

ISSUE BRIEF : Q1 2020

ILLINOIS COMPANIES EXPLAIN CLIMATE CHANGE AND SEVERE WEATHER RISK



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EXECUTIVE SUMMARY

This report examines how severe weather is disrupting supply chains, distorting commodity prices, damaging plants and equipment, and hurting consumer demand for Illinois 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 officials answer a simple question about climate change: Can we fix climate change without wrecking our economy?

Illinois'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 Springfield and Washington, D.C. should not ignore.

Severe weather affects Illinois's greatest competitive advantages, including fast-moving global supply chains, central geographic location, and access to important waterways like the Mississippi, Ohio, and Illinois rivers. Severe weather is affecting key industries, from farms and orchards to aerospace, auto suppliers, railroads, restaurants, and shipping.

Business Forward has worked with more than 6,150 entrepreneurs, executives, and small business owners across Illinois. 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 2,000 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.

**31 OF ILLINOIS'S 36
FORTUNE 500
COMPANIES
HAVE ISSUED WARNINGS TO
THEIR INVESTORS, AS WELL
AS INDUSTRY LEADERS IN
MANUFACTURING, RETAIL, FOOD
PROCESSING 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

The Illinois agriculture industry is vulnerable to extra spring downpours and floods disrupting seeding efforts, while decreased summer rainfall threatens yields with droughts.

These decreased yields affect other Illinois sectors that rely on local corn, like transportation companies, food processors and livestock producers.¹

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.

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 ILLINOIS WHERE IT HURTS - INFRASTRUCTURE

Illinois's infrastructure is particularly vulnerable to severe weather events. According to the American Society of Civil Engineers (ASCE), Illinois has 26,775 bridges, third most of any state. More than **2,000** of those are currently graded "structurally deficient" and more than **9 million** trips are made daily on these structurally deficient bridges, creating **\$9.5 billion** of present-day need for bridge repairs. Roadways in Illinois are ranked **third worst** in the nation for travel delay, excess fuel consumed, truck congestion cost, and total congestion cost.²

Funding shortfalls prevent the Illinois DOT from repairing roads, costing Illinois motorists an average of **\$566 per year** in additional repairs and operating costs. Intense rain storms that overflow existing sewer systems leads to contamination in nearby lakes and rivers; the state needs **\$6.5 billion** to meet the water quality and public-health goals of the Clean Water Act.

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 2017.³ According to the Des Moines Register, Illinois has the **eighteenth** worst infrastructure in the United States.⁴ Without a strong federal partner, local and state governments are left to themselves to plan and fund infrastructure investments on their own. Illinois has **6,963** total governmental units, which is the most in the country and makes planning and coordination between governments especially difficult.⁵

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

C-
**RATING FOR
INFRASTRUCTURE
FROM ASCE**

\$9.5B
**SPENDING
SHORTFALL FOR
PRESENT-DAY BRIDGE
MAINTENANCE**

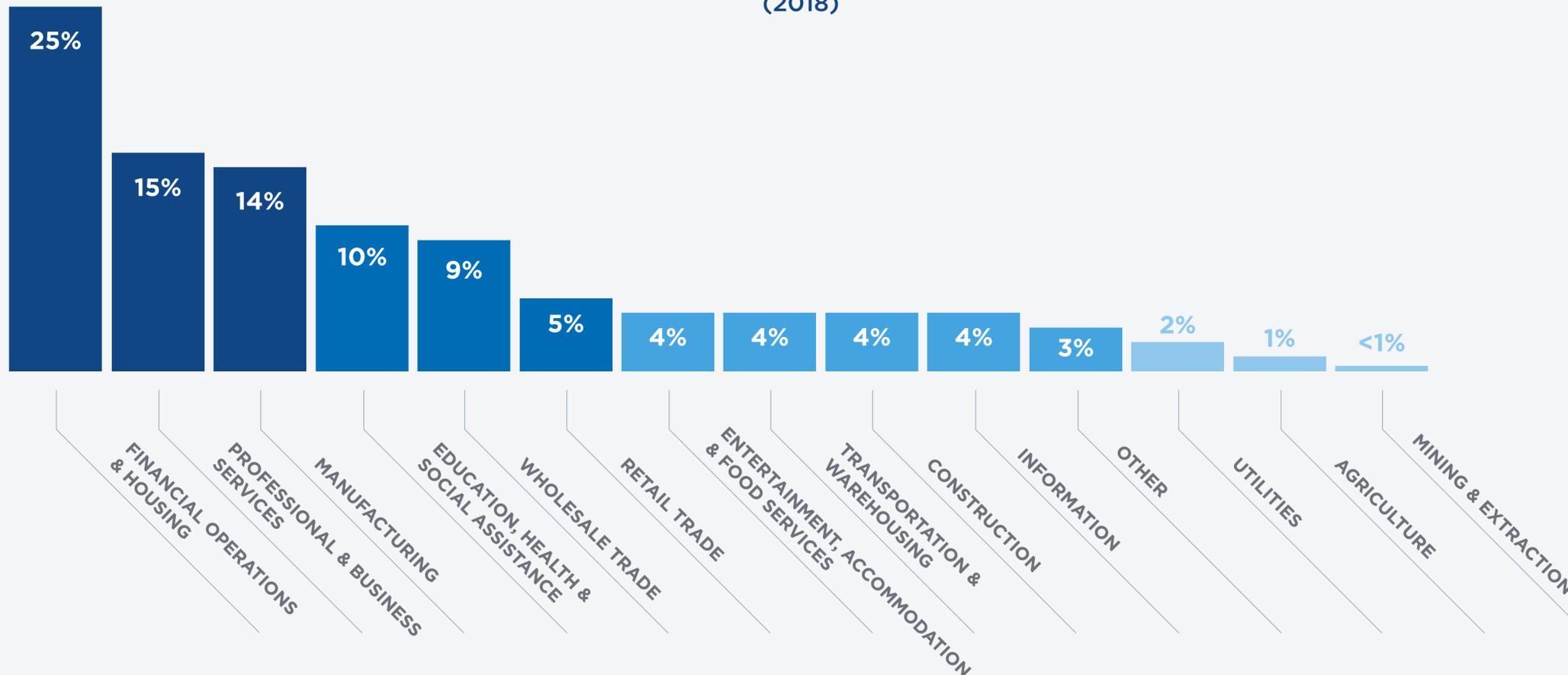
\$566
**COST PER
MOTORIST DUE
TO POOR ROAD
CONDITION**

BY 2022
80%
**OF ILLINOIS DAMS
WILL BE AT LEAST 50
YEARS OLD**

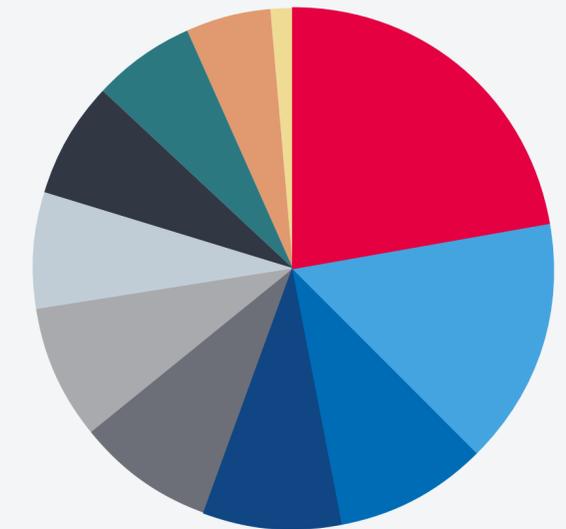
A SNAPSHOT OF ILLINOIS' ECONOMY



GROSS DOMESTIC PRODUCT BY INDUSTRY (2018)



EMPLOYMENT BY INDUSTRY (2018)



- 23% - OFFICE MANAGEMENT & SUPPORT
- 15% - FINANCIAL OPERATIONS & SALES
- 10% - CONSTRUCTION & MAINTENANCE
- 9% - HEALTH CARE
- 9% - FOOD SERVICES & AGRICULTURE
- 8% - TRANSPORTATION & SHIPPING
- 7% - SKILL INTENSIVE
- 7% - MANUFACTURING
- 6% - EDUCATION
- 5% - PERSONAL & PROTECTIVE SERVICES
- 1% - ENTERTAINMENT

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

HOW SEVERE WEATHER AFFECTS KEY ILLINOIS INDUSTRIES, AS EXPLAINED BY ILLINOIS EXECUTIVES

AEROSPACE

Illinois is a leader in American aerospace engineering and research. The Rockford region in northern Illinois is a hotbed for talent in the aerospace industry. It is home to more than 70 companies and 7,000 workers;⁶ within 90 miles of Rockford, there are 56,000 engineers.⁷

Examples of aerospace companies that have major offices, manufacturing facilities, or corporate headquarters in northern Illinois include **Boeing**, **Woodward**, and **UTC Aerospace Systems**.

Boeing has its corporate headquarters in Chicago. The company understands the risks of climate change and has heavily invested in clean energy initiatives. Boeing has reduced emissions in production facilities by 28 percent while increasing air deliveries by 66 percent over the past decade. It has also started a program where passengers can choose to fly on planes with plant-based biofuels to further reduce emissions. Boeing has also begun powering its data centers through wind energy.⁸

Woodward was founded in 1870 in Rockford.⁹ The company built an additional \$300 million Loves Park factory in 2016 to manufacture its jet engine fuel system found on most jets.¹⁰ The company warns investors in its most recent annual report, “Our operations and sources of supply could be disrupted by unforeseen events, including fires, tornadoes, tsunamis, hurricanes, earthquakes, floods and other forms of severe weather in countries in which we operate or in which our suppliers are located, any of which could adversely affect our operations and financial performance.”¹¹

UTC Aerospace employs nearly 2,000 workers in Rockford and helped design and build the space shuttle for NASA; it also built torpedoes for the Navy for decades.¹² UTC Aerospace warns that climate change and severe weather events pose major risks to its supply chain and overall financial results.¹³



**ILLINOIS HAS HAD
22 BILLION-DOLLAR
WEATHER & CLIMATE
DISASTERS SINCE 2014¹⁴**

36 Fortune 500 companies are headquartered in Illinois, and 31 of them have issued warnings about severe weather risks.

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

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

AIRPORTS

Aviation is one of Illinois's most important industries in terms of economic impact and employment. Illinois's geographic location in the center of the United States gives it a comparative advantage for air transportation. In 2018, more than 87.4 million commercial passengers flew into or through an Illinois airport, accounting for 2.5 million flights.¹⁵ A recent Federal Aviation Administration report states that the aviation industry is responsible for \$50 billion in economic output and 366,000 jobs.¹⁶ Chicago O'Hare is the busiest airport in the United States, surpassing Atlanta's airport in 2018.¹⁷ Two of the three largest U.S. airlines use O'Hare as one of their major hubs: **United Airlines** and **American Airlines**.

United Airlines is headquartered in Chicago and its most recent 10-K states that the airline "may incur substantial costs as a result of changes in weather patterns due to climate change. Increases in the frequency, severity or duration of severe weather events such as thunderstorms, hurricanes, flooding, typhoons, tornados and other severe weather events could result in increases in delays and cancellations, turbulence-related injuries and fuel consumption to avoid such weather, any of which could result in significant loss of revenue and higher costs."¹⁸

American Airlines is the largest airline in the world¹⁹ and flies more than 25 percent of the passengers at O'Hare.²⁰ Its annual report warns, "Our business has been and will continue to be affected by many changing economic and other conditions beyond our control, including global events that affect travel behavior, and our results of operations could be volatile and fluctuate due to seasonality...including, among others: weather and natural disasters, including increases in such disasters and related costs caused by more severe weather due to climate change."²¹

AUTOMOTIVE MANUFACTURING

The automotive manufacturing industry, much like aerospace engineering, benefits from Illinois's high concentration of engineers and emphasis on R&D and manufacturing. More than 35,000 workers are directly employed in the industry, making Illinois one of the nation's leaders in the field.²² Three Fortune 500 car part manufacturers are based in Illinois: **LKQ**, **Tenneco**, and **W.W. Grainger**.



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 the timing and duration of growing seasons.
- 3.** More severe storms are damaging crops and livestock.

LKQ has its global headquarters in Chicago. The specialty car parts company warns investors that “risks and uncertainties that could cause actual results to differ from the results predicted or implied by our forward-looking statements include the following... Changes in the demand for our products and the supply of our inventory due to severity of weather and seasonality of weather patterns.”²³

Tenneco, an automotive component, aftermarket ride control, and emissions products manufacturer, is headquartered in Lake Forest. Severe weather events disrupting supply chain operations and customer demand is one of the stated factors that could harm the company’s financial performance in its most recent 10-K.²⁴

W.W. Grainger is a manufacturer of motors, lighting, and other industrial supplies with headquarters in Lake Forest. W.W. Grainger cautions, “Disruptions in Grainger’s supply chain could result in an adverse impact on results of operations. The occurrence of one or more natural disasters such as earthquakes, storms, hurricanes, floods, fires, droughts, tornados and other extreme weather... could result in disruption of Grainger’s logistics or supply chain network. Any such disruption could cause one or more of Grainger’s distribution centers or branches to become non-operational, adversely affect Grainger’s ability to obtain or deliver inventory in a timely manner, impair Grainger’s ability to meet customer demand for products, result in lost sales, additional costs, or penalties, or damage Grainger’s reputation. Grainger’s ability to provide same-day shipping and next-day delivery is an integral component of Grainger’s business strategy and any such disruption could adversely impact results of operations and financial performance.”²⁵

FOOD PROCESSING & AGRICULTURE

Food processing and agribusiness in Illinois is a booming industry. With more than 2,600 food processing companies that employ more than 130,000 Illinoisans, the state depends heavily on the sector. Illinois is first in the U.S. in processed food sales, totaling more than \$180 billion.²⁶ Six Fortune 500 food processing or agriculture companies have corporate headquarters in Illinois; all six have issued severe weather or climate change warnings.

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The occurrence of one or more natural disasters such as earthquakes, storms, hurricanes, floods, fires, droughts, tornados and other extreme weather... could result in disruption of Grainger’s logistics or supply chain network.

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-GRAINGER

“

Certain factors which may impact the availability of non-agricultural commodity raw materials are out of the Company’s control including, but not limited to, disruptions resulting from weather, economic conditions, manufacturing delays or disruptions at suppliers, shortage of materials, interruption of energy supply...

”

-ARCHER DANIELS MIDLAND

Archer Daniels Midland ranks 49th on the Fortune 500 list and has its headquarters in Chicago.²⁷ The company warns that its “operations rely on dependable and efficient transportation services, the disruption of which could result in difficulties supplying materials to the Company’s facilities and impair the Company’s ability to deliver products to its customers in a timely manner. The Company relies on access to navigable rivers and waterways in order to fulfill its transportation obligations more effectively... Certain factors which may impact the availability of non-agricultural commodity raw materials are out of the Company’s control including, but not limited to, disruptions resulting from weather, economic conditions, manufacturing delays or disruptions at suppliers, shortage of materials, interruption of energy supply...”²⁸

Mondelez International owns brands such as Oreo, Ritz, and Trident, and has its global headquarters in Deerfield.²⁹ Mondelez warns investors, “We utilize an integrated supply chain - a complex network of suppliers and material needs, owned manufacturing locations, co-manufacturing locations, distribution networks, shared service delivery centers and information systems that support our ability to provide our products to our customers consistently. Factors that are hard to predict or beyond our control, like weather (including any potential effects of climate change), natural disasters, supply and commodity shortages, fire, explosions... could damage or disrupt our operations or those of our suppliers, their suppliers or our co-manufacturers... These events could materially and adversely affect our product sales, financial condition and results of operations.”³⁰

U.S. Foods Holding is centered in Rosemont and has more than 4,000 Illinois employees.³¹ The company cautions, “Some of our facilities and our customers’ facilities are located in areas that may be subject to extreme, and occasionally prolonged, weather conditions, including, but not limited to, hurricanes, tornadoes, blizzards, and extreme cold. Extreme weather conditions may interrupt our operations in such areas. Furthermore, extreme weather conditions may interrupt or impede access to our customers’ facilities or otherwise reduce the number of consumers who visit our customers’ facilities, all of which could have an adverse effect on our business, financial condition, or results of operations.”³²

“ Extreme weather conditions may interrupt our operations in such areas. Furthermore, extreme weather conditions may interrupt or impede access to our customers’ facilities or otherwise reduce the number of consumers who visit our customers’ facilities, all of which could have an adverse effect on our business...” ”

- U.S. FOODS HOLDINGS

“ Adverse weather conditions and natural disasters can reduce crop size and crop quality, which in turn could reduce our supplies of raw materials, lower recoveries of usable raw materials, increase the prices of our raw materials...” ”

- CONAGRA

ConAgra has its corporate headquarters in Chicago and employs 1,500 workers in the state.³³ The packaged food company warns that “carbon dioxide and other greenhouse gases in the atmosphere may have an adverse impact on global temperatures, weather patterns, and the frequency and severity of extreme weather and natural disasters... Adverse weather conditions and natural disasters can reduce crop size and crop quality, which in turn could reduce our supplies of raw materials, lower recoveries of usable raw materials, increase the prices of our raw materials, increase our cost of transporting and storing raw materials, or disrupt our production schedules... In addition, natural disasters and extreme weather conditions may disrupt the productivity of our facilities or the operation of our supply chain.”³⁴

Ingredion is an ingredient provider headquartered in Westchester. Climate change is one of Ingredion’s top concerns because “changes in precipitation extremes, droughts and water availability have the potential to impact Ingredion’s agricultural supply as well as the availability of water for our manufacturing operations... The price and availability of corn and other raw materials is influenced by economic and industry conditions, including supply and demand factors such as crop disease and severe weather conditions, such as drought, floods, or frost, that are difficult to anticipate and which we cannot control.”³⁵

TreeHouse Foods has its main corporate office in Oak Brook. TreeHouse Foods warns that its “ability to manufacture, move, and sell products is critical to our success. We are subject to damage or disruption to raw material supplies or our manufacturing or distribution capabilities (in particular, to the extent that our raw materials are sourced globally) due to weather, including any potential effects of climate change, natural disaster, fire...or other factors that could impair our ability to manufacture or sell our products. Failure to take adequate steps to mitigate the likelihood or potential impact of such events, or to effectively manage such events if they occur, could adversely affect our business, financial condition, and results of operations, as well as require additional resources to restore our supply chain.”³⁶

ENERGY

Illinois is one of the most energy dependent states in America, and it relies on a number of energy sources to fulfill its needs. The state ranks fifth in total energy consumption. It has the second largest coal reserve, the fourth highest crude oil refining capacity, and leads the nation in electricity generation from nuclear power.³⁷

EFFICIENCY & CLIMATE RISK

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

To maximize each individual supplier plant’s efficiency, Illinois companies have encouraged their suppliers to specialize. And, to reduce overhead costs, more Illinois 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, Illinois factories, stores, and plants grow more vulnerable to severe weather in other countries.

Although Illinois consumes a lot of it, coal has declined in its contribution to state electricity generation. Nuclear energy is Illinois's main source of electricity; 52 percent of the state's net generation comes from six nuclear power plants. Coal fuels one-third of the remaining generation, with natural gas and wind energy generating almost the entirety of the rest of Illinois's electricity.³⁸ Still, Illinois has one of the fastest growing solar power industries in the country.³⁹ By 2025, 25 percent of the state's electricity is required to be generated from renewable sources.⁴⁰

Exelon is a Fortune 500 energy company with headquarters in Chicago. The company warns that its "distribution and transmission infrastructures could be affected by natural disasters, such as seismic activity, fires resulting from natural causes such as lightning, extreme weather events, changes in temperature and precipitation patterns, changes to ground and surface water availability, sea level rise and other related phenomena. Severe weather or other natural disasters could be destructive, which could result in increased costs, including supply chain costs. An extreme weather event within the Registrants' service areas can also directly affect their capital assets, causing disruption in service to customers due to downed wires and poles or damage to other operating equipment."⁴¹

HEALTH CARE & PHARMACEUTICALS

The health care industry in Illinois generated more than \$88 billion in 2017 and supported nearly 500,000 jobs, directly and indirectly.⁴²

Walgreens Boots Alliance is the largest company with headquarters in Illinois, ranking 17th in the most recent Fortune 500 list.⁴³ The drug store giant, based in Deerfield, has 457 Illinois locations.⁴⁴ Walgreens warns, "Frequent or unusually heavy snowfall, ice storms, rainstorms, windstorms or other extreme weather conditions over a prolonged period could make it difficult for our customers to travel to our stores and increase our snow removal and other costs. This could lead to lower sales or to unanticipated markdowns, negatively impacting our financial condition and results of operations." One of the risks the company highlights in its 10-K is "the long-term effects of climate change on general economic conditions and the pharmacy industry in particular, along with changes in the supply, demand or available sources of energy and the regulatory and other costs associated with energy production and delivery."⁴⁵

“ Distribution and transmission infrastructures could be affected by natural disasters, such as seismic activity, fires resulting from natural causes such as lightning, extreme weather events, changes in temperature and precipitation patterns, changes to ground and surface water availability, sea level rise and other related phenomena. ”

-EXELON

“ Frequent or unusually heavy snowfall, ice storms, rainstorms, windstorms or other extreme weather conditions over a prolonged period could make it difficult for our customers to travel to our stores and increase our snow removal and other costs. ”

-WALLGREENS BOOTS ALLIANCE

AbbVie is a biopharmaceutical company centered in North Chicago. The Fortune 100 company produces the drug Humira and is a leader in the pharmaceutical industry.⁴⁶ AbbVie warns, “The manufacture of many of AbbVie’s products is a highly exacting and complex process, due in part to strict regulatory requirements. Problems may arise during manufacturing for a variety of reasons, including... problems with raw materials... man-made or natural disasters and environmental factors. If problems arise during the production of a batch of product, that batch of product may have to be discarded and AbbVie may experience product shortages or incur added expenses. This could, among other things, lead to increased costs, lost revenue, damage to customer relations, time and expense spent investigating the cause and, depending on the cause, similar losses with respect to other batches or products.”⁴⁷

Abbott Laboratories makes medical devices and sells nutritional products like Pedialyte. Headquartered in Abbott Park, Abbott Laboratories has more than 12,000 employees in Illinois⁴⁸ and cautions investors that “changes to global climate, extreme weather and natural disasters can all affect the supply chain and profitability of Abbott Laboratories.”⁴⁹

Baxter International, located in Deerfield, employs 4,500 workers statewide.⁵⁰ The medical supplier issued a severe weather warning to investors: “Climate change... could increase our costs, in particular our costs of supply, energy and transportation/freight... Some of our products are manufactured at a single manufacturing facility or stored at a single storage site. Loss or damage to a manufacturing facility or storage site due to a natural disaster, such as we experienced as a result of Hurricane Maria, or otherwise could adversely affect our ability to manufacture sufficient quantities of key products or otherwise deliver products to meet customer demand or contractual requirements which may result in a loss of revenue and other adverse business consequences.”⁵¹

HOTELS

Hotel and lodging is a significant economic driver for Illinois. The hotel industry directly employs nearly 150,000 Illinoisans and contributes \$28 billion to the state GDP.⁵²

Hyatt Hotels recently moved its corporate headquarters to Chicago and operates 35 hotels in the state.⁵³ The hotel chain’s most recent annual report states, “Macroeconomic and other factors beyond our control as well as the business, financial, operating, and other risks of the hospitality industry can adversely affect demand for hospitality products and services. This includes demand for rooms and services at a portfolio of properties that we develop, own, operate, manage, franchise, and license. These factors include... climate change and resource scarcity, such as water and energy scarcity; natural or man-made disasters, such as earthquakes, tsunamis, tornadoes, hurricanes, floods, wildfires, oil spills, and nuclear incidents.”⁵⁴

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Climate change... could increase our costs, in particular our costs of supply, energy and transportation/freight.

”

-BAXTER INTERNATIONAL

“

Natural disasters and severe weather such as earthquakes, tornadoes, hurricanes or floods may result in significant damage to our properties.

”

- MARRIOTT

Marriott owns 154 hotels in Illinois, including hotels formerly operated by the recently-acquired **Starwood Hotels**.⁵⁵ Starwood warned in its last annual report that the chain is “subject to risks from natural disasters such as earthquakes and severe weather, which may result in damage to our properties. Natural disasters and severe weather such as earthquakes, tornadoes, hurricanes or floods may result in significant damage to our properties. The extent of our casualty losses and loss in operating income in connection with such events is a function of the severity of the event and the total amount of exposure in the affected area... We may be materially and adversely affected by our exposure to losses arising from natural disasters or severe weather.”⁵⁶

INFORMATION & COMMUNICATIONS TECHNOLOGY

The IT industry is the main target industry for future investment, according to a new plan from Illinois Governor J.B. Pritzker. The plan hopes to continue the recent explosion in the sector, as Illinois’s IT industry grew nearly 40 percent in employment from 2009-2018. Large capital investments in expanding broadband networks and research facilities hope to allow the same explosion that has taken place in the Chicago-metro region to occur in the rest of the state.⁵⁷

CDW is headquartered in Lincolnshire, and the company provides technology products and services to public and private-sector clients. CDW’s annual report states that the company relies on United Parcel Service or FedEx to transport important hardware packages; both of these companies have supply chains that are inherently vulnerable to severe weather events and disruptions.⁵⁸

Anixter International is based in Glenview, and provides communications and security products as well as electrical wire and cable. The company speaks on potential supply chain issues in its 2018 10-K: “Our global logistics services are operated through distribution centers around the world. We also depend on transportation service providers for the delivery of products to our customers. Any significant interruption or disruption in service at one or more of our distribution centers due to severe weather, natural disasters, information technology upgrades, operating issues, disruptions to our transportation network, or other unanticipated events, could impair our ability to obtain or deliver inventory in a timely manner, cause cancellations or delays in shipments to customers or otherwise disrupt our normal business operations.”⁵⁹

Motorola Solutions recently moved its headquarters from Schaumburg to Chicago. Motorola warns that natural disasters or other severe weather events can significantly interrupt supply chain operations, which results in increased costs and delays that negatively affect the company.⁶⁰



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.⁶¹

Illinois currently averages 10 heat wave days per year; by 2050, Illinois is projected to experience more than 60 heat wave days per year, averaging out to more than one per week.⁶²

R.R. Donnelley & Sons is a business communication, marketing, and printing firm. The Chicago-based company warns, “We rely upon third party carriers for timely delivery of our product shipments. As a result, we are subject to carrier disruptions and increased costs due to factors that are beyond our control, including employee strikes, inclement weather and increased fuel costs. Any failure to deliver products to our clients in a timely and accurate manner may damage our reputation and brand and may cause us to lose clients. If our relationship with any of these third party carriers is terminated or impaired, or if any of these third parties are unable to ship products for us, we would be required to use alternative, and possibly more expensive, carriers for the shipment of products.”⁶³

INSURANCE, REAL ESTATE & FINANCIAL SERVICES

Illinois continues to be a national leader in the insurance and financial services industries. The state has more than 150,000 workers directly employed by the insurance industry and leads the nation in premiums written for property and casualty.⁶⁴ The state also ranks first in the number of domestic banks and bank holding companies, and it hosts three of the largest international exchanges.⁶⁵

State Farm is a Fortune 500 insurance company with headquarters in Bloomington. Edward Rust Jr., CEO and chairman of the board at State Farm, detailed the risks of climate change and severe weather that insurance companies grapple with in a 2018 op-ed in the New York Times: “For the insurance industry, which focuses on protecting against large events that we expect to happen but don’t expect to happen to us, the trend lines are not encouraging... What the data tells us is that the greater losses we can expect from climate-related events, combined with greater uncertainty about where and when they will take place, will create substantial volatility in insurance payouts. For consumers, this will mean more costly premiums.”⁶⁶

“

What the data tells us is that the greater losses we can expect from climate-related events, combined with greater uncertainty about where and when they will take place, will create substantial volatility in insurance payouts. For consumers, this will mean more costly premiums.

”

**-EDWARD RUST JR.,
CEO AND CHAIRMAN OF THE BOARD,
STATE FARM**

Allstate, based in Northbrook, employs 5,000 Illinoisans.⁶⁷ Allstate warns, “Our property and casualty business may be exposed to catastrophic events caused by various events, some of which may be exacerbated by climate change, such as wildfires, tornadoes, tsunamis, hurricanes, tropical storms, earthquakes, volcanic eruptions, solar flares, terrorism or industrial accidents which could cause operating results to vary significantly from one period to the next, despite our catastrophe management programs... Climate change may affect the occurrence of certain natural events, such as an increase in the frequency or severity of wind and thunderstorm events, eruptions of volcanoes and tornado or hailstorm events due to increased convection in the atmosphere; more frequent wildfires in certain geographies; higher incidence of deluge flooding and the potential for an increase in severity of the hurricane events due to higher sea surface temperatures... Due to significant variability associated with future changing climate conditions we are unable to predict the impact climate change will have on our businesses.”⁶⁸

Discover Financial Services is the world’s fifth largest credit card company and is headquartered in Riverwoods.⁶⁹ It warns, “Natural disasters or other catastrophic events, including terrorist attacks, may have a negative effect on our business and infrastructure, including our information technology systems. Our Diners Club network, concentrated primarily on serving the global travel industry, could be adversely affected by international conditions that may result in a decline in consumer or business travel activity... Although a regionalized event or condition may primarily affect one of our network participants, it may also affect our overall network and card activity and our resulting revenue. Overall network and card transaction activity may decline as a result of concerns about safety or disease or may be limited because of economic conditions that result in spending on travel to decline. The impact of such events and other catastrophes on the overall economy may also adversely affect our financial condition or results of operations.”⁷⁰

Arthur J. Gallagher is the fourth largest insurance brokerage in the world, and has its corporate headquarters in Rolling Meadows.⁷¹ The company warns of the growing threat of climate change in the insurance industry: “Such failures or coverage withdrawals on the part of underwriting enterprises could occur for any number of reasons, including large unexpected payouts related to climate change or other emerging risk areas.”⁷²

“ The impact of climate change presents a significant risk. Damage to assets caused by extreme weather events linked to climate change is becoming more evident, highlighting the fragility of global infrastructure...”

- JONES LANG LASALLE

“ Such failures or coverage withdrawals on the part of underwriting enterprises could occur for any number of reasons, including large unexpected payouts related to climate change or other emerging risk areas. ”

-ARTHUR J. GALLAGHER

Jones Lang LaSalle is a commercial real estate services firm. Headquartered in Chicago, Jones Lang LaSalle warns that “the impact of climate change presents a significant risk. Damage to assets caused by extreme weather events linked to climate change is becoming more evident, highlighting the fragility of global infrastructure... We anticipate that the potential effects of climate change will increasingly impact the decisions and analysis that LaSalle makes with respect to the properties it considers for acquisition on behalf of clients...”⁷³

MANUFACTURING

Nearly 600,000 Illinoisans are employed in a manufacturing job. The manufacturing industry contributes more than \$100 billion to the state’s GDP and there are three Fortune 500 manufacturing companies with global headquarters in Illinois.⁷⁴

Caterpillar employs 3,000 workers in Illinois and is based in Peoria.⁷⁵ Caterpillar warns, “The occurrence of one or more unexpected events, including...fires, tornadoes, tsunamis, hurricanes, earthquakes, floods and other forms of severe weather in the United States or in other countries in which we operate or in which our suppliers are located could adversely affect our operations and financial performance. Natural disasters... power outages or other unexpected events could result in physical damage to and complete or partial closure of one or more of our manufacturing facilities or distribution centers, temporary or long-term disruption in the supply of component products from some local and international suppliers, disruption in the transport of our products to dealers and end users and delay in the delivery of our products to our distribution centers. Existing insurance coverage may not provide protection for all of the costs that may arise from such events.”⁷⁶

John Deere is based in Moline and currently employs nearly 1,800 Illinoisans.⁷⁷ John Deere warns investors, “Certain components and parts used in John Deere’s products are available from a single supplier and cannot be alternatively sourced quickly. Supply chain disruptions due to supplier financial distress, capacity constraints, labor shortages, business continuity, quality, delivery or disruptions due to weather-related or natural disaster events could affect John Deere’s operations and profitability... 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 and will be particular to the circumstances developing in various geographical regions. These may include long-term changes in temperatures levels and water availability. These potential physical effects may adversely impact the demand for John Deere products and the cost, production, sales and financial performance of John Deere’s operations.”⁷⁸



Existing insurance coverage may not provide protection for all of the costs that may arise from such events.



-CATERPILLAR



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 and will be particular to the circumstances developing in various geographical regions.



-JOHN DEERE

Illinois Tool Works, located in Glenview, saw its profits increase by 51.9 percent in 2018.⁷⁹ The Fortune 500 industrial manufacturer warns that the company's complex supply chain of raw materials is vulnerable to shortages caused by events like natural disasters and severe weather.⁸⁰

MILITARY

There are three active military bases in the state of Illinois. The Army has a base on Arsenal Island, the Air Force has a base in St. Clair, and the Navy has a training center in North Chicago with access to the Great Lakes.⁸¹ The military employs more than 20,000 active duty personnel in Illinois, as well as nearly 25,000 additional Illinoisans in the reserve forces.⁸²

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.⁸³

PORTS & SHIPPING

The Illinois maritime transportation system includes nearly 1,100 miles of navigable inland waterways, and is also directly linked with Lake Michigan. Ports in the state support more than 48,000 jobs and generate a total revenue of \$6.4 billion.⁸⁴ On an annual basis, the waterway system carries more than 100 million tons of freight per year representing \$32 billion in value.⁸⁵ The CenterPoint Intermodal in Will County is the largest master-planned inland port in North America, and third largest in the world.⁸⁶

The ports and shipping industry in Illinois has inherent advantages from America's inland waterway system that make it much cheaper to export products internationally; however, such advantages rely upon up-to-date infrastructure. By failing to properly modernize infrastructure on locks that are more than 50 years old and not allowing ports to receive funding from the state, Illinois leaves its transportation and shipping network at risk. Severe weather events that cause a failure at just one lock can cost more than \$1.5 billion in additional transport costs and can lose more than \$2 billion in farm-based income.⁸⁷



SEVERE WEATHER TREND

FLOODING

A warmer climate leads to increased moisture in the atmosphere and higher amounts of precipitation. The January-May period of 2019 is the wettest start to a year in recorded American history, and this heavy rainfall (as well as significant winter snowfall across the Midwest) was a primary cause in the historic Midwest flooding in March.⁸⁸

The percent of days with very heavy rain in the Midwest has increased by 37% since the late 1950s, increasing the risk of flooding.⁸⁹ Severe rainfall can also flood sewer systems, causing the water to overflow into lakes and rivers and harm the water supply. Illinois' access to three major rivers and Lake Michigan makes the state uniquely susceptible to flooding.

RAIL

Illinois's central location in the U.S. makes it a critical point in the nation's rail network. The state has nearly 10,000 miles of railroad tracks, with almost 80 percent of the network being operated by America's largest railroad companies. The city of Chicago is the largest U.S. rail gateway, and Illinois is the nation's leader in annual rail freight volume. **BNSF Railway** and **Union Pacific** are the two primary railroad operators in the state.⁹⁰

BNSF Railway Company states that "the Company's success is dependent on its ability to operate its railroad system efficiently. Severe weather, climate change and natural disasters, such as tornadoes, fires, flooding and earthquakes, could cause significant business interruptions and result in increased costs and liabilities and decreased revenues. In addition, damages to or loss of use of significant aspects of the company's infrastructure due to natural or man-made disruptions could have an adverse effect on the Company's operating results... Extreme swings in weather could also negatively affect the performance of locomotives and rolling stock."⁹¹

The **Union Pacific Corporation** has 2,310 miles of track and 3,958 employees in Illinois.⁹² Union Pacific warns, "Severe weather could result in significant business interruptions and expenditures - As a railroad with a vast network, we are exposed to severe weather conditions and other natural phenomena, including earthquakes, hurricanes, fires, floods, mudslides or landslides, extreme temperatures, and significant precipitation. Line outages and other interruptions caused by these conditions can adversely affect our entire rail network and can adversely affect revenue, costs, and liabilities, which could have a material adverse effect on our results or operations, financial condition, and liquidity."⁹³

RESTAURANTS

Restaurants are critical to local economies throughout the state of Illinois. In 2018 there were more than 25,000 eating and drinking places in Illinois, providing nearly 600,000 jobs and \$30.1 billion in sales.⁹⁴

McDonald's is the second largest food services company in the world, trailing only Starbucks.⁹⁵ Illinois has the fourth most McDonald's locations of any state (more than 650), and the company recently moved its corporate headquarters to Chicago.⁹⁶ The company warns that it is "working to manage the risks and costs to us, our franchisees and our supply chain of the effects of climate change, greenhouse gases, and diminishing energy and water resources."⁹⁷

“ In addition, damages to or loss of use of significant aspects of the company's infrastructure due to natural or man-made disruptions could have an adverse effect on the Company's operating results... ”

- BNSF RAILWAY

“ Line outages and other interruptions caused by these conditions can adversely affect our entire rail network and can adversely affect revenue, costs, and liabilities, which could have a material adverse effect on our results or operations, financial condition, and liquidity. ”

-UNION PACIFIC

Starbucks is the largest food services company in the world and recently opened its largest location in Chicago, operating a 43,000 square-foot space and employing more than 200 workers.⁹⁸ Starbucks states, “The supply and price of coffee can also be affected by multiple factors in the producing countries, such as weather (including the potential effects of climate change), natural disasters, crop disease...”⁹⁹

Potbelly is a popular sandwich chain with corporate headquarters in Chicago. The company warns that its high concentration of shops in the Chicago metropolitan area (25 percent of total U.S. locations) makes it more susceptible to financial losses caused by extreme weather events in the region.¹⁰⁰

RETAIL

Illinois’s retail industry is a significant generator of jobs and contributes \$50 billion to the state GDP. Retail creates nearly \$33 billion in direct labor income; there are more than 144,000 retail stores in the state.¹⁰¹

Retail workers are in danger of having their incomes cut as a result of climate change, according to a recent Federal Reserve analysis. The industry makes up one-tenth of national employment, but increasingly volatile weather patterns threaten to cut back retail workers’ hours and pay. Extreme temperatures, flooding, and severe weather events all limit consumer spending habits, making it more likely that these hourly workers may experience large losses in income.¹⁰²

Ulta Beauty is a Fortune 500 leader in beauty products. Based in Bolingbrook, Ulta warns, “We distribute products to our stores without supplementing such deliveries with direct-to-store arrangements from vendors or wholesalers. We are a retailer carrying over 25,000 beauty products that change on a regular basis in response to beauty trends, which makes the success of our operations particularly vulnerable to disruptions in our distribution infrastructure. Any significant interruption in the operation of our supply chain infrastructure, such as disruptions in our information systems disruptions in operations due to fire, natural disasters, or other catastrophic events...or shipping and transportation problems, could drastically reduce our ability to receive and process order and provide products and services to our stores...”¹⁰³

“The supply and price of coffee can also be affected by multiple factors in the producing countries, such as weather (including the potential effects of climate change), natural disasters, crop disease...”

-STARBUCKS

“Any significant interruption in the operation of our supply chain infrastructure...could drastically reduce our ability to receive and process order and provide products and services to our stores...”

-ULTA BEAUTY

Apple has nine retail store locations in Illinois and provides technology products throughout the state.¹⁰⁴ The company tells investors that “global climate change could result in certain types of natural disasters occurring more frequently or with more intense effects. Such events could make it difficult or impossible to manufacture and deliver products to its customers, create delays and inefficiencies in the Company’s supply and manufacturing chain...because the company relies on single or limited sources for the supply and manufacture of many critical components, a business interruption affecting such sources would exacerbate any negative consequences...”¹⁰⁵

TOURISM

Tourism is the largest service export in the United States.¹⁰⁶ Illinois businesses are dependent on visitors from the United States and abroad to visit the state. In 2018, more than 114 million visitors came to Illinois, spending nearly \$40 billion and generating \$3 billion in tax revenue.¹⁰⁷ Tourist attractions in Illinois include the **Shawnee National Forest** and **Chicago**.

The **Shawnee National Forest** is located in Southern Illinois and offers attractions to visitors like hiking, fishing, boating, wine, and horseback riding.¹⁰⁸ The forest consists of approximately 280,000 acres, making it the largest publicly owned body of land in Illinois; it is one of the most ecologically diverse regions in the nation.¹⁰⁹ In October 2019 a national convention of climate leaders met at Shawnee to address the climate crisis, protect public land, and create long-term solutions to mitigate the impacts of climate on national forests and parks.¹¹⁰

Chicago is the third most populous city in the United States, with a population of 2.7 million people.¹¹¹ Located at the northern edge of Illinois, bordering Lake Michigan, the metropolis is seen as the hub of the midwest. In 2018 Chicago had 57.7 million visitors, who spent \$16 billion and supported more than 150,000 jobs.¹¹²

Chicago’s tourism industry is vulnerable to climate-related changes. In 2019, record high water marks in Lake Michigan completely submerged two beaches along the city’s coast, wiping out fishing opportunities as well as jetties that help protect boaters. Lake Michigan is also likely to experience algal blooms as water temperatures continue to rise, harming wildlife in the area and depressing key activities like fishing. Severe weather events like tornadoes are also moving eastward, with Chicago right in the middle of the trend and a likely victim of future storms. Additionally, the city is sinking while water levels are rising, creating a continuous cycle of increased flooding that will prevent visitors and depress the economy.¹¹³

“ Global climate change could result in certain types of natural disasters occurring more frequently or with more intense effects. Such events could make it difficult or impossible to manufacture and deliver products to its customers, create delays and inefficiencies in the Company’s supply and manufacturing chain...”

-APPLE

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