



CHAD M. STOKES  
ADMITTED IN OREGON AND WASHINGTON

cstokes@cablehuston.com  
www.cablehuston.com

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**VIA ELECTRONIC FILING**

Amanda Maxwell  
Executive Director and Secretary  
Washington Utilities & Transportation Commission  
621 Woodland Square Loop SE  
Lacey, WA 98503

UG-210729

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State Of WASH.  
UTIL. AND TRANSP.  
COMMISSION

Re: *Consideration of whether to continue to use the Perpetual Net Present Value Methodology to calculate natural gas line extension allowances, Notice of Opportunity to File Written Comments (Sep. 21, 2021).*  
Docket No. UG 210729

**Comments of Alliance of Western Energy Consumers**

Dear Executive Director and Secretary Maxwell:

Alliance of Western Energy Consumers (“AWEC”) appreciates the opportunity to provide comments pursuant to the Washington Utilities and Transportation Commission’s (“Commission”) September 21, 2021, Notice of Opportunity to File Written Comments in this Docket.

As an initial matter, AWEC is supportive of the Commission investigating the methodologies used to establish natural gas line extension allowances, including the continued use of the Perpetual Net Present Value (“PNPV”) methodology. AWEC supports developing a methodology that is grounded on sound economic principles.

Notwithstanding, AWEC does not support using line extension allowance methodologies as a means for achieving policy objectives, such as fuel switching. Natural gas is an essential source of energy, and the natural gas industry is currently investing in ways to decarbonize through renewable natural gas, renewable hydrogen, and other methods. Further, many manufacturing equipment processes are currently designed for natural gas, not electricity. The U.S. Energy Information Administration reports that most U.S manufacturing sectors are unable to switch from natural gas to another fuel. **See Exhibit A.** For those customers that are unable to fuel switch, they continue to rely on a viable natural gas industry for service. AWEC is interested in ensuring that its members continue to have safe and reliable access to energy, including both natural gas and electricity. It doesn’t make sense to adopt a line extension policy

that encourages employers in Washington to move to other states with less stringent energy policies.

AWEC is also interested in ensuring that existing customers are not required to unfairly subsidize new customers. Accordingly, AWEC is interested in establishing fair and reasonable line extension policies that provide new customers with access to the natural gas system without harming existing customers.

A primary consideration with line extensions is cost causation. As a general principle, customers benefiting from a cost incurred by a utility are the most appropriate customers to pay for that cost. Installing new facilities to bring new customers onto a utility system, however, benefits all customers because it also lowers the fixed cost contributions of all customers. While the new customer is the primary beneficiary of a new line extension, line extension allowance policies consider the system benefits associated with the addition of a new customer to existing customers. Thus, evaluating whether the current methodologies fairly values the system benefit of adding a new customer is a central question to the Commission's investigation in this matter.

In addition to cost causation, there are also issues of general equity that must be considered with respect to line extensions. A line extension policy reduces the burden of new customers connecting to the utility system, and thus provides a new customer with a comparable opportunity to receive services as existing customers. Every customer at one point or another was a new customer requiring the installation of new facilities to interconnect to the utility system. Thus, providing customers with a line extension allowance avoids discrimination against new customers who may wish to receive utility services.

Given the various ratemaking principles at issue, there is no single correct method for determining the proper line extension allowance. Different states use different methodologies and usually there are different considerations between residential and commercial/industrial customers. For non-residential customers, a line extension allowance is typically a multiple of the expected margin revenues of a new customer. In Oregon, for example, Northwest Natural Gas Company's ("NW Natural") Schedule X has a line extension policy as follows:

The Company will perform an investment analysis for each installation to determine the amount of any Construction Allowance. At a minimum, the Construction Allowance will equal 5.0 times the annual margin revenue that is estimated to be generated from the operation of natural gas-fired equipment to be installed at the service address

In Washington, the use of the PNPV methodology is a different approach but has a similar effect. Instead of using a multiple of margin revenues, the perpetuity value of the new customer's margin revenues is taken. This amount represents the present value of the margin cashflows from the new customer in perpetuity. A perpetuity value is a simple calculation, which is simply the cash flow divided by the interest rate.

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Thus, for a utility with a cost of capital equal to 7.00%, the perpetuity value of \$1 in margin revenues is equal to  $1 / 7\%$  or \$14.29. In other words, in contrast to the Oregon methodology that is based on no less than 5 times the annual margin revenues of the new customer, the PNPV method produces a line extension allowance that is around 14 times the annual margin revenues of the new customer.

AWEC supports the PNPV methodology, but AWEC is not opposed to evaluating alternative line extension allowance methodologies in the context of this docket so long as the new methodology is not designed to encourage fuel switching.

An important consideration for evaluating line extension policies is the fact that not all line extensions are exactly the same. Some, for example, may result in new mains being constructed in an area where it is highly likely that other new customers may interconnect in the future. Similarly, there may be configuration options that a utility may wish to make that provide other ancillary benefits to its system, which may be appropriately considered in the line extension allowance. For example, as a part of a line extension, a utility might build a new main that interconnects two constrained parts of its system, increasing system reliability.

Given the uniqueness of each line extension, and regardless of the methodologies the Commission ultimately considers, AWEC recommends that, similar to the NW Natural line extension rule above, that each non-residential line extension be evaluated based on an investment analysis considering the unique facts and circumstances of each particular site. This will provide the utility with a greater ability to consider the various configurations and system benefits that may be involved in a complex line extension.

AWEC looks forward to working with the parties and Commission in this docket and appreciates the opportunity to provide these comments.

Thank you for your assistance.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Chad M. Stokes".

Chad M. Stokes

CMS:bh

## Exhibit A

U.S. Energy Information Administration

Table 10.2 Capability to Switch Natural Gas to  
Alternative Energy Sources, 2018

Released: February 2021  
Next MECS will be fielded in 2023.

**Table 10.2 Capability to Switch Natural Gas to Alternative Energy Sources, 2018;**

Level: National Data and Regional Data;

Row: NAICS Codes

Column: Energy Sources;

Unit: Billion Cubic Feet.

NAICS Code(a)	Subsector and Industry	Natural Gas			Alternative Energy Sources(b)						
		Total Consumed(c)	Switchable	Not Switchable	Electricity Receipts(d)	Distillate Fuel Oil	Residual Fuel Oil	Coal	HGL (excluding natural gasoline)	Coal Coke and Breeze	Other(e)
<b>Total United States</b>											
311	Food	644	66	578	2	28	10	7	15	0	4
3112	Grain and Oilseed Milling	144	20	124	1	9	3	6	1	0	2
311221	Wet Corn Milling	59	5	54	0	0	0	4	*	0	0
31131	Sugar Manufacturing	32	5	27	0	1	3	1	*	0	*
3114	Fruit and Vegetable Preserving and Specialty Food	88	6	82	*	3	1	0	1	0	*
3115	Dairy Product	76	11	65	*	5	2	0	3	0	Q
3116	Animal Slaughtering and Processing	144	16	127	1	5	Q	*	10	0	2
312	Beverage and Tobacco Products	52	6	47	*	4	Q	0	*	0	*
3121	Beverages	48	4	44	*	3	Q	0	*	0	*
3122	Tobacco	4	2	2	*	1	*	0	*	0	0
313	Textile Mills	22	9	12	Q	4	1	Q	2	*	0
314	Textile Product Mills	11	5	6	*	4	0	0	2	0	0
315	Apparel	2	*	1	*	*	0	0	*	0	0
316	Leather and Allied Products	1	*	1	*	*	*	0	*	0	0
321	Wood Products	65	2	63	*	*	*	*	*	0	1
321113	Sawmills	17	*	17	*	*	*	0	*	0	*
3212	Veneer, Plywood, and Engineered Woods	30	1	29	*	*	*	*	*	0	1
321219	Reconstituted Wood Products	20	1	19	0	*	*	0	*	0	1
3219	Other Wood Products	15	1	14	*	0	*	0	*	0	*
322	Paper	551	62	489	12	21	13	15	3	2	10
322110	Pulp Mills	39	7	32	0	2	3	1	0	0	3
322121	Paper Mills, except Newsprint	216	21	195	3	8	2	5	*	2	3
322122	Newsprint Mills	5	*	5	0	0	0	0	*	0	*
322130	Paperboard Mills	227	28	199	8	9	7	9	*	0	4
323	Printing and Related Support	23	3	20	Q	Q	*	0	Q	0	1
324	Petroleum and Coal Products	1,037	103	934	3	8	5	*	74	0	21
324110	Petroleum Refineries	958	93	864	2	1	1	0	71	0	19
324121	Asphalt Paving Mixture and Block	40	9	31	*	8	4	*	2	0	2
324122	Asphalt Shingle and Coating Materials	13	*	13	*	*	0	0	*	0	0
324191	Petroleum Lubricating Oil and Grease Products	18	*	18	*	*	0	*	*	0	0
324199	Other Petroleum and Coal Products	8	0	8	0	0	0	0	0	0	0
325	Chemicals	2,258	81	2,177	7	32	9	10	13	0	14
325110	Petrochemicals	292	11	281	*	1	*	0	6	0	4
325120	Industrial Gases	80	*	80	*	0	0	0	*	0	0

325180	Other Basic Inorganic Chemicals	210	7	203	0	1	4	1	0	0	1
325193	Ethyl Alcohol	346	4	342	0	*	0	0	2	0	2
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	49	3	47	0	2	0	0	0	0	*
325199	Other Basic Organic Chemicals	386	14	372	*	5	1	7	*	0	2
325211	Plastics Materials and Resins	402	16	386	3	8	*	0	1	0	5
325212	Synthetic Rubber	19	2	17	*	1	*	*	*	0	0
325220	Artificial and Synthetic Fibers and Filaments	22	6	16	1	4	2	0	2	0	0
325311	Nitrogenous Fertilizers	205	*	205	0	*	0	0	0	0	0
325312	Phosphatic Fertilizers	24	0	24	0	0	0	0	0	0	0
3254	Pharmaceuticals and Medicines	60	9	51	1	7	*	1	1	0	*
325412	Pharmaceutical Preparation	29	4	25	1	2	*	1	*	0	*
325992	Photographic Film, Paper, Plate, and Chemicals	3	2	1	0	1	*	0	1	0	0
326	Plastics and Rubber Products	80	13	67	*	Q	Q	0	Q	0	*
327	Nonmetallic Mineral Products	335	32	303	1	2	Q	19	5	3	1
327120	Clay Building Material and Refractories	35	4	31	*	*	0	2	1	0	1
327211	Flat Glass	40	2	37	0	1	0	0	2	0	0
327212	Other Pressed and Blown Glass and Glassware	22	1	21	1	0	0	0	*	0	*
327213	Glass Containers	41	0	41	0	0	0	0	0	0	0
327215	Glass Products from Purchased Glass	8	*	7	*	*	0	0	*	0	*
327310	Cements	55	17	39	*	0	*	14	0	3	*
327410	Lime	18	3	15	0	0	0	3	0	0	0
327420	Gypsum	50	1	49	0	1	0	0	0	0	0
327993	Mineral Wool	21	*	20	*	*	0	0	*	0	*
331	Primary Metals	616	26	590	*	2	*	15	6	0	3
331110	Iron and Steel Mills and Ferroalloys	396	18	378	*	*	*	15	3	0	0
3312	Steel Products from Purchased Steel	24	*	24	*	*	*	0	*	0	*
3313	Alumina and Aluminum	112	3	109	*	*	*	0	1	0	2
331314	Secondary Smelting and Alloying of Aluminum	17	*	17	*	0	0	0	*	0	0
331315	Aluminum Sheet, Plate and Foils	52	1	51	0	*	*	0	1	0	*
331318	Other Aluminum Rolling, Drawing and Extruding	17	2	14	*	*	0	0	0	0	2
3314	Nonferrous Metals, except Aluminum	40	2	38	*	1	*	0	1	0	*
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	15	*	15	*	0	0	0	*	0	0
3315	Foundries	43	2	40	*	0	*	0	2	0	*
331511	Iron Foundries	12	1	11	*	0	*	0	1	0	0
331523	Nonferrous Metal Die-Casting Foundries	14	1	13	*	0	0	0	1	0	*
331524	Aluminum Foundries, except Die-Casting	6	*	6	*	0	0	0	0	0	0
332	Fabricated Metal Products	120	Q	116	1	*	Q	0	Q	0	0
333	Machinery	57	Q	54	*	*	0	0	Q	0	*
334	Computer and Electronic Products	29	2	27	*	*	*	0	*	0	*
334413	Semiconductors and Related Devices	13	1	12	*	*	0	0	*	0	0
335	Electrical Equip., Appliances, and Components	35	Q	34	*	0	0	0	Q	0	0
336	Transportation Equipment	151	5	146	1	2	2	0	Q	0	Q
336111	Automobiles	18	*	17	*	0	0	0	0	0	*
336112	Light Trucks and Utility Vehicles	24	*	24	*	0	0	0	0	0	0
3364	Aerospace Product and Parts	26	3	23	*	1	2	0	*	0	0
336411	Aircraft	6	*	5	*	0	0	0	*	0	0
337	Furniture and Related Products	15	Q	13	*	0	0	0	Q	0	0
339	Miscellaneous	24	1	23	Q	*	*	*	*	*	*
	Total	6,129	428	5,701	30	113	49	68	135	5	56

Northeast Census Region

311	Food	47	7	40	1	4	2	0	1	0	*
3112	Grain and Oilseed Milling	2	*	2	*	0	0	0	0	0	0
311221	Wet Corn Milling	*	0	*	0	0	0	0	0	0	0
31131	Sugar Manufacturing	2	1	1	0	1	0	0	0	0	0
3114	Fruit and Vegetable Preserving and Specialty Food	8	2	7	*	*	1	0	0	0	0
3115	Dairy Product	11	1	10	0	1	1	0	*	0	0
3116	Animal Slaughtering and Processing	7	1	6	*	1	*	0	0	0	*
312	Beverage and Tobacco Products	7	2	5	*	1	*	0	*	0	*
3121	Beverages	6	1	5	*	1	0	0	*	0	*
3122	Tobacco	1	*	*	0	0	*	0	0	0	0
313	Textile Mills	4	1	3	*	*	0	0	*	0	0
314	Textile Product Mills	1	*	1	0	*	0	0	0	0	0
315	Apparel	1	0	1	0	0	0	0	0	0	0
316	Leather and Allied Products	*	*	*	0	*	0	0	0	0	0
321	Wood Products	5	*	4	*	0	*	0	*	0	0
321113	Sawmills	*	0	*	0	0	0	0	0	0	0
3212	Veneer, Plywood, and Engineered Woods	2	*	2	*	0	0	0	*	0	0
321219	Reconstituted Wood Products	2	*	2	0	0	0	0	*	0	0
3219	Other Wood Products	3	*	3	*	0	*	0	*	0	0
322	Paper	74	10	64	*	3	2	2	0	2	*
322110	Pulp Mills	4	0	4	0	0	0	0	0	0	0
322121	Paper Mills, except Newsprint	47	5	42	0	1	*	2	0	2	*
322122	Newsprint Mills	0	0	0	0	0	0	0	0	0	0
322130	Paperboard Mills	15	4	11	*	2	2	0	0	0	0
323	Printing and Related Support	3	*	3	0	0	*	0	0	0	0
324	Petroleum and Coal Products	41	5	36	*	2	2	0	2	0	0
324110	Petroleum Refineries	29	3	26	0	*	1	0	2	0	0
324121	Asphalt Paving Mixture and Block	8	2	6	*	2	1	0	0	0	0
324122	Asphalt Shingle and Coating Materials	1	*	1	*	0	0	0	0	0	0
324191	Petroleum Lubricating Oil and Grease Products	*	0	*	0	0	0	0	0	0	0
324199	Other Petroleum and Coal Products	2	0	2	0	0	0	0	0	0	0
325	Chemicals	91	11	80	*	8	1	1	*	0	*
325110	Petrochemicals	*	*	*	0	*	0	0	0	0	0
325120	Industrial Gases	1	0	1	0	0	0	0	0	0	0
325180	Other Basic Inorganic Chemicals	6	*	5	0	0	0	0	0	0	*
325193	Ethyl Alcohol	7	0	7	0	0	0	0	0	0	0
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	2	2	*	0	2	0	0	0	0	0
325199	Other Basic Organic Chemicals	24	3	21	*	1	1	1	0	0	0
325211	Plastics Materials and Resins	4	1	4	*	0	*	0	*	0	*
325212	Synthetic Rubber	*	*	*	*	*	0	0	0	0	0
325220	Artificial and Synthetic Fibers and Filaments	*	0	*	0	0	0	0	0	0	0
325311	Nitrogenous Fertilizers	*	*	*	0	*	0	0	0	0	0
325312	Phosphatic Fertilizers	0	0	0	0	0	0	0	0	0	0
3254	Pharmaceuticals and Medicines	22	3	19	0	3	*	0	*	0	0
325412	Pharmaceutical Preparation	8	1	7	0	1	*	0	*	0	0
325992	Photographic Film, Paper, Plate, and Chemicals	1	*	1	0	0	*	0	0	0	0
326	Plastics and Rubber Products	10	*	10	0	0	0	0	*	0	0

327	Nonmetallic Mineral Products	50	3	46	*	0	Q	2	*	0	*
327120	Clay Building Material and Refractories	3	*	2	*	0	0	0	0	0	*
327211	Flat Glass	4	0	4	0	0	0	0	0	0	0
327212	Other Pressed and Blown Glass and Glassware	4	0	4	0	0	0	0	0	0	0
327213	Glass Containers	6	0	6	0	0	0	0	0	0	0
327215	Glass Products from Purchased Glass	2	*	2	*	0	0	0	*	0	0
327310	Cements	15	*	15	*	0	0	0	0	0	0
327410	Lime	3	2	1	0	0	0	2	0	0	0
327420	Gypsum	6	0	6	0	0	0	0	0	0	0
327993	Mineral Wool	2	*	2	*	0	0	0	*	0	*
331	Primary Metals	70	3	66	*	1	*	*	*	0	2
331110	Iron and Steel Mills and Ferroalloys	43	*	43	*	*	0	*	*	0	0
3312	Steel Products from Purchased Steel	2	*	2	0	0	*	0	0	0	0
3313	Alumina and Aluminum	14	2	12	0	*	0	0	0	0	2
331314	Secondary Smelting and Alloying of Aluminum	*	0	*	0	0	0	0	0	0	0
331315	Aluminum Sheet, Plate and Foils	6	*	6	0	0	0	0	0	0	*
331318	Other Aluminum Rolling, Drawing and Extruding	4	2	1	0	*	0	0	0	0	2
3314	Nonferrous Metals, except Aluminum	7	1	6	*	1	*	0	*	0	0
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	*	0	*	0	0	0	0	0	0	0
3315	Foundries	4	*	4	*	0	*	0	*	0	0
331511	Iron Foundries	1	*	1	*	0	*	0	*	0	0
331523	Nonferrous Metal Die-Casting Foundries	1	0	1	0	0	0	0	0	0	0
331524	Aluminum Foundries, except Die-Casting	*	0	*	0	0	0	0	0	0	0
332	Fabricated Metal Products	23	Q	23	*	*	*	0	*	0	0
333	Machinery	5	0	5	0	0	0	0	0	0	0
334	Computer and Electronic Products	8	1	7	0	*	*	0	0	0	*
334413	Semiconductors and Related Devices	2	*	2	0	*	0	0	0	0	0
335	Electrical Equip., Appliances, and Components	6	0	6	0	0	0	0	0	0	0
336	Transportation Equipment	16	3	14	*	Q	2	0	0	0	0
336111	Automobiles	*	0	*	0	0	0	0	0	0	0
336112	Light Trucks and Utility Vehicles	*	0	*	0	0	0	0	0	0	0
3364	Aerospace Product and Parts	6	2	4	0	0	2	0	0	0	0
336411	Aircraft	1	0	1	0	0	0	0	0	0	0
337	Furniture and Related Products	2	*	2	*	0	0	0	0	0	0
339	Miscellaneous	8	*	8	0	0	*	0	0	0	0
	Total	472	47	425	2	21	11	5	3	2	4

**Midwest Census Region**

311	Food	293	37	256	*	13	5	6	11	0	2
3112	Grain and Oilseed Milling	112	16	96	0	6	3	6	*	0	1
311221	Wet Corn Milling	55	4	50	0	0	0	4	*	0	0
31131	Sugar Manufacturing	8	1	7	0	0	*	0	*	0	0
3114	Fruit and Vegetable Preserving and Specialty Food	19	2	16	0	1	0	0	*	0	*
3115	Dairy Product	30	7	24	*	3	1	0	2	0	0
3116	Animal Slaughtering and Processing	59	10	49	*	2	Q	*	8	0	*
312	Beverage and Tobacco Products	12	1	11	0	Q	Q	0	*	0	*
3121	Beverages	12	1	11	0	Q	Q	0	*	0	*
3122	Tobacco	*	0	*	0	0	0	0	0	0	0
313	Textile Mills	1	*	1	*	0	*	0	*	0	0



314	Textile Product Mills	*	0	*	0	0	0	0	0	0	0	0
315	Apparel	*	0	*	0	0	0	0	0	0	0	0
316	Leather and Allied Products	1	*	1	0	*	0	0	*	0	0	0
321	Wood Products	10	1	9	*	*	*	*	*	0	*	*
321113	Sawmills	1	*	1	*	*	*	0	*	0	*	*
3212	Veneer, Plywood, and Engineered Woods	4	*	4	*	0	*	*	*	0	*	*
321219	Reconstituted Wood Products	3	*	3	0	0	*	0	*	0	*	*
3219	Other Wood Products	5	*	4	0	0	0	0	*	0	*	*
322	Paper	106	11	95	3	2	2	2	2	0	*	*
322110	Pulp Mills	1	0	1	0	0	0	0	0	0	0	0
322121	Paper Mills, except Newsprint	52	6	46	3	1	1	1	*	0	*	*
322122	Newsprint Mills	0	0	0	0	0	0	0	0	0	0	0
322130	Paperboard Mills	27	2	26	0	*	1	*	*	0	*	*
323	Printing and Related Support	12	Q	11	*	0	0	0	Q	0	0	0
324	Petroleum and Coal Products	131	37	94	*	3	1	0	34	0	2	2
324110	Petroleum Refineries	113	34	79	*	*	0	0	34	0	0	0
324121	Asphalt Paving Mixture and Block	10	3	6	*	3	1	0	*	0	2	2
324122	Asphalt Shingle and Coating Materials	4	*	4	0	*	0	0	0	0	0	0
324191	Petroleum Lubricating Oil and Grease Products	2	0	2	0	0	0	0	0	0	0	0
324199	Other Petroleum and Coal Products	2	0	2	0	0	0	0	0	0	0	0
325	Chemicals	539	11	528	*	6	*	1	3	0	2	2
325110	Petrochemicals	*	0	*	0	0	0	0	0	0	0	0
325120	Industrial Gases	*	0	*	0	0	0	0	0	0	0	0
325180	Other Basic Inorganic Chemicals	21	*	21	0	*	0	0	0	0	0	0
325193	Ethyl Alcohol	315	2	313	0	*	0	0	2	0	2	2
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	2	0	2	0	0	0	0	0	0	0	0
325199	Other Basic Organic Chemicals	39	1	38	0	1	*	0	*	0	0	0
325211	Plastics Materials and Resins	31	3	28	*	3	0	0	*	0	0	0
325212	Synthetic Rubber	1	*	1	0	*	0	0	*	0	0	0
325220	Artificial and Synthetic Fibers and Filaments	*	0	*	0	0	0	0	0	0	0	0
325311	Nitrogenous Fertilizers	44	0	44	0	0	0	0	0	0	0	0
325312	Phosphatic Fertilizers	*	0	*	0	0	0	0	0	0	0	0
3254	Pharmaceuticals and Medicines	20	3	17	*	Q	0	1	*	0	0	0
325412	Pharmaceutical Preparation	14	2	12	*	*	0	1	0	0	0	0
325992	Photographic Film, Paper, Plate, and Chemicals	*	*	*	0	0	0	0	*	0	0	0
326	Plastics and Rubber Products	34	Q	27	0	0	Q	0	Q	0	*	*
327	Nonmetallic Mineral Products	86	6	80	*	1	0	1	2	1	*	*
327120	Clay Building Material and Refractories	7	1	6	*	0	0	*	1	0	*	*
327211	Flat Glass	14	1	13	0	1	0	0	0	0	0	0
327212	Other Pressed and Blown Glass and Glassware	8	0	8	0	0	0	0	0	0	0	0
327213	Glass Containers	11	0	11	0	0	0	0	0	0	0	0
327215	Glass Products from Purchased Glass	2	*	2	*	0	0	0	*	0	*	*
327310	Cements	6	2	4	0	0	0	*	0	1	0	0
327410	Lime	9	1	9	0	0	0	1	0	0	0	0
327420	Gypsum	9	0	9	0	0	0	0	0	0	0	0
327993	Mineral Wool	8	0	8	0	0	0	0	0	0	0	0
331	Primary Metals	322	18	305	*	*	0	15	2	0	*	*
331110	Iron and Steel Mills and Ferroalloys	244	15	229	*	0	0	15	0	0	0	0
3312	Steel Products from Purchased Steel	13	*	13	*	0	0	0	*	0	0	0

3313	Alumina and Aluminum	28	*	28	*	0	0	0	*	0	0
331314	Secondary Smelting and Alloying of Aluminum	8	*	8	*	0	0	0	*	0	0
331315	Aluminum Sheet, Plate and Foils	13	0	13	0	0	0	0	0	0	0
331318	Other Aluminum Rolling, Drawing and Extruding	5	0	5	0	0	0	0	0	0	0
3314	Nonferrous Metals, except Aluminum	11	*	11	*	*	0	0	*	0	0
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	3	*	3	*	0	0	0	*	0	0
3315	Foundries	26	2	24	*	0	0	0	2	0	*
331511	Iron Foundries	8	*	7	*	0	0	0	*	0	0
331523	Nonferrous Metal Die-Casting Foundries	9	1	7	*	0	0	0	1	0	*
331524	Aluminum Foundries, except Die-Casting	3	0	3	0	0	0	0	0	0	0
332	Fabricated Metal Products	56	Q	53	1	0	0	0	Q	0	0
333	Machinery	34	1	34	*	*	0	0	*	0	*
334	Computer and Electronic Products	3	*	3	*	0	0	0	*	0	0
334413	Semiconductors and Related Devices	1	*	1	*	0	0	0	*	0	0
335	Electrical Equip., Appliances, and Components	12	0	12	0	0	0	0	0	0	0
336	Transportation Equipment	87	Q	86	*	0	0	0	*	0	Q
336111	Automobiles	12	*	12	0	0	0	0	0	0	*
336112	Light Trucks and Utility Vehicles	16	*	16	*	0	0	0	0	0	0
3364	Aerospace Product and Parts	7	*	7	*	0	0	0	*	0	0
336411	Aircraft	2	0	2	0	0	0	0	0	0	0
337	Furniture and Related Products	8	*	8	*	0	0	0	0	0	0
339	Miscellaneous	9	1	8	Q	*	*	*	*	*	*
	Total	1,757	134	1,622	6	26	13	26	61	1	7

South Census Region

311	Food	156	20	136	1	10	3	1	3	0	2
3112	Grain and Oilseed Milling	24	4	19	1	3	*	0	*	0	1
311221	Wet Corn Milling	2	0	2	0	0	0	0	0	0	0
31131	Sugar Manufacturing	10	4	6	0	0	3	1	*	0	*
3114	Fruit and Vegetable Preserving and Specialty Food	16	1	14	*	1	0	0	1	0	0
3115	Dairy Product	10	2	8	0	*	1	0	*	0	Q
3116	Animal Slaughtering and Processing	58	3	55	Q	2	0	0	1	0	1
312	Beverage and Tobacco Products	23	3	20	*	3	*	0	*	0	0
3121	Beverages	20	2	18	0	2	0	0	*	0	0
3122	Tobacco	4	1	2	*	1	*	0	*	0	0
313	Textile Mills	16	8	7	Q	4	1	Q	Q	*	0
314	Textile Product Mills	9	5	3	*	3	0	0	2	0	0
315	Apparel	1	*	1	*	*	0	0	*	0	0
316	Leather and Allied Products	*	0	*	0	0	0	0	0	0	0
321	Wood Products	38	1	37	*	0	*	0	*	0	1
321113	Sawmills	13	*	13	*	0	*	0	*	0	*
3212	Veneer, Plywood, and Engineered Woods	18	1	18	*	0	0	0	0	0	1
321219	Reconstituted Wood Products	12	1	12	0	0	0	0	0	0	1
3219	Other Wood Products	6	*	5	*	0	0	0	0	0	*
322	Paper	319	40	278	8	15	8	11	Q	0	8
322110	Pulp Mills	34	7	27	0	2	3	1	0	0	3
322121	Paper Mills, except Newsprint	90	10	80	0	6	1	2	0	0	2
322122	Newsprint Mills	4	*	4	0	0	0	0	*	0	*
322130	Paperboard Mills	168	22	146	8	6	5	9	0	0	3

323	Printing and Related Support	7	1	6	0	Q	0	0	*	0	1
324	Petroleum and Coal Products	620	29	591	2	3	1	*	17	0	9
324110	Petroleum Refineries	581	25	556	1	0	0	0	15	0	9
324121	Asphalt Paving Mixture and Block	14	3	11	*	3	1	*	2	0	*
324122	Asphalt Shingle and Coating Materials	6	*	6	*	*	0	0	*	0	0
324191	Petroleum Lubricating Oil and Grease Products	15	*	15	*	*	0	*	*	0	0
324199	Other Petroleum and Coal Products	3	0	3	0	0	0	0	0	0	0
325	Chemicals	1,569	57	1,512	7	17	7	6	10	0	12
325110	Petrochemicals	292	11	281	*	*	*	0	6	0	4
325120	Industrial Gases	D	*	D	*	0	0	0	*	0	0
325180	Other Basic Inorganic Chemicals	166	6	161	0	1	4	0	0	0	*
325193	Ethyl Alcohol	13	1	12	0	0	0	0	*	0	0
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	43	*	42	0	*	0	0	0	0	*
325199	Other Basic Organic Chemicals	319	10	309	0	3	0	6	*	0	2
325211	Plastics Materials and Resins	366	13	353	2	5	0	0	*	0	5
325212	Synthetic Rubber	17	2	16	*	1	*	*	0	0	0
325220	Artificial and Synthetic Fibers and Filaments	22	6	16	1	4	2	0	2	0	0
325311	Nitrogenous Fertilizers	156	0	156	0	0	0	0	0	0	0
325312	Phosphatic Fertilizers	D	0	D	0	0	0	0	0	0	0
3254	Pharmaceuticals and Medicines	13	3	10	*	2	*	0	1	0	*
325412	Pharmaceutical Preparation	6	1	4	*	1	0	0	*	0	*
325992	Photographic Film, Paper, Plate, and Chemicals	1	1	*	0	*	0	0	1	0	0
326	Plastics and Rubber Products	31	6	25	*	Q	Q	0	Q	0	0
327	Nonmetallic Mineral Products	151	20	131	1	2	*	13	2	2	1
327120	Clay Building Material and Refractories	23	2	21	*	*	0	1	*	0	1
327211	Flat Glass	17	1	15	0	0	0	0	1	0	0
327212	Other Pressed and Blown Glass and Glassware	10	1	9	1	0	0	0	*	0	*
327213	Glass Containers	15	0	15	0	0	0	0	0	0	0
327215	Glass Products from Purchased Glass	3	*	3	*	*	0	0	*	0	0
327310	Cements	26	13	13	0	0	*	12	0	2	*
327410	Lime	5	*	5	0	0	0	*	0	0	0
327420	Gypsum	27	1	26	0	1	0	0	0	0	0
327993	Mineral Wool	8	0	8	0	0	0	0	0	0	0
331	Primary Metals	183	5	179	*	1	*	0	4	0	*
331110	Iron and Steel Mills and Ferroalloys	94	3	91	*	*	0	0	3	0	0
3312	Steel Products from Purchased Steel	9	*	9	0	*	0	0	0	0	0
3313	Alumina and Aluminum	62	1	61	*	*	*	0	1	0	*
331314	Secondary Smelting and Alloying of Aluminum	8	0	8	0	0	0	0	0	0	0
331315	Aluminum Sheet, Plate and Foils	29	1	28	0	0	*	0	1	0	0
331318	Other Aluminum Rolling, Drawing and Extruding	6	*	6	*	*	0	0	0	0	*
3314	Nonferrous Metals, except Aluminum	10	1	10	*	*	0	0	*	0	0
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	1	*	1	*	0	0	0	0	0	0
3315	Foundries	9	*	8	*	0	0	0	*	0	0
331511	Iron Foundries	2	*	2	*	0	0	0	*	0	0
331523	Nonferrous Metal Die-Casting Foundries	4	*	3	0	0	0	0	*	0	0
331524	Aluminum Foundries, except Die-Casting	1	*	1	*	0	0	0	0	0	0
332	Fabricated Metal Products	29	Q	28	*	0	Q	0	0	0	0
333	Machinery	14	Q	12	*	0	0	0	Q	0	0
334	Computer and Electronic Products	7	1	6	*	*	0	0	0	0	0

334413	Semiconductors and Related Devices	4	1	3	0	*	0	0	0	0	0
335	Electrical Equip., Appliances, and Components	14	Q	14	*	0	0	0	Q	0	0
336	Transportation Equipment	39	Q	38	*	*	0	0	Q	0	0
336111	Automobiles	5	0	5	0	0	0	0	0	0	0
336112	Light Trucks and Utility Vehicles	9	0	9	0	0	0	0	0	0	0
3364	Aerospace Product and Parts	4	*	4	*	*	0	0	*	0	0
336411	Aircraft	1	*	1	0	0	0	0	*	0	0
337	Furniture and Related Products	4	Q	2	0	0	0	0	Q	0	0
339	Miscellaneous	6	*	6	*	0	0	0	*	0	0
	Total	3,235	203	3,032	20	62	25	34	48	2	33

West Census Region

311	Food	149	3	146	0	2	0	0	1	0	1
3112	Grain and Oilseed Milling	6	*	6	0	0	0	0	*	0	0
311221	Wet Corn Milling	2	*	2	0	0	0	0	*	0	0
31131	Sugar Manufacturing	13	0	13	0	0	0	0	0	0	0
3114	Fruit and Vegetable Preserving and Specialty Food	46	*	45	0	*	0	0	0	0	0
3115	Dairy Product	25	1	24	0	1	0	0	0	0	*
3116	Animal Slaughtering and Processing	20	2	19	0	*	0	0	*	0	1
312	Beverage and Tobacco Products	11	0	11	0	0	0	0	0	0	0
3121	Beverages	11	0	11	0	0	0	0	0	0	0
3122	Tobacco	0	0	0	0	0	0	0	0	0	0
313	Textile Mills	1	0	1	0	0	0	0	0	0	0
314	Textile Product Mills	Q	0	Q	0	0	0	0	0	0	0
315	Apparel	*	*	*	*	0	0	0	0	0	0
316	Leather and Allied Products	*	*	*	*	*	*	0	*	0	0
321	Wood Products	12	1	12	*	*	0	0	*	0	*
321113	Sawmills	3	*	3	*	*	0	0	*	0	0
3212	Veneer, Plywood, and Engineered Woods	7	*	6	*	*	0	0	*	0	*
321219	Reconstituted Wood Products	3	*	3	0	*	0	0	*	0	0
3219	Other Wood Products	2	*	1	*	0	0	0	0	0	*
322	Paper	52	*	51	*	0	0	0	0	0	*
322110	Pulp Mills	0	0	0	0	0	0	0	0	0	0
322121	Paper Mills, except Newsprint	27	0	27	0	0	0	0	0	0	0
322122	Newsprint Mills	1	0	1	0	0	0	0	0	0	0
322130	Paperboard Mills	17	*	16	0	0	0	0	0	0	*
323	Printing and Related Support	1	*	1	*	*	*	0	*	0	0
324	Petroleum and Coal Products	246	32	214	1	*	*	0	21	0	10
324110	Petroleum Refineries	235	32	204	1	0	0	0	21	0	10
324121	Asphalt Paving Mixture and Block	8	*	7	0	*	*	0	*	0	0
324122	Asphalt Shingle and Coating Materials	2	*	2	0	0	0	0	*	0	0
324191	Petroleum Lubricating Oil and Grease Products	1	0	1	0	0	0	0	0	0	0
324199	Other Petroleum and Coal Products	*	0	*	0	0	0	0	0	0	0
325	Chemicals	59	2	57	*	1	0	1	*	0	0
325110	Petrochemicals	0	0	0	0	0	0	0	0	0	0
325120	Industrial Gases	D	*	D	*	0	0	0	0	0	0
325180	Other Basic Inorganic Chemicals	17	1	16	0	0	0	1	0	0	0
325193	Ethyl Alcohol	11	0	11	0	0	0	0	0	0	0
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	2	0	2	0	0	0	0	0	0	0

325199	Other Basic Organic Chemicals	4	0	4	0	0	0	0	0	0	0	0
325211	Plastics Materials and Resins	1	0	1	0	0	0	0	0	0	0	0
325212	Synthetic Rubber	*	0	*	0	0	0	0	0	0	0	0
325220	Artificial and Synthetic Fibers and Filaments	*	0	*	0	0	0	0	0	0	0	0
325311	Nitrogenous Fertilizers	5	0	5	0	0	0	0	0	0	0	0
325312	Phosphatic Fertilizers	D	0	D	0	0	0	0	0	0	0	0
3254	Pharmaceuticals and Medicines	4	*	4	*	0	0	0	0	0	0	0
325412	Pharmaceutical Preparation	2	*	2	*	0	0	0	0	0	0	0
325992	Photographic Film, Paper, Plate, and Chemicals	1	1	*	0	1	0	0	*	0	0	0
326	Plastics and Rubber Products	Q	*	Q	*	0	0	0	0	0	0	*
327	Nonmetallic Mineral Products	48	2	46	*	*	0	2	*	*	*	*
327120	Clay Building Material and Refractories	2	*	2	*	0	0	0	0	0	0	0
327211	Flat Glass	5	*	5	0	0	0	0	*	0	0	0
327212	Other Pressed and Blown Glass and Glassware	1	*	1	*	0	0	0	*	0	0	0
327213	Glass Containers	9	0	9	0	0	0	0	0	0	0	0
327215	Glass Products from Purchased Glass	*	*	*	*	0	0	0	0	0	0	0
327310	Cements	9	2	7	0	0	0	2	0	*	0	0
327410	Lime	*	0	*	0	0	0	0	0	0	0	0
327420	Gypsum	9	0	9	0	0	0	0	0	0	0	0
327993	Mineral Wool	2	*	2	0	*	0	0	0	0	0	*
331	Primary Metals	41	1	40	*	*	*	0	*	0	0	*
331110	Iron and Steel Mills and Ferroalloys	16	*	16	*	0	*	0	*	0	0	0
3312	Steel Products from Purchased Steel	*	*	*	0	0	0	0	0	0	0	*
3313	Alumina and Aluminum	8	*	8	0	*	0	0	0	0	0	0
331314	Secondary Smelting and Alloying of Aluminum	1	0	1	0	0	0	0	0	0	0	0
331315	Aluminum Sheet, Plate and Foils	4	*	4	0	*	0	0	0	0	0	0
331318	Other Aluminum Rolling, Drawing and Extruding	2	0	2	0	0	0	0	0	0	0	0
3314	Nonferrous Metals, except Aluminum	12	*	12	*	0	0	0	*	0	0	*
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	10	*	10	0	0	0	0	*	0	0	0
3315	Foundries	4	*	4	*	0	0	0	*	0	0	0
331511	Iron Foundries	1	*	1	*	0	0	0	*	0	0	0
331523	Nonferrous Metal Die-Casting Foundries	1	*	1	*	0	0	0	0	0	0	0
331524	Aluminum Foundries, except Die-Casting	1	*	1	*	0	0	0	0	0	0	0
332	Fabricated Metal Products	11	*	11	*	0	0	0	*	0	0	0
333	Machinery	3	*	3	*	0	0	0	0	0	0	0
334	Computer and Electronic Products	11	*	11	0	*	0	0	0	0	0	0
334413	Semiconductors and Related Devices	6	*	6	0	*	0	0	0	0	0	0
335	Electrical Equip., Appliances, and Components	Q	*	Q	*	0	0	0	*	0	0	0
336	Transportation Equipment	9	1	8	*	1	0	0	*	0	0	0
336111	Automobiles	*	*	*	*	0	0	0	0	0	0	0
336112	Light Trucks and Utility Vehicles	*	0	*	0	0	0	0	0	0	0	0
3364	Aerospace Product and Parts	8	1	7	*	1	0	0	*	0	0	0
336411	Aircraft	2	*	2	*	0	0	0	0	0	0	0
337	Furniture and Related Products	1	0	1	0	0	0	0	0	0	0	0
339	Miscellaneous	1	0	1	0	0	0	0	0	0	0	0
	Total	666	44	622	2	5	*	3	23	*	12	

Economic Characteristic (f)

<b>Value of Shipments and Receipts</b>										
<b>(million dollars)</b>										
Under 20	444	27	416	4	13	5	2	8	*	3
20-49	353	21	332	2	7	4	4	5	*	1
50-99	580	28	552	1	9	5	7	5	*	3
100-249	1,067	74	993	3	28	13	7	18	2	7
250-499	727	59	668	5	20	14	8	10	2	4
500 and Over	2,958	218	2,740	15	36	9	41	90	0	39
<b>Total</b>	<b>6,129</b>	<b>428</b>	<b>5,701</b>	<b>30</b>	<b>113</b>	<b>49</b>	<b>68</b>	<b>135</b>	<b>5</b>	<b>56</b>

  

<b>Employment Size</b>										
Under 50	711	33	678	3	18	7	2	8	*	3
50-99	609	28	580	4	11	4	2	5	*	4
100-249	1,121	67	1,054	3	23	13	14	11	3	6
250-499	1,202	125	1,077	13	32	15	12	46	0	17
500-999	1,244	101	1,142	6	17	6	12	42	2	20
1000 and Over	1,243	73	1,170	1	12	4	27	24	0	6
<b>Total</b>	<b>6,129</b>	<b>428</b>	<b>5,701</b>	<b>30</b>	<b>113</b>	<b>49</b>	<b>68</b>	<b>135</b>	<b>5</b>	<b>56</b>

(a) The Bureau of the Census classifies establishments using the 2017 North American Industry Classification System (NAICS).

(b) *Alternative Energy Sources* consist of those energy sources that could have been substituted for natural gas during 2018. The quantities are expressed in billions of cubic feet, and therefore represent the quantity of natural gas that could have been displaced by the given alternative type of energy.

(c) *Total Consumed* represents those quantities (Total Inputs) of natural gas that were ascertained switchable or not switchable, plus an additional quantity for which the switching status was not ascertained.

(d) *Electricity Receipts* represents those quantities of electricity generated off the manufacturing establishment site and available at the site for consumption. It includes those quantities for which payment was made, quantities transferred in, quantities purchased and paid for by a central purchasing entity, and quantities for which payment was made in kind. It does not include electricity generated onsite. *Electricity Receipts* has not been adjusted to account for any quantities that might have been resold or transferred out. The estimates include those quantities that were ascertained switchable or not switchable, plus an additional quantity for which the switching status was not ascertained.

(e) *Other* includes all other types of energy not already identified that respondents indicated could have been consumed in place of natural gas.

(f) *Value of Shipments and Receipts* and *Employment Size* categories were supplied by the Bureau of the Census.

\* Estimate less than 0.5.

D=Withheld to avoid disclosing data for individual establishments.

Q=Withheld because Relative Standard Error is greater than 50 percent.

NA=Not available.

Notes: Totals may not equal sum of components because of independent rounding.

Sources: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-846, *2018 Manufacturing Energy Consumption Survey*, and the Bureau of the Census, data files for the *2018 Annual Survey of Manufactures*.

The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied (Approval ID: CBDRB-FY20-260) and (Approval ID: CBDRB-FY21-312).

Released: February 2021  
Next MECS will be fielded in 2023.

**RSE Table 10.2 Relative Standard Errors for Table 10.2;**

Unit: Percents.

NAICS Code(a)	Subsector and Industry	Natural Gas			Alternative Energy Sources(b)						
		Total Consumed(c)	Switchable	Not Switchable	Electricity Receipts(d)	Distillate Fuel Oil	Residual Fuel Oil	Coal	HGL (excluding natural gasoline)	Coal Coke and Breeze	Other(e)
<b>Total United States</b>											
311	Food	4.5	5.5	5.0	20.6	11.5	11.1	1.0	8.8	X	15.1
3112	Grain and Oilseed Milling	3.6	5.4	4.1	0.2	7.1	27.1	0.0	19.3	X	23.8
311221	Wet Corn Milling	0.0	0.0	0.0	X	X	X	0.0	0.0	X	X
31131	Sugar Manufacturing	0.0	0.0	0.0	X	0.0	0.0	0.0	0.0	X	0.0
3114	Fruit and Vegetable Preserving and Specialty Food	3.2	3.8	3.5	5.2	6.8	3.5	X	1.8	X	0.0
3115	Dairy Product	2.3	7.9	2.4	0.0	8.9	12.3	X	21.1	X	80.3
3116	Animal Slaughtering and Processing	6.2	7.3	6.9	44.1	20.2	64.1	97.1	7.1	X	11.4
312	Beverage and Tobacco Products	8.5	8.4	9.5	0.0	10.4	51.6	X	19.5	X	44.1
3121	Beverages	9.2	11.7	10.0	0.0	14.1	91.2	X	24.2	X	44.1
3122	Tobacco	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	X
313	Textile Mills	12.7	22.2	10.6	51.7	32.0	47.1	57.7	47.6	87.3	X
314	Textile Product Mills	13.5	19.0	20.3	39.7	19.6	X	X	15.5	X	X
315	Apparel	14.3	21.2	17.0	25.2	31.6	X	X	0.5	X	X
316	Leather and Allied Products	11.6	11.6	13.2	0.0	16.0	0.0	X	0.0	X	X
321	Wood Products	10.2	5.7	10.6	30.7	0.4	15.2	0.0	22.0	X	6.5
321113	Sawmills	36.2	0.6	36.9	7.0	0.0	0.0	X	14.9	X	0.4
3212	Veneer, Plywood, and Engineered Woods	1.2	1.2	1.2	1.9	0.9	0.0	0.0	8.5	X	0.0
321219	Reconstituted Wood Products	0.9	1.7	1.0	X	0.0	0.0	X	30.6	X	0.0
3219	Other Wood Products	14.9	19.8	15.6	53.2	X	64.7	X	58.5	X	19.6
322	Paper	1.0	2.1	1.2	0.9	1.9	0.0	0.0	41.4	0.0	0.0
322110	Pulp Mills	0.0	0.0	0.0	X	0.0	0.0	0.0	X	X	0.0
322121	Paper Mills, except Newsprint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
322122	Newsprint Mills	0.0	0.0	0.0	X	X	X	X	0.0	X	0.0
322130	Paperboard Mills	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0
323	Printing and Related Support	10.0	27.3	10.9	69.0	65.3	47.4	X	60.7	X	0.0
324	Petroleum and Coal Products	0.3	0.6	0.4	5.1	7.6	11.5	33.4	0.6	X	0.8
324110	Petroleum Refineries	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	0.0
324121	Asphalt Paving Mixture and Block	3.9	7.4	4.8	31.4	8.3	13.6	57.4	21.5	X	8.7
324122	Asphalt Shingle and Coating Materials	1.1	0.3	1.1	0.0	0.7	X	X	0.0	X	X
324191	Petroleum Lubricating Oil and Grease Products	17.4	0.0	17.8	0.0	0.0	X	0.0	0.0	X	X
324199	Other Petroleum and Coal Products	0.0	X	0.0	X	X	X	X	X	X	X
325	Chemicals	1.7	4.0	1.7	24.8	6.1	3.9	0.0	4.9	X	7.2
325110	Petrochemicals	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	0.0
325120	Industrial Gases	1.9	62.4	1.9	62.4	X	X	X	72.5	X	X

325180	Other Basic Inorganic Chemicals	4.0	2.5	4.1	X	23.0	0.0	0.0	X	X	0.0
325193	Ethyl Alcohol	1.5	15.3	1.5	X	0.0	X	X	24.7	X	26.7
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	0.0	0.0	0.0	X	0.0	X	X	X	X	0.0
325199	Other Basic Organic Chemicals	6.0	7.1	6.2	24.0	12.4	19.8	0.0	0.9	X	49.4
325211	Plastics Materials and Resins	1.1	7.2	1.2	0.8	14.4	25.8	X	33.2	X	6.1
325212	Synthetic Rubber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	X
325220	Artificial and Synthetic Fibers and Filaments	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	X
325311	Nitrogenous Fertilizers	3.2	0.0	3.2	X	0.0	X	X	X	X	X
325312	Phosphatic Fertilizers	0.0	X	0.0	X	X	X	X	X	X	X
3254	Pharmaceuticals and Medicines	5.2	9.8	5.7	26.8	13.1	51.7	0.0	0.2	X	0.0
325412	Pharmaceutical Preparation	9.6	4.8	11.1	27.3	8.8	0.0	0.0	0.6	X	0.0
325992	Photographic Film, Paper, Plate, and Chemicals	0.4	0.1	0.9	X	0.1	0.0	X	0.0	X	X
326	Plastics and Rubber Products	14.3	41.9	15.0	56.8	80.0	70.4	X	68.3	X	74.2
327	Nonmetallic Mineral Products	1.7	4.7	1.8	2.5	0.0	54.3	0.1	23.9	0.1	2.2
327120	Clay Building Material and Refractories	2.2	0.9	2.4	21.2	0.0	X	0.0	1.6	X	3.0
327211	Flat Glass	0.0	0.0	0.0	X	0.0	X	X	0.0	X	X
327212	Other Pressed and Blown Glass and Glassware	0.7	9.8	0.7	0.0	X	X	X	72.8	X	0.0
327213	Glass Containers	0.0	X	0.0	X	X	X	X	X	X	X
327215	Glass Products from Purchased Glass	1.1	2.5	1.2	17.6	0.0	X	X	0.3	X	49.8
327310	Cements	1.2	0.1	1.7	0.0	X	0.0	0.1	X	0.1	0.0
327410	Lime	0.0	0.0	0.0	X	X	X	0.0	X	X	X
327420	Gypsum	0.5	0.0	0.5	X	0.0	X	X	X	X	X
327993	Mineral Wool	1.0	0.0	1.0	0.0	0.0	X	X	0.0	X	0.0
331	Primary Metals	0.2	0.9	0.2	10.5	2.3	0.7	0.0	3.7	X	0.3
331110	Iron and Steel Mills and Ferroalloys	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	X
3312	Steel Products from Purchased Steel	3.9	1.0	3.9	69.1	0.0	0.0	X	0.0	X	0.0
3313	Alumina and Aluminum	0.4	0.4	0.4	30.2	3.2	0.0	X	0.0	X	0.4
331314	Secondary Smelting and Alloying of Aluminum	2.3	0.0	2.3	0.0	X	X	X	0.0	X	X
331315	Aluminum Sheet, Plate and Foils	0.0	0.0	0.0	X	0.0	0.0	X	0.0	X	0.0
331318	Other Aluminum Rolling, Drawing and Extruding	0.4	0.6	0.5	43.5	6.9	X	X	X	X	0.4
3314	Nonferrous Metals, except Aluminum	1.3	3.5	1.4	48.2	4.1	0.0	X	9.8	X	0.0
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	1.3	0.0	1.3	0.0	X	X	X	0.0	X	X
3315	Foundries	0.9	9.4	0.8	12.5	X	80.0	X	11.5	X	0.0
331511	Iron Foundries	2.0	41.0	1.3	28.1	X	80.0	X	41.3	X	X
331523	Nonferrous Metal Die-Casting Foundries	1.6	5.4	1.8	3.3	X	X	X	5.1	X	0.0
331524	Aluminum Foundries, except Die-Casting	1.3	6.6	1.3	6.6	X	X	X	X	X	X
332	Fabricated Metal Products	16.1	54.5	16.7	42.1	99.5	70.9	X	91.5	X	X
333	Machinery	13.0	54.9	13.5	51.3	0.0	X	X	66.3	X	0.0
334	Computer and Electronic Products	10.4	2.2	11.0	61.6	0.0	0.0	X	0.0	X	99.0
334413	Semiconductors and Related Devices	3.6	2.8	3.8	65.3	0.0	X	X	0.0	X	X
335	Electrical Equip., Appliances, and Components	15.1	71.6	15.5	81.4	X	X	X	74.7	X	X
336	Transportation Equipment	8.5	18.2	8.8	30.8	34.7	0.0	X	56.8	X	83.6
336111	Automobiles	0.0	0.0	0.0	0.0	X	X	X	X	X	0.0
336112	Light Trucks and Utility Vehicles	0.0	0.0	0.0	0.0	X	X	X	X	X	X
3364	Aerospace Product and Parts	2.8	2.7	3.2	7.1	8.3	0.0	X	7.3	X	X
336411	Aircraft	1.6	0.0	1.7	0.0	X	X	X	0.0	X	X



337	Furniture and Related Products	12.4	69.9	12.1	96.4	X	X	X	70.9	X	X
339	Miscellaneous	17.6	30.5	18.4	54.9	39.9	75.5	99.0	56.2	99.0	99.0
	Total	0.9	2.0	1.0	6.7	4.2	8.5	2.0	3.8	3.5	2.4

**Northeast Census Region**

311	Food	9.9	2.4	11.5	2.4	3.7	3.7	X	19.4	X	0.0
3112	Grain and Oilseed Milling	0.9	71.5	0.9	71.5	X	X	X	X	X	X
311221	Wet Corn Milling	0.0	X	0.0	X	X	X	X	X	X	X
31131	Sugar Manufacturing	0.0	0.0	0.0	X	0.0	X	X	X	X	X
3114	Fruit and Vegetable Preserving and Specialty Food	13.5	3.1	17.0	0.0	15.8	3.5	X	X	X	X
3115	Dairy Product	6.6	5.9	7.6	X	8.0	8.4	X	0.0	X	X
3116	Animal Slaughtering and Processing	2.2	3.9	2.6	0.0	7.1	0.0	X	X	X	0.0
312	Beverage and Tobacco Products	4.3	2.0	5.7	0.0	0.0	0.0	X	66.6	X	49.8
3121	Beverages	4.7	2.4	6.1	0.0	0.0	X	X	66.6	X	49.8
3122	Tobacco	0.0	0.0	0.0	X	X	0.0	X	X	X	X
313	Textile Mills	13.1	16.7	14.2	36.4	24.1	X	X	26.7	X	X
314	Textile Product Mills	41.4	0.0	48.6	X	0.0	X	X	X	X	X
315	Apparel	36.6	X	36.6	X	X	X	X	X	X	X
316	Leather and Allied Products	15.1	38.1	15.2	X	38.1	X	X	X	X	X
321	Wood Products	18.6	14.9	19.5	53.1	X	16.3	X	63.0	X	X
321113	Sawmills	9.7	X	9.7	X	X	X	X	X	X	X
3212	Veneer, Plywood, and Engineered Woods	1.2	0.0	1.2	0.0	X	X	X	0.0	X	X
321219	Reconstituted Wood Products	0.0	0.0	0.0	X	X	X	X	0.0	X	X
3219	Other Wood Products	33.2	64.7	33.8	64.7	X	64.7	X	64.7	X	X
322	Paper	4.5	3.3	5.2	0.0	10.6	0.0	0.0	X	0.0	0.0
322110	Pulp Mills	0.0	X	0.0	X	X	X	X	X	X	X
322121	Paper Mills, except Newsprint	0.0	0.0	0.0	X	0.0	0.0	0.0	X	0.0	0.0
322122	Newsprint Mills	X	X	X	X	X	X	X	X	X	X
322130	Paperboard Mills	0.0	0.0	0.0	0.0	0.0	0.0	X	X	X	X
323	Printing and Related Support	28.9	50.9	31.1	X	X	50.9	X	X	X	X
324	Petroleum and Coal Products	1.2	6.1	1.2	0.0	12.9	14.8	X	0.0	X	X
324110	Petroleum Refineries	0.0	0.0	0.0	X	0.0	0.0	X	0.0	X	X
324121	Asphalt Paving Mixture and Block	5.7	15.6	6.5	0.0	16.5	25.4	X	X	X	X
324122	Asphalt Shingle and Coating Materials	0.0	0.0	0.0	0.0	X	X	X	X	X	X
324191	Petroleum Lubricating Oil and Grease Products	1.6	X	1.6	X	X	X	X	X	X	X
324199	Other Petroleum and Coal Products	0.0	X	0.0	X	X	X	X	X	X	X
325	Chemicals	13.0	3.7	14.8	21.6	3.6	24.2	0.0	0.6	X	0.4
325110	Petrochemicals	0.0	0.0	0.0	X	0.0	X	X	X	X	X
325120	Industrial Gases	5.8	X	5.8	X	X	X	X	X	X	X
325180	Other Basic Inorganic Chemicals	17.8	0.0	18.9	X	X	X	X	X	X	0.0
325193	Ethyl Alcohol	0.0	X	0.0	X	X	X	X	X	X	X
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	0.0	0.0	0.0	X	0.0	X	X	X	X	X
325199	Other Basic Organic Chemicals	0.5	3.9	0.3	24.0	0.0	18.1	0.0	X	X	X
325211	Plastics Materials and Resins	2.4	4.1	2.6	16.6	X	25.8	X	0.6	X	1.2
325212	Synthetic Rubber	0.0	0.0	0.0	0.0	0.0	X	X	X	X	X
325220	Artificial and Synthetic Fibers and Filaments	0.0	X	0.0	X	X	X	X	X	X	X

325311	Nitrogenous Fertilizers	0.0	0.0	0.0	X	0.0	X	X	X	X	X
325312	Phosphatic Fertilizers	X	X	X	X	X	X	X	X	X	X
3254	Pharmaceuticals and Medicines	1.2	2.3	1.4	X	2.3	0.0	X	0.0	X	X
325412	Pharmaceutical Preparation	1.7	8.8	1.6	X	8.9	0.0	X	0.0	X	X
325992	Photographic Film, Paper, Plate, and Chemicals	0.0	0.0	0.0	X	X	0.0	X	X	X	X
326	Plastics and Rubber Products	46.5	96.7	46.9	X	X	X	X	96.7	X	X
327	Nonmetallic Mineral Products	3.1	15.0	3.1	22.0	X	98.5	0.0	0.0	X	0.0
327120	Clay Building Material and Refractories	5.9	3.8	6.9	24.3	X	X	X	X	X	0.0
327211	Flat Glass	0.0	X	0.0	X	X	X	X	X	X	X
327212	Other Pressed and Blown Glass and Glassware	1.8	X	1.8	X	X	X	X	X	X	X
327213	Glass Containers	0.0	X	0.0	X	X	X	X	X	X	X
327215	Glass Products from Purchased Glass	0.7	0.0	0.7	0.0	X	X	X	0.0	X	X
327310	Cements	0.0	0.0	0.0	0.0	X	X	X	X	X	X
327410	Lime	0.0	0.0	0.0	X	X	X	0.0	X	X	X
327420	Gypsum	0.0	X	0.0	X	X	X	X	X	X	X
327993	Mineral Wool	0.0	0.0	0.0	0.0	X	X	X	0.0	X	0.0
331	Primary Metals	0.3	1.6	0.3	54.4	0.0	0.7	0.0	41.4	X	0.0
331110	Iron and Steel Mills and Ferroalloys	0.0	0.0	0.0	0.0	0.0	X	0.0	0.0	X	X
3312	Steel Products from Purchased Steel	2.5	0.0	2.6	X	X	0.0	X	X	X	X
3313	Alumina and Aluminum	0.0	0.0	0.0	X	0.0	X	X	X	X	0.0
331314	Secondary Smelting and Alloying of Aluminum	0.0	X	0.0	X	X	X	X	X	X	X
331315	Aluminum Sheet, Plate and Foils	0.0	0.0	0.0	X	X	X	X	X	X	0.0
331318	Other Aluminum Rolling, Drawing and Extruding	0.0	0.0	0.0	X	0.0	X	X	X	X	0.0
3314	Nonferrous Metals, except Aluminum	2.2	5.4	2.4	70.3	0.0	0.0	X	42.8	X	X
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	0.0	X	0.0	X	X	X	X	X	X	X
3315	Foundries	1.9	80.0	1.9	80.0	X	80.0	X	80.0	X	X
331511	Iron Foundries	1.4	80.0	1.3	80.0	X	80.0	X	80.0	X	X
331523	Nonferrous Metal Die-Casting Foundries	3.2	X	3.2	X	X	X	X	X	X	X
331524	Aluminum Foundries, except Die-Casting	1.2	X	1.2	X	X	X	X	X	X	X
332	Fabricated Metal Products	46.8	84.2	47.8	76.8	99.5	92.3	X	99.5	X	X
333	Machinery	25.3	X	25.3	X	X	X	X	X	X	X
334	Computer and Electronic Products	18.8	3.1	20.4	X	0.0	0.0	X	X	X	99.0
334413	Semiconductors and Related Devices	2.3	0.0	2.4	X	0.0	X	X	X	X	X
335	Electrical Equip., Appliances, and Components	38.2	X	38.2	X	X	X	X	X	X	X
336	Transportation Equipment	23.8	24.7	27.9	66.1	66.1	0.0	X	X	X	X
336111	Automobiles	0.0	X	0.0	X	X	X	X	X	X	X
336112	Light Trucks and Utility Vehicles	0.0	X	0.0	X	X	X	X	X	X	X
3364	Aerospace Product and Parts	1.1	0.0	1.5	X	X	0.0	X	X	X	X
336411	Aircraft	0.0	X	0.0	X	X	X	X	X	X	X
337	Furniture and Related Products	37.0	99.0	37.0	99.0	X	X	X	X	X	X
339	Miscellaneous	41.5	99.0	41.9	X	X	99.0	X	X	X	X
	Total	4.0	2.5	4.5	7.5	4.2	7.0	0.0	4.6	0.0	0.6

**Midwest Census Region**

311	Food	6.6	4.3	7.5	36.7	8.3	22.4	1.2	6.5	X	25.7
3112	Grain and Oilseed Milling	4.5	6.9	5.3	X	10.9	28.4	0.0	8.1	X	35.3

311221	Wet Corn Milling	0.0	0.0	0.0	X	X	X	0.0	0.0	X	X
31131	Sugar Manufacturing	0.0	0.0	0.0	X	X	0.0	X	0.0	X	X
3114	Fruit and Vegetable Preserving and Specialty Food	9.6	6.8	11.1	X	7.5	X	X	4.1	X	0.0
3115	Dairy Product	4.0	10.5	4.5	0.0	11.9	38.1	X	26.2	X	X
3116	Animal Slaughtering and Processing	8.9	7.9	10.8	90.0	33.1	64.9	97.1	5.7	X	14.7
312	Beverage and Tobacco Products	6.2	49.5	5.4	X	89.9	91.2	X	18.1	X	46.6
3121	Beverages	6.2	49.5	5.4	X	89.9	91.2	X	18.1	X	46.6
3122	Tobacco	0.0	X	0.0	X	X	X	X	X	X	X
313	Textile Mills	13.1	34.0	13.7	43.8	X	43.8	X	40.7	X	X
314	Textile Product Mills	57.4	X	57.4	X	X	X	X	X	X	X
315	Apparel	61.2	X	61.2	X	X	X	X	X	X	X
316	Leather and Allied Products	17.2	0.0	20.1	X	0.0	X	X	0.0	X	X
321	Wood Products	6.2	15.3	6.6	3.7	0.0	0.0	0.0	57.7	X	16.2
321113	Sawmills	4.7	0.7	5.3	3.7	0.0	0.0	X	20.6	X	1.1
3212	Veneer, Plywood, and Engineered Woods	2.2	17.2	2.2	0.0	X	0.0	0.0	42.1	X	0.0
321219	Reconstituted Wood Products	0.5	17.7	0.3	X	X	0.0	X	42.2	X	0.0
3219	Other Wood Products	12.3	20.2	13.5	X	X	X	X	92.6	X	19.3
322	Paper	3.9	7.4	4.2	3.3	0.0	0.0	0.0	49.0	X	0.0
322110	Pulp Mills	0.0	X	0.0	X	X	X	X	X	X	X
322121	Paper Mills, except Newsprint	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0
322122	Newsprint Mills	X	X	X	X	X	X	X	X	X	X
322130	Paperboard Mills	0.0	0.0	0.0	X	0.0	0.0	0.0	0.0	X	0.0
323	Printing and Related Support	14.7	52.9	15.3	89.7	X	X	X	65.2	X	X
324	Petroleum and Coal Products	0.3	0.8	0.3	0.0	9.7	21.1	X	0.0	X	8.3
324110	Petroleum Refineries	0.0	0.0	0.0	0.0	0.0	X	X	0.0	X	X
324121	Asphalt Paving Mixture and Block	3.8	9.1	4.4	0.0	10.0	21.1	X	0.0	X	8.3
324122	Asphalt Shingle and Coating Materials	1.3	2.6	1.3	X	2.6	X	X	X	X	X
324191	Petroleum Lubricating Oil and Grease Products	3.8	X	3.8	X	X	X	X	X	X	X
324199	Other Petroleum and Coal Products	0.0	X	0.0	X	X	X	X	X	X	X
325	Chemicals	4.9	12.0	4.9	14.6	18.6	64.2	0.0	18.1	X	26.7
325110	Petrochemicals	0.0	X	0.0	X	X	X	X	X	X	X
325120	Industrial Gases	3.5	X	3.5	X	X	X	X	X	X	X
325180	Other Basic Inorganic Chemicals	1.9	0.0	1.9	X	0.0	X	X	X	X	X
325193	Ethyl Alcohol	1.6	24.1	1.7	X	0.0	X	X	26.4	X	26.7
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	0.0	X	0.0	X	X	X	X	X	X	X
325199	Other Basic Organic Chemicals	20.6	30.0	21.6	X	44.5	64.2	X	0.0	X	X
325211	Plastics Materials and Resins	6.1	0.8	6.7	72.6	0.0	X	X	8.7	X	X
325212	Synthetic Rubber	0.0	0.0	0.0	X	0.0	X	X	0.0	X	X
325220	Artificial and Synthetic Fibers and Filaments	0.0	X	0.0	X	X	X	X	X	X	X
325311	Nitrogenous Fertilizers	0.1	X	0.1	X	X	X	X	X	X	X
325312	Phosphatic Fertilizers	0.0	X	0.0	X	X	X	X	X	X	X
3254	Pharmaceuticals and Medicines	15.0	29.3	16.2	5.0	60.6	X	0.0	0.0	X	X
325412	Pharmaceutical Preparation	20.1	0.0	22.8	0.0	0.0	X	0.0	X	X	X
325992	Photographic Film, Paper, Plate, and Chemicals	0.0	0.0	0.0	X	X	X	X	0.0	X	X
326	Plastics and Rubber Products	24.1	68.4	24.3	X	X	96.3	X	98.8	X	99.0
327	Nonmetallic Mineral Products	2.6	17.5	2.4	3.7	0.0	X	0.0	46.1	0.0	76.0

327120	Clay Building Material and Refractories	3.4	2.4	4.0	0.0	X	X	0.0	0.0	X	84.0
327211	Flat Glass	0.0	0.0	0.0	X	0.0	X	X	X	X	X
327212	Other Pressed and Blown Glass and Glassware	1.0	X	1.0	X	X	X	X	X	X	X
327213	Glass Containers	0.0	X	0.0	X	X	X	X	X	X	X
327215	Glass Products from Purchased Glass	3.2	5.0	3.3	5.6	X	X	X	10.6	X	49.8
327310	Cements	0.1	0.0	0.1	X	X	X	0.0	X	0.0	X
327410	Lime	0.0	0.0	0.0	X	X	X	0.0	X	X	X
327420	Gypsum	0.2	X	0.2	X	X	X	X	X	X	X
327993	Mineral Wool	0.5	X	0.5	X	X	X	X	X	X	X
331	Primary Metals	0.2	1.3	0.2	7.5	0.0	X	0.0	12.4	X	0.0
331110	Iron and Steel Mills and Ferroalloys	0.0	0.0	0.0	0.0	X	X	0.0	X	X	X
3312	Steel Products from Purchased Steel	3.7	2.1	3.7	69.1	X	X	X	0.0	X	X
3313	Alumina and Aluminum	0.8	0.0	0.8	0.0	X	X	X	0.0	X	X
331314	Secondary Smelting and Alloying of Aluminum	2.7	0.0	2.7	0.0	X	X	X	0.0	X	X
331315	Aluminum Sheet, Plate and Foils	0.0	X	0.0	X	X	X	X	X	X	X
331318	Other Aluminum Rolling, Drawing and Extruding	1.2	X	1.2	X	X	X	X	X	X	X
3314	Nonferrous Metals, except Aluminum	3.1	0.0	3.1	0.0	0.0	X	X	0.0	X	X
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	0.0	0.0	0.0	0.0	X	X	X	0.0	X	X
3315	Foundries	1.4	11.4	1.3	56.9	X	X	X	14.2	X	0.0
331511	Iron Foundries	3.1	48.7	1.9	42.1	X	X	X	49.1	X	X
331523	Nonferrous Metal Die-Casting Foundries	2.4	6.6	2.8	75.9	X	X	X	6.4	X	0.0
331524	Aluminum Foundries, except Die-Casting	1.8	X	1.8	X	X	X	X	X	X	X
332	Fabricated Metal Products	21.5	76.9	22.3	48.1	X	X	X	93.6	X	X
333	Machinery	17.9	23.9	18.3	70.5	0.0	X	X	65.7	X	0.0
334	Computer and Electronic Products	23.4	17.4	24.5	65.3	X	X	X	0.0	X	X
334413	Semiconductors and Related Devices	12.2	17.4	11.3	65.3	X	X	X	0.0	X	X
335	Electrical Equip., Appliances, and Components	35.2	X	35.2	X	X	X	X	X	X	X
336	Transportation Equipment	13.1	61.3	13.2	66.8	X	X	X	80.7	X	83.6
336111	Automobiles	0.0	0.0	0.0	X	X	X	X	X	X	0.0
336112	Light Trucks and Utility Vehicles	0.0	0.0	0.0	0.0	X	X	X	X	X	X
3364	Aerospace Product and Parts	2.5	52.7	2.5	80.5	X	X	X	67.9	X	X
336411	Aircraft	1.3	X	1.3	X	X	X	X	X	X	X
337	Furniture and Related Products	16.5	98.6	16.5	98.6	X	X	X	X	X	X
339	Miscellaneous	20.0	38.2	21.7	57.0	39.9	99.0	99.0	99.0	99.0	99.0
	Total	2.2	4.3	2.3	10.7	6.4	29.8	0.7	6.6	19.8	11.3

**South Census Region**

311	Food	6.3	16.5	6.4	35.3	31.8	0.1	0.0	35.1	X	26.6
3112	Grain and Oilseed Milling	1.9	3.1	2.2	0.0	0.0	1.3	X	64.7	X	0.0
311221	Wet Corn Milling	0.0	X	0.0	X	X	X	X	X	X	X
31131	Sugar Manufacturing	0.0	0.0	0.0	X	X	0.0	0.0	0.0	X	0.0
3114	Fruit and Vegetable Preserving and Specialty Food	4.9	2.5	5.4	23.5	0.0	X	X	1.5	X	X
3115	Dairy Product	7.2	27.9	5.3	X	0.0	0.0	X	13.8	X	81.5
3116	Animal Slaughtering and Processing	4.8	27.1	4.9	78.1	43.8	X	X	49.4	X	32.9
312	Beverage and Tobacco Products	18.7	2.1	21.7	0.0	0.1	0.0	X	42.5	X	X
3121	Beverages	22.1	3.7	24.4	X	0.2	X	X	90.8	X	X

3122	Tobacco	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	X
313	Textile Mills	17.2	24.8	16.5	76.1	33.0	49.0	57.7	54.5	87.3	X
314	Textile Product Mills	15.6	19.5	27.2	39.7	20.4	X	X	15.5	X	X
315	Apparel	11.7	21.3	14.0	28.5	31.6	X	X	0.5	X	X
316	Leather and Allied Products	4.8	X	4.8	X	X	X	X	X	X	X
321	Wood Products	17.1	5.6	17.4	9.8	X	0.0	X	0.0	X	5.7
321113	Sawmills	46.5	0.0	46.8	0.0	X	0.0	X	0.0	X	0.0
3212	Veneer, Plywood, and Engineered Woods	1.4	0.3	1.5	69.9	X	X	X	X	X	0.0
321219	Reconstituted Wood Products	1.5	0.0	1.6	X	X	X	X	X	X	0.0
3219	Other Wood Products	34.5	93.4	34.8	94.2	X	X	X	X	X	94.8
322	Paper	1.2	2.5	1.4	0.1	1.3	0.0	0.0	70.2	X	0.0
322110	Pulp Mills	0.0	0.0	0.0	X	0.0	0.0	0.0	X	X	0.0
322121	Paper Mills, except Newsprint	0.0	0.0	0.0	X	0.0	0.0	0.0	X	X	0.0
322122	Newsprint Mills	0.0	0.0	0.0	X	X	X	X	0.0	X	0.0
322130	Paperboard Mills	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	X	0.0
323	Printing and Related Support	19.7	35.1	22.7	X	68.0	X	X	99.0	X	0.0
324	Petroleum and Coal Products	0.6	1.6	0.6	7.4	15.6	25.6	33.4	2.4	X	0.9
324110	Petroleum Refineries	0.0	0.0	0.0	0.0	X	X	X	0.0	X	0.0
324121	Asphalt Paving Mixture and Block	9.7	13.8	12.5	32.0	16.5	25.6	57.4	22.7	X	50.0
324122	Asphalt Shingle and Coating Materials	2.3	0.0	2.4	0.0	0.0	X	X	0.0	X	X
324191	Petroleum Lubricating Oil and Grease Products	20.9	0.0	21.4	0.0	0.0	X	0.0	0.0	X	X
324199	Other Petroleum and Coal Products	0.0	X	0.0	X	X	X	X	X	X	X
325	Chemicals	1.7	5.2	1.7	26.0	9.1	1.8	0.0	3.8	X	7.6
325110	Petrochemicals	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	0.0
325120	Industrial Gases	D	72.5	D	72.5	X	X	X	72.5	X	X
325180	Other Basic Inorganic Chemicals	5.0	3.2	5.2	X	24.4	0.0	X	X	X	0.0
325193	Ethyl Alcohol	0.0	0.0	0.0	X	X	X	X	0.0	X	X
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	0.0	0.0	0.0	X	0.0	X	X	X	X	0.0
325199	Other Basic Organic Chemicals	6.8	9.1	7.0	X	15.3	X	0.0	49.9	X	49.4
325211	Plastics Materials and Resins	1.1	9.1	1.2	0.0	21.4	X	X	76.8	X	6.3
325212	Synthetic Rubber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	X	X	X
325220	Artificial and Synthetic Fibers and Filaments	0.0	0.0	0.0	0.0	0.0	0.0	X	0.0	X	X
325311	Nitrogenous Fertilizers	4.1	X	4.1	X	X	X	X	X	X	X
325312	Phosphatic Fertilizers	D	X	D	X	X	X	X	X	X	X
3254	Pharmaceuticals and Medicines	2.0	7.3	1.7	33.7	8.0	67.9	X	0.3	X	0.0
325412	Pharmaceutical Preparation	3.6	12.9	2.9	33.7	16.5	X	X	0.6	X	0.0
325992	Photographic Film, Paper, Plate, and Chemicals	1.4	0.2	4.2	X	77.9	X	X	0.0	X	X
326	Plastics and Rubber Products	21.8	47.0	24.0	69.3	80.0	62.6	X	89.7	X	X
327	Nonmetallic Mineral Products	2.1	4.7	2.3	1.8	0.0	0.0	0.0	5.4	0.0	0.0
327120	Clay Building Material and Refractories	3.0	0.5	3.4	90.2	0.0	X	0.0	90.2	X	0.0
327211	Flat Glass	0.0	0.0	0.0	X	X	X	X	0.0	X	X
327212	Other Pressed and Blown Glass and Glassware	1.2	9.9	1.2	0.0	X	X	X	74.2	X	0.0
327213	Glass Containers	0.0	X	0.0	X	X	X	X	X	X	X
327215	Glass Products from Purchased Glass	0.9	0.4	0.9	38.9	0.0	X	X	0.0	X	X
327310	Cements	2.6	0.0	5.1	X	X	0.0	0.0	X	0.0	0.0
327410	Lime	0.0	0.0	0.0	X	X	X	0.0	X	X	X

327420	Gypsum	0.9	0.0	0.9	X	0.0	X	X	X	X	X
327993	Mineral Wool	0.2	X	0.2	X	X	X	X	X	X	X
331	Primary Metals	0.5	0.9	0.5	14.0	5.5	0.0	X	0.2	X	35.7
331110	Iron and Steel Mills and Ferroalloys	0.0	0.0	0.0	0.0	0.0	X	X	0.0	X	X
3312	Steel Products from Purchased Steel	9.2	0.0	9.3	X	0.0	X	X	X	X	X
3313	Alumina and Aluminum	0.6	2.0	0.6	43.5	43.5	0.0	X	0.0	X	35.7
331314	Secondary Smelting and Alloying of Aluminum	4.2	X	4.2	X	X	X	X	X	X	X
331315	Aluminum Sheet, Plate and Foils	0.0	0.0	0.0	X	X	0.0	X	0.0	X	X
331318	Other Aluminum Rolling, Drawing and Extruding	0.4	27.6	0.3	43.5	43.5	X	X	X	X	35.7
3314	Nonferrous Metals, except Aluminum	2.4	7.2	2.5	7.5	16.3	X	X	0.0	X	X
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	0.0	0.0	0.0	0.0	X	X	X	X	X	X
3315	Foundries	0.8	2.6	0.8	8.8	X	X	X	3.0	X	X
331511	Iron Foundries	1.5	81.7	1.5	81.7	X	X	X	81.7	X	X
331523	Nonferrous Metal Die-Casting Foundries	1.6	2.7	1.7	X	X	X	X	2.7	X	X
331524	Aluminum Foundries, except Die-Casting	0.1	0.0	0.1	0.0	X	X	X	X	X	X
332	Fabricated Metal Products	35.9	92.6	36.9	99.5	X	96.9	X	X	X	X
333	Machinery	29.2	72.9	32.0	92.3	X	X	X	71.8	X	X
334	Computer and Electronic Products	33.3	0.4	37.3	98.0	0.0	X	X	X	X	X
334413	Semiconductors and Related Devices	0.0	0.0	0.0	X	0.0	X	X	X	X	X
335	Electrical Equip., Appliances, and Components	16.9	88.9	17.3	84.6	X	X	X	93.8	X	X
336	Transportation Equipment	15.7	63.3	15.8	11.8	55.1	X	X	75.6	X	X
336111	Automobiles	0.0	X	0.0	X	X	X	X	X	X	X
336112	Light Trucks and Utility Vehicles	0.0	X	0.0	X	X	X	X	X	X	X
3364	Aerospace Product and Parts	15.4	29.5	16.3	11.8	55.1	X	X	0.0	X	X
336411	Aircraft	5.4	0.0	5.9	X	X	X	X	0.0	X	X
337	Furniture and Related Products	30.3	70.9	27.2	X	X	X	X	70.9	X	X
339	Miscellaneous	33.7	48.5	34.9	91.1	X	X	X	53.3	X	X
	Total	1.0	3.1	1.1	9.2	7.0	6.1	3.9	6.6	0.3	3.1

**West Census Region**

311	Food	13.4	8.8	13.7	X	15.4	X	X	1.4	X	0.8
3112	Grain and Oilseed Milling	6.1	11.5	6.1	X	X	X	X	11.5	X	X
311221	Wet Corn Milling	0.0	0.0	0.0	X	X	X	X	0.0	X	X
31131	Sugar Manufacturing	0.0	X	0.0	X	X	X	X	X	X	X
3114	Fruit and Vegetable Preserving and Specialty Food	3.9	38.9	3.9	X	38.9	X	X	X	X	X
3115	Dairy Product	2.8	19.0	2.9	X	24.2	X	X	X	X	60.1
3116	Animal Slaughtering and Processing	32.7	0.0	35.4	X	0.0	X	X	0.0	X	0.0
312	Beverage and Tobacco Products	5.5	X	5.5	X	X	X	X	X	X	X
3121	Beverages	5.5	X	5.5	X	X	X	X	X	X	X
3122	Tobacco	X	X	X	X	X	X	X	X	X	X
313	Textile Mills	12.5	X	12.5	X	X	X	X	X	X	X
314	Textile Product Mills	57.0	X	57.0	X	X	X	X	X	X	X
315	Apparel	31.1	39.1	32.5	39.1	X	X	X	X	X	X
316	Leather and Allied Products	21.7	0.0	22.4	0.0	0.0	0.0	X	0.0	X	X
321	Wood Products	4.4	10.4	4.7	41.4	0.4	X	X	0.0	X	4.3
321113	Sawmills	1.4	1.2	1.5	80.3	0.0	X	X	X	X	X

3212	Veneer, Plywood, and Engineered Woods	3.2	0.5	3.5	0.0	0.9	X	X	0.0	X	0.0
321219	Reconstituted Wood Products	0.1	0.0	0.1	X	0.0	X	X	0.0	X	X
3219	Other Wood Products	20.8	66.4	22.0	69.7	X	X	X	X	X	90.2
322	Paper	2.5	0.1	2.5	98.3	X	X	X	X	X	0.0
322110	Pulp Mills	X	X	X	X	X	X	X	X	X	X
322121	Paper Mills, except Newsprint	0.0	X	0.0	X	X	X	X	X	X	X
322122	Newsprint Mills	0.0	X	0.0	X	X	X	X	X	X	X
322130	Paperboard Mills	0.0	0.0	0.0	X	X	X	X	X	X	0.0
323	Printing and Related Support	31.9	85.3	34.1	85.3	99.0	99.0	X	99.0	X	X
324	Petroleum and Coal Products	0.1	0.7	0.1	0.0	62.4	50.8	X	0.8	X	0.0
324110	Petroleum Refineries	0.0	0.0	0.0	0.0	X	X	X	0.0	X	0.0
324121	Asphalt Paving Mixture and Block	4.4	48.0	4.0	X	62.4	50.8	X	74.4	X	X
324122	Asphalt Shingle and Coating Materials	0.5	0.0	0.5	X	X	X	X	0.0	X	X
324191	Petroleum Lubricating Oil and Grease Products	0.0	X	0.0	X	X	X	X	X	X	X
324199	Other Petroleum and Coal Products	0.0	X	0.0	X	X	X	X	X	X	X
325	Chemicals	1.6	1.2	1.7	82.3	0.0	X	0.0	0.0	X	X
325110	Petrochemicals	X	X	X	X	X	X	X	X	X	X
325120	Industrial Gases	D	93.8	D	93.8	X	X	X	X	X	X
325180	Other Basic Inorganic Chemicals	2.1	0.0	2.2	X	X	X	0.0	X	X	X
325193	Ethyl Alcohol	0.0	X	0.0	X	X	X	X	X	X	X
325194	Cyclic Crudes, Intermediate and Gum and Wood Chemicals	0.0	X	0.0	X	X	X	X	X	X	X
325199	Other Basic Organic Chemicals	4.0	X	4.0	X	X	X	X	X	X	X
325211	Plastics Materials and Resins	2.9	X	2.9	X	X	X	X	X	X	X
325212	Synthetic Rubber	0.0	X	0.0	X	X	X	X	X	X	X
325220	Artificial and Synthetic Fibers and Filaments	0.0	X	0.0	X	X	X	X	X	X	X
325311	Nitrogenous Fertilizers	14.5	X	14.5	X	X	X	X	X	X	X
325312	Phosphatic Fertilizers	D	X	D	X	X	X	X	X	X	X
3254	Pharmaceuticals and Medicines	7.0	86.7	7.0	86.7	X	X	X	X	X	X
325412	Pharmaceutical Preparation	11.9	86.7	11.9	86.7	X	X	X	X	X	X
325992	Photographic Film, Paper, Plate, and Chemicals	0.1	0.0	1.3	X	0.0	X	X	0.0	X	X
326	Plastics and Rubber Products	62.0	92.7	62.5	92.7	X	X	X	X	X	92.7
327	Nonmetallic Mineral Products	8.8	0.4	9.2	44.1	0.0	X	0.1	1.9	0.1	0.0
327120	Clay Building Material and Refractories	1.3	70.3	1.3	70.3	X	X	X	X	X	X
327211	Flat Glass	0.0	0.0	0.0	X	X	X	X	0.0	X	X
327212	Other Pressed and Blown Glass and Glassware	2.1	15.6	2.0	0.0	X	X	X	70.4	X	X
327213	Glass Containers	0.0	X	0.0	X	X	X	X	X	X	X
327215	Glass Products from Purchased Glass	6.0	91.3	6.0	91.3	X	X	X	X	X	X
327310	Cements	0.1	0.1	0.0	X	X	X	0.1	X	0.1	X
327410	Lime	0.0	X	0.0	X	X	X	X	X	X	X
327420	Gypsum	0.1	X	0.1	X	X	X	X	X	X	X
327993	Mineral Wool	8.3	0.0	8.9	X	0.0	X	X	X	X	0.0
331	Primary Metals	0.8	4.2	0.8	9.3	0.0	0.0	X	13.6	X	0.0
331110	Iron and Steel Mills and Ferroalloys	0.0	0.0	0.0	0.0	X	0.0	X	0.0	X	X
3312	Steel Products from Purchased Steel	16.0	0.0	16.2	X	X	X	X	X	X	0.0
3313	Alumina and Aluminum	0.4	0.0	0.4	X	0.0	X	X	X	X	X
331314	Secondary Smelting and Alloying of Aluminum	0.0	X	0.0	X	X	X	X	X	X	X

331315	Aluminum Sheet, Plate and Foils	0.0	0.0	0.0	X	0.0	X	X	X	X	X
331318	Other Aluminum Rolling, Drawing and Extruding	1.7	X	1.7	X	X	X	X	X	X	X
3314	Nonferrous Metals, except Aluminum	2.5	0.2	2.6	59.1	X	X	X	0.0	X	0.0
331410	Nonferrous Metal (except Aluminum) Smelting and Refining	1.9	0.0	1.9	X	X	X	X	0.0	X	X
3315	Foundries	1.6	18.6	1.6	14.6	X	X	X	21.3	X	X
331511	Iron Foundries	0.3	0.0	0.4	0.0	X	X	X	0.0	X	X
331523	Nonferrous Metal Die-Casting Foundries	4.1	0.0	4.2	0.0	X	X	X	X	X	X
331524	Aluminum Foundries, except Die-Casting	6.7	34.2	6.8	34.2	X	X	X	X	X	X
332	Fabricated Metal Products	37.4	79.3	37.6	99.5	X	X	X	99.5	X	X
333	Machinery	43.3	69.1	45.0	69.1	X	X	X	X	X	X
334	Computer and Electronic Products	12.2	0.0	12.3	X	0.0	X	X	X	X	X
334413	Semiconductors and Related Devices	7.1	0.0	7.1	X	0.0	X	X	X	X	X
335	Electrical Equip., Appliances, and Components	53.3	87.7	57.7	96.8	X	X	X	87.7	X	X
336	Transportation Equipment	5.4	0.0	6.1	0.0	0.0	X	X	0.0	X	X
336111	Automobiles	0.0	0.0	0.0	0.0	X	X	X	X	X	X
336112	Light Trucks and Utility Vehicles	0.0	X	0.0	X	X	X	X	X	X	X
3364	Aerospace Product and Parts	1.8	0.0	2.1	0.0	0.0	X	X	0.0	X	X
336411	Aircraft	2.7	0.0	2.9	0.0	X	X	X	X	X	X
337	Furniture and Related Products	44.0	X	44.0	X	X	X	X	X	X	X
339	Miscellaneous	32.6	X	32.6	X	X	X	X	X	X	X
	Total	3.2	1.0	3.4	15.5	6.9	46.6	0.1	1.1	0.1	0.2

**Economic Characteristic (f)**

**Value of Shipments and Receipts  
(million dollars)**

Under 20	7.1	13.9	7.5	38.6	9.3	14.7	12.8	40.5	61.7	23.6
20-49	6.6	8.2	7.0	43.5	16.0	25.0	0.1	20.6	0.1	0.9
50-99	4.0	8.3	4.2	42.1	20.0	19.2	1.1	19.6	3.6	16.6
100-249	2.8	8.4	3.0	14.0	9.0	27.8	20.1	20.6	0.0	0.7
250-499	2.8	3.9	3.1	10.8	8.2	1.0	0.0	12.8	0.0	12.9
500 and Over	0.4	1.4	0.4	0.2	7.6	12.5	0.0	0.7	X	2.3
Total	0.9	2.0	1.0	6.7	4.2	8.5	2.0	3.8	3.5	2.4

**Employment Size**

Under 50	5.2	11.2	5.4	19.5	10.0	15.5	12.6	40.5	98.9	21.7
50-99	3.0	9.6	3.1	48.4	14.8	22.5	0.2	18.2	4.6	17.2
100-249	2.8	4.2	3.0	22.3	7.2	5.9	0.0	12.0	0.0	13.5
250-499	2.0	4.3	2.2	1.7	7.3	23.8	0.6	6.9	X	0.0
500-999	1.0	3.8	1.0	8.7	16.6	13.6	11.2	4.3	0.0	1.0
1000 and Over	0.8	2.3	0.8	5.0	5.6	24.2	0.0	5.0	X	0.8
Total	0.9	2.0	1.0	6.7	4.2	8.5	2.0	3.8	3.5	2.4

(a) The Bureau of the Census classifies establishments using the 2017 North American Industry Classification System (NAICS).



(b) *Alternative Energy Sources* consist of those energy sources that could have been substituted for natural gas during 2018. The quantities are expressed in billions of cubic feet, and therefore represent the quantity of natural gas that could have been displaced by the given alternative type of energy.

(c) *Total Consumed* represents those quantities (Total Inputs) of natural gas that were ascertained switchable or not switchable, plus an additional quantity for which the switching status was not ascertained.

(d) *Electricity Receipts* represents those quantities of electricity generated off the manufacturing establishment site and available at the site for consumption. It includes those quantities for which payment was made, quantities transferred in, quantities purchased and paid for by a central purchasing entity, and quantities for which payment was made in kind. It does not include electricity generated onsite. *Electricity Receipts* has not been adjusted to account for any quantities that might have been resold or transferred out. The estimates include those quantities that were ascertained switchable or not switchable, plus an additional quantity for which the switching status was not ascertained.

(e) *Other* includes all other types of energy not already identified that respondents indicated could have been consumed in place of natural gas.

(f) *Value of Shipments and Receipts* and *Employment Size* categories were supplied by the Bureau of the Census.

\* Estimate less than 0.5.

D=Withheld to avoid disclosing data for individual establishments.

Q=Withheld because Relative Standard Error is greater than 50 percent.

X=Not defined because RSE corresponds to a data table value of zero.

NA=Not available.

Notes: Totals may not equal sum of components because of independent rounding.

Sources: U.S. Energy Information Administration, Office of Energy Demand and Integrated Statistics, Form EIA-846, *2018 Manufacturing Energy Consumption Survey*, and the Bureau of the Census, data files for the *2018 Annual Survey of Manufactures*.

*The Census Bureau has reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied (Approval ID: CBDRB-FY20-260) and (Approval ID: CBDRB-FY21-312).*