

ISSUE BRIEF : Q1 2020

WISCONSIN COMPANIES EXPLAIN CLIMATE CHANGE AND SEVERE WEATHER RISK



BUSINESSFORWARD
FOUNDATION

EXECUTIVE SUMMARY

This report examines how severe weather is disrupting supply chains, distorting commodity prices, damaging plants and equipment, and hurting consumer demand for Wisconsin businesses. It is meant to serve as a resource for local, state, and Congressional officials and media interested in energy and climate change policy. Specifically, the points made here should help media and elected officials answer a simple question about climate change: Can we fix climate change without wrecking our economy?

Wisconsin's top entrepreneurs, executives, investors, and small business owners are changing how they build, where they locate, and how they insure their assets. They are creating new business lines and models to mitigate the effects of climate change. And they are issuing warnings to their investors about climate change that skeptics in Madison and Washington, D.C. should not ignore.

Severe weather affects Wisconsin's greatest competitive advantages, including fast-moving global supply chains, model climate for corn and soybeans, and ready access to the Great Lakes. Severe weather is affecting key industries, from farms and orchards to retailers, railroads, restaurants, and shipping.

Business Forward has worked with more than 2,000 entrepreneurs, executives, and small business owners across Wisconsin. These leaders have helped brief Congress, the White House, and state legislatures on a range of issues, including tax reform, trade agreements, infrastructure investment, and immigration reform. More than 600 of them have participated in our climate change and clean energy program, where they have learned about renewable energy options and shared their experience managing severe weather costs.

**7 OF WISCONSIN'S 9
FORTUNE 500
COMPANIES
HAVE ISSUED WARNINGS TO
THEIR INVESTORS, AS WELL AS
INDUSTRY LEADERS IN RETAIL,
ENERGY, MANUFACTURING,
AND MORE.**

KEY THEMES FROM FORTUNE 500 WARNINGS ABOUT CLIMATE CHANGE

“JUST IN TIME” INVENTORY AND GLOBAL SUPPLY CHAINS RAISE RISK

To boost profits, U.S. companies source from across the globe, encourage suppliers to specialize, and reduce overhead costs by operating with as little as two to four hours of parts inventory on site.

As our supply chains grow more global, more specialized, and faster, severe weather events become more expensive.

HIGHER TEMPERATURES THREATEN COMPARATIVE ADVANTAGES ACROSS SUPPLY CHAINS

Since 1950, Wisconsin’s average annual rainfall has increased four to six inches.¹

Higher temperatures have elevated both the frequency and intensity of precipitation, decreasing corn yields and subsequently raising prices for the dairy industry.²

DAMAGE TO THE DEVELOPING WORLD HURTS U.S. COMPANIES

Developing markets face greater climate risk: their populations live in hotter climates and are concentrated in coastal areas with poor infrastructure.

This hurts Fortune 500 companies, because those developing markets are expected to drive their future growth.³

WEATHER CAN BE THE DIFFERENCE BETWEEN A GOOD YEAR AND GOING OUT OF BUSINESS

For retailers, restaurants, and the entertainment industry, weather can make or break their year.

Good weather allows golf courses to sell more afternoon rounds and restaurants and sports teams to fill outdoor seating. For low-margin businesses, marginal sales are critical to survival.

SMALL BUSINESSES ARE LESS LIKELY TO SURVIVE SEVERE WEATHER LOSSES

They have smaller cash reserves, are more likely to operate out of a single location, less likely to have backup systems, and have a harder time relocating.

Small businesses are more likely to shut down due to severe weather events, and their failures are bad news for the big companies they supply.

CLIMATE CHANGE HITS WISCONSIN WHERE IT HURTS - INFRASTRUCTURE

Wisconsin's infrastructure is particularly vulnerable to severe weather events. According to the American Society of Civil Engineers (ASCE), **198** dams are at high hazard potential and **1,245** bridges are structurally deficient. **Twenty-eight percent** of the state's public roads are in poor condition, ranking **5th** worst in the country and costing the average driver more than **\$700** each year. Wisconsin needs more than **\$8.5 billion** of infrastructure investment to meet drinking water needs over the next 20 years.⁴

The Federal Government has been underfunding infrastructure for years, resulting in a system that fails: the ASCE gave the United States a **D+** on infrastructure in 2017.⁵ According to the Des Moines Register, Wisconsin has the **15th worst** infrastructure in the United States.⁶ Without a strong federal partner, local and state governments are left to plan and fund infrastructure investments on their own. A high number of governmental units makes coordinating policy and collaborating more difficult. Wisconsin has **3,128** total governmental units, ranking **10th** highest in the country.⁷

Because of these factors, Wisconsin companies are warning investors that climate change threatens to reduce productivity and profits.

15TH
WORST
INFRASTRUCTURE
IN THE U.S.

28%
OF ROADS
ARE IN POOR
CONDITION
5TH WORST IN U.S.

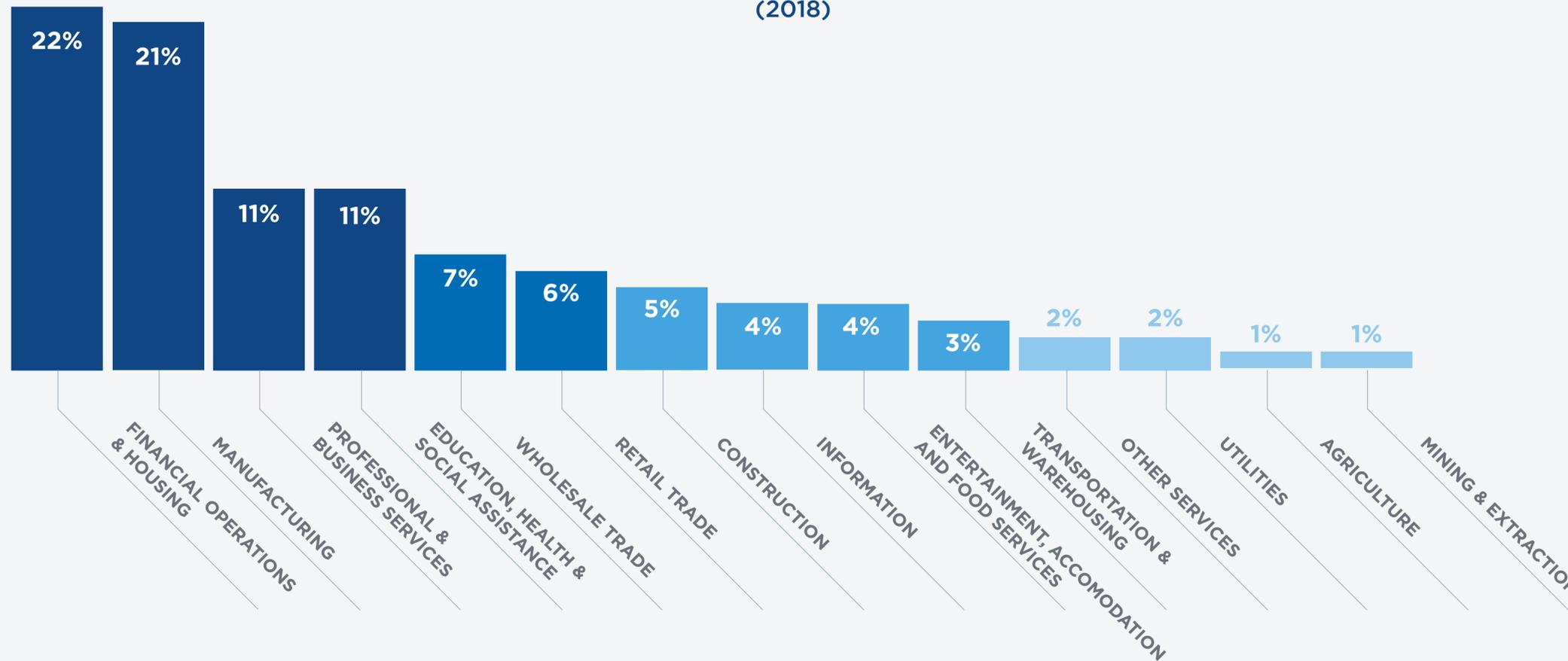
1,245
BRIDGES ARE
STRUCTURALLY
DEFICIENT

\$8.5 BILLION
IN DRINKING WATER
INFRASTRUCTURE
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20 YEARS

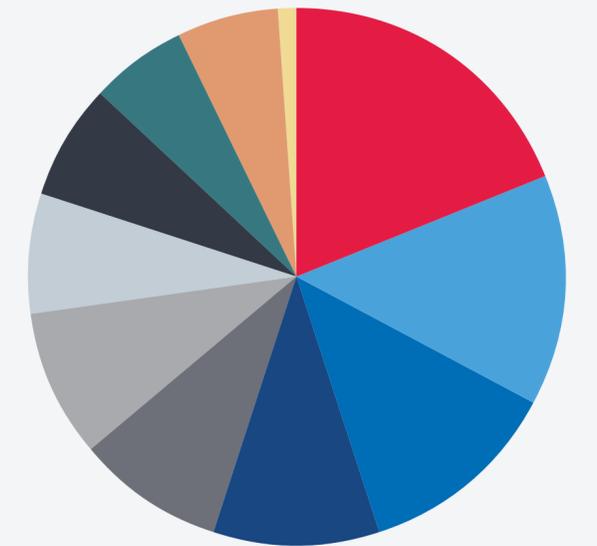
A SNAPSHOT OF WISCONSIN'S ECONOMY



GROSS DOMESTIC PRODUCT BY INDUSTRY (2018)



EMPLOYMENT BY INDUSTRY (2018)



- 19% - OFFICE MANAGEMENT & SUPPORT
- 14% - FINANCIAL OPERATIONS & SALES
- 12% - MANUFACTURING
- 10% - CONSTRUCTION & MAINTENANCE
- 9% - FOOD SERVICES & AGRICULTURE
- 9% - HEALTH CARE
- 7% - TRANSPORTATION & SHIPPING
- 7% - PERSONAL & PROTECTIVE SERVICES
- 6% - EDUCATION
- 6% - SKILL INTENSIVE
- 1% - ENTERTAINMENT

SOURCE: GDP FROM THE BUREAU OF ECONOMIC ANALYSIS. EMPLOYMENT FROM THE BUREAU OF LABOR STATISTICS. POPULATION FROM THE CENSUS BUREAU. ENERGY FROM EIA.

HOW SEVERE WEATHER AFFECTS KEY WISCONSIN INDUSTRIES

AIRPORTS

Wisconsin has international airports in Milwaukee and Green Bay. Major airlines, including **American Airlines** and **United Airlines**, fly through both General Mitchell International (MKE)⁸ and Austin Straubel International (GRB).⁹

American Airlines reports that their operations and financial condition are vulnerable to factors out of their control, such as “weather and natural disasters, including increases in such disasters and related costs caused by more severe weather due to climate change.”¹⁰ **United Airlines** similarly warns, “We may incur substantial costs as a result of changes in weather patterns due to climate change.”¹¹

Southwest Airlines warns, “adverse weather and natural disasters such as hurricanes and earthquakes in third quarter 2017... resulted in approximately \$100 million in reduced revenues for the company as a result of approximately 5,000 canceled flights.”¹² In the third quarter of 2018, Southwest had to cancel another 2,200 flights because of extreme weather.¹³

Delta Airlines reports, “Severe weather conditions and natural disasters (or other environmental events) can significantly disrupt service and create air traffic control problems. These events decrease revenue and can also increase costs.” The airline cautions investors about “increases in the frequency... [of] severe weather events, including from changes in the global climate.”¹⁴

Smaller airlines are even more susceptible to the effects of climate change. **Frontier Airlines**, which flies through both MKE and GRB, warns investors: “Cancellations or delays due to adverse weather conditions or natural disasters... may affect us to a greater degree than other, larger airlines.”¹⁵



WISCONSIN HAS HAD 12 BILLION-DOLLAR WEATHER AND CLIMATE DISASTERS SINCE 2011¹⁶

Nine Fortune 500 companies are headquartered in Wisconsin, seven of which have issued warnings about severe weather.

Companies operating factories, farms, shops, restaurants, or hotels in Wisconsin have reported that rising temperatures, extreme weather, and drought are affecting their operations here.

Many also report that severe weather is increasingly affecting their global operations. As Wisconsin businesses grow, their severe weather risks grow, too.

AGRICULTURE AND FOOD PROCESSING

The agriculture sector is essential to Wisconsin's economy, which ranks first nationally in production of cheese, cranberries, ginseng, and more.¹⁷ Wisconsin ranks second in milk production; "America's Dairyland" produced 2.6 billion pounds of milk in 2019, behind only California.¹⁸

With 64,800 farms across 14.3 million acres, Wisconsin's agriculture sector supports more than 400,000 jobs.¹⁹ The state's top four crops are corn, hay, soybeans, and potatoes.²⁰ It is predicted that for every degree Celsius (1.8 degrees Fahrenheit) that the Earth warms, corn yields will go down an average of 7.4 percent.²¹ Dairy is at the heart of Wisconsin's economy, and the cost of dairy products will rise with corn prices because corn is a major feedstock for the dairy industry; as a result, the demand for milk will decrease as temperatures keep rising.

Wisconsin has experienced a rise in annual precipitation and heavy rain events. Both are expected to continue rising, elevating flood risk and threatening farm yields. Future droughts are also expected to be more intense, as warmer temperatures exacerbate dry soil conditions.²²

Warmer temperatures in early spring damage fruit crops; when frosts come after abnormally warm periods, early budding trees struggle.²³ A professor of agronomy and environmental studies at University of Wisconsin-Madison found that "about one-third of the variability in the trend of those (farmers') yields over the last 30 to 40 years from county to county has been explained by trends in climate, basically temperatures and precipitation... That's a pretty big explanatory response that we've proved there."²⁴

Due to increasingly severe and unpredictable weather conditions, farmers in Wisconsin are dealing with higher maintenance costs, lower soil productivity, and ultimately lower crop yields. The state's entire agriculture and food processing sector is feeling the effects. Wisconsin's food processing industry includes 260,000 jobs and 70 food distribution centers. Almost 1,400 food and beverage processing companies have facilities in the state, including **Coca-Cola**, **Kraft Heinz**, **Nestle**, and **Pepsi**.²⁵

“

Climate change could affect our ability to procure needed commodities at costs and quantities we currently experience and may require us to make additional unplanned capital expenditures.

”

- TYSON FOODS

“

We suffered a serious direct hit on our farm with about 15 minutes of 100-mile-an-hour winds, and probably a small tornado or two... So, yes, we've seen climate change. I've been out here for 33 years watching weather events change -- they are becoming more erratic and the storms are becoming stronger.

”

- MIKE MILES
ANATHOTH COMMUNITY FARM,
POLK COUNTY²⁶

Coca-Cola has a factory in Milwaukee and expresses concern for how climate change will affect its business: “Climate change may have long-term direct and indirect implications for our business and supply chain.”²⁷ The company’s official statement explains, “the consensus on climate science is increasingly unequivocal - global climate change is happening and man-made greenhouse gas emissions are a crucial factor.”²⁸

New Berlin is home to a **PepsiCo** facility. PepsiCo warns investors that “weather conditions (including any potential effects of climate change)” could disrupt supply chains or cause shortages in resources.²⁹ Operating in Beaver Dam, the **Kraft Heinz Company** warns investors that global climate change can affect prices of raw materials, agricultural products, and energy.³⁰

Food processor **Tyson Foods** has two major plants in Wisconsin, one in Green Bay and one in New London. Tyson warns its investors that “climate change could affect our ability to procure needed commodities at costs and in quantities we currently experience and may require us to make additional unplanned capital expenditures.”³¹

Multinational food manufacturer **Kellogg Company** has multiple locations in Wisconsin, including Menomonee Falls. Kellogg reports, “the food system and global supply chain is becoming increasingly vulnerable to acute shocks, leading to increased prices and volatility... [which could] unfavorably impact the cost or availability of raw or packaging materials.”³²

“The food system and global supply chain is becoming increasingly vulnerable to acute shocks, leading to increased prices and volatility... [which could] unfavorably impact the cost or availability of raw or packaging materials.”

- KELLOGG COMPANY

“I’ve never seen anything like this before... Farmers around here have been beat down to nothing, then the flood comes through... Farmers are drowning in debt and forced to work off the farm, we are up against a wall and no one is listening.”

- CRAIG DUNNUM
FOURTH GENERATION FARMER,
SOUTH-CENTRAL WISCONSIN³³



HOW SEVERE WEATHER AFFECTS CASH CROPS (AND FOOD PRICES)

1. Consistently warmer temperatures stress plants and livestock, reducing crop yields and livestock health.
2. Rising surface temperatures are disrupting weather patterns, affecting rainfall, and even altering the timing and duration of growing seasons.
3. More severe storms are damaging crops and livestock.

HEALTH CARE & PHARMACEUTICALS

The increase in extreme heat is a health hazard for Wisconsinites. High temperatures can harm air quality and increase ozone at the ground-level. Diseases carried by insects may also increase. People with allergies can expect longer and more severe pollen seasons; the ragweed season in Madison and La Crosse has become two weeks longer than it was in 1995.³⁴ By 2050, Wisconsin could experience two weeks of dangerous heat per year. Higher temperatures can lead to heat stroke and dehydration, particularly in densely populated areas like Milwaukee.³⁵

The Midwest is home to Fortune 500 leaders in health and pharmaceuticals, including **Walgreens** and **Cardinal Health**. **Walgreens** warns of “the long-term effects of climate change on general economic conditions and the pharmacy industry in particular, along with changes in supply, demand or available sources of energy...”³⁶ **Cardinal Health** warns investors, “supplier relationships could be interrupted or become less favorable due to events beyond our control, including natural disasters...” adding that infrastructure could be “damaged or fail...”³⁷

HOTELS

Choice Hotels International owns **Ascend**, **Comfort Inn**, and **Quality Inn**, among other subsidiaries. Choice operates hotels across Wisconsin and warns that severe weather is an unpredictable external factor that will negatively impact their business and operations.³⁸

Marriott International also owns hotels across the state, including **Sheraton** and **Westin** hotels. Marriott warns of property damages due to catastrophes “such as earthquakes, hurricanes and floods... For example, in 2018 substantial increases in property insurance costs occurred due to the severe and widespread damage caused by the 2017 Atlantic hurricane season and other natural disasters.”³⁹

Hilton operates 68 hotels in Wisconsin.⁴⁰ It warns, “factors beyond our control can reduce demand for hospitality products and services, including demand for rooms at our hotels... [such as] climate change or availability of natural resources, natural or man-made disasters and extreme weather conditions.”⁴¹

INSURANCE

Wisconsin’s insurance industry supports more than 80,000 jobs and contributes \$18 billion to the gross state product every year. The top insurance providers in Wisconsin include **The Travelers Companies**, **Erie Insurance Group**, and **Sentry Insurance Group**.⁴² Extreme weather events and the increasing unpredictability of weather patterns increase risk for insurance companies.

EFFICIENCY & CLIMATE RISK

For decades, Wisconsin companies have built increasingly large, complex and fast-moving supply chains. To reach the lowest-cost producers, Wisconsin companies depend more on Asian, South American, and African markets.

To maximize each individual supplier plant’s efficiency, Wisconsin companies have encouraged their suppliers to specialize. And, to reduce overhead costs, more Wisconsin companies are following just-in-time inventory practices, which require their global supply chains to operate with greater speed.

As their supply chains become more global, Wisconsin factories, stores, and plants grow more vulnerable to severe weather in other countries.

Travelers warns investors, “Severe weather events over the last two decades have underscored the unpredictability of future climate trends, and potentially changing climate conditions could add to the frequency and severity of natural disasters and create additional uncertainty as to future trends and exposures.”⁴³

A warning from **Erie Insurance** emphasizes the increased risk: “Changing climate conditions have added to the unpredictability, frequency and severity of natural disasters and have created additional uncertainty as to future trends and exposures.”⁴⁴

Sentry Insurance, based in Stevens Point, employs more than 2,000 associates at its headquarters and another 2,000 nationally.⁴⁵ In Sentry’s latest annual report, CEO Pete McPartland warned investors about the increasing severity of climate change: “Weather events have become more extreme, and years of drought have made the western terrain a tinderbox, throwing old assumptions about how wildfires behave out the window.”⁴⁶

Progressive Corporation and **Lincoln National Corporation** both have major presences in Wisconsin. Progressive reports that “unfortunately, our retained catastrophe losses and loss adjustment expenses from hurricanes, hail, winter storms, and the California wildfires totaled \$295 million.” The company warns that climate change could “increase how often severe weather events and other natural disasters occur.”⁴⁷ Lincoln National also warns that “more severe and more frequent natural disasters... could cause a material adverse effect on our results of operations.”⁴⁸

MANUFACTURING

Wisconsin ranks second in the country for manufacturing employment concentration and in the top ten for manufacturing company headquarters. Eighty-five percent of the Badger State’s exports are manufactured goods. The manufacturing sector includes more than 9,400 companies and 475,000 employees; about 20 percent of the state’s GDP comes from manufacturers.⁴⁹

Rockwell Automation is committed to the future of smart manufacturing. The Milwaukee-based Fortune 500 company warns investors that natural disasters, along with “power outages, fires, explosions, [and] equipment failures” can disrupt operations and infrastructure, increasing costs and making it more difficult to deliver products and services.⁵⁰

“

Changing climate conditions have added to the unpredictability, frequency and severity of natural disasters and have created additional uncertainty as to future trends and exposures.

”

- ERIE INSURANCE GROUP

“

Weather conditions have a significant impact on the timing and volume of sales... periods of dry, hot weather can decrease insecticide sales, while periods of cold and wet weather can slow sales of herbicides.

”

- SPECTRUM BRANDS

Harley-Davidson is another Fortune 500 company headquartered in Milwaukee. The motorcycle manufacturer has an 849,000 square-foot factory in Menomonee Falls⁵¹ and more than 1,400 independently owned dealerships globally.⁵² The company warns investors, “abnormally cold and/or wet conditions in a region, including impacts from hurricanes or unusual storms, could have the effect of reducing demand or changing the timing for purchases of new Harley-Davidson motorcycles.” Harley-Davidson adds, “Extreme weather may disrupt the production and supply of component parts...” addressing potential losses from a drop in demand and disruption in production.⁵³

Spectrum Brands Holdings manufactures products across industries and is based in Middleton. The company warns investors how weather impacts operations: “Weather conditions have a significant impact on the timing and volume of sales... periods of dry, hot weather can decrease insecticide sales, while periods of cold and wet weather can slow sales of herbicides.” Between 2017 and 2018, “Lawn & garden controls products decreased \$14.3 million primarily due to slower seasonal volumes and POS from unfavorable weather,” highlighting the importance of predictable and seasonally appropriate conditions.⁵⁴

John Deere has a major factory in Horicon where it manufactures lawn equipment and utility vehicles.⁵⁵ The company has more than 30 dealer locations in Wisconsin⁵⁶ and warns that “the potential physical impacts of climate change on John Deere’s facilities, suppliers and customers and therefore on John Deere’s operations are highly uncertain... [including] long-term changes in temperature levels and water availability. These potential physical effects may adversely impact the demand for John Deere’s products and the cost, production, sales and financial performance of John Deere’s operations.”⁵⁷

Regal Beloit Corporation, headquartered in Beloit, manufactures a range of products for motors and machinery, including electric motors, generators, and blowers.⁵⁸ Regal warns investors about natural disasters, which “could cause damage or disrupt our business operations, our suppliers, or our customers... these events could decrease demand for our products, could make it difficult or impossible for us to deliver products, or could disrupt our supply chain.”⁵⁹

Gardner Denver provides manufactured goods and support services to a range of customers. Based in Milwaukee, the company warns investors, “If one or more of our manufacturing facilities are damaged by severe weather... operations could be significantly interrupted. Similar interruptions could result from damage to production or other facilities that provide supplies or other raw materials to our plants or other stoppages arising from factors beyond our control.”⁶⁰

“ Natural disasters... could cause damage or disrupt our business operations, our suppliers, or our customers... these events could decrease demand for our products, could make it difficult or impossible for us to deliver products, or could disrupt our supply chain. ”

- REGAL BELOIT

“ The potential physical impacts of climate change on... John Deere’s operations are highly uncertain... These potential physical effects may adversely impact the demand for John Deere’s products and the cost, production, sales and financial performance of John Deere’s operations. ”

- JOHN DEERE

REV Group operates 18 manufacturing facilities in the United States and employs more than 7,400 people.⁵⁹ Headquartered in Milwaukee, REV warns investors that “severe weather conditions in some geographic areas may delay the timing of shipments from one quarter to another.”⁶² Another manufacturing company based in Milwaukee, **Rexnord Corporation** warns that weather conditions impact operations across industries: “Weather is an important variable affecting financial performance as it significantly impacts construction activity. Adverse weather conditions, such as prolonged periods of cold or rain... could delay or halt construction and remodeling activity, which could have a negative effect on our business.”⁶³

MILITARY

Wisconsin is home to the United States Army base at Fort McCoy. In 2017 and 2018, the base’s economic impact was more than \$1.1 billion. Fort McCoy employees nearly 2,500 people: civilians, military, and contract employees.⁶⁴ In January 2019 the Pentagon released a report examining how climate change affects our national defense: “The effects of a changing climate are a national security issue with potential impacts to Department of Defense missions, operational plans, and installations.” Of the 79 military facilities examined, about two-thirds are vulnerable to “current or future recurrent flooding” and more than one-half to “current or future drought.” In 20 years, seven more locations are expected to become vulnerable to flooding, five to drought, and seven to wildfires.⁶⁵

PORTS AND SHIPPING

Wisconsin, bordered by the Great Lakes and Mississippi River, is home to 14 port cities. More than 40 million tons of cargo move through Wisconsin’s ports every year.⁶⁶ The Great Lakes ports alone support 7,484 jobs. In 2017, maritime commerce contributed \$480 million to spending in Wisconsin, plus \$241 million in local, state, and federal taxes.⁶⁷

Warming temperatures pose a risk to economic activity in the Great Lakes. Periods of heavy rain are occurring more frequently and the warmer climate is increasing evaporation; water levels are becoming more unpredictable, making shipping in the Great Lakes less effective and more costly. Each year, Wisconsin ports see more than \$7 billion of cargo pass through.⁶⁸

Headquartered in Green Bay, **Schneider National** has been providing truckload services, supply chain management, and shipping logistics for more than 80 years.⁶⁹ Schneider reports, “[severe weather] events may disrupt freight shipments or routes, affect regional economies, destroy our assets, disrupt fuel supplies, increase fuel costs, cause lost revenue and productivity, [and] increase our maintenance costs...”⁷⁰



SEVERE WEATHER TREND

MORE SEVERE STORMS

Heavy downpours are increasing nationally. Within the last 70 years, Wisconsin’s average annual rainfall has increased four to six inches.⁷¹

Overly wet springs are bad for farming. Heavy rainfall erodes soil, depletes nutrients, and can cause diseases to spread among crops.

In July 2019, the U.S. Department of Agriculture identified 21 counties in Wisconsin as primary natural disaster areas. These counties qualified for emergency loans from the government in order to compensate for farming losses.⁷²

Major commercial shipping companies like **UPS** and **FedEx** have warned investors about the risk of climate change and severe weather. UPS reports that severe weather “may result in decreased revenues... or increased costs to operate our business, which could have a material adverse effect on our results of operations.”⁷³ FedEx similarly warns, “given the broad and global scope of our operations and our susceptibility to global macroeconomic trends, we are particularly vulnerable to the physical risks of climate change.”⁷⁴

PROFESSIONAL AND FINANCIAL SERVICES

Fortune 500 company **ManpowerGroup** is a \$19 billion business headquartered in Milwaukee.⁷⁵ Offering workforce solutions across industries, ManpowerGroup serves 400,000 clients each year and warns investors that “severe weather conditions,” “natural disasters,” and “disruptions of infrastructure,” pose a risk to global operations.⁷⁶

Fiserv is headquartered in Brookfield and offers financial services to clients in more than 100 countries.⁷⁷ Also a Fortune 500 company, Fiserv warns investors that operational failures could result from, “hurricanes, floods, fires, natural disasters, power losses,” among other factors.⁷⁸ Such disruptions affect business results and can cause clients to leave the company.

Plexus Corporation, based in Neenah, employs more than 19,000 people globally and provides services related to electronics manufacturing, supply chain management, and delivery of products to market.⁷⁹ **Plexus** warns investors about climate change: “Some of our facilities are located in areas that may be impacted by natural disasters... All facilities are subject to other natural or man-made disasters such as those related to weather events or global climate change...”⁸⁰

Derco Aerospace is a Milwaukee-based subsidiary of **Lockheed Martin** that provides logistical and technical support for aircrafts.⁸¹ Derco’s parent company warns investors about weather-related risks: “We are limited in the amount of insurance we can obtain to cover certain natural hazards such as earthquakes, fires or extreme weather conditions. We have significant operations in geographic areas prone to these risks.”⁸²



SEVERE WEATHER TREND

DROUGHT & FROST EFFECTS ON AGRICULTURE

Wisconsin’s warming climate is linked to an increase in severe weather events: rainy days and dry days. Severe drought in Wisconsin has added to the adverse conditions that farmers continue to face. Rising temperatures in early spring have caused major damage to fruit crops. Frosts after abnormally early warm conditions cause damage to trees that are budding early.⁸³

Experts have found that about one-third of the variability in farmers’ yields over the last 35 years can be explained by the changing climate.⁸⁴

RAIL

There are more than 3,300 miles of rail and 11 freight rail companies operating in Wisconsin, including four class one railroad operators: **Burlington Northern Santa Fe, Union Pacific, Canadian National, and Canadian Pacific.**⁸⁵

Burlington Northern Santa Fe has warned investors, “Severe weather, climate change and natural disasters, such as tornados, fires, flooding and earthquakes, could cause significant business interruptions and result in increased costs and liabilities and decreased revenues.” The railway operator also reports that increased weather volatility can “negatively affect the performance of locomotives and rolling stock.”⁸⁶

Union Pacific warns, “Climate change, including the impact of global warming, could have a material adverse effect on our results of operations, financial condition, and liquidity.” The railway adds, “We are exposed to severe weather conditions and other natural phenomena, including... extreme temperatures, and significant precipitation... [which] can adversely affect revenue, costs, and liabilities...”⁸⁷

Canadian National recognizes that “climate change, including the impact of global warming, has the potential physical risk of increasing the frequency of adverse weather events...” while emphasizing that “severe weather and natural disasters, such as extreme cold or heat, flooding, droughts, fires, hurricanes and earthquakes, can disrupt operations... [resulting] in increased costs, increased liabilities and lower revenues.”⁸⁸

Canadian Pacific also warns investors, “There is potential for significant impacts to CP’s infrastructure due to changes in global weather patterns. Increasing frequency, intensity and duration of extreme weather events such as flooding, storms and forest fires may result in substantial costs...”⁸⁹

RESTAURANTS

Fast-food chains like **McDonald’s**,⁹⁰ **Wendy’s**,⁹¹ **Burger King**,⁹² **Taco Bell**, and **KFC**⁹³ operate hundreds of restaurants across Wisconsin. They all warn investors that severe weather and climate change will adversely impact their supply chains, food pricing, and consumer demand.

“Severe weather, climate change and natural disasters, such as tornados, fires, flooding and earthquakes, could cause significant business interruptions and result in increased costs and liabilities and decreased revenues.”

- BURLINGTON NORTHERN SANTA FE

“There is potential for significant impacts to Canadian Pacific’s infrastructure due to changes in global weather patterns. Increasing frequency, intensity and duration of extreme weather events such as flooding, storms and forest fires may result in substantial costs.”

- CANADIAN PACIFIC

Diversified Restaurant Holdings operates more than 15 **Buffalo Wild Wings** in Wisconsin.⁹⁴ It warns that “food, beverage and packaging costs could be significantly affected by increases in the cost of fresh chicken wings, which can result from a number of factors... [such as] drought and other weather phenomena.” In addition, the company reports that “possible shortages or interruptions in the supply of food items and other supplies to our restaurants caused by inclement weather... could adversely affect the availability, quality and cost of items we buy and the operations of our restaurants.”⁹⁵

Chipotle has 19 locations in Wisconsin.⁹⁶ The restaurant chain warns investors: “Increasing weather volatility or other long-term changes in global weather patterns, including any changes associated with global climate change, could have a significant impact on the price or availability of some of our ingredients. Any increase in the prices of the ingredients most critical to our menu, such as chicken, beef, cheese, avocados, beans, rice, tomatoes and pork, would have a particularly adverse effect on our operating results.”⁹⁷

Panera Bread Company has 36 locations in Wisconsin.⁹⁸ It warns that “unforeseen natural events, such as earthquakes, hurricanes, or other adverse weather and climate conditions, could disrupt our operations or those of our franchisees, or suppliers. These events could reduce traffic in our bakery-cafes, make it difficult or impossible for bakery-cafes to receive deliveries of ingredients or other products, and otherwise impede our or our franchisees’ ability to continue business operations.”⁹⁹

RETAIL

Headquartered in Menomonee Falls, **Kohl’s** has 41 stores across the state and brings in \$20 billion in revenue.¹⁰⁰ The Fortune 500 retail company warns investors that “operating results may be adversely affected by severe or unexpected weather conditions... by affecting consumer shopping patterns and diminishing demand for merchandise... [and] these events could cause physical damage to our properties or impact our supply chain, making it difficult or impossible to timely deliver seasonally appropriate merchandise.”¹⁰¹

Oshkosh B’gosh is a major apparel retailer founded in Wisconsin that warns investors about climate change: “Severe weather or a natural disaster that results in a prolonged disruption to our operations... could have a material adverse effect on our net sales, financial condition, profitability and/or cash flows.”¹⁰²



SEVERE WEATHER TREND

HIGHER TEMPERATURES

Temperatures across the U.S. are 1.8 degrees warmer, on average, than they were at the beginning of last century, and most of this increase has occurred since 1970. The last five years have been the globe’s warmest on modern record, and 18 of the 19 warmest years have occurred this century.¹⁰³

Wisconsin has warmed 2.7 degrees since 1970.¹⁰⁴ By May 22, 2019, Madison had experienced 13.05 inches of rain, 2.34 inches more than the expected level.¹⁰⁵

Walmart has 99 stores in Wisconsin¹⁰⁶ and reports that “the occurrence of one or more natural disasters, such as hurricanes, tropical storms, floods, fires, earthquakes, tsunamis, cyclones, typhoons... whether as a result of climate change or otherwise... in a country in which we operate or in which our suppliers are located could adversely affect our operations and financial performance.”¹⁰⁷

The Home Depot is a major employer in Wisconsin, with 27 locations statewide.¹⁰⁸ The retailer cites “weather-related events” and natural disasters as factors that can disrupt their supply chain and halt operations. Home Depot also reports, “extreme weather conditions such as excessive precipitation, [and] warm temperatures during the winter season... could render a portion of our inventory incompatible with customer needs.”¹⁰⁹

Many other clothing retailers (including **The Gap**,¹¹⁰ **Nike**,¹¹¹ **Abercrombie & Fitch**,¹¹² and **L Brands**¹¹³) have warned investors about the negative effect severe weather has on their operations and sales. **American Eagle Outfitters** has 18 Wisconsin locations¹¹⁴ and warns that “extreme weather conditions or changes in climate conditions or weather patterns” could negatively affect their financial performance and operations.¹¹⁵

TOURISM

In 2018, 112 million people visited Wisconsin and spent \$13.3 billion. Tourism supports nearly 200,000 jobs statewide and contributed \$21.6 billion to the state’s economy in 2018.¹¹⁶ Milwaukee and the Great Lakes are among Wisconsin’s major tourism attractions; both are threatened by climate change and increasingly severe weather conditions.

Milwaukee’s tourism industry supports more than 52,000 jobs and contributes almost \$6 billion to the state’s economy every year.¹¹⁷ Extreme temperatures and humidity are particularly dangerous in densely populated urban areas. On February 21, 2017 Milwaukee experienced a record high 66 degrees, eight degrees hotter than the previous high and 32 degrees warmer than the average temperature for February 21.¹¹⁸

The Great Lakes offer many recreational activities and attractions in Wisconsin: hiking and biking trails, vineyards, beaches, fishing, and wildlife. But climate change and warmer temperatures can significantly change sea levels, triggering shoreline erosion and coastal flooding. On July 1, 2019, Lake Superior reached a record high water level, 14 inches above the average; Lake Michigan hit a record high level in June.¹¹⁹ Since 1958, the Midwest has seen 42 percent more “very heavy rainfall events.”¹²⁰ The warmer, wetter climate is causing flooding that threatens the water quality and puts a strain on outdoor restaurants, fishing and vacation rentals, and water recreation.

“

Operating results may be adversely affected by severe or unexpected weather conditions... by affecting consumer shopping patterns and diminishing demand for merchandise... these events could cause physical damage to our properties or impact our supply chain, making it difficult or impossible to timely deliver seasonally appropriate merchandise.

”

- KOHL'S

“

Extreme weather conditions such as excessive precipitation, [and] warm temperatures during the winter season... could render a portion of our inventory incompatible with customer needs.

”

- THE HOME DEPOT

UTILITIES

WEC Energy Group serves more than 4.5 million people in the Midwest.¹²¹ The Fortune 500 energy distributor is headquartered in Milwaukee and warns investors that electric generation and distribution are vulnerable to weather-related risks: “Potential breakdown or failure may occur due to severe weather... [and] significant changes in water level in waterways...”¹²²

Alliant Energy operates out of Madison and delivers electricity to nearly one million customers.¹²³ The utility provider includes “adverse weather conditions” among risk factors for construction projects and warns of potential breakdowns and equipment failures across generating facilities. Alliant also describes the impact of a warming climate: “We have historically generated less revenues and income when temperatures are warmer in the winter...”¹²⁴

Madison Gas and Electric Company is also based in Madison and warns investors, “Extreme summer conditions or storms may stress electric systems, resulting in increased maintenance costs and limiting the ability to meet peak customer demand.” The company adds that weather conditions “can result in damage or failures of equipment or facilities and disrupt or limit our ability to generate, transmit, transport, purchase, or distribute electric and gas.”¹²⁵

Based out of Eau Claire, **Northern States Power Company** reports “physical and financial risks associated with climate change and other weather, natural disaster and resource depletion impacts.” The utility provider cites “weather conditions and extreme weather events” as potential physical risks. It warns of an increase in the “frequency of extreme weather events,” which “require system backup, costs, and can contribute to increased system stress, including service interruptions.”¹²⁶

WATER SYSTEMS CHALLENGES

WASTEWATER SYSTEMS

Current sewer system infrastructure may not be able to handle increased rainfall. Wisconsin will either have to upgrade their systems or it will have to pay for damages. It is estimated that Wisconsin will need to spend roughly \$8.57 billion to improve wastewater infrastructure over the next 20 years.¹²⁷

WATER SUPPLY

Warmer temperatures can cause sea levels to rise. Lake Superior, among other Great Lakes, saw record high monthly water levels in May 2019. Shoreline erosion and coastal flooding will continue to threaten the Great Lakes. Such events harm the water supply and negatively affect the economic and recreational value of the Great Lakes.¹²⁸

REFERENCES

1. Doogs, Brian. "Average annual rainfall trending up." NBC15. May 22, 2019. <https://www.nbc15.com/content/news/Average-annual-rainfall-trending-up-510304561.html>
2. NOAA National Centers for Environmental Information. "State Climate Summaries: Wisconsin." Accessed November 20, 2019. <https://statesummaries.ncics.org/chapter/wi/>
3. McKinsey and Company. "Global growth, local roots: The shift toward emerging markets." August 2017. <https://www.mckinsey.com/business-functions/operations/our-insights/global-growth-local-roots-the-shift-toward-emerging-markets>
4. American Society of Civil Engineers. "Infrastructure in Wisconsin." 2017. <https://www.infrastructurereportcard.org/state-item/wisconsin/>
5. Ibid.
6. Stebbins, Samuel. "This Northeast state has the worst infrastructure in the US. Where does your rank?" Des Moines Register. July 13, 2019. <https://www.desmoinesregister.com/story/money/2019/07/08/states-that-are-falling-apart/39644781/>
7. United States Census Bureau. "American Fact Finder." Accessed November 20, 2019. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml
8. Mitchell International Airport. "Passenger Airlines Serving MKE." Accessed November 20, 2019. <https://www.mitchellairport.com/flights-airlines/airlines>
9. Green Bay Austin Straubel International Airport. "Airlines." Accessed November 20, 2019. <https://www.flygrb.com/airlines/>
10. America Airlines Group, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://americanairlines.gcs-web.com/static-files/ceb67596-d59a-41e3-ad0c-b5556dd43b4a>
11. United Airlines, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://ir.united.com/static-files/7764f912-7135-486b-aa5c-f729fa8b7cb3>
12. Southwest Airlines Co. Annual Report Form 10-K for fiscal year ended December 31, 2017. <http://investors.southwest.com/-/media/Files/S/Southwest-IR/Bookmarked%20Annual%20no%20blanks.pdf>
13. Southwest Airlines Co. Annual Report Form 10-K for fiscal year ended December 31, 2018. http://investors.southwest.com/-/media/Files/S/Southwest-IR/LUV_2018_Annual%20Report.pdf
14. Delta Air Lines, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://d18rn0p25nwr6d.cloudfront.net/CIK-0000027904/5fcae838-aa00-4be0-95dd-1824e4f97799.pdf>
15. Frontier Group Holdings, Inc. Annual Report Form S-1 filed on March 31, 2017. <https://www.sec.gov/Archives/edgar/data/1670076/000119312517106522/d366312ds1.htm>
16. NOAA National Centers for Environmental Information. "U.S. Billion-Dollar Weather and Climate Disasters (2019)." <https://www.ncdc.noaa.gov/billions/>
17. Wisconsin Department of Agriculture, Trade and Consumer Protection. "Wisconsin Agricultural Statistics." Accessed November 20, 2019. <https://datcp.wi.gov/Pages/Publications/WIAGStatistics.aspx>
18. National Agricultural Statistics Service (NASS), Agricultural Statistics Board. "Milk Production." USDA. July 22, 2019. <https://downloads.usda.library.cornell.edu/usda-esmis/files/h989r321c/g158bt880/sb397m19p/mkpr0719.pdf>
19. Wisconsin Department of Agriculture, Trade and Consumer Protection. "Wisconsin Agricultural Statistics." Accessed November 20, 2019. <https://datcp.wi.gov/Pages/Publications/WIAGStatistics.aspx>
20. U.S. Department of Agriculture. "2018 State Agricultural Overview." Accessed November 20, 2019. https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=WISCONSIN
21. Zhao, Chuang, Bing Liu, Shilong Piao, Xuhui Wang, David B. Lobell, Yao Huang, Mengtian Huang, Yitong Yao, Simona Bassu, Philippe Ciais, Jean-Louis Durand, Joshua Elliott, Frank Ewert, Ivan A. Janssens, Tao Li, Erda Lin, Qiang Liu, Pierre Martre, Christoph Müller, Shushi Peng, Josep Peñuelas, Alex C. Ruane, Daniel Wallach, Tao Wang, Donghai Wu, Zhuo Liu, Yan Zhu, Zaichun Zhu, and Senthold Asseng. "Temperature increase reduces global yields of major crops in four independent estimates." August 29, 2017. <https://www.pnas.org/content/114/35/9326>
22. NOAA National Centers for Environmental Information. "State Climate Summaries: Wisconsin." Accessed November 20, 2019. <https://statesummaries.ncics.org/chapter/wi/>
23. Ibid.
24. Kent, Kate Archer. "How Do Wisconsin Farmers Deal With Climate Change? It's A Balancing Act, Experts Say." Wisconsin Public Radio. March 28, 2017. <https://www.wpr.org/how-do-wisconsin-farmers-deal-climate-change-its-balancing-act-experts-say>
25. Wisconsin Economic Development Corporation. "Nourishing the World with Food and Beverage Expertise in Wisconsin." In Wisconsin. September 2017. https://inwisconsin.com/wp-content/uploads/2017/10/TMH_Food_and_Beverage_2017.pdf
26. Schamberg, Anne. "Fighting back against climate change: Wisconsin farmers find ways to protect their crops, our food supply." Journal Sentinel. October 1, 2019. <https://www.jsonline.com/story/life/food/2019/10/01/climate-change-challenges-wisconsin-farmers-who-produce-our-food/2433733001/>
27. The Coca-Cola Company. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0000021344/4705d271-8719-4b57-94e0-332e22765317.pdf>
28. Coca-Cola. "Position Statement on Climate Protection." Accessed November 20, 2019. <https://www.coca-colacompany.com/stories/position-statement-on-climate-protection>
29. PepsiCo, Inc. Annual Report Form 10-K for fiscal year ended December 29, 2018. <https://pepsico.gcs-web.com/static-files/60b79d40-4d73-46c8-8e7f-ebb9dab597c6>
30. The Kraft Heinz Company. Annual Report Form 10-K for fiscal year ended December 29, 2018. <http://ir.kraftheinzcompany.com/static-files/e0ec203b-d7c4-4025-b263-52cfe321960f>
31. Tyson Foods Inc. Annual Report Form 10-K for fiscal year ended September 29, 2018. <https://d18rn0p25nwr6d.cloudfront.net/CIK-0000100493/dcdf2f5b-689d-4520-afd6-69691cf580de.pdf>
32. Kellogg Company. Annual Report Form 10-K for fiscal year ended December 29, 2018. <https://investor.kelloggs.com/Cache/396866429.pdf>
33. Schamberg, Anne. "Fighting back against climate change: Wisconsin farmers find ways to protect their crops, our food supply." Journal Sentinel. October 1, 2019. <https://www.jsonline.com/story/life/food/2019/10/01/climate-change-challenges-wisconsin-farmers-who-produce-our-food/2433733001/>
34. EPA. "What Climate Change Means for Wisconsin." August 2016. <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-wi.pdf>
35. Hubbuck, Chris. "Report: Deadly heat waves to soar in Wisconsin without climate change action." Wisconsin State Journal. July 16, 2019. https://madison.com/wsj/news/local/environment/report-deadly-heat-waves-to-soar-in-wisconsin-without-climate/article_a631e779-ee02-5116-9ad0-db6c97923c7b.html
36. Walgreens Boots Alliance. Annual Report Form 10-K for fiscal year ended August 31, 2019. <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001618921/7ac612b2-2935-41f5-bb0e-650d21140435.pdf>
37. Cardinal Health, Inc. Annual Report Form 10-K for fiscal year ended June 30, 2019. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0000721371/5fc08896-ec61-4424-a56f-21754d052d00.pdf>
38. Choice Hotels International, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://app.quotemedia.com/data/downloadFiling?webmasterId=101533&ref=112770586&type=PDF&symbol=CHH&companyName=Choice+Hotels+International+Inc.&formType=10-K&dateFiled=2019-02-26&CK=1046311>
39. Marriott International, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://marriott.gcs-web.com/static-files/5a0ddc51-1246-422d-9743-61c0cb1198a4>
40. Hilton. "Wisconsin Hotels." Accessed November 20, 2019. <https://www.hilton.com/en/locations/usa/wisconsin/>
41. Hilton Worldwide Holdings, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. https://otp.tools.investis.com/clients/us/hilton_worldwide2/SEC/sec-show.aspx?FilingId=13217616&Cik=0001585689&Type=PDF&hasPdf=1
42. Insurance Information Institute. "Wisconsin Firm Foundation." Accessed November 20, 2019. <https://www.iii.org/publications/a-firm-foundation-how-insurance-supports-the-economy/state-fact-sheets/wisconsin-firm-foundation>
43. The Travelers Companies, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://investor.travelers.com/Cache/396745432.pdf>
44. Erie Indemnity Company. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://erieindemnitycompany.gcs-web.com/static-files/1a45d550-6e35-49d4-8d81-4f745c325b85>
45. Sentry Insurance Group. "About us." Accessed November 20, 2019. <https://www.sentry.com/about-us>
46. Sentry Insurance Group. "2018 Year in Review." <https://www.sentry.com/-/media/sentry-insurance/home/about-us/annual-report-v2/year-in-review-digital-2018.ashx>
47. The Progressive Corporation. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://investors.progressive.com/static-files/572d8b9b-111a-4a0d-966e-72c1b5a366eb>
48. Lincoln National Corporation. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://lincolnfinancialgroup.gcs-web.com/static-files/40a3a34e-fa03-439b-910d-04be6e31561d>

REFERENCES

49. Wisconsin Economic Development Corporation. "Industry Leadership Drives Manufacturing Advancements in Wisconsin." In Wisconsin. September 2019. <https://inwisconsin.com/wp-content/uploads/2019/09/2019-Manufacturing-Profile.pdf>
50. Rockwell Automation, Inc. Annual Report Form 10-K for fiscal year ended September 30, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0001024478/67b50678-2acb-4a51-9d7e-889bedc411c0.pdf>
51. Harley-Davidson. "Factory Tours." Accessed November 20, 2019. <https://www.harley-davidson.com/us/en/about-us/factory-tours.html>
52. Harley-Davidson. "Our Company." Accessed November 20, 2019. <https://www.harley-davidson.com/us/en/about-us/company.html>
53. Harley-Davidson. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://investor.harley-davidson.com/static-files/e0705aa3-25a7-409f-a8fc-5487789a6a71>
54. Spectrum Brands Holdings, Inc. Annual Report Form 10-K for fiscal year ended September 30, 2018. <https://investor.spectrumbrands.com/static-files/9696c830-db77-4cd1-992d-a324ddb1e1d8>
55. John Deere. "John Deere Horizon Works." Accessed November 20, 2019. <https://www.deere.com/en/our-company/john-deere-careers/interview-resources/horicon-works/>
56. Machinefinder. "Wisconsin John Deere Dealers." Accessed November 20, 2019. <https://www.machinefinder.com/ww/en-US/john-deere-dealers/wisconsin>
57. Deere & Company. Annual Report Form 10-K for fiscal year ended October 28, 2018. https://s22.q4cdn.com/253594569/files/doc_downloads/2018/12/7835154_Deere-Company_2018.10.K.PDF
58. Regal Beloit Corporation. "Products." Accessed November 20, 2019. <https://www.regalbeloit.com/Products>
59. Regal Beloit Corporation. Annual Report Form 10-K for fiscal year ended December 29, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0000082811/2e706264-dafa-45cb-9cb9-fca7eb257a35.pdf>
60. Gardner Denver Holdings, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. https://otp.tools.investis.com/clients/us/gardner_denver/SEC/sec-show.aspx?FilingId=13259443&Cik=0001699150&Type=PDF&hasPdf=1
61. REV Group, Inc. "REV's Plant Locations." Accessed November 20, 2019. <https://www.revgroup.com/rev-group-corporate-headquarters-and-manufacturing-locations>
62. REV Group, Inc. Annual Report Form 10-K for fiscal year ended October 31, 2018. https://otp.tools.investis.com/clients/us/rev_group/SEC/sec-show.aspx?FilingId=13117097&Cik=0001687221&Type=PDF&hasPdf=1
63. Rexnord Corporation. Annual Report Form 10-K for fiscal year ended March 31, 2019. <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001439288/b15c5782-9095-42bf-9487-2c4ae5cd7785.pdf>
64. Fort McCoy Public Affairs Office. "Fort McCoy's total economic impact exceeds \$1.135 billion during fiscal year 2018." U.S. Army. April 12, 2019. https://www.army.mil/article/220139/fort_mccoys_total_economic_impact_exceeds_1135_billion_during_fiscal_year_2018
65. Office of the Under Secretary of Defense for Acquisition and Sustainment. "Report on Effects of a Changing Climate to the Department of Defense." Department of Defense. January 2019. https://media.defense.gov/2019/Jan/29/2002084200/-1/-1/1/CLI_MATE-CHANGE-REPORT-2019.PDF
66. Wisconsin Commercial Ports Association. "Economic Benefits." Accessed November 20, 2019. <https://www.wcpaports.org/economic-benefits>
67. Kaeding, Danielle. "Study: Wisconsin's Great Lakes Ports Generate \$1.4B Economic Impact." Wisconsin Public Radio. August 16, 2018. <https://www.wpr.org/study-wisconsins-great-lakes-ports-generate-1-4b-economic-impact>
68. Wisconsin Department of Natural Resources. "Wisconsin's Great Lakes." Accessed November 25, 2019. <https://dnr.wi.gov/topic/GreatLakes/Learn.html>
69. Schneider National. "About Schneider: Put Us on the Job and Consider it Done." Accessed November 20, 2019. <https://schneider.com/about-schneider>
70. Schneider National. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0001692063/036d1261-6742-498e-a490-0670caa9765f.pdf>
71. Doogs, Brian. "Average annual rainfall trending up." NBC15. May 22, 2019. <https://www.nbc15.com/content/news/Average-annual-rainfall-trending-up-510304561.html>
72. United States Department of Agriculture. "USDA Designates 21 Wisconsin Counties as Primary Natural Disaster Areas." Farm Service Agency. July 31, 2019. https://www.fsa.usda.gov/news-room/emergency-designations/2019/ed_2019_0731_rel_0068
73. United Parcel Service, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://www.investors.ups.com/static-files/59a587c5-44b6-4afc-92a0-7a8cf6786517>
74. Fedex Corporation. Annual Report Form 10-K for fiscal year ended May 31, 2019. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0001048911/746ac5b4-2754-452b-8d40-a018e2b9b748.pdf>
75. Manpower Group. "About ManpowerGroup." Accessed November 20, 2019. <https://www.manpowergroup.com/about>
76. ManpowerGroup. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://investor.manpowergroup.com/static-files/663ce266-2251-4c65-8bf8-81bb463746cc>
77. Fiserv. "Who We Are." Accessed November 20, 2019. https://www.fiserv.com/en/about-fiserv.html?_ga=2.205328789.429411351.1519138887-1028053284.1517515402
78. Fiserv, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://newsroom.fiserv.com/static-files/edb097ea-50c9-4f9b-a9cd-d7fa85fc94e4>
79. Plexus Corporation. "Partnering with you to bring innovative products to life." Accessed November 20, 2019. <https://www.plexus.com/en-us/about>
80. Plexus Corporation. Annual Report Form 10-K for fiscal year ended September 29, 2018. <https://plexus.gcs-web.com/static-files/06131293-9fa9-4bad-8171-a489d946b5f0>
81. Lockheed Martin. "Derco A Lockheed Martin Company." Accessed November 20, 2019. <https://www.lockheedmartin.com/content/lockheed-martin/en-us/products/derco-aerospace.html>
82. Lockheed Martin Corporation. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://investors.lockheedmartin.com/static-files/141388f7-0aec-492e-8fb1-9884c4d91ee2>
83. NOAA National Centers for Environmental Information. "State Climate Summaries: Wisconsin." Accessed November 20, 2019. <https://statesummaries.ncics.org/chapter/wi/>
84. Kent, Kate Archer. "How Do Wisconsin Farmers Deal With Climate Change? It's A Balancing Act, Experts Say." Wisconsin Public Radio. March 28, 2017. <https://www.wpr.org/how-do-wisconsin-farmers-deal-climate-change-its-balancing-act-experts-say>
85. State of Wisconsin Department of Transportation. "Freight Railroads." Accessed November 20, 2019. <https://wisconsin.dot.gov/Pages/doing-bus/freight/rail.aspx>
86. Burlington Northern Santa Fe, LLC. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://www.bnsf.com/about-bnsf/financial-information/pdf/10k-llc-2018.pdf>
87. Union Pacific Corporation. Annual Report Form 10-K for fiscal year ended December 31, 2018. https://www.up.com/cs/groups/public/@uprr/@investor/documents/investordocuments/pdf_up_10k_02082019.pdf
88. Canadian National Railway. 2018 Annual Report. <https://www.cn.ca/-/media/Files/Investors/Investor-Annual-Report-Archive/English/2018-CN-Annual-Report.pdf?la=en>
89. Canadian Pacific Railway Limited. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0000016875/9e3c8390-441e-417d-aa03-e1d5ff34c13b.pdf>
90. McDonald's Corporation. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://d18rn0p25nwr6d.cloudfront.net/CIK-0000063908/94ad07bd-66c3-433c-a81e-94f1587b0ed8.pdf>
91. The Wendy's Company. Annual Report Form 10-K for fiscal year ended January 3, 2018. <https://d18rn0p25nwr6d.cloudfront.net/CIK-0000030697/b4514ebc-86e2-4c10-8c3d-5dfc88be814b.pdf>
92. Restaurant Brands International Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://www.rbi.com/Cache/396848915.PDF?O=PDF&T=&Y=&D=&FID=396848915&iid=4591210>
93. Yum! Brands, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://investors.yum.com/Cache/396825367.pdf>
94. Google. "Buffalo Wild Wings in Wisconsin." Accessed November 20, 2019. <https://www.google.com/maps>
95. Diversified Restaurant Holdings, Inc. Annual Report Form 10-K for fiscal year ended December 30, 2018.
96. Chipotle. "90 Chipotle Locations in Pennsylvania." Accessed November 20, 2019. <https://locations.chipotle.com/wi>
97. Chipotle Mexican Grill, Inc. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://app.quotemedia.com/data/downloadFiling?webmasterId=101533&ref=12684582&type=PDF&symbol=CMG&companyName=Chipotle+Mexican+Grill+Inc.&formType=10-K&dateFiled=2019-02-08>
98. Panera Bread. "36 Panera Bread Locations in Wisconsin." <https://locations.panerabread.com/wi.html>
99. Panera Bread Company. Annual Report Form 10-K for fiscal year ended December 27, 2016. <https://www.panerabread.com/content/dam/panerabread/documents/financial/2016/2016-fiscal-form-10-K.pdf>
100. Kohl's. "Kohl's Factbook 2018." Accessed November 20, 2019. https://corporate.kohls.com/content/dam/kohlscorp/investors/landing-page/72188%20-%20Fact%20Book%202018_Fact%20Book%20Fiscal%202018_V7_r15_FIN_AssocStrCountRemvd%201.pdf
101. Kohl's. Annual Report Form 10-K for fiscal year ended February 2, 2019. <https://kohls.gcs-web.com/static-files/95eccefb-bcbd-41c3-b630-d8c76a3bcc6f>

REFERENCES

102. Oshkosh Corporation. Report Form 8-K filed October 30, 2019. <https://d18rnOp25nwr6d.cloudfront.net/CIK-0000775158/b053939d-7581-47d2-903b-d0b8a718b8b2.pdf>
103. Schwartz, John and Nadja Popovich. "It's Official" 2018 Was the Fourth-Warmest Year on Record." The New York Times. February 6, 2019. <https://www.nytimes.com/interactive/2019/02/06/climate/fourth-hottest-year.html>
104. Climate Central. "American Warming: The Fastest-Warming Cities and States in the U.S." April 17th, 2019. <https://www.climatecentral.org/news/report-american-warming-us-heats-up-earth-day>
105. Doogs, Brian. "Average annual rainfall trending up." NBC15. May 22, 2019. <https://www.nbc15.com/content/news/Average-annual-rainfall-trending-up-510304561.html>
106. Walmart. "Location Facts." Accessed November 20, 2019. <https://corporate.walmart.com/our-story/locations/united-states/wisconsin?multi=false>
107. Walmart Inc. Annual Report Form 10-K for fiscal year ended January 31, 2019. <http://d18rnOp25nwr6d.cloudfront.net/CIK-0000104169/b23b2787-eb44-4e0b-82bd-fca01f140a3e.pdf>
108. The Home Depot. "Wisconsin." Accessed November 20, 2019. <https://www.homedepot.com/l/WI>
109. The Home Depot. Annual Report Form 10-K for fiscal year ended February 3, 2019. https://otp.tools.investis.com/clients/us/home_depot/SEC/sec-show.aspx?FilingId=13327317&Cik=0000354950&Type=PDF&hasPdf=1
110. The Gap, Inc. Annual Report Form 10-k for fiscal year ended February 2, 2019. <https://investors.gapinc.com/static-files/ea814b54-72cf-4b8b-b343-ed9f77534afe>
111. Nike, Inc. Annual Report Form 10-K for fiscal year ended May 31, 2019. https://s1.q4cdn.com/806093406/files/doc_financials/2019/annual/nike-2019-form-10K.pdf
112. Abercrombie & Fitch Co. Annual Report Form 10-K for fiscal year ended February 2, 2019. <https://abercrombieandfitchcompany.gcs-web.com/static-files/c23d52d6-8917-420d-94a3-bda60c848ff8>
113. L Brands, Inc. Annual Report Form 10-K for fiscal year ended February 2, 2019. <http://investors.lb.com/static-files/afb08b66-3a6f-4b99-9987-46556eaae4a>
114. American Eagle. "18 American Eagle Locations in Wisconsin." Accessed November 20, 2019. <https://storelocations.ae.com/us/wi>
115. American Eagle Outfitters, Inc. Annual Report Form 10-K for fiscal year ended February 2, 2019. <http://d18rnOp25nwr6d.cloudfront.net/CIK-0000919012/ae90de15-0436-4616-8789-68b190acfea3.pdf>
116. "The Power of Tourism." Wisconsin Department of Tourism. Accessed November 20, 2019. <http://industry.travelwisconsin.com/the-power-of-tourism>
117. Visit Milwaukee. "About Visit Milwaukee." Accessed November 20, 2019. <http://visitmilwaukee.org/about-us/>
118. Garza, Jesse. "Milwaukee shatters high temperature record." Journal Sentinel. February 21, 2017. <https://www.jsonline.com/story/news/local/milwaukee/2017/02/21/milwaukee-shatters-high-temperature-record/98224576/>
119. Myers, John. "Lake Superior tops record high July water level." Duluth News Tribune. July 8, 2019. <https://www.duluthnewtribune.com/news/3826440-Lake-Superior-tops-record-high-July-water-level>
120. Gray, Ellen and Jessica Merzdorf. "Earth's Freshwater Future: Extremes of Flood and Drought." Nasa. June 13, 2019. <https://www.nasa.gov/feature/goddard/2019/earth-s-freshwater-future-extremes-of-flood-and-drought>
121. WEC Energy Group. "About us." Accessed November 20, 2019. <https://www.wecenergygroup.com/about/aboutus.htm>
122. WEC Energy Group. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://d18rnOp25nwr6d.cloudfront.net/CIK-0000783325/21720ac3-6d05-444a-8ff3-afc53ab0280a.pdf>
123. Alliant Energy. "Operations, values and compliance." Accessed November 20, 2019. <https://www.alliantenergy.com/AboutAlliantEnergy/OperationsValuesandCompliance>
124. Alliant Energy. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://alliantenergy.gcs-web.com/static-files/761161de-3012-45f6-b546-92f5bf5b31cc>
125. Madison Gas and Electric Company. Annual Report Form 10-K for fiscal year ended December 31, 2018. <https://www.mgeenergy.com/documents/sec-reports/sec-forms-10k-10q/20181231-10k.pdf>
126. Northern States Power Company. Annual Report Form 10-K for fiscal year ended December 31, 2018. <http://investors.xcelenergy.com/Cache/396846746.pdf>
127. American Society of Civil Engineers. "Infrastructure in Wisconsin." 2017. <https://www.infrastructurereportcard.org/state-item/wisconsin/>
128. US Army Corps of Engineers. "Great Lakes water levels at record highs." June 4, 2019. <https://www.lre.usace.army.mil/Media/News-Releases/Article/1865549/great-lakes-water-levels-at-record-highs/>

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