

## APPENDIX 6A. DATA FOR EQUIPMENT PRICE MARKUPS

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## APPENDIX 6A. DATA FOR EQUIPMENT PRICE MARKUPS

### 6A.1 INTRODUCTION

This appendix provides further details on information presented in chapter 6, Markups for Equipment Price Determination.

### 6A.2 DETAILED WHOLESALER COST DATA

Chapter 6 presents wholesaler revenues and costs in aggregated form, based on the Heating, Airconditioning & Refrigeration Distributors International (HARDI) *2010 Profit Report (2009 Data)*. Table 6A.2.1 provides the complete breakdown of costs and expenses from the *2010 Profit Report (2009 Data)*. The column labeled “Scaling” indicates which expenses were assumed to scale with only the baseline markup and which were assumed to scale with both the baseline and the incremental markups. As described in chapter 6, only those expenses that scale with baseline and incremental costs are marked up when there is an incremental change in equipment costs.

**Table 6A.2.1 Disaggregated Costs and Expenses for Wholesalers\***

Item	Percent of Revenue	Scaling
<b>Cost of Goods Sold</b>	<b>73.4%</b>	
<b>Gross Margin</b>	<b>26.6%</b>	
<b>Payroll Expenses</b>	<b>16.1%</b>	Baseline
Executive Salaries & Bonuses	1.7%	
Branch Manager Salaries and Commissions	1.4%	
Sales Executive Salaries & Commissions	0.5%	
Outside Sales Salaries & Commissions	2.2%	
Inside/Counter Sales/Wages	2.9%	
Purchasing Salaries/Wages	0.5%	
Credit Salaries/Wages	0.2%	
IT Salaries/Wages	0.2%	
Warehouse Salaries/Wages	1.5%	
Accounting	0.5%	
Delivery Salaries/Wages	0.9%	
All Other Salaries/Wages & Bonuses	0.9%	
Payroll Taxes	1.1%	
Group Insurance	1.2%	
Benefit Plans	0.4%	
<b>Occupancy Expenses</b>	<b>3.8%</b>	Baseline
Utilities: Heat, Light, Power, Water	0.4%	
Telephone	0.3%	
Building Repairs & Maintenance	0.2%	
Rent or Ownership in Real Estate	2.9%	
<b>Other Operating Expenses</b>	<b>5.4%</b>	Baseline & Incremental
Advertising & Promotion	0.7%	
Insurance (business liability & casualty)	0.2%	
Depreciation	0.4%	
Vehicle Expenses	1.4%	
Personal Property Taxes/Licenses	0.1%	
Collection Exp (collection, credit card fees)	0.3%	
Bad Debt Losses	0.3%	
All Other Operating Expenses	2.0%	

**Table 6A.2.1 (cont)\***

Item	Percent of Revenue	Scaling
<b>Total Operating Expenses</b>	<b>25.3%</b>	
<b>Operating Profit</b>	<b>1.3%</b>	Baseline & Incremental
Other Income	0.5%	
Interest Expense	0.6%	
Other Non-operating Expenses	0.0%	
<b>Profit Before Taxes</b>	<b>1.2%</b>	

Source: Heating, Airconditioning & Refrigeration Distributors International. *2010 Profit Report (2009 Data)*. 2010. Columbus, OH.

\*Wholesaler costs and expenses are *percentage* values as opposed to the *per dollar of sales revenue* values shown in chapter 6.

### 6A.3 DETAILED MECHANICAL CONTRACTOR DATA

The U.S. Department of Energy (DOE) uses mechanical contractor data in construction of distribution chains, in this case as a proxy for local or regional dealers. Based on input received at the Framework public meeting, DOE recognizes that customers frequently rely on third parties (*e.g.*, dealers or contractors) for installation and repair work because customers rely on the equipment and cannot be in a situation where their equipment is not operating,<sup>1</sup> though mechanical contractors, specifically, are not commonly used. Thus, DOE has retained the contractor channel as a proxy for the three-step chain. In the preliminary technical support document executive summary, DOE requests additional data from stakeholders concerning appropriate markups for the third step of the contractor channel.

Chapter 6 presents mechanical contractor revenues and costs in aggregated form, based on U.S. Census Bureau data. Table 6A.3.1 shows the complete breakdown of costs and expenses provided by the U.S. Census Bureau. The column labeled “Scaling” indicates which expenses were assumed to scale with only the baseline markup and which were assumed to scale with both the baseline and incremental markups. As described in chapter 6, only those expenses that scale with baseline and incremental costs are marked up when there is an incremental change in equipment costs.

**Table 6A.3.1 Mechanical Contractor Expenses and Markups Used To Scale the Incremental Markups\***

Item	Dollar Value	Percentage	Scaling
<b>Total Cost of Equipment Sales</b>	<b>\$107,144,428</b>	<b>67.80%</b>	Baseline
Cost of materials, components, and supplies	\$59,023,964	37.35%	
Payroll, construction workers	\$31,373,558	19.85%	
Cost of construction work subcontracted out to others	13,646,192	8.64%	
Cost of selected power, fuels, and lubricants	\$3,100,714	1.96%	
<b>Gross Margin</b>	<b>\$50,895,129</b>	<b>32.20%</b>	
<b>Payroll Expenses</b>	<b>\$27,626,376</b>	<b>17.48%</b>	Baseline
Fringe benefits, all employees	\$13,585,040	8.60%	
Payroll, other employees	\$14,041,336	8.89%	
<b>Occupancy Expenses</b>			Baseline
Rental cost for machinery, equipment, and buildings; cost of repairs to machinery and equipment; purchased communication services	<b>\$3,436,208</b>	<b>2.17%</b>	

**Table 6A.3.1 (cont)**

Item	Dollar Value	Percentage	Scaling
<b>Other Operating Expenses</b>	<b>\$6,165,776</b>	<b>3.90%</b>	Baseline & Incremental
Depreciation charges during year	\$2,297,550	1.50%	
Computers; insurance and other business services; advertising and promotions; taxes and license fees	\$3,868,226	2.40%	
<b>Net Profit Before Income Taxes</b>	<b>\$13,666,769</b>	<b>8.60%</b>	Baseline & Incremental

Source: U.S. Census Bureau. *2007 Economic Census, Release Date: 8/14/2009, Sector 23: EC072311: Construction: Industry Series: Preliminary Detailed Statistics for Establishments: 2007.* (Last accessed, March 8, 2011.)

< [http://factfinder.census.gov/servlet/IBQTable?\\_bm=v&-geo\\_id=&-ds\\_name=EC072311&-lang=en](http://factfinder.census.gov/servlet/IBQTable?_bm=v&-geo_id=&-ds_name=EC072311&-lang=en) >

\*Mechanical contractor costs and expenses are first presented as total dollar values and then converted to percentage values. This is in contrast to per dollar of sales revenue values shown in chapter 6.

## 6A.4 ESTIMATION OF WHOLESALER AND MECHANICAL CONTRACTOR MARKUP STANDARD DEVIATIONS

DOE used the U.S. Census Bureau's Economic Census data to estimate automatic commercial ice making equipment mechanical contractor markup distributions. The most recent census was performed in 2007. In the case of mechanical contractors, the 2007 census data included state-level plumbing, heating, and air-conditioning data for total value of work, number of firms, cost of goods sold, cost of subcontract work, cost of materials, and construction payroll, as shown in Table 6A.4.1.

DOE used the state-by-state variation in mechanical contractor markups as a component of state-by-state variation in the life-cycle cost (LCC) studies. In the case of the contractor markups, the variation in contractor markup by state is captured explicitly in the subsequent LCC analysis. By "selecting" a state during the Monte Carlo analysis, DOE varied the installation costs widely. Looking at contractor markups on a relative basis, the lowest state is 90 percent of the average markup while the highest state is 119 percent of the average. Using population as a weighting factor, contractor cost was combined with other factors that vary by state to create one of the key sets of cost components varied during the analysis.

**Table 6A.4.1 Mechanical Contractor Baseline Markups by State, 2007\***

State	Number of Firms	Value of Construction \$000	Cost of Subcontract Work \$000	Cost of Materials \$000	Construction Payroll \$000	Baseline Markup
Alabama	1,425	2,010,305	113,782	876,341	411,100	1.435
Alaska	229	583,171	52,245	171,575	120,909	1.692
Arizona	1,510	3,522,116	179,103	1,508,903	638,469	1.514
Arkansas	1,045	1,065,754	68,417	461,924	213,054	1.434
California	7,272	16,726,969	1,070,065	6,330,469	3,464,667	1.539
Colorado	2,015	3,056,988	261,734	1,195,057	627,663	1.467
Connecticut	1,321	1,704,668	145,740	628,720	361,411	1.501
Delaware	306	481,900	D	D	163,343	1.421
District of Columbia	22	34,600	D	D	50,439	1.458

**Table 6A.4.2 (cont)**

State	Number of Firms	Value of Construction \$000	Cost of Subcontract Work \$000	Cost of Materials \$000	Construction Payroll \$000	Baseline Markup
Florida	5,069	9,061,426	783,859	3,736,811	1,733,721	1.449
Georgia	2,534	4,700,799	365,010	2,224,110	740,722	1.412
Hawaii	280	800,221	46,753	270,723	137,646	1.758
Idaho	594	900,698	62,252	387,181	167,732	1.459
Illinois	3,848	7,641,642	602,251	2,833,489	1,622,307	1.511
Indiana	1,867	4,002,323	431,558	1,319,523	854,157	1.536
Iowa	1,066	1,868,483	144,869	801,239	359,775	1.431
Kansas	966	1,395,359	106,307	580,764	279,636	1.443
Kentucky	1,219	1,747,925	128,902	674,500	353,958	1.510
Louisiana	1,469	1,997,044	162,063	776,784	378,582	1.516
Maine	458	580,816	46,692	234,993	113,162	1.471
Maryland	2,024	5,329,135	698,381	2,009,957	1,031,222	1.425
Massachusetts	2,520	4,099,301	488,098	1,475,525	817,754	1.474
Michigan	3,051	4,420,638	604,850	1,569,113	841,985	1.466
Minnesota	1,635	3,402,921	386,669	1,230,126	698,535	1.470
Mississippi	655	1,025,452	76,709	449,851	189,011	1.433
Missouri	1,816	3,335,124	345,285	1,319,142	689,171	1.417
Montana	432	483,578	42,988	216,792	85,678	1.400
Nebraska	683	1,004,296	94,170	455,264	205,904	1.330
Nevada	498	2,327,842	121,091	988,605	490,859	1.454
New Hampshire	531	620,761	39,784	D	128,512	1.472
New Jersey	3,551	5,062,336	496,174	1,825,407	1,015,432	1.517
New Mexico	599	891,914	67,987	356,961	170,711	1.497
New York	5,750	10,364,779	1,219,468	3,568,182	1,972,687	1.533
North Carolina	2,978	5,111,396	341,129	2,288,841	1,001,832	1.407
North Dakota	272	360,683	36,037	148,617	70,403	1.414
Ohio	3,514	5,618,591	568,837	2,115,568	1,125,401	1.475
Oklahoma	1,158	1,352,943	94,153	581,079	249,032	1.464
Oregon	1,031	1,893,678	124,070	701,468	412,418	1.530
Pennsylvania	3,653	6,487,476	579,901	2,628,602	1,370,864	1.417
Rhode Island	397	631,202	56,234	229,692	124,727	1.537
South Carolina	1,472	1,991,303	126,123	847,690	352,877	1.501
South Dakota	337	386,186	11,037	158,375	69,605	1.616
Tennessee	1,370	2,595,613	189,293	1,159,952	484,997	1.415
Texas	5,653	10,810,308	823,920	4,605,624	2,102,520	1.435
Utah	892	1,746,398	146,052	769,140	319,812	1.414
Vermont	282	294,806	21,021	D	63,015	1.472
Virginia	2,547	4,623,151	347,055	1,791,740	960,534	1.492
Washington	1,602	4,111,543	370,741	1,546,819	816,533	1.504
West Virginia	416	655,100	D	D	90,660	1.464
Wisconsin	1,839	2,926,545	234,962	1,125,779	662,893	1.446
Wyoming	262	289,391	14,391	128,922	54,792	1.461
<b>Average Baseline Markup</b>						<b>1.477</b>
<b>Standard Deviation</b>						<b>0.070</b>
<b>Relative Standard Deviation</b>						<b>0.048</b>

### **Table 6A.4.2 (cont)**

Source: U.S. Census Bureau. *2007 Economic Census, Release Date: 11/24/2009, Sector 23: EC0723A1: Construction: Geographic Area Series: Detailed Statistics for Establishments: 2007.* (Last accessed May 28, 2010.)

[http://factfinder.census.gov/servlet/IBQTable?\\_bm=y&-ds\\_name=EC0723A1&-NAICS2007=238220&-lang=en](http://factfinder.census.gov/servlet/IBQTable?_bm=y&-ds_name=EC0723A1&-NAICS2007=238220&-lang=en)

\*The Census Bureau withheld data for some states due to sample sizes and the size of errors relative to means. For states where a D appears under the headings for Subcontractor Costs, Materials & Supplies, or Construction Payroll, data was withheld. States missing one or more variables were set equal to an average of neighboring states' baseline markup.

## REFERENCES

1. U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Transcripts: Public Meeting on Energy Conservation Standard Framework Document for Automatic Commercial Ice-Makers, December 16, 2010, pp. 165–167. Washington, D.C. <[http://www1.eere.energy.gov/buildings/appliance\\_standards/commercial/pdfs/acim\\_frame\\_work\\_public\\_meeting\\_transcript\\_12\\_16\\_2010.pdf](http://www1.eere.energy.gov/buildings/appliance_standards/commercial/pdfs/acim_frame_work_public_meeting_transcript_12_16_2010.pdf)>