Manufacturing, Service and Retailing *(Continued)*

Industrial products (Continued)

Industrial products revenues increased approximately $7.9 billion (47.4%) in 2016 versus 2015, primarily due to the inclusion of PCC, partially offset by revenue declines of $859 million (5.1%) across our other businesses. Sales volumes of our other businesses declined compared to 2015, reflecting sluggish demand for many product categories, particularly for products sold to businesses in the oil and gas and heavy equipment industries. In addition, lower average costs of oil-based raw materials and metals and increased competitive pressures continued to lower average selling prices.

Pre-tax earnings increased $1.2 billion (40.6%) in 2016 compared to 2015, reflecting the inclusion of PCC, partially offset by comparative earnings declines from our other businesses. Lubrizol's earnings in 2016 included pre-tax losses of $365 million related to the aforementioned disposition of an underperforming business. Earnings from several of Marmon's manufacturing businesses and Lubrizol's continuing operations declined, while earnings from IMC increased slightly. Generally, our earnings in 2016 reflected the negative effects of a combination of weaker customer demand, sales price and mix changes, and increased restructuring costs, partially offset by the favorable effects of cost containment initiatives and lower average material prices.

Building products

Building products revenues were approximately $11.9 billion in 2017, an increase of approximately $1.2 billion (10.8%) compared to 2016. Approximately half of the increase was attributable to bolt-on business acquisitions by Shaw and MiTek. The remainder of the increase reflected sales volume increases at MiTek, Benjamin Moore and Johns Manville, partly offset by changes in prices and product mix.

Pre-tax earnings were $1.4 billion in 2017, an increase of $204 million (17.3%) compared to 2016. The comparative earnings increase reflected the fact that approximately $107 million of asset impairment, pension settlement and environmental claim charges were recorded in 2016 by Shaw and Benjamin Moore. The comparative earnings increase also was a result of bolt-on acquisitions, partly offset by comparative declines in average gross sales margin rates due to higher raw material and other production costs.

Revenues increased $456 million (4.4%) in 2016 compared to 2015, reflecting volume-driven revenue increases by MiTek, Johns Manville, Acme and Shaw, as well as revenues from bolt-on acquisitions by Shaw and MiTek. The revenue increase reflected increased unit sales across several product categories, partly offset by lower average sales prices and changes in product mix. Pre-tax earnings increased $11 million (0.9%) in 2016 compared to 2015. The favorable effects of increased sales volume and lower manufacturing costs in 2016 attributable to deflation in certain commodity unit costs, were substantially offset by increased charges for asset impairments, pension settlements and environmental claims.

Consumer products

Consumer products revenues were approximately $12.1 billion in 2017, an increase of $1.1 billion (10%) compared to 2016, driven by comparative revenue increases from Duracell and Forest River. Duracell's revenues increased 25.3% in 2017 compared to the ten-month post-acquisition period in 2016. Forest River's revenues increased 13.7% in 2017 compared to 2016, reflecting a 13.5% comparative increase in units sold. Apparel and footwear revenues were approximately $4.2 billion in 2017, an increase of 1.6% compared to 2016.

Pre-tax earnings increased $288 million (35%) in 2017 compared to 2016. The increase in earnings was primarily due to increased earnings from Duracell and Forest River. Pre-tax earnings from Duracell were $82 million in 2017, compared to a pre-tax loss of $89 million in 2016, which included significant transition costs arising from the acquisition. The improvement in operating results in 2017 reflects an overall reduction in transition costs and the positive effects of ongoing restructuring and business development efforts. Forest River's earnings increased 23% in 2017, primarily attributable to the increase in sales and lower manufacturing overhead rates. Earnings from apparel and footwear businesses increased 5% in 2017 compared to 2016, primarily due to increased earnings from the footwear businesses.

Revenues were approximately $11.0 billion in 2016, an increase of approximately $2.0 billion (21.8%) compared to 2015. The increase reflected the inclusion of Duracell and a 12% increase in Forest River's revenues, primarily attributable to increased unit sales. Apparel revenues declined $81 million (1.9%) in 2016 compared to 2015, reflecting lower footwear sales and the impact of a divestiture by Fruit of the Loom.

BERKSHIRE HATHAWAY INC.
OPERATING COMPANIES

INSURANCE BUSINESSES:	Employees
GEICO	38,690
Berkshire Hathaway Reinsurance Group	562
General Re	2,006
Berkshire Hathaway Homestate Companies	1,004
Berkshire Hathaway Specialty	890
Berkshire Hathaway GUARD Insurance Companies	689
MedPro Group Inc.	896
National Indemnity Primary Group	673
United States Liability Insurance Companies	893
Applied Underwriters	753
Central States Indemnity	52
	47,108
MANUFACTURING BUSINESSES:	
Acme	2,408
Benjamin Moore	1,772
Brooks Sports	638
CTB	2,886
Duracell	2,875
Fechheimer	407
Forest River	12,185
Fruit of the Loom Companies:	
Fruit of the Loom	26,219
Russell	1,020
Vanity Fair Brands	209
Garan	4,630
H. H. Brown Shoe Group	950
IMC International Metalworking Companies	12,749
Johns Manville	7,309
Justin Brands	735
Larson-Juhl	1,273
LiquidPower Specialty Products, Inc.	259
Lubrizol	9,046
MiTek Inc.	5,738
Precision Castparts	31,984
Richline Group	3,128
Scott Fetzer Companies:	
Adalet	164
Altaquip	166
Carefree of Colorado	336
Cleveland Wood Products	39
Douglas/Quikut	38
France	95
Halex	72
Kirby	344
Stahl	134
United Consumer Financial Services	197
Wayne Water Systems	101
Western Enterprises	232
World Book	138
Other Scott Fetzer Companies	320
Shaw Industries	21,867
The Marmon Group [1]	12,763
	165,426

RAILROAD, UTILITIES AND ENERGY BUSINESSES:	Employees
BNSF	41,000
Berkshire Hathaway Energy Company:	
Corporate Office	25
PacifiCorp	5,436
MidAmerican Energy	3,311
NV Energy	2,451
Northern Powergrid	2,492
Northern Natural Gas	908
Kern River Gas	149
AltaLink	752
BHE Renewables	326
BHE U.S. Transmission	14
CalEnergy Philippines	55
MidAmerican Energy Services	125
HomeServices of America	6,729
	63,773
SERVICE AND RETAILING BUSINESSES:	
Affordable Housing Partners, Inc.	18
Ben Bridge Jeweler	1,128
Berkshire Hathaway Automotive	11,003
BH Media Group	3,719
Borsheims	152
Business Wire	486
Charter Brokerage	163
Dairy Queen	464
Detlev Louis	1,293
FlightSafety	4,468
Helzberg Diamonds	2,252
Jordan's Furniture	1,100
McLane Company	23,859
Nebraska Furniture Mart	4,645
NetJets	6,314
Oriental Trading	1,523
Pampered Chef	373
Precision Steel Warehouse	126
R.C.Willey Home Furnishings	2,782
See's Candies	2,439
Star Furniture	673
The Buffalo News	618
TTI, Inc.	5,591
WPLG, Inc.	185
	75,374
FINANCE BUSINESSES:	
Clayton Homes	16,362
CORT	2,487
Marmon – UTLX [1]	6,346
XTRA	389
	25,584
Berkshire Hathaway Corporate Office	26
	377,291

(1) The Marmon Group consists of approximately 175 manufacturing and service businesses that operate within 15 business sectors.

In October 2012, HomeServices acquired a 66.7% interest in one of the largest residential real estate brokerage franchise networks in the United States, which offers and sells independently owned and operated residential real estate brokerage franchises. HomeServices' franchise network currently includes over 365 franchisees in over 1,500 brokerage offices in 47 states with over 48,000 real estate agents under three brand names. In exchange for certain fees, HomeServices provides the right to use the Berkshire Hathaway HomeServices, Prudential or Real Living brand names and other related service marks, as well as providing orientation programs, training and consultation services, advertising programs and other services.

HomeServices' principal sources of revenue are dependent on residential real estate sales, which are generally higher in the second and third quarters of each year. This business is highly competitive and subject to the general real estate market conditions.

Manufacturing Businesses

Berkshire's numerous and diverse manufacturing businesses are grouped into three categories: (1) industrial products, (2) building products and (3) consumer products. Berkshire's industrial products businesses manufacture specialty chemicals, metal cutting tools, components for aerospace and power generation applications and a variety of other products primarily for industrial use. The building products group produces flooring products, insulation, roofing and engineered products, building and engineered components, paint and coatings and bricks and masonry products that are primarily used in building and construction applications. The consumer products group manufactures recreational vehicles, alkaline batteries, various apparel products, jewelry and custom picture framing products. Information concerning the major activities of these three groups follows.

Industrial products

Lubrizol Corporation

The Lubrizol Corporation ("Lubrizol") is a specialty chemical company that produces and supplies technologies for the global transportation, industrial and consumer markets. Lubrizol currently operates in two business sectors: (1) Lubrizol Additives, which includes engine additives, driveline additives and industrial specialties products; and (2) Lubrizol Advanced Materials, which includes personal and home care, engineered polymers, performance coatings and life science solutions.

Lubrizol Additives products are used in a broad range of applications including engine oils, transmission fluids, gear oils, specialty driveline lubricants, fuel additives, metalworking fluids, compressor lubricants and greases for transportation and industrial applications. Lubrizol's Advanced Materials products are used in several different types of applications including over-the-counter pharmaceutical products, performance coatings, personal care products, sporting goods and plumbing and fire sprinkler systems. Lubrizol is an industry leader in many of the markets in which it competes. Lubrizol's principal lubricant additives competitors are Infineum International Ltd., Chevron Oronite Company and Afton Chemical Corporation. The advanced materials industry is highly fragmented with a variety of competitors in each product line.

From a base of approximately 3,200 patents, Lubrizol uses its technological leadership position in product development and formulation expertise to improve the quality, value and performance of its products, as well as to help minimize the environmental impact of those products. Lubrizol uses many specialty and commodity chemical raw materials in its manufacturing processes and uses base oil in processing and blending additives. Raw materials are primarily feedstocks derived from petroleum and petrochemicals and, generally, are obtainable from several sources. The materials that Lubrizol chooses to purchase from a single source typically are subject to long-term supply contracts to ensure supply reliability. Lubrizol operates facilities in 31 countries (including production facilities in 17 countries and laboratories in 14 countries).

Lubrizol markets its products worldwide through a direct sales organization and sales agents and distributors. Lubrizol's customers principally consist of major global and regional oil companies and industrial and consumer products companies that are located in more than 120 countries. Some of its largest customers also may be suppliers. In 2017, no single customer accounted for more than 10% of Lubrizol's consolidated revenues. Lubrizol continues to implement a multi-year phased investment plan to upgrade operations, ensure compliance with health, safety and environmental requirements and increase global manufacturing capacity.

Lubrizol is subject to foreign, federal, state and local laws to protect the environment and limit manufacturing waste and emissions. The company believes that its policies, practices and procedures are designed to limit the risk of environmental damage and consequent financial liability. Nevertheless, the operation of manufacturing plants entails ongoing environmental risks, and significant costs or liabilities could be incurred in the future.

Johns Manville

Johns Manville ("JM") is a leading manufacturer and marketer of premium-quality products for building, mechanical and industrial insulation, commercial roofing and roof insulation, as well as engineered fibers and nonwovens for commercial, industrial and residential applications. JM serves markets that include building, flooring, interiors, aerospace, automotive and transportation, air handling, appliance, HVAC, pipe insulation, filtration, waterproofing and wind energy. Fiberglass is the basic material in a majority of JM's products, although JM also manufactures a significant portion of its products with other materials to satisfy the broader needs of its customers. Raw materials are readily available in sufficient quantities from various sources for JM to maintain and expand its current production levels. JM regards its patents and licenses as valuable, however it does not consider any of its businesses to be materially dependent on any single patent or license. JM is headquartered in Denver, Colorado, and operates 43 manufacturing facilities in North America, Europe and China and conducts research and development at its technical center in Littleton, Colorado and at other facilities in the U.S. and Europe.

Fiberglass is made from earthen raw materials and recycled glass, together with proprietary organic and acrylic-based formaldehyde-free agents to bind many of its glass fibers. JM's products also contain materials other than fiberglass, including various chemical and petro-chemical-based materials used in roofing and other specialized products. JM uses recycled material when available and suitable to satisfy the broader needs of its customers. The raw materials used in these various products are readily available in sufficient quantities from various sources to maintain and expand its current production levels.

JM's operations are subject to a variety of federal, state and local environmental laws and regulations. These laws and regulations regulate the discharge of materials into the air, land and water and govern the use and disposal of hazardous substances. The most relevant of the federal laws are the Federal Clean Air Act, the Clean Water Act, the Toxic Substances Control Act, the Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation and Liability Act of 1980, which are administered by the EPA. In 2015, the EPA revised the hazardous air pollutant rules for the wool fiberglass and mineral wool manufacturing industries. While the new rules implement new emission standards, they are not expected to require material expenditures to meet the compliance dates in 2018.

JM sells its products through a wide variety of channels including contractors, distributors, retailers, manufacturers and fabricators. JM operates in a highly competitive market, with competitors comprised primarily of several large global and national manufacturers and smaller regional manufacturers. JM holds leadership positions in the key markets that it serves. JM's products compete primarily on the basis of value, product differentiation and customization and breadth of product line. Sales of JM's products are moderately seasonal due to increases in construction activity that typically occur in the second and third quarters of the calendar year. JM is seeing a trend in customer purchasing decisions being influenced by the sustainable and energy efficient attributes of its products, services and operations.

MiTek Industries, Inc.

MiTek Industries, Inc. ("MiTek"), based in Chesterfield, Missouri, operates in three separate markets: residential, commercial and industrial. MiTek operates worldwide with sales in over 100 countries and with manufacturing facilities and/or sales/engineering offices located in 21 countries. MiTek has completed a number of bolt-on acquisitions in the past five years, intended to diversify product offerings and reduce the impact of the cyclical global housing markets.

In the residential market, MiTek is a leading supplier of engineered connector products, construction hardware, engineering software and services and computer-driven manufacturing machinery to the truss component market of the building components industry. MiTek's primary customers are component manufacturers who manufacture prefabricated roof and floor trusses and wall panels for the residential building market. MiTek also sells construction hardware to commercial distributors and do-it-yourself retail stores under the MiTek Builders Products name.

MiTek's commercial market business includes products and services sold to the commercial construction industry. Product offerings include curtain wall systems (Benson Industries, Inc.), anchoring systems for masonry and stone (Hohmann & Barnard, Inc.), light gauge steel framing products (Aegis Metal Framing Division of MiTek USA, Inc.), engineering services for a proprietary high-performance steel frame connection (SidePlate Systems, Inc.) and a comprehensive range of round, rectangular, oval and spiral ductwork for the ventilation market (M&M Manufacturing, Inc. and Snappy ADP, Inc.).

MiTek's industrial market business includes: automated machinery for the battery manufacturing industry (TBS Engineering, Ltd.), highly customized air handling systems sold to commercial, institutional and industrial markets (TMI Climate Solutions, Inc.), design and supply of Nuclear Safety Related HVAC systems and components (Ellis & Watts Global Industries, Inc.), energy recovery and dehumidification systems for commercial applications (Heat-Pipe Technology, Inc.) and pre-engineered and pre-fabricated custom structural mezzanines and platforms for distribution and manufacturing facilities (Cubic Designs, Inc. and Mezzanine International, Ltd.).

Utilities and Energy ("Berkshire Hathaway Energy Company") (Continued)

Other energy businesses (Continued)

Revenues declined $98 million (4.2%) in 2016 compared to 2015. The decline in comparative revenues was principally attributable to lower revenues from AltaLink and from our unregulated retail services business. AltaLink's revenue decline reflected the impact of the aforementioned regulatory decision by AltaLink's regulator. Pre-tax earnings declined $17 million (4.3%) compared to 2015, primarily due to lower earnings from our renewable energy businesses, primarily due to higher depreciation expense from additional assets placed in service.

Real estate brokerage

Revenues increased 23% in 2017 compared to 2016, primarily due to business acquisitions and an increase in average home sales prices. Pre-tax earnings decreased 2% in 2017 as compared to 2016. Earnings in 2017 included increased earnings from franchise businesses, partially offset by lower earnings from brokerage businesses, primarily due to higher operating expenses.

Revenues increased 11.0% to $2.8 billion in 2016 compared to 2015. The increase was primarily attributable to increased closed brokerage transactions (primarily resulting from business acquisitions) and a 2% increase in average home sales prices, as well as higher mortgage revenues. Pre-tax earnings increased $34 million (17.8%) in 2016 compared to 2015, primarily due to the increases in mortgage revenues.

Corporate interest and income taxes

Corporate interest includes interest on unsecured debt issued by BHE and borrowings from Berkshire insurance subsidiaries in connection with BHE's acquisitions of NV Energy and AltaLink. Corporate interest in 2017 included pre-tax charges of $410 million from a tender offer completed in December 2017 to redeem certain long-term debt of BHE. Otherwise, corporate interest declined 7% in 2017 and 2016 compared to the corresponding prior years, primarily due to lower average borrowings.

BHE's consolidated effective income tax rates were approximately 7% in 2017, 14% in 2016 and 16% in 2015. BHE's effective income tax rates regularly reflect significant production tax credits from wind-powered electricity generation placed in service. In addition, income tax rates applicable to Northern Powergrid and AltaLink were lower than the U.S. statutory income tax rate. The effective tax rate in 2017 decreased primarily due to an increase in recognized production tax credits.

Manufacturing, Service and Retailing

A summary of revenues and earnings of our manufacturing, retailing and service businesses follows (in millions).

	Revenues			Earnings *		
	2017	2016	2015	2017	2016	2015
Manufacturing	$ 50,445	$ 46,506	$ 36,136	$ 6,861	$ 6,211	$ 4,893
Service and retailing	76,088	73,553	71,689	2,382	2,251	2,222
	$126,533	$120,059	$107,825			
Pre-tax earnings				9,243	8,462	7,115
Income taxes and noncontrolling interests				3,035	2,831	2,432
				$ 6,208	$ 5,631	$ 4,683

* *Excludes certain acquisition accounting expenses, which primarily related to the amortization of identified intangible assets recorded in connection with our business acquisitions. The after-tax acquisition accounting expenses excluded from earnings above were $896 million in 2017, $771 million in 2016 and $476 million in 2015. These expenses are included in "Other" in the summary of earnings on page K-32 and in the "Other" earnings section on page K-51.*

Manufacturing

Our manufacturing group includes a variety of businesses that produce industrial, building and consumer products. Industrial products businesses include specialty chemicals (The Lubrizol Corporation ("Lubrizol")), metal cutting tools/systems (IMC International Metalworking Companies ("IMC")), equipment and systems for the livestock and agricultural industries (CTB International ("CTB")), and a variety of industrial products for diverse markets (Marmon, Scott Fetzer and LiquidPower Specialty Products ("LSPI")). Beginning on January 29, 2016, our industrial products group also includes Precision Castparts Corp. ("PCC"), a leading manufacturer of complex metal products for aerospace, power and general industrial markets.

Our building products businesses include flooring (Shaw), insulation, roofing and engineered products (Johns Manville), bricks and masonry products (Acme Building Brands), paint and coatings (Benjamin Moore), and residential and commercial construction and engineering products and systems (MiTek). Our consumer products businesses include leisure vehicles (Forest River), several apparel and footwear operations (including Fruit of the Loom, Garan, H.H. Brown Shoe Group and Brooks Sports), and beginning February 29, 2016, the Duracell Company ("Duracell"), a leading manufacturer of high performance alkaline batteries. This group also includes custom picture framing products (Larson Juhl) and jewelry products (Richline). A summary of revenues and pre-tax earnings of our manufacturing operations follows (in millions).

	Revenues			Pre-tax earnings		
	2017	2016	2015	2017	2016	2015
Industrial products	$26,376	$24,702	$16,760	$4,367	$4,209	$2,994
Building products	11,936	10,772	10,316	1,382	1,178	1,167
Consumer products	12,133	11,032	9,060	1,112	824	732
	$50,445	$46,506	$36,136	$6,861	$6,211	$4,893

Revenues of our manufacturers were approximately $50.4 billion in 2017, an increase of approximately $3.9 billion (8.5%) over 2016, which increased approximately $10.4 billion (28.7%) over 2015. Pre-tax earnings were approximately $6.9 billion in 2017, an increase of $650 million (10.5%) over 2016 and earnings in 2016 increased $1.3 billion (26.9%) compared to 2015.

Industrial products

Industrial products revenues were approximately $26.4 billion in 2017, an increase of approximately $1.7 billion (6.8%) versus 2016, reflecting increased revenues at several of our businesses. PCC's revenues increased $754 million (9%) in 2017 compared to the eleven month post-acquisition period in 2016. On a comparable full year-to-date basis, PCC's revenues increased approximately 2.3% compared to 2016, reflecting increases in aerospace and oil and gas markets, partially offset by declines in other power markets. In 2017, PCC produced revenue increases from structural castings, airfoils and forged products and from business acquisitions, partly offset by lower revenues from airframe products and industrial gas turbine products used in power markets. PCC continues to transition into product lines for new programs within the aerospace markets, which we expect will produce future revenue increases, but may have negative effects on revenues in the near term as prior programs wind down.

IMC's revenues increased 13%, primarily due to increased customer demand and unit sales and from business acquisitions. The global demand for cutting tools was generally higher in 2017. Marmon's revenues increased $349 million (7%) in 2017 versus 2016, primarily due to business acquisitions and higher average metal prices, partly offset by lower overall volumes and changes in mix. Marmon's highway transportation, retail food and restaurant equipment businesses experienced volume-based revenue growth in 2017, which was more than offset by declines at the engineered wire/cable and retail store products businesses. Lubrizol's revenues increased $165 million (3%) compared to 2016, primarily due to higher unit volumes, partly offset by effects of the disposition of an underperforming business in 2016. CTB's revenues increased 5% in 2017 compared to 2016. The increase reflected the impact of a bolt-on business acquisition, partly offset by weak demand in the U.S. egg and poultry production markets and selling price pressures for grain storage systems.

Pre-tax earnings of our industrial products businesses in 2017 increased $158 million (3.8%) compared to 2016. Overall, pre-tax earnings as a percentage of revenues were 16.6% in 2017 and 17.0% in 2016.

PCC's pre-tax earnings decreased 12.5% in 2017 compared to the post-acquisition period in 2016, primarily due to certain one-time inventory and impairment charges that were recorded in the fourth quarter of 2017. Pre-tax earnings from IMC and Marmon increased in 2017 compared to 2016, due to a combination of increased sales, increased manufacturing efficiencies, the effects of business acquisitions and ongoing expense control efforts. Lubrizol's pre-tax earnings increased 17% in 2017 compared to 2016 due to comparatively lower earnings charges related to the disposition in 2016 of an underperforming bolt-on business and ongoing cost containment efforts, partly offset by lower gross sales margins, which were primarily attributable to higher average raw material prices. In 2017, average raw material prices at Lubrizol, including base oil feedstock and petrochemicals, increased about 9% versus 2016.