

CHAPTER 7. MARKUP

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CHAPTER 7. MARKUP

Markup is the amount added to the cost of a water heater to cover overhead and profit by a manufacturer, wholesaler, installer, or retailer. Overhead refers to the general continuing costs involved in running a business. Profit is the sum remaining after all costs, direct and indirect are deducted from the income of a business. Throughout the Water Heater Efficiency Standards Analysis, the markup was defined as the price charged divided by the cost incurred. However, more than one markup was used because prices and costs differ depending on the type of markup (i.e., manufacturer, wholesaler, installer, or retailer). This chapter describes the markup calculation for three of the water heater analyses: Engineering Analysis, Life-Cycle Cost Analysis, and Manufacturer Impact Analysis. The first section of this chapter discusses what is common to all three markup calculations and the definitions and sources of the variables. The differences in the markup calculations are covered in the section pertaining to each analysis.

7.1 BACKGROUND

Markups can be applied at a variety of stages from water heater manufacture to consumer sales. Manufacturers sell to plumbing wholesalers or to retail outlets at a certain markup over the cost to manufacture. Contractors will purchase the water heaters either through the wholesaler, or through a retail outlet, both of whom will mark up prices to cover their operation costs and profit margins. The amount by which the manufacturer price (price paid by the plumbing wholesaler/retailer to the manufacturer) is marked up by the retailer to arrive at the retail price is referred to as the retail markup. When the retail price is divided by the manufacturing cost, it is referred to as the manufacturer-to-retailer markup (or overall markup). Manufacturers' sales are approximately equally divided between the two channels. In 1996, approximately 4.2 million water heaters were sold to plumbing wholesalers (such as Noland and Ferguson Westburn), while 4.7 million were sold to retailers (such as Home Depot, Sears or Lowes). While some manufacturers sell to both wholesale and retail outlets, certain manufacturers, such as A.O. Smith and Bradford-White, distribute only through wholesalers.¹

Most water heaters purchased for new construction, and the majority of water heaters purchased by contractors for replacement, are baseline units. The majority of higher cost (longer warranty, etc.) water heaters are sold through retail channels. Markups for the baseline “commodity” water heaters tend to be much smaller than for the higher cost units. The manufacturer markups to both channels are similar, with prices to wholesalers tending to be slightly lower. As the relatively large percentage of sales through retailers might indicate, contractors are purchasing from these suppliers (versus plumbing wholesalers) in significant numbers. This has helped effect a near equalization of prices between the two channels.

7.1.1 Definitions

Since two primary channels exist for water heater distribution, some confusion may exist when there is discussion of “contractor price” versus “retail price” versus “plumbing wholesaler

price”, etc. Because of the cost equalization discussed above, it is plausible to simplify this structure for the purposes of this analysis and to use the following definitions:

Manufacturer’s Cost: Cost to the manufacturer to produce the water heater, determined as the sum of the material, labor and direct overhead costs.

Manufacturer’s Markup: The ratio of manufacturer’s price to manufacturer’s cost.

Manufacturer’s Price: Equivalent to the cost to the wholesale distributor (plumbing wholesaler) or the retail outlet. These two prices are somewhat different, with the large retail outlets generally exerting more price pressure on the manufacturers. However, here the manufacturer’s price is taken as the average of the two.

Retail Markup: The ratio of retail price to manufacturer’s price.

Retail Price: The price of the water heater sold by either the plumbing wholesaler or the retail outlet, to a plumbing contractor or directly to the consumer.

Manufacturer-to-Retailer Markup: The ratio of retailer’s price to manufacturer’s cost. Also referred to as overall markup.

7.1.2 Sources for Markup Values

7.1.2.1 Manufacturer Cost Information

The primary source of the manufacturer costs was the Gas Appliance Manufacturers’ Association (GAMA) (See Appendix C-2). The cost data, collected from the manufacturers, were aggregated to protect the confidentiality of individual manufacturers. GAMA did not provide data for all of the design options being considered. The missing data were supplemented by cost information obtained from industry consultants (see Appendix C-3 for details).^a

7.1.2.2 Manufacturer Price Information

The Current Industrial Reports (CIR) program of the U.S. Census Bureau has been providing monthly, quarterly, and annual measures of industrial activity for many years.² The primary objective of the CIR program is to produce timely, accurate data on production and shipments of selected products. The data are used to satisfy economic policy needs and for market analysis, forecasting, and decision making in the private sector. The CIRs include statistics for the United States on the quantity and value of shipments along with comparative data on exports, imports, and domestic output.

^a Max E. Minniear, former Vice President of Engineering at A.O. Smith Water Products Company and Eugene West, formerly of Bradford-White Corporation.

The CIR program uses a unified data collection, processing, and publication system. The census bureau updates the survey panels for most reports annually and reconciles the estimates to the broader-based annual survey of manufactures and the census of manufactures. The census of manufactures provides a complete list of all producers of the products covered by the CIR program and serves as the primary source for CIR sampling. The CIR program includes a group of mandatory and voluntary surveys. Typically, the monthly and quarterly surveys are conducted on a voluntary basis. Those companies that choose not to respond to the voluntary surveys are required to submit a mandatory annual counterpart corresponding to the more frequent survey.

The figures on quantity and value of shipments represent physical shipments of all products sold, transferred to other establishments of the same company or shipped on consignment, whether for domestic or export sale. The value represents the net sales price, FOB (freight-on-board) plant, to the customer or branch to which the products are shipped, net of discounts, allowances, freight charges, and returns. Shipments to a company's own branches are assigned the same value as comparable appropriate allocation of company overhead and profit. Products bought and resold without further manufacture are excluded.

Table 7.1 provides the estimated manufacturer price of electric water heaters between 45 and 54 gallons capacity. The value of the water heaters shipped from factories is divided by the quantity shipped to arrive at the per unit manufacturer price.

Table 7.1 Manufacturer Prices of Electric Water Heaters from 1991 Through 1997

| Year | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Average |
|-------------------|--------|--------|--------|--------|--------|--------|--------|---------|
| Manuf. Price (\$) | 128.49 | 157.66 | 127.46 | 130.74 | 133.07 | 133.20 | 134.34 | 133.56 |

Retail Markups Estimated from SEC Financial Statements. Information relating to the gross margins (or gross profit) of water heater distributors can be obtained from their SEC 10-K financial statements.³ Table 7.2 presents gross margins for four distributors, two wholesale plumbing companies and two retail home supply companies. Figures are only somewhat representative of actual margins for water heaters, as a significant proportion of the products sold by both the wholesalers and retailers are not water heaters. The margins in Table 7.2 represent the average of the margins that retailers obtained from sales of all products.

Table 7.2 Gross Margins for Home Supply Retailers and Plumbing Wholesalers

| | Gross Margin (%) | Retail Markup | Distribution Path |
|---------------------------------------|------------------|---------------|-------------------|
| Company A (average of 1990-1996 data) | 25.2 | 1.34 | Retail |
| Company B (average of 1994-1995 data) | 27.8 | 1.39 | Retail |
| Company C (average of 1995-1996 data) | 19.3 | 1.24 | Wholesale |
| Company D (average of 1994-1996 data) | 20.4 | 1.26 | Wholesale |

Typically, gross profits, as reported in SEC 10-K statements, are obtained by subtracting the ‘cost of sales’ from the ‘net sales.’ Dividing gross profit by the net sales gives the gross margin. Gross margin represents the markup that retailers receive based on:

- (1) price that the wholesalers/retailers pay to the manufacturers for buying the goods,
- (2) costs involved in the process of buying the goods from manufacturers (these might include some transportation costs, administration and labor costs), and
- (3) costs of maintaining and operating warehouses where the goods are stocked after they are bought from manufacturers.

From the above description of gross margins, it can be seen that the wholesale/retail markups (defined earlier in this write-up as the ratio of retail or wholesale price to manufacturer price) will be, in general, higher than what the gross margins indicate. This is because in addition to profits and SG&A, the retail markups will also have to cover the costs incurred by retailers for buying and warehousing activities. The buying and warehousing costs as a percentage of the net sales or revenues are not available.

7.1.2.3 Retail Price Information

Retail price information was obtained directly from retail outlets by Lawrence Berkeley National Laboratory (LBNL) and collected into the Water Heater Price Database (see Chapter 5). Retail price information for water heaters was not available from the standard price reference sources, such as Dealerscope Mechandising, used for some other appliances. See Section 5.3.1 for a full description of prices for electric and gas-fired baseline water heaters.

7.2 APPLICATION OF THE COST AND PRICE DATA

The markups reported in the Engineering, LCC, and MIA are different because each analysis defines and uses markup in a different way. The next sections describe how markups were calculated and used in the three analyses.

7.2.1 Engineering Analysis

The Engineering Analysis uses markups to determine the increase in price from manufacturing cost to retail price. The markup is the manufacturer-to-retail markup or overall markup. A markup is calculated separately for each fuel type and water heater volume size. For every design option within each fuel type and volume size, the markup remains constant.

7.2.1.1 Costs and Price Sources

GAMA provided estimates of water heater manufacturing costs for typical existing baseline models and for most design options. Consultants provided cost estimates for design option costs not provided by manufacturers. The source of retail price and the installation cost of existing baseline

models is the Water Heater Price Database.⁴ This database contains price data collected from retail outlets and wholesale distributors.

Only baseline models were used to determine the markup for the Engineering Analysis. We determined a mean price for an existing baseline 50-gallon electric, 40-gallon gas-fired (both natural gas and LPG),^a or 32-gallon oil-fired water heater with HCFC-141b foam insulation by contacting various wholesale distributors, plumbing contractors, and large retail chains. Since the price of a water heater depends on the length of the manufacturer's warranty, we considered only water heaters warrantied for 6 years or less as baseline models. Water heater manufacturers warranties of up to 6 years are typical of those models which are produced in large quantities (i.e., baseline models). A longer warranty period, in addition to raising the price, also may indicate the presence of some design features not normally found in baseline models. The median retail price, rather than the average, was used in the calculation to avoid the effect of outliers.

7.2.1.2 Adjustments Made to Manufacturing Costs

Most 40- and 50-gallon gas-fired water heaters on the market use 3" flues. However, the baseline models 4" flues. Therefore, the manufacturer costs of baseline models were adjusted downward to reflect the incremental manufacturer cost of the difference in flue diameter. Our consultant estimated the incremental cost difference between manufacturing water heaters with 3" and 4" flues. This cost was then subtracted from the manufacturer cost supplied by GAMA for water heaters with 4" flues.

Similar adjustments were made to calculate the manufacturer cost of baseline models of other size tanks. This calculation was based on the different amounts of foam insulation and steel for the jacket and the tank used to make different size water heaters.

7.2.1.3 Markup for the Engineering Analysis

Dividing the retail price by the manufacturer cost yields a manufacturer-to-retail markup. We performed this calculation separately for electric, gas-fired, and oil-fired water heaters and for different sizes. In the Engineering Analysis, we assumed that the baseline manufacturer-to-retail markup was constant for all design options. Thus, we determined the retail price for any modified design simply by multiplying the manufacturer cost for a water heater with that design by the derived markup for the particular fuel and tank size. Table 7.3 shows the markups for each fuel and volume size.

Battelle estimated the cost of materials and labor for the design options under consideration and applied standard industry markup factors to determine the cost to the consumer.⁵ Battelle

^a Water heaters fueled by natural gas and LPG are considered as one product class from the point of view of physical and efficiency characteristics. They are treated separately with respect to manufacturing cost, markup, retail price, and fuel price in the Life-Cycle Cost and subsequent analyses.

assumed standard industry markup factors were 1.5 for the manufacturer, 1.2 for the distributor, and 1.4 for the retailer. Thus, the overall markup factor is 2.52 ($1.5 \times 1.2 \times 1.4 = 2.52$). Therefore, to determine the cost to the consumer, the manufacturer's materials and labor costs for a design option are multiplied by 2.52. Battelle claims that when its baseline materials and labor costs were used in conjunction with the DOE database of retail water heater prices, the average overall markup factor for natural gas water heaters came out to be 2.44.

The markup of 2.52 is incorrect because it assumes a flow from a manufacturer to a distributor, who then sells to retailer. However for residential water heaters, the manufacturer sells separately to distributors and retailers, so the distributor and retailer markups should not be combined.

To confirm this approach for natural gas water heaters, Battelle conducted a tear-down analysis on six water heaters varying in size among 30-, 40-, 50-, and 75-gallon capacities. BDI Design for Manufacture software was used to catalog the components and estimate materials and labor costs for each water.⁶ The materials and labor costs for the 30-, 40-, 50-, and 75-gallon baseline natural gas water heaters were \$80.83, \$86.06, \$90.95, and \$139.77, respectively. The 40-gallon natural gas water heater cost of \$86.06 is in excellent agreement with the value of \$85.76 for materials and labor supplied by GAMA to DOE (see Appendix C-3).

DOE compared its manufacturer markup to Battelle's standard markup factor. This is the total manufacturer price divided by the sum of the materials and labor costs for 40-gallon gas-fired water heaters. The markup comparison, based just on the materials and labor costs shows that Battelle's markup and DOE's markup differ by one hundredth of a point. Note that in addition to the materials and labor costs, the final DOE markup shown in Table 7.3 includes transportation and overhead costs which represent a significant fraction of the variable manufacturing cost.

| | |
|-----------|---|
| Battelle: | $\$133.78 / \$86.06 = 1.55$ |
| DOE: | $\$133.78 / (\$75.02 + \$10.74) = 1.56$ |

Therefore the manufacturing markup is essentially identical, when the transportation and overhead costs is not included.

Table 7.3 Engineering Markups for Different Fuels and Volume Sizes

| Electric | 30 gal | 40 gal | 50 gal | 65 gal | 80 gal |
|--|---------------|---------------|---------------|---------------|---------------|
| Mean Retail Price of Baseline Model | \$188.25 | \$187.54 | \$192.70 | \$346.28 | \$394.18 |
| Total Manufacturing Cost of Baseline Model | \$113.95 | \$118.90 | \$121.73 | \$125.60 | \$129.12 |
| Markup | 1.65 | 1.58 | 1.58 | 2.76 | 3.05 |
| Gas | 30 gal | 40 gal | 50 gal | 75 gal | |
| Mean Retail Price of Baseline Model | \$176.02 | \$167.78 | \$247.76 | \$546.08 | |
| Total Manufacturing Cost of Baseline Model | \$130.63 | \$133.78 | \$136.01 | \$141.28 | |
| Markup | 1.35 | 1.29 | 1.87 | 3.87 | |
| Oil | 32 gal | 50 gal | | | |
| Mean Retail Price of Baseline Model | \$445.60 | \$659.60 | | | |
| Total Manufacturing Cost of Baseline Model | \$139.25 | \$206.13 | | | |
| Markup | 3.20 | 3.20 | | | |

7.2.2 Life-Cycle Cost Analysis

In the LCC Analysis, the overall markup factor consists of distributor or retail prices for baseline models divided by the manufacturer cost. Because a major goal of the LCC analysis is to represent the variability and uncertainty of the impact on consumers of possible efficiency levels markup is represented as a range of values.

7.2.2.1 Costs and Price Sources

The LCC Analysis uses the same sources for costs and prices as in the Engineering Analysis. The distribution of retail prices for baseline LPG water heaters was estimated for various size water heaters.

7.2.2.2 Adjustments Made to Manufacturing Costs

We estimated the manufacturing costs for all other standard size existing baseline water heaters based on the manufacturing cost for the typical water heater plus (or minus) incremental costs for extra foam insulation, sheet metal, and other components.

The high end of the cost distribution was not in line with known appliance manufacturing costs, derived from SEC reports and the A.O. Smith 10K reports. Therefore, manufacturing costs were modified to reflect this data and to guarantee that the cost of manufacturing a baseline unit would never exceed the manufacturer price of that unit. The range of manufacturer's cost distribution were adjusted to match the average of the cost distribution of the remaining manufacturers. We also applied this correction to the incremental manufacturer costs for heat traps and increased insulation. This also ensures consistency within the data. Since the overall retail prices remain constant, the

change eliminates the occurrences of unreasonably low markups on the baseline gas and electric water heaters. This reduced the average values of the baseline manufacturer costs for electric and gas water heaters by \$9.55 and \$6.22 respectively. See Appendix E-3 for more information.

We also applied the 4" to 3" flue diameter correction as described in Section 7.2.1.2 above for 30-, 40-, and 50-gallon gas-fired water heaters. The baseline manufacturer costs for other standard sizes were estimated by adding the incremental costs described in 7.2.1.2.

LPG water heaters are also covered in the LCC Analysis. The baseline manufacturer cost of LPG water heaters was derived from the manufacturer cost of a baseline natural gas water heater by adding an incremental cost supplied by a consultant.⁷ See Appendix C-3 for more details on LPG manufacturer costs.

7.2.2.3 Markup for the LCC Analysis

DOE determined the markup for each sampled household by dividing a randomly chosen baseline retail price from the LBNL database by a randomly chosen manufacturing cost from a range of the adjusted baseline manufacturing costs for the standard-size water heater assigned to that household. The markup determined for the household was applied to all of the subsequent design options for that household. We have an overall markup of 1.59 for gas and 1.94 for electric water heaters. Table 7.4 summarizes the range and average markup used for each fuel type and volume size.

Table 7.4 LCC Markups for Different Fuels and Volume Sizes

| Fuel | Vol. | Retail Price (1998\$) | | | Manufacturing Cost (1998\$) | | | Markup | | |
|-------------|------|-----------------------|------|------|-----------------------------|------|------|--------|------|------|
| | | Ave. | Min. | Max. | Ave. | Min. | Max. | Ave. | Min. | Max. |
| Electric | 30 | 192 | 98 | 377 | 106 | 81 | 126 | 1.81 | 0.78 | 4.46 |
| | 40 | 191 | 112 | 309 | 112 | 86 | 130 | 1.70 | 0.84 | 3.44 |
| | 50 | 195 | 130 | 394 | 114 | 88 | 133 | 1.70 | 0.97 | 4.30 |
| | 65 | 356 | 214 | 440 | 117 | 92 | 137 | 3.00 | 1.53 | 4.62 |
| | 80 | 400 | 303 | 566 | 123 | 96 | 141 | 3.21 | 2.13 | 5.28 |
| Natural Gas | 30 | 234 | 152 | 537 | 127 | 104 | 147 | 1.44 | 0.86 | 3.69 |
| | 40 | 220 | 147 | 381 | 130 | 107 | 149 | 1.33 | 0.80 | 2.65 |
| | 50 | 326 | 207 | 695 | 132 | 110 | 150 | 1.95 | 1.12 | 4.31 |
| | 75 | 693 | 433 | 1176 | 137 | 115 | 155 | 4.00 | 2.28 | 7.56 |
| LPG | 30 | 365 | 298 | 441 | 142 | 119 | 162 | 2.05 | 1.54 | 2.79 |
| | 40 | 366 | 253 | 466 | 145 | 122 | 164 | 2.04 | 1.31 | 2.93 |
| | 50 | 438 | 336 | 520 | 146 | 124 | 164 | 2.41 | 1.72 | 3.20 |
| | 75 | 800 | 637 | 952 | 152 | 130 | 169 | 4.26 | 3.21 | 5.53 |
| Oil | 32 | 446 | 410 | 619 | 139 | 125 | 153 | 3.53 | 2.74 | 4.77 |
| | 50 | 446 | 410 | 619 | 206 | 186 | 227 | 3.54 | 2.79 | 4.56 |

7.2.3 Manufacturer Impact Analysis (MIA)

To meet the new appliance efficiency standards, manufacturers may introduce design changes in their product lines. These design changes may result in increased manufacturing costs. Some portion of the increased manufacturing costs are “passed-through” from manufacturers to retailers and eventually to consumers in the form of higher purchase prices.

The manufacturer markup has an important bearing on the manufacturers’ profitability, as a higher markup suggests that manufacturers are able to pass-through the variable costs and some of the product conversion costs (the fixed costs) to retailers and eventually to consumers; whereas a lower markup implies that manufacturers will not be able to fully recover the investment in plant and equipment.

Based on publicly available information from the Census of Manufacturers and the SEC 10-K reports filed by publicly owned manufacturers, we developed a water heater industry cost structure. (See Table 7.5) The cost structure was built up from financial data for the one major publicly traded

manufacturer in the industry, and is consistent with the cost structure developed by Arthur D. Little previously for the washing machine industry and for the appliance industry as a whole.¹ Note, because of data availability, this cost structure covers manufacturing of both gas and electric water heaters.

Manufacturing cost estimates for baseline water heaters from the 1995 manufacturer price (\$133.07) and the industry cost structure are displayed in Table 7.5. The breakdown of prices assumes that to earn a satisfactory return, revenues from the sale of goods (and hence the manufacturer price) must be large enough to recover costs and to earn a profit that provides a satisfactory return on investment.

Table 7.5 Manufacturing Cost of a Water Heater Estimated from the Industry Cost Structure

| Per unit | Cost (\$) | |
|----------------------|-----------|-------|
| | Electric | Gas |
| Material | 58.43 | 64.53 |
| Labor | 5.77 | 6.50 |
| Overhead | 18.11 | 16.72 |
| Full Production Cost | 82.31 | 87.75 |

The full production cost of a baseline electric water heater is estimated to be \$82.31. The full production cost is the sum of the direct material cost, the direct labor cost, and the overhead cost which includes depreciation (~2.2% of revenues). The non-production costs include selling costs, general and administrative costs, research and development costs, and interest costs. The full production cost (also called the inventory cost) and the non-production cost together constitute the full cost of a product.

The GRIM model used in the MIA calculates cash flows by year and then determines the present value of these cash flows, for three regulatory cases:

1. No government regulations, i.e., status quo. This case serves as providing a current industry value to be used as a benchmark. (*Base Case*).
2. Energy-efficiency regulations only (*Standard Case*).
3. All government regulations (*Cumulative Case*). This includes replacing the current blowing agent with one that is not ozone depleting and implementing flammable vapor ignition resistant designs on natural gas and LPG water heaters.

The ability of manufacturers to recover the investments required for each of these cases was examined under three business scenarios.

Baseline manufacturer markup is defined as the ratio of price to the full production cost of a baseline water heater. In the Manufacturer Impact Analysis, markup is an output in the calculation of the Net Present Value (NPV) of three business scenarios. The three business scenarios predict the

ability of manufacturers to recover the investments required to meet the standards case and the cumulative case. The three scenarios are:

1. The average price for all water heaters sold needed to maintain the industry’s current value, essentially recovering 100% of investments (*Business Scenario 1*).
2. The average price for all water heaters sold needed to recover variable costs and markup only (loss of fixed cost investment. (0% recovery) (*Business Scenario 2*).
3. The average price based on the water heater manufacturer’s expected price and operating performance, based on comments received during the interview process, essentially leading to recovery of 75% of investments (*Business Scenario 3*).

A baseline markup is applied over the full production cost to arrive at the manufacturer price at which the firm can recover all costs, both production and non-production, and earn a profit. In general, the manufacturer markup should ensure that the manufacturer price of the product is high enough to recover the full cost of the product and yield a satisfactory profit. Table 7.6 and 7.7 show the different markups used for the three different business scenarios in the cases of Cumulative Regulatory Impacts and Energy-Efficiency Standards Only. (See Chapter 13 for a full explanation.)

Table 7.6 Markup for the Cumulative Regulatory Impacts Case

| Business Scenario 1: Maintain Current Industry NPV | | | |
|--|-------------|----------------------|---|
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | \$ 325 | |
| 1 | 1.32 | \$ 325 | \$ 190 |
| 2 | 1.28 | \$ 325 | \$ 204 |
| 3 | 1.28 | \$ 325 | \$ 201 |
| 4 | 1.23 | \$ 325 | \$ 292 |
| Business Scenario 2: Loss of entire investments | | | |
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | | |
| 1 | 1.23 | \$ 176 | \$ 187 |
| 2 | 1.21 | \$ 149 | \$ 200 |
| 3 | 1.21 | \$ 150 | \$ 198 |
| 4 | 1.18 | \$ (20) | \$ 286 |
| Business Scenario 3: Based on Manufacturer Comment, lose approx. 25% of Investment | | | |
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | | |
| 1 | 1.30 | \$ 288 | \$ 189 |
| 2 | 1.26 | \$ 281 | \$ 203 |
| 3 | 1.26 | \$ 281 | \$ 200 |
| 4 | 1.22 | \$ 239 | \$ 290 |

Table 7.7 Markup for the Energy-Efficiency Standards Only Case

| Business Scenario 1: Maintain Current Industry NPV | | | |
|--|-------------|----------------------|---|
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | \$ 325 | \$ 156 |
| 1 | 1.19 | \$ 325 | \$ 175 |
| 2 | 1.19 | \$ 325 | \$ 189 |
| 3 | 1.19 | \$ 325 | \$ 186 |
| 4 | 1.20 | \$ 325 | \$ 278 |
| Business Scenario 2: Loss of entire investments | | | |
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | | |
| 1 | 1.15 | \$ 292 | \$ 174 |
| 2 | 1.16 | \$ 266 | \$ 188 |
| 3 | 1.16 | \$ 266 | \$ 185 |
| 4 | 1.17 | \$ 97 | \$ 274 |
| Business Scenario 3: Based on Manufacturer Comment, lose approx. 25% of Investment | | | |
| Trial Standard Level | Markup | NPV (in millions) | Total Manufacturing Price (average unit value) |
| base case | 1.00 | | |
| 1 | 1.18 | \$ 317 | \$ 175 |
| 2 | 1.18 | \$ 310 | \$ 189 |
| 3 | 1.18 | \$ 310 | \$ 186 |
| 4 | 1.20 | \$ 268 | \$ 277 |

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