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**TECHNICAL AND ANALYTICAL SUPPORT AND
DOCKET REVIEW FOR OSHA’S PRELIMINARY
ANALYSIS OF COSTS, BENEFITS, AND ECONOMIC
IMPACTS FOR OSHA’S PROPOSED STANDARD FOR
WALKING AND WORKING SURFACES**

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FINAL REPORT

TASK ORDER NO. 11

CONTRACT NO. GS10F0125P

Submitted to:

OSHA
Directorate of Evaluation and Analysis
Office of Regulatory Analysis
U.S. Department of Labor
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SECTION ONE

INTRODUCTION

OSHA's Subpart D covers General Industry safety requirements for walking and working surfaces, including ladders, stairways, platforms, floors, and ramps. The regulation was first promulgated in 1971 and was based on a number of American National Standards Institute (ANSI) voluntary consensus standards. The draft proposed standard updates these requirements to conform to current ANSI standards and recognized industry safe work practices. In addition, the proposal reorganizes the safety provisions to permit more flexibility in compliance by eliminating many overly specific requirements in favor of more performance-oriented requirements. The draft standard clarifies employers' responsibilities for guarding against fall hazards and for otherwise providing fall protection equipment. It also adds new requirements for training in the use of fall protection equipment and about falls and other walking and working surface hazards, and provides for additional hazard inspections of steps, ladders, and surfaces. OSHA has prepared a new draft section, §1910.140, to be added to Subpart I covering personal fall protection equipment. Table 1-1 shows the individual sections and paragraphs contained in the draft Subpart D and I standards, dated May 2007.

Table 1-1. Draft OSHA Subpart D and I Standards

1910.21 Scope, application, and definitions.
1910.21 (a) Scope and application.
1910.21 (b) Definitions.
1910.22 General requirements.
1910.22 (a) Surface conditions.
1910.22 (b) Application of loads.
1910.22 (c) Access and egress.
1910.22 (d) Maintenance and repair.
1910.23 Ladders.
1910.23 (a) Application.
1910.23 (b) General requirements for all ladders.
1910.23 (c) Portable ladders.

1910.23 (d) Fixed Ladders.
1910.23 (e) Mobile ladder stands and mobile ladder stand platforms (Mobile ladder stands and platforms).
1910.24 Step bolts and manhole steps.
1910.24 (a) Step bolts
1910.24 (b) Manhole steps
1910.25 Stairways.
1910.25 (a) General requirements.
1910.25 (b) Standard stairs.
1910.25 (c) Spiral stairways.
1910.25 (d) Ship stairs.
1910.25 (e) Alternating tread-type stairs.
1910.26 Dockboards (bridge plates).
1910.27 Scaffolds and rope descent systems.
1910.27 (a) Scaffolds.
1910.27 (b) Rope descent systems.
1910.28 Duty to have fall protection.
1910.28 (a) General.
1910.28 (b) Protection from fall hazards.
1910.28 (c) Protection from falling objects.
1910.29 Fall protection systems criteria and practices.
1910.29 (a) General.
1910.29 (b) Guardrail systems.
1910.29 (c) Safety net systems.
1910.29 (d) Designated areas.
1910.29 (e) Covers.
1910.29 (f) Handrail and stair rail systems.
1910.29 (g) Cages, wells, and platforms used with fixed ladders.
1910.29 (h) Qualified climber.
1910.29 (i) Ladder safety systems.
1910.29 (j) Personal fall protection systems.
1910.29 (k) Protection from falling objects.

1910.29 (l) Grab handles.
1910.30 Training Program.
1910.30 (a) Fall hazards.
1910.30 (b) Equipment hazards.
1910.30 (c) Retraining.
1910.140 Fall Protection
1910.140 (a) Scope and application.
1910.140 (b) Definitions.
1910.140 (c) General requirements.
1910.140 (d) Personal fall arrest systems.
1910.140 (e) Positioning systems.

This document presents the benefit assessment and a cost and economic impact analysis of these draft standards. Section Two presents a profile of the affected industries, while Section Three provides an assessment of compliance costs likely to be imposed by the draft standard. An analysis of the prospective benefits is presented in Section Four. Finally, Section Five contains an analysis of industry-specific economic impacts resulting from promulgation of the draft standards.

SECTION TWO

INDUSTRY PROFILE

This section presents a profile of the industries affected by OSHA's draft General Industry Subpart D and I standards. Section 2.1 provides statistics describing the numbers of establishments and employees in the covered industries, while Section 2.2 shows estimates of the numbers of employees in such industries that use fall protection equipment. Finally, Section 2.3 provides industry-specific estimates of the production worker and supervisor wage rates used in the cost analysis.

2.1 PROFILE OF GENERAL INDUSTRY ESTABLISHMENTS AND EMPLOYMENT

Table 2-1 provides economic profile statistics for the 4-digit NAICS industries covered by the draft standard. Based on U.S. Census' Statistics of U.S. Businesses for 2003, the table shows that 6.4 million establishments and 106.5 million employees fall under the purview of the draft standards. ERG also used the Census data on payroll and receipts from the same source to estimate average revenues per establishment in 2003 for each 4-digit NAICS industry. The methodology for deriving these estimates is discussed in Section Five.

Parts of the draft standard that cover ladders, scaffolds, and other working surfaces are most likely to directly affect workers engaged in maintenance and related activities. To estimate the numbers of such employees, ERG relied on data from Bureau of Labor Statistics' (BLS) Occupational Employment Statistics Survey (OES) that document employment by detailed occupation on a 4-digit NAICS industry basis. ERG used these data to estimate the numbers of employees in construction and in maintenance, installation, and repair occupations in each

industry and the overall number of production workers.¹ The BLS data represent the only source of industry-specific statistics on detailed occupational employment totals. Because industry employment totals reported by the OES are not identical to those estimated by the U.S. Census, ERG used the ratios of production to total employment as reported by OES and total employment as reported by the Census to estimate the numbers of production workers and workers in maintenance-related occupations for each NAICS industry covered by the draft Subpart D & I standards. These estimates are also shown in Table 2-1. As the table shows, an estimated 27.6 million workers are employed in production occupations, while an estimated 5.3 million are employed in construction, installation, and maintenance and repair occupations.

2.2 PROFILE OF POTENTIALLY AFFECTED SMALL ENTITIES

ERG also developed profiles of small entities in the industries covered by the draft OSHA standards. First, ERG used the Small Business Administration's (SBA) small business criterion for each industry and the Census's Statistics of U. S. Business data on employment, payroll, and receipts by entity size to estimate the numbers of entities and associated employment meeting the SBA definitions.² Where the SBA small business criterion was specified as a revenue threshold, ERG used the Census data to associate that revenue with a given employment size. The resultant SBA employment-size criteria are shown in the first column in Table 2-2. The table shows the numbers of entities and employees and average receipts per entity for those that meet the given size criterion. The numbers of at-risk workers are estimated assuming the same percentage of total employment as shown in Table 2-1. ERG also used the Census's Statistics of U.S. Businesses data to develop a profile of entities that employ fewer than 20 employees. These estimates are shown in Table 2-3..

¹ Production workers include those in building and grounds; construction; installation, maintenance, and repair; production; and material moving occupations. It is conceivable that workers in construction and related occupations, even though not employed by establishments in construction industries, might on occasion perform work that would be regulated by OSHA under its construction standards in §1926. To the extent this is true, their employers might also be required to meet the requirements for fall protection and walking and working surfaces as specified in the construction standards.

² See U.S. Small Business Administration, Table of Small Business Size Standards Matched to North American Industry Classification System Codes, July 31, 2006. < <http://www.sba.gov/size/index.html>>. Accessed August 8, 2006.

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
1131	Timber Tract Operations	621	\$2,496,758	5,515	NA	NA	NA
1132	Forest Nurseries and Gathering of Forest Products	316	\$4,906,603	2,283	NA	NA	NA
1133	Logging	10,977	\$141,249	68,020	59,760	3,496	5.90%
1141	Fishing	2,042	\$759,298	6,234	NA	NA	NA
1142	Hunting and Trapping	432	\$3,589,089	2,711	NA	NA	NA
1153	Support Activities for Forestry	1,762	\$879,958	14,969	NA	NA	NA
2111	Oil and Gas Extraction	7,493	\$206,925	83,447	34,001	14,176	41.70%
2211	Electric Power Generation, Transmission and Distribution	9,986	\$155,266	543,782	254,698	177,903	69.80%
2212	Natural Gas Distribution	2,626	\$590,437	87,452	41,880	29,531	70.50%
2213	Water, Sewage and Other Systems	5,801	\$267,279	44,704	24,885	11,367	45.70%
3111	Animal Food Manufacturing	1,805	\$858,995	47,338	34,250	3,298	9.60%
3112	Grain and Oilseed Milling	827	\$1,874,833	54,918	41,922	6,298	15.00%
3113	Sugar and Confectionery Product Manufacturing	1,868	\$830,025	79,630	57,468	6,327	11.00%
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	1,781	\$870,571	163,763	135,871	14,264	10.50%
3115	Dairy Product Manufacturing	1,681	\$922,360	134,287	104,187	9,473	9.10%
3116	Animal Slaughtering and Processing	4,004	\$387,234	499,898	450,583	23,614	5.20%
3117	Seafood Product Preparation and Packaging	764	\$2,029,433	39,580	31,814	1,555	4.90%
3118	Bakeries and Tortilla Manufacturing	11,514	\$134,661	317,040	221,746	14,282	6.40%
3119	Other Food Manufacturing	3,030	\$511,712	159,544	113,655	9,708	8.50%
3121	Beverage Manufacturing	3,082	\$503,078	131,331	83,980	11,756	14.00%
3122	Tobacco Manufacturing	130	\$11,926,820	23,830	15,987	2,609	16.30%
3131	Fiber, Yarn, and Thread Mills	569	\$2,724,932	58,668	52,188	7,570	14.50%
3132	Fabric Mills	1,654	\$937,416	136,456	112,865	12,492	11.10%
3133	Textile and Fabric Finishing and Fabric Coating Mills	1,617	\$958,866	59,714	44,213	2,796	6.30%
3141	Textile Furnishings Mills	2,901	\$534,466	107,011	86,938	5,800	6.70%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
3149	Other Textile Product Mills	4,388	\$353,347	80,515	61,821	3,116	5.00%
3151	Apparel Knitting Mills	786	\$1,972,629	45,060	38,291	3,526	9.20%
3152	Cut and Sew Apparel Manufacturing	11,343	\$136,691	232,156	175,476	2,372	1.40%
3159	Apparel Accessories and Other Apparel Manufacturing	1,247	\$1,243,373	26,438	20,448	376	1.80%
3161	Leather and Hide Tanning and Finishing	261	\$5,940,562	8,448	6,725	299	4.40%
3162	Footwear Manufacturing	343	\$4,520,369	18,163	14,333	433	3.00%
3169	Other Leather and Allied Product Manufacturing	915	\$1,694,521	17,502	13,454	201	1.50%
3211	Sawmills and Wood Preservation	4,229	\$366,632	112,316	97,371	9,828	10.10%
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	1,906	\$813,477	110,969	92,596	12,467	13.50%
3219	Other Wood Product Manufacturing	10,673	\$145,272	300,699	244,590	36,453	14.90%
3221	Pulp, Paper, and Paperboard Mills	635	\$2,441,711	154,903	124,237	29,050	23.40%
3222	Converted Paper Product Manufacturing	4,821	\$321,611	327,329	257,204	19,599	7.60%
3231	Printing and Related Support Activities	36,024	\$43,040	700,221	443,006	12,401	2.80%
3241	Petroleum and Coal Products Manufacturing	2,299	\$674,418	98,334	63,895	16,312	25.50%
3251	Basic Chemical Manufacturing	2,353	\$658,940	170,579	104,023	21,520	20.70%
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	1,059	\$1,464,104	100,336	64,943	10,773	16.60%
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	915	\$1,694,521	31,194	19,807	4,669	23.60%
3254	Pharmaceutical and Medicine Manufacturing	1,825	\$849,582	251,855	93,302	11,836	12.70%
3255	Paint, Coating, and Adhesive Manufacturing	1,963	\$789,856	68,327	38,746	3,026	7.80%
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	2,307	\$672,079	109,363	70,344	7,038	10.00%
3259	Other Chemical Product and Preparation Manufacturing	2,825	\$548,845	109,721	67,127	7,954	11.80%
3261	Plastics Product Manufacturing	12,652	\$122,549	746,211	593,468	42,810	7.20%
3262	Rubber Product Manufacturing	2,367	\$655,043	175,181	143,578	17,523	12.20%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
3271	Clay Product and Refractory Manufacturing	1,573	\$985,688	59,900	46,227	4,215	9.10%
3272	Glass and Glass Product Manufacturing	2,162	\$717,154	111,613	90,303	9,246	10.20%
3273	Cement and Concrete Product Manufacturing	9,391	\$165,103	206,058	164,157	31,536	19.20%
3274	Lime and Gypsum Product Manufacturing	373	\$4,156,800	16,827	13,801	3,134	22.70%
3279	Other Nonmetallic Mineral Product Manufacturing	2,947	\$526,124	73,246	56,964	9,519	16.70%
3311	Iron and Steel Mills and Ferroalloy Manufacturing	876	\$1,769,962	125,871	99,694	28,412	28.50%
3312	Steel Product Manufacturing from Purchased Steel	828	\$1,872,568	52,401	41,325	5,133	12.40%
3313	Alumina and Aluminum Production and Processing	585	\$2,650,404	66,644	54,890	8,566	15.60%
3314	Nonferrous Metal (except Aluminum) Production and Processing	1,001	\$1,548,938	63,008	47,638	5,994	12.60%
3315	Foundries	2,435	\$636,750	171,769	145,405	16,259	11.20%
3321	Forging and Stamping	2,786	\$556,528	122,595	94,092	7,347	7.80%
3322	Cutlery and Handtool Manufacturing	1,537	\$1,008,775	60,349	43,918	2,558	5.80%
3323	Architectural and Structural Metals Manufacturing	13,180	\$117,639	365,532	269,533	40,337	15.00%
3324	Boiler, Tank, and Shipping Container Manufacturing	1,583	\$979,461	87,234	66,744	9,676	14.50%
3325	Hardware Manufacturing	856	\$1,811,316	56,766	42,847	1,791	4.20%
3326	Spring and Wire Product Manufacturing	1,751	\$885,486	59,312	44,574	3,089	6.90%
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	25,151	\$61,647	356,838	273,531	11,414	4.20%
3328	Coating, Engraving, Heat Treating, and Allied Activities	6,175	\$251,091	135,161	106,408	6,967	6.50%
3329	Other Fabricated Metal Product Manufacturing	6,388	\$242,719	274,479	190,529	17,528	9.20%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	2,888	\$536,872	172,356	117,139	11,882	10.10%
3332	Industrial Machinery Manufacturing	4,196	\$369,515	144,793	74,444	9,413	12.60%
3333	Commercial and Service Industry Machinery Manufacturing	2,357	\$657,822	103,749	52,046	5,338	10.30%
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	1,795	\$863,781	152,354	113,686	12,116	10.70%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
3335	Metalworking Machinery Manufacturing	8,777	\$176,653	181,119	128,073	5,033	3.90%
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	938	\$1,652,971	91,856	63,561	6,077	9.60%
3339	Other General Purpose Machinery Manufacturing	6,508	\$238,243	282,913	167,349	16,235	9.70%
3341	Computer and Peripheral Equipment Manufacturing	1,562	\$992,629	170,349	41,360	4,296	10.40%
3342	Communications Equipment Manufacturing	1,984	\$781,495	167,421	60,439	4,970	8.20%
3343	Audio and Video Equipment Manufacturing	568	\$2,729,730	24,808	14,021	892	6.40%
3344	Semiconductor and Other Electronic Component Manufacturing	5,193	\$298,572	386,824	182,308	12,479	6.80%
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	5,217	\$297,199	403,693	134,209	13,092	9.80%
3346	Manufacturing and Reproducing Magnetic and Optical Media	902	\$1,718,943	36,390	14,442	940	6.50%
3351	Electric Lighting Equipment Manufacturing	1,234	\$1,256,472	61,102	43,590	3,110	7.10%
3352	Household Appliance Manufacturing	360	\$4,306,907	90,803	69,791	3,658	5.20%
3353	Electrical Equipment Manufacturing	2,488	\$623,186	146,860	95,420	7,386	7.70%
3359	Other Electrical Equipment and Component Manufacturing	2,301	\$673,832	161,228	113,039	8,284	7.30%
3361	Motor Vehicle Manufacturing	367	\$4,224,759	211,454	176,934	28,964	16.40%
3362	Motor Vehicle Body and Trailer Manufacturing	2,142	\$723,850	132,617	104,740	9,747	9.30%
3363	Motor Vehicle Parts Manufacturing	5,651	\$274,374	688,390	542,193	60,134	11.10%
3364	Aerospace Product and Parts Manufacturing	1,584	\$978,843	375,169	146,705	36,239	24.70%
3365	Railroad Rolling Stock Manufacturing	194	\$7,992,199	24,757	17,040	3,579	21.00%
3366	Ship and Boat Building	1,739	\$891,597	133,395	98,671	29,888	30.30%
3369	Other Transportation Equipment Manufacturing	826	\$1,877,102	40,931	29,046	2,462	8.50%
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	16,421	\$94,421	365,907	299,359	18,686	6.20%
3372	Office Furniture (including Fixtures) Manufacturing	4,221	\$367,327	153,696	113,501	7,889	7.00%
3379	Other Furniture Related Product Manufacturing	1,074	\$1,443,656	44,811	33,047	1,348	4.10%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
3391	Medical Equipment and Supplies Manufacturing	11,896	\$130,337	305,850	194,288	6,691	3.40%
3399	Other Miscellaneous Manufacturing	19,525	\$79,410	401,994	264,389	19,624	7.40%
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	25,974	\$59,694	364,349	160,604	52,010	32.40%
4232	Furniture and Home Furnishing Merchant Wholesalers	13,768	\$112,615	162,438	57,494	4,905	8.50%
4233	Lumber and Other Construction Materials Merchant Wholesalers	17,976	\$86,253	236,395	119,663	12,460	10.40%
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	36,388	\$42,610	702,604	154,908	81,988	52.90%
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	10,730	\$144,500	147,174	74,791	3,778	5.10%
4236	Electrical and Electronic Goods Merchant Wholesalers	31,394	\$49,388	468,927	100,339	33,587	33.50%
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	19,021	\$81,514	212,074	61,528	15,609	25.40%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	62,223	\$24,918	688,366	244,134	138,160	56.60%
4239	Miscellaneous Durable Goods Merchant Wholesalers	36,550	\$42,421	330,393	157,490	14,742	9.40%
4241	Paper and Paper Product Merchant Wholesalers	12,864	\$120,529	214,916	59,837	3,230	5.40%
4242	Drugs and Druggists' Sundries Merchant Wholesalers	7,672	\$202,097	251,697	37,323	2,056	5.50%
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	17,307	\$89,587	196,618	60,456	564	0.90%
4244	Grocery and Related Product Wholesalers	35,244	\$43,993	756,617	420,425	19,472	4.60%
4245	Farm Product Raw Material Merchant Wholesalers	7,259	\$213,595	65,259	38,474	1,613	4.20%
4246	Chemical and Allied Products Merchant Wholesalers	13,082	\$118,521	145,635	53,865	5,954	11.10%
4247	Petroleum and Petroleum Products Merchant Wholesalers	7,702	\$201,310	104,741	48,330	7,692	15.90%
4248	Beer, Wine, and Distilled Alcoholic Beverage	4,309	\$359,825	168,966	72,763	2,304	3.20%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
	Merchant Wholesalers						
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	33,419	\$46,395	383,167	153,546	6,883	4.50%
4251	Wholesale Electronic Markets and Agents and Brokers	39,655	\$39,099	263,524	57,465	14,689	25.60%
4411	Automobile Dealers	52,278	\$29,658	1,289,685	521,890	348,572	66.80%
4412	Other Motor Vehicle Dealers	16,222	\$95,579	148,173	58,246	44,124	75.80%
4413	Automotive Parts, Accessories, and Tire Stores	58,489	\$26,509	483,300	216,707	150,253	69.30%
4421	Furniture Stores	28,318	\$54,753	264,889	67,370	5,055	7.50%
4422	Home Furnishings Stores	37,075	\$41,820	295,828	62,102	29,593	47.70%
4431	Electronics and Appliance Stores	47,746	\$32,474	419,321	82,484	58,931	71.40%
4441	Building Material and Supplies Dealers	66,890	\$23,180	1,014,414	230,837	38,870	16.80%
4442	Lawn and Garden Equipment and Supplies Stores	20,858	\$74,335	175,358	73,027	17,840	24.40%
4451	Grocery Stores	96,964	\$15,990	2,594,727	517,946	4,914	0.90%
4452	Specialty Food Stores	26,477	\$58,560	149,605	51,449	1,842	3.60%
4453	Beer, Wine, and Liquor Stores	29,141	\$53,206	139,449	14,770	252	1.70%
4461	Health and Personal Care Stores	82,447	\$18,806	969,863	55,367	4,057	7.30%
4471	Gasoline Stations	119,464	\$12,979	936,492	121,941	44,259	36.30%
4481	Clothing Stores	90,490	\$17,134	1,116,324	50,340	2,177	4.30%
4482	Shoe Stores	27,352	\$56,686	187,975	1,558	42	2.70%
4483	Jewelry, Luggage, and Leather Goods Stores	30,170	\$51,392	163,128	16,593	2,426	14.60%
4511	Sporting Goods, Hobby, and Musical Instrument Stores	42,614	\$36,384	401,682	38,298	14,383	37.60%
4512	Book, Periodical, and Music Stores	19,230	\$80,629	201,314	7,028	338	4.80%
4521	Department Stores	9,366	\$165,544	1,368,609	70,777	13,789	19.50%
4529	Other General Merchandise Stores	32,592	\$47,573	1,156,571	167,470	21,739	13.00%
4531	Florists	22,022	\$70,406	113,270	23,934	88	0.40%
4532	Office Supplies, Stationery, and Gift Stores	43,127	\$35,952	323,759	29,558	12,660	42.80%
4533	Used Merchandise Stores	17,872	\$86,755	128,664	20,275	2,110	10.40%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
4539	Other Miscellaneous Store Retailers	44,623	\$34,746	253,588	42,325	16,235	38.40%
4541	Electronic Shopping and Mail-Order Houses	16,049	\$96,610	264,868	33,570	2,624	7.80%
4542	Vending Machine Operators	5,613	\$276,231	62,907	33,086	14,765	44.60%
4543	Direct Selling Establishments	32,417	\$47,829	244,062	118,944	36,556	30.70%
4811	Scheduled Air Transportation	3,169	\$489,267	498,398	174,845	63,511	36.30%
4812	Nonscheduled Air Transportation	2,309	\$671,497	35,401	21,286	6,643	31.20%
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	1,310	\$1,183,578	48,735	21,311	1,904	8.90%
4832	Inland Water Transportation	620	\$2,500,785	18,594	14,872	1,030	6.90%
4841	General Freight Trucking	60,227	\$25,744	986,673	792,600	49,076	6.20%
4842	Specialized Freight Trucking	51,354	\$30,192	436,613	347,499	25,787	7.40%
4851	Urban Transit Systems	971	\$1,596,794	48,224	38,850	5,802	14.90%
4852	Interurban and Rural Bus Transportation	486	\$3,190,302	17,861	11,406	1,146	10.00%
4853	Taxi and Limousine Service	6,962	\$222,707	64,547	43,485	2,350	5.40%
4854	School and Employee Bus Transportation	4,464	\$347,331	183,731	158,335	6,756	4.30%
4855	Charter Bus Industry	1,246	\$1,244,371	28,549	23,027	1,742	7.60%
4859	Other Transit and Ground Passenger Transportation	3,128	\$495,680	55,037	39,881	1,681	4.20%
4861	Pipeline Transportation of Crude Oil	307	\$5,050,445	7,430	4,425	2,155	48.70%
4862	Pipeline Transportation of Natural Gas	1,912	\$810,924	27,682	14,201	6,142	43.20%
4869	Other Pipeline Transportation	514	\$3,016,511	5,891	4,454	1,293	29.00%
4871	Scenic and Sightseeing Transportation, Land	615	\$2,521,116	9,577	5,065	564	11.10%
4872	Scenic and Sightseeing Transportation, Water	1,745	\$888,531	11,218	4,387	286	6.50%
4879	Scenic and Sightseeing Transportation, Other	172	\$9,014,457	1,728	804	257	32.00%
4881	Support Activities for Air Transportation	5,052	\$306,905	140,613	87,192	42,264	48.50%
4882	Support Activities for Rail Transportation	904	\$1,715,140	25,229	21,125	6,722	31.80%
4883	Support Activities for Water Transportation	2,353	\$658,940	82,481	68,359	7,232	10.60%
4884	Support Activities for Road Transportation	8,277	\$187,325	61,087	42,771	5,565	13.00%
4885	Freight Transportation Arrangement	16,481	\$94,077	173,248	49,277	1,609	3.30%
4889	Other Support Activities for Transportation	1,414	\$1,096,525	21,946	16,480	1,228	7.50%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
4921	Couriers	9,090	\$170,571	489,256	352,504	13,371	3.80%
4922	Local Messengers and Local Delivery	5,073	\$305,635	44,856	20,187	321	1.60%
4931	Warehousing and Storage	12,518	\$123,861	543,330	322,768	18,390	5.70%
5111	Newspaper, Periodical, Book, and Directory Publishers	22,179	\$69,908	705,388	88,857	6,611	7.40%
5112	Software Publishers	9,157	\$169,323	344,238	2,446	1,805	73.80%
5121	Motion Picture and Video Industries	18,914	\$81,976	257,498	14,408	1,504	10.40%
5122	Sound Recording Industries	3,293	\$470,843	26,299	1,977	314	15.90%
5151	Radio and Television Broadcasting	9,688	\$160,042	254,582	4,402	1,988	45.20%
5152	Cable and Other Subscription Programming	684	\$2,266,793	31,819	8,242	7,827	95.00%
5161	Internet Publishing and Broadcasting	2,038	\$760,788	35,606	204	48	23.50%
5171	Wired Telecommunications Carriers	27,607	\$56,163	855,199	258,056	252,527	97.90%
5172	Wireless Telecommunications Carriers (except Satellite)	13,020	\$119,085	266,279	19,983	19,370	96.90%
5173	Telecommunications Resellers	2,726	\$568,777	36,635	73	16	21.90%
5174	Satellite Telecommunications	698	\$2,221,327	14,618	3,027	2,957	97.70%
5175	Cable and Other Program Distribution	5,383	\$288,034	234,117	84,967	82,105	96.60%
5179	Other Telecommunications	708	\$2,189,953	8,307	220	52	23.80%
5181	Internet Service Providers and Web Search Portals	5,365	\$289,000	70,910	1,361	1,050	77.20%
5182	Data Processing, Hosting, and Related Services	14,278	\$108,593	403,000	14,729	5,486	37.20%
5191	Other Information Services	4,289	\$361,503	55,407	2,527	412	16.30%
5211	Monetary Authorities - Central Bank	63	\$24,610,898	21,798	889	480	53.90%
5221	Depository Credit Intermediation	114,195	\$13,578	2,081,714	15,989	3,976	24.90%
5222	Nondepository Credit Intermediation	52,612	\$29,470	719,435	4,871	1,821	37.40%
5223	Activities Related to Credit Intermediation	35,256	\$43,978	313,081	2,765	1,345	48.70%
5231	Securities and Commodity Contracts Intermediation and Brokerage	45,431	\$34,128	529,806	566	566	100.00%
5232	Securities and Commodity Exchanges	75	\$20,673,154	7,312	40	40	100.00%
5239	Other Financial Investment Activities	39,491	\$39,262	364,523	3,624	1,072	29.60%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
5241	Insurance Carriers	31,166	\$49,749	1,509,446	11,555	5,097	44.10%
5242	Agencies, Brokerages, and Other Insurance Related Activities	139,003	\$11,154	883,742	3,198	1,010	31.60%
5259	Other Investment Pools and Funds	3,299	\$469,987	32,849	1,064	590	55.50%
5311	Lessors of Real Estate	114,255	\$13,570	523,420	223,259	122,272	54.80%
5312	Offices of Real Estate Agents and Brokers	82,841	\$18,716	298,550	37,829	20,347	53.80%
5313	Activities Related to Real Estate	70,873	\$21,877	566,306	176,689	102,683	58.10%
5321	Automotive Equipment Rental and Leasing	11,319	\$136,981	172,400	80,613	25,433	31.50%
5322	Consumer Goods Rental	33,400	\$46,422	269,099	39,922	7,327	18.40%
5323	General Rental Centers	5,351	\$289,756	34,137	14,277	5,949	41.70%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	13,110	\$118,267	151,799	74,866	37,619	50.20%
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	2,403	\$645,230	29,027	1,403	586	41.70%
5411	Legal Services	181,534	\$8,541	1,182,581	7,727	865	11.20%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	114,078	\$13,591	1,325,118	33,446	10,491	31.40%
5413	Architectural, Engineering, and Related Services	106,199	\$14,600	1,235,421	122,564	55,622	45.40%
5414	Specialized Design Services	30,390	\$51,020	117,358	12,754	1,944	15.20%
5415	Computer Systems Design and Related Services	101,536	\$15,270	1,058,987	28,132	18,519	65.80%
5416	Management, Scientific, and Technical Consulting Services	122,838	\$12,622	838,381	52,262	17,923	34.30%
5417	Scientific Research and Development Services	15,349	\$101,015	615,740	40,862	12,070	29.50%
5418	Advertising and Related Services	37,464	\$41,386	419,342	39,542	8,180	20.70%
5419	Other Professional, Scientific, and Technical Services	71,482	\$21,691	547,318	24,082	2,823	11.70%
5511	Management of Companies and Enterprises	47,432	\$32,689	2,879,156	273,130	85,061	31.10%
5611	Office Administrative Services	24,431	\$63,464	444,049	42,473	13,892	32.70%
5612	Facilities Support Services	3,458	\$448,377	157,524	35,470	21,311	60.10%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
5613	Employment Services	40,522	\$38,263	3,902,177	1,984,709	284,367	14.30%
5614	Business Support Services	34,649	\$44,748	760,099	41,326	7,884	19.10%
5615	Travel Arrangement and Reservation Services	25,683	\$60,370	283,664	11,196	2,114	18.90%
5616	Investigation and Security Services	22,920	\$67,648	747,088	62,888	49,230	78.30%
5617	Services to Buildings and Dwellings	157,734	\$9,830	1,532,778	1,358,973	47,058	3.50%
5619	Other Support Services	20,891	\$74,218	343,542	122,051	21,868	17.90%
5621	Waste Collection	8,434	\$183,838	177,699	142,159	14,917	10.50%
5622	Waste Treatment and Disposal	2,555	\$606,844	61,771	41,186	11,129	27.00%
5629	Remediation and Other Waste Management Services	7,409	\$209,271	100,747	72,643	53,351	73.40%
6111	Elementary and Secondary Schools	20,864	\$74,314	804,249	81,261	10,476	12.90%
6112	Junior Colleges	909	\$1,705,706	93,922	5,607	1,603	28.60%
6113	Colleges, Universities, and Professional Schools	3,400	\$456,025	1,435,661	120,506	41,696	34.60%
6114	Business Schools and Computer and Management Training	7,652	\$202,625	65,719	1,265	476	37.60%
6115	Technical and Trade Schools	7,365	\$210,521	93,120	7,125	2,996	42.00%
6116	Other Schools and Instruction	30,849	\$50,261	232,919	6,591	1,871	28.40%
6117	Educational Support Services	5,383	\$288,034	51,025	1,326	302	22.80%
6211	Offices of Physicians	207,386	\$7,476	1,960,503	21,972	2,898	13.20%
6212	Offices of Dentists	119,307	\$12,996	772,603	13,869	0	0.00%
6213	Offices of Other Health Practitioners	107,983	\$14,359	519,636	9,055	793	8.80%
6214	Outpatient Care Centers	25,494	\$60,818	630,293	17,076	4,722	27.70%
6215	Medical and Diagnostic Laboratories	10,887	\$142,416	212,680	6,573	788	12.00%
6216	Home Health Care Services	18,556	\$83,557	811,504	7,622	939	12.30%
6219	Other Ambulatory Health Care Services	8,810	\$175,992	220,582	18,267	2,493	13.60%
6221	General Medical and Surgical Hospitals	5,504	\$281,702	4,807,453	289,952	62,241	21.50%
6222	Psychiatric and Substance Abuse Hospitals	656	\$2,363,547	213,158	16,330	5,153	31.60%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	727	\$2,132,719	189,146	10,055	2,458	24.40%
6231	Nursing Care Facilities	16,810	\$92,236	1,682,671	184,936	20,706	11.20%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	28,207	\$54,968	514,567	23,415	5,641	24.10%
6233	Community Care Facilities for the Elderly	17,887	\$86,682	590,546	70,633	11,960	16.90%
6239	Other Residential Care Facilities	6,210	\$249,676	158,171	6,780	2,279	33.60%
6241	Individual and Family Services	50,248	\$30,857	935,356	49,128	6,105	12.40%
6242	Community Food and Housing, and Emergency and Other Relief Services	12,403	\$125,009	150,528	13,909	3,183	22.90%
6243	Vocational Rehabilitation Services	8,308	\$186,626	328,661	81,160	3,549	4.40%
6244	Child Day Care Services	70,967	\$21,848	774,125	20,416	1,467	7.20%
7111	Performing Arts Companies	9,138	\$169,675	131,313	9,037	3,608	39.90%
7112	Spectator Sports	4,268	\$363,282	107,847	18,698	6,118	32.70%
7113	Promoters of Performing Arts, Sports, and Similar Events	5,382	\$288,087	98,685	20,709	3,884	18.80%
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	3,376	\$459,267	15,506	159	0	0.00%
7115	Independent Artists, Writers, and Performers	16,959	\$91,426	41,216	1,830	310	16.90%
7121	Museums, Historical Sites, and Similar Institutions	6,740	\$230,043	119,999	13,808	3,910	28.30%
7131	Amusement Parks and Arcades	3,011	\$514,941	133,433	13,505	6,524	48.30%
7132	Gambling Industries	2,191	\$707,662	167,884	19,774	5,109	25.80%
7139	Other Amusement and Recreation Industries	62,926	\$24,640	1,017,102	214,790	42,336	19.70%
7211	Traveler Accommodation	51,475	\$30,121	1,753,708	647,632	72,535	11.20%
7212	RV (Recreational Vehicle) Parks and Recreational Camps	7,209	\$215,077	37,135	11,757	3,734	31.80%
7213	Rooming and Boarding Houses	2,578	\$601,430	12,905	3,481	562	16.20%
7221	Full-Service Restaurants	200,371	\$7,738	4,091,133	70,472	3,685	5.20%
7222	Limited-Service Eating Places	234,374	\$6,615	3,640,644	190,526	4,493	2.40%
7223	Special Food Services	31,290	\$49,552	552,810	50,410	5,098	10.10%
7224	Drinking Places (Alcoholic Beverages)	48,050	\$32,268	351,316	7,629	577	7.60%
8111	Automotive Repair and Maintenance	165,437	\$9,372	891,878	718,194	474,164	66.00%

Table 2-1. Profile of General Industry Establishments Covered by Subparts D and I

NAICS	NAICS Description	Establishments	Average Receipts per Establishment [a]	Total Employment	Production Employment [b]	Employment in Construction, Installation, Maintenance, and Repair Occupations	
						Number	Share of Prod. Employment
8112	Electronic and Precision Equipment Repair and Maintenance	13,856	\$111,900	130,454	72,329	63,464	87.70%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	24,096	\$64,346	173,894	127,219	74,478	58.50%
8114	Personal and Household Goods Repair and Maintenance	25,195	\$61,539	108,422	79,898	36,288	45.40%
8121	Personal Care Services	101,459	\$15,282	551,686	9,334	322	3.40%
8122	Death Care Services	22,125	\$70,078	146,974	36,217	2,539	7.00%
8123	Dry-cleaning and Laundry Services	41,520	\$37,343	370,411	259,326	6,906	2.70%
8129	Other Personal Services	39,606	\$39,148	240,889	130,607	4,513	3.50%
8131	Religious Organizations	174,219	\$8,900	1,654,780	235,572	34,735	14.70%
8132	Grantmaking and Giving Services	14,799	\$104,770	137,920	4,929	929	18.90%
8133	Social Advocacy Organizations	11,950	\$129,748	109,264	6,572	919	14.00%
8134	Civic and Social Organizations	32,084	\$48,326	327,720	23,092	3,168	13.70%
8139	Business, Professional, Labor, Political, and Similar Organizations	65,621	\$23,628	522,874	55,668	17,974	32.30%
	Totals	6,460,256		106,518,243	27,698,295	5,342,672	19.30%

Source: U.S. Census Bureau, Statistics of U.S. Businesses, 2003; Bureau of Labor Statistics, Occupational Employment Statistics, 2003.

[a] Estimated based on 2002 receipts and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[b] Based on the employment share of workers employed in building and grounds; construction; installation, maintenance, and repair; production; and material moving occupations as reported by BLS, Occupational Employment Statistics.

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
1131	Timber Tract Operations	500	549	\$1,142,876	2,635	NA
1132	Forest Nurseries and Gathering of Forest Products	500	252	\$709,698	1,210	NA
1133	Logging	500	10,876	\$795,879	52,205	2,683
1141	Fishing	20	1,961	\$388,850	9,413	NA
1142	Hunting and Trapping	20	408	\$227,947	1,958	NA
1153	Support Activities for Forestry	100	1,676	\$580,446	8,045	NA
2111	Oil and Gas Extraction	500	6,183	\$4,376,463	29,678	5,042
2211	Electric Power Generation, Transmission and Distribution	20	680	\$5,775,052	3,264	1,068
2212	Natural Gas Distribution	20	411	\$6,965,463	1,973	666
2213	Water, Sewage and Other Systems	100	4,855	\$184,365	23,304	5,926
3111	Animal Food Manufacturing	500	1,171	\$8,882,904	5,621	392
3112	Grain and Oilseed Milling	500	449	\$17,387,198	2,155	247
3113	Sugar and Confectionery Product Manufacturing	500	1,669	\$3,728,665	8,011	637
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	500	1,256	\$9,996,387	6,029	525
3115	Dairy Product Manufacturing	500	1,071	\$13,808,295	5,141	363
3116	Animal Slaughtering and Processing	500	3,247	\$6,979,877	15,586	736
3117	Seafood Product Preparation and Packaging	500	638	\$7,394,878	3,062	120
3118	Bakeries and Tortilla Manufacturing	500	10,402	\$1,281,319	49,930	2,249
3119	Other Food Manufacturing	500	2,482	\$7,272,577	11,914	725
3121	Beverage Manufacturing	500	2,500	\$4,847,666	12,000	1,074
3122	Tobacco Manufacturing	500	89	\$12,093,036	427	47
3131	Fiber, Yarn, and Thread Mills	500	339	\$5,527,895	1,627	210
3132	Fabric Mills	500	1,301	\$4,355,136	6,245	572
3133	Textile and Fabric Finishing and Fabric Coating Mills	500	1,447	\$3,983,444	6,946	325
3141	Textile Furnishings Mills	500	2,644	\$2,024,960	12,691	688
3149	Other Textile Product Mills	500	4,182	\$1,484,746	20,074	777
3151	Apparel Knitting Mills	500	702	\$3,571,977	3,370	264
3152	Cut and Sew Apparel Manufacturing	500	11,002	\$1,832,714	52,810	540

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
3159	Apparel Accessories and Other Apparel Manufacturing	500	1,187	\$1,696,432	5,698	81
3161	Leather and Hide Tanning and Finishing	500	239	\$3,653,714	1,147	41
3162	Footwear Manufacturing	500	296	\$2,229,891	1,421	34
3169	Other Leather and Allied Product Manufacturing	500	887	\$1,855,206	4,258	49
3211	Sawmills and Wood Preservation	500	3,712	\$4,250,230	17,818	1,559
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	500	1,427	\$5,443,841	6,850	770
3219	Other Wood Product Manufacturing	500	9,656	\$2,395,089	46,349	5,619
3221	Pulp, Paper, and Paperboard Mills	750	305	\$228,330,418	1,464	275
3222	Converted Paper Product Manufacturing	750	3,213	\$26,128,109	15,422	923
3231	Printing and Related Support Activities	500	34,017	\$1,581,950	163,282	2,892
3241	Petroleum and Coal Products Manufacturing	500	1,002	\$14,905,653	4,810	798
3251	Basic Chemical Manufacturing	500	1,021	\$14,525,432	4,901	618
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	500	613	\$17,972,373	2,942	316
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	500	616	\$6,799,748	2,957	443
3254	Pharmaceutical and Medicine Manufacturing	500	1,279	\$10,838,150	6,139	289
3255	Paint, Coating, and Adhesive Manufacturing	500	1,457	\$5,777,881	6,994	310
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	500	1,957	\$6,773,088	9,394	605
3259	Other Chemical Product and Preparation Manufacturing	500	2,021	\$5,916,182	9,701	703
3261	Plastics Product Manufacturing	500	9,490	\$5,297,875	45,552	2,613
3262	Rubber Product Manufacturing	500	1,716	\$4,388,066	8,237	824
3271	Clay Product and Refractory Manufacturing	500	1,295	\$2,499,565	6,216	437
3272	Glass and Glass Product Manufacturing	500	1,764	\$2,116,722	8,467	701
3273	Cement and Concrete Product Manufacturing	500	5,160	\$4,540,501	24,768	3,791
3274	Lime and Gypsum Product Manufacturing	500	234	\$3,803,349	1,123	209
3279	Other Nonmetallic Mineral Product Manufacturing	500	2,427	\$2,580,861	11,650	1,514
3311	Iron and Steel Mills and Ferroalloy Manufacturing	750	757	\$64,519,041	3,634	820
3312	Steel Product Manufacturing from Purchased Steel	1000	673	\$21,184,749	3,230	316
3313	Alumina and Aluminum Production and Processing	750	441	\$58,161,776	2,117	272
3314	Nonferrous Metal (except Aluminum) Production and Processing	750	792	\$26,643,712	3,802	362

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
3315	Foundries	500	2,017	\$4,832,266	9,682	916
3321	Forging and Stamping	500	2,380	\$5,188,885	11,424	685
3322	Cutlery and Handtool Manufacturing	500	1,338	\$3,270,840	6,422	272
3323	Architectural and Structural Metals Manufacturing	500	11,997	\$2,960,607	57,586	6,355
3324	Boiler, Tank, and Shipping Container Manufacturing	500	1,196	\$5,121,201	5,741	637
3325	Hardware Manufacturing	500	711	\$4,189,419	3,413	108
3326	Spring and Wire Product Manufacturing	500	1,518	\$3,526,629	7,286	380
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	500	24,524	\$1,400,139	117,715	3,765
3328	Coating, Engraving, Heat Treating, and Allied Activities	500	5,514	\$2,220,369	26,467	1,364
3329	Other Fabricated Metal Product Manufacturing	500	5,578	\$3,216,169	26,774	1,710
3331	Agriculture, Construction, and Mining Machinery Manufacturing	500	2,465	\$4,472,410	11,832	816
3332	Industrial Machinery Manufacturing	500	3,808	\$3,874,176	18,278	1,188
3333	Commercial and Service Industry Machinery Manufacturing	500	2,053	\$4,372,235	9,854	507
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	500	1,371	\$5,394,282	6,581	523
3335	Metalworking Machinery Manufacturing	500	8,280	\$2,152,281	39,744	1,104
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	500	697	\$5,795,246	3,346	221
3339	Other General Purpose Machinery Manufacturing	500	5,517	\$3,869,682	26,482	1,520
3341	Computer and Peripheral Equipment Manufacturing	1000	1,472	\$53,286,040	7,066	178
3342	Communications Equipment Manufacturing	750	1,735	\$33,823,068	8,328	247
3343	Audio and Video Equipment Manufacturing	750	545	\$15,895,919	2,616	94
3344	Semiconductor and Other Electronic Component Manufacturing	500	4,318	\$4,798,391	20,726	669
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	500	4,256	\$4,389,099	20,429	663
3346	Manufacturing and Reproducing Magnetic and Optical Media	500	818	\$2,855,474	3,926	101
3351	Electric Lighting Equipment Manufacturing	500	1,085	\$4,232,506	5,208	265
3352	Household Appliance Manufacturing	500	249	\$9,265,006	1,195	48
3353	Electrical Equipment Manufacturing	500	1,989	\$3,901,931	9,547	480
3359	Other Electrical Equipment and Component Manufacturing	500	1,786	\$5,492,854	8,573	440

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
3361	Motor Vehicle Manufacturing	1000	300	\$795,437,988	1,440	197
3362	Motor Vehicle Body and Trailer Manufacturing	500	1,828	\$5,049,191	8,774	645
3363	Motor Vehicle Parts Manufacturing	500	4,161	\$6,928,857	19,973	1,745
3364	Aerospace Product and Parts Manufacturing	1000	1,243	\$96,053,172	5,966	576
3365	Railroad Rolling Stock Manufacturing	1000	142	\$53,341,947	682	99
3366	Ship and Boat Building	500	1,573	\$4,229,489	7,550	1,692
3369	Other Transportation Equipment Manufacturing	500	751	\$3,388,571	3,605	217
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	500	15,731	\$1,375,538	75,509	3,856
3372	Office Furniture (including Fixtures) Manufacturing	500	3,938	\$2,873,054	18,902	970
3379	Other Furniture Related Product Manufacturing	500	925	\$4,225,519	4,440	134
3391	Medical Equipment and Supplies Manufacturing	500	10,998	\$1,789,335	52,790	1,155
3399	Other Miscellaneous Manufacturing	500	18,772	\$2,111,921	90,106	4,399
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	100	18,668	\$3,745,925	89,606	12,791
4232	Furniture and Home Furnishing Merchant Wholesalers	100	11,781	\$3,418,623	56,549	1,707
4233	Lumber and Other Construction Materials Merchant Wholesalers	100	11,955	\$4,745,187	57,384	3,025
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	100	27,600	\$2,965,196	132,480	15,459
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	100	7,458	\$5,755,237	35,798	919
4236	Electrical and Electronic Goods Merchant Wholesalers	100	20,678	\$4,930,623	99,254	7,109
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	100	11,390	\$4,270,527	54,672	4,024
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	100	45,371	\$3,065,116	217,781	43,710
4239	Miscellaneous Durable Goods Merchant Wholesalers	100	32,932	\$2,704,259	158,074	7,053
4241	Paper and Paper Product Merchant Wholesalers	100	9,978	\$3,488,818	47,894	720
4242	Drugs and Druggists' Sundries Merchant Wholesalers	100	5,907	\$4,516,017	28,354	232
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	100	15,559	\$3,701,988	74,683	214
4244	Grocery and Related Product Wholesalers	100	28,149	\$5,720,582	135,115	3,477
4245	Farm Product Raw Material Merchant Wholesalers	100	4,464	\$10,867,852	21,427	530

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
4246	Chemical and Allied Products Merchant Wholesalers	100	8,916	\$3,834,533	42,797	1,750
4247	Petroleum and Petroleum Products Merchant Wholesalers	100	5,008	\$15,837,469	24,038	1,765
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	100	3,079	\$7,597,809	14,779	202
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	100	26,619	\$2,699,874	127,771	2,295
4251	Wholesale Electronic Markets and Agents and Brokers	100	37,588	\$2,471,219	180,422	10,057
4411	Automobile Dealers	20	33,011	\$2,143,003	158,453	42,826
4412	Other Motor Vehicle Dealers	100	14,790	\$2,851,025	70,992	21,140
4413	Automotive Parts, Accessories, and Tire Stores	100	34,382	\$955,303	165,034	51,307
4421	Furniture Stores	100	20,426	\$1,304,367	98,045	1,871
4422	Home Furnishings Stores	100	27,754	\$867,165	133,219	13,326
4431	Electronics and Appliance Stores	20	29,377	\$605,261	141,010	19,817
4441	Building Material and Supplies Dealers	100	46,537	\$1,744,734	223,378	8,559
4442	Lawn and Garden Equipment and Supplies Stores	100	17,363	\$1,313,780	83,342	8,479
4451	Grocery Stores	100	67,757	\$1,100,252	325,234	616
4452	Specialty Food Stores	100	21,328	\$549,863	102,374	1,261
4453	Beer, Wine, and Liquor Stores	100	25,715	\$905,634	123,432	223
4461	Health and Personal Care Stores	100	42,459	\$1,458,311	203,803	852
4471	Gasoline Stations	100	65,785	\$1,777,162	315,768	14,923
4481	Clothing Stores	100	39,378	\$561,576	189,014	369
4482	Shoe Stores	100	6,618	\$776,603	31,766	7
4483	Jewelry, Luggage, and Leather Goods Stores	100	20,017	\$702,974	96,082	1,429
4511	Sporting Goods, Hobby, and Musical Instrument Stores	100	31,401	\$670,441	150,725	5,397
4512	Book, Periodical, and Music Stores	100	10,061	\$551,426	48,293	81
4521	Department Stores	100	367	\$1,031,135	1,762	18
4529	Other General Merchandise Stores	100	9,552	\$666,201	45,850	862
4531	Florists	100	21,089	\$292,344	101,227	79
4532	Office Supplies, Stationery, and Gift Stores	500	31,458	\$534,665	150,998	5,905
4533	Used Merchandise Stores	100	13,281	\$393,348	63,749	1,045
4539	Other Miscellaneous Store Retailers	100	35,549	\$808,837	170,635	10,924
4541	Electronic Shopping and Mail-Order Houses	100	14,544	\$1,504,758	69,811	692

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
4542	Vending Machine Operators	100	4,887	\$747,879	23,458	5,506
4543	Direct Selling Establishments	20	23,770	\$780,150	114,096	17,089
4811	Scheduled Air Transportation	1500	638	\$141,784,802	3,062	390
4812	Nonscheduled Air Transportation	1500	2,155	\$4,239,911	10,344	1,941
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	20	645	\$1,580,880	3,096	121
4832	Inland Water Transportation	500	537	\$3,022,021	2,578	143
4841	General Freight Trucking	500	50,289	\$1,099,151	241,387	12,006
4842	Specialized Freight Trucking	500	47,778	\$872,540	229,334	13,545
4851	Urban Transit Systems	100	609	\$667,554	2,923	352
4852	Interurban and Rural Bus Transportation	100	201	\$733,003	965	62
4853	Taxi and Limousine Service	500	6,813	\$527,442	32,702	1,191
4854	School and Employee Bus Transportation	100	2,936	\$498,263	14,093	518
4855	Charter Bus Industry	500	1,133	\$1,251,470	5,438	332
4859	Other Transit and Ground Passenger Transportation	500	2,827	\$782,613	13,570	414
4861	Pipeline Transportation of Crude Oil	1500	62	\$72,579,611	298	86
4862	Pipeline Transportation of Natural Gas	500	110	\$21,963,747	528	117
4869	Other Pipeline Transportation	500	28	\$15,527,855	134	30
4871	Scenic and Sightseeing Transportation, Land	500	542	NA	2,602	153
4872	Scenic and Sightseeing Transportation, Water	500	1,705	\$517,600	8,184	209
4879	Scenic and Sightseeing Transportation, Other	100	163	\$1,209,831	782	116
4881	Support Activities for Air Transportation	100	3,452	\$1,096,131	16,570	4,980
4882	Support Activities for Rail Transportation	100	405	\$1,535,050	1,944	518
4883	Support Activities for Water Transportation	100	1,686	\$1,424,893	8,093	710
4884	Support Activities for Road Transportation	100	7,821	\$476,486	37,541	3,420
4885	Freight Transportation Arrangement	100	11,886	\$1,138,845	57,053	530
4889	Other Support Activities for Transportation	100	1,235	\$839,050	5,928	332
4921	Couriers	1500	3,309	\$16,946,820	15,883	434
4922	Local Messengers and Local Delivery	500	4,644	\$572,010	22,291	159
4931	Warehousing and Storage	100	5,055	\$1,409,727	24,264	821
5111	Newspaper, Periodical, Book, and Directory Publishers	500	16,277	\$1,928,528	78,130	732

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
5112	Software Publishers	500	6,475	\$3,475,756	31,080	163
5121	Motion Picture and Video Industries	500	15,259	\$1,279,535	73,243	428
5122	Sound Recording Industries	100	2,979	\$762,754	14,299	171
5151	Radio and Television Broadcasting	20	3,862	\$485,582	18,538	145
5152	Cable and Other Subscription Programming	500	368	\$9,621,013	1,766	435
5161	Internet Publishing and Broadcasting	500	1,779	\$2,186,174	8,539	12
5171	Wired Telecommunications Carriers	1500	3,058	\$92,037,621	14,678	4,334
5172	Wireless Telecommunications Carriers (except Satellite)	1500	3,234	\$22,837,472	15,523	1,129
5173	Telecommunications Resellers	1500	2,442	\$3,719,017	11,722	5
5174	Satellite Telecommunications	1000	521	\$9,346,282	2,501	506
5175	Cable and Other Program Distribution	1000	1,404	\$38,815,833	6,739	2,363
5179	Other Telecommunications	1000	496	\$5,517,367	2,381	15
5181	Internet Service Providers and Web Search Portals	1000	4,771	\$3,091,513	22,901	339
5182	Data Processing, Hosting, and Related Services	1000	8,072	\$8,260,266	38,746	527
5191	Other Information Services	1000	3,675	\$1,749,768	17,640	131
5211	Monetary Authorities - Central Bank	1000	24	\$1,132,909,455	115	3
5221	Depository Credit Intermediation	20	8,941	\$1,270,864	42,917	82
5222	Nondepository Credit Intermediation	100	20,441	\$1,291,573	98,117	248
5223	Activities Related to Credit Intermediation	20	22,444	\$596,805	107,731	463
5231	Securities and Commodity Contracts Intermediation and Brokerage	100	13,179	\$1,493,257	63,259	68
5232	Securities and Commodity Exchanges	100	50	\$379,062	240	1
5239	Other Financial Investment Activities	100	34,757	\$1,057,762	166,834	491
5241	Insurance Carriers	100	5,366	\$3,168,078	25,757	87
5242	Agencies, Brokerages, and Other Insurance Related Activities	20	120,559	\$373,765	578,683	661
5259	Other Investment Pools and Funds	20	1,962	\$2,357,849	9,418	169
5311	Lessors of Real Estate	100	96,438	\$765,772	462,902	108,135
5312	Offices of Real Estate Agents and Brokers	100	74,966	\$670,761	359,837	24,523
5313	Activities Related to Real Estate	100	63,523	\$550,761	304,910	55,287
5321	Automotive Equipment Rental and Leasing	500	4,720	\$1,665,630	22,656	3,342
5322	Consumer Goods Rental	100	14,006	\$496,302	67,229	1,831

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
5323	General Rental Centers	100	3,590	\$620,133	17,232	3,003
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	100	7,981	\$1,412,358	38,309	9,494
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	100	2,031	\$2,334,352	9,749	197
5411	Legal Services	100	172,066	\$659,072	825,917	604
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	500	100,618	\$459,083	482,966	3,824
5413	Architectural, Engineering, and Related Services	100	92,458	\$807,520	443,798	19,981
5414	Specialized Design Services	100	29,941	\$512,358	143,717	2,380
5415	Computer Systems Design and Related Services	500	90,809	\$962,556	435,883	7,622
5416	Management, Scientific, and Technical Consulting Services	100	114,132	\$540,802	547,834	11,711
5417	Scientific Research and Development Services	100	10,902	\$1,597,218	52,330	1,026
5418	Advertising and Related Services	500	33,996	\$1,057,913	163,181	3,183
5419	Other Professional, Scientific, and Technical Services	500	63,629	\$583,110	305,419	1,575
5511	Management of Companies and Enterprises	100	12,575	\$1,697,913	60,360	1,783
5611	Office Administrative Services	100	20,769	\$935,461	99,691	3,119
5612	Facilities Support Services	500	1,675	\$2,154,580	8,040	1,088
5613	Employment Services	100	18,938	\$848,874	90,902	6,624
5614	Business Support Services	100	28,306	\$611,764	135,869	1,409
5615	Travel Arrangement and Reservation Services	100	18,721	\$452,056	89,861	670
5616	Investigation and Security Services	100	17,603	\$500,947	84,494	5,568
5617	Services to Buildings and Dwellings	100	149,715	\$346,135	718,632	22,063
5619	Other Support Services	100	18,043	\$896,376	86,606	5,513
5621	Waste Collection	500	6,657	\$1,527,677	31,954	2,682
5622	Waste Treatment and Disposal	100	1,461	\$1,398,778	7,013	1,263
5629	Remediation and Other Waste Management Services	100	6,524	\$972,892	31,315	16,583
6111	Elementary and Secondary Schools	100	16,646	\$1,235,911	79,901	1,041
6112	Junior Colleges	500	534	\$3,584,181	2,563	44
6113	Colleges, Universities, and Professional Schools	100	1,357	\$1,922,448	6,514	189
6114	Business Schools and Computer and Management Training	100	6,914	\$662,399	33,187	240

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
6115	Technical and Trade Schools	500	6,250	\$884,881	30,000	965
6116	Other Schools and Instruction	100	28,614	\$301,602	137,347	1,103
6117	Educational Support Services	100	4,814	\$594,213	23,107	137
6211	Offices of Physicians	100	181,818	\$987,634	872,726	1,290
6212	Offices of Dentists	100	114,618	\$624,360	550,166	0
6213	Offices of Other Health Practitioners	100	99,082	\$348,018	475,594	726
6214	Outpatient Care Centers	500	12,286	\$2,271,434	58,973	442
6215	Medical and Diagnostic Laboratories	500	6,974	\$2,298,315	33,475	124
6216	Home Health Care Services	20	8,000	\$313,538	38,400	44
6219	Other Ambulatory Health Care Services	100	5,266	\$1,003,577	25,277	286
6221	General Medical and Surgical Hospitals	20	151	\$2,884,513	725	9
6222	Psychiatric and Substance Abuse Hospitals	20	48	\$2,159,950	230	6
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	20	130	\$1,079,779	624	8
6231	Nursing Care Facilities	500	8,321	\$4,087,881	39,941	491
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	100	6,072	\$757,935	29,146	319
6233	Community Care Facilities for the Elderly	100	12,194	\$574,387	58,531	1,185
6239	Other Residential Care Facilities	100	2,859	\$779,896	13,723	198
6241	Individual and Family Services	100	33,309	\$593,541	159,883	1,044
6242	Community Food and Housing, and Emergency and Other Relief Services	100	8,457	\$1,002,250	40,594	858
6243	Vocational Rehabilitation Services	100	3,782	\$896,983	18,154	196
6244	Child Day Care Services	100	56,076	\$255,837	269,165	510
7111	Performing Arts Companies	500	8,936	\$1,028,610	42,893	1,179
7112	Spectator Sports	100	3,858	\$1,073,897	18,518	1,051
7113	Promoters of Performing Arts, Sports, and Similar Events	20	4,565	\$642,123	21,912	862
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	500	3,305	\$904,200	15,864	0
7115	Independent Artists, Writers, and Performers	500	16,928	\$591,403	81,254	610
7121	Museums, Historical Sites, and Similar Institutions	100	6,017	\$643,344	28,882	941

Table 2-2. Profile of General Industry SBA-Defined Small Business Entities

NAICS	NAICS DESCRIPTION	SBA Employment Size Criterion [a]	Entities [b]	Average Receipts per Entity [c]	Total Employees	Estimated Employment in At-Risk Occupations [d]
7131	Amusement Parks and Arcades	100	2,229	\$594,344	10,699	523
7132	Gambling Industries	500	1,683	\$4,299,923	8,078	246
7139	Other Amusement and Recreation Industries	100	56,071	\$541,542	269,141	11,203
7211	Traveler Accommodation	100	39,483	\$673,188	189,518	7,839
7212	RV (Recreational Vehicle) Parks and Recreational Camps	100	6,564	\$465,630	31,507	3,168
7213	Rooming and Boarding Houses	100	2,476	\$444,598	11,885	518
7221	Full-Service Restaurants	500	173,188	\$596,549	831,302	749
7222	Limited-Service Eating Places	100	149,306	\$407,647	716,669	884
7223	Special Food Services	100	13,110	\$447,398	62,928	580
7224	Drinking Places (Alcoholic Beverages)	100	47,305	\$300,218	227,064	373
8111	Automotive Repair and Maintenance	100	151,661	\$450,877	727,973	387,025
8112	Electronic and Precision Equipment Repair and Maintenance	20	11,323	\$372,100	54,350	26,441
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	100	22,467	\$620,143	107,842	46,188
8114	Personal and Household Goods Repair and Maintenance	500	24,002	\$273,683	115,210	38,560
8121	Personal Care Services	100	87,802	\$188,655	421,450	246
8122	Death Care Services	20	14,986	\$502,885	71,933	1,243
8123	Dry-cleaning and Laundry Services	20	32,496	\$206,530	155,981	2,908
8129	Other Personal Services	20	26,943	\$242,567	129,326	2,423
8131	Religious Organizations	20	156,574	\$218,513	751,555	15,776
8132	Grantmaking and Giving Services	20	11,353	\$1,630,891	54,494	367
8133	Social Advocacy Organizations	20	9,003	\$443,538	43,214	364
8134	Civic and Social Organizations	20	26,658	\$276,788	127,958	1,237
8139	Business, Professional, Labor, Political, and Similar Organizations	20	58,608	\$427,977	281,318	9,671
	Totals		4,896,755		23,504,424	1,404,692

[a] SBA criteria specified in dollar terms converted to size-class definition based on average revenues of different size establishments. Most restrictive criterion for 6-digit NAICS applied to the 4-digit NAICS level.

[b] U.S. Census Bureau, Statistics of U.S. Businesses, 2003.

[c] Estimated based on 2002 receipts and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[d] Assumes same share of production workers in construction, installation, maintenance, and repair occupations as shown in Table 2-1.

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
1131	Timber Tract Operations	520	\$869,348	1,664	NA
1132	Forest Nurseries and Gathering of Forest Products	231	\$544,580	739	NA
1133	Logging	10,270	\$576,414	32,864	1,689
1141	Fishing	1,961	\$388,850	6,275	NA
1142	Hunting and Trapping	408	\$227,947	1,306	NA
1153	Support Activities for Forestry	1,558	\$398,194	4,986	NA
2111	Oil and Gas Extraction	5,755	\$1,359,992	18,416	3,129
2211	Electric Power Generation, Transmission and Distribution	680	\$5,775,052	2,176	712
2212	Natural Gas Distribution	411	\$6,965,463	1,315	444
2213	Water, Sewage and Other Systems	4,692	\$404,898	15,014	3,818
3111	Animal Food Manufacturing	822	\$2,377,317	2,630	183
3112	Grain and Oilseed Milling	274	\$2,689,555	877	101
3113	Sugar and Confectionery Product Manufacturing	1,303	\$644,906	4,170	331
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	751	\$1,616,537	2,403	209
3115	Dairy Product Manufacturing	674	\$1,878,874	2,157	152
3116	Animal Slaughtering and Processing	2,380	\$1,264,455	7,616	360
3117	Seafood Product Preparation and Packaging	401	\$1,940,610	1,283	50
3118	Bakeries and Tortilla Manufacturing	8,556	\$369,129	27,379	1,233
3119	Other Food Manufacturing	1,546	\$1,520,323	4,947	301
3121	Beverage Manufacturing	1,934	\$919,518	6,189	554
3122	Tobacco Manufacturing	68	\$2,041,746	218	24
3131	Fiber, Yarn, and Thread Mills	218	\$843,917	698	90
3132	Fabric Mills	848	\$828,665	2,714	248
3133	Textile and Fabric Finishing and Fabric Coating Mills	1,066	\$1,143,946	3,411	160
3141	Textile Furnishings Mills	2,250	\$701,677	7,200	390
3149	Other Textile Product Mills	3,423	\$477,383	10,954	424
3151	Apparel Knitting Mills	427	\$798,214	1,366	107
3152	Cut and Sew Apparel Manufacturing	8,707	\$487,396	27,862	285
3159	Apparel Accessories and Other Apparel Manufacturing	934	\$426,392	2,989	42

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
3161	Leather and Hide Tanning and Finishing	187	\$671,471	598	21
3162	Footwear Manufacturing	224	\$555,555	717	17
3169	Other Leather and Allied Product Manufacturing	710	\$516,939	2,272	26
3211	Sawmills and Wood Preservation	2,683	\$984,572	8,586	751
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	739	\$1,145,483	2,365	266
3219	Other Wood Product Manufacturing	7,184	\$716,265	22,989	2,787
3221	Pulp, Paper, and Paperboard Mills	87	\$2,257,490	278	52
3222	Converted Paper Product Manufacturing	1,485	\$1,495,040	4,752	285
3231	Printing and Related Support Activities	28,377	\$498,115	90,806	1,608
3241	Petroleum and Coal Products Manufacturing	635	\$2,978,713	2,032	337
3251	Basic Chemical Manufacturing	565	\$2,874,055	1,808	228
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	324	\$4,213,498	1,037	111
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	431	\$2,000,472	1,379	206
3254	Pharmaceutical and Medicine Manufacturing	794	\$1,978,409	2,541	119
3255	Paint, Coating, and Adhesive Manufacturing	1,030	\$1,531,229	3,296	146
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	1,406	\$2,077,732	4,499	290
3259	Other Chemical Product and Preparation Manufacturing	1,414	\$1,333,381	4,525	328
3261	Plastics Product Manufacturing	5,471	\$1,065,124	17,507	1,004
3262	Rubber Product Manufacturing	1,061	\$956,137	3,395	340
3271	Clay Product and Refractory Manufacturing	975	\$448,743	3,120	220
3272	Glass and Glass Product Manufacturing	1,416	\$533,484	4,531	375
3273	Cement and Concrete Product Manufacturing	3,318	\$1,181,724	10,618	1,625
3274	Lime and Gypsum Product Manufacturing	180	\$1,079,526	576	107
3279	Other Nonmetallic Mineral Product Manufacturing	1,817	\$854,338	5,814	756
3311	Iron and Steel Mills and Ferroalloy Manufacturing	493	\$3,750,832	1,578	356
3312	Steel Product Manufacturing from Purchased Steel	359	\$1,069,728	1,149	113
3313	Alumina and Aluminum Production and Processing	215	\$1,483,657	688	88
3314	Nonferrous Metal (except Aluminum) Production and Processing	459	\$1,288,432	1,469	140
3315	Foundries	1,123	\$797,552	3,594	340

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
3321	Forging and Stamping	1,324	\$1,061,894	4,237	254
3322	Cutlery and Handtool Manufacturing	958	\$700,684	3,066	130
3323	Architectural and Structural Metals Manufacturing	8,581	\$792,940	27,459	3,030
3324	Boiler, Tank, and Shipping Container Manufacturing	637	\$1,217,580	2,038	226
3325	Hardware Manufacturing	449	\$868,001	1,437	45
3326	Spring and Wire Product Manufacturing	1,003	\$816,987	3,210	167
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	20,266	\$515,060	64,851	2,074
3328	Coating, Engraving, Heat Treating, and Allied Activities	3,943	\$573,898	12,618	650
3329	Other Fabricated Metal Product Manufacturing	3,872	\$762,313	12,390	791
3331	Agriculture, Construction, and Mining Machinery Manufacturing	1,629	\$1,105,784	5,213	359
3332	Industrial Machinery Manufacturing	2,597	\$940,184	8,310	540
3333	Commercial and Service Industry Machinery Manufacturing	1,404	\$954,994	4,493	231
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	815	\$1,087,860	2,608	207
3335	Metalworking Machinery Manufacturing	6,263	\$642,230	20,042	557
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	414	\$1,284,626	1,325	88
3339	Other General Purpose Machinery Manufacturing	3,731	\$1,003,583	11,939	685
3341	Computer and Peripheral Equipment Manufacturing	995	\$1,221,212	3,184	80
3342	Communications Equipment Manufacturing	947	\$1,139,195	3,030	90
3343	Audio and Video Equipment Manufacturing	391	\$944,852	1,251	45
3344	Semiconductor and Other Electronic Component Manufacturing	2,548	\$1,291,475	8,154	263
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	2,965	\$1,096,438	9,488	308
3346	Manufacturing and Reproducing Magnetic and Optical Media	655	\$847,888	2,096	54
3351	Electric Lighting Equipment Manufacturing	725	\$946,605	2,320	118
3352	Household Appliance Manufacturing	163	\$1,712,962	522	21
3353	Electrical Equipment Manufacturing	1,366	\$1,024,675	4,371	220
3359	Other Electrical Equipment and Component Manufacturing	1,114	\$1,306,330	3,565	183
3361	Motor Vehicle Manufacturing	209	\$2,490,791	669	92
3362	Motor Vehicle Body and Trailer Manufacturing	1,138	\$1,087,236	3,642	268
3363	Motor Vehicle Parts Manufacturing	2,563	\$1,151,651	8,202	716

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
3364	Aerospace Product and Parts Manufacturing	725	\$999,595	2,320	224
3365	Railroad Rolling Stock Manufacturing	71	\$1,587,447	227	33
3366	Ship and Boat Building	1,150	\$793,188	3,680	825
3369	Other Transportation Equipment Manufacturing	586	\$836,443	1,875	113
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	13,500	\$439,938	43,200	2,206
3372	Office Furniture (including Fixtures) Manufacturing	2,601	\$746,938	8,323	427
3379	Other Furniture Related Product Manufacturing	618	\$810,271	1,978	59
3391	Medical Equipment and Supplies Manufacturing	9,374	\$470,332	29,997	656
3399	Other Miscellaneous Manufacturing	15,182	\$609,110	48,582	2,372
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	16,101	\$2,019,552	51,523	7,355
4232	Furniture and Home Furnishing Merchant Wholesalers	10,346	\$2,186,859	33,107	1,000
4233	Lumber and Other Construction Materials Merchant Wholesalers	10,022	\$2,752,068	32,070	1,690
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	24,260	\$1,639,411	77,632	9,059
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	6,294	\$3,716,861	20,141	517
4236	Electrical and Electronic Goods Merchant Wholesalers	17,986	\$2,895,439	57,555	4,122
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	9,652	\$2,198,017	30,886	2,273
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	39,360	\$1,797,613	125,952	25,280
4239	Miscellaneous Durable Goods Merchant Wholesalers	30,246	\$1,754,193	96,787	4,319
4241	Paper and Paper Product Merchant Wholesalers	8,727	\$2,028,236	27,926	420
4242	Drugs and Druggists' Sundries Merchant Wholesalers	5,223	\$2,364,659	16,714	137
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	14,029	\$2,035,566	44,893	129
4244	Grocery and Related Product Wholesalers	24,206	\$3,265,330	77,459	1,993
4245	Farm Product Raw Material Merchant Wholesalers	3,754	\$6,317,341	12,013	297
4246	Chemical and Allied Products Merchant Wholesalers	7,896	\$2,421,522	25,267	1,033
4247	Petroleum and Petroleum Products Merchant Wholesalers	3,873	\$6,772,459	12,394	910
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	2,132	\$2,595,322	6,822	93
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	24,025	\$1,609,365	76,880	1,381
4251	Wholesale Electronic Markets and Agents and Brokers	36,162	\$1,979,137	115,718	6,450
4411	Automobile Dealers	33,011	\$2,143,003	105,635	28,551

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
4412	Other Motor Vehicle Dealers	12,994	\$1,644,945	41,581	12,382
4413	Automotive Parts, Accessories, and Tire Stores	32,013	\$667,732	102,442	31,848
4421	Furniture Stores	18,423	\$833,318	58,954	1,125
4422	Home Furnishings Stores	26,417	\$654,254	84,534	8,456
4431	Electronics and Appliance Stores	29,377	\$605,261	94,006	13,212
4441	Building Material and Supplies Dealers	40,587	\$985,198	129,878	4,977
4442	Lawn and Garden Equipment and Supplies Stores	15,611	\$850,908	49,955	5,082
4451	Grocery Stores	60,039	\$641,582	192,125	364
4452	Specialty Food Stores	20,138	\$442,127	64,442	793
4453	Beer, Wine, and Liquor Stores	24,943	\$771,492	79,818	144
4461	Health and Personal Care Stores	39,200	\$1,101,787	125,440	525
4471	Gasoline Stations	60,424	\$1,328,760	193,357	9,138
4481	Clothing Stores	37,555	\$436,851	120,176	234
4482	Shoe Stores	6,184	\$533,400	19,789	4
4483	Jewelry, Luggage, and Leather Goods Stores	19,463	\$572,849	62,282	926
4511	Sporting Goods, Hobby, and Musical Instrument Stores	29,604	\$491,512	94,733	3,392
4512	Book, Periodical, and Music Stores	9,421	\$393,689	30,147	51
4521	Department Stores	349	\$319,681	1,117	11
4529	Other General Merchandise Stores	8,974	\$462,042	28,717	540
4531	Florists	20,389	\$249,147	65,245	51
4532	Office Supplies, Stationery, and Gift Stores	29,431	\$334,619	94,179	3,683
4533	Used Merchandise Stores	12,659	\$317,731	40,509	664
4539	Other Miscellaneous Store Retailers	33,960	\$639,267	108,672	6,957
4541	Electronic Shopping and Mail-Order Houses	13,335	\$949,551	42,672	423
4542	Vending Machine Operators	4,535	\$468,988	14,512	3,406
4543	Direct Selling Establishments	23,770	\$780,150	76,064	11,393
4811	Scheduled Air Transportation	410	\$1,630,648	1,312	167
4812	Nonscheduled Air Transportation	1,761	\$850,128	5,635	1,057
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	645	\$1,580,880	2,064	81
4832	Inland Water Transportation	434	\$817,507	1,389	77

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
4841	General Freight Trucking	45,233	\$452,783	144,746	7,199
4842	Specialized Freight Trucking	43,742	\$447,727	139,974	8,267
4851	Urban Transit Systems	482	\$274,333	1,542	186
4852	Interurban and Rural Bus Transportation	164	\$388,243	525	34
4853	Taxi and Limousine Service	6,180	\$279,575	19,776	720
4854	School and Employee Bus Transportation	2,211	\$213,307	7,075	260
4855	Charter Bus Industry	769	\$443,498	2,461	150
4859	Other Transit and Ground Passenger Transportation	2,209	\$274,687	7,069	216
4861	Pipeline Transportation of Crude Oil	23	\$4,555,190	74	21
4862	Pipeline Transportation of Natural Gas	87	\$6,942,692	278	62
4869	Other Pipeline Transportation	19	\$1,529,567	61	13
4871	Scenic and Sightseeing Transportation, Land	451	NA	1,443	85
4872	Scenic and Sightseeing Transportation, Water	1,585	\$301,262	5,072	129
4879	Scenic and Sightseeing Transportation, Other	144	NA	461	69
4881	Support Activities for Air Transportation	3,037	\$648,330	9,718	2,921
4882	Support Activities for Rail Transportation	323	\$850,612	1,034	275
4883	Support Activities for Water Transportation	1,408	\$642,383	4,506	395
4884	Support Activities for Road Transportation	7,259	\$349,846	23,229	2,116
4885	Freight Transportation Arrangement	10,897	\$777,237	34,870	324
4889	Other Support Activities for Transportation	1,125	\$598,886	3,600	201
4921	Couriers	2,831	\$427,743	9,059	248
4922	Local Messengers and Local Delivery	4,226	\$344,375	13,523	97
4931	Warehousing and Storage	3,781	\$758,890	12,099	410
5111	Newspaper, Periodical, Book, and Directory Publishers	13,651	\$524,586	43,683	409
5112	Software Publishers	4,884	\$794,028	15,629	82
5121	Motion Picture and Video Industries	14,076	\$756,666	45,043	263
5122	Sound Recording Industries	2,855	\$475,078	9,136	109
5151	Radio and Television Broadcasting	3,862	\$485,582	12,358	97
5152	Cable and Other Subscription Programming	315	\$3,561,108	1,008	248
5161	Internet Publishing and Broadcasting	1,520	\$612,225	4,864	7

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
5171	Wired Telecommunications Carriers	2,297	\$1,194,239	7,350	2,170
5172	Wireless Telecommunications Carriers (except Satellite)	2,856	\$677,465	9,139	665
5173	Telecommunications Resellers	2,093	\$877,847	6,698	3
5174	Satellite Telecommunications	421	\$1,146,838	1,347	272
5175	Cable and Other Program Distribution	1,157	\$769,072	3,702	1,298
5179	Other Telecommunications	427	\$729,121	1,366	9
5181	Internet Service Providers and Web Search Portals	4,269	\$380,692	13,661	202
5182	Data Processing, Hosting, and Related Services	6,049	\$618,219	19,357	263
5191	Other Information Services	3,264	\$316,726	10,445	78
5211	Monetary Authorities - Central Bank	10	NA	32	1
5221	Depository Credit Intermediation	8,941	\$1,270,864	28,611	55
5222	Nondepository Credit Intermediation	18,871	\$706,460	60,387	153
5223	Activities Related to Credit Intermediation	22,444	\$596,805	71,821	309
5231	Securities and Commodity Contracts Intermediation and Brokerage	12,434	\$764,357	39,789	42
5232	Securities and Commodity Exchanges	46	\$447,659	147	1
5239	Other Financial Investment Activities	33,353	\$668,202	106,730	314
5241	Insurance Carriers	4,689	\$1,420,507	15,005	51
5242	Agencies, Brokerages, and Other Insurance Related Activities	120,559	\$373,765	385,789	441
5259	Other Investment Pools and Funds	1,962	\$2,357,849	6,278	113
5311	Lessors of Real Estate	93,353	\$614,103	298,730	69,784
5312	Offices of Real Estate Agents and Brokers	73,462	\$533,572	235,078	16,021
5313	Activities Related to Real Estate	59,698	\$388,392	191,034	34,638
5321	Automotive Equipment Rental and Leasing	4,123	\$739,046	13,194	1,946
5322	Consumer Goods Rental	12,843	\$337,056	41,098	1,119
5323	General Rental Centers	3,294	\$471,007	10,541	1,837
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	7,170	\$805,899	22,944	5,686
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	1,811	\$1,190,522	5,795	117
5411	Legal Services	164,606	\$444,327	526,739	385
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	95,100	\$268,789	304,320	2,409
5413	Architectural, Engineering, and Related Services	84,707	\$461,992	271,062	12,204

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
5414	Specialized Design Services	29,234	\$427,376	93,549	1,549
5415	Computer Systems Design and Related Services	84,560	\$395,264	270,592	4,732
5416	Management, Scientific, and Technical Consulting Services	109,948	\$380,014	351,834	7,521
5417	Scientific Research and Development Services	9,272	\$712,340	29,670	582
5418	Advertising and Related Services	31,248	\$581,482	99,994	1,951
5419	Other Professional, Scientific, and Technical Services	59,146	\$406,796	189,267	976
5511	Management of Companies and Enterprises	6,751	\$1,930,351	21,603	638
5611	Office Administrative Services	18,029	\$531,968	57,693	1,805
5612	Facilities Support Services	1,139	\$508,591	3,645	493
5613	Employment Services	13,577	\$391,201	43,446	3,166
5614	Business Support Services	25,458	\$386,643	81,466	845
5615	Travel Arrangement and Reservation Services	17,750	\$297,978	56,800	423
5616	Investigation and Security Services	15,211	\$313,413	48,675	3,207
5617	Services to Buildings and Dwellings	140,502	\$254,498	449,606	13,803
5619	Other Support Services	16,425	\$575,931	52,560	3,346
5621	Waste Collection	5,694	\$607,165	18,221	1,530
5622	Waste Treatment and Disposal	1,286	\$818,349	4,115	741
5629	Remediation and Other Waste Management Services	5,675	\$538,271	18,160	9,617
6111	Elementary and Secondary Schools	8,367	\$362,168	26,774	349
6112	Junior Colleges	248	\$816,332	794	14
6113	Colleges, Universities, and Professional Schools	954	\$541,493	3,053	89
6114	Business Schools and Computer and Management Training	6,377	\$391,223	20,406	148
6115	Technical and Trade Schools	5,401	\$407,453	17,283	556
6116	Other Schools and Instruction	26,349	\$218,108	84,317	677
6117	Educational Support Services	4,498	\$384,107	14,394	85
6211	Offices of Physicians	166,372	\$655,614	532,390	787
6212	Offices of Dentists	111,183	\$567,136	355,786	0
6213	Offices of Other Health Practitioners	96,344	\$295,375	308,301	470
6214	Outpatient Care Centers	8,298	\$604,614	26,554	199
6215	Medical and Diagnostic Laboratories	5,662	\$888,498	18,118	67

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
6216	Home Health Care Services	8,000	\$313,538	25,600	30
6219	Other Ambulatory Health Care Services	3,933	\$480,933	12,586	142
6221	General Medical and Surgical Hospitals	151	\$2,884,513	483	6
6222	Psychiatric and Substance Abuse Hospitals	48	\$2,159,950	154	4
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	130	\$1,079,779	416	5
6231	Nursing Care Facilities	2,217	\$775,200	7,094	87
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	4,046	\$285,693	12,947	142
6233	Community Care Facilities for the Elderly	9,203	\$248,230	29,450	596
6239	Other Residential Care Facilities	1,877	\$297,795	6,006	87
6241	Individual and Family Services	27,310	\$295,047	87,392	570
6242	Community Food and Housing, and Emergency and Other Relief Services	6,774	\$461,472	21,677	458
6243	Vocational Rehabilitation Services	2,623	\$389,888	8,394	91
6244	Child Day Care Services	47,892	\$151,471	153,254	290
7111	Performing Arts Companies	7,819	\$478,237	25,021	688
7112	Spectator Sports	3,500	\$549,064	11,200	635
7113	Promoters of Performing Arts, Sports, and Similar Events	4,565	\$642,123	14,608	575
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	3,204	\$670,373	10,253	0
7115	Independent Artists, Writers, and Performers	16,611	\$552,518	53,155	399
7121	Museums, Historical Sites, and Similar Institutions	5,261	\$334,158	16,835	549
7131	Amusement Parks and Arcades	1,897	\$380,445	6,070	297
7132	Gambling Industries	1,208	\$664,341	3,866	118
7139	Other Amusement and Recreation Industries	46,981	\$316,694	150,339	6,258
7211	Traveler Accommodation	31,843	\$382,195	101,898	4,215
7212	RV (Recreational Vehicle) Parks and Recreational Camps	6,085	\$384,287	19,472	1,958
7213	Rooming and Boarding Houses	2,405	\$228,668	7,696	335
7221	Full-Service Restaurants	130,156	\$283,494	416,499	375
7222	Limited-Service Eating Places	124,944	\$244,075	399,821	493
7223	Special Food Services	11,376	\$272,192	36,403	336
7224	Drinking Places (Alcoholic Beverages)	43,640	\$217,554	139,648	229
8111	Automotive Repair and Maintenance	145,857	\$374,199	466,742	248,142

Table 2-3. Profile of General Industry Entities With Fewer Than 20 Employees

NAICS	NAICS DESCRIPTION	Entities [a]	Average Receipts per Entity [b]	Total Employees	Estimated Employment in At-Risk Occupations [c]
8112	Electronic and Precision Equipment Repair and Maintenance	11,323	\$372,100	36,234	17,627
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	21,243	\$442,521	67,978	29,115
8114	Personal and Household Goods Repair and Maintenance	23,522	\$231,606	75,270	25,193
8121	Personal Care Services	84,303	\$144,362	269,770	157
8122	Death Care Services	14,986	\$502,885	47,955	829
8123	Dry-cleaning and Laundry Services	32,496	\$206,530	103,987	1,939
8129	Other Personal Services	26,943	\$242,567	86,218	1,615
8131	Religious Organizations	156,574	\$218,513	501,037	10,517
8132	Grantmaking and Giving Services	11,353	\$1,630,891	36,330	245
8133	Social Advocacy Organizations	9,003	\$443,538	28,810	242
8134	Civic and Social Organizations	26,658	\$276,788	85,306	825
8139	Business, Professional, Labor, Political, and Similar Organizations	58,608	\$427,977	187,546	6,447
	Totals	4,441,236		14,211,955	867,089

[a] U.S. Census Bureau, Statistics of U.S. Businesses, 2003.

[b] Estimated based on 2002 receipts and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[c] Assumes same share of production workers in construction, installation, maintenance, and repair occupations as shown in Table 2-1.

NA: Data not available.

2.3 EMPLOYEES USING FALL PROTECTION

ERG estimated the numbers of workers using fall protection equipment by extrapolating results obtained from OSHA's 1999 PPE Cost Survey. This establishment-based survey provided industry-specific estimates of the numbers of workers who used various types of personal protective equipment, including body harnesses and body belts.³ The survey reported the percent of employees in each industry (SIC classification) that used these equipment types. ERG extrapolated the survey findings by first associating the SIC industries covered by the survey with 4-digit NAICS industries and then multiplying the equipment use percentages by total employment as shown in Table 2-1. Because the same employees might use both body harnesses and body belts, ERG used the maximum value of the two percentages in deriving these estimates. For example, if for a given industry, six percent of employees were estimated using body harnesses while four percent were estimated to use body belts, ERG used the larger six percent statistic as its estimate of the share of workers using fall protection. Also, the survey's design did not permit industry-specific estimates for all industries. For example, only aggregated estimates are available for several groups of service, wholesale, and retail trade industries. To make the fall protection estimates consistent with the numbers of at-risk workers, ERG constrained the estimated number of employees using fall protection in any industry to be less than or equal to the numbers of workers in construction, installation, maintenance, and repair occupations as shown in Table 2-1. Table 2-4 presents, by 4-digit NAICS industries, the resultant estimates of the numbers of workers using fall protection equipment. Overall, the table shows an estimated 1.6 million employees in General Industry using fall protection.

³ For a description of the survey, see Eastern Research Group, PPE Cost Survey: Final Report. Task Order 3, Base Year, DOL Contract No. J-9-F-9-0010. June 23, 1999 (Exhibit 14, OSHA Docket S-042: Costs of Personal Protective Equipment). Back support belts and similar ergonomic devices were explicitly excluded from the types of personal protective equipment investigated by the survey.

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
1131	Timber Tract Operations	5,515	6.90%	381	
1132	Forest Nurseries and Gathering of Forest Products	2,283	9.70%	222	
1133	Logging	68,020	1.80%	1,191	
1141	Fishing	6,234	NA	NA	
1142	Hunting and Trapping	2,711	NA	NA	
1153	Support Activities for Forestry	14,969	9.70%	1,453	
2111	Oil and Gas Extraction	83,447	22.90%	14,176	[b]
2211	Electric Power Generation, Transmission and Distribution	543,782	10.40%	56,595	
2212	Natural Gas Distribution	87,452	10.40%	9,102	
2213	Water, Sewage and Other Systems	44,704	10.40%	4,653	
3111	Animal Food Manufacturing	47,338	1.90%	912	
3112	Grain and Oilseed Milling	54,918	1.90%	1,058	
3113	Sugar and Confectionery Product Manufacturing	79,630	1.90%	1,534	
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	163,763	1.90%	3,155	
3115	Dairy Product Manufacturing	134,287	1.90%	2,587	
3116	Animal Slaughtering and Processing	499,898	1.90%	9,632	
3117	Seafood Product Preparation and Packaging	39,580	1.90%	763	
3118	Bakeries and Tortilla Manufacturing	317,040	1.90%	6,109	
3119	Other Food Manufacturing	159,544	1.90%	3,074	
3121	Beverage Manufacturing	131,331	1.90%	2,530	
3122	Tobacco Manufacturing	23,830	2.70%	639	
3131	Fiber, Yarn, and Thread Mills	58,668	1.80%	1,078	
3132	Fabric Mills	136,456	1.80%	2,508	
3133	Textile and Fabric Finishing and Fabric Coating Mills	59,714	1.80%	1,097	
3141	Textile Furnishings Mills	107,011	1.80%	1,967	
3149	Other Textile Product Mills	80,515	1.80%	1,480	
3151	Apparel Knitting Mills	45,060	1.60%	702	
3152	Cut and Sew Apparel Manufacturing	232,156	1.60%	2,372	[b]
3159	Apparel Accessories and Other Apparel Manufacturing	26,438	1.60%	376	[b]
3161	Leather and Hide Tanning and Finishing	8,448	1.60%	138	
3162	Footwear Manufacturing	18,163	1.60%	296	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
3169	Other Leather and Allied Product Manufacturing	17,502	1.60%	201	[b]
3211	Sawmills and Wood Preservation	112,316	1.80%	1,966	
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	110,969	1.80%	1,942	
3219	Other Wood Product Manufacturing	300,699	1.80%	5,263	
3221	Pulp, Paper, and Paperboard Mills	154,903	6.10%	9,437	
3222	Converted Paper Product Manufacturing	327,329	6.10%	19,599	[b]
3231	Printing and Related Support Activities	700,221	1.80%	12,401	[b]
3241	Petroleum and Coal Products Manufacturing	98,334	16.40%	16,108	
3251	Basic Chemical Manufacturing	170,579	16.80%	21,520	[b]
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	100,336	16.80%	10,773	[b]
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	31,194	16.80%	4,669	[b]
3254	Pharmaceutical and Medicine Manufacturing	251,855	16.80%	11,836	[b]
3255	Paint, Coating, and Adhesive Manufacturing	68,327	16.80%	3,026	[b]
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	109,363	16.80%	7,038	[b]
3259	Other Chemical Product and Preparation Manufacturing	109,721	16.80%	7,954	[b]
3261	Plastics Product Manufacturing	746,211	1.50%	11,219	
3262	Rubber Product Manufacturing	175,181	1.50%	2,634	
3271	Clay Product and Refractory Manufacturing	59,900	6.50%	3,919	
3272	Glass and Glass Product Manufacturing	111,613	6.50%	7,301	
3273	Cement and Concrete Product Manufacturing	206,058	6.50%	13,480	
3274	Lime and Gypsum Product Manufacturing	16,827	6.50%	1,101	
3279	Other Nonmetallic Mineral Product Manufacturing	73,246	6.50%	4,792	
3311	Iron and Steel Mills and Ferroalloy Manufacturing	125,871	7.20%	9,057	
3312	Steel Product Manufacturing from Purchased Steel	52,401	7.20%	3,770	
3313	Alumina and Aluminum Production and Processing	66,644	7.20%	4,795	
3314	Nonferrous Metal (except Aluminum) Production and Processing	63,008	7.20%	4,533	
3315	Foundries	171,769	2.40%	4,142	
3321	Forging and Stamping	122,595	2.40%	2,956	
3322	Cutlery and Handtool Manufacturing	60,349	2.40%	1,455	
3323	Architectural and Structural Metals Manufacturing	365,532	2.40%	8,815	
3324	Boiler, Tank, and Shipping Container Manufacturing	87,234	2.40%	2,104	
3325	Hardware Manufacturing	56,766	2.40%	1,369	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
3326	Spring and Wire Product Manufacturing	59,312	2.40%	1,430	
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	356,838	2.40%	8,605	
3328	Coating, Engraving, Heat Treating, and Allied Activities	135,161	2.40%	3,259	
3329	Other Fabricated Metal Product Manufacturing	274,479	2.40%	6,619	
3331	Agriculture, Construction, and Mining Machinery Manufacturing	172,356	2.70%	4,608	
3332	Industrial Machinery Manufacturing	144,793	2.70%	3,871	
3333	Commercial and Service Industry Machinery Manufacturing	103,749	2.70%	2,774	
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	152,354	2.70%	4,074	
3335	Metalworking Machinery Manufacturing	181,119	2.70%	4,843	
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	91,856	2.70%	2,456	
3339	Other General Purpose Machinery Manufacturing	282,913	2.70%	7,564	
3341	Computer and Peripheral Equipment Manufacturing	170,349	2.40%	4,092	
3342	Communications Equipment Manufacturing	167,421	2.40%	4,022	
3343	Audio and Video Equipment Manufacturing	24,808	2.40%	596	
3344	Semiconductor and Other Electronic Component Manufacturing	386,824	2.40%	9,293	
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	403,693	2.40%	9,698	
3346	Manufacturing and Reproducing Magnetic and Optical Media	36,390	2.40%	874	
3351	Electric Lighting Equipment Manufacturing	61,102	2.40%	1,468	
3352	Household Appliance Manufacturing	90,803	2.40%	2,181	
3353	Electrical Equipment Manufacturing	146,860	2.40%	3,528	
3359	Other Electrical Equipment and Component Manufacturing	161,228	2.40%	3,873	
3361	Motor Vehicle Manufacturing	211,454	2.50%	5,323	
3362	Motor Vehicle Body and Trailer Manufacturing	132,617	2.50%	3,339	
3363	Motor Vehicle Parts Manufacturing	688,390	2.50%	17,330	
3364	Aerospace Product and Parts Manufacturing	375,169	2.50%	9,445	
3365	Railroad Rolling Stock Manufacturing	24,757	2.50%	623	
3366	Ship and Boat Building	133,395	36.20%	29,888	[b]
3369	Other Transportation Equipment Manufacturing	40,931	2.50%	1,030	
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	365,907	1.70%	6,244	
3372	Office Furniture (including Fixtures) Manufacturing	153,696	1.70%	2,623	
3379	Other Furniture Related Product Manufacturing	44,811	1.70%	765	
3391	Medical Equipment and Supplies Manufacturing	305,850	2.50%	6,691	[b]

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
3399	Other Miscellaneous Manufacturing	401,994	2.80%	11,341	
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	364,349	4.50%	16,290	
4232	Furniture and Home Furnishing Merchant Wholesalers	162,438	4.50%	4,905	[b]
4233	Lumber and Other Construction Materials Merchant Wholesalers	236,395	4.50%	10,570	
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	702,604	4.50%	31,414	
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	147,174	4.50%	3,778	[b]
4236	Electrical and Electronic Goods Merchant Wholesalers	468,927	4.50%	20,966	
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	212,074	4.50%	9,482	
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	688,366	4.50%	30,778	
4239	Miscellaneous Durable Goods Merchant Wholesalers	330,393	4.50%	14,742	[b]
4241	Paper and Paper Product Merchant Wholesalers	214,916	4.10%	3,230	[b]
4242	Drugs and Druggists' Sundries Merchant Wholesalers	251,697	4.10%	2,056	[b]
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	196,618	4.10%	564	[b]
4244	Grocery and Related Product Wholesalers	756,617	4.10%	19,472	[b]
4245	Farm Product Raw Material Merchant Wholesalers	65,259	4.10%	1,613	[b]
4246	Chemical and Allied Products Merchant Wholesalers	145,635	4.10%	5,954	[b]
4247	Petroleum and Petroleum Products Merchant Wholesalers	104,741	4.10%	4,332	
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	168,966	4.10%	2,304	[b]
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	383,167	4.10%	6,883	[b]
4251	Wholesale Electronic Markets and Agents and Brokers	263,524	4.10%	10,898	
4411	Automobile Dealers	1,289,685	2.40%	31,009	
4412	Other Motor Vehicle Dealers	148,173	2.40%	3,563	
4413	Automotive Parts, Accessories, and Tire Stores	483,300	2.40%	11,621	
4421	Furniture Stores	264,889	2.40%	5,055	[b]
4422	Home Furnishings Stores	295,828	2.40%	7,079	
4431	Electronics and Appliance Stores	419,321	2.40%	10,034	
4441	Building Material and Supplies Dealers	1,014,414	2.00%	19,998	
4442	Lawn and Garden Equipment and Supplies Stores	175,358	2.00%	3,457	
4451	Grocery Stores	2,594,727	2.10%	4,914	[b]
4452	Specialty Food Stores	149,605	2.10%	1,842	[b]
4453	Beer, Wine, and Liquor Stores	139,449	2.10%	252	[b]
4461	Health and Personal Care Stores	969,863	2.10%	4,057	[b]

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
4471	Gasoline Stations	936,492	2.10%	19,281	
4481	Clothing Stores	1,116,324	2.50%	2,177	[b]
4482	Shoe Stores	187,975	2.50%	42	[b]
4483	Jewelry, Luggage, and Leather Goods Stores	163,128	2.50%	2,426	[b]
4511	Sporting Goods, Hobby, and Musical Instrument Stores	401,682	2.50%	10,069	
4512	Book, Periodical, and Music Stores	201,314	2.50%	338	[b]
4521	Department Stores	1,368,609	2.10%	13,789	[b]
4529	Other General Merchandise Stores	1,156,571	2.10%	21,739	[b]
4531	Florists	113,270	2.10%	88	[b]
4532	Office Supplies, Stationery, and Gift Stores	323,759	2.10%	6,940	
4533	Used Merchandise Stores	128,664	2.40%	2,110	[b]
4539	Other Miscellaneous Store Retailers	253,588	2.40%	6,070	
4541	Electronic Shopping and Mail-Order Houses	264,868	2.40%	2,624	[b]
4542	Vending Machine Operators	62,907	2.40%	1,506	
4543	Direct Selling Establishments	244,062	2.40%	5,842	
4811	Scheduled Air Transportation	498,398	7.00%	34,651	
4812	Nonscheduled Air Transportation	35,401	7.00%	2,461	
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	48,735	3.40%	1,663	
4832	Inland Water Transportation	18,594	3.40%	634	
4841	General Freight Trucking	986,673	3.50%	34,551	
4842	Specialized Freight Trucking	436,613	3.50%	15,289	
4851	Urban Transit Systems	48,224	2.30%	1,094	
4852	Interurban and Rural Bus Transportation	17,861	2.30%	405	
4853	Taxi and Limousine Service	64,547	2.30%	1,464	
4854	School and Employee Bus Transportation	183,731	2.30%	4,168	
4855	Charter Bus Industry	28,549	2.30%	648	
4859	Other Transit and Ground Passenger Transportation	55,037	2.30%	1,249	
4861	Pipeline Transportation of Crude Oil	7,430	8.80%	652	
4862	Pipeline Transportation of Natural Gas	27,682	8.80%	2,429	
4869	Other Pipeline Transportation	5,891	8.80%	517	
4871	Scenic and Sightseeing Transportation, Land	9,577	NA	NA	
4872	Scenic and Sightseeing Transportation, Water	11,218	NA	NA	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
4879	Scenic and Sightseeing Transportation, Other	1,728	NA	NA	
4881	Support Activities for Air Transportation	140,613	4.20%	5,957	
4882	Support Activities for Rail Transportation	25,229	4.20%	1,069	
4883	Support Activities for Water Transportation	82,481	14.20%	7,232	[b]
4884	Support Activities for Road Transportation	61,087	4.20%	2,588	
4885	Freight Transportation Arrangement	173,248	4.20%	1,609	[b]
4889	Other Support Activities for Transportation	21,946	4.20%	930	
4921	Couriers	489,256	4.20%	13,371	[b]
4922	Local Messengers and Local Delivery	44,856	4.20%	321	[b]
4931	Warehousing and Storage	543,330	3.50%	18,390	[b]
5111	Newspaper, Periodical, Book, and Directory Publishers	705,388	1.80%	6,611	[b]
5112	Software Publishers	344,238	0.90%	1,805	[b]
5121	Motion Picture and Video Industries	257,498	NA	NA	
5122	Sound Recording Industries	26,299	9.80%	314	[b]
5151	Radio and Television Broadcasting	254,582	9.80%	1,988	[b]
5152	Cable and Other Subscription Programming	31,819	9.80%	3,109	
5161	Internet Publishing and Broadcasting	35,606	NA	NA	
5171	Wired Telecommunications Carriers	855,199	9.80%	83,565	
5172	Wireless Telecommunications Carriers (except Satellite)	266,279	9.80%	19,370	[b]
5173	Telecommunications Resellers	36,635	9.80%	16	[b]
5174	Satellite Telecommunications	14,618	9.80%	1,428	
5175	Cable and Other Program Distribution	234,117	NA	NA	
5179	Other Telecommunications	8,307	NA	NA	
5181	Internet Service Providers and Web Search Portals	70,910	NA	NA	
5182	Data Processing, Hosting, and Related Services	403,000	NA	NA	
5191	Other Information Services	55,407	NA	NA	
5211	Monetary Authorities - Central Bank	21,798	NA	NA	
5221	Depository Credit Intermediation	2,081,714	NA	NA	
5222	Nondepository Credit Intermediation	719,435	NA	NA	
5223	Activities Related to Credit Intermediation	313,081	NA	NA	
5231	Securities and Commodity Contracts Intermediation and Brokerage	529,806	NA	NA	
5232	Securities and Commodity Exchanges	7,312	NA	NA	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
5239	Other Financial Investment Activities	364,523	NA	NA	
5241	Insurance Carriers	1,509,446	0.90%	5,097	[b]
5242	Agencies, Brokerages, and Other Insurance Related Activities	883,742	0.90%	1,010	[b]
5259	Other Investment Pools and Funds	32,849	0.90%	286	
5311	Lessors of Real Estate	523,420	0.90%	4,561	
5312	Offices of Real Estate Agents and Brokers	298,550	0.90%	2,602	
5313	Activities Related to Real Estate	566,306	0.90%	4,935	
5321	Automotive Equipment Rental and Leasing	172,400	0.90%	1,502	
5322	Consumer Goods Rental	269,099	0.90%	2,345	
5323	General Rental Centers	34,137	0.90%	297	
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	151,799	0.90%	1,323	
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	29,027	0.90%	253	
5411	Legal Services	1,182,581	0.90%	865	[b]
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	1,325,118	0.90%	10,491	[b]
5413	Architectural, Engineering, and Related Services	1,235,421	1.20%	15,246	
5414	Specialized Design Services	117,358	1.20%	1,448	
5415	Computer Systems Design and Related Services	1,058,987	1.20%	13,069	
5416	Management, Scientific, and Technical Consulting Services	838,381	1.20%	10,346	
5417	Scientific Research and Development Services	615,740	1.20%	7,599	
5418	Advertising and Related Services	419,342	1.20%	5,175	
5419	Other Professional, Scientific, and Technical Services	547,318	1.20%	2,823	[b]
5511	Management of Companies and Enterprises	2,879,156	0.90%	25,089	
5611	Office Administrative Services	444,049	0.90%	3,869	
5612	Facilities Support Services	157,524	0.90%	1,373	
5613	Employment Services	3,902,177	0.90%	34,003	
5614	Business Support Services	760,099	0.90%	6,623	
5615	Travel Arrangement and Reservation Services	283,664	0.90%	2,114	[b]
5616	Investigation and Security Services	747,088	0.90%	6,510	
5617	Services to Buildings and Dwellings	1,532,778	0.90%	13,356	
5619	Other Support Services	343,542	0.90%	2,994	
5621	Waste Collection	177,699	0.90%	1,548	
5622	Waste Treatment and Disposal	61,771	0.90%	538	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
5629	Remediation and Other Waste Management Services	100,747	0.90%	878	
6111	Elementary and Secondary Schools	804,249	NA	NA	
6112	Junior Colleges	93,922	NA	NA	
6113	Colleges, Universities, and Professional Schools	1,435,661	NA	NA	
6114	Business Schools and Computer and Management Training	65,719	NA	NA	
6115	Technical and Trade Schools	93,120	NA	NA	
6116	Other Schools and Instruction	232,919	NA	NA	
6117	Educational Support Services	51,025	NA	NA	
6211	Offices of Physicians	1,960,503	1.30%	2,898	[b]
6212	Offices of Dentists	772,603	1.30%	0	[b]
6213	Offices of Other Health Practitioners	519,636	1.30%	793	[b]
6214	Outpatient Care Centers	630,293	1.30%	4,722	[b]
6215	Medical and Diagnostic Laboratories	212,680	1.30%	788	[b]
6216	Home Health Care Services	811,504	1.30%	939	[b]
6219	Other Ambulatory Health Care Services	220,582	1.30%	2,493	[b]
6221	General Medical and Surgical Hospitals	4,807,453	1.30%	60,969	
6222	Psychiatric and Substance Abuse Hospitals	213,158	1.30%	2,703	
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	189,146	1.30%	2,399	
6231	Nursing Care Facilities	1,682,671	1.30%	20,706	[b]
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	514,567	1.30%	5,641	[b]
6233	Community Care Facilities for the Elderly	590,546	1.30%	7,489	
6239	Other Residential Care Facilities	158,171	1.30%	2,006	
6241	Individual and Family Services	935,356	1.30%	6,105	[b]
6242	Community Food and Housing, and Emergency and Other Relief Services	150,528	1.30%	1,909	
6243	Vocational Rehabilitation Services	328,661	1.30%	3,549	[b]
6244	Child Day Care Services	774,125	1.30%	1,467	[b]
7111	Performing Arts Companies	131,313	NA	NA	
7112	Spectator Sports	107,847	NA	NA	
7113	Promoters of Performing Arts, Sports, and Similar Events	98,685	NA	NA	
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	15,506	NA	NA	
7115	Independent Artists, Writers, and Performers	41,216	NA	NA	
7121	Museums, Historical Sites, and Similar Institutions	119,999	NA	NA	

Table 2-4. Estimated Number of Employees Using Fall Protection Equipment

NAICS	NAICS DESCRIPTION	Total Employment	Employees Using Fall Protection [a]		
			Percent	Number	
7131	Amusement Parks and Arcades	133,433	NA	NA	
7132	Gambling Industries	167,884	NA	NA	
7139	Other Amusement and Recreation Industries	1,017,102	NA	NA	
7211	Traveler Accommodation	1,753,708	0.90%	15,939	
7212	RV (Recreational Vehicle) Parks and Recreational Camps	37,135	0.90%	338	
7213	Rooming and Boarding Houses	12,905	0.90%	117	
7221	Full-Service Restaurants	4,091,133	2.10%	3,685	[b]
7222	Limited-Service Eating Places	3,640,644	2.10%	4,493	[b]
7223	Special Food Services	552,810	2.10%	5,098	[b]
7224	Drinking Places (Alcoholic Beverages)	351,316	2.10%	577	[b]
8111	Automotive Repair and Maintenance	891,878	3.20%	28,278	
8112	Electronic and Precision Equipment Repair and Maintenance	130,454	2.70%	3,567	
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	173,894	2.70%	4,755	
8114	Personal and Household Goods Repair and Maintenance	108,422	2.70%	2,965	
8121	Personal Care Services	551,686	1.40%	322	[b]
8122	Death Care Services	146,974	1.40%	2,063	
8123	Dry-cleaning and Laundry Services	370,411	1.40%	5,199	
8129	Other Personal Services	240,889	1.40%	3,381	
8131	Religious Organizations	1,654,780	0.90%	14,420	
8132	Grantmaking and Giving Services	137,920	0.90%	929	[b]
8133	Social Advocacy Organizations	109,264	0.90%	919	[b]
8134	Civic and Social Organizations	327,720	0.90%	2,856	
8139	Business, Professional, Labor, Political, and Similar Organizations	522,874	0.90%	4,556	
	Totals	106,518,243	1.50%	1,629,230	

[a] Source: OSHA PPE Cost Survey. Estimate based on the maximum percent of employees using either body harnesses or body belts. See Eastern Research Group, PPE Cost Survey: Final Report. (Exhibit 14, OSHA Docket S-042: Costs of Personal Protective Equipment). Prepared for OSHA under Task Order 3, Base Year, DOL Contract No. J-9-F-9-0010. June 23, 1999.

[b] Number using fall protection constrained to be less than or equal to the number of at-risk employees in construction, installation, maintenance, and repair occupations as shown in Table 2-1.

NA: Estimate not available for this industry.

2.4 WAGE RATES

As discussed in Section Three, much of the cost impact of the draft standard is associated with the time requirements for additional training and inspections. Estimates for these costs depend on the opportunity cost of the labor hours that would otherwise be devoted to productive activities. Such opportunity costs are typically valued in terms of workers' hourly wages, adjusted for benefit and fringe costs. ERG relied on average hourly earnings as reported by the BLS, Occupational Employment Statistics Survey and constructed a weighted average hourly wage for the specific occupations comprising production employment. ERG similarly constructed an average hourly production supervisor wage for each industry. These wages were then inflated by a factor to account for fringe benefits. According to a recent BLS survey, this mark-up factor averaged 42.6 percent.⁴ The resultant wage rates are shown in Table 2-5.

⁴ BLS, Employee Costs for Employee Compensation – March, 2006. June 21, 2006

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
1131	Timber Tract Operations	NA	\$20.27	NA	\$31.48[a]
1132	Forest Nurseries and Gathering of Forest Products	NA	\$20.27	NA	\$31.48[a]
1133	Logging	\$14.21	\$20.27	\$22.07	\$31.48
1141	Fishing	NA	\$20.27	NA	\$31.48[a]
1142	Hunting and Trapping	NA	\$20.27	NA	\$31.48[a]
1153	Support Activities for Forestry	NA	\$20.27	NA	\$31.48[a]
2111	Oil and Gas Extraction	\$19.84	\$28.30	\$29.02	\$41.40
2211	Electric Power Generation, Transmission and Distribution	\$25.36	\$36.17	\$32.90	\$46.94
2212	Natural Gas Distribution	\$24.57	\$35.06	\$29.97	\$42.75
2213	Water, Sewage and Other Systems	\$17.00	\$24.24	\$24.48	\$34.92
3111	Animal Food Manufacturing	\$13.72	\$19.58	\$21.23	\$30.28
3112	Grain and Oilseed Milling	\$15.38	\$21.94	\$22.57	\$32.19
3113	Sugar and Confectionery Product Manufacturing	\$13.24	\$18.88	\$22.31	\$31.82
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	\$12.37	\$17.65	\$21.09	\$30.08
3115	Dairy Product Manufacturing	\$14.64	\$20.88	\$22.59	\$32.23
3116	Animal Slaughtering and Processing	\$10.65	\$15.20	\$19.46	\$27.76
3117	Seafood Product Preparation and Packaging	\$10.34	\$14.74	\$20.57	\$29.34
3118	Bakeries and Tortilla Manufacturing	\$12.88	\$18.38	\$21.09	\$30.08
3119	Other Food Manufacturing	\$13.18	\$18.81	\$23.14	\$33.01
3121	Beverage Manufacturing	\$14.97	\$21.36	\$23.16	\$33.04
3122	Tobacco Manufacturing	\$17.18	\$24.51	\$23.95	\$34.16
3131	Fiber, Yarn, and Thread Mills	\$11.74	\$16.75	\$20.19	\$28.80
3132	Fabric Mills	\$12.19	\$17.39	\$19.91	\$28.40
3133	Textile and Fabric Finishing and Fabric Coating Mills	\$11.55	\$16.48	\$19.85	\$28.31
3141	Textile Furnishings Mills	\$11.01	\$15.70	\$19.14	\$27.31
3149	Other Textile Product Mills	\$10.87	\$15.51	\$18.96	\$27.04
3151	Apparel Knitting Mills	\$10.29	\$14.67	\$17.18	\$24.51
3152	Cut and Sew Apparel Manufacturing	\$9.55	\$13.62	\$17.30	\$24.68
3159	Apparel Accessories and Other Apparel Manufacturing	\$9.29	\$13.25	\$18.02	\$25.71
3161	Leather and Hide Tanning and Finishing	\$13.17	\$18.79	\$19.98	\$28.50
3162	Footwear Manufacturing	\$10.71	\$15.28	\$18.55	\$26.46
3169	Other Leather and Allied Product Manufacturing	\$10.04	\$14.33	\$18.76	\$26.76
3211	Sawmills and Wood Preservation	\$12.57	\$17.94	\$21.80	\$31.09
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	\$12.73	\$18.16	\$20.77	\$29.63
3219	Other Wood Product Manufacturing	\$12.02	\$17.14	\$19.57	\$27.92
3221	Pulp, Paper, and Paperboard Mills	\$19.39	\$27.67	\$30.11	\$42.95
3222	Converted Paper Product Manufacturing	\$14.41	\$20.55	\$23.84	\$34.01
3231	Printing and Related Support Activities	\$14.69	\$20.95	\$23.59	\$33.65
3241	Petroleum and Coal Products Manufacturing	\$21.06	\$30.05	\$30.07	\$42.90
3251	Basic Chemical Manufacturing	\$20.61	\$29.41	\$28.36	\$40.45
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and	\$18.62	\$26.57	\$27.01	\$38.53

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
	Filaments Manufacturing				
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	\$17.55	\$25.04	\$25.79	\$36.80
3254	Pharmaceutical and Medicine Manufacturing	\$15.95	\$22.76	\$25.91	\$36.96
3255	Paint, Coating, and Adhesive Manufacturing	\$15.24	\$21.75	\$23.72	\$33.84
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	\$14.19	\$20.24	\$24.72	\$35.27
3259	Other Chemical Product and Preparation Manufacturing	\$15.36	\$21.91	\$23.73	\$33.85
3261	Plastics Product Manufacturing	\$12.80	\$18.27	\$21.28	\$30.35
3262	Rubber Product Manufacturing	\$15.23	\$21.72	\$21.85	\$31.17
3271	Clay Product and Refractory Manufacturing	\$13.28	\$18.95	\$21.49	\$30.66
3272	Glass and Glass Product Manufacturing	\$14.72	\$21.00	\$23.03	\$32.86
3273	Cement and Concrete Product Manufacturing	\$14.70	\$20.96	\$22.45	\$32.03
3274	Lime and Gypsum Product Manufacturing	\$15.20	\$21.68	\$22.49	\$32.08
3279	Other Nonmetallic Mineral Product Manufacturing	\$14.23	\$20.29	\$22.23	\$31.72
3311	Iron and Steel Mills and Ferroalloy Manufacturing	\$18.49	\$26.37	\$25.76	\$36.75
3312	Steel Product Manufacturing from Purchased Steel	\$15.44	\$22.02	\$23.62	\$33.70
3313	Alumina and Aluminum Production and Processing	\$15.20	\$21.68	\$22.95	\$32.74
3314	Nonferrous Metal (except Aluminum) Production and Processing	\$16.32	\$23.28	\$23.57	\$33.62
3315	Foundries	\$15.44	\$22.02	\$23.36	\$33.32
3321	Forging and Stamping	\$15.31	\$21.85	\$24.10	\$34.38
3322	Cutlery and Handtool Manufacturing	\$14.48	\$20.66	\$23.38	\$33.35
3323	Architectural and Structural Metals Manufacturing	\$14.18	\$20.22	\$22.62	\$32.27
3324	Boiler, Tank, and Shipping Container Manufacturing	\$15.56	\$22.20	\$24.09	\$34.36
3325	Hardware Manufacturing	\$13.33	\$19.01	\$22.58	\$32.21
3326	Spring and Wire Product Manufacturing	\$13.35	\$19.05	\$21.60	\$30.82
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	\$15.56	\$22.19	\$24.87	\$35.48
3328	Coating, Engraving, Heat Treating, and Allied Activities	\$12.95	\$18.48	\$21.73	\$31.00
3329	Other Fabricated Metal Product Manufacturing	\$14.71	\$20.99	\$23.05	\$32.88
3331	Agriculture, Construction, and Mining Machinery Manufacturing	\$15.25	\$21.75	\$23.58	\$33.64
3332	Industrial Machinery Manufacturing	\$16.31	\$23.27	\$25.03	\$35.71
3333	Commercial and Service Industry Machinery Manufacturing	\$14.59	\$20.82	\$23.83	\$33.99
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	\$13.93	\$19.86	\$21.71	\$30.97
3335	Metalworking Machinery Manufacturing	\$17.27	\$24.64	\$26.05	\$37.17
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	\$16.63	\$23.72	\$25.50	\$36.38
3339	Other General Purpose Machinery Manufacturing	\$15.38	\$21.94	\$24.43	\$34.84
3341	Computer and Peripheral Equipment Manufacturing	\$15.14	\$21.60	\$27.96	\$39.89
3342	Communications Equipment Manufacturing	\$14.26	\$20.35	\$25.55	\$36.45
3343	Audio and Video Equipment Manufacturing	\$12.65	\$18.05	\$22.82	\$32.55

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
3344	Semiconductor and Other Electronic Component Manufacturing	\$13.83	\$19.73	\$24.43	\$34.85
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	\$15.13	\$21.59	\$25.85	\$36.88
3346	Manufacturing and Reproducing Magnetic and Optical Media	\$13.13	\$18.73	\$23.44	\$33.44
3351	Electric Lighting Equipment Manufacturing	\$13.27	\$18.92	\$21.82	\$31.12
3352	Household Appliance Manufacturing	\$13.86	\$19.78	\$21.28	\$30.35
3353	Electrical Equipment Manufacturing	\$14.25	\$20.33	\$23.24	\$33.16
3359	Other Electrical Equipment and Component Manufacturing	\$14.20	\$20.26	\$23.19	\$33.08
3361	Motor Vehicle Manufacturing	\$23.41	\$33.40	\$30.43	\$43.40
3362	Motor Vehicle Body and Trailer Manufacturing	\$14.21	\$20.28	\$21.78	\$31.07
3363	Motor Vehicle Parts Manufacturing	\$17.30	\$24.68	\$24.27	\$34.63
3364	Aerospace Product and Parts Manufacturing	\$18.89	\$26.94	\$28.14	\$40.15
3365	Railroad Rolling Stock Manufacturing	\$16.28	\$23.22	\$24.58	\$35.06
3366	Ship and Boat Building	\$15.28	\$21.79	\$23.88	\$34.06
3369	Other Transportation Equipment Manufacturing	\$15.57	\$22.21	\$23.49	\$33.51
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	\$12.29	\$17.54	\$19.74	\$28.16
3372	Office Furniture (including Fixtures) Manufacturing	\$13.46	\$19.20	\$21.20	\$30.24
3379	Other Furniture Related Product Manufacturing	\$11.87	\$16.93	\$20.68	\$29.50
3391	Medical Equipment and Supplies Manufacturing	\$13.94	\$19.88	\$24.35	\$34.73
3399	Other Miscellaneous Manufacturing	\$12.74	\$18.18	\$20.92	\$29.84
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	\$12.90	\$18.41	\$22.31	\$31.83
4232	Furniture and Home Furnishing Merchant Wholesalers	\$12.18	\$17.37	\$20.18	\$28.78
4233	Lumber and Other Construction Materials Merchant Wholesalers	\$13.50	\$19.26	\$21.63	\$30.85
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	\$15.95	\$22.75	\$25.35	\$36.16
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	\$13.99	\$19.96	\$22.54	\$32.16
4236	Electrical and Electronic Goods Merchant Wholesalers	\$14.50	\$20.69	\$24.32	\$34.69
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	\$14.31	\$20.42	\$23.95	\$34.17
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	\$15.48	\$22.08	\$23.38	\$33.35
4239	Miscellaneous Durable Goods Merchant Wholesalers	\$12.12	\$17.29	\$21.56	\$30.76
4241	Paper and Paper Product Merchant Wholesalers	\$13.79	\$19.67	\$22.58	\$32.21
4242	Drugs and Druggists' Sundries Merchant Wholesalers	\$12.97	\$18.50	\$24.54	\$35.01
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	\$11.67	\$16.65	\$24.21	\$34.53
4244	Grocery and Related Product Wholesalers	\$13.61	\$19.42	\$22.49	\$32.08
4245	Farm Product Raw Material Merchant Wholesalers	\$10.54	\$15.03	\$18.81	\$26.83
4246	Chemical and Allied Products Merchant Wholesalers	\$15.18	\$21.65	\$23.63	\$33.71
4247	Petroleum and Petroleum Products Merchant Wholesalers	\$15.42	\$22.00	\$23.61	\$33.68
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	\$14.92	\$21.28	\$21.91	\$31.26

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	\$11.19	\$15.96	\$19.73	\$28.14
4251	Wholesale Electronic Markets and Agents and Brokers	\$14.06	\$20.06	\$23.86	\$34.04
4411	Automobile Dealers	\$16.11	\$22.98	\$27.03	\$38.56
4412	Other Motor Vehicle Dealers	\$13.63	\$19.44	\$20.81	\$29.68
4413	Automotive Parts, Accessories, and Tire Stores	\$12.17	\$17.36	\$21.94	\$31.30
4421	Furniture Stores	\$10.92	\$15.57	\$18.19	\$25.95
4422	Home Furnishings Stores	\$13.21	\$18.84	\$21.06	\$30.05
4431	Electronics and Appliance Stores	\$13.84	\$19.75	\$21.67	\$30.91
4441	Building Material and Supplies Dealers	\$12.31	\$17.55	\$20.41	\$29.12
4442	Lawn and Garden Equipment and Supplies Stores	\$11.08	\$15.81	\$18.27	\$26.06
4451	Grocery Stores	\$9.93	\$14.17	\$19.29	\$27.52
4452	Specialty Food Stores	\$12.14	\$17.32	\$20.10	\$28.68
4453	Beer, Wine, and Liquor Stores	\$13.98	\$19.94	\$21.85	\$31.17
4461	Health and Personal Care Stores	\$11.00	\$15.69	\$18.89	\$26.94
4471	Gasoline Stations	\$10.95	\$15.62	\$18.37	\$26.20
4481	Clothing Stores	\$11.10	\$15.83	\$20.11	\$28.69
4482	Shoe Stores	\$11.92	\$17.01	NA	\$28.27[a]
4483	Jewelry, Luggage, and Leather Goods Stores	\$15.62	\$22.28	\$22.31	\$31.83
4511	Sporting Goods, Hobby, and Musical Instrument Stores	\$11.00	\$15.69	\$18.21	\$25.98
4512	Book, Periodical, and Music Stores	\$10.49	\$14.97	\$19.13	\$27.29
4521	Department Stores	\$9.63	\$13.74	\$12.58	\$17.95
4529	Other General Merchandise Stores	\$9.95	\$14.19	\$12.75	\$18.19
4531	Florists	\$8.49	\$12.11	\$13.58	\$19.37
4532	Office Supplies, Stationery, and Gift Stores	\$13.60	\$19.40	\$22.41	\$31.97
4533	Used Merchandise Stores	\$9.57	\$13.66	\$13.68	\$19.51
4539	Other Miscellaneous Store Retailers	\$11.67	\$16.64	\$20.87	\$29.77
4541	Electronic Shopping and Mail-Order Houses	\$11.44	\$16.32	\$20.43	\$29.14
4542	Vending Machine Operators	\$12.76	\$18.21	\$20.64	\$29.44
4543	Direct Selling Establishments	\$15.09	\$21.52	\$22.39	\$31.93
4811	Scheduled Air Transportation	\$8.99	\$12.82	\$28.11	\$40.10
4812	Nonscheduled Air Transportation	\$24.76	\$35.32	\$31.88	\$45.48
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	\$21.58	\$30.78	\$28.87	\$41.18
4832	Inland Water Transportation	\$20.64	\$29.44	\$25.78	\$36.78
4841	General Freight Trucking	\$16.90	\$24.11	\$22.63	\$32.29
4842	Specialized Freight Trucking	\$15.10	\$21.55	\$21.99	\$31.37
4851	Urban Transit Systems	\$15.46	\$22.05	\$23.66	\$33.76
4852	Interurban and Rural Bus Transportation	\$14.75	\$21.04	\$20.21	\$28.82
4853	Taxi and Limousine Service	\$11.92	\$17.01	\$25.12	\$35.83
4854	School and Employee Bus Transportation	\$12.07	\$17.22	\$20.48	\$29.22
4855	Charter Bus Industry	\$11.65	\$16.62	\$19.80	\$28.25
4859	Other Transit and Ground Passenger Transportation	\$10.61	\$15.14	\$18.11	\$25.84
4861	Pipeline Transportation of Crude Oil	\$23.30	\$33.24	\$30.74	\$43.86
4862	Pipeline Transportation of Natural Gas	\$22.41	\$31.97	\$28.70	\$40.94
4869	Other Pipeline Transportation	\$23.76	\$33.90	\$31.91	\$45.52

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
4871	Scenic and Sightseeing Transportation, Land	\$11.44	\$16.32	\$20.81	\$29.69
4872	Scenic and Sightseeing Transportation, Water	\$14.95	\$21.32	\$21.86	\$31.18
4879	Scenic and Sightseeing Transportation, Other	\$20.54	\$29.30	\$23.89	\$34.08
4881	Support Activities for Air Transportation	\$16.21	\$23.13	\$24.29	\$34.65
4882	Support Activities for Rail Transportation	\$14.70	\$20.97	\$21.47	\$30.62
4883	Support Activities for Water Transportation	\$20.76	\$29.62	\$23.90	\$34.09
4884	Support Activities for Road Transportation	\$13.36	\$19.06	\$21.58	\$30.78
4885	Freight Transportation Arrangement	\$14.86	\$21.20	\$22.73	\$32.42
4889	Other Support Activities for Transportation	\$12.36	\$17.63	\$20.97	\$29.91
4921	Couriers	\$16.68	\$23.79	\$25.98	\$37.06
4922	Local Messengers and Local Delivery	\$13.36	\$19.06	\$20.93	\$29.86
4931	Warehousing and Storage	\$13.34	\$19.03	\$20.69	\$29.52
5111	Newspaper, Periodical, Book, and Directory Publishers	\$12.03	\$17.16	\$25.71	\$36.67
5112	Software Publishers	\$17.27	\$24.63	\$19.43	\$27.72
5121	Motion Picture and Video Industries	\$11.84	\$16.90	\$27.57	\$39.34
5122	Sound Recording Industries	\$12.25	\$17.47	\$32.02	\$45.68
5151	Radio and Television Broadcasting	\$15.45	\$22.04	\$31.82	\$45.39
5152	Cable and Other Subscription Programming	\$19.37	\$27.64	\$28.20	\$40.23
5161	Internet Publishing and Broadcasting	\$14.28	\$20.37	NA	\$34.58[a]
5171	Wired Telecommunications Carriers	\$23.99	\$34.22	\$30.18	\$43.05
5172	Wireless Telecommunications Carriers (except Satellite)	\$21.06	\$30.04	\$30.16	\$43.02
5173	Telecommunications Resellers	\$16.70	\$23.82	\$29.95	\$42.72
5174	Satellite Telecommunications	\$25.62	\$36.54	NA	\$62.05[a]
5175	Cable and Other Program Distribution	\$18.15	\$25.90	\$26.48	\$37.77
5179	Other Telecommunications	\$17.90	\$25.54	NA	\$43.36[a]
5181	Internet Service Providers and Web Search Portals	\$17.31	\$24.69	\$26.30	\$37.52
5182	Data Processing, Hosting, and Related Services	\$14.38	\$20.52	\$23.06	\$32.89
5191	Other Information Services	\$13.03	\$18.59	\$16.79	\$23.95
5211	Monetary Authorities - Central Bank	\$14.16	\$20.20	\$28.43	\$40.56
5221	Depository Credit Intermediation	\$10.64	\$15.18	\$18.64	\$26.59
5222	Nondepository Credit Intermediation	\$10.94	\$15.60	\$26.73	\$38.13
5223	Activities Related to Credit Intermediation	\$13.50	\$19.26	NA	\$35.79[a]
5231	Securities and Commodity Contracts Intermediation and Brokerage	\$16.26	\$23.20	NA	\$43.12[a]
5232	Securities and Commodity Exchanges	\$22.36	\$31.90	NA	\$59.29[a]
5239	Other Financial Investment Activities	\$15.62	\$22.28	\$25.79	\$36.79
5241	Insurance Carriers	\$16.48	\$23.52	\$23.70	\$33.81
5242	Agencies, Brokerages, and Other Insurance Related Activities	\$12.61	\$17.99	NA	\$33.43[a]
5259	Other Investment Pools and Funds	\$13.09	\$18.67	\$21.34	\$30.44
5311	Lessors of Real Estate	\$12.09	\$17.24	\$18.32	\$26.14
5312	Offices of Real Estate Agents and Brokers	\$12.94	\$18.46	\$29.24	\$41.71
5313	Activities Related to Real Estate	\$12.46	\$17.78	\$19.54	\$27.88
5321	Automotive Equipment Rental and Leasing	\$12.02	\$17.14	\$21.62	\$30.85
5322	Consumer Goods Rental	\$11.34	\$16.18	\$19.73	\$28.15

Table 2-5. Wage Rates in Affected Industries

NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
5323	General Rental Centers	\$12.86	\$18.34	\$20.97	\$29.91
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	\$16.04	\$22.88	\$23.40	\$33.39
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$13.93	\$19.87	\$24.29	\$34.65
5411	Legal Services	\$11.15	\$15.91	\$27.90	\$39.80
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Svcs	\$13.65	\$19.47	\$24.09	\$34.37
5413	Architectural, Engineering, and Related Services	\$17.55	\$25.03	\$26.69	\$38.08
5414	Specialized Design Services	\$14.25	\$20.33	\$24.55	\$35.02
5415	Computer Systems Design and Related Services	\$20.03	\$28.58	\$28.08	\$40.05
5416	Management, Scientific, and Technical Consulting Services	\$14.70	\$20.97	\$23.56	\$33.61
5417	Scientific Research and Development Services	\$18.72	\$26.70	\$29.31	\$41.81
5418	Advertising and Related Services	\$13.25	\$18.89	\$21.19	\$30.23
5419	Other Professional, Scientific, and Technical Services	\$11.98	\$17.09	\$20.68	\$29.50
5511	Management of Companies and Enterprises	\$15.53	\$22.15	\$25.54	\$36.43
5611	Office Administrative Services	\$13.78	\$19.65	\$22.31	\$31.83
5612	Facilities Support Services	\$16.66	\$23.76	\$20.61	\$29.40
5613	Employment Services	\$9.58	\$13.67	\$18.53	\$26.43
5614	Business Support Services	\$12.62	\$18.00	\$20.91	\$29.83
5615	Travel Arrangement and Reservation Services	\$17.52	\$24.99	\$19.69	\$28.09
5616	Investigation and Security Services	\$14.83	\$21.16	\$23.76	\$33.90
5617	Services to Buildings and Dwellings	\$10.21	\$14.56	\$15.40	\$21.97
5619	Other Support Services	\$12.26	\$17.49	\$23.04	\$32.87
5621	Waste Collection	\$14.72	\$20.99	\$23.32	\$33.27
5622	Waste Treatment and Disposal	\$16.38	\$23.36	\$25.28	\$36.06
5629	Remediation and Other Waste Management Services	\$15.94	\$22.73	\$23.63	\$33.71
6111	Elementary and Secondary Schools	\$12.34	\$17.60	\$18.43	\$26.30
6112	Junior Colleges	\$13.30	\$18.97	\$19.20	\$27.39
6113	Colleges, Universities, and Professional Schools	\$13.89	\$19.82	\$19.89	\$28.38
6114	Business Schools and Computer and Management Training	\$13.18	\$18.81	\$14.63	\$20.87
6115	Technical and Trade Schools	\$15.75	\$22.47	\$20.83	\$29.71
6116	Other Schools and Instruction	\$12.27	\$17.50	\$17.64	\$25.16
6117	Educational Support Services	\$13.58	\$19.37	\$17.24	\$24.59
6211	Offices of Physicians	\$11.55	\$16.47	\$18.93	\$27.01
6212	Offices of Dentists	\$13.51	\$19.27	NA	\$29.42[a]
6213	Offices of Other Health Practitioners	\$10.44	\$14.90	\$18.46	\$26.34
6214	Outpatient Care Centers	\$11.62	\$16.58	\$17.10	\$24.40
6215	Medical and Diagnostic Laboratories	\$13.61	\$19.41	\$22.07	\$31.49
6216	Home Health Care Services	\$10.87	\$15.51	\$15.75	\$22.47
6219	Other Ambulatory Health Care Services	\$12.98	\$18.51	\$20.68	\$29.49
6221	General Medical and Surgical Hospitals	\$11.99	\$17.10	\$18.82	\$26.85
6222	Psychiatric and Substance Abuse Hospitals	\$13.21	\$18.85	\$17.12	\$24.42
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	\$12.95	\$18.48	\$19.86	\$28.33
6231	Nursing Care Facilities	\$9.56	\$13.64	\$14.61	\$20.84

Table 2-5. Wage Rates in Affected Industries					
NAICS	Industry	Production Worker		Production Worker Supervisor	
		Average Hourly Wage		Average Hourly Wage	
		Raw	With Fringe Markup	Raw	With Fringe Markup
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	\$10.07	\$14.36	\$15.45	\$22.04
6233	Community Care Facilities for the Elderly	\$9.70	\$13.84	\$14.62	\$20.86
6239	Other Residential Care Facilities	\$11.12	\$15.86	\$16.73	\$23.87
6241	Individual and Family Services	\$9.19	\$13.10	\$14.53	\$20.72
6242	Community Food and Housing, and Emergency and Other Relief Services	\$10.29	\$14.68	\$12.94	\$18.46
6243	Vocational Rehabilitation Services	\$8.79	\$12.55	\$13.30	\$18.98
6244	Child Day Care Services	\$9.23	\$13.16	\$14.65	\$20.90
7111	Performing Arts Companies	\$14.21	\$20.27	\$18.58	\$26.51
7112	Spectator Sports	\$14.41	\$20.56	\$25.73	\$36.71
7113	Promoters of Performing Arts, Sports, and Similar Events	\$11.50	\$16.40	\$16.71	\$23.84
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	\$10.19	\$14.53	NA	\$22.87[a]
7115	Independent Artists, Writers, and Performers	\$13.21	\$18.84	\$22.42	\$31.98
7121	Museums, Historical Sites, and Similar Institutions	\$12.42	\$17.72	\$18.98	\$27.07
7131	Amusement Parks and Arcades	\$12.33	\$17.58	\$20.66	\$29.47
7132	Gambling Industries	\$10.62	\$15.15	\$14.73	\$21.01
7139	Other Amusement and Recreation Industries	\$10.87	\$15.50	\$19.09	\$27.23
7211	Traveler Accommodation	\$9.35	\$13.34	\$13.46	\$19.21
7212	RV (Recreational Vehicle) Parks and Recreational Camps	\$9.46	\$13.49	\$14.73	\$21.01
7213	Rooming and Boarding Houses	\$9.63	\$13.74	\$12.56	\$17.92
7221	Full-Service Restaurants	\$8.91	\$12.71	\$15.50	\$22.11
7222	Limited-Service Eating Places	\$7.82	\$11.16	\$13.52	\$19.28
7223	Special Food Services	\$10.54	\$15.04	\$17.94	\$25.59
7224	Drinking Places (Alcoholic Beverages)	\$8.27	\$11.79	\$12.82	\$18.29
8111	Automotive Repair and Maintenance	\$13.60	\$19.39	\$21.79	\$31.08
8112	Electronic and Precision Equipment Repair and Maintenance	\$16.05	\$22.89	\$25.36	\$36.18
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	\$15.87	\$22.64	\$24.38	\$34.78
8114	Personal and Household Goods Repair and Maintenance	\$13.45	\$19.18	\$22.55	\$32.17
8121	Personal Care Services	\$8.17	\$11.66	\$15.16	\$21.63
8122	Death Care Services	\$11.16	\$15.92	\$19.14	\$27.31
8123	Dry-cleaning and Laundry Services	\$9.63	\$13.74	\$17.38	\$24.80
8129	Other Personal Services	\$10.09	\$14.39	\$17.69	\$25.23
8131	Religious Organizations	\$10.41	\$14.84	\$17.93	\$25.57
8132	Grantmaking and Giving Services	\$11.27	\$16.07	\$18.53	\$26.43
8133	Social Advocacy Organizations	\$10.03	\$14.31	\$15.90	\$22.67
8134	Civic and Social Organizations	\$10.06	\$14.35	\$15.54	\$22.16
8139	Business, Professional, Labor, Political, and Similar Organizations	\$12.36	\$17.63	\$17.52	\$25.00

Sources: BLS Occupational Employment Statistics Survey, 2003; BLS, Employer Costs for Employee Compensation- March 2006.

[a] Value imputed from 3-digit NAICS averages.

SECTION THREE

COST ANALYSIS

This cost analysis begins with a discussion of the assumptions used in the analysis (Section 3.1). The discussion focuses on what constitutes the regulatory baseline (i.e., current conditions) from which the costs, impacts, and benefits of the draft rule are measured. The role of consensus standards and the compliance rates for the existing rule are also discussed for their impact on the cost analysis (i.e., where codification of existing consensus standards result in no incremental costs for the draft rule.)

Section 3.2 reviews the draft rule on a paragraph-by-paragraph basis for those paragraphs that potentially could result in costs to industry. Table 3-4 provides a summary of the paragraphs that need further examination for the cost analysis.

Section 3.3 examines one-time costs to bring the existing employees in industry into compliance with the draft rule as well as the annual costs for training new employees and retraining existing employees that require it. ERG estimates costs for each industry affected under a specific paragraph. Tables 3-10 through 3-12 summarize the costs for each section and aggregate them to estimate the cost of the draft rule.

3.1 COST METHODOLOGY

This section addresses the methodology for assessing compliance cost implications of national consensus standards for the equipment, training, and hazard assessment requirements specified in the OSHA standard. In some cases, OSHA has used the consensus standards in developing its own equipment requirements. In most cases, OSHA has included a grandfather clause exempting employers from the need to immediately upgrade noncompliant equipment. The questions addresses are:

- What is the appropriate baseline for estimating incremental compliance costs?
- When does “grandfathering” result in “future” compliance costs as employers replace equipment covered by the grandfather clauses?
- If such future compliance costs do result, how should they be calculated?

Section 3.1.1 discusses the regulatory baseline (“baseline”) and its relationship to national consensus standards. This relationship affects if and how certain types of costs are considered. Section 3.1.2 examines the relationship between national consensus standards and compliance costs for OSHA standards. Section 3.1.3 considers compliance costs when OSHA requirements are equivalent to national consensus standards, while Section 3.1.4 discusses the case where the OSHA standard is more stringent than the consensus standard. Section 3.1.5 addresses the compliance costs issues associated with grandfather clauses. Section 3.1.6 discusses current compliance rates and section 3.1.7 presents the compliance met by least cost method.

3.1.1 OMB Guidance and National Consensus Standards

OMB’s guidance on regulatory analysis (OMB, 2003) recommends developing a baseline against which to measure the costs of a rule. The baseline should be the best assessment of the way the world would look absent the proposed regulation and it is frequently assumed to resemble the present. The present includes existing national consensus standards. For example, American National Standards Institute (ANSI) publishes consensus standards on portable ladders (ANSI, 2000 and 2002). Although these standards are voluntary, virtually all domestic ladder manufacturers design and fabricate ladders that meet these standards.

The baseline as defined by these consensus standards evolves over time, as these standards are revised and new versions published. For example, the ANSI standard for fixed ladders that was in place when the existing Subpart D standards were promulgated in the early 1970s was revised and updated in 1984. To be consistent with OMB guidance on estimating costs, the point against which to measure costs is the present (or, more precisely, when the rule goes into effect) including the national consensus standards in effect at that time. That is,

compliance costs should mirror common practice as reflected in these consensus standards and consider the extent to which existing equipment is likely to conform to the associated specifications.

This baseline is illustrated by a hypothetical example in Figure 3-1. The y-axis is measured in terms of increased worker protection, while the x-axis shows the time in years. The first worker protection level is that set by the first OSHA regulation promulgated in 1971. In this example, three voluntary standards have been adopted, each providing an increased level of worker protection. The stair-step line is the OMB baseline where each increase in worker protection corresponds to the adoption of a revised voluntary standard. The baseline remains level from the present into the future because the requirements in future voluntary standards are not known and cannot be incorporated into the forecast baseline.

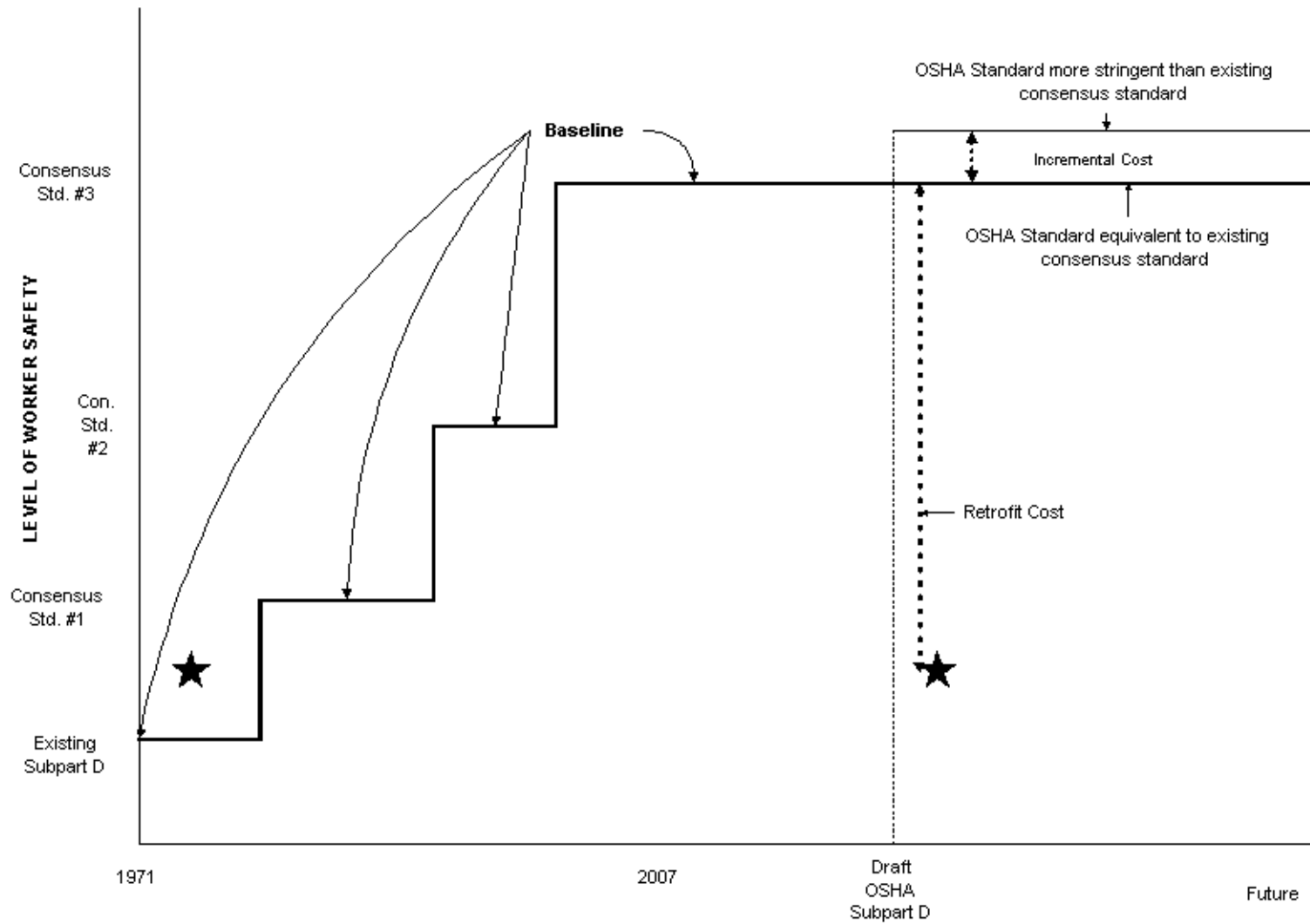
The star on the left-hand side of the figure represents an establishment that exceeded OSHA requirements at the time its equipment was installed. In the intervening period, however, voluntary standards have increased the level of worker protection beyond that provided in the establishment. The star on the right-hand side of the figure is that establishment at the time the OSHA revised standard takes effect. This establishment will incur a cost if the standard requires retrofit to meet the OSHA requirement. These retrofit costs, however, are avoided, in the present at least, through the inclusion of a “grandfather” clause. Whenever the employer replaces this equipment in the future, it must be upgraded to meet the OSHA standard and thus would incur costs necessary to meet the worker protection level associated with the OSHA standard as shown in the figure. Grandfather clauses are discussed in more detail in Section 3.1.5.

In the example shown in Figure 3-1, two possibilities are shown for the level of protection afforded by the OSHA standard. One level is equivalent to the national consensus standard, while the second requires a higher level of safety. When the OSHA standard is equivalent to a national consensus standard, there may be a cost associated with the change from a voluntary standard to a mandatory one, but it is the same cost that would be incurred if the employer otherwise complied with the consensus standard. This is discussed in Section 3.1.3. When the OSHA requirement is stricter than the national consensus standard (i.e., the baseline), there is an incremental cost that will be borne by the entire regulated community beyond what

would be required if all employers conformed to the consensus standards (see Section 3.1.4 for further discussion).

While a grandfather clause relieves an establishment from having to immediately upgrade or retrofit its equipment, the employer will rebuild, refurbish, or re-equip at a time of his/her own choosing, depending on when the equipment was purchased or installed and the equipment lifetime. Whenever this happens, the appropriate baseline, we argue, is the national consensus currently in place at that time. For an employer to incur a cost attributable to the OSHA standard depends on whether it is possible not to comply with the standard. In the example given above, an employer has no option other than buying a portable ladder built to an ANSI standard.

Figure 3-1. Regulatory Baseline Through Time



3.1.2 OSHA Standards and Existing Consensus Standards

3.1.2.1 *Background*

OSHA has used consensus standards extensively as a basis for its mandatory safety and health standards since the earliest days of the Occupational Safety and Health Act of 1970 (OSH Act). Under section 6(a) of the OSH Act, OSHA was given the authority for a period of two years to adopt both national consensus standards and establish Federal standards as OSHA standards without following notice-and-comment rulemaking procedures. Using Section 6(a), the Agency adopted many consensus standards as OSHA standards.

If a national consensus standard exists, it is the “baseline” reflecting current national consensus standards against which incremental costs and benefits of the regulation are measured. If the new regulatory language requires a level of safety equivalent to that in an existing consensus standard, then there is no difference between the proposed regulatory language and the baseline. What has changed, however, is that the requirement is not mandatory rather than voluntary. Thus, the costs are those associated with the change from a voluntary standard to a mandatory standard. These are only incurred by that part of the population that currently does not comply with voluntary standards. If, however, the standard is more stringent than the consensus standard, all employers incur compliance costs solely attributable to the OSHA regulation.

3.1.2.2 *Feasibility of Not Complying with Consensus Standards*

As we have noted, future compliance costs may be incurred by employers whose equipment as currently installed is grandfathered under the OSHA standard. Even though no retrofitting is required, the employer is required to upgrade this equipment (e.g. fixed ladders) to meet OSHA’s standard whenever that equipment is replaced in the future. As we argue, in many (perhaps most) cases, the employer has no choice but to upgrade his equipment to meet the OSHA standard, as equipment designers, engineers and architects will require the upgrades to meet the same consensus standards that the OSHA regulation are based on. In this case, when the OSHA standard and the consensus standard are identical, we say that noncompliance is unlikely.

If, however, the OSHA standard is more stringent than the consensus standard or no comprehensive consensus standard exists, then employers might incur upgrade costs that are higher than they would otherwise incur in the absence of the regulation. In this case, noncompliance is possible and might be the preferred choice of employers.

Since we posit that employers have no choice but to install equipment that meets current consensus standards (assuming one or more exist), the incremental cost of the OSHA standard is the difference between the cost of meeting the (possibly) more stringent OSHA standard and the cost of designing and installing the equipment to meet the (possibly) less stringent consensus standard. In our view, the fact that the current consensus standard may be more stringent than the standard that was in place when any existing equipment was designed and installed does not by itself result in incremental costs that can be attributed to OSHA's standard. Thus no compliance costs result if noncompliance is improbable.

If noncompliance is more probable (see Section 3.1.6 for current compliance rates), the magnitude of the compliance costs from the perspective of a regulatory cost analysis depends, first, on the differential between the cost of the upgrade needed to comply with the OSHA standard and the cost of the upgrade that the employer would otherwise undertake. Second, since regulatory costs are measured in terms of their present value equivalents, the cost depends on how far into the future the prospective upgrades would be undertaken and the discount rate used to calculate the present values.

ERG considers three types of costs in the evaluation of the proposed Subpart D language:

- Training costs and costs from other work-practice requirements, such as inspection and hazard assessment
- Stand-alone equipment costs, such as for portable ladders, and
- Installed walking-working surface equipment costs, such as for fixed ladders.

First, training and other work practice-related costs are typically recurring costs and are not subject to grandfather-type provisions. Even one-time training requirements impose ongoing costs as new employees enter the job market. Furthermore, compliance with these requirements

is not controlled by consensus standards to the same extent as compliance with equipment requirements.

Second, some equipment addressed by the OSHA standard, such as portable ladders or mobile ladder stands, is commercially produced and purchased in ready-to-use conditions by employers. ERG argues that such equipment, in virtually all cases, will be designed and fabricated to meet current consensus standards. This is due to the fact that equipment manufacturers will seek to avoid (1) the small market represented by employers that would purchase non-compliant equipment and (2) the liabilities associated with the manufacture of non-compliant equipment. For example, a walk through a hardware store will indicate that each ladder is marked to identify the ANSI standard to which it is built. Therefore, as a ladder needs to be replaced, the replacement will meet the current standard. Even longer-lived equipment, such as a mobile ladder stand, is advertised as meeting ANSI requirements. In other words, an employer would not be able to purchase a ladder (or other stand-alone equipment) that did not meet current voluntary standards. The possibility does exist of importing equipment that may not meet consensus standards. The 2006 Performance and Accountability Report of the U.S. Consumer Product Commission (CPSC) noted that roughly two-thirds of their product recalls involve imported products. ERG argues that some imported equipment might be produced to specifications provided by domestic vendors that are based on the requirements in the ANSI standards. It is conceivable, however, that other vendors might misrepresent the technical specifications of equipment that did not fully meet the ANSI requirements. To address the question of substandard imports, a cost is assigned for due diligence on the part of the employer to ensure the equipment meet all the ANSI requirements. Otherwise we conclude that noncompliance with consensus standards is unlikely.

A third type of cost is associated with walking-working-related equipment – such as fixed ladders, stairways, or ramps- that must be designed and constructed to fit site-specific dimensions and requirements. Installed surfaces often have lifetimes comparable to the structures to which they are attached, e.g., fixed ladders. Typically, an employer would use architects, engineers, and/or contractors (possible in-house resources) to design, fabricate and install such equipment. While it is conceivable that an employer might insist on installing nonconforming equipment, ERG believes that professional standards for architects and engineers, local building

codes, and potential liability concerns would dictate that virtually all employers would voluntarily choose to upgrade equipment so as to conform to existing national consensus standards. For these reasons, ERG concludes that noncompliance with consensus standards is also unlikely for fixed equipment requirements.

3.1.3 OSHA Requirements Equivalent to National Consensus Standards

Figure 3-2 is a logic flow diagram outlining the process for identifying costs associated with new regulatory language. The starting point is a side-by-side, provision-by-provision comparison of the existing and new regulatory language. In many cases, the language might have changed to enhance the understandability of the regulation without a change in the scope of activities covered or requirement for an employer to provide a safe workplace. In some cases, the revised language gives the employer additional methods to provide a level of safety equivalent to that specific in the original language. Such changes result in de minimis costs to the employer.

If there is a change from the existing to the proposed language, the second decision point is to determine whether the proposed language is equivalent to an existing consensus standard. If it is, then the cost associated with the new language is the change from a voluntary standard to a mandatory standard, see Section 3.1.2.1. Table 3.1 is a listing of national consensus standard and the associated section of the draft rule. If the draft rule does not contain more stringent requirements than an existing national consensus standard, and equipment purchased or installed meet these standards, no costs are assigned to the rule. Costs are assigned, however, for the portion of the industry that is not currently complying with the voluntary standard to comply with the mandatory requirement (see Section 3.1.6 for the current compliance rates). As we have argued, however, costs are attributable to the OSHA standard only if the employer has the option to not comply with the consensus standard.

Third, the presence or absence of a grandfather clause determines whether costs are incurred by existing establishments to retrofit and upgrade to the new requirements when the standard is implemented (retrofit costs, see Figure 3-1) or only when establishments replace infrastructure or equipment at a time of the employer's choosing (future costs). Section 3.1.5 discusses the effect of grandfather clauses in more detail. However, given that an OSHA

requirement is equivalent to a national consensus standard, it is possible that this consensus is incorporated into the baseline conditions so strongly that it is not probable for the employer to do anything but comply. If an employer has no other choice than to comply with a requirement, then there is no cost for compliance attributable to the regulation.

Figure 3-2. Cost Methodology Logic Flow – OSHA Standard Equivalent to National Consensus standard

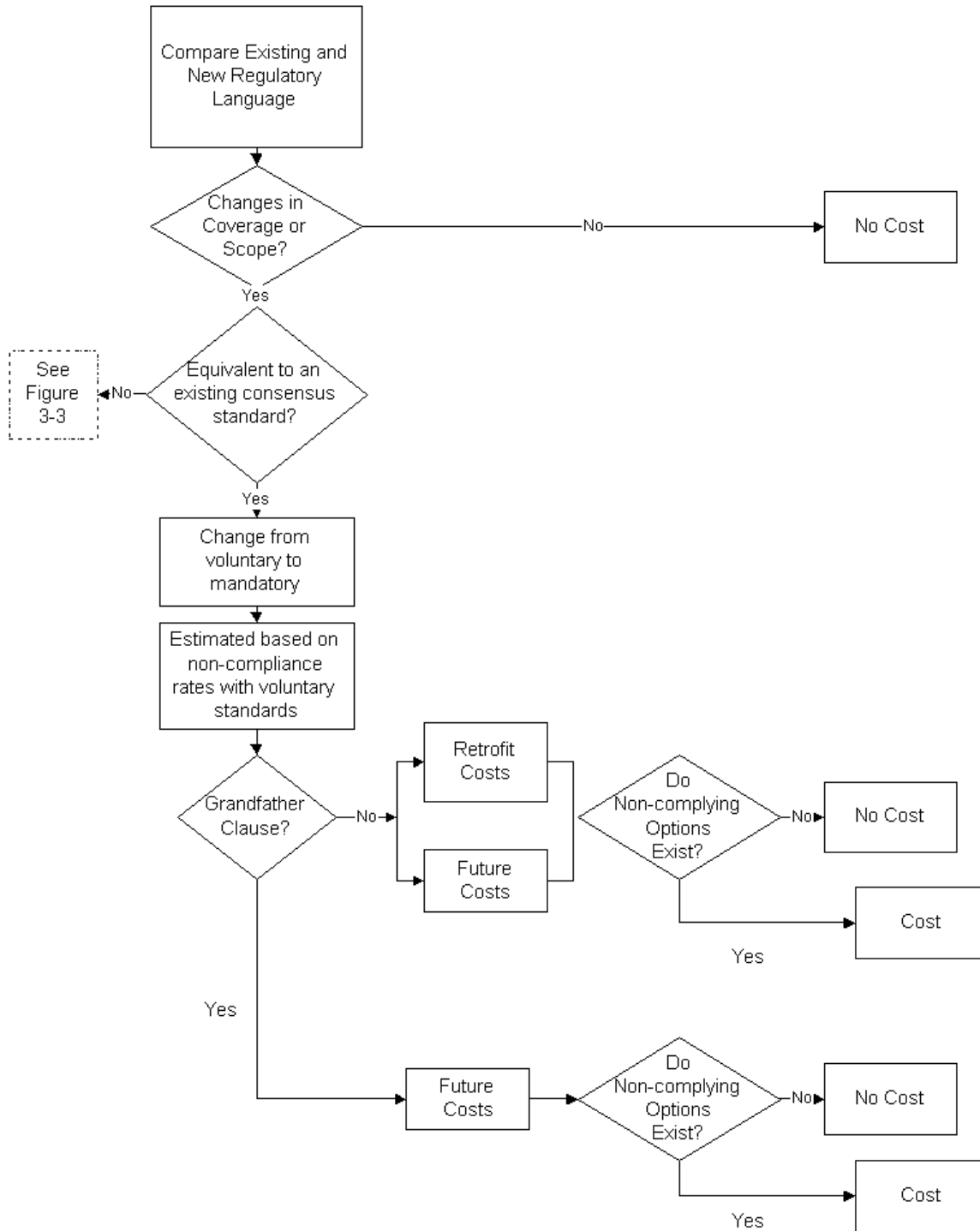


Table 3-1. Subpart D Requirements and National Consensus Standards	
Subpart D	National Consensus Standard
§1910.22	ANSI/ASSE A1264.2-2006, American National Standard for the Provision of Slip Resistance on Walking/Working Surfaces
	ASME B56.1-2004, American Society of Mechanical Engineers, Safety Standard for Low Lift and High Lift Trucks
§1910.23	ANSI A14.1-2000, American National Standard for Ladders—Wood Safety Requirements.
	ANSI A14.2-2000, American National Standard for Ladders—Portable Metal Safety Requirements.
	ANSI A14.3-2002, American National Standard for Ladders—Fixed-Safety Requirements.
	ANSI A14.4-2002, American National Standard Safety Requirements for Job-Made Wooden Ladders.
	ANSI A14.5-2000, American National Standard Ladders—Portable Reinforced Plastic Ladders-Safety.
	ANSI A14.7-2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.
§1910.24	ASTM C478-07, American Society for Testing and Materials Standard Specification for Precast Reinforced Concrete Manhole Sections.
	ASTM A394-05, American Society for Testing and Materials Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare.
	ASTM C497-05, American Society for Testing and Materials Test Methods for Concrete Piper, Manhole Sections, or Tile.
	IEEE 1307-2004; Institute of Electrical and Electronics Engineers. IEEE Standard for Fall Protection for Utility Work - IEEE Power Engineering Society.
	Telecommunications Industry Association TIA-222-G-2005, Structural Standard for Antenna Supporting Structures and Antennas.
§1910.25	ANSI A1264.1-1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.
	ANSI A1264.1-2007, American National Standard Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.
	NFPA 101-2006, National Fire Protection Association Life Safety Code.
	ICC-2003, International Code Council International Building Code.
§1910.26	ASME B56.1-2004, American Society of Mechanical Engineers, Safety Standard for Low Lift and High Lift Trucks.
	ANSI/MH30.1-2000, American National Standard For the Safety Performance, and Testing of Dock Leveling Devices Specification.
	ANSI/MH30.2-2005, Portable Dock Loading Devices: Safety, Performance and Testing.
§1910.27	ANSI/IWCA I14.1-2001, Window Cleaning Safety Standard.

Table 3-1. Subpart D Requirements and National Consensus Standards	
Subpart D	National Consensus Standard
	ANSI/ASCE 7-2005, American National Standard for Minimum Design Loads for Buildings and Other Structures.
	ANSI A1264.1-1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.
	ANSI A1264.1-2007, American National Standard Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.
§1910.28	ANSI A10.11-1989 (R1998), American National Standard for Construction and Demolition Operations – Personnel and Debris Nets.
§1910.29	
§1910.30	ANSI A14.3-2002, American National Standard for Ladders - Fixed - Safety Requirements.
	ANSI A14.7-2006, American National Standard for Mobile Ladder Stands and Mobile Ladder Stand Platforms.
	ANSI A1264.1-1995 (R2002), American National Standard for Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems.
	ANSI A1264.1-2007, American National Standard, Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Floor Openings; Stairs and Guardrail Systems.
	ANSI/IWCA I-14.1-2001, Window Cleaning Safety.
	ANSI Z359.0-20xx, American National Standard, Definitions and Nomenclature Used for Fall Protection and Fall Arrest.
	ANSI Z359.1-20xx, American National Standard, Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components
	ANSI Z359.2-20xx, American National Standard, Minimum Requirements for a Comprehensive Managed Fall Protection Program.

3.1.4 OSHA Requirements More Stringent Than National Consensus Standards

Figure 3-3 is the logic flow for identifying costs associated with OSHA language that contain more stringent safety requirements than an existing consensus standard or where no consensus standard exists. In this case, we assume that non-complying options exist. If there is no grandfather clause, then all employers will incur retrofit costs to meet the new requirement in the year in which the regulation becomes effective. If there is a grandfather clause, then costs are incurred as old equipment is replaced or new facilities are built. In each case, the magnitude of compliance costs from a regulatory cost analysis perspective depends on the differential between the cost of the upgrade needed to achieve conformity with the consensus standard. In the

grandfather clause case, the cost analysis must consider timing of equipment replacement within each affected industry and the appropriate discount rate for calculating the present value of the resultant compliance costs.

3.1.5 Grandfather Clauses

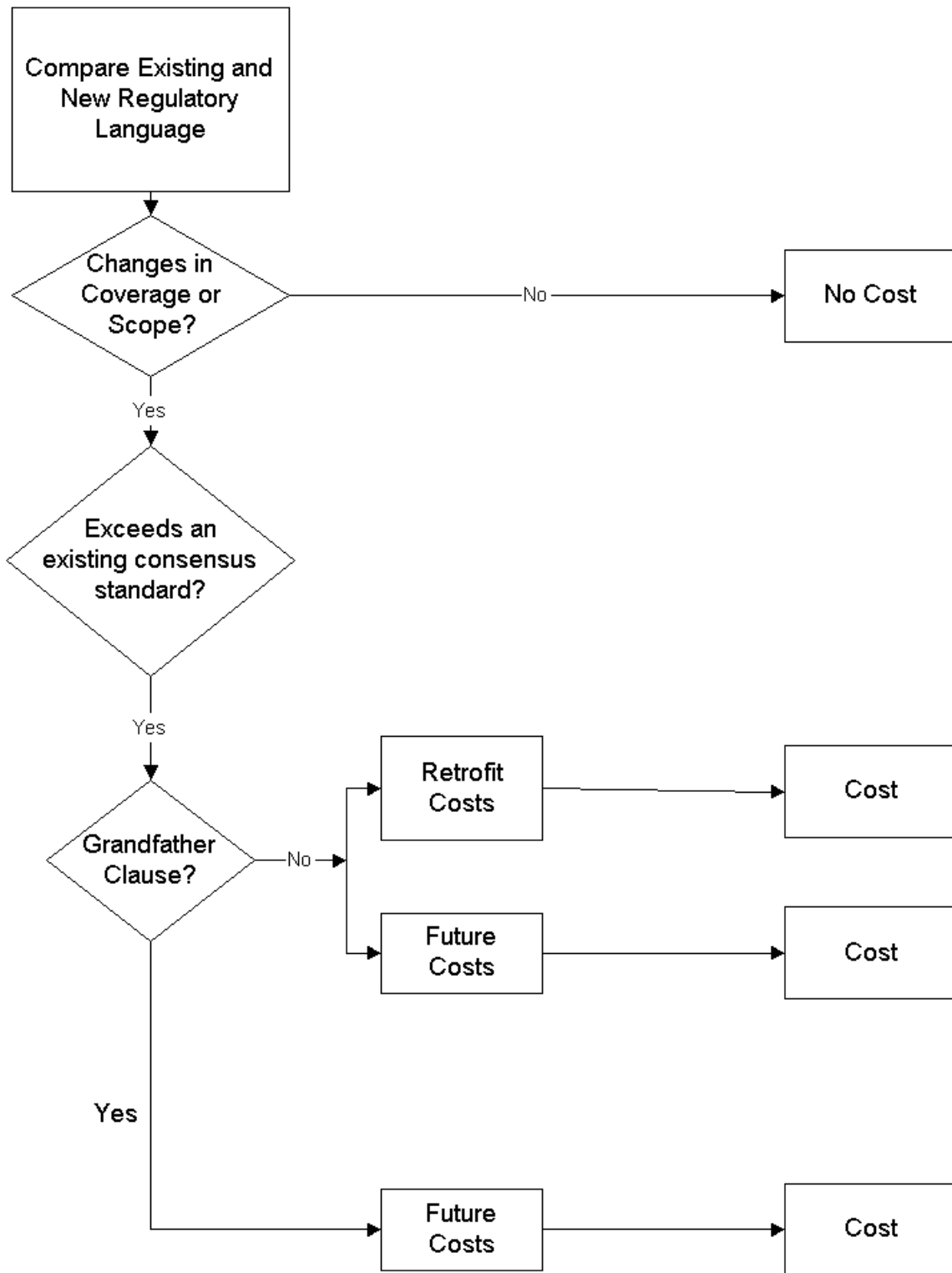
A “grandfather” clause contains language such as “Fixed ladders installed on or after [insert date one year after the effective date of the final rule published in the Federal Register] must meet the following requirements:...” As shown in Figure 3-1, if there is no grandfather clause, all workplaces must retrofit to meet the provision in the year the regulation becomes effective.

If there is a grandfather clause, costs might be incurred in the future as employers install new equipment to replace worn out equipment. However, when the replacement time is reached, the baseline for comparison is formed by the national consensus standards *in effect at the time of the replacement*. However, for the purpose of this cost analysis, ERG assumes the baseline is formed by the national consensus standards in effect in 2007. If the proposed OSHA requirements are not stricter than the current voluntary standards, then a cost would be incurred only by those who would not have complied with the voluntary standard.

Grandfather clauses work to lessen the potential costs to the employer through two mechanisms:

- The value of avoided costs (time delay, see Section 3.1.5.1), and
- The shift from a retrofit cost to an incremental cost (see Section 3.1.5.2).

Figure 3-3. Cost Methodology Logic Flow – OSHA Requirements Exceed Consensus Standard



3.1.5.1 *Value of Avoided Costs*

Regulatory costs are measured in terms of their present value equivalents. Thus the cost depends on the discount rate used to calculate the present values and on how many years into the future before the prospective upgrades would be undertaken. Applying a 7.5 percent discount rate – a rate used here for illustrative purposes – to calculate present values and annualized costs, the following figures shows the present value of \$1,000 in compliance costs incurred at different years in the future.

Current Year:	\$1,000.00
Year 2:	\$930.23
Year 5:	\$748.80
Year 10:	\$521.58

So a five-year delay in upgrading reduces the present value of compliance costs by about 25 percent, while a 10-year delay reduces the costs by about half.

Where the OSHA standard is based on current consensus standards, the likelihood of non-compliance depends on the age of the equipment. The older the equipment, the more likely it was designed and installed prior to the date of current consensus standards. Non-compliance also depends on the typical lifetime of the equipment. If the equipment is relatively short-lived (such as portable ladders), then it is more likely that a substantial part of the equipment stock in use has been designed, fabricated, and installed under the auspices of the current version of the consensus standard.

3.1.5.2 *The Shift from a Retrofit Cost to an Incremental Cost*

Without a grandfather clause, an employer must immediately upgrade when the rule becomes effective. This might mean, for example, ripping down a relatively new fixed ladder and rebuilding it to meet the new requirements. The retrofit cost is the entire cost of the new fixed ladder, and the remaining economic value of the existing equipment lost. With a grandfather clause, the employer can wait until the fixed ladder is worn out and needs replacing. The costs for design and labor to build the replacement fixed ladder are likely to be very similar whether the ladder meets the original or updated standard. What will change is the cost for the stronger materials to meet the updated standard, e.g., from supporting a single live load of 200

pounds to supporting two live loads of 250 pounds each. The incremental cost for heavier bolts, thicker steel, or the addition of supporting members is the incremental costs associated with the updated standard. The incremental costs cannot be quantified except on a case-by-case basis, but are likely to be small relative to the overall cost of replacement.

Table 3-2 lists the paragraphs in the draft regulation with new requirements that include a “grandfather” provision. Due to this provision, no costs will be incurred for modification or replacement of equipment in these paragraphs.

Table 3-2. Paragraphs with Grandfather Provisions

Paragraph	Subject
§1910.23(d)(2)	Fixed ladders must be designed, constructed, and maintained as follows: (i) Fixed ladders must be capable of supporting two live loads of at least 250 pounds each, concentrated between any two consecutive attachments, plus anticipated loads caused by ice buildup, winds, rigging, and impact loads resulting from the use of ladder safety devices... (ii) Each step or rung must be capable of supporting at least a single concentrated load of 250 pounds applied in the middle of the step or rung.
§1910.24(a)(1)	All step bolts that are used in corrosive environments must be constructed of, or coated with, a material that will retard corrosion of the step or bolt.
§1910.24(a)(7)	Each step bolt installed must be capable of supporting, without failure, at least four times its maximum intended load.
§1910.24(b)(2)	The employer must ensure that manhole steps: (i) are provided with slip-resistant surfaces such as, corrugated, knurled, or dimpled surfaces; (ii) used in corrosive environment are constructed of, or coated with, a material that will retard corrosion of the step; (iii) have a minimum clear step width of 10 inches; (iv) are spaced uniformly, not more than 16 inches apart; (v) have a minimum perpendicular distance between the centerline of the manhole step to the nearest permanent object in back of the step of at least 4.5 inches; and (vi) are designed to prevent the employee's foot from slipping or sliding off the end of the manhole step.
§1910.25(a)(6)	When a door or a gate opens directly on a stairway, a platform must be provided, and the swing of the door or gate must not reduce the effective usable depth to less than 22 inches.
§1910.26(b)	Dockboards must be designed, constructed, and maintained to prevent equipment from running off the edge.
§1910.29(f)(1)(ii)	The height of stair rail systems must not be less than 36 inches.

3.1.6 Current Compliance Rates

The baseline should be the assessment of the way the world would look absent the regulation and is frequently assumed to resemble the present. The baseline, then includes compliance rates with the existing Subpart D and Subpart I as well as with national consensus standards.

Current Compliance Rates: Table 3-3 presents the fiscal year 2005 OSHA inspections, subdivided by industry sector, that resulted in a citation (OSHA, 2006a). The columns in Table 3-3 tabulate cases where a citation was issued for any reason and also included non-compliance with a section of 29 CFR 1910 Subpart D. The non-compliance rates in Table 3-3 are overstated because there are inspections with no citations that are not included in this estimate. The upper-bound non-compliance rates for floor guarding requirements in Section §1910.23 vary by industry. Finance, Insurance, and Real Estate has the lowest non-compliance rate (2.8 percent), while Wholesale Trade has the highest non-compliance rate (13.6 percent). The non-compliance rates drop for fixed industrial stair requirements, which range from 0 percent (Finance, Insurance, and Real Estate) to 2.7 percent (Wholesale Trade). For the remaining paragraphs (portable wood ladders, portable metal ladders, fixed ladders, scaffolding, and manually propelled mobile ladder stands and scaffolds), non-compliance rates do not exceed 1.2 percent. That is, for §1910.25-§1910.28, the assumption of 100 percent industry compliance is reasonable. That is, costs are only incurred when the draft requirements exceed or would be more costly than the current requirements. However, where costs might be incurred under more stringent requirements, the upper-bound non-compliance rate for existing requirements can be used as an estimate of the proportion of facilities that might incur costs under the draft rule.

If meeting an existing requirement would also meet the draft requirement, no costs are assigned to the provision. For example, the draft language for §1910.23(d)(12)(ii) specifies that the step-across distance from the centerline of the steps or rungs of a fixed ladder to the access/egress point of the platform edge for side step ladders must be between 15 and 20 inches. Based on Figure D-10 in the existing standard, the maximum space from the edge of the ladder to the platform (i.e., access/egress point) is 12 inches. As noted in the previous paragraph, the centerline width for a fixed ladder is 8 inches. The total step-across distance under the

Table 3-3. Compliance with Current 29 CFR 1910 Requirements

Sector	Inspections With Citations	Inspections With Subpart D Citations													
		§1910.23		§1910.24		§1910.25		§1910.26		§1910.27		§1910.28		§1910.29	
	Total	Floor Guarding	Fixed Industrial Stairs	Portable Wood Ladders	Portable Metal Ladders	Fixed Ladders	Scaffolding	Manually Propelled Aerial Platforms							
Manufacturing	6,773	732	10.80%	168	2.50%	18	0.30%	23	0.30%	60	0.90%	16	0.20%	19	0.30%
Transportation and Utilities	1,301	115	8.80%	15	1.20%	0	0.00%	7	0.50%	11	0.80%	3	0.20%	5	0.40%
Retail trade	680	58	8.50%	14	2.10%	2	0.30%	6	0.90%	3	0.40%	1	0.10%	2	0.30%
Wholesale trade	670	91	13.60%	18	2.70%	1	0.10%	7	1.00%	8	1.20%	4	0.60%	0	0.00%
Finance, Insurance, and Real Estate	107	3	2.80%	0	0.00%	0	0.00%	2	1.90%	0	0.00%	1	0.90%	0	0.00%
Services	1,938	106	5.50%	19	1.00%	4	0.20%	5	0.30%	10	0.50%	15	0.80%	3	0.20%
All sectors	11,469	1,105	9.60%	234	2.00%	25	0.20%	50	0.40%	92	0.80%	40	0.30%	29	0.30%

existing standard is 20 inches. Thus, a fixed ladder that meets the current requirements also meets the draft requirements; and no costs are assigned to this paragraph.

3.1.7 Compliance Met By Least Cost Method

In a cost impact analysis, an employer is always assumed to meet a regulatory requirement by choosing the least expensive means to do so. Thus, if the draft regulation identifies several other means of meeting a requirement along with the current method, the employers would be expected to select the least cost method. It then follows that if the alternative method specified in the draft regulation is more expensive than the current method, the employer would be expected to use the current method to meet the requirement. For example, under §1910.28(b)(1), an employer can meet the duty to have fall protection for an employee on a walking-working surface with an unprotected side or edge by (1) the use of guardrail systems, safety net systems, personal fall arrest systems, or travel restraint systems, or (2) an employee must work in a designated area. The current regulation specifies Approach (1) while the draft regulation specifies either Approach (1) or (2). Thus, in this case, no costs were assigned to the draft §1910.28(b)(1). There might be a cost savings to an employer. However, those savings are not estimated in this report.

3.2 PARAGRAPH-BY-PARAGRAPH REVIEW

This section provides a brief paragraph-by-paragraph review of the draft rule. Only requirements that might involve costs incremental to those beyond current requirements and national consensus standards are described.

Table 3-4 summarizes the paragraphs that, as currently written, might result in costs to the employer. These are primarily inspection and training costs. For the purpose of this analysis, ERG distinguishes between informal and formal training. For example, draft §1910.23(b)(11) states that an employee must face the ladder when ascending or descending the ladder. ERG assumes such instruction can be done on an in-house basis with materials such as OSHA training videos. When training is done on an informal basis, ERG does not assign an administrative costs for the employer to document that the training has taken place. When the draft language uses the

words “trained” or “training,” ERG assumes the instruction is done on a more formal basis, possibly with an outside person being hired to provide the course. ERG assumes that an employer will choose to maintain documentation of all formal training and ERG thus assigns a cost for the administrative task.

Finally, several paragraphs say that training must be done in accordance with §1910.30, see:

- §1910.27(b)(2)(ii): Rope descent systems,
- §1910.28(b)(1): Unprotected sides and edges,
- §1910.28(b)(10)(v): Outdoor advertising

in Table 3-4. The costs for §1910.30 include the costs for the paragraphs listed above.

Table 3-4. Paragraphs of the Draft Standard To Be Analyzed for Cost Impacts	
Paragraph	Subject
§1910.22(d)(1)	Regular and periodic inspection of walking-working surfaces.
§1910.22(d)(2)	Unsafe conditions must be guarded until repair.
§1910.22(d)(3)	Qualified person must inspect repair.
§1910.23(b)(11)	Training: When ascending or descending a ladder, the user must face the ladder.
§1910.23(b)(12)	Training: Each employee must use at least one hand to grasp the ladder when progressing up and down the ladder.
§1910.23(b)(13)	Training: An employee must not carry any object or load that could cause the employee to lose his or her balance and fall.
§1910.23(c)(5)	Training: Use of portable single rail ladders is prohibited.
§1910.23(c)(6)	Training: Ladders must not be moved, shifted, or extended while occupied by employees.
§1910.23(e)	Due diligence on the part of the employer to ensure mobile ladder stands and platforms meet the requirements
§1910.23(e)(1)(vii)	Mobile ladder stands and platforms must not be moved.
§1910.24(a)(8)	Visual inspection of step bolts before each use.
§1910.24(b)(3)	Visual inspection of manhole steps before each use.
§1910.24(b)(2)(i)	Manhole steps are provided with slip-resistant surfaces
§1910.24(b)(2)(vi)	Manhole steps are designed to prevent the employee's foot from slipping or sliding off the end of the manhole step.
§1910.27(b)(2)(ii)	When rope descent systems are used, employees must be trained in accordance with §1910.30. Costs for this paragraph are therefore included in §1910.30.

Table 3-4. Paragraphs of the Draft Standard To Be Analyzed for Cost Impacts	
Paragraph	Subject
§1910.27(b)(2)(iv)	When rope descent systems are used, employees must use proper rigging, including sound anchorages and tiebacks.
§1910.28(a)(2)	Employer must determine that walking-working surfaces have the strength and structural integrity to safely support employees.
§1910.28(b)(4)	Installation of guardrails and handrails on dockboards.
§1910.28(b)(10)(iii)	Inspection of ladder safety devices.
§1910.28(b)(10)(v)	Each employee who routinely climbs fixed ladders must satisfy the criteria for qualified climber found in §1910.29(h). Costs associated with this training are assigned to §1910.29(h).
§1910.28(b)(10)(vi)	Training: Employee must have both hands free while ascending or descending ladder (outdoor advertising/billboards operations).
§1910.29(b)(15)	Inspection of manila, plastic, or synthetic rope being used as top rails or midrails.
§1910.29(h)	Training for qualified climbers.
	Retraining for qualified climbers as necessary.
	Performance observations
§1910.30(a)	Training: Fall hazards.
§1910.30(b)	Training: Equipment hazards.
§1910.30(c)	Retraining.
§1910.140	Hazard assessment.
§1910.140(c)(18)	Personal fall protection systems inspected before each use.

The discussion pattern in this section lists the paragraph and text first, followed by a discussion of whether or not the new requirement constitutes a cost. Changes that result in no costs because they fall under any of the situations described in Section 3.1 are not discussed here.

Sections 3.2.1 through 3.2.10 discuss the requirements in draft Subpart D paragraphs while Section 3.2.11 discusses the requirements in draft Subpart I.

3.2.1 §1910.21 Scope

There are no costs assigned to §1910.21 Scope, application, and definitions.

3.2.2 §1910.22 General Requirements

3.2.2.1 *Paragraphs with Costs*

§1910.22(d). Maintenance and repair. The paragraph involves new requirements for the employer to inspect the walking-working surfaces, guard hazardous conditions to prevent employee use until the hazard is corrected, and the repair or maintenance work is inspected by a qualified person. These costs are considered in Section 3.3.2 and are assumed to include the costs for inspection described in §1910.28 (see Section 3.3.6).

3.2.2.2 *Paragraphs with No Costs*

§1910.22(c). Access and egress. The employer must ensure that employees are provided with and use a safe means of access to, and egress from one walking-working surface to another. The language in the existing §1910.22(b) concerns aisles and passageways. Aisles and passageways must be kept clear, in good repair, and with no obstruction across or in aisles that could create a hazard. ERG interprets the language in the draft §1910.22(c) to generalize the terms “aisles” and “passageways” to cover all means of access and egress. The change results in the terminology in the draft rule being consistent with that in a consensus standard (NFPA 101). Thus, §1910.22(c) is assigned no costs.

3.2.3 §1910.23 Ladders

§1910.23 begins with provisions that apply to all ladders (§1910.23(b)) and then has provisions applicable to specific types of ladders, such as portable ladders (§1910.23(c)), fixed ladders (§1910.23(d)), and mobile ladder stands and mobile ladders stand platforms (§1910.23(e)).

3.2.3.1 *Paragraphs with Costs*

§1910.23(b)(11-13), §1910.23(c)(5-6), (10-11), and (13). These eight paragraphs include instructions to the employee on proper use of the ladders. These requirements are summarized in Table 3-7 in Section 3.3.3. §1910.23(c)(5) prohibits the use of single-rail ladders. This is consistent with the requirements for the construction industry standard at §1926.1053(b)(19). Thus the requirement not to use a single-rail ladder is a matter of training. The wide availability of permitted ladders means there are no equipment costs associated with the prohibition. Training costs are considered in Section 3.3.3.

§1910.23(e). Mobile ladder stands and mobile ladder stand platforms designed, used, and maintained in accordance with the applicable standard from ANSI A14 series as of (insert effective date of this standard) are deemed to be in compliance with this section. The only provision that does not have a corresponding requirement in the national consensus standard is §1910.23(e)(1)(vii) – occupied mobile ladder stands and platforms must not be moved. §1910.23(e)(1)(vii) is a work practice requirement and compliance is achieved through ladder safety training and enforcement. Therefore, any cost for §1910.23(e)(1)(vii) is not associated with the equipment costs due to the grandfather clause, but with workplace practices addressed through training. See Section 3.3.3 for ladder safety training costs.

All other provisions meet the national consensus standard. An investigation of fiscal year 2005 OSHA data for inspections with Subpart D citations indicates that the failure to provide safe ladders is very low (e.g., 0.2 percent of inspections with citations included violations for portable wood ladders, 0.4 percent for metal ladders, and 0.8 percent for fixed ladders). Based on these data, we might infer that there is a near-100 percent intent to provide safe (i.e., OSHA compliant) ladders by employers. With a near-100 percent compliance rate with the current consensus standards no costs are assigned for equipment upgrades (see Section 3.1.2.2). However, costs are assigned for due diligence on the part of the employer to ensure the equipment meet all the ANSI requirements.

3.2.3.2 *Paragraphs with No Costs*

§1910.23(a). Application. The draft paragraph covers special wood ladders specifically excluded in the existing language, including fruit picker’s ladders, combination step and extension ladders, stockroom stepladders, aisle-way stepladders, shelf ladders, and library ladders. However, these ladders are assumed to meet consensus standards for wooden ladders so no costs are incurred with the expanded application.

§1910.23(b)(4)(iii) concerning rolling ladders in communications centers was moved from §1910.268(h)(5)—Telecommunications. Thus, this is not a new requirement.

§1910.23(b)(9). Both existing and draft standards have a requirement to inspect ladders before use. Based on discussion with OSHA, ERG does not interpret the draft language to imply more frequent inspections than currently performed.

§1910.23(c)(14). The reach of the ladder and ladder sections must not be increased by any means unless specifically designed for the application. Ladders and ladder sections cannot be tied or fastened together to provide longer length unless the equipment is designed for this purpose. This provision might cause the employer to incur a cost if it is necessary to purchase a longer ladder of sufficient length for the task. However, the existing regulations at §1910.25(d)(2)(ix) and §1910.26(c)(3)(vi) specify that neither wood nor metal portable ladders may be spliced, tied, or fastened together to create a longer section unless the manufacturer has designed the equipment for such a purpose. The draft language, then, expands the prohibition to all other means of joining sections. There are no data estimating the frequency of such occurrences but, presumably, these are rare. Thus, we do not assign a cost to this paragraph.

§1910.23(d)(2). Fixed ladders installed on or after [insert date 90 days after the effective date of the final rule in the Federal Register] must be capable of supporting 2 live loads of at least 250 pounds, concentrated between any two consecutive attachments, plus anticipated loads caused by ice build-up, etc. Each rung must be capable of supporting at least a single concentrated load of 250 pounds. The new language reflects the consensus standard in ANSI 14.3, however, the existing language specifies a single concentrated load of 200 pounds.

ERG estimated that there are approximately 3.1 million fixed ladders over 20 feet in length in the United States (see Appendix A). The requirement to be able to support two loads of 250 pounds each dates back to the 1984 version of ANSI A14.3. It is therefore highly likely that much of the population of existing fixed ladders was built when the 250-pound requirement was in the voluntary standard. However, we do not know the age distribution of fixed ladders in the United States or when a ladder had its most recent reconstruction.

The cost differential for each ladder is the difference between a design to support one live load of 200 pounds and two live loads of 250 pounds each. Given that the fixed ladder must be constructed to fit a specific site, it is likely that the labor costs for either design would be comparable. Therefore, the cost attributable to the consensus standard is primarily attributable to the difference in materials, e.g., thicker steel. Such costs are likely to be highly site-specific and not estimable at this time. However, given (1) that the cost for materials is a fraction of the overall cost of building or rebuilding the fixed ladder, and (2) the incremental cost is the difference between the materials planned and materials needed, these incremental costs are likely to be small. Since these small costs are likely to only affect a small population of employers who are non-compliant with the current consensus standards no costs are estimated for this paragraph.

§1910.23(d)(12)(i). The draft language changes the definition of “step-across distance” to measure from the centerline of the steps or rungs of a fixed ladder. The existing definition measures the step-across distance from the nearest edge of the ladder to the nearest edge of the structure or equipment. The minimum distance under the draft language is 7 inches and 2.5 inches under the existing language. The draft paragraph §1910.23(b)(4) specifies a minimum clear step or rung width of 16 inches for individual rung and fixed ladders; thus the distance from the centerline to the inside edge of the ladder is 8 inches. Adding the existing requirement of 2.5 inches from the nearest edge of the ladder to the nearest edge of the structure or equipment to the 8-inch centerline width results in a step-across width of 10.5 inches. Thus any fixed ladder that meets the current requirements also meets the draft requirements. No costs are assigned to this paragraph.

§1910.23(d)(12)(ii). The draft language specifies that the step-across distance from the centerline of the steps or rungs of a fixed ladder to the access/egress point of the platform edge

for side step ladders must be between 15 and 20 inches. Based on Figure D-10 in the existing standard, the maximum space from the edge of the ladder to the platform (i.e., access/egress point) is 12 inches. As noted in the previous paragraph, the centerline width for a fixed ladder is 8 inches. The total step-across distance under the existing standard is 20 inches. Thus, a fixed ladder that meets the current requirements also meets the draft requirements. No costs are assigned to this paragraph.

3.2.4 §1910.24 Step Bolts and Manhole Steps

The requirements for step bolts are new to Subpart D. The preliminary regulatory impact analysis (RIA) for the draft rule notes “Manufactured products, such as ladders, step bolts, manhole steps...generally meet or exceed draft OSHA specifications.” (OSHA, 1990a). A 2003 Standard Interpretation document comments that OSHA considers the IEEE 1307-1996 consensus standard, in most cases, to prevent or eliminate serious hazards (OSHA, 2003a). IEEE 1307-1996 defines “failure” in a step bolt as occurring when step bolts are bent greater than 0.26 rad (15 degrees) below the horizontal, i.e., the requirement in the draft §1910.24(a)(9). IEEE revised the standard in 2004; thus we assume that industry is using the more up-to-date consensus standard.

3.2.4.1 *Paragraphs with Costs*

§1910.24(a)(8) and §1910.24(b)(3). Step bolts and manhole steps must be visually inspected before each use. Inspection costs are considered in Section 3.3.4.

§1910.24(b). The language in the draft is summarized in Table 3-5 along with the corresponding section of ASTM C-478-06b.

Table 3-5. Manhole Steps

Provision	Draft Language	ASTM C 478-06b Section
1910.24(b)(1)	Manhole steps installed before (insert date 90 days after the effective date of the final rule in the Federal Register) must be capable of supporting their maximum intended load.	
1910.24(b)(2)	The employer must ensure that manhole steps installed on or after (insert date 90 days after the effective rule in the Federal Register):	
1910.24(b)(2)(i)	Are provided with slip-resistant surfaces such as, corrugated, knurled, or dimpled surfaces;	
1910.24(b)(2)(ii)	Used in corrosive environments are constructed of, or coated with, a material that will retard corrosion of the step;	
1910.24(b)(2)(iii)	Have a minimum clear step width of 10 inches (25 cm);	16.5.2
1910.24(b)(2)(iv)	Are spaced uniformly, not more than 16 inches apart. The spacing from the entry and exit surface to the first manhole step may be different from the spacing between other steps;	16.4.1
1910.24(b)(2)(v)	Have a minimum perpendicular distance between the centerline of the manhole step to the nearest permanent object in back of the step of at least 4.5 inches (11.4 cm); and	16.5.3 ⁵
1910.24(b)(2)(vi)	Are designed to prevent the employee's foot from slipping or sliding off the end of the manhole step.	
1910.24(b)(3)	Manhole steps must be visually inspected before each use and be maintained in accordance with 1910.22	

There are three additional requirements that exceed what is specified in a national consensus standard for steps in pre-cast concrete manhole sections:

- Manhole steps must be provided with slip-resistant surfaces such as, corrugated, knurled, or dimpled surfaces;

⁵ ASTM C478-06b 16.5.3 specifies that the rung or cleat shall project a uniform clear distance of 4 inches minimum from the wall, to the embedment side of the rung. The OSHA distance is measured from the centerline of the manhole step. Thus, if a step is at least an inch wide, a step that meets the ASTM 4-inch requirement would also meet the OSHA 4.5 inch requirement.

- Manhole steps must be designed to prevent the employee's foot from slipping or sliding off the end of the manhole step;
- Manhole steps must be replaced if they are bent to such a degree that there is no longer 4 inches clearance to the wall.

ASTM C478-06b permits the use of uncoated or untreated ferrous steps as long as they are at least 1 inch in cross section, but says nothing about a slip-resistant surface or design. Due to the requirements that go beyond those in a consensus standard, when a manhole section needs to be built or replaced, there will be incremental costs for slip-resistant/corrosion-resistant surfaces. The paragraph now defines when a step has “failed” when still present in the manhole; thus there are also step replacement costs. These costs are discussed in Section 3.3.4.

3.2.4.2 *Paragraphs with No Costs*

§1910.24(a)(1). The draft reads:

“All step bolts installed on or after [insert date 90 days after the effective date of the final rule in the Federal Register] that are used in corrosive environments must be constructed of, or coated with, a material that will retard corrosion of the step or bolt.”

The most relevant national consensus standard is ASTM Standard Specification for Steel Transmission Tower Bolts, Zinc-Coated and Bare (ASTM A394-05). The appendix to the consensus standard mentions that the dimensions of ladder bolts, step bolts, and equipment support bolts shall be specified by the purchaser, thus the rest of the standard is applicable to step bolts. The standard describes three types of bolts covered by the standard:

- Type 0: hot-dip zinc-coated bolts made of low or medium carbon steel. (ASTM 394-05, Section 1.1.1)
- Type 1: hot-dip zinc-coated bolts made of medium carbon steel, quenched and tempered. (ASTM 394-05, Section 1.1.2)
- Type 3: Bare (uncoated), quenched and tempered bolts made of weathering steel (ASTM 394-05, Section 1.1.4)⁶

⁶ Type 2 bolts were withdrawn in 2005.

Appendix A.2 of the consensus standard mentions that bolts should be Type 0 unless agreed upon between the manufacturer and purchaser. That is, the default condition is that the bolt is zinc-coated and therefore meets the proposed OSHA requirement for corrosion resistance. The use of any other bolt type implies that the manufacturer and purchaser have agreed that the bolt is appropriate for the intended environment and intended use. Since manufacturers of step bolts are unlikely to make non-compliant step bolts, this provision falls into the category of “non-compliance is unlikely,” and no costs are assigned to this paragraph.

§1910.24(a)(6). The draft reads:

“Step bolts installed before [insert date 90 days after the effective date of the final rule in the Federal Register] must be capable of supporting their maximum intended load.”

The requirement that a step bolt must be capable of supporting its maximum intended load is consistent with IEEE 1307-2004; IEEE Standard for Fall Protection for Utility Work, Section 9.1.1.1(d) which reads:

“d) Be capable of supporting the intended workload [as defined for the application per the applicable ANSI standard(s)], but in no case shall the minimum design live load be less than a simple concentrated load of 271 kg (598.4 lb) applied 51mm (2 inches) from the inside face of the step bolt head.”

No cost is therefore assigned to this paragraph.

§1910.24(a)(7) requires step bolts installed after the effective date of the rule to be capable of supporting four times its maximum intended load. In the preamble to the proposed rule, OSHA says that it considers a 5/8-inch bolt to meet this requirement and that such size bolts are readily available.

3.2.5 §1910.25 Stairs and Stairways

3.2.5.1 *Paragraphs with No Costs*

§1910.25(a)(6). The original regulation says that for doors or gates that open directly on a stairway, a platform must be provided, and the swing of the door must not reduce the effective width to less than 20 inches. For platforms installed before 90 days after the effective date of the

final rule there are no changes to the existing requirements and therefore no retrofit costs. For platforms installed on or after 90 days after the effective date of the final rule, the effective width is increased to 22 inches.⁷ The incremental cost is that associated with adding 2 inches in clearance to the platform whenever the platform is replaced. This is likely to be a minimal increase in materials cost borne by the employer to meet the consensus standard. For reasons given in Section 3.1.3, no incremental costs for meeting a consensus standard are attributable to the proposed OSHA standard.

§1910.25(c). The original regulation in §1910.25(b) did not permit spiral stairways except under special conditions. Under §1910.25(a)(9), spiral stairs, ship stairs, or alternating tread-type stairs are not permitted except for special limited usage and secondary access situations where it is not practicable to provide a standard stairway. Additional requirements for spiral stairs are listed in the draft language for §1910.25(c). An existing spiral staircase that does not meet the draft requirements for clear width, riser height, etc., would need to be modified or replaced. However, spiral staircases are likely to be relatively rare given that they are exceptions to the existing rule. In addition, a note to §1910.25(a)(1) indicates that employers in compliance with NFPA 101 (or Building Code) will be deemed to be in compliance with this paragraph. Therefore, if the spiral staircase is in compliance with NFPA 101, it meets the requirements in §1910.25(c)(1-5), see NFPA (2006). Thus, we do not assign costs to §1910.25(c).

§1910.25(d). This paragraph is a response from OSHA to an OMB initiated, government-wide effort to reform regulation in the U.S. manufacturing sector. The Copper and Brass Fabricators Council submitted a comment that OSHA required the use of fixed stairs when ship stairs would be safer (OMB, 2005). Ship stairs typically are installed with slopes of 50 degrees or greater, however, the existing regulation for fixed stairs addressed stairs installed at angles between 30 and 50 degrees. Thus, ship stairs were not specifically addressed in the original interpretation. Recent standard interpretations indicate that if an inspection found a set of ship stairs at an establishment (a violation of the existing regulation) that conformed to the draft

⁷ The 22-inch clearance requirement for new structures matches ANSI A1264, Section 6.11.

regulation, OSHA would consider it a de minimis violation⁸ (OSHA 2006b and 2006c). Therefore, the need to retrofit or replace a set of ship stairs under the draft rule would be minimal and no costs are assigned to §1910.25(d).

§1910.25(e). Alternating tread stairs were not specifically mentioned in the original regulation. A letter from OSHA to a manufacturer of alternating tread stairs deemed the stair design to be safe (OSHA, 1981). Alternating tread stairs are discussed in NFPA 101, Section 7.2.11, therefore, any alternating tread stair that meets the requirements of NFPA 101 also meets the requirements draft in §1910.25(e). Thus, we do not assign costs to §1910.25(e).

3.2.6 §1910.26 Dockboards

3.2.6.1 *Paragraphs with No Costs*

§1910.26(b). The draft language reads:

Dockboards put into service on or after [insert date 90 days after the effective date of the final rule in the Federal Register] must be designed, constructed, and maintained to prevent equipment from running off the edge.”

The definition of a dockboard in ANSI MH30.2-2005 Section 2.2 contains the language “as well as providing a run-off guard, or curb.” Dockboards are manufactured by one company for sale to and use by another company. Following the logic of Section 3.1.2.2, if an employer orders a dockboard, it will have curbs. No costs for this provision are attributable to the rule.

⁸ i.e. a violation of minimum importance. For example, if ship stairs existed when they were supposedly banned, as long as they met the draft regulation, it would be an infraction but one so minor as to be below regulatory concern.

3.2.7 §1910.27 Scaffolds

3.2.7.1 *Paragraphs with Costs*

§1910.27(b)(2)(ii). This paragraph codifies safety provisions presented in the 1991 memorandum to the Regional Administrators, which are essentially similar to what is now contained in the national consensus standard ANSI/IWCA I 14.1 (OSHA, 1991a). These are:

- Training of employees in the use of the equipment before it is used.
- Inspection of the equipment each day before use.
- Proper rigging, including sound anchorages and tiebacks, in all cases, with particular emphasis on providing tiebacks when counterweights, cornice hooks, or similar non-permanent anchorage systems are used.
- Use of a separate fall arrest system.
- All lines installed (such as by using knots, swages, or eye splices) when rigging descent control devices shall be capable of sustaining a minimum tensile load of 5,000 pounds.
- Provisions are made for rescue or assure that employees are able to rescue themselves.
- Ropes are effectively padded where they contact edges of the building, anchorage, obstructions, or other surfaces that might cut or weaken the rope.
- Provide for stabilization at the specific work location when descents are greater than 130 feet.

There are some changes in language but most of these are not anticipated to result in compliance costs, e.g., “prompt rescue” rather than “rescue” and “harness” rather than “body belt.” The exceptions are §1910.27(b)(2)(ii) and §1910.27(b)(2)(iv). According to

§1910.27(b)(2)(ii), training must now be done in accordance with §1910.30. Costs for any training beyond what was done as a result of the 1991 memorandum are attributed to §1910.30.

§1910.27(b)(2)(iv). When rope descent systems are used, employers must use proper rigging, including sound anchorages and tiebacks with particular emphasis on providing tiebacks when counterweights, cornice hooks, or similar non-permanent anchorages are used. It is apparent that IWCA expects to find buildings without anchorages. A key provision of ANSI/IWCA I-14.1 is a written work plan (Section 1.7). The IWCA web site recommends that the person “whose job it is to look at and price jobs should be the primary person to develop the written plan. After all, this is the time when you see things like anchor points (or lack thereof) entrance ways, sharp edges, and other concerns. The best part of the written plan is the fact that it allows the building owner or manager to work with you in creating a safe place to work for you and your employees.” (IWCA, 2007b) ANSI/IWCA 14.1, Section 17 lists options for roof support equipment, including:

- Parapets, cornices, and building anchorages (Section 17.1)
- Davits and davit fixtures (a crane-like structure, Section 17.2)
- Sockets (Section 17.3)
- Tie-backs (Section 17.4)
- Counterweighted outriggers (Section 17.5)
- Parapet clamps and cornice hooks (Section 17.6)
- Overhead monorail tracks and trolleys (Section 17.7)

Several of these options, such as counterweighted outriggers, are transportable and are likely to be supplied by the contractor. Thus, the role of the work plan is to delineate how the work is to be performed using a mix of contractor and property owner equipment. The voluntary standard provides several acceptable options for roof support equipment and specifies the development of a work plan where both the contractor and property owner concur on how a safe job can be done at that property. It is highly unlikely that either party would agree to a work practice it

considered unsafe and ERG believes that voluntary compliance with the consensus standard is likely to be high. Therefore, no costs are assigned for equipment costs.

Costs do result, however, from inspections and certification for providing assurances that an anchorage is sound. These are discussed in Section 3.3.5.

3.2.7.2 Paragraphs with No Costs

§1910.27(a). This paragraph extends the construction industry requirements for scaffolds (except rope descent systems) to all other parts of industry. The construction industry scaffold standards (Subpart L of 29 CFR Part 1926) were updated on August 30, 1996 (OSHA, 1996), and contain requirements for all the same types of scaffolds that are now regulated by General Industry standards. OSHA believes that many general industry employers who use scaffolds also perform work covered by the construction industry standards and are already familiar with, and in compliance with, the construction industry scaffold standards. Therefore, the new language resolves any inconsistencies and thus no costs are attributed to this paragraph.

§1910.27(b)(1). Rope descent systems are an alternative to powered platforms. The draft language states that rope descent systems cannot be used for heights greater than 300 feet unless access cannot otherwise be obtained safely and practicably. The wording of the draft rule is consistent with the industry consensus standard (ANSI/IWCA, 2001). In other words, both the IWCA consensus standard and the proposed OSHA language (1) prohibit the use of rope descent systems for descents exceeding 300 feet, and (2) contain an exclusion clause – unless access cannot safely and practicably be obtained by other means. Because both contain the same exclusion clause, the OSHA requirement is no more restrictive than the consensus standard. Since this is a work-practice as opposed to an equipment specification requirement, incremental costs are attributable to the proposed standard to the extent that employers would not otherwise voluntarily comply with the IWCA standard.

The potential cost is, at the very least, limited to situations where (1) the building is 300 feet tall or higher, and (2) there is an alternative to the rope descent system that is practicable and safe. ERG used the Council on Tall Buildings and Urban Habitat's database and identified slightly more than 1,900 buildings that are 300 feet (91.7 m) tall or higher (CTBUH, 2006).

More than one in every four of these buildings is in New York City where State policy does not allow the use of rope descent systems (DiChacho, 2006). A better estimate of the number of potentially affected buildings is 1,500 buildings nationwide. ERG presumes that some of these 1,500 buildings have permanently installed power platforms for access to the exterior of the building, and further presumes that using an existing system would be less expensive than setting up a rope descent system. The final set of buildings for which §1910.27(b)(1) could result in costs are those where a safe and practicable alternative to a rope descent system exists but cannot be used. Because all companies bidding on the project would be making those bids under the same set of constraints, §1910.27(b)(1) would not result in a loss in income to the window cleaning industry. There may be higher costs to the building owners but, although the cost cannot be estimated, ERG considers the cost to be small given the limited number of buildings that potentially would be affected.

§1910.27(b)(2)(x). The requirement to secure equipment is consistent with the consensus standard IWCA I-14.1-2001 Section 3.10. Thus, no incremental costs are incurred for this requirement.

§1910.27(b)(2)(xi). The requirement to protect suspension ropes from exposure to open flames, hot work, corrosive chemicals, or other destructive conditions is an extension of the requirement to protect the integrity of the ropes in the 1991 OSHA memorandum. The costs for meeting this requirement is part of the training costs estimated in §1910.30.

3.2.8 §1910.28 Duty to Have Fall Protection

The draft language for §1910.28, with two major revisions, is a consolidation of the fall protection requirements in the existing rule. First, comments submitted in response to the reopening of the rule in 2003 suggested that the fall protection requirements in Subpart D should be consistent with those in Subpart M of the construction standard. The draft language for §1910.28 brings consistency between the rules that might affect employers and employees in both the construction and General Industry sectors. Second, the existing standard does not address the use of restraint systems, designated areas, or safety nets systems, nor is it clear as to where the use of personal fall protection systems is permitted. The restructured section allows

employers to choose from various options in providing fall protection, that is, it is not as restrictive as the existing standard that primarily requires the use of standard railings (guardrails).

3.2.8.1 *Paragraphs with Costs*

§1910.28(a)(2). General. The employer must determine that the walking-working surface has the strength and structural integrity to safely support employees. Discussions with OSHA staff indicate that their opinion is that this requirement can be met by a five- to ten-minute inspection of the surface or review of engineering paperwork. In rare circumstances, an employer might need to spend 15 to 30 minutes to determine if work can proceed. Costs for this are discussed in Section 3.3.6 where they are considered as part of the general requirement for an employer to periodically and regularly inspect walking-working surfaces in §1910.22(d) (1).

§1910.28(b)(4). Dockboards. This includes a new requirement for guardrails or handrails on dockboards if an employee might fall four or more feet. There is an exception for cases where the dockboards are used exclusively for material handling operations performed with motorized equipment. In these cases, neither guardrails nor handrails are required if the fall hazard is 10 feet or less and the employee has been trained according to §1910.30. Section 3.3.6 discusses the costs for installing handrail or guardrail systems for dockboards. Training costs are assigned to §1910.30.

§1910.28(b)(10)(iii) and (vi). §1910.28(b)(10)(iii) requires the employee to follow inspection procedures for the safety devices. §1910.28(b)(10)(vi) requires the employee to have both hands free of tools and material while climbing up or down the ladder. No frequency is mentioned but we assume inspection occurs prior to each use. Costs are assigned to these two paragraphs and are discussed in Section 3.3.6.

§1910.28(b)(10)(v). This paragraph effectively requires employees that routinely climb fixed portions of billboard ladders that do not have cages or wells to be a “qualified” climber as specified in §1910.29(h). Costs for this paragraph are assigned to §1910.29(h). Rather than speculate on what defines “routinely”⁹ or what is required of employees that climb outdoor

⁹ The draft text does not provide a definition of “routinely.”

advertising structures /billboards but not on a routine basis, ERG assumes that all employees in NAICS 5418 (advertising and related services) that use personal fall protection should be trained as qualified climbers (see §1910.29(h) discussion in Section 3.3.7).

3.2.8.2 *Paragraphs with No Costs*

§1910.28(b)(1). Unprotected sides and edges. Under the draft rule, if a walking-working surface (vertical and horizontal) has an unprotected side or edge that is four feet or more above a lower level, an employee must be protected from falling by the use of guardrail systems, safety net systems, personal fall arrest systems, or the employee must work in a designated area. In the existing rule, the “4-foot drop” condition for protection is found:

- §1910.23(b): every wall opening
- §1910.23(c)(1): every open-sided floor or platform
- §1910.23(c)(2): the open sides of any runway

Thus, there is no change in height requirement for fall protection between the existing and draft rules. The language and organization for the draft rule, however, is less complex than that for the existing rule. The draft rule provides additional flexibility in the methods used for fall protection and allows for exceptional conditions, e.g., if it is not feasible to install guardrails on the working surface, guardrails are not required provided access to the working surface is limited to authorized employees who have been trained in accordance with §1910.30. No costs are assigned to this paragraph.

§1910.28(b)(2). Hoist areas. The draft rule states that fall protection must be provided in hoist areas where the drop is four or more feet. This is a clarification. OSHA staff consider the existing §1910.23(b)(1) and §1910.23(c)(1) to address hoist areas. No costs are assigned to this paragraph.

§1910.28(b)(3). Holes. The existing rule requires guarding for every hole and skylight floor opening. The draft rule specifies that fall protection is needed when an employee might fall more than four feet. Thus, the new language brings the condition that precipitates a need for fall

protection for holes into agreement with that for unprotected sides and edges and hoist areas. The new language also permits the requirement to be met by personal fall arrest systems and covers as well as guardrails. No costs are assigned to this paragraph.

§1910.28(b)(6). Dangerous equipment. The existing language requires a standard railing and toe board for working/walking surfaces above dangerous equipment. The draft language introduces a distinction on what is required by whether the potential fall is less than four feet. For potential falls of less than four feet onto or into dangerous equipment, the employer has the additional options of covering or guarding the dangerous equipment to eliminate the hazard. For potential falls of four feet or more, the employer has the options of guardrail systems, restraint systems, personal fall arrest systems, or safety net systems. Because the employer is assumed to meet the requirements through the least cost method (see Section 3.1.7 above), no costs are assigned to this paragraph.

§1910.28(b)(7). Wall openings. The draft language limits the need for fall protection to cases where the inside bottom edge of the wall opening is less than 39 inches above the walking-working surface. In addition, the employer has the additional option of using a safety net system or personal fall arrest system to meet this requirement. No costs are assigned to this paragraph.

§1910.28(b)(8). Repair, service, and assembly pits 4 to 10 feet in depth. Pits, in general, were subsumed within the definition of a floor opening in the existing §1910.21(a)(2). In the draft paragraph, pits between 4 and 10 feet in depth for repair, service, and assembly operations need not have a fall protection system provided that a (minimum) 6-foot perimeter is marked around the pit and access to that area is limited to trained and authorized employees. ERG does not assign incremental costs to this paragraph for two reasons. First, an employer would only incur costs for caution signs and floor markings if they were less expensive than the fall protection system required under the existing regulation (see Section 3.1.7 for a discussion on the assumption that an employer will meet requirements by the least expensive method). Second, the existing §1910.145 already requires an employer to post caution signs where needed and the existing §1910.144 describes what is required for marking. ERG assumes an employer has signs and marking materials available, so no incremental costs are assigned to this paragraph.

§1910.28(b)(9). Fixed ladders. The employer has the added option of meeting the requirement through the use of personal fall protection systems. The existing language specified cages or wells. No costs are assigned to this paragraph.

§1910.28(b)(10)(i), (ii), and (iv). Outdoor advertising (billboards). This is a new paragraph. Under the language of the existing Subpart D, no distinction is made for billboards. Thus, the fixed ladder portion of the billboard could be considered under the existing fixed ladder requirements. Under existing §1910.27(d)(1), cages or wells are required for ladders more than 20 feet. Under the draft §1910.28(b)(10)(i), an employee climbing a fixed ladder portion of a billboard up to 50 feet in length needs either a body belt or body harness with an appropriate 18-inch rest lanyard as a means to tie off to the fixed ladder. Presumably, the additional options are less expensive than cages or wells where they do not already exist. Any ladder safety systems (i.e., a device other than a cage or well, see §1910.21(b)) that already exist must be maintained (§1910.28(b)(10)(iv)). This is already required under current practice. Thus, no incremental costs are assigned to these paragraphs for compliance.

If, however, the fixed ladder portion extends beyond 50 feet, the entire length of the fixed ladder must have ladder safety devices (see §1910.28(b)(10)(ii)). Ladder safety systems refer to any device other than a cage or well (Presumably, the ladder safety systems are less expensive than cages or wells where the latter do not already exist, see Section 3.1.7). Thus, no incremental costs are assigned to this paragraph for compliance.

§1910.28(b)(10)(vii). Climbers must be protected by an appropriate fall protection system when they reach their work positions but the costs for these systems are already considered in the existing requirements for fixed ladder systems. Thus, no additional costs for equipment are considered for this paragraph.

§1910.28(b)(12). Scaffolds and rope descent systems. Paragraph now refers to §1926, thus avoiding any inconsistencies between the paragraphs. The language extends the requirements found in the construction standards to all other industries. Fall protection on scaffolds in §1926 follows consensus standards, thus no costs are assigned to this paragraph.

§1910.28(b)(13). Walking-working surfaces not otherwise addressed. OSHA considers the new paragraph to be a clarification of the existing §1910.23(c)(3), which requires a railing and toeboard. The draft language restricts the requirement to working surfaces 4 feet or more above a lower level and permits the employer to comply with the paragraph by the use a personal fall protection system. Under the least cost assumption, no costs are assigned to this paragraph.

3.2.9 §1910.29 Fall Protection Systems and Criteria

3.2.9.1 *Paragraphs with Costs*

§1910.29(b)(15). Guardrail systems. The new paragraph requires that manila, plastic, or synthetic rope being used for top rails or midrails be inspected “as frequently as necessary” to ensure that it meets the strength requirements. This inspection cost is considered in Section 3.3.7.

§1910.29(h). This paragraph sets the criteria for the use of “qualified” climbers¹⁰ and limits the use of “qualified climbers” to employees engaged in outdoor advertising operations. The costs for this paragraph are those to train and, as necessary, retrain qualified climbers. That is, ERG assumes qualified climbers require training beyond that now required for fixed ladders. Additional costs are incurred by the requirement for the employer to observe the performance to ensure the qualified climber has the skills necessary to perform the climb safely. These costs are discussed further in Section 3.3.7.

3.2.9.2 *Paragraphs with No Costs*

§1910.29(c). Safety net systems. Paragraph now refers to §1926, thus avoiding any inconsistencies between the paragraphs. The language extends the requirements found in the construction standards to all other industries. However, safety net system requirements in §1926 follow consensus standards, thus no costs are assigned to this paragraph.

¹⁰ A “qualified climber” as described here combines the terms “qualified engineer” and “qualified person” in ANSI standard A10.14 on fall protection. That standard, however, has been withdrawn.

3.2.10 §1910.30 Training Programs

3.2.10.1 *Paragraphs with Costs*

This is an entirely new paragraph requiring training regarding fall and equipment hazards as well as re-training when necessary for employees in general industry. ERG assumes that an employer that trains employees in compliance with §1910.30 would choose to maintain records of the training and the cost estimates reflect this time commitment on the part of the employer. The training costs estimated for §1910.30 encompass requirements from other paragraphs that specify that training must be done in accordance with §1910.30. These costs are discussed in more detail in Section 3.3.8 and are incurred only by the percentage of establishments that do not already provide regular safety training.

3.2.11 §1910.140 Subpart I: Fall Protection

OSHA proposes to amend the general industry standard for personal protective equipment (PPE) to add requirements for personal fall protection equipment. The draft §1910.140 adds specific design and performance requirements for personal fall protection systems to the existing regulation. In addition, the proposed standard would require that the provisions for hazard assessment found in §1910.132 apply to personal fall protection systems.

3.2.11.1 *Paragraphs with Costs*

§1910.140(c)(18) requires personal fall protection systems to be inspected prior to each use. Inspection costs for this provision are discussed in Section 3.3.9.

§1910.132(d) requires an employer to assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE and, if so, to determine the type of PPE required. Costs associated with hazard assessment are discussed in Section 3.3.9.

§1910.132(f) requires that— before using personal fall protection systems, and after any component or system is changed— employees must be trained in the application limits of the

equipment, proper hook-up, anchoring and tie-off techniques, methods of use, and proper methods of equipment inspection and storage. The costs for this paragraph, then, are included in the costs for §1910.30.

3.3 COST ESTIMATION

This section focuses on the costs associated with the draft rule. It does not attempt to estimate potential cost savings to industry from increased flexibility in meeting specific requirements, such as the use of personal fall protection systems rather than the currently mandated hand/guardrail systems, even if some of the new alternatives might actually be safer than the currently mandated requirements.¹¹

Section 3.3.1 discusses data used in the following estimations. Section 3.3.2 through 3.3.9 estimates the costs associated with each paragraph. Table 3-4, developed in Section 3.4, is the basis for these discussion. Section 3.3 summarizes the compliance cost estimates for the draft standards.

3.3.1 Supporting Data

The costs are based on additional employer and supervisor time for training and inspection. The number of establishments and employees are taken from Statistics of U.S. Businesses 2003. The number of employees covered by Subpart D and Subpart I is based on the employment share of workers employed in building and grounds; construction¹²; installation, maintenance, and repair; production; and material moving occupations as reported by Bureau of Labor statistics, Occupational Employment Statistics. See Section Two for more industry profile information.

¹¹ The new alternatives are assumed to be at least as effective in employee protection as that provided by the current requirements.

¹² Production workers include those in building and grounds; construction; installation, maintenance, and repair; production; and material moving occupations. It is conceivable that workers in construction and related occupations, even though not employed by establishments in construction industries, might on occasion perform work that would be regulated by OSHA under its construction standards in §1926. For the purpose of estimating costs, however, ERG assumed that these employees are covered by the General Industry standard.

Employee and supervisor wages (See Table 2-5) also are based on Bureau of Labor statistics, Occupational Employment Statistics. Wages are adjusted to include the cost of benefits, based on Bureau of Labor Statistics, Employer Costs for Employee Compensation – March 2006 (released June 2006). Current compliance rates are based on OSHA inspection statistics for Fiscal Year 2005, see Table 3-3. The percentage of businesses that already provide regular safety training is based on the National Occupational Exposure Survey (NIOSH, 1988), see Table 3-6.

Table 3-6. Fraction of Businesses Providing Regular Safety Training

NAICS	Industry	Fraction Providing Regular Safety Training
11	Agriculture, Forestry, Fishing, and Hunting	0.796
21	Mining (2111 Oil and Gas Extraction)	0.751
22	Utilities	0.89
31-33	Manufacturing	0.855
42	Wholesale Trade	0.668
44-45	Retail Trade	0.668
48-49	Transportation	0.89
51	Information	0.664
52	Finance and Insurance	0.664
53	Real Estate	0.664
54	Professional, Scientific, and Technical Services	0.664
55	Management	0.664
56	Administrative and Support, Waste Management and Remediation Services	0.664
61	Educational Services	0.83
62	Health Care	0.957
71	Arts, Entertainment, and Recreation	0.664
72	Accommodation and Food Services	0.664
81	Other Services	0.664

3.3.2 §1910.22 General Requirements

§1910.22(d). Although the underlying hazard of unsafe walking-working surfaces is addressed within various §1910 requirements, §1910.22 contains three paragraphs with new requirements:

- §1910.22(d)(1): Regular and periodic inspection of walking-working surfaces
- §1910.22(d)(2): Unsafe conditions must be guarded until repair
- §1910.22(d)(3): Qualified person must inspect repair.

For the purpose of estimating costs for §1910.22(d)(1), ERG assumes that facilities in compliance with OSHA regulations already perform regular and periodic inspections of walking working surfaces. For the purposes of estimating costs, ERG used the non-compliance rates for floor guarding (§1910.23 has the highest non-compliance rates, see Table 3-3) to estimate the number of establishments that need to perform regular and periodic inspections of walking-working surfaces. ERG assumed that a supervisor would spend 15 minutes every quarter making the inspection for a total of 1 hour per year. The total annual cost for inspections is estimated to be \$12.9 million.

For estimating the costs for §1910.22(d)(2), ERG assumed that within a year, ten percent of these establishments would identify an unsafe condition and that it takes an employee 15 minutes to set up the guard mechanism (e.g., cones, barriers, etc.). Incremental material costs are assumed to be negligible (e.g., they have cones but now they use them). Estimated compliance costs for this provision are \$0.196 million.

For §1910.22(d)(3), ERG assumes it takes 5 minutes for a supervisor or qualified person to inspect the repair of the unsafe condition. The estimated cost is \$0.107 million (\$107,350).

The total estimated cost for compliance with §1910.22(d) is \$13.2 million per year.

3.3.3 §1910.23 Ladders

§1910.23(b)(11-13), §1910.23(c)(5-6), (10-11), and (13). Eight paragraphs within §1910.23 have new directives for protecting employees from slip, trip, and fall hazards during operations involving ladders. Table 3-7 summarizes these requirements, all of which are assumed to be addressed in a single training session. ERG considers that compliance with this paragraph can be met by informal training and thus no administrative costs are included for an employer.

The OSHA website includes a Resource Center with a loan program for training videos (OSHA, 2006d). The index lists ten training videos for ladders and stairways with times ranging from five to 19 minutes and an average of 12 minutes. For the purposes of estimating costs, we use a 15-minute training period. Ten employees are trained per session with one supervisor in attendance. We assume that \$1 in materials cost is incurred for handouts for each employee trained.

Table 3-7. Training Requirements Under Draft §1910.23

Paragraph	Subject
§1910.23(b)(11)	When ascending or descending a ladder, the user must face the ladder.
§1910.23(b)(12)	Each employee must use at least one hand to grasp the ladder when progressing up and down the ladder.
§1910.23(b)(13)	An employee must not carry any object or load that could cause the employee to lose his or her balance and fall.
§1910.23(c)(5)	The use of portable single rail ladders is prohibited.
§1910.23(c)(6)	Ladders must not be moved, shifted, or extended while occupied by employees.
§1910.23(c)(10)	The top of a non-self-supporting ladder must be placed with the two rails supported unless it is equipped with a single support attachment. (New for wood ladders)
§1910.23(c)(11)	When portable ladders are used to gain access to an upper landing surface, the ladder siderails must extend at least 3 feet (0.9 m) above that upper landing surface. (New for metal ladders)
§1910.23(c)(13)	Ladders and ladder sections must not be tied or fastened together to provide longer length unless they are specifically designed for such use. (New for wood ladders)

Some establishments already provide regular safety training. The proportions of industries that already provide training are taken from NOES survey. Although the data are more than 20 years old, NIOSH (1988) is still the primary source for such information covering a

range of industries. The proportion of establishments that already offer regular safety training is likely to have increased in the past two decades, hence, the training costs may be overestimated.

The cost to train all the employees at establishments that do not offer regular safety training is a one-time cost that is annualized over a 10-year period at an interest rate of seven percent to estimate the cost of the rule. The total costs are \$10.1 million with an annualized cost of \$1.4 million.

New employees that enter the workforce would also need training. For the purpose of estimating the cost of the rule, ERG assumed that training received at a prior place of employment was not considered sufficient to meet this requirement for the new employer. ERG examined the industry turnover rate data collected by the Bureau of Labor Statistics. For 2002, the data were collected by SIC code while industries in this cost analysis are classified by NAICS code. Table 3-8 summarizes the data and the NAICS codes to which they are assigned. ERG assigned the turnover rate for manufacturing to logging (NAICS 1133) and oil and gas extraction (NAICS 2111). ERG assigned the turnover rate for finance, insurance, and real estate to information (NAICS 51). Under these assumptions, the estimated cost is \$3.9 million per year to train new employees about ladder safety.

Table 3-8. 2002 Industry Turnover Rates

Industry Sector	NAICS Codes	Turnover Rate [a]
Manufacturing	1133, 2111, 31-33	26.10%
Transportation and Public Utilities	22, 48-49	27.70%
Wholesale Trade	42	28.40%
Retail Trade	44-45	60.10%
Finance, Insurance, and Real Estate	51-53	24.00%
Service	54-81	43.40%

Source: Bureau of Labor Statistics. Job Openings and Labor Turnover Survey, 2002.

[a]Hires as a percent of total employment.

§1910.23(e). The industry profile identifies 6,460,256 establishments covered in Subpart D. Five years might be a typical lifetime for a ladder; thus ERG assumes that one-fifth of the establishments might purchase a ladder in any given year. Furthermore, ERG assumes that a supervisor from each establishment takes 5 minutes to read ladder specifications to ensure the

ladder about to be purchased meets all ANSI 14 requirements for that type ladder. With these assumptions, the estimated annual cost for this paragraph is \$3.2 million.

3.3.4 §1910.24 Step Bolts and Manhole Steps

§1910.24(a)(8). ERG identified three general cost categories for the step bolt and pole step requirements:

- Utility poles.
- Communication structures
- Sports and performance arenas with pole-mounted lights

Utility poles have been identified as having step bolts. According to the 2007 UDI Directory of Electric Power Producers and Distributors, there are 6,297,596 distribution line miles across the United States (Platts, 2007). Of these we are interested in the overhead (as opposed to underground) line miles. The most recent data found for the overhead line miles is 4.1 million line miles in 1996, about two-thirds of total line miles (NCAMP, 1997). Considering the maturity of the electric power industry in the United States, it is assumed that there is not a significant amount of new line miles built, and of the new lines miles there is a trend to build the lines underground. Assuming one pole every 100 feet, ERG estimates 216,480,000 poles across the United States. This is 2.5 times the number of reported utility poles on highways in 1999, and therefore this estimate is considered reasonable (NCHRP, 2004). Assuming 1 percent of the poles are climbed each year and 1 minute is taken for inspection of the step bolts, the estimated annual cost is \$1.3 million.

ERG estimated about 190,000 fixed ladder structures in the communications industry (see Appendix A). This estimate, however, actually covers communication structures with fixed ladders and step bolts. Fixed ladders, however, have an existing requirement for inspection while step bolts do not. Structures in FCC's Antenna Structure Registration (ASR) database meet at least one of the following requirements:

- Height is 200 ft or greater.

- Height <199 ft IF within 5 miles of an airport and fails the glide calculation (Part 17 requirement).
- Height of the extension (e.g., beyond the building roof) is 20 feet or more.

ERG assumes that these structures are more likely to have fixed ladders rather than step bolts. As of May 2007, there are approximately 93,000 structures in the ASR database. Communication structures that are not in the ASR database are smaller and, thus, more likely to have step bolts. ERG assumes that the difference between the total number of structures (190,000) and the number in the ASR database (93,000) is the number of structures that could potentially have step bolts. ERG assumes that the 97,000 structures with step bolts are climbed once a year and that one minute is spent inspecting the structure before it is climbed. This results in an annual cost of \$0.039 million for NAICS 51 (Information).

There are 1,699 promoters of performing arts, sports, and similar events with facilities (Census, 2002). ERG is unable to estimate the number of step bolts at each facility, but assumes that one hour per year is dedicated to inspecting all step bolts at each facility. This results in an annual cost of \$0.028 million for NAICS 7113 (promoters of performing arts, sports, and similar events with facilities).

The total annual inspection cost for step bolts is estimated to be \$1.37 million.

§1910.24(b)(3). ERG (2005) estimates there are between 6.6 and 13.2 million manholes with a mid-point estimate of 9.9 million. Of these, approximately 85 percent, or 8.4 million are less than 20 feet in depth and do not have a fixed ladder. ERG assumes that 10 percent of these are entered once a year, on average, and that it takes one minute to inspect the steps prior to entering the manhole. This results in an annual cost of \$0.34 million for NAICS 2213 (water, sewage, and other systems).

Other industries also use manholes for access, such as the electric power generation, transmission, and distribution (NAICS 2211) and natural gas distribution (NAICS 2212). ERG, however, has no data on the number of such manholes but assumes that the costs would be proportional to the number of manholes that are estimated for water and sewage systems. No costs are estimated for NAICS 2211 and 2212 for this paragraph.

§1910.24(b)(2) and (4) The incremental costs of slip-resistant and corrosion-resistant surfaces would be incurred in the future as manhole sections with steps are replaced at the end of their useful life. There are 9.9 million manholes, of which 85 percent are less than 20 feet and 15 percent are 20 feet or more. The manholes less than 20 feet are assumed to have a uniform distribution between portable ladders, fixed ladders, and steps, resulting in 2.9 million manholes with steps. The manholes 20 feet or more are assumed to have a uniform distribution between fixed ladders and steps, resulting in 0.7 million manholes with steps. Therefore, 3.6 million manholes are considered as the universe affected by the proposed language. The most expensive step found has a per-unit cost of \$8.50, and it is assumed that this includes a 10 percent premium to ensure the steps meet the proposed requirements.

First, annual step replacement costs are estimated assuming that 10 percent of the manholes are entered each year, and of those 10 percent have a failed rung. At the incremental cost of \$0.85 each, the estimated annual step replacement cost is \$0.03 million. Second, annual manhole replacement costs are estimated assuming 5 percent of manholes need to be replaced a year and that steps are every 16 inches. The estimated annual manhole replacement cost is \$1.7 million.

3.3.5 §1910.27 Scaffolds and Rope Descent Systems

§1910.27(b)(2)(ii). Cost for any training beyond what is done as a result of the 1991 memorandum are attributed to §1910.30 (see Section 3.3.8).

§1910.27(b)(2)(iv). To provide assurances that an anchorage is sound, costs are assigned as 1) a qualified/competent person to inspect the rigging and anchorages on buildings annually and 2) a professional engineer to certify the soundness of the rigging and anchorages every 10 years.

ERG contacted Stefan Bright of the International Window Cleaning Association who provided an estimate of 3.0 million descents or 750,000 buildings per year (Bright, 2007). Using data collected by the Department of Energy (DOE) for surveys on energy use, ERG compared this estimate with the number of commercial and residential buildings with four or more floors. The 2003 Commercials Buildings Energy Consumption Survey identified about 140,000

commercial buildings nationwide (DOE, 2006). The 2001 Residential Energy Consumption Survey identified about 2.4 million apartment buildings with 5 to 10 floors, 0.9 million apartment buildings with 11 to 20 floors, and an unspecified number of buildings with more than 20 floors. Thus, we have at least 3.3 million residential buildings with at least 5 or more floors (DOE, 2004).

If we assume that each commercial building has its windows cleaned annually, that would account for 140,000 of the estimated 750,000 cleanings per year. If the remaining 610,000 cleanings are distributed over the 3.3 million residential buildings, each building would, on average, have its windows cleaned every five to six years.¹³

Bright (2007) estimated that a minimum of 20 percent of the building owners comply with the inspection standard but that the number is increasing. Comments on the proposed language, however, indicate a wide range of response that probably reflect the geographical variability in proportion of building owners that inspect their anchorages on a periodic basis. Amodeo (2003) mentions some clients view ANSI I-14 as voluntary and resist having inspections. Kreidenweis (2003) mentions that very few buildings are inspected by an engineer. In contrast, Lebel (2003) mentions that many buildings have a roof plan and identified anchorages certified by a professional engineer. Zeolla (2003) states that most buildings that have invested in anchors are performing the inspections.

If we assume approximately 750,000 inspections per year and 75 percent of them will be affected by the change from a voluntary requirement to a mandatory requirement, an estimated 562,500 buildings require annual inspections and decennial certifications.

It is assumed that the annual inspections are performed by a supervisor and that it takes one hour to perform the inspection.

Table 3-9 summarizes the range in costs estimated for a professional engineer to certify the anchorages. Kreidenweis (2003) and Lebel (2003) are comments submitted to OSHA on proposed Subpart D language. The estimates are deflated to 2003 dollars based on changes in the

¹³ In an unscientific sample, a 25-year resident of a 28-story apartment building in New York City reported that the outside of the windows were never cleaned (Smith, 2007).

Consumer Price Index (CPI-U; CEA, 2007). The costs range from a low of \$175 to a high of \$2,500 and probably represent the range in building size, complexity, and regional variation. The median value is \$1,000.

Table 3-9. Estimated Certification Costs

Source	Estimated Cost		Year	2003 Dollars Estimated Cost	
	Low	High		Low	High
Bright, 2007	\$300	\$1,500	2006	\$274	\$1,369
Kreidenweis, 2003	\$1,000	\$2,500	2003	\$1,000	\$2,500
Lebel, 2003	\$175	\$1,000	2003	\$175	\$1,000
Wright, 2003	\$400		2003	\$400	

An estimated 562,500 inspections at an inspection cost of \$21.97/hr¹⁴ is about \$12.4 million. An estimated 562,500 certifications every ten years means that 56,250 buildings need to certify every year. At an average cost of \$1,000 for certification this is about \$56.3 million. The estimated total cost of inspecting and certifying anchorages for window washing is \$68.6 million.

3.3.6 §1910.28 Duty to Have Fall Protection

§1910.28(a)(2). This paragraph covers all walking-working surfaces. The paragraph on general requirements (§1910.22(d)(1)) has a provision for the employer to inspect walking-working surfaces on a periodic and regular basis to ensure that the surfaces are in a safe condition for the employee to use. ERG considers §1910.28(a)(2) to provide further detail as to what should be considered in an inspection. Thus, ERG considers the costs for strength and structural integrity inspection, specified in §1910.28(a)(2), to be included in the costs estimated for general inspection in §1910.22(d)(1). The costs for §1910.22(d)(1) are discussed in Section 3.3.2.

§1920.28(b)(4) concerns dockboards. In this paragraph, guardrails or handrails must be installed if an employee can fall four or more feet to a lower level. Dockboards with maximum

¹⁴ See production worker supervisor's hourly wage plus benefits for NAICS 5617 in Table 2-5.

heights of less than four feet would not incur costs under this paragraph. Dockboards with fall potential between four feet and ten feet are exempted from the hand/guardrail requirement if the ramp is used exclusively for material handling operations with motorized equipment. To qualify for the exception, employees must be trained and these requirements are discussed in Section 3.3.8 below. ERG assumes that a substantial proportion of dockboards would either not incur costs due to height or be able to use the exception, thus the costs that would be incurred under this paragraph are unlikely to be substantial and are not estimated.

The costs for §1920.28(b)(4)(ii)(B) are included in the estimates for §1910.30 (see Section 3.3.8).

§1910.28(b)(10)(iii). ERG (2005) reports that, based on discussions with the Outdoor Advertising Association of America, the number of billboards with fixed ladders over 20 feet is approximately 20,500. The billboards are climbed anywhere from one to more than 12 times a year whenever the copy is changed. For the purpose of estimating costs, ERG assumes that the 20,500 billboards are climbed six times a year (123,000 climbs). Each time a billboard is about to be climbed, the employee takes two minutes to inspect the ladder safety device (246,000 minutes or 4,100 hours). Employees that climb billboards are included under NAICS 5418 (Advertising and Related Services). In 2003, the average wage including benefits for this category is \$18.895/hr. The estimated cost to comply with this provision is approximately \$77,469 per year.

§1910.28(b)(10)(v) and (vi) refers to outdoor advertising operations. For the purpose of estimating costs, all employees that climb billboard are assumed to be “qualified” climbers and that the training for a qualified climber includes the instruction to have both hands free while ascending or descending the ladder (§1910.28(b)(10)(vi)). ERG assigns the costs to train a qualified climber (§1910.28(b)(10)(v)) to §1910.29(h).

3.3.7 §1910.29 Fall Protection Systems Criteria and Practices

§1910.29(b)(15). The draft language for §1910.29(b)(15) specifies only that the inspections must be done as frequently as necessary to ensure the strength requirement is met. The estimated inspection cost, then, would be the product of the:

- number of guardrail systems
- proportion that use manila, plastic, or synthetic rope used as top rails or midrails
- number of inspections per year
- time required for each inspection (hr)
- average wage per inspector per industry (\$/hr).

At this time, ERG does not have an estimate of the proportion of guardrail systems that use manila, plastic, or synthetic rope as top rails or midrails. However, ERG considers it likely that the inspection of these alternate materials for top rails and siderails would form part of the inspections performed under §1910.22, the general inspection of walking-working surfaces for safety. That is, §1910.29(b)(15) provides a detail to be included in the inspection for those workplaces that use manila, plastic, or synthetic rope as top rails or midrails. Therefore, no additional costs are allocated to this provision.

§1910.29(h). Qualified climbers must:

- have climbing duties as one of their routine work activities (§1910.29(h)(4))
- be physically capable of performing the climbing duties (§1910.29(h)(1))
- undergo training or an apprenticeship program (§1910.29(h)(2))
- be retrained as necessary (§1910.29(h)(2))

Employers are required to ensure that a qualified climber has the skill to safely perform the climb. The language for how the employer does this is open to two interpretations. The first interpretation is that the employer uses performance observations (i.e., in all cases) and either formal classroom or on-the-job training. The second interpretation is that the employer uses performance observations when the climber has had formal classroom training, or the employer ensures the skill of the qualified climber through on-the-job training. In the second case, the employer does not need to personally observe the climber.

The concept of a “qualified climber” is not new. In 1990, Gannett Outdoor Companies applied for a variance from the fixed ladder regulations. OSHA considered the application and granted it in 1991. In 1993, OSHA issued an instruction to extend the variance granted to Gannett Outdoor Companies to other employers (OSHA, 1990, OSHA, 1991b, and OSHA, 1993). For the purposes of estimating costs, ERG assumes that 90 percent of the employees in the outdoor advertising industry that climb have been trained as qualified climbers. Thus, there are one-time costs associated with this paragraph to qualify the remaining 10 percent of climbers. These costs are annualized over 10 years at a rate of seven percent. In addition, the industry incurs annual costs for:

- Employer performance observation
- Training of new employees
- Retraining of employees as necessary
- Administrative costs to document training and re-training.

For the purpose of estimating one-time costs, ERG assumes that 818 employees that perform construction, installation, maintenance, and repair operations in NAICS 5418 (advertising and related services) need to undergo training to be qualified climbers.

The National Association of Tower Erectors has developed a climber training standard with varying levels of expertise (authorized, competent, and competent rescuer) but does not offer training itself (NATE, 2006). The OSHA website lists a 4-day training session in fall arrest systems for \$750. Commercial courses in fall protection searched on the web range from one to five days with costs ranging from \$500 to \$2,500 per course. The prices include materials and the trainer’s time. For the purposes of estimating costs, ERG assumes a 4-day training at a cost of \$1,500 plus the employee’s time (\$605, based on an average wage of \$18.89/hr and 32 hours) for a total of \$2,105. Administrative tasks to document the training are assumed to be 15 minutes of a supervisor’s time for every ten employees trained. The one-time cost to qualify the estimated 818 climbers of outdoor advertising/billboard structure is \$1.72 million and the annualized cost is \$0.25 million per year.

For the purposes of estimating the annual costs associated with this paragraph, ERG assumes:

- A supervisor observes each of the estimated 8,180 qualified climbers for 15 minutes per quarter or 1 hour per qualified climber per year.
- A supervisor spends 15 minutes per year per qualified climber on administrative tasks for training and re-training.
- Ten percent of the climbers need re-training.
- Retraining consists of an 8-hour refresher course at a cost of \$500.
- The turnover rate is 43 percent.

The estimated annual cost is \$8.2 million of which \$7.4 million is due to the need to train new hires.¹⁵

3.3.8 §1910.30 Training Programs

§1910.30(a and b) addresses training with respect to fall hazards. The training must be:

- done by a qualified person
- include the nature of fall hazards in the workplace
- include the correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection system used
- include the use and operation of guardrail systems, safety net systems, warning lines used in designated areas, and other (unspecified) protection to be used

¹⁵ This assumes that a qualified climber could not bring his or her accreditation if he or she changes companies.

- The use, operation, and limitations of personal fall protection systems including proper hook-up, anchoring and tie-off techniques, methods of use, and proper methods of equipment inspection and storage as recommended by the manufacturer.

§1910.30(b) addresses training with respect to equipment hazards. In particular, employees must be trained in the proper:

- care, use, and inspection of equipment covered by the subpart D and their use in accordance with recognized industry practices and manufacturers recommendations
- placement and securing of dockboards to prevent unintentional movement
- rigging and safe use of rope descent systems.

The costs for the training allocated under §1910.27(b)(2)(ii) (rope descent systems) and §1910.28(b)(4) (duty to have fall protection: dockboards) are thus included in the cost estimate for §1910.30.

ERG estimated the number and percent of employees by industry that use personal protective equipment such as body belts and/or body harnesses (ERG, 1999). ERG then applied these industry-specific percentages to the number of employees for 2003 to estimate the number of employees that need the type of training now required in §1910.30.

Some companies already provide this training. ERG used the NOES survey to estimate the level of training, by NAICS code, that is already provided at the baseline.

For the purpose of estimating costs, ERG assumes that all employees that have not already been trained and use personal fall protection systems undergo a 6-hour training on fall hazards to address the §1910.30(a) and 1910.30(b)(1) requirements.

Employees in the utility, sewage, and communications industry sectors (NAICS 2211-2213 and 5121-5191) are assumed to undergo an additional half-day of training to specifically

address the requirements for step bolts (i.e., a total of 10 hours of training). Employees in NAICS codes 4881 through 4884 (support activities for transportation by air, rail, water, and road, respectively) are assumed to undergo a half-day of training specifically to address requirements for dockboards. Window washers are in NAICS 5617 (services to buildings and dwellings). They are assumed to have an entire day devoted to training on rope descent systems (i.e., for a total of 14 hours).

Training must be provided by a qualified person. For the purpose of estimating costs, ERG assumes that the trainer comes to the workplace. The \$500/day fee includes instruction, travel, lodging, and per diem as well as hand-out materials. This fee is incurred per every 10 employees (i.e., class size is limited to 10 people).

A supervisor is assumed to spend 15 minutes per employee per year in administrative costs to maintain and update training records.

The estimated total one-time cost for §1910.30(a and b) is \$76.8 million. This cost is annualized over ten years and an interest rate of seven percent. The annualized cost is \$10.9 million.

There is also an annual cost due to the need to train new employees. The BLS turnover rates are applied to estimate the annual number of new employees that need training. The estimated annual cost is \$26.6 million.

§1910.30(c) concerns the need to retrain employees whenever the employer has reason to believe that retraining is required for safety. This need can occur through several situations such as changes in the workplace, fall protection systems, or fall protection equipment that render previous training invalid, or employee knowledge or use of fall protection systems or equipment is not adequate. ERG assumes that retraining already occurs at establishments that already have training programs in place. For the remaining employees, ERG estimates that five percent require retraining in any given year. The retraining course is assumed to be a 1-hour refresher course provided by a supervisor that focuses on the areas in which the employee is deficient. The estimated cost is \$3.9 million.

3.3.9 §1910.140 Subpart I: Fall Protection

§1910.140(c)(18) states that personal fall protection systems must be inspected before each use for mildew, wear, damage, and other deterioration and defective components must be removed from service. For the purposes of estimating costs, ERG assumes that each employee that wears a personal fall protection system does so at the beginning of every workweek, the employee works 50 weeks per year, and the inspection takes about one minute. The associated inspection cost is approximately \$6.5 million per year.

§1910.132(d) requires an employer to assess the workplace to determine if hazards are present or are likely to be present. ERG assumes that the amount of time needed by an employer to walk around the establishment, assess the potential hazard, and determine the appropriate PPE and training needed by the employees varied with the size of the establishment. ERG uses the number of employees as an indicator of establishment size. The time required for the hazard assessment is estimated as:

- 1 to 19 employees: 1 hour
- 20 to 99 employees: 2 hours
- 100 to 499 employees: 3 hours
- 500+ employees: 4 hours.

Furthermore, ERG assumed that:

- All establishments in the forestry, oil and gas, utility, manufacturing, and transportation sectors (NAICS 1131 through 3399 and 4811 through 4931) required a hazard assessment.
- Half the establishments in wholesale and retail sales (NAICS 4231 through 4543) required a hazard assessment, and
- One-quarter of the establishments in the service industries (NAICS 5111 through 8139) required a hazard assessment.

This results in a one-time cost of \$61.4 million, which converts to an annualized cost of \$8.7 million.

1910.132(f) requires that employees must be trained prior to using PPE in the workplace. The costs for this paragraph, then, are included in the costs for §1910.30.

3.4 COST SUMMARY

Tables 3-10 through 3-12 summarize the cost for each paragraph by industry. Table 3-10 lists the first-year costs. These costs are incurred once in order to bring the employee population into compliance with the new requirements. For the purpose of evaluating impacts, these one-time costs are annualized over a 10-year period at an interest rate of 7 percent. Total first-year costs are \$150 million; the annualized cost is \$21.4 million

Table 3-11 lists the recurring costs, such as inspections and training new employees, for each paragraph by industry. These costs are incurred annually and are estimated at \$138 million. Table 3-12 lists the annual costs to industry, that is, the sum of the recurring costs and the annualized one-time costs. The cost to industry is estimated at \$159 million.

Table 3-10. First Year Costs for Draft Rule by Paragraph and Industry

NAICS	Title	One-Time Compliance Costs								Total
		§1910.22	§1910.23	§1910.24	§1910.27	§1910.28	§1910.29	§1910.30	§1910.140	
		General Requirements	Ladders	Step Bolts and Manhole Steps	Scaffolds	Duty To Have Fall Protection	Fall Protection Systems Criteria and Practices	Training Program	Fall Protection	
11	Agriculture, Forestry, Fishing, and Hunting	\$0	\$4,888	\$0	\$0	\$0	\$0	\$118,883	\$255,213	\$378,985
21	Mining	\$0	\$32,158	\$0	\$0	\$0	\$0	\$812,380	\$249,785	\$1,094,322
22	Utilities	\$0	\$264,601	\$0	\$0	\$0	\$0	\$3,395,451	\$1,223,776	\$4,883,828
31-33	Manufacturing	\$0	\$1,032,811	\$0	\$0	\$0	\$0	\$12,446,644	\$9,656,569	\$23,136,023
42	Wholesale Trade	\$0	\$988,116	\$0	\$0	\$0	\$0	\$11,951,856	\$6,057,789	\$18,997,761
44-45	Retail Trade	\$0	\$1,994,544	\$0	\$0	\$0	\$0	\$10,688,115	\$16,324,931	\$29,007,590
48-49	Transportation	\$0	\$214,632	\$0	\$0	\$0	\$0	\$3,325,959	\$5,835,456	\$9,376,057
51	Information	\$0	\$1,266,796	\$0	\$0	\$0	\$0	\$15,745,319	\$1,291,598	\$18,303,713
52	Finance and Insurance	\$0	\$36,034	\$0	\$0	\$0	\$0	\$414,478	\$1,272,696	\$1,723,209
53	Real Estate	\$0	\$677,782	\$0	\$0	\$0	\$0	\$987,389	\$2,066,125	\$3,731,296
54	Professional, Scientific, and Technical Services	\$0	\$341,878	\$0	\$0	\$0	\$1,722,243	\$4,494,960	\$4,778,911	\$11,337,991
55	Management of Companies and Enterprises	\$0	\$212,882	\$0	\$0	\$0	\$0	\$1,618,641	\$713,153	\$2,544,676
56	Administrative and Support, Waste Management and Remediation Services	\$0	\$1,038,596	\$0	\$0	\$0	\$0	\$4,566,956	\$1,914,397	\$7,519,949
61	Educational Services	\$0	\$66,268	\$0	\$0	\$0	\$0	\$0	\$0	\$66,268
62	Health Care	\$0	\$32,896	\$0	\$0	\$0	\$0	\$829,638	\$3,681,718	\$4,544,252
71	Arts, Entertainment, and Recreation	\$0	\$140,401	\$0	\$0	\$0	\$0	\$0	\$0	\$140,401
72	Accommodation and Food Services	\$0	\$146,820	\$0	\$0	\$0	\$0	\$1,365,409	\$2,816,666	\$4,328,894
81	Other Services	\$0	\$1,619,839	\$0	\$0	\$0	\$0	\$4,076,932	\$3,260,584	\$8,957,355
Total		\$0	\$10,111,940	\$0	\$0	\$0	\$1,722,243	\$76,839,020	\$61,399,367	\$150,072,569

Table 3-11. Recurring Costs for Draft Rule by Paragraph and Industry

NAICS	Title	Recurring Compliance Costs								Total
		§1910.22	§1910.23	§1910.24	§1910.27	§1910.28	§1910.29	§1910.30	§1910.140	
		General Requirements	Ladders	Step Bolts and Manhole Steps	Scaffolds	Duty To Have Fall Protection	Fall Protection Systems Criteria and Practices	Training Program	Fall Protection	
11	Agriculture, Forestry, Fishing, and Hunting	\$50,176	\$9,749	\$0	\$0	\$0	\$0	\$67,934	\$11,188	\$139,047
21	Mining	\$28,119	\$13,564	\$0	\$0	\$0	\$0	\$224,333	\$83,243	\$349,259
22	Utilities	\$71,149	\$86,354	\$3,374,254	\$0	\$0	\$0	\$1,038,196	\$227,237	\$4,797,190
31-33	Manufacturing	\$1,222,602	\$453,722	\$0	\$0	\$0	\$0	\$3,642,109	\$1,198,150	\$6,516,583
42	Wholesale Trade	\$1,960,992	\$515,767	\$0	\$0	\$0	\$0	\$3,774,844	\$1,122,007	\$7,373,609
44-45	Retail Trade	\$2,767,102	\$1,727,133	\$0	\$0	\$0	\$0	\$7,198,744	\$963,475	\$12,656,453
48-49	Transportation	\$595,680	\$169,000	\$0	\$0	\$0	\$0	\$1,005,824	\$292,207	\$2,062,711
51	Information	\$534,145	\$394,287	\$39,009	\$0	\$0	\$0	\$4,246,105	\$1,039,061	\$6,252,607
52	Finance and Insurance	\$444,816	\$267,392	\$0	\$0	\$0	\$0	\$113,666	\$40,143	\$866,017
53	Real Estate	\$297,818	\$335,793	\$0	\$0	\$0	\$0	\$492,275	\$89,268	\$1,215,154
54	Professional, Scientific, and Technical Services	\$1,584,706	\$620,592	\$0	\$0	\$77,469	\$8,244,729	\$2,082,536	\$439,181	\$13,049,212
55	Management of Companies and Enterprises	\$96,745	\$121,193	\$0	\$0	\$0	\$0	\$786,210	\$155,606	\$1,159,754
56	Administrative and Support, Waste Management and Remediation Services	\$518,651	\$605,039	\$0	\$68,608,964	\$0	\$0	\$2,381,116	\$334,612	\$72,448,383
61	Educational Services	\$109,864	\$61,381	\$0	\$0	\$0	\$0	\$23,903	\$0	\$195,148
62	Health Care	\$1,018,491	\$317,368	\$0	\$0	\$0	\$0	\$371,930	\$72,467	\$1,780,255
71	Arts, Entertainment, and Recreation	\$177,842	\$113,890	\$27,865	\$0	\$0	\$0	\$53,206	\$0	\$372,803
72	Accommodation and Food Services	\$661,201	\$260,640	\$0	\$0	\$0	\$0	\$642,934	\$111,779	\$1,676,554
81	Other Services	\$1,096,428	\$1,029,466	\$0	\$0	\$0	\$0	\$2,386,721	\$368,146	\$4,880,762
Total		\$13,236,525	\$7,102,329	\$3,441,128	\$68,608,964	\$77,469	\$8,244,729	\$30,532,586	\$6,547,771	\$137,791,501

Table 3-12. Annualized Costs for Draft Rule by Paragraph and Industry

NAICS	Title	Annualized Compliance Costs								Total
		§1910.22	§1910.23	§1910.24	§1910.27	§1910.28	§1910.29	§1910.30	§1910.140	
		General Requirements	Ladders	Step Bolts and Manhole Steps	Scaffolds	Duty To Have Fall Protection	Fall Protection Systems Criteria and Practices	Training Program	Fall Protection	
11	Agriculture, Forestry, Fishing, and Hunting	\$50,176	\$10,445	\$0	\$0	\$0	\$0	\$84,861	\$47,524	\$193,006
21	Mining	\$28,119	\$18,142	\$0	\$0	\$0	\$0	\$339,998	\$118,807	\$505,066
22	Utilities	\$71,149	\$124,027	\$3,374,254	\$0	\$0	\$0	\$1,521,632	\$401,475	\$5,492,537
31-33	Manufacturing	\$1,222,602	\$600,771	\$0	\$0	\$0	\$0	\$5,414,231	\$2,573,028	\$9,810,632
42	Wholesale Trade	\$1,960,992	\$656,452	\$0	\$0	\$0	\$0	\$5,476,519	\$1,984,500	\$10,078,463
44-45	Retail Trade	\$2,767,102	\$2,011,111	\$0	\$0	\$0	\$0	\$8,720,491	\$3,287,778	\$16,786,482
48-49	Transportation	\$595,680	\$199,558	\$0	\$0	\$0	\$0	\$1,479,367	\$1,123,045	\$3,397,650
51	Information	\$534,145	\$574,651	\$39,009	\$0	\$0	\$0	\$6,487,884	\$1,222,955	\$8,858,644
52	Finance and Insurance	\$444,816	\$272,522	\$0	\$0	\$0	\$0	\$172,679	\$221,346	\$1,111,363
53	Real Estate	\$297,818	\$432,294	\$0	\$0	\$0	\$0	\$632,857	\$383,438	\$1,746,407
54	Professional, Scientific, and Technical Services	\$1,584,706	\$669,267	\$0	\$0	\$77,469	\$8,489,938	\$2,722,517	\$1,119,591	\$14,663,487
55	Management of Companies and Enterprises	\$96,745	\$151,503	\$0	\$0	\$0	\$0	\$1,016,668	\$257,143	\$1,522,058
56	Administrative and Support, Waste Management and Remediation Services	\$518,651	\$752,912	\$0	\$68,608,964	\$0	\$0	\$3,031,348	\$607,179	\$73,519,055
61	Educational Services	\$109,864	\$70,817	\$0	\$0	\$0	\$0	\$23,903	\$0	\$204,583
62	Health Care	\$1,018,491	\$322,051	\$0	\$0	\$0	\$0	\$490,052	\$596,661	\$2,427,254
71	Arts, Entertainment, and Recreation	\$177,842	\$133,880	\$27,865	\$0	\$0	\$0	\$53,206	\$0	\$392,793
72	Accommodation and Food Services	\$661,201	\$281,544	\$0	\$0	\$0	\$0	\$837,337	\$512,809	\$2,292,891
81	Other Services	\$1,096,428	\$1,260,095	\$0	\$0	\$0	\$0	\$2,967,185	\$832,380	\$6,156,088
Total		\$13,236,525	\$8,542,042	\$3,441,128	\$68,608,964	\$77,469	\$8,489,938	\$41,472,733	\$15,289,660	\$159,158,459

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SECTION FOUR

BENEFITS

OSHA's draft standards for Subpart D, Walking and Working Surfaces, and Subpart I, Fall Protection, will produce benefits to the extent compliance with the standard results in the aversion of injuries and fatalities that would not otherwise be prevented through full compliance with the existing OSHA standards. Section 4.1 presents a profile of fall injuries and fatalities that might potentially be preventable by the OSHA standards, while Section 4.2 presents estimates of the annual numbers of injuries and fatalities preventable through compliance with the draft standard, but not otherwise preventable under the existing standard.

4.1 PROFILE OF FALL ACCIDENTS

4.1.1 Fall Fatalities

As shown in Table 4-1, the BLS's Census of Fatal Occupational Injuries (CFOI) reported 287 and 312 fatal falls for 2003 and 2004, respectively, in the industries covered by the draft standard. Over the two-year period, industries in the Professional and Business Services sector (NAICS 54, 55, and 56) accounted for 26.2 percent of the fatal falls, while the Manufacturing and Transportation sectors accounted for 15.3 and 10.1 percent of the fall fatalities, respectively. BLS reported the highest number of fatal falls in NAICS 561, Administrative and Support Services. Although not shown in the table, a large majority of these fatalities occurred in the landscaping services industry (NAICS 561720). The CFOI reported 47 and 44 fatal falls for this industry in 2003 and 2004, respectively. The fatality numbers reported in Table 4-1 also include 18 and 27 fatalities for 2003 and 2004, respectively, resulting from "falls from ship." These accidents are otherwise classified as transportation accidents.

Table 4-1. Fatalities from Falls - General Industry, 2003 & 2004			
CODE	NAICS DESCRIPTION	Number of Fatalities	
		2003	2004
113	Forestry and Logging	3	3
114	Fishing, Hunting and Trapping	0	0
115	Support Activities for Agriculture and Forestry	0	0
211	Oil and Gas Extraction	0	0
213111	Oil and Gas Well Drilling	4	6
221	Utilities	0	9
311	Food Manufacturing	7	7
312	Beverage and Tobacco Product Manufacturing	0	0
313	Textile Mills	0	0
314	Textile Product Mills	0	0
315	Apparel Manufacturing	0	0
316	Leather and Allied Product Manufacturing	0	0
321	Wood Product Manufacturing	3	4
322	Paper Manufacturing	0	0
323	Printing and Related Support Activities	0	0
324	Petroleum and Coal Products Manufacturing	0	0
325	Chemical Manufacturing	0	0
326	Plastics and Rubber Products Manufacturing	0	0
327	Nonmetallic Mineral Product Manufacturing	0	5
331	Primary Metal Manufacturing	0	4
332	Fabricated Metal Product Manufacturing	5	6
333	Machinery Manufacturing	0	3
334	Computer and Electronic Product Manufacturing	0	0
335	Electrical Equipment, Appliance, and Component Manufacturing	0	0
336	Transportation Equipment Manufacturing	6	5
337	Furniture and Related Product Manufacturing	0	0
339	Miscellaneous Manufacturing	0	0
423	Merchant Wholesalers, Durable Goods	4	6
424	Merchant Wholesalers, Nondurable Goods	11	6
425	Wholesale Electronic Markets and Agents and Brokers	0	0
441	Motor Vehicle and Parts Dealers	5	4
442	Furniture and Home Furnishings Stores	0	0
443	Electronics and Appliance Stores	0	0
444	Building Material and Garden Equipment and Supplies Dealers	5	6
445	Food and Beverage Stores	6	6
446	Health and Personal Care Stores	0	3
447	Gasoline Stations	0	0
448	Clothing and Clothing Accessories Stores	0	0
451	Sporting Goods, Hobby, Book, and Music Stores	0	0
452	General Merchandise Stores	0	12
453	Miscellaneous Store Retailers	0	0
454	Nonstore Retailers	0	0
481	Air Transportation	0	0
482	Railroads	0	0

Table 4-1. Fatalities from Falls - General Industry, 2003 & 2004			
CODE	NAICS DESCRIPTION	Number of Fatalities	
		2003	2004
483	Water Transportation	0	0
484	Truck Transportation	17	16
485	Transit and Ground Passenger Transportation	0	0
486	Pipeline Transportation	0	0
487	Scenic and Sightseeing Transportation	0	0
488	Support Activities for Transportation	0	5
492	Couriers and Messengers	0	0
493	Warehousing and Storage	4	8
511	Publishing Industries (except Internet)	0	0
512	Motion Picture and Sound Recording Industries	0	0
515	Broadcasting (except Internet)	0	0
516	Internet Publishing and Broadcasting	0	0
517	Telecommunications	3	0
518	Internet Service Providers, Web Search Portals, and Data Processing Services	0	0
519	Other Information Services	0	0
521	Monetary Authorities - Central Bank	0	0
522	Credit Intermediation and Related Activities	0	0
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	0	0
524	Insurance Carriers and Related Activities	0	0
525	Funds, Trusts, and Other Financial Vehicles	0	0
531	Real Estate	10	10
532	Rental and Leasing Services	0	0
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	0	0
541	Professional, Scientific, and Technical Services	8	8
551	Management of Companies and Enterprises	0	0
561	Administrative and Support Services	57	64
562	Waste Management and Remediation Services	4	4
611	Educational Services	4	5
621	Ambulatory Health Care Services	4	0
622	Hospitals	5	3
623	Nursing and Residential Care Facilities	6	3
624	Social Assistance	0	0
711	Performing Arts, Spectator Sports, and Related Industries	3	5
712	Museums, Historical Sites, and Similar Institutions	0	0
713	Amusement, Gambling, and Recreation Industries	7	4
721	Accommodation	6	5
722	Food Services and Drinking Places	8	7
811	Repair and Maintenance	9	7
812	Personal and Laundry Services	3	4
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	5	10
	Industry not specified [a]	65	49
	Total	287	312

Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 2002 and 2003.

Note: Zero fatalities mean no fatality data were available.

[a] Also includes "fall from ship" fatalities otherwise classified as transportation accidents.

Table 4-2 shows, for the eleven-year period 1992 to 2002, the breakdown of fall fatalities by type of fall. As shown, falls to a lower level (as opposed to falls on the same level) accounted for about 78 percent of the fatalities. On an overall average basis, falls to a lower level, accounted for 217 of the 279 fatal falls per year that occurred in general industry establishments. On a sector-by-sector basis, falls to a lower level as a percent of all fatal falls ranged from 59 and 71 percent for the Retail Trade and Services sectors, respectively, to 95 percent for the Agricultural Services sector. As the table also shows fatal falls from ladders averaged 41 per year over the ten-year period, while falls from scaffolds averaged 15 per year. Although not shown in this table, the category of “other” falls to a lower level includes the following types of falls: fall from floor, dock, or ground level; fall from nonmoving vehicle; fall from building girders or other structural steel; and fall to lower level, n.e.c.

4.1.2 Fall Injuries

Table 4-3 shows on a 3-digit NAICS basis, the lost-workday injury rate for the two major categories of falls: falls to a lower level and falls to the same level. For those 3-digit industries where the BLS reported statistics, the combined fall injury rate ranges from a low of 4.9 cases per 10,000 workers in NAICS 523 (Securities, Commodity Contracts, and Other Financial Investments and Related Activities) to a high of 81.9 per 10,000 workers in NAICS 484 (Truck Transportation). Twenty-five industries had fall injury rates in excess of 30.0 cases per 10,000 workers, while 19 had fall injury rates between 20.0 and 30.0 cases per 10,000 workers.

Table 4-4 shows lost workday fall-related injury rates by detailed type of fall, disaggregated by major industry sector covered by the draft standard. These statistics show that, unlike fall fatalities, falls to a lower level represent a relatively small share of non-fatal falls. For example, in manufacturing, falls to the same level account for 67 percent of all falls, while falls to a lower level accounted for only 28 percent. For service providing industries, falls to the same level account for 71 percent of all falls. The majority of accidents in this are characterized as a fall to a floor, walkway, or other surface.

Table 4-2. Fatal Falls by Type and Industry Sector, 1992 to 2002

Industry Sector	All Falls	Falls to a Lower Level				
		Total	From a Ladder	From a Roof	From a Scaffold	Other
Total Fatal Falls, 1992 to 2002						
Agricultural services	366	348	47	11	3	287
Manufacturing	665	535	80	64	75	316
Transportation, communications, electric, gas, and sanitary services	438	365	55	9	8	293
Wholesale trade	196	163	22	10	0	131
Retail trade	318	188	73	9	0	106
Finance, insurance, and real estate	138	111	37	14	0	60
Services	944	672	141	84	77	370
Total	3,065	2,382	455	201	163	1,563
Average Fatal Falls per Year						
Agricultural services	33	32	4	1	0	26
Manufacturing	60	49	7	6	7	29
Transportation, communications, electric, gas, and sanitary services	40	33	5	1	1	27
Wholesale trade	18	15	2	1	0	12
Retail trade	29	17	7	1	0	10
Finance, insurance, and real estate	13	10	3	1	0	5
Services	86	61	13	8	7	34
Total	279	217	41	18	15	142

Source: BLS, Census of Fatal Occupational Injuries, 1992 – 2002

Note: Sectors are based on SIC industry classifications

Table 4-3. Injuries From Falls - General Industry, 2003 (Lost Work Day Cases per 10,000 Workers)

Table 4-3. Injuries From Falls - General Industry, 2003 (Lost Work Day Cases per 10,000 Workers)						
CODE	NAICS DESCRIPTION	Falls To Lower Level	Falls On Same Level	All Falls	Industry Rank	Estimated Number of Falls
113	Forestry and Logging	18.5	35.4	53.9	9	409
114	Fishing, Hunting and Trapping	NA	NA	NA	NA	NA
115	Support Activities for Agriculture and Forestry	13.5	16.2	29.7	27	285
211	Oil and Gas Extraction	NA	NA	NA	NA	NA
213111	Oil and Gas Well Drilling	3.8	7.1	10.9	67	191
221	Utilities	6.8	15.3	22.1	39	1,494
311	Food Manufacturing	10.8	23.9	34.7	22	5,191
312	Beverage and Tobacco Product Manufacturing	12.5	38.2	50.7	10	951

Table 4-3. Injuries From Falls - General Industry, 2003 (Lost Work Day Cases per 10,000 Workers)

CODE	NAICS DESCRIPTION	Falls To Lower Level	Falls On Same Level	All Falls	Industry Rank	Estimated Number of Falls
313	Textile Mills	3.6	14.2	17.8	49	276
314	Textile Product Mills	3.5	12.9	16.4	54	418
315	Apparel Manufacturing	2.9	13	15.9	56	483
316	Leather and Allied Product Manufacturing	NA	11.8	11.8	65	52
321	Wood Product Manufacturing	12.2	17	29.2	28	1,530
322	Paper Manufacturing	6.8	14.3	21.1	42	1,018
323	Printing and Related Support Activities	2.5	11	13.5	62	945
324	Petroleum and Coal Products Manufacturing	6.7	8.3	15	57	148
325	Chemical Manufacturing	5.3	10.9	16.2	55	1,363
326	Plastics and Rubber Products Manufacturing	5.1	16.8	21.9	40	2,018
327	Nonmetallic Mineral Product Manufacturing	14.1	18.5	32.6	23	1,525
331	Primary Metal Manufacturing	5.2	18.1	23.3	36	1,118
332	Fabricated Metal Product Manufacturing	6	15.9	21.9	41	3,325
333	Machinery Manufacturing	4.9	9.7	14.6	58	1,649
334	Computer and Electronic Product Manufacturing	1.7	6.7	8.4	71	999
335	Electrical Equipment, Appliance, and Component Manufacturing	4.3	15	19.3	45	888
336	Transportation Equipment Manufacturing	6.1	13.1	19.2	46	3,085
337	Furniture and Related Product Manufacturing	5.7	11.1	16.8	52	948
339	Miscellaneous Manufacturing	2.2	11.7	13.9	59	984
423	Merchant Wholesalers, Durable Goods	7.8	9.7	17.5	50	5,797
424	Merchant Wholesalers, Nondurable Goods	16.9	20.8	37.7	17	8,624
425	Wholesale Electronic Markets and Agents and Brokers	NA	NA	NA	NA	NA
441	Motor Vehicle and Parts Dealers	7.3	20.1	27.4	31	5,264
442	Furniture and Home Furnishings Stores	16.7	11	27.7	30	1,553
443	Electronics and Appliance Stores	3.6	6.1	9.7	68	407
444	Building Material and Garden Equipment and Supplies Dealers	10.9	16.4	27.3	33	3,248
445	Food and Beverage Stores	7.2	29.9	37.1	19	10,699
446	Health and Personal Care Stores	5.4	15.2	20.6	44	1,998
447	Gasoline Stations	6.9	23	29.9	26	2,800
448	Clothing and Clothing Accessories Stores	7.5	11.3	18.8	48	2,759
451	Sporting Goods, Hobby, Book, and Music Stores	3.4	8.6	12	64	724
452	General Merchandise Stores	9.3	32.1	41.4	14	10,454
453	Miscellaneous Store Retailers	8.9	12	20.9	43	1,712
454	Nonstore Retailers	13.4	25.2	38.6	16	2,207
481	Air Transportation	16	51.5	67.5	3	3,603
482	Railroads	38.3	1.3	39.6	15	NA
483	Water Transportation	NA	NA	NA	NA	NA
484	Truck Transportation	36	45.9	81.9	1	11,657

CODE	NAICS DESCRIPTION	Falls To Lower Level	Falls On Same Level	All Falls	Industry Rank	Estimated Number of Falls
485	Transit and Ground Passenger Transportation	14.6	44.2	58.8	6	2,340
486	Pipeline Transportation	NA	5.1	5.1	73	21
487	Scenic and Sightseeing Transportation	NA	NA	NA	NA	NA
488	Support Activities for Transportation	17.2	28.5	45.7	11	2,306
492	Couriers and Messengers	21.8	51.1	72.9	2	3,894
493	Warehousing and Storage	10.5	33.2	43.7	12	2,374
511	Publishing Industries (except Internet)	3.3	10.6	13.9	60	1,459
512	Motion Picture and Sound Recording Industries	2.8	8.4	11.2	66	318
515	Broadcasting (except Internet)	6.6	12.4	19	47	544
516	Internet Publishing and Broadcasting	NA	NA	NA	NA	NA
517	Telecommunications	10.9	17.3	28.2	29	3,991
518	Internet Service Providers, Web Search Portals, and Data Processing Services	0.5	7.4	7.9	72	374
519	Other Information Services	NA	13.5	13.5	61	75
521	Monetary Authorities - Central Bank	NA	NA	NA	NA	NA
522	Credit Intermediation and Related Activities	3.3	6.1	9.4	69	2,927
523	Securities, Commodity Contracts, and Other Financial Investments and Related Activities	0.9	4	4.9	74	442
524	Insurance Carriers and Related Activities	3.3	8.9	12.2	63	2,920
525	Funds, Trusts, and Other Financial Vehicles	NA	NA	NA	NA	NA
531	Real Estate	17.8	14.8	32.6	24	4,526
532	Rental and Leasing Services	10.3	12.9	23.2	37	1,456
533	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	NA	NA	NA	NA	NA
541	Professional, Scientific, and Technical Services	2.8	6	8.8	70	6,459
551	Management of Companies and Enterprises	11	24.1	35.1	21	10,106
561	Administrative and Support Services	NA	NA	NA	NA	NA
562	Waste Management and Remediation Services	29.2	34.5	63.7	4	2,167
611	Educational Services	5.6	18.1	23.7	35	6,581
621	Ambulatory Health Care Services	3.8	12.9	16.7	53	8,563
622	Hospitals	5.5	31.6	37.1	20	19,328
623	Nursing and Residential Care Facilities	5.7	50.8	56.5	7	16,645
624	Social Assistance	9.1	32.9	42	13	9,192
711	Performing Arts, Spectator Sports, and Related Industries	8.2	19.1	27.3	32	1,077
712	Museums, Historical Sites, and Similar Institutions	28.8	32.4	61.2	5	734
713	Amusement, Gambling, and Recreation Industries	7.4	29.9	37.3	18	4,918
721	Accommodation	11.6	43.6	55.2	8	9,957
722	Food Services and Drinking Places	2.7	29.6	32.3	25	27,894

CODE	NAICS DESCRIPTION	Falls To Lower Level	Falls On Same Level	All Falls	Industry Rank	Estimated Number of Falls
811	Repair and Maintenance	9.5	12.7	22.2	38	2,896
812	Personal and Laundry Services	5.5	11.9	17.4	51	2,279
813	Religious, Grantmaking, Civic, Professional, and Similar Organizations	5.9	20.2	26.1	34	7,184

Source: Bureau of Labor Statistics. Survey of Occupational Injuries and Illnesses: Case and Demographic Information. 2003.

Table 4-4
Falls by Type and Sector, 2003
(Lost Work Day Cases per 10,000 Workers)

Event Code	Type of Fall	Private Industry	Manufacturing	Trade, Transportation, and Utilities	Information	Financial Activities	Professional and Business Services	Education and Health Services	Leisure and Hospitality	Other Services
10	Fall, unspecified	0.3	0.3	0.3	0.1	[a]	0.1	0.2	0.1	0.2
11	Fall to lower level	9.4	6.0	11.6	6.0	6.0	6.6	5.5	5.1	7.1
110	Fall to lower level, unspecified	0.1	0.1	0.1	[b]	[b]	0.1	[a]	0.1	[b]
111	Fall down stairs or steps	2.3	1.5	2.0	1.8	2.8	2.3	3.1	2.6	2.3
112	Fall from floor, dock, or ground	0.6	0.4	1.1	0.2	0.1	0.3	0.1	0.2	0.4
1120	Fall from floor, dock, or ground level, unspecified	0.1	0.1	0.5	[b]	[b]	[b]	[a]	[b]	[b]
1121	Fall through existing floor opening	0.1	0.1	0.1	[b]	[b]	[b]	[b]	[b]	0.3
1122	Fall through floor surface	0.1	0.1	0.1	[b]	[b]	0.1	[b]	[b]	[b]
1123	Fall from loading dock	0.1	[a]	0.3	[b]	[b]	[b]	[a]	[b]	[b]
1124	Fall from ground level to lower level	0.1	[a]	0.1	[b]	[b]	0.2	[b]	0.1	[b]
1129	Fall from floor, dock, or ground level, n.e.c.	[b]	0.1	0.1	0.1	[b]	[b]	[b]	[b]	[b]
113	Fall from ladder	2.5	1.4	2.6	2.4	1.5	1.6	0.6	0.7	1.5
114	Fall from piled or stacked material	2.5	0.1	0.2	[b]	[b]	[b]	[b]	[b]	[b]
115	Fall from roof	0.1	[a]	0.1	[b]	0.1	[b]	[b]	[b]	0.2
1150	Fall from roof, unspecified	0.3	[a]	[a]	[b]	[a]	[b]	[b]	[b]	[b]
1151	Fall through existing roof opening	0.1	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
1152	Fall through roof surface	[a]	[b]	[a]	[b]	[b]	[b]	[b]	[b]	[b]
1153	Fall through skylight	[a]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
1154	Fall from roof edge	0.1	[b]	[a]	[b]	[b]	[b]	[b]	[b]	[b]
1159	Fall from roof, n.e.c.	[a]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
116	Fall from scaffold, staging	0.4	0.2	0.1	[b]	[b]	0.2	[b]	[b]	0.2
117	Fall from building girders or other structural members	[a]	[a]	[a]	[b]	[b]	[b]	[b]	[b]	[b]
118	Fall from nonmoving vehicle	1.8	1.3	4.2	0.6	0.7	0.9	0.3	0.3	1.6
119	Fall to lower level, n.e.c.	1.4	1.1	1.2	0.9	0.8	1.1	1.3	1.1	0.9
12	Jump to lower level	0.6	0.7	0.7	0.1	0.3	0.3	0.1	0.3	0.5
120	Jump to lower level, unspecified	[a]	[a]	0.1	[b]	[b]	[b]	[b]	[b]	[b]
121	Jump from scaffold, platform, ladder, or other structure	0.1	0.1	0.1	[b]	[b]	[b]	[b]	[b]	[b]
122	Jump from structure, structural member	0.1	0.1	[a]	[b]	[b]	[b]	[a]	0.1	[b]
123	Jump from nonmoving vehicle	0.2	0.3	0.3	[b]	0.1	0.2	[b]	0.1	0.3
129	Jump to lower level, n.e.c.	0.2	0.1	0.2	[b]	0.2	[b]	[b]	0.1	[b]
13	Fall on same level	19.9	14.4	22.5	13.4	8.6	13.4	27.9	31.7	14.6
130	Fall on same level, unspecified	0.4	0.3	0.5	0.1	0.2	0.4	0.4	0.4	[b]
131	Fall to floor, walkway, or other surface	17.0	11.6	18.8	11.9	7.6	11.7	25.6	28.5	13.0
132	Fall onto or against objects	2.3	2.3	2.9	1.4	0.7	1.2	1.8	2.4	1.4
139	Fall on same level, n.e.c.	0.2	0.1	0.2	[b]	0.1	0.1	0.1	0.4	0.2
19	Fall, n.e.c.	0.1	0.1	0.1	[b]	0.1	[b]	0.1	0.1	[b]
1	All falls	30.3	21.4	35.3	19.7	15.1	20.5	33.8	37.3	22.5

Source: Bureau of Labor Statistics. *Survey of Occupational Injuries and Illnesses: Case and Demographic Information*. 2003.

[a] Less than 1.0 cases per 10,000 workers

[b] Data not available

Among falls accidents addressed by the OSHA draft standard, the annual risk of a fall to a lower level ranges from 5.1 per 10,000 workers for the Leisure and Hospitality sector to

11.6 per 10,000 for the Trade, Transportation, and Utility sector. Among specific types of falls within this category, falls from ladders represent 6.5 percent of all falls in manufacturing as reflected in an injury rate of 1.4 cases per 10,000 workers. Among other sectors, the injury rate from falls from ladders ranges from 0.6 per 10,000 workers in the Education and Health Services sector to 2.6 per 10,000 in the Trade, Transportation, and Utility sector. In several sectors, falls down stairs or steps represent a major share of injuries from falls to a lower level. This type of fall is not likely to be prevented by the OSHA standard. Falls from floor openings, loading docks, roofs, and scaffolding that are directly addressed by the draft standards make up much smaller shares of nonfatal fall accidents.

4.2 FATALITIES AND INJURIES PREVENTABLE BY THE DRAFT SUBPART D AND I STANDARDS

4.2.1 Fatalities Prevented

The requirements contained in OSHA's draft Subpart D and I standards concern safety measures designed to prevent accidents such as falls from ladders, scaffolds, unguarded floor openings, unprotected platform edges, and so forth. Falls from these types of accidents are classified as "falls to lower level" as opposed to "falls on the same level." The latter type of accident might be the result of slips and trips from floor obstructions or wet or slippery working surface conditions. Table 4-5 shows the estimated number of annual fatalities from falls in General Industry. The base number, 300 fatalities per year, is the average of the number of falls in 2003 and 2004 as shown in Table 4-1. ERG allocated this total among the different fall categories based on overall fatal fall accident experience from 1992 to 2002 as derived from the BLS Census of Occupational Fatalities and summarized in Table 4-2. On this basis, an estimated 213 fatalities per year result from falls to lower level, while the remaining 87 fatalities result from falls on the same level or other types of falls.

For each category of fall, ERG judged the extent to which the draft Subpart D and I standards would be effective in preventing that type of accident. Because the existing standard has been in place for over 30 years and since the inspection results show that compliance with most paragraphs is quite high (see Table 3-1), ERG used the existing level of fatalities as the base against which to judge the preventability of the draft standards. Furthermore, a comparison of the draft standards to the existing standards shows that the major changes and additions concern requirements for training and inspections, rather than requirements for additional or more stringent engineering or work practice controls (see Section Three).

Studies have shown that well-designed training programs are an effective means to improve workplace safety. A NIOSH review of the literature concerning the benefits of training-related workplace interventions reported that the findings of such studies were nearly unanimous in showing that improved and expanded training increases hazard awareness and promotes the adoption of safe work practices. While the training literature documents training effectiveness in increasing qualitative measures of workplace safety, the quantitative relationship between increased training and reduced accident rates remains uncertain (Cohen and Colligan, 1988). For this reason, ERG judged the incremental benefits from the draft standards would be modest.

Table 4-5 shows ERG's preventability judgments for each type of fall. Since much of the Subpart D standard focuses on ladder safety, ERG estimated the highest preventability impact of 15 percent for accidents involving falls from ladders. For other types of accidents directly addressed by the standards (e.g., falls from floor or dock), ERG estimated a moderately high preventability impact of 10 percent. For types of fall accidents where the standards are only partially relevant (e.g., falls down stairs or steps), ERG estimated a relatively low impact

(5 percent). Several classes of falls are not specifically defined, and for these, ERG estimated a very low level of preventability (2.5 percent). Based on the assumptions, ERG estimated that the draft standard might prevent 15 fall fatalities a year or 5.0 percent of the yearly total fatal falls in General Industry.

4.2.2 Injuries Prevented

ERG used the same methodology to estimate the number of serious fall injuries that might be prevented by the draft standards. Table 4-6 shows the distribution of lost-workday fall injuries by type for General Industry. This distribution is based on 1992 through 2001 data for fall injuries involving days away from work, as collected by BLS. These data show that 26.6 percent of nonfatal fall-related injuries are due to falls to a lower level, while 69.7 percent are the result of falls to the same level. ERG estimated the annual number of nonfatal fall injuries by applying BLS overall fall injury rates (see Table 4-4) to the total employment levels in General Industry sectors (see Table 1-1). These calculations resulted in an estimated 299,522 lost-workday fall injuries per year. Using the same preventability estimates as were applied to fatal accidents, ERG estimated that 4,877 serious fall injuries might be prevented annually by compliance with the draft Subpart D and I standards.

Table 4--5

Fatalities Potentially Prevented by the Subparts D and I Draft Standards

Falls by Type		Distribution of Fatal Falls by Type		Estimated Annual Number of Fatal Falls by Type [a]		Incremental Preventability of Draft Standard		Annual Fatalities Potentially Prevented by Draft Standard	
All Falls		100.0%		300					
	Fall to lower level		71.1%		213				
	Fall down stairs or steps			3.0%		9	Low	5.0%	0.5
	Fall from floor, dock, or ground level			3.6%		11	High	10.0%	1.1
	Fall from ladder			13.2%		40	High	15.0%	6.0
	Fall from piled or stacked material			0.1%		0	High	10.0%	0.0
	Fall from roof			6.3%		19	High	10.0%	1.9
	Fall from scaffold, staging			6.1%		18	High	10.0%	1.8
	Fall from building girders or other structural steel			0.6%		2	High	10.0%	0.2
	Fall from nonmoving vehicle			11.2%		34	No	0.0%	0.0
	Fall to lower level, n.e.c.			16.4%		49	Uncertain	2.5%	1.2
	Fall to lower level, unspecified			10.4%		31	Uncertain	2.5%	0.8
	Falls on same level		16.1%		48		Very low	0.0%	0.0
	Fall from ship, boat, n.e.c.		9.8%		29		Low	5.0%	1.5
	Other falls		3.0%		9		Very low	0.0%	0.0
	Totals		100.0%	71.1%	300	213			15

[a] Source: BLS, Census of Fatal Occupational Injuries, 1992-2004.

Table 4-6

Nonfatal Lost-Workday Injuries Potentially Prevented by the Subparts D and I Draft Standards

Falls by Type	Distribution of Nonfatal Falls by Type		Estimated Annual Number of Nonfatal Falls by Type [a]		Incremental Preventability of Draft Standard		Annual Nonfatal Injuries Potentially Prevented by Draft Standard
All Falls	100.0%		299,522				
Fall to lower level	26.6%		79,712				
Fall down stairs or steps		8.0%		24,010	Low	5.0%	1,201
Fall from floor, dock, or ground level		1.6%		4,917	High	10.0%	492
Fall from ladder		5.4%		16,269	High	15.0%	2,440
Fall from piled or stacked material		0.3%		1,035	High	10.0%	103
Fall from roof		0.4%		1,066	High	10.0%	107
Fall from scaffold, staging		0.5%		1,474	High	10.0%	147
Fall from building girders or other structural steel		0.1%		223	High	10.0%	22
Fall from nonmoving vehicle		5.4%		16,065	No	0.0%	0
Fall to lower level, n.e.c.		4.4%		13,319	Uncertain	2.5%	333
Fall to lower level, unspecified		0.4%		1,215	Uncertain	2.5%	30
Falls on same level	69.7%		208,668		Very low	0.0%	0
Fall from ship, boat, n.e.c.	0.011%		33		Low	5.0%	2
Other falls	3.7%		11,110		Very low	0.0%	0
Totals	100.0%	26.6%	299,522	79,593			4,877

[a] Source: Bureau of Labor Statistics. *Survey of Occupational Injuries and Illnesses: Case and Demographic Information*. 1992-2004.

4.3 REFERENCES

Cohen, Alexander and Michael Colligan. 1998. *Assessing Occupational Safety and Health Training: A Literature Review*. DDHS (NIOSH) Publication 98-145. June.

SECTION FIVE

ECONOMIC IMPACTS

ERG examined the potential impacts of the draft rule two ways—as a percentage of revenues and as a percentage of profits. The estimated average receipts and profits by establishment and industry are presented in the Table 2-1. ERG estimated 2003 receipts based on 2002 receipts and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from U.S. Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming that the ratio of receipts to payroll remained unchanged between 2002 and 2003. ERG estimated profits from ratios of net income to total receipts as reported for 2003 by the U.S. Internal Revenue Service, Corporation Source Book. Profit data were not available at disaggregated levels for all industries; therefore profit rates at more highly aggregated levels were used for such industries.

5.1 ECONOMIC IMPACTS – ALL ESTABLISHMENTS

Table 5-1 summarizes the impact findings for all General Industry establishments covered by the draft rule. The first two columns of numbers present the minimum and maximum average cost per establishment by industry sector. The average cost per establishment for all sectors ranges from \$1 to \$443. The four industries with the highest average cost per establishment are all in manufacturing: services to buildings and dwellings (NAICS 5617, \$443), motor vehicle manufacturing (NAICS 3361, \$385), water, sewage, and other systems (NAICS 2213, \$379), and pulp, paper, and paperboard mills (NAICS 3221, \$310).

The second pair of numbers lists costs as a percentage of revenue. Costs as a percentage of revenues do not exceed eight hundredths of one percent (i.e., 0.08 percent) for any industry examined. The industry with the highest percentage of costs to revenues is services to buildings and dwellings (NAICS 5617). This industry bears the entire costs of 10 year safety certifications of anchorages for window washing (§1910.27(b)(20)(iv)).

The rightmost pair of numbers lists costs as a percentage of profits. Services to buildings and dwellings (NAICS 5617) also has the highest cost as a percentage of profits (2.3 percent). All other industries show lower impacts.

Table 5-2 shows the detailed economic impact estimates presented for all 4-digit NAICS industries covered by the draft Subpart D and I standards.

Table 5-1. Summary of Cost Impacts for Draft Subpart D & I Standards

NAICS	Sector Title	Average Cost per Establishment		Average Cost to Revenues		Average Cost to Profits	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
11	Agriculture, Forestry, Fishing, and Hunting	\$4	\$21	0.00%	0.00%	0.01%	0.06%
21	Mining*	\$67	\$67	0.00%	0.00%	0.00%	0.00%
22	Utilities	\$107	\$379	0.00%	0.03%	0.02%	0.52%
31-33	Manufacturing	\$8	\$385	0.00%	0.00%	0.00%	0.05%
42	Wholesale Trade	\$8	\$42	0.00%	0.00%	0.00%	0.02%
44-45	Retail Trade	\$3	\$62	0.00%	0.00%	0.00%	0.12%
48-49	Transportation	\$3	\$107	0.00%	0.00%	0.00%	0.08%
51	Information	\$3	\$283	0.00%	0.00%	0.00%	0.07%
52	Finance and Insurance	\$1	\$17	0.00%	0.00%	0.00%	0.01%
53	Real Estate	\$4	\$12	0.00%	0.00%	0.00%	0.03%
54	Professional, Scientific, and Technical Services	\$4	\$237	0.00%	0.01%	0.01%	0.28%
55	Management	\$32	\$32	0.00%	0.00%	0.00%	0.00%
56	Administrative and Support, Waste Management and Remediation Services	\$7	\$443	0.00%	0.09%	0.01%	2.29%
61	Educational Services	\$2	\$15	0.00%	0.00%	0.00%	0.01%
62	Health Care	\$2	\$57	0.00%	0.00%	0.00%	0.01%
71	Arts, Entertainment, and Recreation	\$2	\$8	0.00%	0.00%	0.00%	0.01%
72	Accommodation and Food Services	\$2	\$13	0.00%	0.00%	0.01%	0.03%
81	Other Services	\$2	\$26	0.00%	0.00%	0.01%	0.09%

*Includes oil and gas extraction.

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
1131	Timber Tract Operations	\$2,496,758	4.78%	*	\$119,370	\$11,240	\$18.10	0.00%	0.02%
1132	Forest Nurseries and Gathering of Forest Products	\$947,861	4.78%	*	\$45,317	\$6,457	\$20.43	0.00%	0.05%
1133	Logging	\$890,806	4.78%	*	\$42,590	\$128,585	\$11.71	0.00%	0.03%
1141	Fishing	\$821,789	5.64%	*	\$46,362	\$7,416	\$3.63	0.00%	0.01%
1142	Hunting and Trapping	\$763,689	5.64%	*	\$43,084	\$1,569	\$3.63	0.00%	0.01%
1153	Support Activities for Forestry	\$800,722	4.78%	*	\$38,283	\$37,739	\$21.42	0.00%	0.06%
2111	Oil and Gas Extraction	\$20,650,119	13.19%		\$2,723,335	\$505,066	\$67.41	0.00%	0.00%
2211	Electric Power Generation, Transmission and Distribution	\$34,499,569	2.49%		\$860,212	\$3,010,356	\$301.46	0.00%	0.04%
2212	Natural Gas Distribution	\$26,038,235	2.23%		\$580,015	\$280,841	\$106.95	0.00%	0.02%
2213	Water, Sewage and Other Systems	\$1,453,179	5.00%		\$72,689	\$2,201,340	\$379.48	0.03%	0.52%
3111	Animal Food Manufacturing	\$16,682,324	2.41%		\$402,204	\$29,953	\$16.59	0.00%	0.00%
3112	Grain and Oilseed Milling	\$57,316,087	4.99%	*	\$2,862,753	\$28,243	\$34.15	0.00%	0.00%
3113	Sugar and Confectionery Product Manufacturing	\$13,255,191	6.80%		\$901,105	\$37,911	\$20.29	0.00%	0.00%
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	\$31,705,242	5.19%		\$1,646,717	\$62,697	\$35.20	0.00%	0.00%
3115	Dairy Product Manufacturing	\$41,739,661	2.25%		\$941,000	\$58,368	\$34.72	0.00%	0.00%
3116	Animal Slaughtering and Processing	\$31,737,287	2.52%		\$800,699	\$145,480	\$36.33	0.00%	0.01%
3117	Seafood Product Preparation and Packaging	\$12,481,880	4.99%	*	\$623,429	\$14,822	\$19.40	0.00%	0.00%
3118	Bakeries and Tortilla Manufacturing	\$4,580,337	11.05%		\$506,163	\$165,217	\$14.35	0.00%	0.00%
3119	Other Food Manufacturing	\$19,857,565	4.20%		\$833,421	\$72,024	\$23.77	0.00%	0.00%
3121	Beverage Manufacturing	\$22,127,452	10.23%	*	\$2,263,669	\$70,130	\$22.75	0.00%	0.00%
3122	Tobacco Manufacturing	\$299,723,117	11.27%		\$33,777,058	\$13,174	\$101.33	0.00%	0.00%
3131	Fiber, Yarn, and Thread Mills	\$17,086,515	5.99%	*	\$1,022,735	\$22,353	\$39.28	0.00%	0.00%
3132	Fabric Mills	\$12,415,874	5.99%	*	\$743,168	\$50,451	\$30.50	0.00%	0.00%
3133	Textile and Fabric Finishing and Fabric Coating Mills	\$7,148,330	5.99%	*	\$427,872	\$25,331	\$15.67	0.00%	0.00%
3141	Textile Furnishings Mills	\$8,360,352	12.75%	*	\$1,065,919	\$43,320	\$14.93	0.00%	0.00%
3149	Other Textile Product Mills	\$2,308,627	12.75%	*	\$294,343	\$44,664	\$10.18	0.00%	0.00%
3151	Apparel Knitting Mills	\$6,685,606	3.79%		\$253,393	\$14,226	\$18.10	0.00%	0.01%
3152	Cut and Sew Apparel Manufacturing	\$2,989,692	5.13%		\$153,251	\$87,609	\$7.72	0.00%	0.01%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
3159	Apparel Accessories and Other Apparel Manufacturing	\$2,433,340	4.40%		\$107,093	\$11,150	\$8.94	0.00%	0.01%
3161	Leather and Hide Tanning and Finishing	\$7,648,781	5.85%	*	\$447,361	\$3,671	\$14.06	0.00%	0.00%
3162	Footwear Manufacturing	\$8,239,610	5.85%	*	\$481,917	\$5,674	\$16.54	0.00%	0.00%
3169	Other Leather and Allied Product Manufacturing	\$2,280,340	5.85%	*	\$133,372	\$7,654	\$8.36	0.00%	0.01%
3211	Sawmills and Wood Preservation	\$6,100,709	3.52%	*	\$214,707	\$62,995	\$14.90	0.00%	0.01%
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	\$10,783,434	3.52%	*	\$379,510	\$48,435	\$25.41	0.00%	0.01%
3219	Other Wood Product Manufacturing	\$3,941,816	3.52%	*	\$138,727	\$156,872	\$14.70	0.00%	0.01%
3221	Pulp, Paper, and Paperboard Mills	\$109,670,516	0.79%		\$862,628	\$197,032	\$310.29	0.00%	0.04%
3222	Converted Paper Product Manufacturing	\$17,413,320	5.03%		\$876,129	\$323,964	\$67.20	0.00%	0.01%
3231	Printing and Related Support Activities	\$2,581,535	4.02%	*	\$103,671	\$449,932	\$12.49	0.00%	0.01%
3241	Petroleum and Coal Products Manufacturing	\$94,667,522	6.74%	*	\$6,377,590	\$336,286	\$146.28	0.00%	0.00%
3251	Basic Chemical Manufacturing	\$45,814,285	4.96%		\$2,273,920	\$429,619	\$182.58	0.00%	0.01%
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	\$61,595,034	3.50%		\$2,157,347	\$196,142	\$185.21	0.00%	0.01%
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	\$20,288,489	9.81%	*	\$1,989,587	\$85,302	\$93.23	0.00%	0.01%
3254	Pharmaceutical and Medicine Manufacturing	\$86,131,442	13.83%		\$11,907,751	\$198,357	\$108.69	0.00%	0.00%
3255	Paint, Coating, and Adhesive Manufacturing	\$14,733,327	5.16%		\$760,719	\$62,137	\$31.65	0.00%	0.00%
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	\$28,892,804	9.92%		\$2,865,250	\$117,966	\$51.13	0.00%	0.00%
3259	Other Chemical Product and Preparation Manufacturing	\$15,161,960	2.92%		\$442,655	\$142,958	\$50.60	0.00%	0.01%
3261	Plastics Product Manufacturing	\$10,804,860	3.46%		\$373,496	\$274,812	\$21.72	0.00%	0.01%
3262	Rubber Product Manufacturing	\$14,021,586	1.96%		\$275,383	\$71,144	\$30.06	0.00%	0.01%
3271	Clay Product and Refractory Manufacturing	\$5,238,061	2.64%		\$138,314	\$63,843	\$40.59	0.00%	0.03%
3272	Glass and Glass Product Manufacturing	\$9,966,037	2.84%		\$282,796	\$122,958	\$56.87	0.00%	0.02%
3273	Cement and Concrete Product Manufacturing	\$4,810,726	4.46%		\$214,436	\$295,196	\$31.43	0.00%	0.02%
3274	Lime and Gypsum Product Manufacturing	\$14,966,203	3.75%	*	\$560,814	\$21,089	\$56.54	0.00%	0.01%
3279	Other Nonmetallic Mineral Product Manufacturing	\$5,130,470	3.75%	*	\$192,249	\$93,458	\$31.71	0.00%	0.02%
3311	Iron and Steel Mills and Ferroalloy Manufacturing	\$55,754,468	1.13%		\$631,987	\$179,990	\$205.47	0.00%	0.03%
3312	Steel Product Manufacturing from Purchased Steel	\$17,219,005	2.11%	*	\$364,108	\$64,524	\$77.93	0.00%	0.02%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
3313	Alumina and Aluminum Production and Processing	\$43,845,031	3.83%		\$1,681,183	\$78,246	\$133.75	0.00%	0.01%
3314	Nonferrous Metal (except Aluminum) Production and Processing	\$21,080,740	2.11%	*	\$445,767	\$80,178	\$80.10	0.00%	0.02%
3315	Foundries	\$10,407,943	1.80%		\$187,312	\$92,857	\$38.13	0.00%	0.02%
3321	Forging and Stamping	\$7,489,403	3.79%		\$283,600	\$72,407	\$25.99	0.00%	0.01%
3322	Cutlery and Handtool Manufacturing	\$6,578,548	3.58%		\$235,683	\$34,033	\$22.14	0.00%	0.01%
3323	Architectural and Structural Metals Manufacturing	\$4,477,263	3.21%		\$143,558	\$249,151	\$18.90	0.00%	0.01%
3324	Boiler, Tank, and Shipping Container Manufacturing	\$14,523,348	2.20%		\$320,189	\$53,026	\$33.50	0.00%	0.01%
3325	Hardware Manufacturing	\$12,155,962	4.41%	*	\$535,973	\$25,659	\$29.98	0.00%	0.01%
3326	Spring and Wire Product Manufacturing	\$4,989,711	4.41%	*	\$220,003	\$33,738	\$19.27	0.00%	0.01%
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	\$1,640,338	4.41%	*	\$72,325	\$327,083	\$13.00	0.00%	0.02%
3328	Coating, Engraving, Heat Treating, and Allied Activities	\$2,998,895	2.61%		\$78,388	\$91,181	\$14.77	0.00%	0.02%
3329	Other Fabricated Metal Product Manufacturing	\$7,703,453	5.42%		\$417,166	\$155,547	\$24.35	0.00%	0.01%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	\$16,376,990	2.29%		\$375,024	\$98,128	\$33.98	0.00%	0.01%
3332	Industrial Machinery Manufacturing	\$6,780,229	3.43%		\$232,503	\$101,242	\$24.13	0.00%	0.01%
3333	Commercial and Service Industry Machinery Manufacturing	\$8,742,101	2.58%		\$225,274	\$61,477	\$26.08	0.00%	0.01%
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	\$18,499,091	3.90%		\$720,658	\$76,907	\$42.85	0.00%	0.01%
3335	Metalworking Machinery Manufacturing	\$2,717,628	3.49%		\$94,933	\$153,957	\$17.54	0.00%	0.02%
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	\$37,425,382	1.76%		\$657,755	\$51,170	\$54.55	0.00%	0.01%
3339	Other General Purpose Machinery Manufacturing	\$8,756,429	2.91%		\$255,040	\$176,869	\$27.18	0.00%	0.01%
3341	Computer and Peripheral Equipment Manufacturing	\$50,215,782	7.96%		\$3,997,442	\$75,484	\$48.33	0.00%	0.00%
3342	Communications Equipment Manufacturing	\$29,578,136	2.01%		\$593,803	\$76,563	\$38.59	0.00%	0.01%
3343	Audio and Video Equipment Manufacturing	\$15,252,247	4.10%		\$625,410	\$12,244	\$21.56	0.00%	0.00%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
3344	Semiconductor and Other Electronic Component Manufacturing	\$19,539,188	2.67%		\$522,415	\$177,015	\$34.09	0.00%	0.01%
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	\$18,348,073	3.70%		\$678,688	\$194,582	\$37.30	0.00%	0.01%
3346	Manufacturing and Reproducing Magnetic and Optical Media	\$8,715,798	4.89%	*	\$425,768	\$18,565	\$20.58	0.00%	0.01%
3351	Electric Lighting Equipment Manufacturing	\$9,642,854	3.45%		\$332,971	\$30,207	\$24.48	0.00%	0.01%
3352	Household Appliance Manufacturing	\$67,122,650	3.71%		\$2,492,483	\$33,682	\$93.56	0.00%	0.00%
3353	Electrical Equipment Manufacturing	\$12,024,704	4.93%		\$592,707	\$73,894	\$29.70	0.00%	0.01%
3359	Other Electrical Equipment and Component Manufacturing	\$15,705,621	3.79%		\$594,931	\$78,068	\$33.93	0.00%	0.01%
3361	Motor Vehicle Manufacturing	\$650,221,788	1.18%		\$7,674,967	\$141,127	\$384.54	0.00%	0.01%
3362	Motor Vehicle Body and Trailer Manufacturing	\$12,486,347	1.48%	*	\$184,611	\$68,222	\$31.85	0.00%	0.02%
3363	Motor Vehicle Parts Manufacturing	\$37,958,610	1.48%	*	\$561,218	\$371,819	\$65.80	0.00%	0.01%
3364	Aerospace Product and Parts Manufacturing	\$75,375,059	1.48%		\$1,116,475	\$207,726	\$131.14	0.00%	0.01%
3365	Railroad Rolling Stock Manufacturing	\$39,044,105	1.48%	*	\$577,268	\$14,186	\$73.12	0.00%	0.01%
3366	Ship and Boat Building	\$12,161,016	4.69%		\$570,694	\$449,047	\$258.22	0.00%	0.05%
3369	Other Transportation Equipment Manufacturing	\$17,158,630	7.24%		\$1,241,923	\$23,062	\$27.92	0.00%	0.00%
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	\$2,649,074	3.80%	*	\$100,685	\$188,375	\$11.47	0.00%	0.01%
3372	Office Furniture (including Fixtures) Manufacturing	\$5,214,474	3.80%	*	\$198,189	\$69,624	\$16.49	0.00%	0.01%
3379	Other Furniture Related Product Manufacturing	\$7,544,625	3.80%	*	\$286,753	\$17,715	\$16.49	0.00%	0.01%
3391	Medical Equipment and Supplies Manufacturing	\$5,282,990	7.70%		\$406,930	\$186,141	\$15.65	0.00%	0.00%
3399	Other Miscellaneous Manufacturing	\$3,318,985	5.32%		\$176,602	\$281,294	\$14.41	0.00%	0.01%
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	\$26,108,877	2.45%		\$638,529	\$744,627	\$28.67	0.00%	0.00%
4232	Furniture and Home Furnishing Merchant Wholesalers	\$5,844,281	2.44%	*	\$142,747	\$226,005	\$16.42	0.00%	0.01%
4233	Lumber and Other Construction Materials Merchant Wholesalers	\$8,198,647	2.89%		\$236,586	\$463,890	\$25.81	0.00%	0.01%
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	\$11,063,577	2.26%		\$250,391	\$1,524,053	\$41.88	0.00%	0.02%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	\$10,690,919	1.06%		\$113,475	\$200,298	\$18.67	0.00%	0.02%
4236	Electrical and Electronic Goods Merchant Wholesalers	\$10,940,740	1.73%		\$188,974	\$975,338	\$31.07	0.00%	0.02%
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	\$5,207,975	2.32%		\$121,032	\$476,257	\$25.04	0.00%	0.02%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	\$4,839,790	3.02%		\$146,331	\$1,744,365	\$28.03	0.00%	0.02%
4239	Miscellaneous Durable Goods Merchant Wholesalers	\$4,695,800	3.30%		\$154,836	\$661,699	\$18.10	0.00%	0.01%
4241	Paper and Paper Product Merchant Wholesalers	\$9,986,773	1.84%		\$184,053	\$194,071	\$15.09	0.00%	0.01%
4242	Drugs and Druggists' Sundries Merchant Wholesalers	\$61,946,658	4.31%		\$2,667,458	\$122,715	\$16.00	0.00%	0.00%
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	\$6,919,579	4.54%		\$314,186	\$138,278	\$7.99	0.00%	0.00%
4244	Grocery and Related Product Wholesalers	\$16,664,598	1.50%		\$250,800	\$865,916	\$24.57	0.00%	0.01%
4245	Farm Product Raw Material Merchant Wholesalers	\$15,264,823	2.76%		\$421,948	\$86,364	\$11.90	0.00%	0.00%
4246	Chemical and Allied Products Merchant Wholesalers	\$8,511,944	3.25%		\$276,768	\$305,491	\$23.35	0.00%	0.01%
4247	Petroleum and Petroleum Products Merchant Wholesalers	\$36,860,076	1.36%		\$501,363	\$217,865	\$28.29	0.00%	0.01%
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	\$21,445,970	3.94%		\$844,652	\$108,779	\$25.24	0.00%	0.00%
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	\$7,126,742	3.85%		\$274,510	\$391,579	\$11.72	0.00%	0.00%
4251	Wholesale Electronic Markets and Agents and Brokers	\$4,830,415	9.78%	*	\$472,251	\$630,873	\$15.91	0.00%	0.00%
4411	Automobile Dealers	\$13,539,166	1.11%		\$150,669	\$3,052,335	\$58.39	0.00%	0.04%
4412	Other Motor Vehicle Dealers	\$3,232,426	2.72%	**	\$87,802	\$353,603	\$21.80	0.00%	0.03%
4413	Automotive Parts, Accessories, and Tire Stores	\$1,216,186	1.37%	*	\$16,631	\$1,204,528	\$20.59	0.00%	0.12%
4421	Furniture Stores	\$1,851,370	3.57%	*	\$66,079	\$341,544	\$12.06	0.00%	0.02%
4422	Home Furnishings Stores	\$1,186,588	3.57%	*	\$42,352	\$591,805	\$15.96	0.00%	0.04%
4431	Electronics and Appliance Stores	\$1,721,782	2.90%	*	\$49,972	\$899,907	\$18.85	0.00%	0.04%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
4441	Building Material and Supplies Dealers	\$3,393,820	5.18%	*	\$175,814	\$1,323,725	\$19.79	0.00%	0.01%
4442	Lawn and Garden Equipment and Supplies Stores	\$1,626,684	2.44%	**	\$39,735	\$267,185	\$12.81	0.00%	0.03%
4451	Grocery Stores	\$4,392,255	1.53%	*	\$67,061	\$670,419	\$6.91	0.00%	0.01%
4452	Specialty Food Stores	\$537,443	1.55%	*	\$8,348	\$209,523	\$7.91	0.00%	0.10%
4453	Beer, Wine, and Liquor Stores	\$1,001,136	2.23%	*	\$22,334	\$151,016	\$5.18	0.00%	0.02%
4461	Health and Personal Care Stores	\$2,189,986	2.78%	*	\$60,961	\$606,316	\$7.35	0.00%	0.01%
4471	Gasoline Stations	\$2,114,287	1.10%	*	\$23,313	\$1,467,085	\$12.28	0.00%	0.05%
4481	Clothing Stores	\$1,394,175	5.09%	*	\$70,902	\$621,842	\$6.87	0.00%	0.01%
4482	Shoe Stores	\$855,759	5.09%	*	\$43,520	\$175,073	\$6.40	0.00%	0.02%
4483	Jewelry, Luggage, and Leather Goods Stores	\$865,222	5.09%	*	\$44,001	\$305,718	\$10.13	0.00%	0.02%
4511	Sporting Goods, Hobby, and Musical Instrument Stores	\$1,200,786	2.52%	*	\$30,253	\$633,614	\$14.87	0.00%	0.05%
4512	Book, Periodical, and Music Stores	\$1,148,857	2.52%	*	\$28,945	\$114,811	\$5.97	0.00%	0.02%
4521	Department Stores	\$23,612,261	4.30%	*	\$1,016,106	\$584,315	\$62.39	0.00%	0.01%
4529	Other General Merchandise Stores	\$7,582,979	4.30%	*	\$326,318	\$1,004,338	\$30.82	0.00%	0.01%
4531	Florists	\$306,091	3.21%	*	\$9,824	\$65,088	\$2.96	0.00%	0.03%
4532	Office Supplies, Stationery, and Gift Stores	\$878,782	3.21%	*	\$28,205	\$600,157	\$13.92	0.00%	0.05%
4533	Used Merchandise Stores	\$469,679	3.21%	*	\$15,074	\$140,811	\$7.88	0.00%	0.05%
4539	Other Miscellaneous Store Retailers	\$904,973	3.21%	*	\$29,045	\$511,885	\$11.47	0.00%	0.04%
4541	Electronic Shopping and Mail-Order Houses	\$7,249,457	3.96%	*	\$287,398	\$189,622	\$11.82	0.00%	0.00%
4542	Vending Machine Operators	\$1,268,344	3.96%	*	\$50,282	\$129,902	\$23.14	0.00%	0.05%
4543	Direct Selling Establishments	\$1,534,903	3.96%	*	\$60,850	\$570,315	\$17.59	0.00%	0.03%
4811	Scheduled Air Transportation	\$28,544,873	1.85%	*	\$528,522	\$338,828	\$106.92	0.00%	0.02%
4812	Nonscheduled Air Transportation	\$3,957,128	1.85%	*	\$73,268	\$67,806	\$29.37	0.00%	0.04%
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	\$15,182,761	4.17%	*	\$632,658	\$39,417	\$30.09	0.00%	0.01%
4832	Inland Water Transportation	\$6,186,471	4.17%	*	\$257,787	\$14,591	\$23.53	0.00%	0.01%
4841	General Freight Trucking	\$2,036,687	2.33%	*	\$47,428	\$868,682	\$14.42	0.00%	0.03%
4842	Specialized Freight Trucking	\$1,090,183	2.33%	*	\$25,387	\$503,423	\$9.80	0.00%	0.04%
4851	Urban Transit Systems	\$2,489,476	1.80%	*	\$44,903	\$24,352	\$25.08	0.00%	0.06%
4852	Interurban and Rural Bus Transportation	\$2,290,488	1.80%	*	\$41,314	\$9,271	\$19.08	0.00%	0.05%
4853	Taxi and Limousine Service	\$606,313	1.80%	*	\$10,936	\$62,720	\$9.01	0.00%	0.08%
4854	School and Employee Bus Transportation	\$1,458,523	1.80%	*	\$26,308	\$75,623	\$16.94	0.00%	0.06%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
4855	Charter Bus Industry	\$1,407,984	1.80%	*	\$25,396	\$14,414	\$11.57	0.00%	0.05%
4859	Other Transit and Ground Passenger Transportation	\$878,018	1.80%	*	\$15,837	\$28,593	\$9.14	0.00%	0.06%
4861	Pipeline Transportation of Crude Oil	\$14,657,772	14.74%	*	\$2,160,627	\$16,966	\$55.26	0.00%	0.00%
4862	Pipeline Transportation of Natural Gas	\$12,088,545	14.74%	*	\$1,781,911	\$71,448	\$37.37	0.00%	0.00%
4869	Other Pipeline Transportation	\$9,380,405	14.74%	*	\$1,382,718	\$18,236	\$35.48	0.00%	0.00%
4871	Scenic and Sightseeing Transportation, Land	\$1,078,675	4.01%	*	\$43,253	\$2,248	\$3.66	0.00%	0.01%
4872	Scenic and Sightseeing Transportation, Water	\$576,460	4.01%	*	\$23,115	\$6,015	\$3.45	0.00%	0.02%
4879	Scenic and Sightseeing Transportation, Other	\$1,596,488	4.01%	*	\$64,017	\$830	\$4.82	0.00%	0.01%
4881	Support Activities for Air Transportation	\$3,071,107	2.77%	**	\$84,930	\$172,020	\$34.05	0.00%	0.04%
4882	Support Activities for Rail Transportation	\$2,953,469	2.77%	**	\$81,677	\$28,867	\$31.93	0.00%	0.04%
4883	Support Activities for Water Transportation	\$4,503,853	2.77%	**	\$124,552	\$171,543	\$72.90	0.00%	0.06%
4884	Support Activities for Road Transportation	\$561,027	2.77%	**	\$15,515	\$90,529	\$10.94	0.00%	0.07%
4885	Freight Transportation Arrangement	\$1,836,732	2.77%	**	\$50,794	\$142,878	\$8.67	0.00%	0.02%
4889	Other Support Activities for Transportation	\$1,686,289	2.77%	**	\$46,633	\$18,098	\$12.80	0.00%	0.03%
4921	Couriers	\$6,169,090	2.76%	**	\$170,603	\$273,646	\$30.10	0.00%	0.02%
4922	Local Messengers and Local Delivery	\$638,977	2.76%	**	\$17,671	\$34,477	\$6.80	0.00%	0.04%
4931	Warehousing and Storage	\$5,487,557	3.68%	*	\$201,801	\$302,130	\$24.14	0.00%	0.01%
5111	Newspaper, Periodical, Book, and Directory Publishers	\$5,992,410	11.49%	*	\$688,247	\$208,847	\$9.42	0.00%	0.00%
5112	Software Publishers	\$12,472,447	16.84%	*	\$2,099,867	\$133,250	\$14.55	0.00%	0.00%
5121	Motion Picture and Video Industries	\$3,628,012	7.07%	**	\$256,640	\$89,775	\$4.75	0.00%	0.00%
5122	Sound Recording Industries	\$3,982,417	3.60%	**	\$143,168	\$35,282	\$10.71	0.00%	0.01%
5151	Radio and Television Broadcasting	\$5,627,132	4.55%	*	\$255,885	\$167,905	\$17.33	0.00%	0.01%
5152	Cable and Other Subscription Programming	\$28,624,449	4.55%	*	\$1,301,652	\$193,534	\$282.95	0.00%	0.02%
5161	Internet Publishing and Broadcasting	\$3,930,772	5.20%	*	\$204,205	\$10,266	\$5.04	0.00%	0.00%
5171	Wired Telecommunications Carriers	\$10,194,916	3.30%	*	\$336,872	\$6,291,597	\$227.90	0.00%	0.07%
5172	Wireless Telecommunications Carriers (except Satellite)	\$5,672,533	3.30%	*	\$187,438	\$1,273,372	\$97.80	0.00%	0.05%
5173	Telecommunications Resellers	\$3,331,562	3.30%	*	\$110,085	\$19,679	\$7.22	0.00%	0.01%
5174	Satellite Telecommunications	\$6,976,236	3.30%	*	\$230,516	\$117,830	\$168.81	0.00%	0.07%
5175	Cable and Other Program Distribution	\$10,123,988	3.30%	*	\$334,528	\$202,722	\$37.66	0.00%	0.01%
5179	Other Telecommunications	\$3,865,274	3.30%	*	\$127,721	\$6,236	\$8.81	0.00%	0.01%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
5181	Internet Service Providers and Web Search Portals	\$2,749,228	3.76%	*	\$103,239	\$27,914	\$5.20	0.00%	0.01%
5182	Data Processing, Hosting, and Related Services	\$4,669,902	3.76%	*	\$175,364	\$66,048	\$4.63	0.00%	0.00%
5191	Other Information Services	\$1,499,277	9.07%	*	\$136,035	\$14,386	\$3.35	0.00%	0.00%
5211	Monetary Authorities - Central Bank	\$431,584,554	18.99%	*	\$81,972,785	\$1,040	\$16.51	0.00%	0.00%
5221	Depository Credit Intermediation	\$5,581,686	13.14%	*	\$733,401	\$143,235	\$1.25	0.00%	0.00%
5222	Nondepository Credit Intermediation	\$8,587,475	13.14%	*	\$1,128,344	\$93,738	\$1.78	0.00%	0.00%
5223	Activities Related to Credit Intermediation	\$2,509,135	9.18%	**	\$230,248	\$59,579	\$1.69	0.00%	0.00%
5231	Securities and Commodity Contracts Intermediation and Brokerage	\$4,952,719	10.68%	*	\$528,852	\$89,966	\$1.98	0.00%	0.00%
5232	Securities and Commodity Exchanges	\$48,750,362	10.68%	*	\$5,205,568	\$318	\$4.24	0.00%	0.00%
5239	Other Financial Investment Activities	\$2,813,012	17.55%	*	\$493,682	\$67,998	\$1.72	0.00%	0.00%
5241	Insurance Carriers	\$41,425,001	5.37%	*	\$2,225,853	\$290,411	\$9.32	0.00%	0.00%
5242	Agencies, Brokerages, and Other Insurance Related Activities	\$1,020,352	5.37%	*	\$54,826	\$347,945	\$2.50	0.00%	0.01%
5259	Other Investment Pools and Funds	\$7,535,878	60.77%	*	\$4,579,723	\$17,133	\$5.19	0.00%	0.00%
5311	Lessors of Real Estate	\$955,618	12.63%	*	\$120,658	\$512,459	\$4.49	0.00%	0.00%
5312	Offices of Real Estate Agents and Brokers	\$918,205	9.59%	*	\$88,048	\$343,500	\$4.15	0.00%	0.01%
5313	Activities Related to Real Estate	\$936,574	13.77%	*	\$128,981	\$425,940	\$6.01	0.00%	0.01%
5321	Automotive Equipment Rental and Leasing	\$3,127,043	1.15%	**	\$35,909	\$112,066	\$9.90	0.00%	0.03%
5322	Consumer Goods Rental	\$669,273	3.07%	*	\$20,578	\$156,770	\$4.69	0.00%	0.02%
5323	General Rental Centers	\$750,013	3.13%	*	\$23,456	\$30,221	\$5.65	0.00%	0.02%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	\$2,707,038	5.36%	**	\$145,126	\$151,097	\$11.53	0.00%	0.01%
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$8,728,635	25.70%	*	\$2,242,937	\$14,354	\$5.97	0.00%	0.00%
5411	Legal Services	\$1,056,719	8.52%	**	\$89,996	\$708,821	\$3.90	0.00%	0.00%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	\$844,075	8.61%	**	\$72,633	\$822,266	\$7.21	0.00%	0.01%
5413	Architectural, Engineering, and Related Services	\$1,650,721	4.45%	**	\$73,515	\$1,270,878	\$11.97	0.00%	0.02%
5414	Specialized Design Services	\$559,814	6.23%	**	\$34,889	\$161,725	\$5.32	0.00%	0.02%
5415	Computer Systems Design and Related Services	\$1,746,057	5.48%	**	\$95,642	\$1,143,924	\$11.27	0.00%	0.01%
5416	Management, Scientific, and Technical Consulting Services	\$1,063,231	6.87%	**	\$73,056	\$864,229	\$7.04	0.00%	0.01%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
5417	Scientific Research and Development Services	\$7,396,095	6.56%	**	\$485,283	\$484,817	\$31.59	0.00%	0.01%
5418	Advertising and Related Services	\$1,667,848	5.01%	**	\$83,587	\$8,893,407	\$237.39	0.01%	0.28%
5419	Other Professional, Scientific, and Technical Services	\$692,060	6.70%	**	\$46,373	\$313,420	\$4.38	0.00%	0.01%
5511	Management of Companies and Enterprises	\$6,843,965	14.89%	**	\$1,018,976	\$1,522,058	\$32.09	0.00%	0.00%
5611	Office Administrative Services	\$2,018,651	3.86%	*	\$77,963	\$261,229	\$10.69	0.00%	0.01%
5612	Facilities Support Services	\$4,031,531	3.86%	*	\$155,702	\$125,481	\$36.29	0.00%	0.02%
5613	Employment Services	\$3,218,627	1.86%	**	\$59,871	\$1,643,694	\$40.56	0.00%	0.07%
5614	Business Support Services	\$1,509,909	3.86%	*	\$58,314	\$366,633	\$10.58	0.00%	0.02%
5615	Travel Arrangement and Reservation Services	\$1,120,944	2.15%	**	\$24,089	\$180,627	\$7.03	0.00%	0.03%
5616	Investigation and Security Services	\$1,380,213	3.86%	*	\$53,305	\$467,453	\$20.39	0.00%	0.04%
5617	Services to Buildings and Dwellings	\$501,508	3.86%	*	\$19,369	\$69,869,233	\$442.96	0.09%	2.29%
5619	Other Support Services	\$1,539,867	5.48%	*	\$84,323	\$222,234	\$10.64	0.00%	0.01%
5621	Waste Collection	\$3,465,693	3.16%	*	\$109,385	\$127,908	\$15.17	0.00%	0.01%
5622	Waste Treatment and Disposal	\$5,469,973	3.16%	*	\$172,645	\$62,740	\$24.56	0.00%	0.01%
5629	Remediation and Other Waste Management Services	\$1,637,360	3.16%	*	\$51,679	\$191,823	\$25.89	0.00%	0.05%
6111	Elementary and Secondary Schools	\$2,098,476	7.67%	**	\$160,912	\$50,032	\$2.40	0.00%	0.00%
6112	Junior Colleges	\$4,451,351	7.67%	**	\$341,331	\$3,453	\$3.80	0.00%	0.00%
6113	Colleges, Universities, and Professional Schools	\$31,909,771	7.67%	**	\$2,446,851	\$51,330	\$15.10	0.00%	0.00%
6114	Business Schools and Computer and Management Training	\$975,383	7.67%	**	\$74,793	\$12,116	\$1.58	0.00%	0.00%
6115	Technical and Trade Schools	\$1,123,833	7.67%	**	\$86,176	\$19,431	\$2.64	0.00%	0.00%
6116	Other Schools and Instruction	\$349,414	7.67%	**	\$26,793	\$58,267	\$1.89	0.00%	0.01%
6117	Educational Support Services	\$1,049,000	7.67%	**	\$80,438	\$9,954	\$1.85	0.00%	0.00%
6211	Offices of Physicians	\$1,283,735	4.39%	*	\$56,361	\$559,436	\$2.70	0.00%	0.01%
6212	Offices of Dentists	\$626,807	6.73%	*	\$42,184	\$326,940	\$2.74	0.00%	0.01%
6213	Offices of Other Health Practitioners	\$384,151	8.92%	*	\$34,248	\$272,987	\$2.53	0.00%	0.01%
6214	Outpatient Care Centers	\$2,658,995	5.58%	*	\$148,341	\$96,214	\$3.77	0.00%	0.00%
6215	Medical and Diagnostic Laboratories	\$2,844,964	5.45%	*	\$155,183	\$42,283	\$3.88	0.00%	0.00%
6216	Home Health Care Services	\$1,925,647	5.45%	*	\$105,038	\$51,662	\$2.78	0.00%	0.00%
6219	Other Ambulatory Health Care Services	\$2,386,335	5.45%	*	\$130,167	\$42,213	\$4.79	0.00%	0.00%
6221	General Medical and Surgical Hospitals	\$89,847,925	5.08%	**	\$4,561,931	\$313,799	\$57.01	0.00%	0.00%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
6222	Psychiatric and Substance Abuse Hospitals	\$21,992,662	5.08%	**	\$1,116,653	\$16,622	\$25.34	0.00%	0.00%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	\$24,380,324	5.08%	**	\$1,237,884	\$14,937	\$20.55	0.00%	0.00%
6231	Nursing Care Facilities	\$4,541,125	5.08%	**	\$230,571	\$129,705	\$7.72	0.00%	0.00%
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	\$720,038	5.08%	**	\$36,559	\$103,015	\$3.65	0.00%	0.01%
6233	Community Care Facilities for the Elderly	\$1,487,828	5.08%	**	\$75,543	\$72,776	\$4.07	0.00%	0.01%
6239	Other Residential Care Facilities	\$1,216,580	5.08%	**	\$61,771	\$26,478	\$4.26	0.00%	0.01%
6241	Individual and Family Services	\$948,221	5.08%	**	\$48,145	\$135,679	\$2.70	0.00%	0.01%
6242	Community Food and Housing, and Emergency and Other Relief Services	\$1,020,679	5.08%	**	\$51,824	\$32,494	\$2.62	0.00%	0.01%
6243	Vocational Rehabilitation Services	\$1,401,346	5.08%	**	\$71,152	\$32,091	\$3.86	0.00%	0.01%
6244	Child Day Care Services	\$326,601	5.08%	**	\$16,583	\$157,921	\$2.23	0.00%	0.01%
7111	Performing Arts Companies	\$1,176,578	9.26%	*	\$108,971	\$25,190	\$2.76	0.00%	0.00%
7112	Spectator Sports	\$5,265,131	9.26%	*	\$487,640	\$25,621	\$6.00	0.00%	0.00%
7113	Promoters of Performing Arts, Sports, and Similar Events	\$2,026,602	9.26%	*	\$187,697	\$44,108	\$8.20	0.00%	0.00%
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	\$1,051,334	9.26%	*	\$97,371	\$5,611	\$1.66	0.00%	0.00%
7115	Independent Artists, Writers, and Performers	\$593,031	9.26%	*	\$54,925	\$40,045	\$2.36	0.00%	0.00%
7121	Museums, Historical Sites, and Similar Institutions	\$1,321,144	6.95%	**	\$91,767	\$20,833	\$3.09	0.00%	0.00%
7131	Amusement Parks and Arcades	\$3,526,421	5.36%	*	\$188,878	\$19,351	\$6.43	0.00%	0.00%
7132	Gambling Industries	\$9,357,109	5.36%	*	\$501,174	\$11,710	\$5.34	0.00%	0.00%
7139	Other Amusement and Recreation Industries	\$770,650	5.36%	*	\$41,277	\$200,325	\$3.18	0.00%	0.01%
7211	Traveler Accommodation	\$2,492,631	2.95%	*	\$73,554	\$687,544	\$13.36	0.00%	0.02%
7212	RV (Recreational Vehicle) Parks and Recreational Camps	\$492,731	2.95%	*	\$14,540	\$30,438	\$4.22	0.00%	0.03%
7213	Rooming and Boarding Houses	\$452,841	2.95%	*	\$13,363	\$8,698	\$3.37	0.00%	0.03%
7221	Full-Service Restaurants	\$770,100	4.15%	*	\$31,952	\$567,765	\$2.83	0.00%	0.01%
7222	Limited-Service Eating Places	\$604,955	4.15%	*	\$25,100	\$625,096	\$2.67	0.00%	0.01%
7223	Special Food Services	\$949,660	4.15%	*	\$39,402	\$274,419	\$8.77	0.00%	0.02%
7224	Drinking Places (Alcoholic Beverages)	\$325,107	4.15%	*	\$13,489	\$98,931	\$2.06	0.00%	0.02%
8111	Automotive Repair and Maintenance	\$480,501	3.67%	*	\$17,616	\$2,608,034	\$15.76	0.00%	0.09%

Table 5-2. Economic Impacts by 4-Digit NAICS Industry

NAICS	Industry	Average Receipts per Estab. [a]	Profit Rate [b]		Estimated Profits per Estab.	Estimated Cost of Draft Rule	Average Cost per Estab.	Average Cost to Revenues	Average Cost to Profits
8112	Electronic and Precision Equipment Repair and Maintenance	\$1,236,087	5.14%	*	\$63,522	\$364,478	\$26.30	0.00%	0.04%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	\$873,035	4.15%	*	\$36,272	\$469,854	\$19.50	0.00%	0.05%
8114	Personal and Household Goods Repair and Maintenance	\$354,501	4.15%	*	\$14,729	\$269,422	\$10.69	0.00%	0.07%
8121	Personal Care Services	\$212,914	5.71%	*	\$12,155	\$224,827	\$2.22	0.00%	0.02%
8122	Death Care Services	\$647,276	5.71%	*	\$36,951	\$136,904	\$6.19	0.00%	0.02%
8123	Dry-cleaning and Laundry Services	\$496,977	5.71%	*	\$28,371	\$271,626	\$6.54	0.00%	0.02%
8129	Other Personal Services	\$435,365	5.71%	*	\$24,854	\$221,177	\$5.58	0.00%	0.02%
8131	Religious Organizations	\$493,372	2.22%	*	\$10,963	\$942,621	\$5.41	0.00%	0.05%
8132	Grantmaking and Giving Services	\$3,155,319	2.22%	*	\$70,113	\$72,493	\$4.90	0.00%	0.01%
8133	Social Advocacy Organizations	\$976,434	2.22%	*	\$21,697	\$57,281	\$4.79	0.00%	0.02%
8134	Civic and Social Organizations	\$503,959	2.22%	*	\$11,198	\$163,403	\$5.09	0.00%	0.05%
8139	Business, Professional, Labor, Political, and Similar Organizations	\$943,985	2.22%	*	\$20,976	\$353,968	\$5.39	0.00%	0.03%

[a] Estimated based on 2002 receipts and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[b] Estimated from ratios of net income to total receipts as reported for 2003 by the US Internal Revenue Service, Corporation Source Book, 2003.

<<<http://www.irs.gov/taxstats/bustaxstats/article/0,,id=149687,00.html>>> Data not available at disaggregated levels for all industries and profit rates at more highly aggregated levels are used for such industries.

* Profit rate imputed from corresponding 3-digit NAICS industry.

** Profit rate imputed from corresponding 2-digit NAICS industry.

5.2 SMALL ENTITY IMPACTS

ERG also estimated compliance costs and economic impacts for small entities affected by the draft rule. Tables 2-2 and 2-3 presented above show, respectively, the profiles for General Industry entities classified as small according to (1) Small Business Administration (SBA) criteria and (2) for entities with fewer than 20 employees. ERG assigned costs to small entities by first determining the per employee compliance costs for those cost items that are a function of the number of affected employees at a facility, and the per establishment cost for those items that do not vary with establishment size. ERG then calculated, by industry, the average number of employees for each of the two classes of small entities, multiplied these averages by per employee compliance cost, and then added the establishment-based cost to determine the average compliance cost for each type of small entity. These statistics multiplied by the numbers of small entities produced the total compliance costs in each industry incurred by small entities.

Table 5-3 shows the resultant annualized compliance costs by industry sector for SBA-defined small entities, while Table 5-4 shows the costs for entities with fewer than 20 employees. Compliance costs for SBA-defined small entities totaled \$124.7 million, compared to \$159.2 million for all establishments. Compliance costs for the smallest entities totaled \$95.4 million.

ERG calculated the economic impacts of these costs by comparing average compliance costs with average receipts and profits. These calculations are shown in Tables 5-5 and 5-6. Among SBA-defined small entities, impacts of project compliance costs on profits were less than five percent for all industries, and these impacts were larger than 1.0 percent for only two industries: NAICS 2213, Water, Sewage and Other Systems (4.7 percent); and NAICS 5617, Services to Buildings and Dwellings (3.4 percent). For entities with fewer than 20 employees, compliance costs as a percent of profits were also less than five percent for all industries, and these impacts were larger than one percent for only one industry: NAICS 5617, Services to Buildings and Dwellings.

Table 5-3. Compliance Costs by 2-Digit NAICS: SBA Small Entities

Industry Sector	Annualized Compliance Costs								
	§1910.22	§1910.23	§1910.24	§1910.27	§1910.28	§1910.29	§1910.30	§1910.140	
	General Requirements	Ladders	Step Bolts and Manhole Steps	Scaffolds	Duty To Have Fall Protection	Fall Protection Systems Criteria and Practices	Training Program	Fall Protection (including Hazard Assessment)	Total
Agriculture, Forestry, Fishing, and Hunting	\$49,637	\$8,749	\$0	\$0	\$0	\$0	\$70,291	\$44,388	\$173,065
Mining	\$27,715	\$9,384	\$0	\$0	\$0	\$0	\$175,872	\$78,113	\$291,085
Utilities	\$42,289	\$1,979	\$2,556,773	\$0	\$0	\$0	\$21,900	\$94,634	\$2,717,576
Manufacturing	\$1,184,552	\$336,868	\$0	\$0	\$0	\$0	\$2,809,545	\$1,943,753	\$6,274,719
Wholesale Trade	\$1,883,462	\$317,595	\$0	\$0	\$0	\$0	\$2,556,330	\$1,348,244	\$6,105,631
Retail Trade	\$2,657,210	\$675,487	\$0	\$0	\$0	\$0	\$2,904,290	\$2,563,800	\$8,800,787
Transportation	\$572,850	\$112,803	\$0	\$0	\$0	\$0	\$812,755	\$946,277	\$2,444,685
Information	\$520,453	\$534,959	\$38,078	\$0	\$0	\$0	\$6,193,037	\$1,171,885	\$8,458,412
Finance and Insurance	\$380,516	\$61,265	\$0	\$0	\$0	\$0	\$13,937	\$168,723	\$624,441
Real Estate	\$293,272	\$254,993	\$0	\$0	\$0	\$0	\$355,120	\$338,692	\$1,242,077
Professional, Scientific, and Technical Services	\$1,565,905	\$371,413	\$0	\$0	\$76,868	\$5,196,726	\$1,335,805	\$886,175	\$9,432,891
Management	\$43,914	\$4,871	\$0	\$0	\$0	\$0	\$32,686	\$51,093	\$132,563
Administrative and Support, Waste Management and Remediation Services	\$493,044	\$206,633	\$0	\$67,845,832	\$0	\$0	\$881,809	\$341,267	\$69,768,586
Educational Services	\$102,736	\$27,769	\$0	\$0	\$0	\$0	\$4,310	\$0	\$134,815
Health Care	\$964,362	\$206,570	\$0	\$0	\$0	\$0	\$90,717	\$493,470	\$1,755,119
Arts, Entertainment, and Recreation	\$172,720	\$69,694	\$24,752	\$0	\$0	\$0	\$24,580	\$0	\$291,747
Accommodation and Food Services	\$647,752	\$131,522	\$0	\$0	\$0	\$0	\$285,319	\$429,970	\$1,494,563
Other Services	\$1,040,664	\$882,666	\$0	\$0	\$0	\$0	\$1,917,755	\$672,408	\$4,513,493
Total	\$12,643,052	\$4,215,221	\$2,619,604	\$67,845,832	\$76,868	\$5,196,726	\$20,486,061	\$11,572,891	\$124,656,255

Table 5-4. Compliance Costs by 2-Digit NAICS: Entities with Fewer than 20 Employees

Industry Sector	Annualized Compliance Costs								Total
	\$1910.22	\$1910.23	\$1910.24	\$1910.27	\$1910.28	\$1910.29	\$1910.30	\$1910.140	
	General Requirements	Ladders	Step Bolts and Manhole Steps	Scaffolds	Duty To Have Fall Protection	Fall Protection Systems Criteria and Practices	Training Program	Fall Protection (including Hazard Assessment)	
Agriculture, Forestry, Fishing, and Hunting	\$47,184	\$5,987	\$0	\$0	\$0	\$0	\$44,280	\$38,796	\$136,246
Mining	\$25,797	\$4,065	\$0	\$0	\$0	\$0	\$76,175	\$51,277	\$157,314
Utilities	\$24,222	\$1,021	\$521,092	\$0	\$0	\$0	\$12,528	\$92,588	\$651,451
Manufacturing	\$865,371	\$52,057	\$0	\$0	\$0	\$0	\$372,987	\$1,021,961	\$2,312,376
Wholesale Trade	\$1,658,145	\$154,983	\$0	\$0	\$0	\$0	\$1,237,232	\$975,996	\$4,026,356
Retail Trade	\$2,487,394	\$481,604	\$0	\$0	\$0	\$0	\$1,999,511	\$2,318,192	\$7,286,701
Transportation	\$504,005	\$33,786	\$0	\$0	\$0	\$0	\$168,590	\$712,628	\$1,419,008
Information	\$437,178	\$16,657	\$32,262	\$0	\$0	\$0	\$133,688	\$166,848	\$786,632
Finance and Insurance	\$345,660	\$52,855	\$0	\$0	\$0	\$0	\$10,628	\$160,747	\$569,889
Real Estate	\$279,987	\$169,248	\$0	\$0	\$0	\$0	\$229,256	\$305,963	\$984,454
Professional, Scientific, and Technical Services	\$1,474,495	\$207,743	\$0	\$0	\$70,654	\$2,297,216	\$676,826	\$739,075	\$5,466,010
Management	\$23,576	\$953	\$0	\$0	\$0	\$0	\$6,393	\$25,722	\$56,644
Administrative and Support, Waste Management and Remediation Services	\$439,428	\$90,534	\$0	\$63,670,808	\$0	\$0	\$424,795	\$262,279	\$64,887,844
Educational Services	\$81,390	\$11,049	\$0	\$0	\$0	\$0	\$1,144	\$0	\$93,583
Health Care	\$855,954	\$132,768	\$0	\$0	\$0	\$0	\$20,334	\$412,617	\$1,421,674
Arts, Entertainment, and Recreation	\$151,873	\$27,707	\$24,752	\$0	\$0	\$0	\$8,810	\$0	\$213,143
Accommodation and Food Services	\$526,013	\$50,810	\$0	\$0	\$0	\$0	\$110,613	\$333,671	\$1,021,107
Other Services	\$1,021,428	\$694,388	\$0	\$0	\$0	\$0	\$1,559,393	\$623,185	\$3,898,394
Total	\$11,249,100	\$2,188,215	\$578,106	\$63,670,808	\$70,654	\$2,297,216	\$7,093,182	\$8,241,544	\$95,388,825

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employ- ment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
1131	Timber Tract Operations	500	\$627,439	549	\$1,142,876	4.78%	*	\$54,641	\$7,467	\$13.60	0.001%	0.025%
1132	Forest Nurseries and Gathering of Forest Products	500	\$178,844	252	\$709,698	4.78%	*	\$33,931	\$5,489	\$21.78	0.003%	0.064%
1133	Logging	500	\$8,655,980	10,876	\$795,879	4.78%	*	\$38,051	\$124,909	\$11.48	0.001%	0.030%
1141	Fishing	20	\$762,535	1,961	\$388,850	5.64%	*	\$21,937	\$7,171	\$3.66	0.001%	0.017%
1142	Hunting and Trapping	20	\$93,002	408	\$227,947	5.64%	*	\$12,860	\$1,482	\$3.63	0.002%	0.028%
1153	Support Activities for Forestry	100	\$972,827	1,676	\$580,446	4.78%	*	\$27,751	\$28,037	\$16.73	0.003%	0.060%
2111	Oil and Gas Extraction	500	\$27,059,671	6,183	\$4,376,463	13.19%		\$577,167	\$293,507	\$47.47	0.001%	0.008%
2211	Electric Power Generation, Transmission and Distribution	20	\$3,927,035	680	\$5,775,052	2.49%		\$143,995	\$600,628	\$883.28	0.015%	0.613%
2212	Natural Gas Distribution	20	\$2,862,805	411	\$6,965,463	2.23%		\$155,159	\$34,103	\$82.98	0.001%	0.053%
2213	Water, Sewage and Other Systems	100	\$895,092	4,855	\$184,365	5.00%		\$9,222	\$2,090,087	\$430.50	0.234%	4.668%
3111	Animal Food Manufacturing	500	\$10,401,881	1,171	\$8,882,904	2.41%		\$214,163	\$22,132	\$18.90	0.000%	0.009%
3112	Grain and Oilseed Milling	500	\$7,806,852	449	\$17,387,198	4.99%	*	\$868,434	\$13,227	\$29.46	0.000%	0.003%
3113	Sugar and Confectionery Product Manufacturing	500	\$6,223,142	1,669	\$3,728,665	6.80%		\$253,479	\$23,670	\$14.18	0.000%	0.006%
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	500	\$12,555,462	1,256	\$9,996,387	5.19%		\$519,195	\$28,118	\$22.39	0.000%	0.004%
3115	Dairy Product Manufacturing	500	\$14,788,684	1,071	\$13,808,295	2.25%		\$311,301	\$26,968	\$25.18	0.000%	0.008%
3116	Animal Slaughtering and Processing	500	\$22,663,661	3,247	\$6,979,877	2.52%		\$176,095	\$48,788	\$15.03	0.000%	0.009%
3117	Seafood Product Preparation and Packaging	500	\$4,717,932	638	\$7,394,878	4.99%	*	\$369,350	\$10,805	\$16.94	0.000%	0.005%
3118	Bakeries and Tortilla	500	\$13,328,280	10,402	\$1,281,319	11.05%		\$141,596	\$119,589	\$11.50	0.001%	0.008%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Manufacturing										
3119	Other Food Manufacturing	500	\$18,050,536	2,482	\$7,272,577	4.20%	\$305,230	\$47,400	\$19.10	0.000%	0.006%
3121	Beverage Manufacturing	500	\$12,119,165	2,500	\$4,847,666	10.23%	* \$495,923	\$40,853	\$16.34	0.000%	0.003%
3122	Tobacco Manufacturing	500	\$1,076,280	89	\$12,093,036	11.27%	\$1,362,815	\$2,212	\$24.85	0.000%	0.002%
3131	Fiber, Yarn, and Thread Mills	500	\$1,873,956	339	\$5,527,895	5.99%	* \$330,879	\$8,249	\$24.33	0.000%	0.007%
3132	Fabric Mills	500	\$5,666,032	1,301	\$4,355,136	5.99%	* \$260,682	\$23,750	\$18.26	0.000%	0.007%
3133	Textile and Fabric Finishing and Fabric Coating Mills	500	\$5,764,043	1,447	\$3,983,444	5.99%	* \$238,434	\$18,455	\$12.75	0.000%	0.005%
3141	Textile Furnishings Mills	500	\$5,353,994	2,644	\$2,024,960	12.75%	* \$258,176	\$26,893	\$10.17	0.001%	0.004%
3149	Other Textile Product Mills	500	\$6,209,208	4,182	\$1,484,746	12.75%	* \$189,301	\$39,876	\$9.54	0.001%	0.005%
3151	Apparel Knitting Mills	500	\$2,507,528	702	\$3,571,977	3.79%	\$135,382	\$9,846	\$14.03	0.000%	0.010%
3152	Cut and Sew Apparel Manufacturing	500	\$20,163,519	11,002	\$1,832,714	5.13%	\$93,944	\$81,374	\$7.40	0.000%	0.008%
3159	Apparel Accessories and Other Apparel Manufacturing	500	\$2,013,665	1,187	\$1,696,432	4.40%	\$74,661	\$9,892	\$8.33	0.000%	0.011%
3161	Leather and Hide Tanning and Finishing	500	\$873,238	239	\$3,653,714	5.85%	* \$213,698	\$2,668	\$11.16	0.000%	0.005%
3162	Footwear Manufacturing	500	\$660,048	296	\$2,229,891	5.85%	* \$130,421	\$3,239	\$10.94	0.000%	0.008%
3169	Other Leather and Allied Product Manufacturing	500	\$1,645,568	887	\$1,855,206	5.85%	* \$108,507	\$7,120	\$8.03	0.000%	0.007%
3211	Sawmills and Wood Preservation	500	\$15,776,854	3,712	\$4,250,230	3.52%	* \$149,582	\$53,286	\$14.36	0.000%	0.010%
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	500	\$7,768,361	1,427	\$5,443,841	3.52%	* \$191,589	\$31,249	\$21.90	0.000%	0.011%
3219	Other Wood Product Manufacturing	500	\$23,126,979	9,656	\$2,395,089	3.52%	* \$84,292	\$122,393	\$12.68	0.001%	0.015%
3221	Pulp, Paper, and Paperboard Mills	750	\$69,640,777	305	\$228,330,418	0.79%	\$1,795,964	\$197,032	\$646.01	0.000%	0.036%
3222	Converted Paper Product Manufacturing	750	\$83,949,614	3,213	\$26,128,109	5.03%	\$1,314,602	\$323,964	\$100.83	0.000%	0.008%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
3231	Printing and Related Support Activities	500	\$53,813,193	34,017	\$1,581,950	4.02%	*	\$63,529	\$391,201	\$11.50	0.001%	0.018%
3241	Petroleum and Coal Products Manufacturing	500	\$14,935,464	1,002	\$14,905,653	6.74%	*	\$1,004,168	\$99,191	\$98.99	0.001%	0.010%
3251	Basic Chemical Manufacturing	500	\$14,830,466	1,021	\$14,525,432	4.96%		\$720,947	\$109,646	\$107.39	0.001%	0.015%
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	500	\$11,017,065	613	\$17,972,373	3.50%		\$629,477	\$52,764	\$86.08	0.000%	0.014%
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	500	\$4,188,645	616	\$6,799,748	9.81%	*	\$666,816	\$37,456	\$60.81	0.001%	0.009%
3254	Pharmaceutical and Medicine Manufacturing	500	\$13,861,994	1,279	\$10,838,150	13.83%		\$1,498,384	\$50,528	\$39.51	0.000%	0.003%
3255	Paint, Coating, and Adhesive Manufacturing	500	\$8,418,373	1,457	\$5,777,881	5.16%		\$298,326	\$37,330	\$25.62	0.000%	0.009%
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	500	\$13,254,933	1,957	\$6,773,088	9.92%		\$671,676	\$62,474	\$31.92	0.000%	0.005%
3259	Other Chemical Product and Preparation Manufacturing	500	\$11,956,604	2,021	\$5,916,182	2.92%		\$172,723	\$71,133	\$35.20	0.001%	0.020%
3261	Plastics Product Manufacturing	500	\$50,276,834	9,490	\$5,297,875	3.46%		\$183,134	\$179,229	\$18.89	0.000%	0.010%
3262	Rubber Product Manufacturing	500	\$7,529,921	1,716	\$4,388,066	1.96%		\$86,181	\$33,946	\$19.78	0.000%	0.023%
3271	Clay Product and Refractory Manufacturing	500	\$3,236,937	1,295	\$2,499,565	2.64%		\$66,003	\$35,477	\$27.40	0.001%	0.042%
3272	Glass and Glass Product Manufacturing	500	\$3,733,898	1,764	\$2,116,722	2.84%		\$60,064	\$46,219	\$26.20	0.001%	0.044%
3273	Cement and Concrete Product Manufacturing	500	\$23,428,985	5,160	\$4,540,501	4.46%		\$202,391	\$214,953	\$41.66	0.001%	0.021%
3274	Lime and Gypsum Product Manufacturing	500	\$889,984	234	\$3,803,349	3.75%	*	\$142,519	\$7,616	\$32.55	0.001%	0.023%
3279	Other Nonmetallic Mineral Product Manufacturing	500	\$6,263,750	2,427	\$2,580,861	3.75%	*	\$96,710	\$62,783	\$25.87	0.001%	0.027%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
3311	Iron and Steel Mills and Ferroalloy Manufacturing	750	\$48,840,914	757	\$64,519,041	1.13%		\$731,335	\$179,990	\$237.77	0.000%	0.033%
3312	Steel Product Manufacturing from Purchased Steel	1000	\$14,257,336	673	\$21,184,749	2.11%	*	\$447,967	\$64,524	\$95.88	0.000%	0.021%
3313	Alumina and Aluminum Production and Processing	750	\$25,649,343	441	\$58,161,776	3.83%		\$2,230,141	\$78,246	\$177.43	0.000%	0.008%
3314	Nonferrous Metal (except Aluminum) Production and Processing	750	\$21,101,820	792	\$26,643,712	2.11%	*	\$563,400	\$80,178	\$101.24	0.000%	0.018%
3315	Foundries	500	\$9,746,681	2,017	\$4,832,266	1.80%		\$86,966	\$53,449	\$26.50	0.001%	0.030%
3321	Forging and Stamping	500	\$12,349,546	2,380	\$5,188,885	3.79%		\$196,486	\$54,503	\$22.90	0.000%	0.012%
3322	Cutlery and Handtool Manufacturing	500	\$4,376,384	1,338	\$3,270,840	3.58%		\$117,181	\$22,700	\$16.97	0.001%	0.014%
3323	Architectural and Structural Metals Manufacturing	500	\$35,518,402	11,997	\$2,960,607	3.21%		\$94,928	\$199,586	\$16.64	0.001%	0.018%
3324	Boiler, Tank, and Shipping Container Manufacturing	500	\$6,124,956	1,196	\$5,121,201	2.20%		\$112,904	\$31,175	\$26.07	0.001%	0.023%
3325	Hardware Manufacturing	500	\$2,978,677	711	\$4,189,419	4.41%	*	\$184,717	\$13,362	\$18.79	0.000%	0.010%
3326	Spring and Wire Product Manufacturing	500	\$5,353,423	1,518	\$3,526,629	4.41%	*	\$155,494	\$27,453	\$18.08	0.001%	0.012%
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	500	\$34,337,009	24,524	\$1,400,139	4.41%	*	\$61,734	\$311,022	\$12.68	0.001%	0.021%
3328	Coating, Engraving, Heat Treating, and Allied Activities	500	\$12,243,115	5,514	\$2,220,369	2.61%		\$58,038	\$81,783	\$14.83	0.001%	0.026%
3329	Other Fabricated Metal Product Manufacturing	500	\$17,939,791	5,578	\$3,216,169	5.42%		\$174,165	\$98,189	\$17.60	0.001%	0.010%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	500	\$11,024,491	2,465	\$4,472,410	2.29%		\$102,416	\$51,504	\$20.89	0.000%	0.020%
3332	Industrial Machinery	500	\$14,752,862	3,808	\$3,874,176	3.43%		\$132,851	\$74,649	\$19.60	0.001%	0.015%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Manufacturing										
3333	Commercial and Service Industry Machinery Manufacturing	500	\$8,976,198	2,053	\$4,372,235	2.58%	\$112,667	\$39,376	\$19.18	0.000%	0.017%
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	500	\$7,395,561	1,371	\$5,394,282	3.90%	\$210,142	\$32,384	\$23.62	0.000%	0.011%
3335	Metalworking Machinery Manufacturing	500	\$17,820,887	8,280	\$2,152,281	3.49%	\$75,184	\$137,487	\$16.60	0.001%	0.022%
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	500	\$4,039,286	697	\$5,795,246	1.76%	\$101,852	\$18,924	\$27.15	0.000%	0.027%
3339	Other General Purpose Machinery Manufacturing	500	\$21,349,036	5,517	\$3,869,682	2.91%	\$112,708	\$111,104	\$20.14	0.001%	0.018%
3341	Computer and Peripheral Equipment Manufacturing	1000	\$78,437,051	1,472	\$53,286,040	7.96%	\$4,241,850	\$75,484	\$51.28	0.000%	0.001%
3342	Communications Equipment Manufacturing	750	\$58,683,023	1,735	\$33,823,068	2.01%	\$679,023	\$76,563	\$44.13	0.000%	0.006%
3343	Audio and Video Equipment Manufacturing	750	\$8,663,276	545	\$15,895,919	4.10%	\$651,804	\$12,244	\$22.47	0.000%	0.003%
3344	Semiconductor and Other Electronic Component Manufacturing	500	\$20,719,452	4,318	\$4,798,391	2.67%	\$128,294	\$92,052	\$21.32	0.000%	0.017%
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	500	\$18,680,005	4,256	\$4,389,099	3.70%	\$162,351	\$84,682	\$19.90	0.000%	0.012%
3346	Manufacturing and Reproducing Magnetic and Optical Media	500	\$2,335,778	818	\$2,855,474	4.89%	\$139,490	\$11,456	\$14.01	0.000%	0.010%
3351	Electric Lighting Equipment Manufacturing	500	\$4,592,269	1,085	\$4,232,506	3.45%	\$146,150	\$19,395	\$17.88	0.000%	0.012%
3352	Household Appliance	500	\$2,306,986	249	\$9,265,006	3.71%	\$344,040	\$5,454	\$21.90	0.000%	0.006%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Manufacturing										
3353	Electrical Equipment Manufacturing	500	\$7,760,941	1,989	\$3,901,931	4.93%	\$192,329	\$38,547	\$19.38	0.000%	0.010%
3359	Other Electrical Equipment and Component Manufacturing	500	\$9,810,237	1,786	\$5,492,854	3.79%	\$208,070	\$40,417	\$22.63	0.000%	0.011%
3361	Motor Vehicle Manufacturing	1000	\$238,631,396	300	\$795,437,988	1.18%	\$9,389,043	\$141,127	\$470.42	0.000%	0.005%
3362	Motor Vehicle Body and Trailer Manufacturing	500	\$9,229,921	1,828	\$5,049,191	1.48%	* \$74,652	\$38,339	\$20.97	0.000%	0.028%
3363	Motor Vehicle Parts Manufacturing	500	\$28,830,974	4,161	\$6,928,857	1.48%	* \$102,443	\$124,222	\$29.85	0.000%	0.029%
3364	Aerospace Product and Parts Manufacturing	1000	\$119,394,093	1,243	\$96,053,172	1.48%	\$1,422,765	\$207,726	\$167.12	0.000%	0.012%
3365	Railroad Rolling Stock Manufacturing	1000	\$7,574,556	142	\$53,341,947	1.48%	* \$788,661	\$14,186	\$99.90	0.000%	0.013%
3366	Ship and Boat Building	500	\$6,652,986	1,573	\$4,229,489	4.69%	\$198,482	\$160,308	\$101.91	0.002%	0.051%
3369	Other Transportation Equipment Manufacturing	500	\$2,544,817	751	\$3,388,571	7.24%	\$245,261	\$12,462	\$16.59	0.000%	0.007%
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	500	\$21,638,588	15,731	\$1,375,538	3.80%	* \$52,281	\$151,397	\$9.62	0.001%	0.018%
3372	Office Furniture (including Fixtures) Manufacturing	500	\$11,314,087	3,938	\$2,873,054	3.80%	* \$109,198	\$54,868	\$13.93	0.000%	0.013%
3379	Other Furniture Related Product Manufacturing	500	\$3,908,605	925	\$4,225,519	3.80%	* \$160,602	\$13,436	\$14.53	0.000%	0.009%
3391	Medical Equipment and Supplies Manufacturing	500	\$19,679,106	10,998	\$1,789,335	7.70%	\$137,826	\$137,153	\$12.47	0.001%	0.009%
3399	Other Miscellaneous Manufacturing	500	\$39,644,981	18,772	\$2,111,921	5.32%	\$112,375	\$236,646	\$12.61	0.001%	0.011%
4231	Motor Vehicle and Motor Vehicle Parts and Supplies	100	\$69,928,928	18,668	\$3,745,925	2.45%	\$91,612	\$435,426	\$23.32	0.001%	0.025%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Merchant Wholesalers											
4232	Furniture and Home Furnishing Merchant Wholesalers	100	\$40,274,798	11,781	\$3,418,623	2.44%	*	\$83,500	\$165,726	\$14.07	0.000%	0.017%
4233	Lumber and Other Construction Materials Merchant Wholesalers	100	\$56,728,711	11,955	\$4,745,187	2.89%		\$136,931	\$285,683	\$23.90	0.001%	0.017%
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	100	\$81,839,410	27,600	\$2,965,196	2.26%		\$67,108	\$682,515	\$24.73	0.001%	0.037%
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	100	\$42,922,558	7,458	\$5,755,237	1.06%		\$61,087	\$134,189	\$17.99	0.000%	0.029%
4236	Electrical and Electronic Goods Merchant Wholesalers	100	\$101,955,422	20,678	\$4,930,623	1.73%		\$85,164	\$520,094	\$25.15	0.001%	0.030%
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	100	\$48,641,303	11,390	\$4,270,527	2.32%		\$99,246	\$315,189	\$27.67	0.001%	0.028%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	100	\$139,067,378	45,371	\$3,065,116	3.02%		\$92,674	\$1,201,142	\$26.47	0.001%	0.029%
4239	Miscellaneous Durable Goods Merchant Wholesalers	100	\$89,056,657	32,932	\$2,704,259	3.30%		\$89,168	\$496,345	\$15.07	0.001%	0.017%
4241	Paper and Paper Product Merchant Wholesalers	100	\$34,811,426	9,978	\$3,488,818	1.84%		\$64,298	\$127,748	\$12.80	0.000%	0.020%
4242	Drugs and Druggists' Sundries Merchant Wholesalers	100	\$26,676,112	5,907	\$4,516,017	4.31%		\$194,462	\$67,594	\$11.44	0.000%	0.006%
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	100	\$57,599,231	15,559	\$3,701,988	4.54%		\$168,090	\$127,277	\$8.18	0.000%	0.005%
4244	Grocery and Related Product Wholesalers	100	\$161,028,663	28,149	\$5,720,582	1.50%		\$86,094	\$448,177	\$15.92	0.000%	0.018%
4245	Farm Product Raw Material Merchant Wholesalers	100	\$48,514,091	4,464	\$10,867,852	2.76%		\$300,407	\$69,092	\$15.48	0.000%	0.005%
4246	Chemical and Allied Products	100	\$34,188,696	8,916	\$3,834,533	3.25%		\$124,681	\$192,557	\$21.60	0.001%	0.017%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Merchant Wholesalers											
4247	Petroleum and Petroleum Products Merchant Wholesalers	100	\$79,314,045	5,008	\$15,837,469	1.36%		\$215,418	\$133,688	\$26.69	0.000%	0.012%
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	100	\$23,393,654	3,079	\$7,597,809	3.94%		\$299,241	\$51,869	\$16.85	0.000%	0.006%
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	100	\$71,867,946	26,619	\$2,699,874	3.85%		\$103,994	\$285,529	\$10.73	0.000%	0.010%
4251	Wholesale Electronic Markets and Agents and Brokers	100	\$92,888,180	37,588	\$2,471,219	9.78%	*	\$241,601	\$476,755	\$12.68	0.001%	0.005%
4411	Automobile Dealers	20	\$70,742,672	33,011	\$2,143,003	1.11%		\$23,848	\$518,538	\$15.71	0.001%	0.066%
4412	Other Motor Vehicle Dealers	100	\$42,166,660	14,790	\$2,851,025	2.72%	**	\$77,442	\$308,224	\$20.84	0.001%	0.027%
4413	Automotive Parts, Accessories, and Tire Stores	100	\$32,845,228	34,382	\$955,303	1.37%	*	\$13,063	\$750,678	\$21.83	0.002%	0.167%
4421	Furniture Stores	100	\$26,643,000	20,426	\$1,304,367	3.57%	*	\$46,556	\$252,785	\$12.38	0.001%	0.027%
4422	Home Furnishings Stores	100	\$24,067,297	27,754	\$867,165	3.57%	*	\$30,951	\$390,396	\$14.07	0.002%	0.045%
4431	Electronics and Appliance Stores	20	\$17,780,752	29,377	\$605,261	2.90%	*	\$17,567	\$423,143	\$14.40	0.002%	0.082%
4441	Building Material and Supplies Dealers	100	\$81,194,686	46,537	\$1,744,734	5.18%	*	\$90,384	\$743,628	\$15.98	0.001%	0.018%
4442	Lawn and Garden Equipment and Supplies Stores	100	\$22,811,162	17,363	\$1,313,780	2.44%	**	\$32,092	\$218,906	\$12.61	0.001%	0.039%
4451	Grocery Stores	100	\$74,549,775	67,757	\$1,100,252	1.53%	*	\$16,799	\$499,283	\$7.37	0.001%	0.044%
4452	Specialty Food Stores	100	\$11,727,478	21,328	\$549,863	1.55%	*	\$8,541	\$185,445	\$8.69	0.002%	0.102%
4453	Beer, Wine, and Liquor Stores	100	\$23,288,378	25,715	\$905,634	2.23%	*	\$20,203	\$148,382	\$5.77	0.001%	0.029%
4461	Health and Personal Care Stores	100	\$61,918,427	42,459	\$1,458,311	2.78%	*	\$40,594	\$478,378	\$11.27	0.001%	0.028%
4471	Gasoline Stations	100	\$116,910,602	65,785	\$1,777,162	1.10%	*	\$19,596	\$1,025,380	\$15.59	0.001%	0.080%
4481	Clothing Stores	100	\$22,113,740	39,378	\$561,576	5.09%	*	\$28,559	\$535,970	\$13.61	0.002%	0.048%
4482	Shoe Stores	100	\$5,139,559	6,618	\$776,603	5.09%	*	\$39,495	\$170,653	\$25.79	0.003%	0.065%
4483	Jewelry, Luggage, and Leather	100	\$14,071,431	20,017	\$702,974	5.09%	*	\$35,750	\$243,593	\$12.17	0.002%	0.034%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Goods Stores											
4511	Sporting Goods, Hobby, and Musical Instrument Stores	100	\$21,052,518	31,401	\$670,441	2.52%	*	\$16,891	\$385,087	\$12.26	0.002%	0.073%
4512	Book, Periodical, and Music Stores	100	\$5,547,897	10,061	\$551,426	2.52%	*	\$13,893	\$102,803	\$10.22	0.002%	0.074%
4521	Department Stores	100	\$378,427	367	\$1,031,135	4.30%	*	\$44,373	\$36,068	\$98.28	0.010%	0.221%
4529	Other General Merchandise Stores	100	\$6,363,552	9,552	\$666,201	4.30%	*	\$28,669	\$154,777	\$16.20	0.002%	0.057%
4531	Florists	100	\$6,165,243	21,089	\$292,344	3.21%	*	\$9,383	\$64,761	\$3.07	0.001%	0.033%
4532	Office Supplies, Stationery, and Gift Stores	500	\$16,819,492	31,458	\$534,665	3.21%	*	\$17,160	\$450,332	\$14.32	0.003%	0.083%
4533	Used Merchandise Stores	100	\$5,224,055	13,281	\$393,348	3.21%	*	\$12,625	\$95,007	\$7.15	0.002%	0.057%
4539	Other Miscellaneous Store Retailers	100	\$28,753,347	35,549	\$808,837	3.21%	*	\$25,960	\$415,968	\$11.70	0.001%	0.045%
4541	Electronic Shopping and Mail-Order Houses	100	\$21,885,200	14,544	\$1,504,758	3.96%	*	\$59,655	\$109,994	\$7.56	0.001%	0.013%
4542	Vending Machine Operators	100	\$3,654,885	4,887	\$747,879	3.96%	*	\$29,649	\$72,864	\$14.91	0.002%	0.050%
4543	Direct Selling Establishments	20	\$18,544,166	23,770	\$780,150	3.96%	*	\$30,928	\$308,287	\$12.97	0.002%	0.042%
4811	Scheduled Air Transportation	1500	\$90,458,704	638	\$141,784,802	1.85%	*	\$2,625,215	\$338,828	\$531.08	0.000%	0.020%
4812	Nonscheduled Air Transportation	1500	\$9,137,008	2,155	\$4,239,911	1.85%	*	\$78,504	\$67,806	\$31.46	0.001%	0.040%
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	20	\$1,019,668	645	\$1,580,880	4.17%	*	\$65,874	\$11,664	\$18.08	0.001%	0.027%
4832	Inland Water Transportation	500	\$1,622,825	537	\$3,022,021	4.17%	*	\$125,926	\$9,628	\$17.93	0.001%	0.014%
4841	General Freight Trucking	500	\$55,275,205	50,289	\$1,099,151	2.33%	*	\$25,596	\$622,702	\$12.38	0.001%	0.048%
4842	Specialized Freight Trucking	500	\$41,688,216	47,778	\$872,540	2.33%	*	\$20,319	\$466,400	\$9.76	0.001%	0.048%
4851	Urban Transit Systems	100	\$406,540	609	\$667,554	1.80%	*	\$12,041	\$10,141	\$16.65	0.002%	0.138%
4852	Interurban and Rural Bus Transportation	100	\$147,334	201	\$733,003	1.80%	*	\$13,221	\$4,307	\$21.43	0.003%	0.162%
4853	Taxi and Limousine Service	500	\$3,593,462	6,813	\$527,442	1.80%	*	\$9,514	\$60,155	\$8.83	0.002%	0.093%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
4854	School and Employee Bus Transportation	100	\$1,462,900	2,936	\$498,263	1.80%	*	\$8,987	\$41,269	\$14.06	0.003%	0.156%
4855	Charter Bus Industry	500	\$1,417,916	1,133	\$1,251,470	1.80%	*	\$22,573	\$13,013	\$11.49	0.001%	0.051%
4859	Other Transit and Ground Passenger Transportation	500	\$2,212,447	2,827	\$782,613	1.80%	*	\$14,116	\$26,229	\$9.28	0.001%	0.066%
4861	Pipeline Transportation of Crude Oil	1500	\$4,499,936	62	\$72,579,611	14.74%	*	\$10,698,590	\$16,966	\$273.65	0.000%	0.003%
4862	Pipeline Transportation of Natural Gas	500	\$2,416,012	110	\$21,963,747	14.74%	*	\$3,237,564	\$24,580	\$223.45	0.001%	0.007%
4869	Other Pipeline Transportation	500	\$434,780	28	\$15,527,855	14.74%	*	\$2,288,882	\$5,684	\$202.99	0.001%	0.009%
4871	Scenic and Sightseeing Transportation, Land	500	NA	542	NA	4.01%	*	NA	\$2,121	\$3.91	NA	NA
4872	Scenic and Sightseeing Transportation, Water	500	\$882,508	1,705	\$517,600	4.01%	*	\$20,755	\$5,947	\$3.49	0.001%	0.017%
4879	Scenic and Sightseeing Transportation, Other	100	\$197,202	163	\$1,209,831	4.01%	*	\$48,512	\$757	\$4.64	0.000%	0.010%
4881	Support Activities for Air Transportation	100	\$3,783,844	3,452	\$1,096,131	2.77%	**	\$30,313	\$68,653	\$19.89	0.002%	0.066%
4882	Support Activities for Rail Transportation	100	\$621,695	405	\$1,535,050	2.77%	**	\$42,451	\$10,983	\$27.12	0.002%	0.064%
4883	Support Activities for Water Transportation	100	\$2,402,370	1,686	\$1,424,893	2.77%	**	\$39,405	\$46,816	\$27.77	0.002%	0.070%
4884	Support Activities for Road Transportation	100	\$3,726,597	7,821	\$476,486	2.77%	**	\$13,177	\$82,035	\$10.49	0.002%	0.080%
4885	Freight Transportation Arrangement	100	\$13,536,312	11,886	\$1,138,845	2.77%	**	\$31,494	\$130,060	\$10.94	0.001%	0.035%
4889	Other Support Activities for Transportation	100	\$1,036,227	1,235	\$839,050	2.77%	**	\$23,203	\$11,964	\$9.69	0.001%	0.042%
4921	Couriers	1500	\$56,077,027	3,309	\$16,946,820	2.77%	**	NA	\$273,646	\$82.70	0.000%	NA
4922	Local Messengers and Local Delivery	500	\$2,656,414	4,644	\$572,010	2.77%	**	NA	\$33,725	\$7.26	0.001%	NA

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
4931	Warehousing and Storage	100	\$7,126,170	5,055	\$1,409,727	3.68%	*	\$51,842	\$99,744	\$19.73	0.001%	0.038%
5111	Newspaper, Periodical, Book, and Directory Publishers	500	\$31,390,650	16,277	\$1,928,528	11.49%	*	\$221,498	\$150,179	\$9.23	0.000%	0.004%
5112	Software Publishers	500	\$22,505,520	6,475	\$3,475,756	16.84%	*	\$585,180	\$74,535	\$11.51	0.000%	0.002%
5121	Motion Picture and Video Industries	500	\$19,524,425	15,259	\$1,279,535	7.07%	**	\$90,512	\$87,679	\$5.75	0.000%	0.006%
5122	Sound Recording Industries	100	\$2,272,244	2,979	\$762,754	3.60%	**	\$27,421	\$28,108	\$9.44	0.001%	0.034%
5151	Radio and Television Broadcasting	20	\$1,875,318	3,862	\$485,582	4.55%	*	\$22,081	\$64,110	\$16.60	0.003%	0.075%
5152	Cable and Other Subscription Programming	500	\$3,540,533	368	\$9,621,013	4.55%	*	\$437,500	\$49,337	\$134.07	0.001%	0.031%
5161	Internet Publishing and Broadcasting	500	\$3,889,204	1,779	\$2,186,174	5.20%	*	\$113,573	\$10,223	\$5.75	0.000%	0.005%
5171	Wired Telecommunications Carriers	1500	\$281,451,045	3,058	\$92,037,621	3.30%	*	\$3,041,207	\$6,291,597	\$2,057.42	0.002%	0.068%
5172	Wireless Telecommunications Carriers (except Satellite)	1500	\$73,856,384	3,234	\$22,837,472	3.30%	*	\$754,621	\$1,273,372	\$393.75	0.002%	0.052%
5173	Telecommunications Resellers	1500	\$9,081,840	2,442	\$3,719,017	3.30%	*	\$122,888	\$19,679	\$8.06	0.000%	0.007%
5174	Satellite Telecommunications	1000	\$4,869,413	521	\$9,346,282	3.30%	*	\$308,830	\$117,830	\$226.16	0.002%	0.073%
5175	Cable and Other Program Distribution	1000	\$54,497,430	1,404	\$38,815,833	3.30%	*	\$1,282,595	\$202,722	\$144.39	0.000%	0.011%
5179	Other Telecommunications	1000	\$2,736,614	496	\$5,517,367	3.30%	*	\$182,311	\$6,236	\$12.57	0.000%	0.007%
5181	Internet Service Providers and Web Search Portals	1000	\$14,749,609	4,771	\$3,091,513	3.76%	*	\$116,092	\$27,914	\$5.85	0.000%	0.005%
5182	Data Processing, Hosting, and Related Services	1000	\$66,676,867	8,072	\$8,260,266	3.76%	*	\$310,189	\$66,048	\$8.18	0.000%	0.003%
5191	Other Information Services	1000	\$6,430,397	3,675	\$1,749,768	9.07%	*	\$158,763	\$14,386	\$3.91	0.000%	0.002%
5211	Monetary Authorities - Central Bank	1000	\$27,189,827	24	\$1,132,909,455	18.99%	*	\$215,178,561	\$1,040	\$43.35	0.000%	0.000%
5221	Depository Credit Intermediation	20	\$11,362,795	8,941	\$1,270,864	13.14%	*	\$166,984	\$72,270	\$8.08	0.001%	0.005%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
5222	Nondepository Credit Intermediation	100	\$26,401,044	20,441	\$1,291,573	13.14%	*	\$169,705	\$86,458	\$4.23	0.000%	0.002%
5223	Activities Related to Credit Intermediation	20	\$13,394,691	22,444	\$596,805	9.18%	**	\$54,765	\$52,831	\$2.35	0.000%	0.004%
5231	Securities and Commodity Contracts Intermediation and Brokerage	100	\$19,679,634	13,179	\$1,493,257	10.68%	*	\$159,450	\$85,268	\$6.47	0.000%	0.004%
5232	Securities and Commodity Exchanges	100	\$18,953	50	\$379,062	10.68%	*	\$40,476	\$154	\$3.09	0.001%	0.008%
5239	Other Financial Investment Activities	100	\$36,764,634	34,757	\$1,057,762	17.55%	*	\$185,637	\$64,840	\$1.87	0.000%	0.001%
5241	Insurance Carriers	100	\$16,999,907	5,366	\$3,168,078	5.37%	*	\$170,228	\$102,319	\$19.07	0.001%	0.011%
5242	Agencies, Brokerages, and Other Insurance Related Activities	20	\$45,060,735	120,559	\$373,765	5.37%	*	\$20,083	\$317,882	\$2.64	0.001%	0.013%
5259	Other Investment Pools and Funds	20	\$4,626,100	1,962	\$2,357,849	60.77%	*	\$1,432,918	NA	NA	NA	NA
5311	Lessors of Real Estate	100	\$73,849,520	96,438	\$765,772	12.63%	*	\$96,688	\$421,364	\$4.37	0.001%	0.005%
5312	Offices of Real Estate Agents and Brokers	100	\$50,284,269	74,966	\$670,761	9.59%	*	\$64,320	\$309,591	\$4.13	0.001%	0.006%
5313	Activities Related to Real Estate	100	\$34,985,991	63,523	\$550,761	13.77%	*	\$75,848	\$299,693	\$4.72	0.001%	0.006%
5321	Automotive Equipment Rental and Leasing	500	\$7,861,774	4,720	\$1,665,630	1.15%	**	\$19,127	\$52,386	\$11.10	0.001%	0.058%
5322	Consumer Goods Rental	100	\$6,951,206	14,006	\$496,302	3.07%	*	\$15,260	\$111,154	\$7.94	0.002%	0.052%
5323	General Rental Centers	100	\$2,226,277	3,590	\$620,133	3.13%	*	\$19,394	\$24,287	\$6.77	0.001%	0.035%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	100	\$11,272,029	7,981	\$1,412,358	5.36%	**	\$75,717	\$78,292	\$9.81	0.001%	0.013%
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	100	\$4,741,069	2,031	\$2,334,352	25.70%	*	\$599,842	\$9,353	\$4.60	0.000%	0.001%
5411	Legal Services	100	\$113,403,88	172,066	\$659,072	8.52%	**	\$56,130	\$694,168	\$4.03	0.001%	0.007%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
			3									
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	500	\$46,192,013	100,618	\$459,083	8.61%	**	\$39,504	\$588,348	\$5.85	0.001%	0.015%
5413	Architectural, Engineering, and Related Services	100	\$74,661,684	92,458	\$807,520	4.45%	**	\$35,963	\$833,110	\$9.01	0.001%	0.025%
5414	Specialized Design Services	100	\$15,340,511	29,941	\$512,358	6.23%	**	\$31,932	\$153,272	\$5.12	0.001%	0.016%
5415	Computer Systems Design and Related Services	500	\$87,408,748	90,809	\$962,556	5.48%	**	\$52,725	\$805,364	\$8.87	0.001%	0.017%
5416	Management, Scientific, and Technical Consulting Services	100	\$61,722,814	114,132	\$540,802	6.87%	**	\$37,159	\$612,746	\$5.37	0.001%	0.014%
5417	Scientific Research and Development Services	100	\$17,412,871	10,902	\$1,597,218	6.56%	**	\$104,799	\$131,728	\$12.08	0.001%	0.012%
5418	Advertising and Related Services	500	\$35,964,810	33,996	\$1,057,913	5.01%	**	\$53,019	\$5,515,070	\$162.23	0.015%	0.306%
5419	Other Professional, Scientific, and Technical Services	500	\$37,102,706	63,629	\$583,110	6.70%	**	\$39,073	\$290,727	\$4.57	0.001%	0.012%
5511	Management of Companies and Enterprises	100	\$21,351,256	12,575	\$1,697,913	14.89%	**	\$252,797	\$144,712	\$11.51	0.001%	0.005%
5611	Office Administrative Services	100	\$19,428,590	20,769	\$935,461	3.86%	*	\$36,129	\$138,454	\$6.67	0.001%	0.018%
5612	Facilities Support Services	500	\$3,608,922	1,675	\$2,154,580	3.86%	*	\$83,212	\$42,538	\$25.40	0.001%	0.031%
5613	Employment Services	100	\$16,075,976	18,938	\$848,874	1.86%	**	\$15,790	\$228,009	\$12.04	0.001%	0.076%
5614	Business Support Services	100	\$17,316,592	28,306	\$611,764	3.86%	*	\$23,627	\$172,674	\$6.10	0.001%	0.026%
5615	Travel Arrangement and Reservation Services	100	\$8,462,940	18,721	\$452,056	2.15%	**	\$9,715	\$111,377	\$5.95	0.001%	0.061%
5616	Investigation and Security Services	100	\$8,818,170	17,603	\$500,947	3.86%	*	\$19,347	\$162,523	\$9.23	0.002%	0.048%
5617	Services to Buildings and Dwellings	100	\$51,821,602	149,715	\$346,135	3.86%	*	\$13,368	\$13,044,016	\$87.13	0.025%	0.652%
5619	Other Support Services	100	\$16,173,312	18,043	\$896,376	5.48%	*	\$49,085	\$120,988	\$6.71	0.001%	0.014%
5621	Waste Collection	500	\$10,169,746	6,657	\$1,527,677	3.16%	*	\$48,217	\$71,582	\$10.75	0.001%	0.022%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
5622	Waste Treatment and Disposal	100	\$2,043,615	1,461	\$1,398,778	3.16%	*	\$44,149	\$20,611	\$14.11	0.001%	0.032%
5629	Remediation and Other Waste Management Services	100	\$6,347,147	6,524	\$972,892	3.16%	*	\$30,707	\$119,985	\$18.39	0.002%	0.060%
6111	Elementary and Secondary Schools	100	\$20,572,975	16,646	\$1,235,911	7.67%	**	\$94,770	\$40,879	\$2.46	0.000%	0.003%
6112	Junior Colleges	500	\$1,913,953	534	\$3,584,181	7.67%	**	\$274,836	\$2,317	\$4.34	0.000%	0.002%
6113	Colleges, Universities, and Professional Schools	100	\$2,608,762	1,357	\$1,922,448	7.67%	**	\$147,414	\$4,447	\$3.28	0.000%	0.002%
6114	Business Schools and Computer and Management Training	100	\$4,579,827	6,914	\$662,399	7.67%	**	\$50,793	\$11,622	\$1.68	0.000%	0.003%
6115	Technical and Trade Schools	500	\$5,530,506	6,250	\$884,881	7.67%	**	\$67,853	\$18,329	\$2.93	0.000%	0.004%
6116	Other Schools and Instruction	100	\$8,630,040	28,614	\$301,602	7.67%	**	\$23,127	\$57,324	\$2.00	0.001%	0.009%
6117	Educational Support Services	100	\$2,860,541	4,814	\$594,213	7.67%	**	\$45,564	\$9,570	\$1.99	0.000%	0.004%
6211	Offices of Physicians	100	\$179,569,639	181,818	\$987,634	4.39%	*	\$43,361	\$547,874	\$3.01	0.000%	0.007%
6212	Offices of Dentists	100	\$71,562,894	114,618	\$624,360	6.73%	*	\$42,019	\$254,868	\$2.22	0.000%	0.005%
6213	Offices of Other Health Practitioners	100	\$34,482,319	99,082	\$348,018	8.92%	*	\$31,026	\$269,997	\$2.72	0.001%	0.009%
6214	Outpatient Care Centers	500	\$27,906,838	12,286	\$2,271,434	5.58%	*	\$126,720	\$81,564	\$6.64	0.000%	0.005%
6215	Medical and Diagnostic Laboratories	500	\$16,028,449	6,974	\$2,298,315	5.45%	*	\$125,365	\$38,788	\$5.56	0.000%	0.004%
6216	Home Health Care Services	20	\$2,508,304	8,000	\$313,538	5.45%	*	\$17,102	\$28,708	\$3.59	0.001%	0.021%
6219	Other Ambulatory Health Care Services	100	\$5,284,836	5,266	\$1,003,577	5.45%	*	\$54,742	\$30,952	\$5.88	0.001%	0.011%
6221	General Medical and Surgical Hospitals	20	\$435,561	151	\$2,884,513	5.08%	**	\$146,458	\$956	\$6.33	0.000%	0.004%
6222	Psychiatric and Substance Abuse Hospitals	20	\$103,678	48	\$2,159,950	5.08%	**	\$109,669	\$210	\$4.37	0.000%	0.004%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	20	\$140,371	130	\$1,079,779	5.08%	**	\$54,825	\$826	\$6.35	0.001%	0.012%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
6231	Nursing Care Facilities	500	\$34,015,258	8,321	\$4,087,881	5.08%	**	\$207,558	\$79,524	\$9.56	0.000%	0.005%
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	100	\$4,602,181	6,072	\$757,935	5.08%	**	\$38,483	\$64,107	\$10.56	0.001%	0.027%
6233	Community Care Facilities for the Elderly	100	\$7,004,075	12,194	\$574,387	5.08%	**	\$29,164	\$45,476	\$3.73	0.001%	0.013%
6239	Other Residential Care Facilities	100	\$2,229,723	2,859	\$779,896	5.08%	**	\$39,598	\$16,688	\$5.84	0.001%	0.015%
6241	Individual and Family Services	100	\$19,770,257	33,309	\$593,541	5.08%	**	\$30,136	\$110,547	\$3.32	0.001%	0.011%
6242	Community Food and Housing, and Emergency and Other Relief Services	100	\$8,476,028	8,457	\$1,002,250	5.08%	**	\$50,888	\$27,436	\$3.24	0.000%	0.006%
6243	Vocational Rehabilitation Services	100	\$3,392,390	3,782	\$896,983	5.08%	**	\$45,543	\$16,117	\$4.26	0.000%	0.009%
6244	Child Day Care Services	100	\$14,346,316	56,076	\$255,837	5.08%	**	\$12,990	\$152,755	\$2.72	0.001%	0.021%
7111	Performing Arts Companies	500	\$9,191,659	8,936	\$1,028,610	9.26%	*	\$95,267	\$24,040	\$2.69	0.000%	0.003%
7112	Spectator Sports	100	\$4,143,095	3,858	\$1,073,897	9.26%	*	\$99,461	\$14,087	\$3.65	0.000%	0.004%
7113	Promoters of Performing Arts, Sports, and Similar Events	20	\$2,931,291	4,565	\$642,123	9.26%	*	\$59,471	\$34,067	\$7.46	0.001%	0.013%
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	500	\$2,988,381	3,305	\$904,200	9.26%	*	\$83,744	\$5,594	\$1.69	0.000%	0.002%
7115	Independent Artists, Writers, and Performers	500	\$10,011,270	16,928	\$591,403	9.26%	*	\$54,774	\$40,017	\$2.36	0.000%	0.004%
7121	Museums, Historical Sites, and Similar Institutions	100	\$3,871,001	6,017	\$643,344	6.95%	**	\$44,687	\$15,989	\$2.66	0.000%	0.006%
7131	Amusement Parks and Arcades	100	\$1,324,793	2,229	\$594,344	5.36%	*	\$31,834	\$8,091	\$3.63	0.001%	0.011%
7132	Gambling Industries	500	\$7,236,770	1,683	\$4,299,923	5.36%	*	\$230,307	\$6,067	\$3.60	0.000%	0.002%
7139	Other Amusement and Recreation Industries	100	\$30,364,801	56,071	\$541,542	5.36%	*	\$29,005	\$163,007	\$2.91	0.001%	0.010%
7211	Traveler Accommodation	100	\$26,579,482	39,483	\$673,188	2.95%	*	\$19,865	\$252,109	\$6.39	0.001%	0.032%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
7212	RV (Recreational Vehicle) Parks and Recreational Camps	100	\$3,056,395	6,564	\$465,630	2.95%	*	\$13,740	\$26,677	\$4.06	0.001%	0.030%
7213	Rooming and Boarding Houses	100	\$1,100,825	2,476	\$444,598	2.95%	*	\$13,119	\$8,046	\$3.25	0.001%	0.025%
7221	Full-Service Restaurants	500	\$103,315,128	173,188	\$596,549	4.15%	*	\$24,751	\$530,176	\$3.06	0.001%	0.012%
7222	Limited-Service Eating Places	100	\$60,864,143	149,306	\$407,647	4.15%	*	\$16,913	\$537,081	\$3.60	0.001%	0.021%
7223	Special Food Services	100	\$5,865,388	13,110	\$447,398	4.15%	*	\$18,563	\$131,405	\$10.02	0.002%	0.054%
7224	Drinking Places (Alcoholic Beverages)	100	\$14,201,812	47,305	\$300,218	4.15%	*	\$12,456	\$96,795	\$2.05	0.001%	0.016%
8111	Automotive Repair and Maintenance	100	\$68,380,457	151,661	\$450,877	3.67%	*	\$16,530	\$2,278,534	\$15.02	0.003%	0.091%
8112	Electronic and Precision Equipment Repair and Maintenance	20	\$4,213,288	11,323	\$372,100	5.14%	*	\$19,122	\$142,769	\$12.61	0.003%	0.066%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	100	\$13,932,753	22,467	\$620,143	4.15%	*	\$25,765	\$357,462	\$15.91	0.003%	0.062%
8114	Personal and Household Goods Repair and Maintenance	500	\$6,568,939	24,002	\$273,683	4.15%	*	\$11,371	\$219,427	\$9.14	0.003%	0.080%
8121	Personal Care Services	100	\$16,564,286	87,802	\$188,655	5.71%	*	\$10,770	\$222,021	\$2.53	0.001%	0.023%
8122	Death Care Services	20	\$7,536,235	14,986	\$502,885	5.71%	*	\$28,708	\$94,512	\$6.31	0.001%	0.022%
8123	Drycleaning and Laundry Services	20	\$6,711,399	32,496	\$206,530	5.71%	*	\$11,790	\$155,917	\$4.80	0.002%	0.041%
8129	Other Personal Services	20	\$6,535,483	26,943	\$242,567	5.71%	*	\$13,847	\$140,742	\$5.22	0.002%	0.038%
8131	Religious Organizations	20	\$34,213,454	156,574	\$218,513	2.22%	*	\$4,855	\$607,873	\$3.88	0.002%	0.080%
8132	Grantmaking and Giving Services	20	\$18,515,506	11,353	\$1,630,891	2.22%	*	\$36,239	\$44,498	\$3.92	0.000%	0.011%
8133	Social Advocacy Organizations	20	\$3,993,173	9,003	\$443,538	2.22%	*	\$9,856	\$34,510	\$3.83	0.001%	0.039%

Table 5-5. Economic Impacts by 4-Digit NAICS: Small Business Entities

NAICS	Industry	SBA Employment Size Criterion [a]	Estimated Receipts, 2003 (\$1,000)[b]	Entities [c]	Average Receipts per Entity	Profit Rate [d]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
8134	Civic and Social Organizations	20	\$7,378,615	26,658	\$276,788	2.22%	*	\$6,150	\$96,234	\$3.61	0.001%	0.059%
8139	Business, Professional, Labor, Political, and Similar Organizations	20	\$25,082,876	58,608	\$427,977	2.22%	*	\$9,510	\$235,083	\$4.01	0.001%	0.042%

[a] SBA criteria specified in dollar terms converted to size-class definition based on average revenues of different size establishments. Most restrictive criterion for 6-digit NAICS applied to the 4-digit NAICS level.

[b] Estimated based on 2002 receipts and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[c] US Census Bureau, Statistics of U.S. Businesses, 2003

[d] Estimated from ratios of net income to total receipts as reported for 2003 by the US Internal Revenue Service, Corporation Source Book, 2003. <<<http://www.irs.gov/taxstats/bustaxstats/article/0,,id=149687,00.html>>> Data were not available at disaggregated levels for all industries, and profit rates at more highly aggregated levels are used for such industries.

NA: Data not available.

* Profit rate imputed from corresponding 3-digit NAICS industry.

** Profit rate imputed from corresponding 2-digit NAICS industry.

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
1131	Timber Tract Operations	\$452,061	520	\$869,348	4.78%	*	\$41,564	\$6,057	\$11.65	0.001%	0.028%
1132	Forest Nurseries and Gathering of Forest Products	\$125,798	231	\$544,580	4.78%	*	\$26,036	\$3,543	\$15.34	0.003%	0.059%
1133	Logging	\$5,919,772	10,270	\$576,414	4.78%	*	\$27,558	\$102,931	\$10.02	0.002%	0.036%
1141	Fishing	\$762,535	1,961	\$388,850	5.64%	*	\$21,937	\$7,171	\$3.66	0.001%	0.017%
1142	Hunting and Trapping	\$93,002	408	\$227,947	5.64%	*	\$12,860	\$1,482	\$3.63	0.002%	0.028%
1153	Support Activities for Forestry	\$620,386	1,558	\$398,194	4.78%	*	\$19,038	\$18,308	\$11.75	0.003%	0.062%
2111	Oil and Gas Extraction	\$7,826,754	5,755	\$1,359,992	13.19%		\$179,356	\$160,900	\$27.96	0.002%	0.016%
2211	Electric Power Generation, Transmission and Distribution	\$3,927,035	680	\$5,775,052	2.49%		\$143,995	\$600,628	\$883.28	0.015%	0.613%
2212	Natural Gas Distribution	\$2,862,805	411	\$6,965,463	2.23%		\$155,159	\$34,103	\$82.98	0.001%	0.053%
2213	Water, Sewage and Other Systems	\$1,899,781	4,692	\$404,898	5.00%		\$20,253	NA	NA	NA	NA
3111	Animal Food Manufacturing	\$1,954,155	822	\$2,377,317	2.41%		\$57,316	\$12,165	\$14.80	0.001%	0.026%
3112	Grain and Oilseed Milling	\$736,938	274	\$2,689,555	4.99%	*	\$134,335	\$5,272	\$19.24	0.001%	0.014%
3113	Sugar and Confectionery Product Manufacturing	\$840,313	1,303	\$644,906	6.80%		\$43,842	\$13,013	\$9.99	0.002%	0.023%
3114	Fruit and Vegetable Preserving and Specialty Food Manufacturing	\$1,214,019	751	\$1,616,537	5.19%		\$83,960	\$9,828	\$13.09	0.001%	0.016%
3115	Dairy Product Manufacturing	\$1,266,361	674	\$1,878,874	2.25%		\$42,358	\$10,838	\$16.08	0.001%	0.038%
3116	Animal Slaughtering and Processing	\$3,009,403	2,380	\$1,264,455	2.52%		\$31,901	\$23,616	\$9.92	0.001%	0.031%
3117	Seafood Product Preparation and Packaging	\$778,185	401	\$1,940,610	4.99%	*	\$96,927	\$4,044	\$10.08	0.001%	0.010%
3118	Bakeries and Tortilla Manufacturing	\$3,158,268	8,556	\$369,129	11.05%		\$40,792	\$78,403	\$9.16	0.002%	0.022%
3119	Other Food Manufacturing	\$2,350,419	1,546	\$1,520,323	4.20%		\$63,808	\$18,535	\$11.99	0.001%	0.019%
3121	Beverage Manufacturing	\$1,778,348	1,934	\$919,518	10.23%	*	\$94,068	\$22,944	\$11.86	0.001%	0.013%
3122	Tobacco Manufacturing	\$138,839	68	\$2,041,746	11.27%		\$230,093	\$922	\$13.56	0.001%	0.006%
3131	Fiber, Yarn, and Thread Mills	\$183,974	218	\$843,917	5.99%	*	\$50,514	\$3,226	\$14.80	0.002%	0.029%
3132	Fabric Mills	\$702,708	848	\$828,665	5.99%	*	\$49,601	\$9,108	\$10.74	0.001%	0.022%
3133	Textile and Fabric Finishing and Fabric	\$1,219,446	1,066	\$1,143,946	5.99%	*	\$68,472	\$9,211	\$8.64	0.001%	0.013%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Coating Mills										
3141	Textile Furnishings Mills	\$1,578,773	2,250	\$701,677	12.75%	*	\$89,462	\$17,753	\$7.89	0.001%	0.009%
3149	Other Textile Product Mills	\$1,634,082	3,423	\$477,383	12.75%	*	\$60,865	\$25,453	\$7.44	0.002%	0.012%
3151	Apparel Knitting Mills	\$340,837	427	\$798,214	3.79%		\$30,253	\$3,442	\$8.06	0.001%	0.027%
3152	Cut and Sew Apparel Manufacturing	\$4,243,757	8,707	\$487,396	5.13%		\$24,984	\$54,004	\$6.20	0.001%	0.025%
3159	Apparel Accessories and Other Apparel Manufacturing	\$398,250	934	\$426,392	4.40%		\$18,766	\$6,244	\$6.69	0.002%	0.036%
3161	Leather and Hide Tanning and Finishing	\$125,565	187	\$671,471	5.85%	*	\$39,273	\$1,514	\$8.09	0.001%	0.021%
3162	Footwear Manufacturing	\$124,444	224	\$555,555	5.85%	*	\$32,493	\$1,825	\$8.15	0.001%	0.025%
3169	Other Leather and Allied Product Manufacturing	\$367,027	710	\$516,939	5.85%	*	\$30,235	\$4,750	\$6.69	0.001%	0.022%
3211	Sawmills and Wood Preservation	\$2,641,607	2,683	\$984,572	3.52%	*	\$34,651	\$27,593	\$10.28	0.001%	0.030%
3212	Veneer, Plywood, and Engineered Wood Product Manufacturing	\$846,512	739	\$1,145,483	3.52%	*	\$40,314	\$9,692	\$13.11	0.001%	0.033%
3219	Other Wood Product Manufacturing	\$5,145,648	7,184	\$716,265	3.52%	*	\$25,208	\$64,379	\$8.96	0.001%	0.036%
3221	Pulp, Paper, and Paperboard Mills	\$196,402	87	\$2,257,490	0.79%		\$17,757	\$3,477	\$39.96	0.002%	0.225%
3222	Converted Paper Product Manufacturing	\$2,220,134	1,485	\$1,495,040	5.03%		\$75,221	\$32,782	\$22.08	0.001%	0.029%
3231	Printing and Related Support Activities	\$14,135,009	28,377	\$498,115	4.02%	*	\$20,004	\$264,318	\$9.31	0.002%	0.047%
3241	Petroleum and Coal Products Manufacturing	\$1,891,483	635	\$2,978,713	6.74%	*	\$200,671	\$29,570	\$46.57	0.002%	0.023%
3251	Basic Chemical Manufacturing	\$1,623,841	565	\$2,874,055	4.96%		\$142,649	\$23,102	\$40.89	0.001%	0.029%
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing	\$1,365,173	324	\$4,213,498	3.50%		\$147,576	\$10,030	\$30.96	0.001%	0.021%
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing	\$862,203	431	\$2,000,472	9.81%	*	\$196,176	\$11,990	\$27.82	0.001%	0.014%
3254	Pharmaceutical and Medicine Manufacturing	\$1,570,857	794	\$1,978,409	13.83%		\$273,517	\$14,305	\$18.02	0.001%	0.007%
3255	Paint, Coating, and Adhesive Manufacturing	\$1,577,166	1,030	\$1,531,229	5.16%		\$79,061	\$16,344	\$15.87	0.001%	0.020%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
3256	Soap, Cleaning Compound, and Toilet Preparation Manufacturing	\$2,921,291	1,406	\$2,077,732	9.92%	\$206,045	\$21,234	\$15.10	0.001%	0.007%
3259	Other Chemical Product and Preparation Manufacturing	\$1,885,401	1,414	\$1,333,381	2.92%	\$38,928	\$25,986	\$18.38	0.001%	0.047%
3261	Plastics Product Manufacturing	\$5,827,293	5,471	\$1,065,124	3.46%	\$36,819	\$67,895	\$12.41	0.001%	0.034%
3262	Rubber Product Manufacturing	\$1,014,461	1,061	\$956,137	1.96%	\$18,778	\$14,029	\$13.22	0.001%	0.070%
3271	Clay Product and Refractory Manufacturing	\$437,524	975	\$448,743	2.64%	\$11,849	\$12,916	\$13.25	0.003%	0.112%
3272	Glass and Glass Product Manufacturing	\$755,413	1,416	\$533,484	2.84%	\$15,138	\$20,287	\$14.33	0.003%	0.095%
3273	Cement and Concrete Product Manufacturing	\$3,920,960	3,318	\$1,181,724	4.46%	\$52,675	\$79,787	\$24.05	0.002%	0.046%
3274	Lime and Gypsum Product Manufacturing	\$194,315	180	\$1,079,526	3.75%	\$40,452	\$3,456	\$19.20	0.002%	0.047%
3279	Other Nonmetallic Mineral Product Manufacturing	\$1,552,332	1,817	\$854,338	3.75%	\$32,014	\$28,160	\$15.50	0.002%	0.048%
3311	Iron and Steel Mills and Ferroalloy Manufacturing	\$1,849,160	493	\$3,750,832	1.13%	\$42,516	\$8,998	\$18.25	0.000%	0.043%
3312	Steel Product Manufacturing from Purchased Steel	\$384,032	359	\$1,069,728	2.11%	\$22,620	\$6,246	\$17.40	0.002%	0.077%
3313	Alumina and Aluminum Production and Processing	\$318,986	215	\$1,483,657	3.83%	\$56,889	\$4,141	\$19.26	0.001%	0.034%
3314	Nonferrous Metal (except Aluminum) Production and Processing	\$591,390	459	\$1,288,432	2.11%	\$27,245	\$8,567	\$18.67	0.001%	0.069%
3315	Foundries	\$895,651	1,123	\$797,552	1.80%	\$14,354	\$14,818	\$13.19	0.002%	0.092%
3321	Forging and Stamping	\$1,405,948	1,324	\$1,061,894	3.79%	\$40,211	\$17,118	\$12.93	0.001%	0.032%
3322	Cutlery and Handtool Manufacturing	\$671,255	958	\$700,684	3.58%	\$25,103	\$10,744	\$11.22	0.002%	0.045%
3323	Architectural and Structural Metals Manufacturing	\$6,804,218	8,581	\$792,940	3.21%	\$25,425	\$93,842	\$10.94	0.001%	0.043%
3324	Boiler, Tank, and Shipping Container Manufacturing	\$775,598	637	\$1,217,580	2.20%	\$26,843	\$9,585	\$15.05	0.001%	0.056%
3325	Hardware Manufacturing	\$389,732	449	\$868,001	4.41%	\$38,271	\$5,159	\$11.49	0.001%	0.030%
3326	Spring and Wire Product Manufacturing	\$819,438	1,003	\$816,987	4.41%	\$36,022	\$11,000	\$10.97	0.001%	0.030%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	\$10,438,206	20,266	\$515,060	4.41% *	\$22,710	\$203,023	\$10.02	0.002%	0.044%
3328	Coating, Engraving, Heat Treating, and Allied Activities	\$2,262,880	3,943	\$573,898	2.61%	\$15,001	\$41,516	\$10.53	0.002%	0.070%
3329	Other Fabricated Metal Product Manufacturing	\$2,951,676	3,872	\$762,313	5.42%	\$41,282	\$43,885	\$11.33	0.001%	0.027%
3331	Agriculture, Construction, and Mining Machinery Manufacturing	\$1,801,322	1,629	\$1,105,784	2.29%	\$25,322	\$20,243	\$12.43	0.001%	0.049%
3332	Industrial Machinery Manufacturing	\$2,441,658	2,597	\$940,184	3.43%	\$32,240	\$31,422	\$12.10	0.001%	0.038%
3333	Commercial and Service Industry Machinery Manufacturing	\$1,340,812	1,404	\$954,994	2.58%	\$24,609	\$16,292	\$11.60	0.001%	0.047%
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing	\$886,606	815	\$1,087,860	3.90%	\$42,379	\$10,627	\$13.04	0.001%	0.031%
3335	Metalworking Machinery Manufacturing	\$4,022,286	6,263	\$642,230	3.49%	\$22,435	\$73,535	\$11.74	0.002%	0.052%
3336	Engine, Turbine, and Power Transmission Equipment Manufacturing	\$531,835	414	\$1,284,626	1.76%	\$22,577	\$6,450	\$15.58	0.001%	0.069%
3339	Other General Purpose Machinery Manufacturing	\$3,744,368	3,731	\$1,003,583	2.91%	\$29,230	\$48,195	\$12.92	0.001%	0.044%
3341	Computer and Peripheral Equipment Manufacturing	\$1,215,106	995	\$1,221,212	7.96%	\$97,215	\$12,393	\$12.46	0.001%	0.013%
3342	Communications Equipment Manufacturing	\$1,078,818	947	\$1,139,195	2.01%	\$22,870	\$12,784	\$13.50	0.001%	0.059%
3343	Audio and Video Equipment Manufacturing	\$369,437	391	\$944,852	4.10%	\$38,743	\$3,844	\$9.83	0.001%	0.025%
3344	Semiconductor and Other Electronic Component Manufacturing	\$3,290,678	2,548	\$1,291,475	2.67%	\$34,530	\$32,504	\$12.76	0.001%	0.037%
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	\$3,250,939	2,965	\$1,096,438	3.70%	\$40,557	\$39,440	\$13.30	0.001%	0.033%
3346	Manufacturing and Reproducing Magnetic and Optical Media	\$555,367	655	\$847,888	4.89% *	\$41,419	\$6,462	\$9.87	0.001%	0.024%
3351	Electric Lighting Equipment Manufacturing	\$686,289	725	\$946,605	3.45%	\$32,687	\$7,774	\$10.72	0.001%	0.033%
3352	Household Appliance Manufacturing	\$279,213	163	\$1,712,962	3.71%	\$63,608	\$2,015	\$12.36	0.001%	0.019%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
3353	Electrical Equipment Manufacturing	\$1,399,706	1,366	\$1,024,675	4.93%	\$50,507	\$17,163	\$12.56	0.001%	0.025%
3359	Other Electrical Equipment and Component Manufacturing	\$1,455,252	1,114	\$1,306,330	3.79%	\$49,484	\$14,517	\$13.03	0.001%	0.026%
3361	Motor Vehicle Manufacturing	\$520,575	209	\$2,490,791	1.18%	\$29,400	\$3,783	\$18.10	0.001%	0.062%
3362	Motor Vehicle Body and Trailer Manufacturing	\$1,237,275	1,138	\$1,087,236	1.48%	\$16,075	\$13,236	\$11.63	0.001%	0.072%
3363	Motor Vehicle Parts Manufacturing	\$2,951,682	2,563	\$1,151,651	1.48%	\$17,027	\$38,753	\$15.12	0.001%	0.089%
3364	Aerospace Product and Parts Manufacturing	\$724,706	725	\$999,595	1.48%	\$14,806	\$12,977	\$17.90	0.002%	0.121%
3365	Railroad Rolling Stock Manufacturing	\$112,709	71	\$1,587,447	1.48%	\$23,470	\$1,311	\$18.47	0.001%	0.079%
3366	Ship and Boat Building	\$912,166	1,150	\$793,188	4.69%	\$37,223	\$29,836	\$25.94	0.003%	0.070%
3369	Other Transportation Equipment Manufacturing	\$490,156	586	\$836,443	7.24%	\$60,541	\$6,120	\$10.44	0.001%	0.017%
3371	Household and Institutional Furniture and Kitchen Cabinet Manufacturing	\$5,939,163	13,500	\$439,938	3.80%	\$16,721	\$103,018	\$7.63	0.002%	0.046%
3372	Office Furniture (including Fixtures) Manufacturing	\$1,942,786	2,601	\$746,938	3.80%	\$28,389	\$24,622	\$9.47	0.001%	0.033%
3379	Other Furniture Related Product Manufacturing	\$500,747	618	\$810,271	3.80%	\$30,796	\$6,102	\$9.87	0.001%	0.032%
3391	Medical Equipment and Supplies Manufacturing	\$4,408,892	9,374	\$470,332	7.70%	\$36,228	\$92,306	\$9.85	0.002%	0.027%
3399	Other Miscellaneous Manufacturing	\$9,247,508	15,182	\$609,110	5.32%	\$32,411	\$134,170	\$8.84	0.001%	0.027%
4231	Motor Vehicle and Motor Vehicle Parts and Supplies Merchant Wholesalers	\$32,516,807	16,101	\$2,019,552	2.45%	\$49,391	\$264,776	\$16.44	0.001%	0.033%
4232	Furniture and Home Furnishing Merchant Wholesalers	\$22,625,243	10,346	\$2,186,859	2.44%	\$53,414	\$109,991	\$10.63	0.000%	0.020%
4233	Lumber and Other Construction Materials Merchant Wholesalers	\$27,581,225	10,022	\$2,752,068	2.89%	\$79,416	\$169,977	\$16.96	0.001%	0.021%
4234	Professional and Commercial Equipment and Supplies Merchant Wholesalers	\$39,772,111	24,260	\$1,639,411	2.26%	\$37,103	\$437,780	\$18.05	0.001%	0.049%
4235	Metal and Mineral (except Petroleum) Merchant Wholesalers	\$23,393,923	6,294	\$3,716,861	1.06%	\$39,451	\$88,097	\$14.00	0.000%	0.035%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
4236	Electrical and Electronic Goods Merchant Wholesalers	\$52,077,366	17,986	\$2,895,439	1.73%	\$50,011	\$339,819	\$18.89	0.001%	0.038%
4237	Hardware, and Plumbing and Heating Equipment and Supplies Merchant Wholesalers	\$21,215,260	9,652	\$2,198,017	2.32%	\$51,081	\$199,219	\$20.64	0.001%	0.040%
4238	Machinery, Equipment, and Supplies Merchant Wholesalers	\$70,754,048	39,360	\$1,797,613	3.02%	\$54,351	\$750,693	\$19.07	0.001%	0.035%
4239	Miscellaneous Durable Goods Merchant Wholesalers	\$53,057,321	30,246	\$1,754,193	3.30%	\$57,841	\$353,789	\$11.70	0.001%	0.020%
4241	Paper and Paper Product Merchant Wholesalers	\$17,700,416	8,727	\$2,028,236	1.84%	\$37,380	\$95,426	\$10.93	0.001%	0.029%
4242	Drugs and Druggists' Sundries Merchant Wholesalers	\$12,350,614	5,223	\$2,364,659	4.31%	\$101,824	\$54,491	\$10.43	0.000%	0.010%
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers	\$28,556,955	14,029	\$2,035,566	4.54%	\$92,426	\$110,973	\$7.91	0.000%	0.009%
4244	Grocery and Related Product Wholesalers	\$79,040,578	24,206	\$3,265,330	1.50%	\$49,143	\$289,995	\$11.98	0.000%	0.024%
4245	Farm Product Raw Material Merchant Wholesalers	\$23,715,298	3,754	\$6,317,341	2.76%	\$174,623	\$47,878	\$12.75	0.000%	0.007%
4246	Chemical and Allied Products Merchant Wholesalers	\$19,120,338	7,896	\$2,421,522	3.25%	\$78,737	\$133,444	\$16.90	0.001%	0.021%
4247	Petroleum and Petroleum Products Merchant Wholesalers	\$26,229,734	3,873	\$6,772,459	1.36%	\$92,118	\$73,500	\$18.98	0.000%	0.021%
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers	\$5,533,227	2,132	\$2,595,322	3.94%	\$102,217	\$23,663	\$11.10	0.000%	0.011%
4249	Miscellaneous Nondurable Goods Merchant Wholesalers	\$38,664,994	24,025	\$1,609,365	3.85%	\$61,990	\$222,912	\$9.28	0.001%	0.015%
4251	Wholesale Electronic Markets and Agents and Brokers	\$71,569,552	36,162	\$1,979,137	9.78%	\$193,492	\$401,331	\$11.10	0.001%	0.006%
4411	Automobile Dealers	\$70,742,672	33,011	\$2,143,003	1.11%	\$23,848	\$518,538	\$15.71	0.001%	0.066%
4412	Other Motor Vehicle Dealers	\$21,374,415	12,994	\$1,644,945	2.72%**	\$44,681	\$186,087	\$14.32	0.001%	0.032%
4413	Automotive Parts, Accessories, and Tire	\$21,376,105	32,013	\$667,732	1.37%*	\$9,131	\$593,482	\$18.54	0.003%	0.203%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Stores										
4421	Furniture Stores	\$15,352,218	18,423	\$833,318	3.57%	*	\$29,743	\$186,185	\$10.11	0.001%	0.034%
4422	Home Furnishings Stores	\$17,283,428	26,417	\$654,254	3.57%	*	\$23,352	\$324,825	\$12.30	0.002%	0.053%
4431	Electronics and Appliance Stores	\$17,780,752	29,377	\$605,261	2.90%	*	\$17,567	\$423,143	\$14.40	0.002%	0.082%
4441	Building Material and Supplies Dealers	\$39,986,231	40,587	\$985,198	5.18%	*	\$51,037	\$505,078	\$12.44	0.001%	0.024%
4442	Lawn and Garden Equipment and Supplies Stores	\$13,283,525	15,611	\$850,908	2.44%	**	\$20,785	\$153,568	\$9.84	0.001%	0.047%
4451	Grocery Stores	\$38,519,942	60,039	\$641,582	1.53%	*	\$9,796	\$423,815	\$7.06	0.001%	0.072%
4452	Specialty Food Stores	\$8,903,554	20,138	\$442,127	1.55%	*	\$6,868	\$158,034	\$7.85	0.002%	0.114%
4453	Beer, Wine, and Liquor Stores	\$19,243,325	24,943	\$771,492	2.23%	*	\$17,211	\$142,052	\$5.70	0.001%	0.033%
4461	Health and Personal Care Stores	\$43,190,050	39,200	\$1,101,787	2.78%	*	\$30,669	\$426,523	\$10.88	0.001%	0.035%
4471	Gasoline Stations	\$80,288,994	60,424	\$1,328,760	1.10%	*	\$14,652	\$812,407	\$13.45	0.001%	0.092%
4481	Clothing Stores	\$16,405,939	37,555	\$436,851	5.09%	*	\$22,216	\$506,899	\$13.50	0.003%	0.061%
4482	Shoe Stores	\$3,298,546	6,184	\$533,400	5.09%	*	\$27,126	\$159,340	\$25.77	0.005%	0.095%
4483	Jewelry, Luggage, and Leather Goods Stores	\$11,149,360	19,463	\$572,849	5.09%	*	\$29,133	\$223,851	\$11.50	0.002%	0.039%
4511	Sporting Goods, Hobby, and Musical Instrument Stores	\$14,550,721	29,604	\$491,512	2.52%	*	\$12,383	\$309,451	\$10.45	0.002%	0.084%
4512	Book, Periodical, and Music Stores	\$3,708,944	9,421	\$393,689	2.52%	*	\$9,919	\$95,012	\$10.09	0.003%	0.102%
4521	Department Stores	\$111,569	349	\$319,681	4.30%	*	\$13,757	\$34,312	\$98.32	0.031%	0.715%
4529	Other General Merchandise Stores	\$4,146,365	8,974	\$462,042	4.30%	*	\$19,883	\$146,999	\$16.38	0.004%	0.082%
4531	Florists	\$5,079,858	20,389	\$249,147	3.21%	*	\$7,996	\$62,094	\$3.05	0.001%	0.038%
4532	Office Supplies, Stationery, and Gift Stores	\$9,848,172	29,431	\$334,619	3.21%	*	\$10,740	\$345,861	\$11.75	0.004%	0.109%
4533	Used Merchandise Stores	\$4,022,157	12,659	\$317,731	3.21%	*	\$10,198	\$80,142	\$6.33	0.002%	0.062%
4539	Other Miscellaneous Store Retailers	\$21,709,507	33,960	\$639,267	3.21%	*	\$20,517	\$350,799	\$10.33	0.002%	0.050%
4541	Electronic Shopping and Mail-Order Houses	\$12,662,263	13,335	\$949,551	3.96%	*	\$37,644	\$85,752	\$6.43	0.001%	0.017%
4542	Vending Machine Operators	\$2,126,861	4,535	\$468,988	3.96%	*	\$18,593	\$50,156	\$11.06	0.002%	0.059%
4543	Direct Selling Establishments	\$18,544,166	23,770	\$780,150	3.96%	*	\$30,928	\$308,287	\$12.97	0.002%	0.042%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
4811	Scheduled Air Transportation	\$668,566	410	\$1,630,648	1.85%	*	\$30,192	\$30,105	\$73.43	0.005%	0.243%
4812	Nonscheduled Air Transportation	\$1,497,075	1,761	\$850,128	1.85%	*	\$15,741	\$26,376	\$14.98	0.002%	0.095%
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	\$1,019,668	645	\$1,580,880	4.17%	*	\$65,874	\$11,664	\$18.08	0.001%	0.027%
4832	Inland Water Transportation	\$354,798	434	\$817,507	4.17%	*	\$34,065	\$4,862	\$11.20	0.001%	0.033%
4841	General Freight Trucking	\$20,480,733	45,233	\$452,783	2.33%	*	\$10,544	\$452,054	\$9.99	0.002%	0.095%
4842	Specialized Freight Trucking	\$19,584,474	43,742	\$447,727	2.33%	*	\$10,426	\$359,720	\$8.22	0.002%	0.079%
4851	Urban Transit Systems	\$132,229	482	\$274,333	1.80%	*	\$4,948	\$6,819	\$14.15	0.005%	0.286%
4852	Interurban and Rural Bus Transportation	\$63,672	164	\$388,243	1.80%	*	\$7,003	\$3,189	\$19.45	0.005%	0.278%
4853	Taxi and Limousine Service	\$1,727,774	6,180	\$279,575	1.80%	*	\$5,043	\$48,695	\$7.88	0.003%	0.156%
4854	School and Employee Bus Transportation	\$471,622	2,211	\$213,307	1.80%	*	\$3,847	\$26,505	\$11.99	0.006%	0.312%
4855	Charter Bus Industry	\$341,050	769	\$443,498	1.80%	*	\$7,999	\$6,272	\$8.16	0.002%	0.102%
4859	Other Transit and Ground Passenger Transportation	\$606,784	2,209	\$274,687	1.80%	*	\$4,955	\$15,598	\$7.06	0.003%	0.143%
4861	Pipeline Transportation of Crude Oil	\$104,769	23	\$4,555,190	14.74%	*	\$671,457	\$0	NA	NA	NA
4862	Pipeline Transportation of Natural Gas	\$604,014	87	\$6,942,692	14.74%	*	\$1,023,387	\$17,843	\$205.10	0.003%	0.020%
4869	Other Pipeline Transportation	\$29,062	19	\$1,529,567	14.74%	*	\$225,466	\$0	NA	NA	NA
4871	Scenic and Sightseeing Transportation, Land	NA	451	NA	4.01%	*	NA	\$1,645	\$3.65	NA	NA
4872	Scenic and Sightseeing Transportation, Water	\$477,500	1,585	\$301,262	4.01%	*	\$12,080	\$5,454	\$3.44	0.001%	0.028%
4879	Scenic and Sightseeing Transportation, Other	NA	144	NA	4.01%	*	NA	\$601	\$4.18	NA	NA
4881	Support Activities for Air Transportation	\$1,968,978	3,037	\$648,330	2.77%	**	\$17,929	\$49,723	\$16.37	0.003%	0.091%
4882	Support Activities for Rail Transportation	\$274,748	323	\$850,612	2.77%	**	\$23,523	\$6,884	\$21.31	0.003%	0.091%
4883	Support Activities for Water Transportation	\$904,475	1,408	\$642,383	2.77%	**	\$17,765	\$24,533	\$17.42	0.003%	0.098%
4884	Support Activities for Road Transportation	\$2,539,532	7,259	\$349,846	2.77%	**	\$9,675	\$66,930	\$9.22	0.003%	0.095%
4885	Freight Transportation Arrangement	\$8,469,552	10,897	\$777,237	2.77%	**	\$21,494	\$116,132	\$10.66	0.001%	0.050%
4889	Other Support Activities for Transportation	\$673,747	1,125	\$598,886	2.77%	**	\$16,562	\$9,412	\$8.37	0.001%	0.051%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
4921	Couriers	\$1,210,940	2,831	\$427,743	0.02765 4475082 3328**	NA	\$97,803	\$34.55	0.008%	NA
4922	Local Messengers and Local Delivery	\$1,455,329	4,226	\$344,375	0.02765 4475082 3328**	NA	\$29,365	\$6.95	0.002%	NA
4931	Warehousing and Storage	\$2,869,363	3,781	\$758,890	3.68%*	\$27,908	\$66,563	\$17.60	0.002%	0.063%
5111	Newspaper, Periodical, Book, and Directory Publishers	\$7,161,123	13,651	\$524,586	11.49%*	\$60,250	\$109,371	\$8.01	0.002%	0.013%
5112	Software Publishers	\$3,878,033	4,884	\$794,028	16.84%*	\$133,683	\$36,757	\$7.53	0.001%	0.006%
5121	Motion Picture and Video Industries	\$10,650,831	14,076	\$756,666	7.07%**	\$53,525	\$80,306	\$5.71	0.001%	0.011%
5122	Sound Recording Industries	\$1,356,348	2,855	\$475,078	3.60%**	\$17,079	\$25,172	\$8.82	0.002%	0.052%
5151	Radio and Television Broadcasting	\$1,875,318	3,862	\$485,582	4.55%*	\$22,081	\$64,110	\$16.60	0.003%	0.075%
5152	Cable and Other Subscription Programming	\$1,121,749	315	\$3,561,108	4.55%*	\$161,936	\$12,839	\$40.76	0.001%	0.025%
5161	Internet Publishing and Broadcasting	\$930,582	1,520	\$612,225	5.20%*	\$31,805	\$8,710	\$5.73	0.001%	0.018%
5171	Wired Telecommunications Carriers	\$2,743,167	2,297	\$1,194,239	3.30%*	\$39,461	\$238,734	\$103.93	0.009%	0.263%
5172	Wireless Telecommunications Carriers (except Satellite)	\$1,934,840	2,856	\$677,465	3.30%*	\$22,386	\$132,268	\$46.31	0.007%	0.207%
5173	Telecommunications Resellers	\$1,837,334	2,093	\$877,847	3.30%*	\$29,007	\$16,336	\$7.80	0.001%	0.027%
5174	Satellite Telecommunications	\$482,819	421	\$1,146,838	3.30%*	\$37,895	\$19,212	\$45.63	0.004%	0.120%
5175	Cable and Other Program Distribution	\$889,816	1,157	\$769,072	3.30%*	\$25,413	\$24,969	\$21.58	0.003%	0.085%
5179	Other Telecommunications	\$311,335	427	\$729,121	3.30%*	\$24,092	\$5,284	\$12.38	0.002%	0.051%
5181	Internet Service Providers and Web Search Portals	\$1,625,174	4,269	\$380,692	3.76%*	\$14,296	\$23,466	\$5.50	0.001%	0.038%
5182	Data Processing, Hosting, and Related Services	\$3,739,607	6,049	\$618,219	3.76%*	\$23,215	\$42,763	\$7.07	0.001%	0.030%
5191	Other Information Services	\$1,033,794	3,264	\$316,726	9.07%*	\$28,738	\$12,362	\$3.79	0.001%	0.013%
5211	Monetary Authorities - Central Bank	NA	10	NA	18.99%*	NA	NA	NA	NA	NA
5221	Depository Credit Intermediation	\$11,362,795	8,941	\$1,270,864	13.14%*	\$166,984	\$72,270	\$8.08	0.001%	0.005%
5222	Nondepository Credit Intermediation	\$13,331,607	18,871	\$706,460	13.14%*	\$92,825	\$79,616	\$4.22	0.001%	0.005%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
5223	Activities Related to Credit Intermediation	\$13,394,691	22,444	\$596,805	9.18%**	\$54,765	\$52,831	\$2.35	0.000%	0.004%
5231	Securities and Commodity Contracts Intermediation and Brokerage	\$9,504,015	12,434	\$764,357	10.68%*	\$81,618	\$80,395	\$6.47	0.001%	0.008%
5232	Securities and Commodity Exchanges	\$20,592	46	\$447,659	10.68%*	\$47,801	NA	NA	NA	NA
5239	Other Financial Investment Activities	\$22,286,541	33,353	\$668,202	17.55%*	\$117,269	\$61,996	\$1.86	0.000%	0.002%
5241	Insurance Carriers	\$6,660,757	4,689	\$1,420,507	5.37%*	\$76,327	\$0	\$0.00	0.000%	0.000%
5242	Agencies, Brokerages, and Other Insurance Related Activities	\$45,060,735	120,559	\$373,765	5.37%*	\$20,083	\$317,882	\$2.64	0.001%	0.013%
5259	Other Investment Pools and Funds	\$4,626,100	1,962	\$2,357,849	60.77%*	\$1,432,918	NA	NA	NA	NA
5311	Lessors of Real Estate	\$57,328,357	93,353	\$614,103	12.63%*	\$77,538	\$358,093	\$3.84	0.001%	0.005%
5312	Offices of Real Estate Agents and Brokers	\$39,197,266	73,462	\$533,572	9.59%*	\$51,165	\$286,263	\$3.90	0.001%	0.008%
5313	Activities Related to Real Estate	\$23,186,226	59,698	\$388,392	13.77%*	\$53,488	\$219,510	\$3.68	0.001%	0.007%
5321	Automotive Equipment Rental and Leasing	\$3,047,087	4,123	\$739,046	1.15%**	\$8,487	\$35,548	\$8.62	0.001%	0.102%
5322	Consumer Goods Rental	\$4,328,810	12,843	\$337,056	3.07%*	\$10,364	\$94,144	\$7.33	0.002%	0.071%
5323	General Rental Centers	\$1,551,497	3,294	\$471,007	3.13%*	\$14,730	\$19,327	\$5.87	0.001%	0.040%
5324	Commercial and Industrial Machinery and Equipment Rental and Leasing	\$5,778,296	7,170	\$805,899	5.36%**	\$43,205	\$54,152	\$7.55	0.001%	0.017%
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted Works)	\$2,156,035	1,811	\$1,190,522	25.70%*	\$305,920	\$6,732	\$3.72	0.000%	0.001%
5411	Legal Services	\$73,138,890	164,606	\$444,327	8.52%**	\$37,841	\$657,652	\$4.00	0.001%	0.011%
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Services	\$25,561,834	95,100	\$268,789	8.61%**	\$23,129	\$469,362	\$4.94	0.002%	0.021%
5413	Architectural, Engineering, and Related Services	\$39,133,956	84,707	\$461,992	4.45%**	\$20,575	\$593,178	\$7.00	0.002%	0.034%
5414	Specialized Design Services	\$12,493,910	29,234	\$427,376	6.23%**	\$26,635	\$138,628	\$4.74	0.001%	0.018%
5415	Computer Systems Design and Related Services	\$33,423,524	84,560	\$395,264	5.48%**	\$21,651	\$529,178	\$6.26	0.002%	0.029%
5416	Management, Scientific, and Technical Consulting Services	\$41,781,779	109,948	\$380,014	6.87%**	\$26,111	\$514,883	\$4.68	0.001%	0.018%
5417	Scientific Research and Development	\$6,604,816	9,272	\$712,340	6.56%**	\$46,739	\$77,986	\$8.41	0.001%	0.018%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]	Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
	Services									
5418	Advertising and Related Services	\$18,170,150	31,248	\$581,482	5.01%**	\$29,142	\$2,526,834	\$80.86	0.014%	0.277%
5419	Other Professional, Scientific, and Technical Services	\$24,060,356	59,146	\$406,796	6.70%**	\$27,258	\$239,445	\$4.05	0.001%	0.015%
5511	Management of Companies and Enterprises	\$13,031,800	6,751	\$1,930,351	14.89%**	\$287,404	\$63,482	\$9.40	0.000%	0.003%
5611	Office Administrative Services	\$9,590,851	18,029	\$531,968	3.86%*	\$20,545	\$87,932	\$4.88	0.001%	0.024%
5612	Facilities Support Services	\$579,285	1,139	\$508,591	3.86%*	\$19,642	\$10,999	\$9.66	0.002%	0.049%
5613	Employment Services	\$5,311,336	13,577	\$391,201	1.86%**	\$7,277	\$98,345	\$7.24	0.002%	0.100%
5614	Business Support Services	\$9,843,157	25,458	\$386,643	3.86%*	\$14,933	\$125,387	\$4.93	0.001%	0.033%
5615	Travel Arrangement and Reservation Services	\$5,289,110	17,750	\$297,978	2.15%**	\$6,403	\$94,292	\$5.31	0.002%	0.083%
5616	Investigation and Security Services	\$4,767,325	15,211	\$313,413	3.86%*	\$12,104	\$100,426	\$6.60	0.002%	0.055%
5617	Services to Buildings and Dwellings	\$35,757,478	140,502	\$254,498	3.86%*	\$9,829	\$12,062,526	\$85.85	0.034%	0.873%
5619	Other Support Services	\$9,459,667	16,425	\$575,931	5.48%*	\$31,538	\$87,850	\$5.35	0.001%	0.017%
5621	Waste Collection	\$3,457,198	5,694	\$607,165	3.16%*	\$19,163	\$40,634	\$7.14	0.001%	0.037%
5622	Waste Treatment and Disposal	\$1,052,397	1,286	\$818,349	3.16%*	\$25,829	\$14,182	\$11.03	0.001%	0.043%
5629	Remediation and Other Waste Management Services	\$3,054,688	5,675	\$538,271	3.16%*	\$16,989	\$64,386	\$11.35	0.002%	0.067%
6111	Elementary and Secondary Schools	\$3,030,260	8,367	\$362,168	7.67%**	\$27,771	\$18,651	\$2.23	0.001%	0.008%
6112	Junior Colleges	\$202,450	248	\$816,332	7.67%**	\$62,597	\$778	\$3.14	0.000%	0.005%
6113	Colleges, Universities, and Professional Schools	\$516,584	954	\$541,493	7.67%**	\$41,522	\$2,749	\$2.88	0.001%	0.007%
6114	Business Schools and Computer and Management Training	\$2,494,829	6,377	\$391,223	7.67%**	\$29,999	\$10,608	\$1.66	0.000%	0.006%
6115	Technical and Trade Schools	\$2,200,654	5,401	\$407,453	7.67%**	\$31,244	\$14,585	\$2.70	0.001%	0.009%
6116	Other Schools and Instruction	\$5,746,928	26,349	\$218,108	7.67%**	\$16,725	\$52,302	\$1.98	0.001%	0.012%
6117	Educational Support Services	\$1,727,713	4,498	\$384,107	7.67%**	\$29,453	\$8,881	\$1.97	0.001%	0.007%
6211	Offices of Physicians	\$109,075,812	166,372	\$655,614	4.39%*	\$28,784	\$498,314	\$3.00	0.000%	0.010%
6212	Offices of Dentists	\$63,055,882	111,183	\$567,136	6.73%*	\$38,168	\$247,229	\$2.22	0.000%	0.006%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
6213	Offices of Other Health Practitioners	\$28,457,609	96,344	\$295,375	8.92%	*	\$26,333	\$261,999	\$2.72	0.001%	0.010%
6214	Outpatient Care Centers	\$5,017,087	8,298	\$604,614	5.58%	*	\$33,730	\$48,821	\$5.88	0.001%	0.017%
6215	Medical and Diagnostic Laboratories	\$5,030,676	5,662	\$888,498	5.45%	*	\$48,465	\$30,328	\$5.36	0.001%	0.011%
6216	Home Health Care Services	\$2,508,304	8,000	\$313,538	5.45%	*	\$17,102	\$28,708	\$3.59	0.001%	0.021%
6219	Other Ambulatory Health Care Services	\$1,891,509	3,933	\$480,933	5.45%	*	\$26,233	\$21,124	\$5.37	0.001%	0.020%
6221	General Medical and Surgical Hospitals	\$435,561	151	\$2,884,513	5.08%	**	\$146,458	\$956	\$6.33	0.000%	0.004%
6222	Psychiatric and Substance Abuse Hospitals	\$103,678	48	\$2,159,950	5.08%	**	\$109,669	\$210	\$4.37	0.000%	0.004%
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	\$140,371	130	\$1,079,779	5.08%	**	\$54,825	\$826	\$6.35	0.001%	0.012%
6231	Nursing Care Facilities	\$1,718,618	2,217	\$775,200	5.08%	**	\$39,360	\$11,513	\$5.19	0.001%	0.013%
6232	Residential Mental Retardation, Mental Health and Substance Abuse Facilities	\$1,155,914	4,046	\$285,693	5.08%	**	\$14,506	\$40,459	\$10.00	0.004%	0.069%
6233	Community Care Facilities for the Elderly	\$2,284,461	9,203	\$248,230	5.08%	**	\$12,604	\$29,961	\$3.26	0.001%	0.026%
6239	Other Residential Care Facilities	\$558,961	1,877	\$297,795	5.08%	**	\$15,120	\$9,728	\$5.18	0.002%	0.034%
6241	Individual and Family Services	\$8,057,734	27,310	\$295,047	5.08%	**	\$14,981	\$86,180	\$3.16	0.001%	0.021%
6242	Community Food and Housing, and Emergency and Other Relief Services	\$3,126,011	6,774	\$461,472	5.08%	**	\$23,431	\$19,728	\$2.91	0.001%	0.012%
6243	Vocational Rehabilitation Services	\$1,022,676	2,623	\$389,888	5.08%	**	\$19,796	\$9,873	\$3.76	0.001%	0.019%
6244	Child Day Care Services	\$7,254,249	47,892	\$151,471	5.08%	**	\$7,691	\$129,007	\$2.69	0.002%	0.035%
7111	Performing Arts Companies	\$3,739,335	7,819	\$478,237	9.26%	*	\$44,293	\$16,945	\$2.17	0.000%	0.005%
7112	Spectator Sports	\$1,921,724	3,500	\$549,064	9.26%	*	\$50,853	\$11,233	\$3.21	0.001%	0.006%
7113	Promoters of Performing Arts, Sports, and Similar Events	\$2,931,291	4,565	\$642,123	9.26%	*	\$59,471	\$34,067	\$7.46	0.001%	0.013%
7114	Agents and Managers for Artists, Athletes, Entertainers, and Other Public Figures	\$2,147,875	3,204	\$670,373	9.26%	*	\$62,088	\$5,423	\$1.69	0.000%	0.003%
7115	Independent Artists, Writers, and Performers	\$9,177,876	16,611	\$552,518	9.26%	*	\$51,172	\$39,055	\$2.35	0.000%	0.005%
7121	Museums, Historical Sites, and Similar Institutions	\$1,758,005	5,261	\$334,158	6.95%	**	\$23,211	\$12,437	\$2.36	0.001%	0.010%
7131	Amusement Parks and Arcades	\$721,704	1,897	\$380,445	5.36%	*	\$20,377	\$5,986	\$3.16	0.001%	0.015%

Table 5-6. Economic Impacts by 4-Digit NAICS: Entities with Fewer Than 20 Employees

NAICS	Industry	Estimated Receipts, 2003 (\$1,000)[a]	Entities [b]	Average Receipts per Entity	Profit Rate [c]		Estimated Profits per Entity	Estimated Cost of Draft Rule	Average Cost per Entity	Average Cost to Revenues	Average Cost to Profits
7132	Gambling Industries	\$802,524	1,208	\$664,341	5.36%	*	\$35,583	\$2,617	\$2.17	0.000%	0.006%
7139	Other Amusement and Recreation Industries	\$14,878,601	46,981	\$316,694	5.36%	*	\$16,962	\$116,258	\$2.47	0.001%	0.015%
7211	Traveler Accommodation	\$12,170,235	31,843	\$382,195	2.95%	*	\$11,278	\$138,188	\$4.34	0.001%	0.038%
7212	RV (Recreational Vehicle) Parks and Recreational Camps	\$2,338,386	6,085	\$384,287	2.95%	*	\$11,340	\$20,899	\$3.43	0.001%	0.030%
7213	Rooming and Boarding Houses	\$549,947	2,405	\$228,668	2.95%	*	\$6,748	\$7,086	\$2.95	0.001%	0.044%
7221	Full-Service Restaurants	\$36,898,445	130,156	\$283,494	4.15%	*	\$11,762	\$362,767	\$2.79	0.001%	0.024%
7222	Limited-Service Eating Places	\$30,495,707	124,944	\$244,075	4.15%	*	\$10,127	\$426,817	\$3.42	0.001%	0.034%
7223	Special Food Services	\$3,096,456	11,376	\$272,192	4.15%	*	\$11,293	\$97,678	\$8.59	0.003%	0.076%
7224	Drinking Places (Alcoholic Beverages)	\$9,494,057	43,640	\$217,554	4.15%	*	\$9,026	\$84,325	\$1.93	0.001%	0.021%
8111	Automotive Repair and Maintenance	\$54,579,544	145,857	\$374,199	3.67%	*	\$13,719	\$1,821,691	\$12.49	0.003%	0.091%
8112	Electronic and Precision Equipment Repair and Maintenance	\$4,213,288	11,323	\$372,100	5.14%	*	\$19,122	\$142,769	\$12.61	0.003%	0.066%
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	\$9,400,474	21,243	\$442,521	4.15%	*	\$18,386	\$262,961	\$12.38	0.003%	0.067%
8114	Personal and Household Goods Repair and Maintenance	\$5,447,836	23,522	\$231,606	4.15%	*	\$9,623	\$191,337	\$8.13	0.004%	0.085%
8121	Personal Care Services	\$12,170,150	84,303	\$144,362	5.71%	*	\$8,241	\$211,426	\$2.51	0.002%	0.030%
8122	Death Care Services	\$7,536,235	14,986	\$502,885	5.71%	*	\$28,708	\$94,512	\$6.31	0.001%	0.022%
8123	Drycleaning and Laundry Services	\$6,711,399	32,496	\$206,530	5.71%	*	\$11,790	\$155,917	\$4.80	0.002%	0.041%
8129	Other Personal Services	\$6,535,483	26,943	\$242,567	5.71%	*	\$13,847	\$140,742	\$5.22	0.002%	0.038%
8131	Religious Organizations	\$34,213,454	156,574	\$218,513	2.22%	*	\$4,855	\$607,873	\$3.88	0.002%	0.080%
8132	Grantmaking and Giving Services	\$18,515,506	11,353	\$1,630,891	2.22%	*	\$36,239	\$44,498	\$3.92	0.000%	0.011%
8133	Social Advocacy Organizations	\$3,993,173	9,003	\$443,538	2.22%	*	\$9,856	\$34,510	\$3.83	0.001%	0.039%
8134	Civic and Social Organizations	\$7,378,615	26,658	\$276,788	2.22%	*	\$6,150	\$96,234	\$3.61	0.001%	0.059%
8139	Business, Professional, Labor, Political, and Similar Organizations	\$25,082,876	58,608	\$427,977	2.22%	*	\$9,510	\$235,083	\$4.01	0.001%	0.042%

[a] Estimated based on 2002 receipts and payroll data from US Census Bureau, Statistics of U.S. Businesses, 2002 and payroll data from US Census Bureau, Statistics of [a] U.S. Businesses, 2003. Receipts are not reported for 2003, but were estimated assuming the ratio of receipts to payroll remained unchanged between 2002 and 2003.

[b] US Census Bureau, *Statistics of U.S. Businesses*, 2003.

[c] Estimated from ratios of net income to total receipts as reported for 2003 by the US Internal Revenue Service, Corporation Source Book, 2003. <<<http://www.irs.gov/taxstats/bustaxstats/article/0,,id=149687,00.html>>> Data not available at disaggregated levels for all industries, and profit rates at more highly aggregated levels are used for such industries.

NA: Data not available

* Profit rate imputed from corresponding 3-digit NAICS industry.

** Profit rate imputed from corresponding 2-digit NAICS industry.

APPENDIX A

ESTIMATED NATIONAL NUMBER OF FIXED LADDERS GREATER THAN 20 FEET IN HEIGHT

A.1 Introduction

This appendix summarizes the estimated number of structures with fixed ladders in the United States and the number of fixed ladders above 20 feet in height. To estimate the number of fixed ladders above 20 feet in height, ERG contacted industry consultants, associations, government agencies, trade journals, and manufacturers. First, ERG identified the structures in various industries at which fixed ladders are likely to exist. Second, the number of fixed ladders in each industry was estimated. Numerous industry sources, primarily trade association and manufacturers, were contacted to develop and revise the fixed ladder estimates.

Fixed ladders are defined in this report as ladders such as: 1) vertical steel ladders affixed to a structure; or 2) individual rung ladders ladder crosspieces which are individually attached to a structure, such as the rungs found embedded in the concrete in manholes. By definition, a fixed ladder is permanently attached to a structure, building, or equipment; this type of walking-working surface does not include ship stairs or manhole steps (OSHA, 2003). The fixed ladder estimate does not include structures with step bolts such as those found on monopole communication towers.

The following structures were identified as having fixed ladders:

- Ski lift towers
- Communications towers (radio, television, cellular, and microwave)
- Smokestacks and chimneys
- Cooling towers
- Manholes
- Elevator pits
- Power transmission towers
- Silos (grain, plastic, cement, and steel)
- Billboards
- Bridges
- Commercial and apartment buildings:
- Water tanks and towers
- Permanent and mobile amusement rides
- Wind turbines
- Astronomical observatories
- Manufacturing and industrial buildings

ERG identified other possible structures that might have fixed ladders, such as dams, tunnels, and stormwater drainage systems. However, ERG did not identify data for the number of structures or whether they had fixed ladders for these categories.

A.2 Summary

Table A-1 summarizes the estimated count of structures and fixed ladders by type of structure. There are about:

- 3.1 million fixed ladders in excess of 20 feet.
- 9.9 million manholes, of which 1.485 million are estimated to have fixed ladders in excess of 20 feet.
- 20,490 billboards with ladders in excess of 20 feet.

Details supporting Table A-1 are in Sections A.3 through A.20 below.

A.3 Ski Lift Towers

ERG contacted the National Ski Areas Association (NSAA) to determine the number of ski lift towers in the U.S. The four major types of ski lifts include detachable chair lifts, gondolas, fixed grip chair lifts, and surface lifts. All towers that support these lifts have fixed ladders. Based on an annual survey of participating resorts around the United States, the number of ski lift towers were tallied at 24,088 (NSAA, 2004a). NSAA reported that this information is likely to be 80 to 85 percent complete due to survey nonresponse. Thus, ERG inflated the totals by 20 percent to 28,906 lift towers with fixed ladders.

Ski towers are climbed on average 2 or 3 times a year for annual inspection and annual maintenance (NSAA, 2004b). They are also painted roughly every three years. There is some variation in how often lift towers are maintained. Some newer lifts no longer need annual lubrication maintenance, while older lifts might require more upkeep. None of the lifts have cages on the fixed ladders given the possibility lift riders could get their skis caught in the cages.

Table A.1 Estimated Number of Fixed Ladders

Structures With Fixed Ladders	Number Of Structures In U.S.	Number With Fixed Ladders (> 20 Feet)	Sources
Ski lift towers	28,906	28,906	NSAA, 2004a NSAA, 2004b
Communications towers	190,000	190,000	FCC, 2007 Carlise, 2007
Smokestacks/chimneys	99,984	57,929	EPA, 2007
Cooling towers at chemical plants	76,997	73	Ellis, 2004 EPA, 2004 Census, 2007a.
Manholes	9,900,000	1,485,000	Albee, 2004
Elevator pits	675,000	0	Clothier, 2004 Beyer, 2004
Power transmission towers	800,000	16,000	EIA, 2004 Weisbrich and Weisbrich, 2004 Putnam, 2004
Silos	1,000,000	850,000	Ellis, 2004 Miller, 2004
Billboards	500,000	20,490	OAAA, 2004 and 2005
Bridges	592,246	872	FHWA, 2004a and b.
Commercial buildings (1)	4,700,000	0	DOE/EIA, 2002
Apartment buildings (1)	136,000	0	DOE/EIA, 2001
Water tanks/towers	53,410	53,410	EPA, 2000
Permanent amusement rides	NA	350	King, 2004
Mobile amusement rides	NA	150	OABA, 2004
Wind turbines	5,000	5,000	AWEA, 2004
Historic windmills	35	Unknown	Windmill, 2005
Astronomical observatories	12	60	Encyclopedia, 2005
Manufacturing and industrial bldgs.	350,866	350,866	Census, 2007b
	19,108,456	3,059,106	

(1) Discussions with Outdoor Amusement Business Association (OABA) staff indicate that very few office and multi-family residential buildings use fixed ladders greater than 20 feet in height.

Based on this data, ERG estimated that all 28,906 estimated fixed ladders on lift towers are infrequently climbed.

A.4 Communications Towers (Radio, Television, Cellular, and Microwave)

Virtually all communication towers have fixed ladders. The Federal Communications Commission (FCC) Antenna Structure Registration Database lists 93,000 registered communication towers that have been constructed (FCC, 2007). The database only includes towers greater than 199 feet. ERG contacted Tower Source, a company that compiles information on tower locations and leasing information. Their databases contains approximately 210,000 structures overall. About 160,000 are guyed and freestanding towers, all of which have fixed ladders. The remaining 50,000 structures are located on rooftops but they do not record whether the antennae are located on the roof itself or on a climbable structure on the roof. (Carlise, 2007). For the purposes of estimating the number of fixed ladders, we assume that 60 percent of the 50,000 rooftop antennae are on climbable fixed ladders. This results in an estimated 190,000 communications towers.

A.5 Smokestacks and Chimneys

EPA collects information on point sources, such as industrial smokestacks and chimneys to track air emissions in the United States. This database—the National Emissions Inventory (NEI) database—is populated with information collected from the states. EPA posted Version 3 of the 2002 NEI database point source files in April 2007 (EPA, 2007). ERG analyzed the file to identify individual stacks by combination of unique pairs of facility identification numbers and stack height. The database contained nearly 100,000 stacks (99,984 stacks) of which nearly 60,000 (57,929) are 20 feet or greater in height.

A.6 Cooling Towers

Cooling towers are used in different industries for purposes such as air conditioning, power generation, manufacturing, and at chemical plants. Put simply, the purpose of a tower is to

remove excess heat from industrial processes by circulating water. There are two types of cooling towers, natural draft towers and forced draft towers. Natural draft towers are generally much larger than forced draft towers, which must use fans in the cooling process. Examples of a natural draft tower include the large chimney structures that are constructed at nuclear power plants. Contacts with a safety expert indicate that cooling towers generally have fixed ladders (Ellis, 2004).

The cooling tower estimate was revised to include electric power generation plants that use cooling towers. Towers at power generation plants are used to condense steam that turns the generators. The 1997 Economic Census reports 13,513 chemical manufacturing plants, whereas EPA's Risk Management Program counts 15,000 facilities (Census, 1997; EPA, 2004). Each of these plants has approximately five sections, each with one tower that has two 12-foot sections of ladder (Ellis, 2004). ERG counted these two sections as one ladder for the purposes of this analysis for a total of 75,000 ladders.

The 2002 Economic Census identifies 1,997 (Census, 2002a) power generation plants in operation. While no substantial data was available about the frequency with which these ladders are climbed, consultants indicated that they were climbed more often than twice a year and thus ERG assumed that none of these ladders are infrequently climbed (Ellis, 2004).

Based on discussions with industry sources, the majority of cooling towers are forced draft towers which are not over twenty feet high, and do not have fixed ladders over twenty feet high. A small number of the largest power plants in operation do have natural draft cooling towers that are several stories high. Nuclear power plants generally employ natural draft towers in a plant design. There were 73 nuclear power plants in operation in the United States according to the 2002 United States Economic Census (Census, 2002a).

A.6 Manholes

Manholes serve as access points for sewer system maintenance and may have fixed ladders installed. ERG found no estimates of the number of manholes or underground chambers.

In 1999, however, the American Society of Civil Engineers estimated that there are 750,000 miles of public sewer in the U.S. (Albee, 2004). Based on an analysis of websites that specify standards for spacing manholes of 300 to 600 feet apart, ERG estimated that 750,000 miles of public sewer might 6.6 to 13.2 million manholes, for an average of 9.9 million manholes. While some manholes have fixed ladders in the form of rungs that are embedded in concrete, many are climbed into using temporary ladders. One contact at a municipal sewer department noted that the individual rungs are considered unsafe by the industry due to corrosion and other degradation problems (Kido, 2004). Another noted that individual rungs are usually not found in older sewer systems, but that he had used them to climb into shallow manholes (Dailey, 2004).

Most manholes are not deeper than 20 feet based conversations with officials at municipal sewer departments (Meehan, 2004 and Kido, 2004). One official noted that the manholes greater than 20 feet are generally climbed every 5 years for inspections and that they compose a minority of the manholes, likely around 10 percent (Kido, 2004). In order not to underestimate the number of fixed ladders for which costs might be incurred, ERG rounds up the estimate to 15 percent. Thus, 15 percent of the estimated 9.9 million manholes, or 1.485 million manholes might be deeper than 20 feet and might have fixed ladders.

A.7 Elevator Pits

According to the industry's trade journal, Elevator World, the number of elevators in the U.S. is roughly estimated at 675,000 as of the year 2000 (Clothier, 2004). Other consultants have indicated this might be a low, but could not provide any better estimates (Beyer, 2004). One consultant indicated that roughly 95% of elevators have fixed ladders (Beyer, 2004). National Inspection Services notes that the depth of the elevator pit varies with elevator speed. A car traveling at 100 feet per minute requires a 4-foot pit while a car traveling at 600 feet per minute requires a 7-foot pit (NIS, 2007). Thus, with the exception of extremely high-speed elevators in the tallest buildings, elevator pits are unlikely to have fixed ladders in excess of 20 feet.

A.8 Transmission Towers

In 2004, the United States had approximately 160,000 miles of high voltage transmission line (EIA, 2004). Weisbrich and Weisbrich (2004) indicate a transmission tower spacing of about 5 towers per mile. ERG combined the information to estimate about 800,000 high voltage transmission towers nationwide.

ERG also spoke to a large electricity provider (Putnam, 2004). He noted that of most transmission towers accessed via aerial lifts, less than 2 percent of towers are likely to be climbed. Taking two percent of 800,000 transmission towers results in an estimated 16,000 towers that are likely to be climbed.

A.9 Silos

Industries that use silos include plastics plants, chemical plants, foundries, coal plants, cement plants, grain mills, beef and dairy farms, and aluminum processors, among others. Given the wide variation of the number of silos at each facility and by industry, ERG was not able to obtain accurate estimates on the number of silos in the U.S. broken down by industry. Based on his knowledge of the average number of silos in some industries, one consultant estimated 1,000,000 silos exist across all industries (Ellis, 2004). Another contact at the International Silos Association (ISA) estimated that there might be roughly 70,000 working forage silos at livestock and dairy farms in the U.S., all of which have fixed ladders, on the interior and the exterior (ISA, 2004).

A large silo manufacturer estimated that 80 to 90 percent of silos have fixed ladders outfitted with cages (Miller, 2004). Based on this data, ERG assumed that 85 percent of silos have fixed ladders higher than 20 feet.

A.10 Billboards

Based on discussions with the Outdoor Advertising Association of America (OAAA, 2005) the number of billboards with fixed ladders over 20 feet in length is now estimated at 20,490. The OAAA provided this estimate from member comments and a survey completed in 2003.

A.11 Bridges

According to statistics maintained by the U.S. Department of Transportation Federal Highway Administration, there were 592,246 bridges constructed as of 2004 (FHWA, 2004a). Most bridges do not have fixed ladders. The bridges that are most likely to have fixed ladders are movable bridges, which require the ladders for maintenance work on the mechanical and electrical equipment (FHWA, 2004b). Moveable bridges make up a small number, 0.15 percent, of all bridges in the United States according to the FHWA data. Bucket trucks and inspection platforms are generally used to do work on bridges. Thus, there are an estimated 872 fixed ladders on bridges.

A.12 Commercial and Apartment Buildings

The Department of Energy reports that there are 4.7 million commercial buildings in the U.S. in 1999, most of which are office, retail, warehouse, and storage buildings. Seventy-nine percent of these buildings are one story tall (DOE, 2002). Buildings only one story tall can access roofs from the exterior with a temporary ladder, negating the need for a fixed ladder. Taller buildings usually provide access to a roof by stairwell. Based on these observations, ERG concluded that very few residential and commercial buildings have fixed ladders. These estimates do not include fire escapes, which ERG assumed were not covered by the standard.

A.13 Water Tanks and Towers

The EPA defines a community water system as a public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. These range from small, privately owned systems to huge public systems serving millions.

The 2000 Community Water System Survey shows there are 53,410 such systems. Water tanks and/or towers provide storage for these systems (EPA, 2002). Whether a water tank or tower is used for water storage depends largely on the geography of the area and varies widely across the U.S. One manufacturer of water towers suggested that areas with mountainous terrain can sustain water pressure in a drinking system by constructing tanks on high ground. While ERG was not able to collect any data on the number of water tanks or towers per system (a system could have more than one tank and/or tower), ERG assumed one tank or tower per system as a lower bound on the actual number of water tanks and towers in the U.S.

Based on discussions with the safety director of a large manufacturer of water towers and tanks, all water tanks and towers have fixed ladders. They are climbed about 2 to 3 times a year to get birds nests off the top, for maintenance, to put cellular antennas up, and to replace light bulbs (Rudy, 2004). ERG assumed that the fixed ladders on water towers and tanks are all infrequently climbed, although a small percentage might be climbed more frequently if more frequent repairs are needed, especially to the cellular antennae.

A.14 Permanent and Mobile Amusement Rides

While there are 320 permanent amusement parks in the U.S., very few have rides that require fixed ladders. Some of the rides inside buildings have fixed ladders, but the vast majority is climbed using a catwalk. There are very few permanent rides that have fixed ladders higher than 20 feet; an estimate of such rides ranges from 300 to 400 rides. These are climbed every day for maintenance access and to check rides before they start (King, 2004). For estimating the number of fixed ladders nationwide, ERG took the mid-point of the estimate (350 ladders).

With respect to mobile amusement parks, there are likely about 100 to 200 rides that might have fixed ladders higher than 20 feet (OABA, 2004). Again, none of these rides are infrequently climbed as they are set up and dismantled once a week during the summer months. Furthermore, these ladders are also used for maintenance access. Some mobile parks also operate year round. For estimating the number of fixed ladders nationwide, ERG took the mid-point of the estimate (150 ladders).

A.17 Wind Turbines

The American Wind Energy Association (AWEA) reports that there currently are 6,500 wind turbines in the U.S. Some are lattice structures and do not have fixed ladders. AWEA estimates that roughly 5,000 wind turbines have fixed ladders (AWEA, 2004).

Wind turbines are generally only climbed when there is a problem with the operation of the turbine. A large operator and manager of wind energy projects throughout the U.S. noted that turbines are generally climbed 2 to 3 times a year for scheduled maintenance and 2 to 3 times a year to make unscheduled repairs. Overall, the turbines are climbed 4 to 6 times a year. Thus, fixed ladders on wind turbines are not infrequently climbed.

A.18 Windmills

Preliminary research into water pumping windmills indicate that they are historic structures and are fairly small in number in the United States (30-40 in the US). Windmills can be found in California; Cape Cod, Massachusetts; and on Long Island, New York (Windmill, 2005).

A.19 Astronomical Observatories

The number of observatories in the United States overall is very small overall, 12 facilities (Encyclopedia, 2005). Observatories are usually comprised of several structures

housing telescopes and other observation equipment that contain fixed ladders. A discussion was held with the staff from the Kech Observatory located at Mauna Kea, Hawaii (Dill, 2005). The dome at the Kech Observatory structure is 100 feet high and has multiple ladders. ERG assumed that on average there were 5 fixed ladders for each facility based on initial photographic observations (e.g., <http://www.ifa.hawaii.edu/mko/>).

A.20 Manufacturing and Industrial Buildings

ERG searched the 2002 Economic Census database for the number of manufacturing establishments. The number, as of June 2007, is 350,866 establishments (Census, 2002b). For the purpose of estimating the number of fixed ladders in the United States, ERG assumed one fixed ladder per establishment.

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