarrying	4.91E+07
212320	Sand, gravel, clay, & ceramic & refractory minerals mining & quarrying	5.84E+07
212390	Other nonmetallic mineral mining & quarrying	1.20E+06
213111	Drilling oil & gas wells	4.45E+05
213112	Support activities for oil & gas operations	1.37E+06
21311A	Support activities for other mining	8.79E+06
221100	Electric power generation, transmission, & distribution (plus Federal Elec Utils)	2.54E+08
221200	Natural gas distribution	6.89E+04
221300	Water, sewage & other systems	0.00E+00
230101	Nonresidential commercial & health care structures	8.59E+04
230102	Nonresidential manufacturing structures	9.43E+04
230103	Other nonresidential structures	2.16E+05
230201	Residential permanent site single- & multi-family structures	1.18E+05
230202	Other residential structures	1.31E+05
230301	Nonresidential maintenance & repair	7.96E+04
230302	Residential maintenance & repair	2.46E+05
311111	Dog & cat food manufacturing	5.33E+06
311119	Other animal food manufacturing	7.45E+06
311210	Flour milling & malt manufacturing	8.39E+04
311221	Wet corn milling	9.79E+05
311225	Fats & oils refining & blending	1.91E+05
31122A	Soybean & other oilseed processing	1.38E+05
311230	Breakfast cereal manufacturing	8.91E+04
311313	Beet sugar manufacturing	6.54E+04
31131A	Sugar cane mills & refining	6.15E+04
311320	Chocolate & confectionery manufacturing from cacao beans	3.47E+05
311330	Confectionery manufacturing from purchased chocolate	7.61E+04
311340	Nonchocolate confectionery manufacturing	1.06E+05
311410	Frozen food manufacturing	2.37E+05
311420	Fruit & vegetable canning, pickling, & drying	8.59E+06
311513	Cheese manufacturing	8.78E+06

I-O code	I-O description	gal/\$M
311514	Dry, condensed, & evaporated dairy product manufacturing	1.79E+05
31151A	Fluid milk & butter manufacturing	2.85E+05
311520	Ice cream & frozen dessert manufacturing	1.93E+05
311615	Poultry processing	1.36E+07
31161A	Animal (except poultry) slaughtering, rendering, & processing	1.61E+05
311700	Seafood product preparation & packaging	2.37E+05
311810	Bread & bakery product manufacturing	6.22E+05
311820	Cookie, cracker, & pasta manufacturing	9.09E+04
311830	Tortilla manufacturing	2.11E+05
311910	Snack food manufacturing	1.82E+05
311920	Coffee & tea manufacturing	1.35E+05
311930	Flavoring syrup & concentrate manufacturing	8.65E+04
311940	Seasoning & dressing manufacturing	4.12E+05
311990	All other food manufacturing	2.22E+05
312110	Soft drink & ice manufacturing	1.73E+05
312120	Breweries	5.59E+06
312130	Wineries	3.44E+07
312140	Distilleries	1.38E+07
3122A0	Tobacco product manufacturing	1.40E+04
313100	Fiber, yarn, & thread mills	1.52E+06
313210	Broadwoven fabric mills	2.27E+05
313220	Narrow fabric mills & schiffli machine embroidery	1.83E+05
313230	Nonwoven fabric mills	1.94E+05
313240	Knit fabric mills	5.99E+05
313310	Textile & fabric finishing mills	2.90E+05
313320	Fabric coating mills	3.45E+05
314110	Carpet & rug mills	1.31E+05
314120	Curtain & linen mills	4.82E+04
314910	Textile bag & canvas mills	9.22E+04
314990	All other textile product mills	1.81E+05
315100	Apparel knitting mills	3.29E+05
315210	Cut & sew apparel contractors	9.25E+04
315220	Men's & boys' cut & sew apparel manufacturing	5.98E+04
315230	Women's & girls' cut & sew apparel manufacturing	4.43E+04
315290	Other cut & sew apparel manufacturing	7.70E+04
315900	Apparel accessories & other apparel manufacturing	1.14E+05
316100	Leather & hide tanning & finishing	2.24E+06
316200	Footwear manufacturing	1.14E+05
316900	Other leather & allied product manufacturing	6.14E+04
321100	Sawmills & wood preservation	2.98E+05
321219	Reconstituted wood product manufacturing	1.85E+05
32121A	Veneer & plywood manufacturing	8.18E+04
32121B	Engineered wood member & truss manufacturing	1.44E+05
321910	Wood windows & doors & millwork	1.41E+05
321920	Wood container & pallet manufacturing	1.28E+05
321991	Manufactured home (mobile home) manufacturing	2.24E+05
321992	Prefabricated wood building manufacturing	1.77E+05
321999	All other miscellaneous wood product manufacturing	4.54E+05
322110	Pulp mills	8.44E+06
322120	Paper mills	5.10E+06
322130	Paperboard Mills	3.59E+07
322210	Paperboard container manufacturing	9.10E+04
32222A	Coated & laminated paper, packaging paper & plastics film manufacturing	2.11E+05
32222B	All other paper bag & coated & treated paper manufacturing	1.90E+05
322230	Stationery product manufacturing	6.31E+04
322291	Sanitary paper product manufacturing	5.24E+04
322299	All other converted paper product manufacturing	3.38E+05

I-O code	I-O description	gal/\$M
323110	Printing	1.43E+05
323120	Support activities for printing	1.13E+05
324110	Petroleum refineries	6.71E+05
324121	Asphalt paving mixture & block manufacturing	2.97E+04
324122	Asphalt shingle & coating materials manufacturing	3.56E+05
324191	Petroleum lubricating oil & grease manufacturing	1.62E+05
324199	All other petroleum & coal products manufacturing	1.37E+05
325110	Petrochemical manufacturing	4.45E+06
325120	Industrial gas manufacturing	2.07E+07
325130	Synthetic dye & pigment manufacturing	2.70E+07
325181	Alkalies & chlorine manufacturing	3.77E+07
325182	Carbon black manufacturing	1.05E+05
325188	All other basic inorganic chemical manufacturing	1.02E+07
325190	Other basic organic chemical manufacturing	7.46E+06
325211	Plastics material & resin manufacturing	1.84E+05
325212	Synthetic rubber manufacturing	3.66E+06
325220	Artificial & synthetic fibers & filaments manufacturing	1.10E+07
325310	Fertilizer manufacturing	8.44E+06
325320	Pesticide & other agricultural chemical manufacturing	2.98E+07
325411	Medicinal & botanical manufacturing	2.31E+05
325412	Pharmaceutical preparation manufacturing	1.02E+05
325413	In-vitro diagnostic substance manufacturing	6.36E+04
325414	Biological product (except diagnostic) manufacturing	1.66E+05
325510	Paint & coating manufacturing	1.23E+08
325520	Adhesive manufacturing	2.10E+07
325610	Soap & cleaning compound manufacturing	3.98E+06
325620	Toilet preparation manufacturing	9.62E+04
325910	Printing ink manufacturing	1.80E+05
3259A0	All other chemical product & preparation manufacturing	2.76E+05
326110	Plastics packaging materials & unlaminated film & sheet manufacturing	1.69E+05
326121	Unlaminated plastics profile shape manufacturing	1.43E+05
326122	Plastics pipe & pipe fitting manufacturing	9.02E+04
326130	Laminated plastics plate, sheet (except packaging), & shape manufacturing	1.99E+05
326140	Polystyrene foam product manufacturing	1.27E+05
326150	Urethane & other foam product (except polystyrene) manufacturing	1.29E+05
326160	Plastics bottle manufacturing	8.26E+04
32619A	Other plastics product manufacturing	1.64E+05
326210	Tire manufacturing	1.10E+06
326220	Rubber & plastics hoses & belting manufacturing	1.69E+05
326290	Other rubber product manufacturing	2.14E+05
32711A	Pottery, ceramics, & plumbing fixture manufacturing	2.95E+05
32712A	Brick, tile, & other structural clay product manufacturing	1.77E+05
32712B	Clay & nonclay refractory manufacturing	2.94E+05
327211	Flat glass manufacturing	3.71E+05
327212	Other pressed & blown glass & glassware manufacturing	1.94E+05
327213	Glass container manufacturing	1.52E+05
327215	Glass product manufacturing made of purchased glass	3.27E+05
327310	Cement manufacturing	9.10E+04
327320	Ready-mix concrete manufacturing	1.19E+05
327330	Concrete pipe, brick, & block manufacturing	1.39E+05
327390	Other concrete product manufacturing	2.39E+05
3274A0	Lime & gypsum product manufacturing	2.06E+05
327910	Abrasive product manufacturing	1.44E+05
327991	Cut stone & stone product manufacturing	9.54E+04
327992	Ground or treated mineral & earth manufacturing	1.32E+05
327993	Mineral wool manufacturing	4.98E+05
327999	Miscellaneous nonmetallic mineral products	1.77E+05

I-O code	I-O description	gal/\$M
331110	Iron & steel mills & ferroalloy manufacturing	4.11E+06
331200	Steel product manufacturing from purchased steel	4.27E+05
331314	Secondary smelting & alloying of aluminum	1.09E+07
33131A	Alumina refining & primary aluminum production	2.21E+05
33131B	Aluminum product manufacturing from purchased aluminum	1.24E+05
331411	Primary smelting & refining of copper	7.96E+04
331419	Primary smelting & refining of nonferrous metal (except copper & aluminum)	1.46E+05
331420	Copper rolling, drawing, extruding & alloying	1.36E+05
	Nonferrous metal (except copper & aluminum) rolling, drawing, extruding & alloying	
331490		2.36E+05
331510	Ferrous metal foundries	5.06E+05
331520	Nonferrous metal foundries	5.15E+05
332114	Custom roll forming	1.08E+05
33211A	All other forging, stamping, & sintering	1.67E+05
33211B	Crown & closure manufacturing & metal stamping	1.20E+05
33221A	Cutlery, utensil, pot, & pan manufacturing	6.88E+04
33221B	Handtool manufacturing	1.04E+05
332310	Plate work & fabricated structural product manufacturing	1.44E+05
332320	Ornamental & architectural metal products manufacturing	9.36E+04
332410	Power boiler & heat exchanger manufacturing	1.10E+05
332420	Metal tank (heavy gauge) manufacturing	8.93E+04
332430	Metal can, box, & other metal container (light gauge) manufacturing	1.23E+05
332500	Hardware manufacturing	8.94E+04
332600	Spring & wire product manufacturing	2.12E+05
332710	Machine shops	2.29E+05
332720	Turned product & screw, nut, & bolt manufacturing	1.30E+05
332800	Coating, engraving, heat treating & allied activities	3.88E+05
332913	Plumbing fixture fitting & trim manufacturing	9.55E+04
33291A	Valve & fittings other than plumbing	1.09E+05
332991	Ball & roller bearing manufacturing	1.43E+05
332996	Fabricated pipe & pipe fitting manufacturing	6.96E+04
33299A	Ammunition manufacturing	3.02E+05
33299B	Arms, ordnance, & accessories manufacturing	1.18E+05
33299C	Other fabricated metal manufacturing	8.71E+04
333111	Farm machinery & equipment manufacturing	9.61E+04
333112	Lawn & garden equipment manufacturing	5.16E+04
333120	Construction machinery manufacturing	4.90E+04
333130	Mining & oil & gas field machinery manufacturing	6.62E+04
333220	Plastics & rubber industry machinery manufacturing	6.95E+04
333295	Semiconductor machinery manufacturing	3.60E+04
33329A	Other industrial machinery manufacturing	8.35E+04
333314	Optical instrument & lens manufacturing	8.88E+04
333315	Photographic & photocopying equipment manufacturing	3.69E+04
333319	Other commercial & service industry machinery manufacturing	6.59E+04
33331A	Vending, commercial, industrial, & office machinery manufacturing	6.45E+04
333414	Heating equipment (except warm air furnaces) manufacturing	1.22E+05
333415	Air conditioning, refrigeration, & warm air heating equipment manufacturing	6.16E+04
33341A	Air purification & ventilation equipment manufacturing	7.73E+04
333511	Industrial mold manufacturing	1.12E+05
333514	Special tool, die, jig, & fixture manufacturing	8.37E+04
333515	Cutting tool & machine tool accessory manufacturing	1.18E+05
33351A	Metal cutting & forming machine tool manufacturing	6.73E+04
33351B	Rolling mill & other metalworking machinery manufacturing	9.38E+04
333611	Turbine & turbine generator set units manufacturing	3.77E+04
333612	Speed changer, industrial high-speed drive, & gear manufacturing	1.13E+05
333613	Mechanical power transmission equipment manufacturing	1.55E+05
333618	Other engine equipment manufacturing	7.39E+04

I-O code	I-O description	gal/\$M
333911	Pump & pumping equipment manufacturing	7.49E+04
333912	Air & gas compressor manufacturing	1.10E+05
333920	Material handling equipment manufacturing	6.94E+04
333991	Power-driven handtool manufacturing	5.33E+04
333993	Packaging machinery manufacturing	5.61E+04
333994	Industrial process furnace & oven manufacturing	1.42E+05
33399A	Other general purpose machinery manufacturing	1.04E+05
33399B	Fluid power process machinery	8.45E+04
334111	Electronic computer manufacturing	8.92E+03
334112	Computer storage device manufacturing	4.68E+04
33411A	Computer terminals & other computer peripheral equipment manufacturing	4.30E+04
334210	Telephone apparatus manufacturing	3.92E+04
334220	Broadcast & wireless communications equipment	6.18E+04
334290	Other communications equipment manufacturing	3.57E+04
334300	Audio & video equipment manufacturing	3.46E+04
334411	Electron tube manufacturing	2.16E+05
334412	Bare printed circuit board manufacturing	3.51E+05
334413	Semiconductor & related device manufacturing	9.72E+04
334417	Electronic connector manufacturing	3.26E+05
334418	Printed circuit assembly (electronic assembly) manufacturing	2.71E+04
334419	Other electronic component manufacturing	7.46E+04
33441A	Electronic capacitor, resistor, coil, transformer, & other inductor manufacturing	2.44E+05
334510	Electromedical & electrotherapeutic apparatus manufacturing	3.40E+04
334511	Search, detection, & navigation instruments manufacturing	5.89E+04
334512	Automatic environmental control manufacturing	5.84E+04
334513	Industrial process variable instruments manufacturing	6.88E+04
334514	Totalizing fluid meters & counting devices manufacturing	5.57E+04
334515	Electricity & signal testing instruments manufacturing	2.65E+04
334516	Analytical laboratory instrument manufacturing	7.82E+04
334517	Irradiation apparatus manufacturing	1.54E+04
33451A	Watch, clock, & other measuring & controlling device manufacturing	9.20E+04
334613	Magnetic & optical recording media manufacturing	7.18E+04
33461A	Software, audio, & video media reproducing	5.88E+04
335110	Electric lamp bulb & part manufacturing	1.62E+05
335120	Lighting fixture manufacturing	8.15E+04
335210	Small electrical appliance manufacturing	1.21E+05
335221	Household cooking appliance manufacturing	5.31E+04
335222	Household refrigerator & home freezer manufacturing	4.15E+04
335224	Household laundry equipment manufacturing	2.55E+04
335228	Other major household appliance manufacturing	8.23E+04
335311	Power, distribution, & specialty transformer manufacturing	5.52E+04
335312	Motor & generator manufacturing	5.24E+04
335313	Switchgear & switchboard apparatus manufacturing	5.65E+04
335314	Relay & industrial control manufacturing	2.91E+04
335911	Storage battery manufacturing	1.41E+05
335912	Primary battery manufacturing	1.02E+05
335920	Communication & energy wire & cable manufacturing	7.51E+04
335930	Wiring device manufacturing	9.02E+04
335991	Carbon & graphite product manufacturing	1.34E+05
335999	All other miscellaneous electrical equipment & component manufacturing	6.30E+04
336111	Automobile manufacturing	2.18E+04
336112	Light truck & utility vehicle manufacturing	1.58E+04
336120	Heavy duty truck manufacturing	4.06E+04
336211	Motor vehicle body manufacturing	8.37E+04
336212	Truck trailer manufacturing	9.31E+04
336213	Motor home manufacturing	3.49E+06
336214	Travel trailer & camper manufacturing	5.05E+06

I-O code	I-O description	gal/\$M
336300	Motor vehicle parts manufacturing	1.60E+05
336411	Aircraft manufacturing	1.86E+04
336412	Aircraft engine & engine parts manufacturing	7.95E+04
336413	Other aircraft parts & auxiliary equipment manufacturing	9.76E+04
336414	Guided missile & space vehicle manufacturing	3.24E+03
33641A	Propulsion units & parts for space vehicles & guided missiles	7.28E+04
336500	Railroad rolling stock manufacturing	5.79E+04
336611	Ship building & repairing	1.60E+05
336612	Boat building	1.29E+05
336991	Motorcycle, bicycle, & parts manufacturing	6.97E+04
336992	Military armored vehicle, tank, & tank component manufacturing	6.16E+04
336999	All other transportation equipment manufacturing	4.73E+04
337110	Wood kitchen cabinet & countertop manufacturing	9.24E+05
337121	Upholstered household furniture manufacturing	6.40E+04
337122	Nonupholstered wood household furniture manufacturing	1.27E+05
337127	Institutional furniture manufacturing	1.47E+05
33712A	Metal & other household furniture (except wood) manufacturing1	2.20E+05
337212	Office furniture & custom architectural woodwork & millwork manufacturing1	1.40E+05
337215	Showcase, partition, shelving, & locker manufacturing	1.68E+05
33721A	Wood television, radio, & sewing machine cabinet manufacturing1	1.94E+05
337910	Mattress manufacturing	7.31E+04
337920	Blind & shade manufacturing	1.02E+05
339111	Laboratory apparatus & furniture manufacturing	7.80E+04
339112	Surgical & medical instrument manufacturing	6.09E+04
339113	Surgical appliance & supplies manufacturing	6.25E+04
339114	Dental equipment & supplies manufacturing	7.23E+04
339115	Ophthalmic goods manufacturing	5.07E+04
339116	Dental laboratories	4.58E+04
339910	Jewelry & silverware manufacturing	3.25E+04
339920	Sporting & athletic goods manufacturing	7.13E+04
339930	Doll, toy, & game manufacturing	8.72E+04
339940	Office supplies (except paper) manufacturing	1.15E+05
339950	Sign manufacturing	6.52E+05
339991	Gasket, packing, & sealing device manufacturing	2.66E+05
339992	Musical instrument manufacturing	8.29E+04
339994	Broom, brush, & mop manufacturing	5.21E+04
33999A	All other miscellaneous manufacturing	1.05E+05
420000	Wholesale trade	7.00E+04
481000	Air transportation	1.30E+04
482000	Rail transportation	6.28E+04
483000	Water transportation	7.68E+05
484000	Truck transportation	5.01E+04
485000	Transit & ground passenger transportation	1.27E+06
486000	Pipeline transportation	0.00E+00
48A000	Scenic & sightseeing transportation & support activities for transportation	4.76E+05
491000	Postal service	1.63E+06
492000	Couriers & messengers	8.28E+04
493000	Warehousing & storage	1.97E+05
4A0000	Retail trade	1.50E+05
511110	Newspaper publishers	2.10E+05
511120	Periodical publishers	2.81E+04
511130	Book publishers	2.88E+04
5111A0	Directory, mailing list, & other publishers	4.55E+04
511200	Software publishers	1.29E+04
512100	Motion picture & video industries	5.37E+04
512200	Sound recording industries	6.87E+03
515100	Radio & television broadcasting	2.04E+05

I-O code	I-O description	gal/\$M
515200	Cable & other subscription programming	8.21E+04
516110	Internet publishing & broadcasting	2.21E+04
517000	Telecommunications	2.87E+05
518100	Internet service providers & web search portals	6.45E+03
518200	Data processing, hosting, & related services	6.36E+04
519100	Other information services	5.92E+04
522A00	Nondepository credit intermediation & related activities	9.56E+04
523000	Securities, commodity contracts, investments, & related activities	2.58E+04
524100	Insurance carriers	8.97E+02
524200	Insurance agencies, brokerages, & related activities	2.43E+04
525000	Funds, trusts, & other financial vehicles	1.68E+03
52A000	Monetary authorities & depository credit intermediation	2.73E+04
531000	Real estate	3.74E+05
532100	Automotive equipment rental & leasing	4.16E+04
532230	Video tape & disc rental	2.26E+05
532400	Commercial & industrial machinery & equipment rental & leasing	6.99E+04
532A00	General & consumer goods rental except video tapes & discs	1.73E+05
533000	Lessors of nonfinancial intangible assets	1.79E+05
541100	Legal services	2.76E+04
541200	Accounting, tax preparation, bookkeeping, & payroll services	3.50E+04
541300	Architectural, engineering, & related services	5.45E+04
541400	Specialized design services	3.15E+04
541511	Custom computer programming services	7.53E+03
541512	Computer systems design services	2.26E+04
54151A	Other computer related services, including facilities management	8.38E+03
541610	Management, scientific, & technical consulting services	2.09E+04
5416A0	Environmental & other technical consulting services	5.47E+04
541700	Scientific research & development services	9.36E+04
541800	Advertising & related services	3.15E+04
541920	Photographic services	7.15E+04
541940	Veterinary services	4.24E+04
5419A0	All other miscellaneous professional, scientific, & technical services	7.55E+04
550000	Management of companies & enterprises	1.18E+04
561100	Office administrative services	8.69E+04
561200	Facilities support services	1.21E+06
561300	Employment services	8.02E+03
561400	Business support services	3.01E+04
561500	Travel arrangement & reservation services	1.98E+04
561600	Investigation & security services	2.83E+04
561700	Services to buildings & dwellings	1.46E+05
561900	Other support services	1.04E+05
562000	Waste management & remediation services	1.05E+06
611100	Elementary & secondary schools	4.72E+05
611A00	Junior colleges, colleges, universities, & professional schools	5.40E+06
611B00	Other educational services	3.68E+04
621600	Home health care services	4.21E+04
621A00	Offices of physicians, dentists, & other health practitioners	1.10E+05
621B00	Medical & diagnostic labs & outpatient & other ambulatory care services	1.10E+05
622000	Hospitals	2.29E+05
623000	Nursing & residential care facilities	4.29E+05
624200	Community food, housing, & other relief services, including rehabilitation services	3.30E+05
624400	Child day care services	2.30E+05
624A00	Individual & family services	4.81E+05
711100	Performing arts companies	7.22E+04
711200	Spectator sports	1.62E+05
711500	Independent artists, writers, & performers	1.95E+04

I-O code	I-O description	gal/\$M
711A00	Promoters of performing arts & sports & agents for public figures	1.29E+05
712000	Museums, historical sites, zoos, & parks	3.42E+05
713940	Fitness & recreational sports centers	5.97E+05
713950	Bowling centers	4.63E+05
713A00	Amusement parks, arcades, & gambling industries	1.78E+05
713B00	Other amusement & recreation industries	6.18E+05
7211A0	Hotels & motels, including casino hotels	1.07E+06
721A00	Other accommodations	1.10E+06
722000	Food services & drinking places	4.23E+05
811192	Car washes	1.54E+06
8111A0	Automotive repair & maintenance, except car washes	2.29E+05
811200	Electronic & precision equipment repair & maintenance	1.12E+05
811300	Commercial & industrial machinery & equipment repair & maintenance	4.36E+05
811400	Personal & household goods repair & maintenance	4.06E+05
812100	Personal care services	7.28E+05
812200	Death care services	3.30E+05
812300	Dry-cleaning & laundry services	6.67E+05
812900	Other personal services	8.25E+04
813100	Religious organizations	2.94E+05
813A00	Grantmaking, giving, & social advocacy organizations	1.27E+05
813B00	Civic, social, professional, & similar organizations	8.40E+05
814000	Private households	0.00E+00
S00102	Other Federal Government enterprises	8.78E+05
S00201	State & local government passenger transit	9.62E+05
S00203	Other State & local government enterprises	3.17E+06
S00300	Noncomparable imports	0.00E+00
S00401	Scrap	0.00E+00
S00402	Used & secondhand goods	0.00E+00
S00500	General Federal defense government services	3.48E+05
S00600	General Federal nondefense government services	6.94E+05
S00700	General state & local government services	1.52E+06
S00800	Owner-occupied dwellings	0.00E+00
S00900	ROW Adjustment	0.00E+00
S00101	Federal Electric Utilities	9.84E+05