

Other energy businesses include Northern Powergrid (Northeast) plc and Northern Powergrid (Yorkshire) plc, which own a substantial electricity distribution network that delivers electricity to end-users in northeast England in an area covering approximately 10,000 square miles. These distribution companies primarily charge supply companies regulated tariffs for the use of their distribution systems and serve about 4.0 million electricity end-users. AltaLink L.P. (“AltaLink”) is a regulated electric transmission-only utility company headquartered in Calgary, Alberta. AltaLink’s high voltage transmission lines and related facilities transmit electricity from generating facilities to major load centers, cities and large industrial plants throughout its 87,000 square mile service territory. AltaLink serves approximately 85% of Alberta’s population. BHE and its subsidiaries, also own interests in independent power projects having approximately 6,000 net megawatts of generation capacity that are in service in California, Texas, Illinois, Nebraska, Montana, Australia, New York, Arizona, Canada, Minnesota, Kansas, Iowa and Hawaii. These independent power projects sell power generated primarily from wind, solar, geothermal and hydro sources under long-term contracts. Additionally, \$7.3 billion has been invested in wind projects sponsored by third parties, commonly referred to as tax equity investments.

Regulatory Matters

The U.S. utilities are subject to comprehensive regulation by various federal, state and local agencies. The Federal Energy Regulatory Commission (“FERC”) is an independent agency with broad authority to implement provisions of the Federal Power Act, the Energy Policy Act of 2005 and other federal statutes. The FERC regulates rates for wholesale sales of electricity; transmission of electricity, including pricing and regional planning for the expansion of transmission systems; electric system reliability; utility holding companies; accounting and records retention; securities issuances; construction and operation of hydroelectric facilities; and other matters. The FERC also has the enforcement authority to assess civil penalties of up to \$1.5 million per day per violation of rules, regulations and orders issued under the Federal Power Act. MEC is also subject to regulation by the Nuclear Regulatory Commission pursuant to the Atomic Energy Act of 1954, as amended, with respect to its 25% ownership of the Quad Cities Nuclear Station.

With certain limited exceptions, the U.S. utilities have an exclusive right to serve retail customers within their service territories and, in turn, have an obligation to provide service to those customers. In some jurisdictions, certain classes of customers may choose to purchase all or a portion of their energy from alternative energy suppliers, and in some jurisdictions retail customers can generate all or a portion of their own energy. Historically, state regulatory commissions have established retail electric and natural gas rates on a cost-of-service basis, which are designed to allow a utility the opportunity to recover what each state regulatory commission deems to be the utility’s reasonable costs of providing services, including a fair opportunity to earn a reasonable return on its investments based on its cost of debt and equity. The retail electric rates of U.S. utilities are generally based on the cost of providing traditional bundled services, including generation, transmission and distribution services; however, rates are available for transmission-only and distribution-only services.

Northern Powergrid (Northeast) plc and Northern Powergrid (Yorkshire) plc each charge fees for the use of their distribution systems that are controlled by a formula prescribed by the British electricity regulatory body, the Gas and Electricity Markets Authority. The current eight-year price control period runs from April 1, 2015 through March 31, 2023 and the next price control period is set for the five-year period ending March 31, 2028.

AltaLink is regulated by the Alberta Utilities Commission (“AUC”), pursuant to the Electric Utilities Act (Alberta), the Public Utilities Act (Alberta), the Alberta Utilities Commission Act (Alberta) and the Hydro and Electric Energy Act (Alberta). The AUC is an independent quasi-judicial agency, which regulates and oversees Alberta’s electricity transmission sector with broad authority that may impact many of AltaLink’s activities, including its tariffs, rates, construction, operations and financing. Under the Electric Utilities Act, AltaLink prepares and files applications with the AUC for approval of tariffs to be paid by the Alberta Electric System Operator (“AESO”) for the use of its transmission facilities, and the terms and conditions governing the use of those facilities. The AESO is an independent system operator in Alberta, Canada that oversees Alberta’s integrated electrical system (“AIES”) and wholesale electricity market. The AESO is responsible for directing the safe, reliable and economic operation of the AIES, including long-term transmission system planning.

The natural gas pipelines are subject to regulation by various federal and state agencies. The natural gas pipeline and storage operations of BHE GT&S, Northern Natural and Kern River are regulated by the FERC pursuant to the Natural Gas Act and the Natural Gas Policy Act of 1978. Under this authority, the FERC regulates, among other items, (a) rates, charges, terms and conditions of service; (b) the construction and operation of interstate pipelines, storage and related facilities, including the extension, expansion or abandonment of such facilities; and (c) the construction and operation of liquefied natural gas export/import facilities. Interstate natural gas pipeline companies are also subject to regulations administered by the Office of Pipeline Safety within the Pipeline and Hazardous Materials Safety Administration, an agency of the DOT. Federal pipeline safety regulations are issued pursuant to the Natural Gas Pipeline Safety Act of 1968, as amended, which establishes safety requirements in the design, construction, operation and maintenance of interstate natural gas pipeline facilities.

Environmental Matters

BHE and its energy businesses are subject to federal, state, local and foreign laws and regulations regarding air quality, climate change, emissions performance standards, water quality, coal ash disposal and other environmental matters that have the potential to impact current and future operations. In addition to imposing continuing compliance obligations, these laws and regulations, such as the Federal Clean Air Act, provide regulators with the authority to levy substantial penalties for noncompliance, including fines, injunctive relief and other sanctions.

The Federal Clean Air Act, as well as state laws and regulations impacting air emissions, provides a framework for protecting and improving the nation's air quality and controlling sources of air emissions. These laws and regulations continue to be promulgated and implemented and will impact the operation of BHE's generating facilities and require them to reduce emissions at those facilities to comply with the requirements. In addition, the potential adoption of state or federal clean energy standards, which include low-carbon, non-carbon and renewable electricity generating resources, may also impact electricity generators and natural gas providers.

In December 2015, an international agreement was negotiated by 195 nations to create a universal framework for coordinated action on climate change in what is referred to as the Paris Agreement. The Paris Agreement reaffirms the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees Celsius and reaching a global peak of GHG emissions as soon as possible to achieve climate neutrality by mid-century; establishes commitments by all parties to make nationally determined contributions and pursue domestic measures aimed at achieving the commitments; commits all countries to submit emissions inventories and report regularly on their emissions and progress made in implementing and achieving their nationally determined commitments; and commits all countries to submit new commitments every five years, with the expectation that the commitments will be more aggressive in reducing GHG emissions. In the context of the Paris Agreement, the U.S. agreed to reduce GHG emissions by 26% to 28% from 2005 levels by 2025. The Paris Agreement formally became effective on November 4, 2016; however, the U.S. completed its withdrawal from the Paris Agreement on November 4, 2020. President Biden accepted the terms of the climate agreement on January 20, 2021, and the U.S. completed its reentry on February 19, 2021. New commitments to the Paris Agreement were announced in April 2021, with the U.S. pledging to cut its overall GHG emissions by 50% to 52% from 2005 levels by 2030 and to reach 100% carbon pollution-free electricity by 2035. Increasingly, states are adopting legislation and regulations to reduce GHG emissions, and local governments and consumers are seeking increasing amounts of clean and renewable energy.

On June 19, 2019, the EPA repealed the Clean Power Plan and issued the Affordable Clean Energy rule. In the Affordable Clean Energy rule, the EPA determined that the best system of emissions reduction for existing coal fueled power plants is heat rate improvements and identified a set of candidate technologies and measures that could improve heat rates. Measures taken to meet the standards of performance must be achieved at the source itself. On January 19, 2021, the D.C. Circuit Court of Appeals vacated the Affordable Clean Energy rule in its entirety. In October 2021, the U.S. Supreme Court agreed to hear an appeal of that decision. Arguments in the case were held in February 2022 and on June 30, 2022, the U.S. Supreme Court issued its decision regarding the scope of the EPA's authority to regulate GHG emissions under the Clean Air Act. The U.S. Supreme Court held that the "generation shifting" approach in the Clean Power Plan exceeded the powers granted to the EPA by Congress, although the court did not address whether the EPA may only adopt measures applied at the individual source as it did in the Affordable Clean Energy rule. The Biden administration plans to propose a replacement to the Clean Power Plan and Affordable Clean Energy rule by April 2023.

In November 2021, the EPA proposed rules that would reduce methane emissions from both new and existing sources in the oil and natural gas industry. The proposals would expand and strengthen emission reduction requirements for new, modified and reconstructed oil and natural gas sources and would require states to reduce methane emissions from existing sources nationwide. The EPA issued a supplemental proposal in November 2022 to further strengthen emission requirements and intends to finalize the rules by fall 2023.

BHE and its energy subsidiaries continue to focus on delivering reliable, affordable, safe and clean energy to its customers and on actions to mitigate its GHG emissions. BHE's primary source of GHG emissions is the generation of electricity from its power plants that are fueled by coal or natural gas. In managing its electricity generation, BHE works with its regulators to protect the energy and economic needs of customers by considering costs, reliability and sources of electric generation. Over the years, BHE has invested heavily in owned wind, solar and geothermal generation, with cumulative investments of \$31.6 billion through 2022 and has retired 16 coal generation units. As a result, as of December 31, 2022, BHE reduced its annual GHG emissions by more than 27% as compared to 2005 levels. BHE plans to continue investing in wind, solar and other low-carbon generation in the future and to retire an additional 16 coal generation units between 2023 and 2030 in a reliable and cost-effective manner, thereby achieving a 50% reduction in GHG emissions from 2005 levels in 2030.

Non-Energy Businesses

HomeServices of America, Inc. (“HomeServices”) is a residential real estate brokerage firm in the U.S. In addition to providing traditional residential real estate brokerage services, HomeServices offers other integrated real estate services, including mortgage originations and mortgage banking, title and closing services, insurance, home warranties, relocation services and other home-related services. It operates under 55 brand names with approximately 45,000 real estate agents in nearly 930 brokerage offices in 33 states and the District of Columbia.

HomeServices’ franchise network currently includes approximately 300 franchisees and over 1,500 brokerage offices with nearly 51,000 real estate agents under two brand names, primarily in the U.S. In exchange for certain fees, HomeServices provides the right to use the Berkshire Hathaway HomeServices 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 general real estate market conditions.

Manufacturing Businesses

Berkshire’s numerous and diverse manufacturing subsidiaries are grouped into three categories: (1) industrial products, (2) building products and (3) consumer products. Berkshire’s industrial products businesses manufacture components for aerospace and power generation applications, specialty chemicals, metal cutting tools, and a variety of other products primarily for industrial use. The building products group produces prefabricated and site-built residential homes, flooring products, insulation, roofing and engineered products, building and engineered components, paint and coatings and bricks and masonry products. The consumer products group manufactures and distributes recreational vehicles, batteries, and various apparel, footwear and other products. Information concerning the major activities of these three groups follows. Berkshire’s manufacturing businesses employed approximately 191,000 people at the end of 2022.

Industrial products

Precision Castparts

Precision Castparts Corp. (“PCC”), based in Lake Oswego, Oregon, manufactures complex metal components and products, provides high-quality investment castings, forgings, fasteners/fastener systems and aerostructures for critical aerospace and power and energy applications. PCC also manufactures investment castings and forgings for general industrial, armament, medical and other applications; nickel and titanium alloys in all standard mill forms from large ingots and billets to plate, foil, sheet, strip, tubing, bar, rod, extruded shapes, rod-in-coil, wire and welding consumables, as well as cobalt alloys, for the aerospace, chemical processing, oil and gas, pollution control and other industries; fasteners for automotive and general industrial markets; specialty alloys for the investment casting and forging industries; heat treating and destructive testing services for the investment cast products and forging industries; grinder pumps and affiliated components for low-pressure sewer systems; critical auxiliary equipment and gas monitoring systems for the power generation industry; and metalworking tools for the fastener market and other applications.

Investment casting technology involves a multi-step process that uses ceramic molds in the manufacture of metal components with more complex shapes, closer tolerances and finer surface finishes than parts manufactured using other methods. PCC uses this process to manufacture products for aircraft engines, industrial gas turbine and other aeroderivative engines, airframes, medical implants, armament, unmanned aerial vehicles and other industrial applications. PCC also manufactures high temperature carbon and ceramic composite components, including ceramic matrix composites, for use in next-generation aerospace engines.

PCC uses forging processes to manufacture components for the aerospace and power generation markets. PCC manufactures high-performance, nickel-based alloys, as well as titanium alloys and products. PCC’s nickel-based alloys are used to produce forged components and investment castings for aerospace and non-aerospace applications in such markets as oil and gas, chemical processing and pollution control. PCC’s titanium products are used to manufacture components for the commercial and military aerospace, power generation, energy, medical, and industrial end markets.

PCC is also a leading developer and manufacturer of highly engineered fasteners, fastener systems, aerostructures and precision components, primarily for critical aerospace applications. These products are produced for the aerospace and power and energy markets, as well as for construction, automotive, heavy truck, farm machinery, mining and construction equipment, shipbuilding, machine tools, medical equipment, appliances and recreation markets.

PCC has several significant customers, including aerospace original equipment manufacturers (“OEMs”) (Boeing and Airbus) and aircraft engine manufacturer suppliers (General Electric, Rolls Royce and Pratt & Whitney). The majority of PCC’s sales are from customer orders or demand schedules pursuant to long-term agreements. Contractual terms may provide for termination by the customer, subject to payment for work performed. PCC typically does not experience significant order cancellations, although periodically it receives requests for delays in delivery schedules.

The effects of the COVID-19 pandemic produced significant adverse effects on the PCC aerospace business in 2020 and 2021. The sudden and material reductions in air travel led to aircraft build rate reductions and customer destocking at extraordinary rates. Further, production delays in Boeing’s 737 MAX and 787 programs during this time also adversely impacted PCC over the past three years.

While commercial air travel increased in both the U.S. and international markets during 2022, traffic remains below pre-COVID-19 pandemic levels, especially for international routes. Further recovery could be uneven, in the event of new COVID-19 variant developments and related travel restrictions, as well as from the changes in supply chain conditions, including the availability of workers. Commercial aircraft delivery rates by OEMs of narrow-body aircraft have rebounded since the onset of the pandemic. However, deliveries of wide-body aircraft remain relatively low, in part attributable to the pause in the Boeing 787 program, which resumed deliveries in the third quarter of 2022. Long-term industry forecasts continue to show growth and strong demand for air travel and aerospace products.

PCC is subject to substantial competition in all of its markets. Components and similar products may be produced by competitors, who use either the same types of manufacturing processes as PCC or other processes. Although PCC believes its manufacturing processes, technology and experience provide its customers advantages, such as high quality, competitive prices and physical properties that often meet more stringent demands, alternative forms of manufacturing can be used to produce many of the same components and products. Nevertheless, PCC is a leading supplier in most of its principal markets. Several factors, including long-standing customer relationships, technical expertise, state-of-the-art facilities and dedicated employees, aid PCC in maintaining competitive advantages.

Several raw materials used in PCC products, including certain metals such as nickel, titanium, cobalt, tantalum and molybdenum, are found in only a few parts of the world. These metals are required for the alloys used in manufactured products. The availability and costs of these metals may be influenced by private or governmental cartels, changes in world politics, labor relations between the metal producers and their workforces and inflation.

PCC is currently subject to various federal, state and foreign environmental laws concerning, among other things, water discharges, air emissions, waste management, toxic materials use reduction and environmental cleanup. Laws and regulations continue to evolve, and it is reasonably possible that environmental standards will become more stringent in the future, particularly under air quality and water quality laws and standards related to climate change, including reporting of GHG emissions. As a result, it is also reasonably likely that PCC will be regularly required to make additional expenditures, including capital expenditures, which could be significant, relating to environmental matters.

Lubrizol

The Lubrizol Corporation (“Lubrizol”), headquartered in Wickliffe, Ohio, is a specialty chemical and performance materials company that manufactures products and supplies technologies for the global transportation, industrial and consumer markets. Lubrizol currently operates two business segments: Lubrizol Additives, which produces engine lubricant additives, driveline lubricant additives and industrial specialties products; and Lubrizol Advanced Materials, which includes engineered materials (engineered polymers and performance coatings) and life sciences (beauty and personal care, and health and home care solutions).

Lubrizol Additives’ products are used in a broad range of applications including engine oils, transmission fluids, gear oils, specialty driveline lubricants, fuels, metalworking fluids and compressor lubricants for transportation and industrial applications. Lubrizol Advanced Materials’ products are used in many different types of applications including beauty, personal care, home care, over-the-counter pharmaceuticals, medical devices, performance coatings, sporting goods, plumbing and fire sprinkler systems. Lubrizol is an industry leader in many of the markets in which it competes, and its principal lubricant additives competitors are Infineum International Ltd., Chevron Oronite Company and Afton Chemical Corporation. Lubrizol Advanced Materials’ businesses compete in many markets with a variety of competitors in each product line.

With its considerable patent portfolio, Lubrizol uses its technological leadership position and applies its science capabilities, formulation know-how and market expertise in product development to improve the demand, quality and value of its solutions. Lubrizol also leverages its scientific and applications knowledge to meet and exceed customer performance and sustainability requirements. While Lubrizol typically has patents that expire each year, it invests resources to protect its intellectual property and to develop or acquire innovative products for the markets it serves. Lubrizol uses many specialty and commodity chemical raw materials in its manufacturing processes. 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 its business on a global basis through more than 100 offices, laboratories, production facilities and warehouses on six continents, the most significant of which are North America, Europe, Asia and South America. Lubrizol markets its products worldwide through direct sales, sales agents and distributors. Lubrizol's customers principally consist of major global and regional oil companies and industrial and consumer products companies. Some of Lubrizol's largest customers also may be suppliers. During 2022, no single customer accounted for more than 10% of Lubrizol's consolidated revenues. In recent years, the COVID-19 pandemic, supply chain disruptions, severe weather and fires at certain Lubrizol facilities affected the availability of raw materials and fulfillment of customer orders and otherwise disrupted Lubrizol's operations.

Lubrizol expends significant capital to ensure the safety of its employees and the communities where it operates, as well as delivering on its commitments to operational excellence and cybersecurity. Lubrizol also makes significant capital investments to ensure reliable supply and compliance with regulations governing its operations, while reducing their environmental footprint.

Lubrizol is subject to foreign, federal, state and local laws to protect the environment, limit manufacturing waste and emissions, ensure product and employee safety and regulate trade. While the company believes that its policies, practices and procedures are designed to limit the associated risks and consequent financial liability, the operation of chemical manufacturing plants entails inherent environmental, safety and other risks, and significant capital expenditures, costs or liabilities could be incurred in the future.

IMC International Metalworking Companies

IMC International Metalworking Companies ("IMC") is one of the three largest multinational manufacturers of consumable precision carbide metal cutting tools for applications in a broad range of industrial end markets. IMC's principal brand names include ISCAR®, TaeguTec®, Ingersoll®, Tungaloy®, Unitac®, UOP®, It.te.di®, Qutiltec®, Tool—Flo®, PCT®, IMCO® and BSW. IMC's primary manufacturing facilities are located in Israel, the U.S., South Korea, Japan, Germany, Italy, Switzerland, India and China.

IMC has five primary product lines: milling tools, gripping tools, turning/thread tools, drilling tools and tooling. The main products are split within each product line between consumable cemented tungsten carbide inserts and steel tool holders. Inserts comprise a major portion of IMC's sales and earnings. Metal cutting inserts are used by industrial manufacturers to cut metals and are consumed during their use in cutting applications. IMC manufactures hundreds of types of highly engineered inserts within each product line that are tailored to maximize productivity and meet the technical requirements of customers. IMC's staff of scientists and engineers continuously develop and innovate products that address end user needs and requirements.

IMC's global sales and marketing network operates in nearly every major manufacturing center around the world, staffed with highly skilled engineers and technical personnel. IMC's customer base is very diverse, with its primary customers being large, multinational businesses in the automotive, aerospace, engineering and machinery industries. IMC operates a regional central warehouse system with locations in Israel, the U.S., Belgium, Korea, Japan and China. Additional small quantities of products are maintained at local IMC sales offices to provide on-time customer support and inventory management.

IMC competes in the metal cutting tools segment of the global metalworking tools market. The segment includes hundreds of participants who range from small, private manufacturers of specialized products for niche applications and markets to larger, global multinational businesses (such as Sandvik and Kennametal, Inc.) with a wide assortment of products and extensive distribution networks. Other manufacturing companies such as Kyocera, Mitsubishi, Sumitomo, Ceratizit and Korloy also play a significant role in the cutting tool market.

Cemented tungsten carbide powder is the main raw material used in manufacturing cutting tools. Most of IMC's insert products are made from tungsten. While supplies are currently adequate, a significant disruption or constraints in production processing facilities could cause reduced availability and increased prices.

IMC is committed to following and complying with all government and environmental rules, regulations and requirements and applicable laws. IMC considers environmental preservation and pollution prevention as important factors in all operations and activities. IMC production facilities are built with the highest standards and follow all applicable regulations.

Marmon

Marmon Holdings, Inc. (“Marmon”), headquartered in Chicago, Illinois, is a global industrial organization comprising eleven diverse business groups and more than 100 autonomous manufacturing and service businesses. Marmon’s manufacturing and service operations are conducted at approximately 400 manufacturing, distribution and service facilities located primarily in the U.S., as well as 18 other countries worldwide. Marmon’s business groups are as follows.

Foodservice Technologies manufactures beverage dispensing and cooling equipment, hot and cold food preparation and holding equipment and related products for restaurants, global brand owners and other foodservice providers. Operations are based in the U.S. with manufacturing facilities in the U.S., Mexico, China, Czech Republic and Italy. Products are sold primarily throughout the U.S., Europe and Asia.

Water Technologies manufactures water treatment equipment for residential, commercial and industrial applications worldwide. Operations are based primarily in the U.S., Canada, China, Singapore, India and Poland with business centers located in Belgium, France, Germany, the U.K. and Italy.

Transportation Products serves the automotive, heavy-duty highway transportation and aerospace industries with precision-molded plastic components; fastener thread solutions; metal tubing; auto aftermarket transmission and chassis products; platform and lowbed trailers; and truck and trailer components. Operations and business are conducted primarily in the U.S., Mexico, Canada, Europe and Asia.

Retail Solutions provides retail environment design services; in-store digital merchandising, dispensing and display fixtures; shopping, material handling and security carts. Operations and business are conducted in the U.S., the U.K. and Czech Republic.

Metal Services provides specialty metal pipe, tubing and related value-added services to customers across a broad range of industries. Operations are based in the U.S., Canada and Mexico and business is conducted primarily in those countries.

Electrical produces electrical wire for use in residential and commercial buildings, and specialty wire and cable for use in energy, transit, aerospace, defense, communication and other industrial applications. Operations are based in the U.S., Canada, India and England. Business is conducted globally and primarily in the U.S., Canada, India, the U.K., U.A.E. and China.

Plumbing & Refrigeration supplies copper tubing and copper, brass, aluminum and stainless-steel fittings and components for the plumbing, heating, ventilation and air conditioning (HVAC) and refrigeration markets; custom coils, ducting, air handling units and heat pipe for the HVAC market; HVAC systems and structures for military, nuclear and medical markets and aluminum and brass forgings for many commercial and industrial applications. Business and operations are conducted primarily in the U.S., Canada and the U.K.

Industrial Products supplies construction fasteners; masonry and stone anchoring systems used in commercial construction; two component polymer products for anchoring, bonding and repair applications, gloves and other protective wear; gear drives, gearboxes, fan and pump drives for various markets; wind machines for agricultural use; wheels, axles and gears for rail, mining and other applications; lighting products for industrial and mining; and equipment for the manufacture and assembly of lead acid batteries. Operations are primarily based in the U.S., the U.K., Canada and China and business is conducted in those countries.

Rail & Leasing manufactures, leases and maintains railcars; leases intermodal tank containers; manufactures mobile railcar movers; provides in-plant rail switching and loading services; performs track construction and maintenance; and manufactures steel tank heads and cylinders.

Union Tank Car Company (“UTLX”) is the largest component of the Rail & Leasing group and is a leading designer, builder and full-service lessor of railroad tank cars and other specialized railcars. Together with its Canadian affiliate Procor, UTLX owns a fleet of approximately 120,000 railcars for lease to customers in chemical, petrochemical, energy and agricultural/food industries. UTLX manufactures tank cars in the U.S. and performs railcar maintenance services at more than 100 locations across North America.

UTLX has a diversified customer base, both geographically and across industries. UTLX, while subject to cyclicality and significant competition in most of its markets, competes by offering a broad range of high-quality products and services targeted at its niche markets. Railcars are typically leased for multiple-year terms and most of the leases are renewed upon expiration. Due to selective ongoing capital investment, utilization rates (the number of railcars on lease as a percentage of the total fleet) of the railcar fleet are generally high.

Intermodal tank containers are leased through EXSIF Worldwide. EXSIF is a leading international lessor of intermodal tank containers with a fleet of approximately 74,000 units, primarily serving chemical producers and logistics operators. In May 2022, EXSIF exited its Russia business, which resulted in the sale of approximately 7,300 intermodal tank containers.

Crane Services is a provider of mobile cranes and operators in North America and Australia with a combined fleet of approximately 1,100 cranes, primarily serving the energy, mining, petrochemical and infrastructure markets. Cranes are leased on either a fully operated and maintained service basis or on an equipment-only basis. The Crane Services group is subject to customer seasonality, with typical concentration of volume in the warmer months.

Medical develops, manufactures and distributes a wide range of innovative medical devices in the extremities fixation, craniomaxillofacial surgery, neurosurgery, biologics, aesthetics and powered instruments markets. The group's leading-edge medical technology and products are used globally to help improve patient care and outcomes. Operations are based in the U.S., Europe and China and business is conducted primarily in North and South America, Europe, Asia and Australia.

Certain Marmon businesses, including the Rail and Medical groups, are subject to government regulation and oversight. Marmon has numerous known environmental matters which are subject to on-going monitoring and/or remediation efforts. Marmon follows all federal, state and local environmental regulations.

Other industrial products

CTB International Corp. ("CTB"), headquartered in Milford, Indiana, is a leading global designer, manufacturer and marketer of a wide range of agricultural systems and solutions for preserving grain, producing poultry, pigs and eggs, and for processing poultry, fish, vegetables and other foods. CTB operates from facilities located around the globe and supports customers through a worldwide network of independent distributors and dealers.

CTB competes with a variety of manufacturers and suppliers, including many that offer only a limited number of the products offered by CTB, as well as a few that offer products across several of CTB's product lines. Competition is based on the price, value, reputation, quality and design of the products offered and the customer service provided by distributors, dealers and manufacturers of the products. CTB's leading brand names, distribution network, diversified product line, product support and high-quality products enable it to compete effectively. CTB manufactures its products primarily from galvanized steel, steel wire, stainless steel and polymer materials. The availability of these materials in recent years has been adequate.

LiquidPower Specialty Products Inc. ("LSPI"), headquartered in Houston, Texas, is a global leader in the science of drag reduction application ("DRA") technology by maximizing the flow potential of pipelines, increasing operational flexibility and throughput capacity, and efficiencies for customers. LSPI develops innovative flow improver solutions with customers in over 20 countries on five continents, treating over 50 million barrels of hydrocarbon liquids per day. LSPI's DRA offering is part of a comprehensive, full-service solution that encompasses industry-leading technology, quality manufacturing, technical support and consulting, a reliable supply chain, injection equipment and field service. LSPI is subject to foreign, federal, state and local laws to protect the environment and limit manufacturing waste and emissions.

The Scott Fetzer companies are a group of businesses that manufacture, distribute, service and finance a wide variety of products for residential, industrial and institutional use. The industrial products group also includes certain manufacturing subsidiaries of Alleghany acquired in October 2022. The Alleghany businesses include the structural steel fabrication products business conducted through W&W|AFCO Steel. Additionally, the Alleghany businesses included certain other smaller manufacturers that primarily became part of Marmon.

Building Products

Clayton

Clayton Homes, Inc. ("Clayton"), headquartered near Knoxville, Tennessee, is a vertically integrated housing company offering traditional site-built homes and off-site (factory) built housing, including modular, manufactured, CrossMod™ and tiny homes. In 2022, Clayton delivered approximately 53,000 off-site built and 11,750 site-built homes. Clayton also offers home financing and insurance products and competes on price, service, location and delivery capabilities.

All Clayton Built® off-site built homes are designed, engineered and assembled in the U.S. As of December 2022, off-site backlog was \$256 million, down 82% from the prior year end. Clayton sells off-site built homes through independent and company-owned home centers, realtors and subdivision channels. Clayton considers its ability to offer financing to retail purchasers a factor affecting the marketplace acceptance of its off-site built homes. Clayton's financing programs utilize proprietary loan underwriting guidelines to evaluate loan applicants.

Since 2015, Clayton's site-built division, Clayton Properties Group, has expanded through the acquisition of nine builders across 18 states with over 310 subdivisions, supplementing the portfolio of housing products offered to customers. Clayton's site-builders currently own and control approximately 70,000 homesites, with a home order backlog of approximately \$1.4 billion as of December 2022.

Historically, access to key housing inputs such as lumber, steel and resin products has been adequate. During 2021 and the first half of 2022, the availability and pricing of these and other inputs was volatile. Input shortages coupled with reduced labor and subcontractor availability increased the time needed to construct a home, increasing the levels of work-in-process inventory. These constraints began to lessen in the latter half of 2022 due to improved availability and pricing of key inputs, increased order cancellations and lower overall demand for new home construction.

Clayton's building products business has benefited in recent years from the low interest rate environment. However, interest rates in the U.S. increased significantly during 2022, which contributed to slowing demand for new home construction.

Clayton's home building business regularly makes capital and non-capital expenditures with respect to compliance with federal, state and local environmental regulations, primarily related to erosion control, permitting and stormwater protection for site-built home subdivisions. The financing business originates and services loans which are federally regulated by the Consumer Financial Protection Bureau, various state regulatory agencies and reviewed by the U.S. Department of Housing and Urban Development, the Government National Mortgage Association and government-sponsored enterprises.

Shaw

Shaw Industries Group, Inc. ("Shaw"), headquartered in Dalton, Georgia, is a leading manufacturer and distributor of carpet, carpet tile, and hard surface flooring products. Shaw designs and manufactures over 4,000 styles of tufted carpet, wood and resilient flooring for residential and commercial use under about 30 brand and trade names and under certain private labels. Soft and hard surface products are available in a broad range of patterns, colors and textures. Shaw's carpet manufacturing operations are fully integrated from the processing of raw materials used to make fiber through to the finishing. Shaw's flooring businesses are primarily in the U.S. and it also manufactures in China and the U.K. and distributes carpet tile throughout Europe and Southeast Asia. Shaw manufactures or distributes a variety of hardwood, wood plastic composite (WPC), stone plastic composite (SPC), vinyl and laminate floor products ("hard surfaces"). Shaw's Integrated Solutions business also provides project management and installation services.

Shaw operates Shaw Sports Turf, Sawgrass and Southwest Greens International, LLC, which provide synthetic sports turf, golf greens and landscape turf products. Since 2021, Shaw's businesses include Watershed Geosynthetics, LLC, which sells innovative and patented environmental solutions for utility, waste management, erosion control and mining industries.

Shaw products are sold wholesale to over 46,000 retailers, distributors and commercial users throughout the U.S., Canada, Mexico and the U.K. Products are also exported to various overseas markets. Shaw's wholesale products are marketed domestically by over 2,000 salaried and commissioned sales personnel directly to retailers and distributors and to large national accounts. Shaw's seven carpet and nine hard surface facilities, one sample full-service distribution facility, three sample satellite locations and 30 redistribution centers, along with centralized management information systems, enable it to provide prompt and efficient delivery of its products to both its retail customers and wholesale distributors.

Substantially all carpet manufactured by Shaw is tufted carpet made from nylon, polypropylene and polyester, as well as recycled materials. During 2022, Shaw processed approximately 89% of its requirements for carpet yarn in its own yarn processing facilities. The availability of raw materials is adequate, but costs are impacted by petro-chemical and natural gas price changes. A significant portion of Shaw's soft-flooring raw materials derive from recycled sources. Raw material cost changes are periodically factored into selling prices to customers.

The soft floor covering industry is highly competitive with only a handful of major competitors domestically. There are numerous manufacturers, domestically and internationally, that are engaged in the hard surfaces flooring sector. According to industry estimates, carpet accounts for approximately 41% of the total U.S. consumption of all flooring types. The principal competitive measures within the floor covering industry are quality, style, price and service.

Johns Manville

Johns Manville Corporation ("JM"), headquartered in Denver, Colorado, is a leading manufacturer and marketer of premium-quality products for building insulation, mechanical and industrial insulation, commercial roofing and roof insulation, as well as reinforcement fiberglass and technical nonwovens. JM serves markets that include aerospace, automotive and transportation, air handling, appliance, HVAC, pipe and equipment, air and liquid filtration, waterproofing, building, flooring, interiors and wind energy. Fiberglass is the basic material in many 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.

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 operates over 40 manufacturing facilities in North America and Europe 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. JM's products also contain materials other than fiberglass, including chemical agents to bind many of its glass fibers and various chemical-based and petrochemical-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 generally 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, which regulate or impose liability for the discharge of materials into the air, land and water and govern the use and disposal of hazardous substances and use of chemical 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, which are administered by the EPA. Canadian and European regulatory authorities have also adopted their own environmental laws and regulations. JM continually monitors new and pending regulations and assesses their potential impact on the business. JM's capital projects regularly address environmental compliance and are generally incidental to other capital projects.

JM sells its products through a wide variety of channels including contractors, distributors, retailers, manufacturers and fabricators. JM operates in highly competitive markets, with competitors comprising primarily 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 value, differentiation and customization, breadth of product line, quality and service. 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.

MiTek

MiTek Industries, Inc. ("MiTek"), based in Chesterfield, Missouri, operates in two separate building markets: residential and commercial. MiTek operates worldwide with sales in over 100 countries and with manufacturing facilities and/or sales/engineering offices located in 20 countries.

In the residential building 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.

A significant raw material used by MiTek is hot dipped galvanized sheet steel. While supplies are presently adequate, variations in supply have historically occurred, producing significant variations in cost and availability.

Benjamin Moore

Benjamin Moore & Co. ("Benjamin Moore"), headquartered in Montvale, New Jersey, is one of North America's leading manufacturers of premium quality residential, commercial and industrial maintenance coatings. Benjamin Moore is committed to innovation and sustainable manufacturing practices. The Benjamin Moore premium portfolio includes Aura®, Regal® Select, Ultra Spec®, ben®, ADVANCE®, ARBORCOAT® and others. The Benjamin Moore diversified brands include specialty and architectural paints from Coronado® and Insl-x®.

Benjamin Moore coatings are available through more than 8,000 independently owned and operated paint, decorating and hardware retailers, including approximately 3,800 Ace Hardware ("Ace") stores, throughout the U.S. and Canada as well as 75 countries globally. Benjamin Moore became the preferred paint supplier for the aforementioned Ace Stores in 2019 through an agreement which affords these stores the opportunity to carry a full line of Benjamin Moore products or a streamlined offering of certain branded products. As part of the agreement, Benjamin Moore assumed responsibility for manufacturing Clark+Kensington® and Royal®, as well as the balance of Ace's private label paint brands.

Benjamin Moore also allows customers to directly order coatings or color samples online or, for national accounts and government agencies, via its customer information center, for delivery to the customer or a retailer near the customer.

Benjamin Moore competes with numerous manufacturers, distributors and paint, coatings and related products retailers. Product quality, product innovation, breadth of product line, technical expertise, service and price determine the competitive advantage. Competitors include other premium paint and decorating stores, mass merchandisers, home centers, independent hardware stores, hardware chains and manufacturer-operated direct outlets, such as Sherwin-Williams Company, PPG Industries, Inc., The Home Depot, Inc. and Lowe's Companies, Inc.

The most significant raw materials in Benjamin Moore products are titanium dioxide, monomers, polymers and pigments. Historically, these materials have been generally available, with pricing and availability subject to fluctuation. However, Benjamin Moore experienced raw material constraints concurrent with the COVID-19 pandemic. These constraints began to ease in the second half of 2022, allowing for the return to normal production scheduling, replenishment of overall finished goods inventory levels and the reduction of customer order cancellations. Some limited constraints remain with alkyd raw materials resulting in elevated cancellation quantities for orders with those products. Benjamin Moore continually evaluates processes, including evaluating raw material substitutions and sourcing from alternative vendors, to optimize production capacity to meet future demand.

Benjamin Moore undertakes to comply with applicable regulations relating to protection of the environment and workers' safety and Benjamin Moore products meet or exceed environmental standards. Benjamin Moore has certain known past environmental matters, which are subject to on-going monitoring and/or remediation efforts.

Acme

Acme Brick Company ("Acme"), headquartered in Fort Worth, Texas, manufactures and distributes clay bricks (Acme Brick®) and concrete block (Featherlite). In addition, Acme distributes numerous other building products of other manufacturers, including floor and wall tile, wood flooring and other masonry products. Products are sold primarily in the South Central and Southeastern U.S. through company-operated sales offices. Acme distributes products primarily to homebuilders and masonry and general contractors.

Acme currently operates 12 clay brick manufacturing sites located in four states and three concrete block facilities in Texas. The demand for Acme's products is seasonal, with higher sales in the warmer weather months, and is subject to the level of construction activity, which is cyclical. Acme also owns and leases properties and mineral rights that supply raw materials used in many of its manufactured products. Acme's raw materials supply is believed to be adequate.

The brick industry is subject to the EPA Maximum Achievable Control Technology Standards ("MACT"). As required under the 1990 Clean Air Act, the EPA developed a list of source categories that require the development of National Emission Standards for Hazardous Air Pollutants, which are also referred to as MACT Standards ("Rule"). Key elements of the MACT Rule include emission limits established for certain hazardous air pollutants and acidic gases. Acme's brick plants are in compliance with the current Rule.

Consumer Products

Recreational vehicles

Forest River, Inc. ("Forest River"), headquartered in Elkhart, Indiana, is a manufacturer of recreational vehicles ("RV"), utility cargo trailers, buses and pontoon boats with products sold in the U.S. and Canada through an independent dealer network. Forest River has numerous manufacturing facilities located in six states and is a leading manufacturer of RVs with numerous brand names, including Forest River, Coachmen RV and Prime Time. Utility cargo trailers are sold under a variety of brand names. Buses are sold under several brand names, including Starcraft Bus. Pontoon boats are sold under the Berkshire, South Bay and Trifecta brand names.

The RV industry is highly competitive. Competition is based primarily on price, design, quality and service. The industry has consolidated over the past several years and is currently concentrated in a few companies, the largest of which had a market share of approximately 42% based on industry data as of September 2022. Forest River held a market share of approximately 33% at that time. Forest River is subject to regulations of the National Traffic and Motor Vehicle Safety Act, the safety standards for recreational vehicles established by the U.S. Department of Transportation and similar laws and regulations issued by the Canadian government. Forest River is a member of the Recreational Vehicle Industry Association, a voluntary association of RV manufacturers which promotes safety standards for RVs. Forest River believes its products comply in all material respects with the standards that govern its products.

Apparel and footwear

Fruit of the Loom Inc. (“FOL”), headquartered in Bowling Green, Kentucky, is primarily a manufacturer and distributor of basic apparel, underwear, casualwear, athletic apparel and sports equipment. Products under the Fruit of the Loom® and JERZEES® labels are primarily sold in the mass merchandise, mid-tier chains and wholesale markets. In the Vanity Fair Brands product line, Vassarette®, Curvation® and Radiant® by Vanity Fair are sold in the mass merchandise market, while Vanity Fair® and Lily of France® products are sold to mid-tier chains and department stores. FOL also markets and sells athletic apparel and sports equipment to team dealers and to sporting goods retailers under the Russell Athletic® and Spalding® brands. Additionally, Spalding® markets and sells sports equipment in the mass merchandise market and dollar store channels.

FOL generally performs its own knitting, cloth finishing, cutting, sewing and packaging for apparel. For the North American market, which is FOL’s predominant sales region, cloth manufacturing is primarily performed in Honduras. Labor-intensive cutting, sewing and packaging operations are in Central America, the Caribbean and Vietnam. For the European market, products are either sourced from third-party contractors in Europe or Asia or sewn in Morocco from textiles internally produced in Morocco. Bras, athletic equipment, sporting goods and other athletic apparel lines are generally sourced from third-party contractors located primarily in Asia.

U.S.-grown cotton fiber and U.S.-manufactured polyester fiber are the main raw materials used in manufacturing FOL’s products. Historically, fibers have been purchased from a limited number of third parties, including one key supplier that provided the majority of FOL’s yarn spinning/raw material conversion services. Supply chain disruptions in 2021 and 2022 caused FOL to utilize alternative sources for these raw materials/services. FOL has since engaged an additional supplier for a portion of FOL’s yarn spinning/raw material conversion services. FOL’s markets are highly competitive, consisting of many domestic and foreign manufacturers and distributors. Competition is generally based upon product features, quality, customer service and price.

Garan Incorporated (“Garan”), headquartered in New York, New York designs, manufactures, imports and sells apparel primarily for children, including boys, girls, toddlers and infants. Products are sold under its own trademarks Garanimals® and 365 Kids from Garanimals® and easy-peasy®, as well as customer private label brands. Garan conducts its business through operating subsidiaries located in the U.S., Central America and Asia. Garan’s products are sold through its distribution centers in the U.S. Fechheimer Brothers Company (“Fechheimers”) manufactures and distributes uniforms, principally for the public service and safety markets, including police, fire, postal and military markets. Fechheimers is based in Cincinnati, Ohio.

The BH Shoe Holdings Group, headquartered in Greenwich, Connecticut, manufactures and distributes work, rugged outdoor and casual shoes and western-style footwear under a number of brand names, including Justin, Tony Lama®, Chippewa®, BØRN®, B•Ø•C®, Carolina®, EuroSofft, Söfft, Double-H Boots®, Nursemates® and Comfortiva®. Brooks Sports, Inc., headquartered in Seattle, Washington, markets and sells performance running footwear and apparel to specialty and national retailers and directly to consumers under the Brooks® brand. A significant volume of the shoes sold by Berkshire’s shoe businesses are manufactured or purchased from sources located outside the U.S. Products are sold worldwide through a variety of channels including department stores, footwear chains, specialty stores, catalogs and the Internet, as well as through company-owned retail stores.

Other consumer products

The Duracell Company (“Duracell”), headquartered in Chicago, Illinois, is a leading manufacturer of high-performance alkaline and lithium coin batteries. Duracell manufactures batteries in the U.S., Europe and China and provides a network of worldwide sales and distribution centers. Duracell sells its products to a diverse group of retailers and distributors across the globe. There are several competitors in the battery manufacturing market with Duracell holding an approximately 29% market share of the global alkaline battery market. Management believes there are currently sufficient sources of raw materials available, which are primarily steel, zinc, manganese and nickel-based chemistries.

Albecca Inc. (“Albecca”), headquartered in Suwanee, Georgia, operates in the U.S., Canada and 11 other countries, with products primarily under the Larson-Juhl® name. Albecca designs, manufactures and distributes a complete line of high quality, branded custom framing products, including wood and metal moulding, matboard, foamboard, glass and framing supplies. Complementary to its framing products, Albecca offers art printing and fulfillment services.

Richline Group, Inc., headquartered in New York, New York, operates five strategic business units: Richline Jewelry, Richline Digital, LeachGarner, Rio Grande and Inverness. Each business unit is a manufacturer and/or distributor of precious metal, non-precious metal, diamond and gem products to specific target markets including large jewelry chains, department stores, shopping networks, mass merchandisers, e-commerce retailers and artisans as well as certain global manufacturers and wholesalers in the medical, electronics and aerospace industries.

The consumer products group also includes Jazwares, LLC and its subsidiaries and affiliates, (“Jazwares”), acquired in October 2022 in connection with Alleghany. Jazwares is a global toy company headquartered in Sunrise, Florida.

Service and Retailing Businesses

Service Businesses

Berkshire’s service businesses provide grocery and foodservice distribution, professional aviation training programs, shared aircraft ownership programs and distribution of electronic components. Other service businesses include franchising and servicing of quick service restaurants, media businesses (television and information distribution), as well as logistics businesses. Berkshire’s service businesses employed approximately 55,000 people at the end of 2022. Information concerning these activities follows.

McLane

McLane Company, Inc. (“McLane”) provides wholesale distribution services in all 50 states to customers that include convenience stores, discount retailers, wholesale clubs, drug stores, military bases, quick service restaurants and casual dining restaurants. McLane’s major customers during 2022 included Walmart (approximately 15.5% of revenues); 7-Eleven (approximately 14.2% of revenues); and Yum! Brands, (approximately 12.0% of revenues). McLane’s business model is based on a high volume of sales, rapid inventory turnover and stringent expense controls. Operations are currently divided into three business units: grocery distribution, foodservice distribution and beverage distribution.

McLane’s grocery distribution unit, based in Temple, Texas, maintains a dominant market share within the convenience store industry and serves most of the national convenience store chains and major oil company retail outlets. Grocery operations provide products to approximately 48,500 retail locations nationwide. McLane’s grocery distribution unit operates 25 distribution facilities in 20 states.

McLane’s foodservice distribution unit, based in Carrollton, Texas, focuses on serving the quick service and casual dining restaurant industry with high quality, timely-delivered products. Operations are conducted through 47 facilities in 22 states. The foodservice distribution unit services approximately 33,600 restaurants nationwide.

Through its subsidiaries, McLane also operates wholesale distributors of distilled spirits, wine and beer. The beverage unit operates as Empire Distributors and operations are conducted through 14 distribution centers in Georgia, North Carolina, Tennessee and Colorado. Empire Distributors services approximately 27,600 retail locations in the southeastern U.S. and Colorado.

FlightSafety

FlightSafety International Inc. (“FlightSafety”) is an industry leading provider of professional aviation training services and flight simulation products. FlightSafety and FlightSafety Textron Aviation Training, a joint venture with Textron, provide high technology training to pilots, aircraft maintenance technicians, flight attendants and dispatchers who operate and support a wide variety of business, commercial and military aircraft. The training is provided using a large fleet of advanced full flight simulators at learning centers and training locations in the U.S., Australia, Brazil, Canada, France, Japan, Singapore, Norway, South Africa and the U.K. Compliance with applicable environmental regulations is an inherent requirement to operate the facilities. The vast majority of the instructors, training programs and flight simulators are qualified by the United States Federal Aviation Administration (“FAA”) and other aviation regulatory agencies around the world.

FlightSafety is also a leader in the design and manufacture of full flight simulators, visual systems, displays and other advanced technology training devices. This equipment is used to support FlightSafety training programs and is offered for sale to airlines and government and military organizations around the world. Manufacturing facilities are located in Oklahoma, Missouri and Illinois. FlightSafety strives to maintain and manufacture simulators and develop courseware using state-of-the-art technology and invests in research and development as it builds new equipment and training programs.

NetJets

NetJets Inc. (“NetJets”) is the leader in private aviation services and operates a large, diverse private aircraft fleet and offers a full range of personalized private aviation solutions to meet and exceed the high standards of its customers. NetJets’ global headquarters is located in Columbus, Ohio. NetJets’ European operations are based in Lisbon, Portugal. The shared ownership concept is designed to meet the travel needs of customers who require the scale, flexibility and access of a large fleet of aircraft as opposed to reliance on whole aircraft ownership. In addition, shared ownership programs are available for corporate flight departments seeking to outsource their general aviation needs or add capacity for peak periods and for others that previously chartered aircraft.

NetJets’ programs are focused on safety and service and are designed to offer customers guaranteed availability of aircraft, predictable operating costs and increased liquidity. NetJets’ shared aircraft ownership programs permit customers to acquire a specific percentage of a certain aircraft type and allows customers to utilize the aircraft for a specified number of flight hours annually. In addition, NetJets offers prepaid flight cards and other aviation solutions and services for aircraft management, customized aircraft sales and acquisition, ground support and flight operation services under several programs including NetJets Shares™, NetJets Leases™ and the NetJets Card Program™.

NetJets is subject to the rules and regulations of the FAA, the Portuguese Civil Aviation Authority and the European Union Aviation Safety Agency. Regulations address aircraft registration, maintenance requirements, pilot qualifications and airport operations, including flight planning and scheduling as well as security issues and other matters. NetJets maintains comprehensive training and development programs in compliance with regulatory requirements for pilots, flight attendants, maintenance mechanics, and other flight operations specialists, many of whom are represented by unions.

TTI

TTI, Inc. (“TTI”), headquartered in Fort Worth, Texas, is a global specialty distributor of passive, interconnect, electromechanical, discrete, and semiconductor components used by customers in the manufacturing and assembling of electronic products. TTI’s customer base includes OEMs, electronic manufacturing services, original design manufacturers and military and commercial customers, as well as design and system engineers. TTI’s distribution agreements with the industry’s leading suppliers allow it to uniquely leverage its product cost and to expand its business by providing new lines and products to its customers. TTI operates sales offices and distribution centers from more than 100 locations throughout North America, South America, Europe and Asia.

TTI services a variety of industries including telecommunications, medical devices, computers and office equipment, military/aerospace, automotive and industrial electronics. TTI’s core customers include businesses in the design through production stages in the electronic component supply chain, which supports its high-volume business, and its Mouser subsidiary, which supports a broader base of customers with lower volume purchases through internet-based marketing.

Other services

XTRA Corporation (“XTRA”), headquartered in St. Louis, Missouri, is a leading transportation equipment lessor operating under the XTRA Lease® brand name. XTRA manages a diverse fleet of approximately 89,000 units located at 47 facilities throughout the U.S. The fleet includes over-the-road and storage trailers, chassis, temperature-controlled vans and flatbed trailers. XTRA is one of the largest lessors (in terms of units available) of over-the-road trailers in North America. Transportation equipment customers lease equipment to cover cyclical, seasonal and geographic needs and as a substitute for purchasing equipment. Therefore, as a provider of marginal capacity to its customers, XTRA’s utilization rates and operating results tend to be cyclical. In addition, transportation providers often use leasing to maximize their asset utilization and reduce capital expenditures. By maintaining a large fleet, XTRA is able to provide customers with a broad selection of equipment and quick response times.

International Dairy Queen Inc. develops and services a worldwide system of over 7,000 franchised restaurants operating primarily under the names DQ Grill and Chill®, Dairy Queen® and Orange Julius® that offer various dairy desserts, beverages, prepared foods and blended fruit drinks. Business Wire Inc. (“Business Wire”) transmits full-text news releases, regulatory filings, photos and other multimedia content to journalists, financial professionals, investor services, regulatory authorities and the general public. Releases are distributed globally via Business Wire’s patented NX network. CORT Business Services Corporation (“CORT”) is a leading national provider of rental furniture and related services in the “rent-to-rent” segment of the furniture rental industry. CORT’s primary revenue streams include furniture rental to individuals, businesses, government agencies, the trade show and events industry and retail sales of new and used furniture. WPLG, Inc. is an ABC affiliate television broadcast station in Miami, Florida and Charter Brokerage Holdings Corp. is a leading non-asset based third party logistics provider to the petroleum and chemical industries. In connection with the Alleghany acquisition, the services group includes IPS-Integrated Project Services, LLC, a provider of a variety of services, including design and engineering, project management, procurement, validation and consulting that are used in facilities construction projects.

Retailing Businesses

Berkshire's retailing businesses include automotive, home furnishings and several other operations that sell various consumer products. Berkshire's retailing businesses employed approximately 26,000 people at the end of 2022. Information regarding each of these operations follows.

Berkshire Hathaway Automotive

Berkshire Hathaway Automotive, Inc. ("BHA") is one of the largest automotive retailers in the U.S., currently operating 106 new vehicle franchises through 83 dealerships located primarily in major metropolitan markets in the U.S. The dealerships sell new and used vehicles, vehicle maintenance and repair services, extended service contracts, vehicle protection products and other aftermarket products. BHA also arranges financing for its customers through third-party lenders. BHA operates 28 collision centers directly connected to the dealerships' operations and owns and operates two auto auctions and an automotive fluid maintenance products distributor.

Dealership operations are highly concentrated in the Arizona and Texas markets, with approximately 75% of dealership-related revenues derived from sales in these markets. BHA currently maintains franchise agreements with 27 different vehicle manufacturers, although it derives a significant portion of its revenue from the Toyota/Lexus, General Motors, Ford/Lincoln, Nissan/Infiniti and Honda/Acura brands. Approximately 90% of BHA's annual revenues are from dealerships representing these manufacturers.

The retail automotive industry is highly competitive. BHA faces competition from other large public and private dealership groups, as well as individual franchised dealerships and competition via the Internet. Given the pricing transparency available via the Internet, and the fact that franchised dealers acquire vehicles from the manufacturers on the same terms irrespective of volume, the location and quality of the dealership facility, customer service and transaction speed are key differentiators in attracting customers.

BHA's overall relationships with the automobile manufacturers are governed by framework agreements. The framework agreements contain provisions relating to the management, operation, acquisition and ownership structure of BHA's dealerships. Failure to meet the terms of these agreements could adversely impact BHA's ability to acquire additional dealerships representing those manufacturers. Additionally, these agreements contain limitations on the number of dealerships from a specific manufacturer that may be owned by BHA.

Individual dealerships operate under franchise agreements with the manufacturer, which grants the dealership entity a non-exclusive right to sell the manufacturer's brand of vehicles and offer related parts and service within a specified market area, as well as the right to use the manufacturer's trademarks. The agreements contain various requirements and restrictions related to the management and operation of the franchised dealership and provide for termination of the agreement by the manufacturer or non-renewal for a variety of causes. States generally have automotive dealership franchise laws that provide substantial protection to the franchisee, and it is difficult for a manufacturer to terminate or not renew a franchise agreement outside of bankruptcy or with "good cause" under the applicable state franchise law.

BHA also develops, underwrites and administers various vehicle protection plans as well as life and accident and health insurance plans sold to consumers through BHA's dealerships and third-party dealerships. BHA also develops proprietary training programs and materials and provides ongoing monitoring and training of the dealership's finance and insurance personnel.

Home furnishings retailing

The home furnishings businesses consist of Nebraska Furniture Mart Inc. ("NFM"), R.C. Willey Home Furnishings ("R.C. Willey"), Star Furniture Company ("Star") and Jordan's Furniture, Inc. ("Jordan's"). These businesses offer a wide selection of furniture, bedding and accessories. In addition, NFM and R.C. Willey sell a full line of major household appliances, electronics, computers and other home furnishings and offer customer financing to complement their retail operations. An important feature of each of these businesses is their ability to control costs and to produce high business volume by offering significant value to their customers.

NFM operates its business from four retail complexes with almost 4.5 million square feet of retail, warehouse and administrative facilities located in Omaha, Nebraska, Clive, Iowa, Kansas City, Kansas and The Colony, Texas. NFM also owns Homemakers Furniture located in Urbandale, Iowa, which has approximately 600,000 square feet of retail, warehouse and administrative space. NFM is the largest furniture retailer in each of these markets. R.C. Willey, based in Salt Lake City, Utah, currently operates ten full-line retail home furnishings stores and three distribution centers. These facilities include approximately 1.3 million square feet of retail space with four stores located in Utah, one store in Meridian, Idaho, three stores in Nevada (Las Vegas and Reno) and two stores in the Sacramento, California area.

Jordan's operates a retail furniture business from seven locations with approximately 890,000 square feet of retail space in stores located in Massachusetts, New Hampshire, Rhode Island, Maine and Connecticut. The retail stores are supported by an 800,000 square foot distribution center in Taunton, Massachusetts. Jordan's is the largest furniture retailer, as measured by sales, in Massachusetts, Maine and New Hampshire. Jordan's is well known in its markets for its unique store arrangements and advertising campaigns. Star has operated home furnishings retail stores in Texas for many years. Star's retail facilities currently include about 700,000 square feet of retail space in 10 locations in Texas, including seven in Houston.

Other retailing

Borsheim Jewelry Company, Inc. ("Borsheims") operates from a single store in Omaha, Nebraska. Borsheims is a high-volume retailer of fine jewelry, watches, crystal, china, stemware, flatware, gifts and collectibles. Helzberg's Diamond Shops, LLC. ("Helzberg") is based in North Kansas City, Missouri, and operates a chain of 170 retail jewelry stores in 34 states, which includes approximately 400,000 square feet of retail space. Helzberg's stores are located in malls, lifestyle centers, power strip centers and outlet malls, and all stores operate under the name Helzberg Diamonds® or Helzberg Diamonds Outlet®. The Ben Bridge Corporation ("Ben Bridge Jeweler"), based in Seattle, Washington, operates 37 retail jewelry stores under two different brand names, located primarily in major shopping malls in nine western states. Thirty-six of its retail locations are upscale jewelry stores selling loose diamonds, finished jewelry and high-end timepieces. One store is a Breitling concept store, selling only Breitling timepieces.

See's Candy Shops, Incorporated ("See's") produces boxed chocolates and other confectionery products with an emphasis on quality and distinctiveness in two large kitchens in Los Angeles and South San Francisco and a facility in Burlingame, California. See's operates approximately 250 retail and volume saving stores located mainly in California and other Western states, as well as over 125 seasonal locations. See's revenues are highly seasonal with approximately half of its annual revenues earned in the fourth quarter.

The Pampered Chef, Ltd. ("Pampered Chef") is a premier direct seller of distinctive high-quality kitchenware products with sales and operations in the U.S., Canada, Germany, Austria and France and operations in China. Pampered Chef's product portfolio consists of over 400 Pampered Chef® branded kitchenware items in categories ranging from stoneware and cutlery to grilling and entertaining. Pampered Chef's products are available through its sales force of independent cooking consultants and online.

Oriental Trading Company ("OTC") is a leading multi-channel and online retailer for fun-value-priced party supplies, seasonal products, arts and crafts, toys and novelties, school supplies and educational games. OTC, headquartered in Omaha, Nebraska, serves a broad base of nearly four million customers annually, including consumers, schools, churches, non-profit organizations, medical and dental offices and other businesses. OTC offers a unique assortment of over 80,000 fun products emphasizing proprietary designs. OTC operates both direct-to-consumer and business-to-business brands including Oriental Trading®, Fun Express®, MindWare®, SmileMakers®, Morris Costumes® and HalloweenExpress.com® and utilizes digital and print marketing along with dedicated sales teams to promote online sales.

Detlev Louis Motorrad ("Louis"), headquartered in Hamburg, Germany, is a leading retailer of motorcycle clothing and equipment in Europe. Louis carries over 50,000 different store and private label products, mainly covering the areas of clothing, technical equipment and leisure. Louis has over 80 stores in Germany, Austria, Switzerland and the Netherlands as well as an online business with online shops in various languages in Europe.

Pilot Travel Centers

Since October 2017, we have owned a 38.6% interest in Pilot Travel Centers, LLC (“Pilot”), headquartered in Knoxville, Tennessee. Through December 31, 2022, we accounted for our investment in Pilot under the equity method. On January 31, 2023, we acquired an additional 41.4% interest in Pilot and we attained control of Pilot for financial reporting purposes as of that date. Consequently, we will discontinue the use of the equity method and include Pilot’s financial statements in our Consolidated Financial Statements at that date.

Pilot is the largest operator of travel centers in North America (primarily under the names Pilot or Flying J) with more than 650 travel center locations across 44 U.S. states and six Canadian provinces. Pilot also has over 150 retail locations in the U.S. and Canada where it sells diesel fuel through various arrangements with third party travel centers. Pilot sold over 13 billion gallons of fuel in 2022 (primarily diesel and gasoline). Pilot has approximately 25,500 employees.

Pilot’s travel centers are generally located close to an interstate highway and offer petroleum products, merchandise, fast food, and a variety of services and amenities to consumers and professional truck drivers. While Pilot’s primary business is operating fuel and inside store travel centers, it also enters into dealer agreements with existing travel centers where Pilot procures and sells diesel fuel at these locations for a fee. Additionally, Pilot operates large wholesale fuel and fuel marketing platforms in the U.S. and operates a water hauling and disposal business in the oil fields sector.

The travel center industry is concentrated among a few large operators (including Love’s Travel Stops and TravelCenters of America), although there are numerous independent operators that operate one to ten travel centers. Pilot’s top 10 customers for diesel sales account for less than 15% of total diesel gallons sold by Pilot, while Pilot’s top 10 fuel suppliers account for less than 50% of gallons purchased by Pilot.

Pilot currently supplies approximately 1.5 billion gallons per year of low-carbon fuels (renewable diesel, biodiesel and ethanol) and approximately 320 million gallons per year of diesel exhaust fluid. During 2022, Pilot entered a partnership with General Motors Company to develop a nationwide electric vehicle fast charger network of 2,000 charging stations in 500 U.S. locations by 2026. Pilot also signed a letter of intent with Volvo during 2022 in a partnership to develop a nationwide public charging network to support the expansion of battery-powered electric trucks.

Pilot is subject to federal, state, and local laws and regulations relating to the environment. These laws generally provide for control of pollutants released into the environment and require responsible parties to undertake remediation of hazardous waste disposal sites. Penalties may be imposed for non-compliance. Certain assets (such as petroleum tanks, dispensers, and disposal wells) impose retirement obligations.

Additional information with respect to Berkshire’s businesses

Revenue, earnings before taxes and identifiable assets attributable to Berkshire’s reportable business segments are included in Note 25 to Berkshire’s Consolidated Financial Statements contained in Item 8, Financial Statements and Supplementary Data. Additional information regarding Berkshire’s investments in fixed maturity and equity securities is included in Notes 3 and 4, respectively, to Berkshire’s Consolidated Financial Statements.

Berkshire or a subsidiary owns 26.6% of the outstanding common stock of The Kraft Heinz Company (“Kraft Heinz”) and 21.4% of the outstanding Occidental Petroleum Corporation (“Occidental”) common stock. Kraft Heinz manufactures and markets food and beverage products, including condiments and sauces, cheese and dairy, meals, meats, refreshment beverages, coffee and other grocery products. Occidental is an international energy company, including oil and natural gas exploration, development and production, and chemicals manufacturing businesses. Occidental’s midstream businesses purchase, market, gather, process, transport and store various oil, natural gas, carbon dioxide and other products. Berkshire subsidiaries also own a 50% joint venture interest in Berkadia Commercial Mortgage LLC. Information concerning these investments is included in Note 5 to Berkshire’s Consolidated Financial Statements.

Berkshire maintains a website (<http://www.berkshirehathaway.com>) where its annual reports, certain corporate governance documents, press releases, interim shareholder reports and links to its subsidiaries’ websites can be found. Berkshire’s periodic reports filed with the SEC, which include Form 10-K, Form 10-Q, Form 8-K and amendments thereto, may be accessed by the public free of charge from the SEC and through Berkshire. Electronic copies of these reports can be accessed at the SEC’s website (<http://www.sec.gov>) and indirectly through Berkshire’s website (<http://www.berkshirehathaway.com>). Copies of these reports may also be obtained, free of charge, upon written request to: Berkshire Hathaway Inc., 3555 Farnam Street, Omaha, NE 68131, Attn: Corporate Secretary.

Item 1A. Risk Factors

Berkshire and its subsidiaries (referred to herein as “we,” “us,” “our” or similar expressions) are subject to certain risks and uncertainties in its business operations which are described below. The risks and uncertainties described below are not the only risks we face. Additional risks and uncertainties that are presently unknown or are currently deemed immaterial may also impair our business operations.

General Business Risks

Terrorist acts could hurt our operating businesses.

A cyber, biological, nuclear or chemical terrorist attack could produce significant losses to our worldwide operations. Our business operations could be adversely affected from such acts through the loss of human resources or destruction of production facilities and information systems. We share the risk with all businesses.

Cyber security risks

We rely on technology in virtually all aspects of our business. Like those of many large businesses, certain of our information systems have been subject to computer viruses, malicious codes, unauthorized access, phishing efforts, denial-of-service attacks and other cyber-attacks. We expect to be subject to similar attacks in the future as such attacks become more sophisticated and frequent. A significant disruption or failure of our technology systems could result in service interruptions, safety failures, security events, regulatory compliance failures, an inability to protect information and assets against unauthorized users and other operational difficulties. Attacks perpetrated against our systems could result in loss of assets and critical information and expose us to remediation costs and reputational damage.

Although we have taken steps intended to mitigate these risks, including business continuity planning, disaster recovery planning and business impact analysis, a significant disruption or cyber intrusion at one or more of our significant operations could adversely affect our results of operations, financial condition and liquidity. Additionally, if we are unable to acquire, develop, implement, adopt or protect rights around new technology, we may suffer a competitive disadvantage, which could also have an adverse effect on our results of operations, financial condition and/or liquidity.

Cyber-attacks could further adversely affect our ability to operate facilities, information technology and business systems or compromise confidential customer and employee information. Political, economic, social or financial market instability or damage to or interference with our operating assets, customers or suppliers from cyber-attacks may result in business interruptions, lost revenues, higher commodity prices, disruption in fuel supplies, lower energy consumption, unstable markets, increased security, repair or other costs, or may materially adversely affect us in ways that cannot be predicted at this time. Any of these risks could materially affect our consolidated financial results. Furthermore, instability in the financial markets resulting from terrorism, sustained or significant cyber-attacks or war could also have a material adverse effect on our ability to raise capital. We share these risks with all businesses.

We are dependent on a few key people for our major investment and capital allocation decisions.

Major investment decisions and all major capital allocation decisions are made by Warren E. Buffett, Chairman of the Board of Directors and Chief Executive Officer, age 92, in consultation with Charles T. Munger, Vice Chairman of the Board of Directors, age 99. In 2018, Berkshire’s Board of Directors appointed Mr. Gregory Abel as Vice Chairman of Berkshire’s non-insurance operations and Mr. Ajit Jain as Vice Chairman of Berkshire’s insurance operations. Mr. Abel and Mr. Jain each report directly to Mr. Buffett. Mr. Buffett continues to be responsible for major capital allocation and investment decisions.

If for any reason the services of our key personnel, particularly Mr. Buffett, were to become unavailable, there could be a material adverse effect on our operations. Should a replacement for Mr. Buffett be needed currently, Berkshire’s Board of Directors has agreed that Mr. Abel should replace Mr. Buffett. The Board continually monitors this risk and could alter its current view regarding a replacement for Mr. Buffett in the future. We believe that the Board’s succession plan, together with the outstanding managers running our numerous and highly diversified operating units helps to mitigate this risk.

We need qualified personnel to manage and operate our various businesses.

In our decentralized business model, we need qualified and competent management to direct day-to-day business activities of our operating subsidiaries and to manage changes in future business operations due to changing business or regulatory environments. Our operating subsidiaries also need qualified and competent personnel to execute business plans and serve their customers, suppliers and other stakeholders. Our inability to recruit, train and retain qualified and competent managers and personnel could negatively affect the operating results, financial condition and liquidity of our subsidiaries and Berkshire as a whole.

Investments are unusually concentrated in equity securities and fair values are subject to loss in value.

We concentrate a high percentage of the equity security investments of our insurance subsidiaries in a relatively small number of issuers. A significant decline in the fair values of our larger investments in equity securities may produce a material decline in our consolidated shareholders' equity and our consolidated earnings.

Since a large percentage of our equity securities are held by our insurance subsidiaries, significant decreases in the fair values of these investments will produce significant declines in the statutory surplus of our insurance subsidiaries. Our large statutory surplus is a competitive advantage, and a long-term material decline could have an adverse effect on our claims-paying ability ratings and our ability to write new insurance business thus potentially reducing our future underwriting profits.

Competition and technology may erode our business franchises and result in lower earnings.

Each of our operating businesses face intense competition within markets in which they operate. While we manage our businesses with the objective of achieving long-term sustainable growth by developing and strengthening competitive advantages, many factors, including technological changes, may erode or prevent the strengthening of competitive advantages. Accordingly, our future operating results will depend to some degree on our operating units successfully protecting and enhancing their competitive advantages. If our operating businesses are unsuccessful in these efforts, our periodic operating results in the future may decline.

Unfavorable general economic conditions may significantly reduce our operating earnings and impair our ability to access capital markets at a reasonable cost.

Our operating businesses are subject to normal economic cycles affecting the general economy or the specific industries in which they operate. Significant deteriorations of economic conditions, including significant inflation over a prolonged period could produce a material adverse effect on one or more of our significant operations. In addition, our utilities and energy businesses and our railroad business regularly utilize debt as a component of their capital structures and depend on having access to borrowed funds through the capital markets at reasonable rates. To the extent that access to the capital markets is restricted or the cost of funding increases, these operations could be adversely affected.

Epidemics, pandemics or other similar outbreaks could hurt our operating businesses.

The outbreak of epidemics, pandemics or other similar outbreaks in the future may adversely affect our operations, including the value of our equity securities portfolio. This may be due to closures or restrictions requested or mandated by governmental authorities, disruption to supply chains and workforce, reduction of demand for our products and services, credit losses when customers and other counterparties fail to satisfy their obligations to us, and volatility in global equity securities markets, among other factors. We share most of these risks with all businesses.

Regulatory changes may adversely impact our future operating results.

Over time, in response to financial markets crises, global economic recessions, and social and environmental issues, regulatory initiatives were adopted in the United States and elsewhere. Such initiatives addressed, for example, the regulation of banks and other major financial institutions, the regulation of products and environmental and global-warming matters. These initiatives impact all of our businesses, albeit in varying ways. Increased regulatory compliance costs could have a significant negative impact on our operating businesses, as well as on the businesses in which we have a significant, but not controlling economic interests. We cannot predict whether such initiatives will have a material adverse impact on our consolidated financial position, results of operations and/or cash flows.

Data privacy regulations have recently been enacted in various jurisdictions in the U.S. and throughout the world. These regulations address numerous aspects related to the security of personal information that is stored in our information systems, networks and facilities. Failure to comply with these regulations could result in reputational damage and significant penalties.

Climate change and the regulation of greenhouse gas (“GHG”) emissions may impact our businesses.

The impacts of climate change and the regulation of GHG emissions could impact our businesses to varying degrees. Climate change could cause or intensify hurricanes, floods, wildfires, and other extreme weather events that may increase physical risks to and impacts on our operations. An increase in the frequency or intensity of extreme weather events and storms could impact the physical assets of our non-insurance operations and could produce losses affecting our businesses. Similarly, extreme weather events may produce losses affecting our insurance operations as their primary business is to monitor, assess and price risk, including climate-related risk, at an expected economic profit to address the risk-transfer needs of their insurance customers.

Additional GHG policies, including legislation, may emerge that accelerate the transition to a lower GHG emitting economy and could, in turn, increase costs for our businesses to comply with those policies, including BNSF and BHE, which combined represent more than 90% of Berkshire's direct emissions. The failure to comply with new or existing regulations or reinterpretation of existing regulations relating to climate change could have a significant adverse effect on our financial results.

Risks unique to our regulated businesses

Our tolerance for risk in our insurance businesses may result in significant underwriting losses.

When properly paid for the risk assumed, we have been and will continue to be willing to assume more risk from a single event than any other insurer has knowingly assumed. Accordingly, we could incur a significant loss from a single catastrophe event resulting from a natural disaster or man-made catastrophes such as terrorism or cyber-attacks. We employ various disciplined underwriting practices intended to mitigate potential losses and attempt to take into account all possible correlations and avoid writing groups of policies from which pre-tax losses from a single catastrophe event might aggregate in excess of \$15 billion. However, despite our efforts, it is possible that losses could manifest in ways that we do not anticipate and that our risk mitigation strategies are not designed to address. Various provisions of our policies, negotiated to limit our risk, such as limitations or exclusions from coverage, may not be enforceable in the manner we intend, as it is possible that a court or regulatory authority could nullify or void an exclusion or limitation, or legislation could be enacted modifying or barring the use of these exclusions and limitations. Our tolerance for significant insurance losses may result in lower reported earnings in a future period.

The principal cost associated with the property and casualty insurance business is claims. In writing property and casualty insurance policies, we receive premiums today and promise to pay covered losses in the future. However, it will take decades before all claims that have occurred as of any given balance sheet date will be reported and settled. Although we believe that liabilities for unpaid losses are adequate, we will not know whether these liabilities or the premiums charged for the coverages provided were sufficient until well after the balance sheet date. Estimating insurance claim costs is inherently imprecise. It is possible that significant claims may emerge or develop in the future from the policies we have written in the past. As industry practices and legal, social and other environmental conditions change, unexpected and unintended issues related to claims and coverage may emerge, including new or expanded theories of liability. These or other changes could impose new financial obligations on us by extending coverage beyond our underwriting intent. In some instances, these changes may not become apparent until sometime after we have issued insurance or reinsurance contracts that are affected by the changes. As a result, the full extent of liability under our insurance or reinsurance contracts may not be known for many years after a contract is issued. Our estimated unpaid losses arising under contracts covering property and casualty insurance risks are large (\$143 billion at December 31, 2022), and a small percentage increase to those liabilities can result in materially lower reported earnings.

Changes in regulations and regulatory actions can adversely affect our operating results and our ability to allocate capital.

Our insurance businesses are subject to regulation in the jurisdictions in which we operate. Such regulations may relate to among other things, the types of business that can be written, the rates that can be charged for coverage, the level of capital that must be maintained, and restrictions on the types and size of investments that can be made. Regulations may also restrict the timing and amount of dividend payments to Berkshire by these businesses. U.S. state insurance regulators and international insurance regulators are also actively developing various regulatory mechanisms to address the regulation of large internationally active insurance groups, including regulations concerning group capital, liquidity, governance and risk management. Accordingly, changes in regulations related to these or other matters or regulatory actions imposing restrictions on our insurance businesses may adversely impact our results of operations and restrict our ability to allocate capital.

Our railroad business conducted through BNSF is also subject to a significant number of laws and regulations with respect to rates and practices, taxes, railroad operations and a variety of health, safety, labor, environmental and other matters. Failure to comply with applicable laws and regulations could have a material adverse effect on BNSF's business. Governments may change the legislative and/or regulatory framework within which BNSF operates, without providing any recourse for any adverse effects that the change may have on the business. Complying with legislative and regulatory changes may pose significant operating and implementation risks and require significant capital expenditures.

BNSF derives significant amounts of revenue from the transportation of energy-related commodities, particularly coal. To the extent that changes in government policies limit or restrict the usage of coal as a source of fuel in generating electricity or alternate fuels, such as natural gas, or displace coal on a competitive basis, revenues and earnings could be adversely affected. As a common carrier, BNSF is also required to transport toxic inhalation hazard chemicals and other hazardous materials. A release of hazardous materials could expose BNSF to significant claims, losses, penalties and environmental remediation obligations. Changes in the regulation of the rail industry could negatively impact BNSF's ability to determine prices for rail services and to make capital improvements to its rail network, resulting in an adverse effect on our results of operations, financial condition and/or liquidity.

Our utilities and energy businesses operated under BHE are highly regulated by numerous federal, state, local and foreign governmental authorities in the jurisdictions in which they operate. These laws and regulations are complex, dynamic and subject to new interpretations or change. Regulations affect almost every aspect of our utilities and energy businesses. Regulations broadly apply and may limit management's ability to independently make and implement decisions regarding numerous matters including: acquiring businesses; constructing, acquiring, disposing or retiring of operating assets; operating and maintaining generating facilities and transmission and distribution system assets; complying with pipeline safety and integrity and environmental requirements; setting rates charged to customers; establishing capital structures and issuing debt; managing and reporting transactions between our domestic utilities and our other subsidiaries and affiliates; and paying dividends or similar distributions. Failure to comply with or reinterpretations of existing regulations and new legislation or regulations, such as those relating to air quality, climate change, emissions performance standards, water quality, coal ash disposal and other environmental matters, or changes in the nature of the regulatory process may have a significant adverse impact on our financial results.

Our railroad business requires significant ongoing capital investment to improve and maintain its railroad network so that transportation services can be safely and reliably provided to customers on a timely basis. Our utilities and energy businesses also require significant amounts of capital to construct, operate and maintain generation, transmission and distribution systems to meet their customers' needs and reliability criteria. System assets may need to be operational for long periods of time in order to justify the financial investment. The operational or financial failure of capital projects may not be recoverable through rates that are charged to customers. Further, a significant portion of costs of capital improvements may be funded through debt issued by BNSF and BHE and their subsidiaries. Disruptions in debt capital markets that restrict access to funding when needed could adversely affect the results of operations, liquidity and/or capital resources of these businesses.

Item 1B. Unresolved Staff Comments

None.

Item 2. Description of Properties

The properties used by Berkshire's business segments are summarized in this section. Berkshire's railroad and utilities and energy businesses, in particular, utilize considerable physical assets in their businesses.

Railroad Business—Burlington Northern Santa Fe

Through BNSF Railway, BNSF operates over 32,500 route miles of track (excluding multiple main tracks, yard tracks and sidings) in 28 states, and also operates in three Canadian provinces. BNSF owns over 23,000 route miles, including easements, and operates over 9,000 route miles of trackage rights that permit BNSF to operate its trains with its crews over other railroads' tracks. As of December 31, 2022, the total BNSF Railway system, including single and multiple main tracks, yard tracks and sidings, consisted of over 50,000 operated miles of track.

BNSF operates various facilities and equipment to support its transportation system, including its infrastructure, locomotives and freight cars. It also owns or leases other equipment to support rail operations, such as vehicles. Support facilities for rail operations include yards and terminals throughout its rail network, system locomotive shops to perform locomotive servicing and maintenance, a centralized network operations center for train dispatching and network operations monitoring and management, computers, telecommunications equipment, signal systems and other support systems. Transfer facilities are maintained for rail-to-rail as well as intermodal transfer of containers, trailers and other freight traffic and include approximately 25 intermodal hubs located across the system. BNSF owns or holds under non-cancelable leases exceeding one year approximately 7,500 locomotives and 68,000 freight cars, in addition to maintenance of way and other equipment.

In the ordinary course of business, BNSF incurs significant costs in repairing and maintaining its properties. In 2022, BNSF recorded approximately \$2 billion in repairs and maintenance expense.

Utilities and Energy Businesses—Berkshire Hathaway Energy

BHE's energy properties consist of the physical assets necessary to support its electricity and natural gas businesses. Properties of BHE's electricity businesses include electric generation, transmission and distribution facilities, as well as coal mining assets that support certain of BHE's electric generating facilities. Properties of BHE's natural gas businesses include natural gas distribution facilities, interstate pipelines, storage facilities, liquefied natural gas facilities, compressor stations and meter stations. The transmission and distribution assets are primarily within each of BHE's utility service territories. In addition to these physical assets, BHE has rights-of-way, mineral rights and water rights that enable BHE to utilize its facilities. Pursuant to separate financing agreements, the majority of these properties are pledged or encumbered to support or otherwise provide the security for the related subsidiary debt. BHE or its affiliates own or have interests in the following types of operating electric generating facilities at December 31, 2022:

Energy Source	Entity	Location by Significance	Facility Net Capacity (MW) ⁽¹⁾	Net Owned Capacity (MW) ⁽¹⁾
Wind	PacifiCorp, MEC, BHE Canada, BHE Montana and BHE Renewables	Iowa, Wyoming, Texas, Montana, Nebraska, Washington, California, Illinois, Canada, Oregon and Kansas	12,282	12,282
Natural gas	PacifiCorp, MEC, NV Energy, BHE Canada and BHE Renewables	Nevada, Utah, Iowa, Illinois, Washington, Wyoming, Oregon, Texas, New York, Arizona and Canada	11,284	11,005
Coal	PacifiCorp, MEC and NV Energy	Wyoming, Iowa, Utah, Nevada, Colorado and Montana	13,210	8,178
Solar	MEC, NV Energy, Northern Powergrid and BHE Renewables	California, Australia, Texas, Arizona, Iowa, Minnesota and Nevada	2,120	1,972
Hydroelectric	PacifiCorp, MEC and BHE Renewables	Washington, Oregon, Idaho, Utah, Hawaii, Montana, Illinois, California and Wyoming	985	985
Nuclear	MEC	Illinois	1,822	455
Geothermal	PacifiCorp and BHE Renewables	California and Utah	377	377
		Total	<u>42,080</u>	<u>35,254</u>

⁽¹⁾ Facility Net Capacity in megawatts (MW) represents the lesser of nominal ratings or any limitations under applicable interconnection, power purchase, or other agreements for intermittent resources and the total net dependable capability available during summer conditions for all other units. An intermittent resource's nominal rating is the manufacturer's contractually specified capability (in MW) under specified conditions. Net Owned Capacity indicates BHE's ownership of Facility Net Capacity.

As of December 31, 2022, BHE's subsidiaries also have electric generating facilities that are under construction in Nevada and Wyoming having total Facility Net Capacity and Net Owned Capacity of 243 MW.

PacifiCorp, MEC and NV Energy own electric transmission and distribution systems, including approximately 27,800 miles of transmission lines and approximately 1,670 substations, and gas distribution facilities, including approximately 28,200 miles of gas mains and service lines.

Northern Powergrid (Northeast) and Northern Powergrid (Yorkshire) operate an electricity distribution network that includes approximately 17,040 miles of overhead lines, approximately 43,400 miles of underground cables and approximately 810 major substations. AltaLink's electricity transmission system includes approximately 8,300 miles of transmission lines and approximately 310 substations.

The BHE GT&S pipeline system consists of approximately 5,400 miles of natural gas transmission, gathering and storage pipelines located in portions of Maryland, New York, Ohio, Pennsylvania, Virginia, West Virginia, South Carolina and Georgia. Storage services are provided through the operation of 17 underground natural gas storage fields located in Pennsylvania, West Virginia and New York. BHE GT&S also operates, as the general partner, and owns a 25% limited partnership interest in one liquefied natural gas export, import and storage facility in Maryland and operates and has ownership interests in three smaller liquefied natural gas facilities in Alabama, Florida and Pennsylvania.

Northern Natural's pipeline system consists of approximately 14,400 miles of natural gas pipelines, including approximately 5,900 miles of mainline transmission pipelines and approximately 8,500 miles of branch and lateral pipelines. Northern Natural's end-use and distribution market area includes points in Iowa, Nebraska, Minnesota, Wisconsin, South Dakota, Michigan and Illinois and its natural gas supply and delivery service area includes points in Kansas, Texas, Oklahoma and New Mexico. Storage services are provided through the operation of one underground natural gas storage field in Iowa, two underground natural gas storage facilities in Kansas and two liquefied natural gas storage peaking units, one in Iowa and one in Minnesota.

Kern River's system consists of approximately 1,400 miles of natural gas pipelines, which extends from the system's point of origination in Wyoming through the Central Rocky Mountains into California.

Other Segments

Significant physical properties used by Berkshire's other business segments are summarized below:

Business	Country	Locations	Property/Facility type	Number of Properties	
				Owned	Leased
Insurance:					
GEICO	U.S.		Offices and claims centers	10	107
BHRG	U.S.		Offices	1	34
	Non-U.S.	Locations in 26 countries	Offices	1	51
BH Primary	U.S.		Offices	5	52
	Non-U.S.	Locations in 7 countries	Offices	—	15
Manufacturing					
	U.S.		Manufacturing facility	513	114
			Offices/Warehouses	225	472
			Retail/Showroom	230	205
			Housing subdivisions	322	—
	Non-U.S.	Locations in 63 countries	Manufacturing facility	176	107
			Offices/Warehouses	109	465
Service					
	U.S.		Training facilities/Hangars	11	88
			Offices/Distribution	16	136
			Production facilities	4	4
			Leasing/Showroom/Retail	34	40
	Non-U.S.	Locations in 18 countries	Training facilities/Hangars	1	16
			Offices/Distribution	—	39
McLane					
	U.S.		Distribution centers/Offices	63	28
Retailing					
	U.S.		Offices/Warehouses	23	27
			Retail/Showroom	141	466
	Non-U.S.	Locations in 6 countries	Retail/Offices/Warehouses	1	95

Item 3. Legal Proceedings

Berkshire and its subsidiaries are parties in a variety of legal actions that routinely arise out of the normal course of business, including legal actions seeking to establish liability directly through insurance contracts or indirectly through reinsurance contracts issued by Berkshire subsidiaries. Plaintiffs occasionally seek punitive or exemplary damages. We do not believe that such normal and routine litigation will have a material effect on our financial condition or results of operations. Berkshire and certain of its subsidiaries are also involved in other kinds of legal actions, some of which assert or may assert claims or seek to impose fines and penalties. We currently believe that any liability that may arise as a result of other pending legal actions will not have a material effect on our consolidated financial condition or results of operations.

Item 4. Mine Safety Disclosures

Information regarding the Company's mine safety violations and other legal matters disclosed in accordance with Section 1503 (a) of the Dodd-Frank Reform Act is included in Exhibit 95 to this Form 10-K.

Executive Officers of the Registrant

Following is a list of the Registrant's named executive officers:

Name	Age	Position with Registrant	Since
Warren E. Buffett	92	Chairman and Chief Executive Officer	1970
Charles T. Munger	99	Vice Chairman	1978
Gregory E. Abel	60	Vice Chairman – Non-Insurance Operations	2018
Ajit Jain	71	Vice Chairman – Insurance Operations	2018
Marc D. Hamburg	73	Senior Vice-President – Chief Financial Officer	1992

Each executive officer serves, in accordance with the by-laws of the Registrant, until the first meeting of the Board of Directors following the next annual meeting of shareholders and until a successor is chosen and qualified or until such executive officer sooner dies, resigns, is removed or becomes disqualified.

FORWARD-LOOKING STATEMENTS

Investors are cautioned that certain statements contained in this document as well as some statements in periodic press releases and some oral statements of Berkshire officials during presentations about Berkshire or its subsidiaries are “forward-looking” statements within the meaning of the Private Securities Litigation Reform Act of 1995 (the “Act”). Forward-looking statements include statements which are predictive in nature, which depend upon or refer to future events or conditions, or which include words such as “expects,” “anticipates,” “intends,” “plans,” “believes,” “estimates” or similar expressions. In addition, any statements concerning future financial performance (including future revenues, earnings or growth rates), ongoing business strategies or prospects and possible future Berkshire actions, which may be provided by management, are also forward-looking statements as defined by the Act. Forward-looking statements are based on current expectations and projections about future events and are subject to risks, uncertainties and assumptions about Berkshire and its subsidiaries, economic and market factors and the industries in which we do business, among other things. These statements are not guarantees of future performance and we have no specific intention to update these statements.

Actual events and results may differ materially from those expressed or forecasted in forward-looking statements due to a number of factors. The principal risk factors that could cause our actual performance and future events and actions to differ materially from such forward-looking statements include, but are not limited to, changes in market prices of our investments in fixed maturity and equity securities; losses realized from derivative contracts; the occurrence of one or more catastrophic events, such as an earthquake, hurricane, act of terrorism or cyber-attack that causes losses insured by our insurance subsidiaries and/or losses to our business operations; the frequency and severity of epidemics, pandemics or other outbreaks, that negatively affect our operating results and restrict our access to borrowed funds through the capital markets at reasonable rates; changes in laws or regulations affecting our insurance, railroad, utilities and energy and finance subsidiaries; changes in federal income tax laws; and changes in general economic and market factors that affect the prices of securities or the industries in which we do business.

Part II

Item 5. Market for Registrant's Common Equity, Related Security Holder Matters and Issuer Purchases of Equity Securities

Market Information

Berkshire's Class A and Class B common stock are listed for trading on the New York Stock Exchange, trading symbols: BRK.A and BRK.B, respectively.

Shareholders

Berkshire had approximately 1,300 record holders of its Class A common stock and 18,700 record holders of its Class B common stock at February 13, 2023. Record owners included nominees holding at least 334,000 shares of Class A common stock and 1,297,000,000 shares of Class B common stock on behalf of beneficial-but-not-of-record owners.

Dividends

Berkshire has not declared a cash dividend since 1967.

Common Stock Repurchase Program

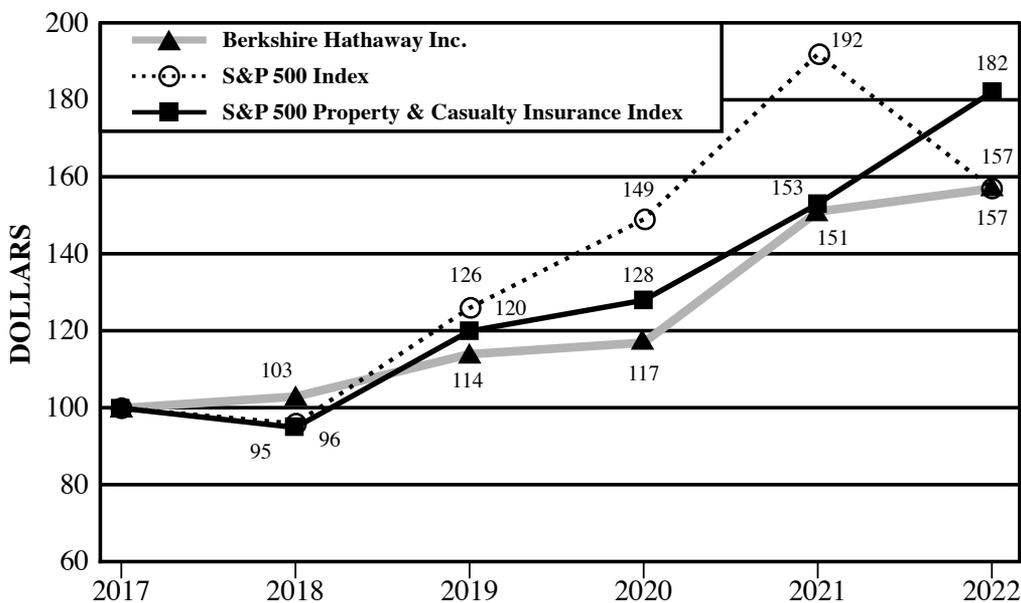
Berkshire's common stock repurchase program permits Berkshire to repurchase its Class A and Class B shares at any time that Warren Buffett, Berkshire's Chairman of the Board and Chief Executive Officer, and Charles Munger, Vice Chairman of the Board, believe that the repurchase price is below Berkshire's intrinsic value, conservatively determined. Repurchases may be in the open market or through privately negotiated transactions. Information with respect to Berkshire's Class A and Class B common stock repurchased during the fourth quarter of 2022 follows.

Period	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of publicly announced program	Maximum number or value of shares that yet may be repurchased under the program
October				
Class A common stock	1,550	\$ 426,592.77	1,550	*
Class B common stock	—	\$ —	—	*
November				
Class A common stock	2,146	\$ 463,584.86	2,146	*
Class B common stock	—	\$ —	—	*
December				
Class A common stock	584	\$ 468,113.93	584	*
Class B common stock	3,046,794	\$ 303.83	3,046,794	*

* The program does not specify a maximum number of shares to be repurchased or obligate Berkshire to repurchase any specific dollar amount or number of Class A or Class B shares and there is no expiration date to the repurchase program. Berkshire will not repurchase its common stock if the repurchases reduce the total value of Berkshire's consolidated cash, cash equivalents and U.S. Treasury Bills holdings to less than \$30 billion.

Stock Performance Graph

The following chart compares the subsequent value of \$100 invested in Berkshire common stock on December 31, 2017 with a similar investment in the Standard & Poor's 500 Stock Index and in the Standard & Poor's Property – Casualty Insurance Index**.



* Cumulative return for the Standard & Poor's indices based on reinvestment of dividends.

** It would be difficult to develop a peer group of companies similar to Berkshire. The Corporation owns subsidiaries engaged in a number of diverse business activities of which an important component is the property and casualty insurance business. Accordingly, management has used the Standard & Poor's Property—Casualty Insurance Index for comparative purposes.

Item 6. [Reserved]