



FACTS ILLINOIS

A M E R I C A N S E C U R I T Y P R O J E C T

Pay Now, Pay Later: Illinois

The manufacturing industry, which employs over 680,000 workers, would be negatively impacted as dredging along the Great Lakes-St. Lawrence shipping route, made necessary due to falling water levels, is projected to cost \$92-154 million annually by 2030.¹

The agriculture industry is expected to experience more flooding, increased pests and pathogens, and increased heat stress, resulting in as much as \$41.46 billion in annual losses.²

The wind energy industry could create up to 8,530 jobs in manufacturing and realize \$2.84 billion in investment.³

According to a new study, a failure to mitigate the effects of climate change could begin to cause serious gross domestic product and job losses within the next several decades. Between 2010 and 2050, it could cost Illinois \$10.1 billion in GDP and nearly 37,000 jobs.*

**GDP numbers are based on a 0% discount rate. Job losses are measured in labor years, or entire years of fulltime employment. Backus, George et al., "Assessing the Near-Term Risk of Climate Uncertainty: Interdependencies among the U.S. States," Sandia Report (Sandia National Laboratories, May 2010), 141. https://cfwebprod.sandia.gov/cfidocs/CCIM/docs/Climate_Risk_Assessment.pdf (accessed March 23, 2011).*

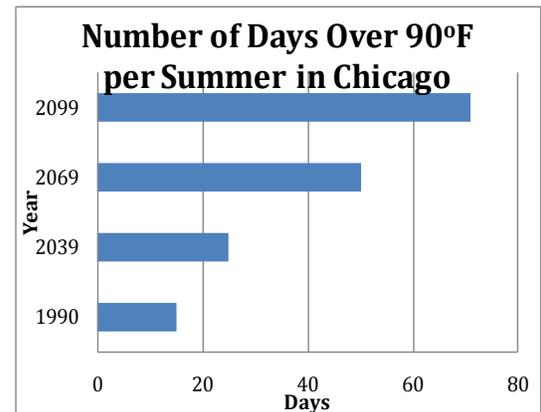
Admittedly, the effects of climate change, a complex and intricate phenomenon, are difficult to predict with precision. Informed scientific and economic projections, as we have used in our research, however, allow us to see that Illinois faces significant losses in industries crucial to its economy if no action is taken.

Moreover, data shows Illinois is poised to benefit from the research, development, and distribution of renewable energy technologies. Ranked 16th in future wind potential and with the necessary infrastructure to manufacture wind turbines,⁴ Illinois has much to gain from the development of a green energy sector. Should we fail to take action against climate change, Illinoisans have much to lose.

Pay Later: The Cost of Inaction

As a result of climate change and its related effects, Illinois faces significant losses within many of its most important industries; the state's economic security is certainly in jeopardy. The agriculture, manufacturing, and shipping industries in Illinois stand to lose thousands of jobs and billions of dollars in revenue if we fail to mitigate the effects of climate change. In July of 1995, a Chicago heat wave with temperatures that reached 106°F, killed over 500 people in 5 days.⁵ If the necessary measures are not taken, days like these could become the norm toward the end of the century. **Chicago could experience as many as 30 days with temperatures of**

100°F or greater each summer, with at least two heat waves like that of 1995. Chicago currently has about two or less such dangerously hot days each summer. Drastically changing the climate of the state, summer temperatures could rise by 3°F toward mid-century, or as much as 13°F as we approach the end of the century, under a high-emissions scenario.⁶



Source: Union of Concerned Scientists⁷

Costs to the Windy City

If smokestacks and automobile emissions continue to produce greenhouse gases at current rates, the smog problem, which already plagues Chicago, will undoubtedly remain. Moreover, warmer temperatures will lead to an increased electricity demand; pollution is likely to worsen under such a scenario, further decreasing the quality of the air. This increased presence of pollutants will trigger a rise in incidents of asthma, chronic bronchitis, emphysema, and

cardiovascular problems. This could result in a mortality rate higher than the infamous 1995 heat wave, in addition to the increased number of illnesses.⁸

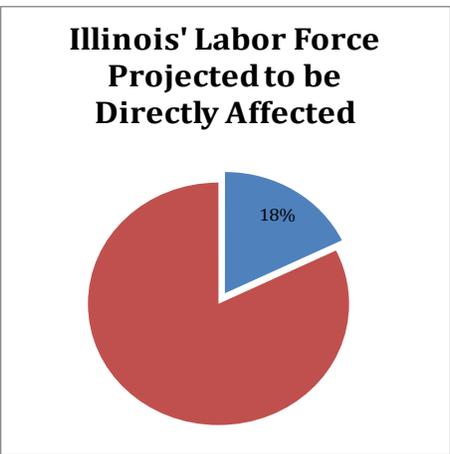
Illinois will also lose a large fraction of its revenue from property sales as flooding, decreasing water levels, and severe storms damage real estate value on Lake Michigan. Over a five-year period, home sales on the water in Chicago topped \$14.3 billion, a third of housing sales throughout the city. However, rising insurance premiums, a potential scenario, could in turn increase customer costs; direct premiums written in federal flood insurance exceeded \$26.3 million in 2006.⁹ Allstate, the state's second largest insurer, has raised rates state-wide by as much as 28% due to damages caused by extreme weather.¹⁰

An Agrarian Heritage under Stress

Illinois has a long, proud history of farming, growing corn since settlement and soybeans since the Second World War. Given this heritage, both John Deere and Cyrus McCormick built factories in Illinois, deepening the connection between Illinoisans and the land.¹¹

A 4.5°F increase in temperature coupled with a 7% increase in precipitation over 30-year averages would cost the Midwest \$9.3 billion each year in lost agricultural profits. Although milder winters will allow for a longer growing season, an increase in spring and fall flooding could make it nearly impossible for farmers to take advantage of this. A heightened risk of flash flooding, caused by severe storms, will further put crops in danger throughout the growing season; an

increasing number of droughts will further compromise the industry.¹²



Source: Bureau of Economic Analysis¹³

The corn earworm, which accounts for an annual loss of 2.5% of corn produced in the United States, will have an easier time surviving with an increase in temperature,¹⁴ likely expanding its region and reducing crop yield. This is particularly detrimental as corn is the leading agricultural product of Illinois, bringing in over \$7.5 billion in 2009.¹⁵

Increased temperatures will also directly threaten crop yields. Corn crops can fail at 95°F, and wheat crops face the same fate, failing at even lower temperatures. A 1988 heat wave in Illinois caused over a 75% reduction in corn and soybean crop yield (compared to the average yield between 1978 and 1997). Under high emissions scenarios, every summer will be hotter than 1988 by mid-century,¹⁶ likely resulting in continuous losses to the state economy. **Scientists have predicted losses of 32% for corn yields and 24% for soybeans as a consequence of changing climate patterns.**¹⁷

Livestock is likely to fair even worse than agriculture. Dairy cattle are vulnerable at high temperatures.

Productivity can, depending on humidity, begin to decrease at 75-80°F.¹⁸ **Milk production is likely to decrease 22% by 2100,¹⁹ and the \$800 million per year hog industry already loses \$20.5 million annually due to the animals' heat stress.** Unless action is taken, hogs will be continually plagued by heat stress, with unforeseeable losses to the industry. Air conditioned barns would be quite costly, but necessary for the industry's survival.²⁰

In July of 1995, a Chicago heat wave with temperatures that reached 106°F, killed over 500 people in 5 days. If the necessary measures are not taken, days like these could become the norm toward the end of the century.

The Manufacturer's Nightmare

Due to increased temperatures, water levels throughout the Great Lakes and the St. Lawrence Seaway will drop as a result of increased evaporation and decreased ice levels throughout the winter. This route is crucial for the manufacturing industry in Illinois, which accounts for almost 14% of the gross state product (GSP) and employs more than 680,000 workers.²¹ The manufacturing industry shipped 123 million tons of goods in 2001, contributing \$23 million to the GSP. If the Great Lakes' water level drops by 1.5 to 3 feet, as high emissions scenarios project, necessary dredging of the Great Lakes-St. Lawrence shipping route is projected to cost between \$92-154 million annually by 2030.²²

Illinois also depends heavily upon its 1,095 miles of inland waterways for the transportation of goods.²³ If precipitation patterns change, these routes may be continually afflicted with increased flooding risk. **If shippers' access to the upper Mississippi and Illinois rivers is cut off, corn, wheat, and soybean producers in Illinois could see revenues fall by \$50 million annually.**²⁴

The waterways in Illinois are also used for recreational purposes. Losses in the state's wildlife and habitat will result in lost revenue for the tourism industry. In 2006, hunting, fishing, and wildlife viewing drew more than 3.7 million people, spending more than \$2.2 billion, to Illinois. The industry, as a result, supported 35,320 jobs in the state.²⁵ Should wetlands continue to recede (only 10% remain)²⁶ recreational activities—boating, fishing, and bird watching, to name a few—will be severely hindered.

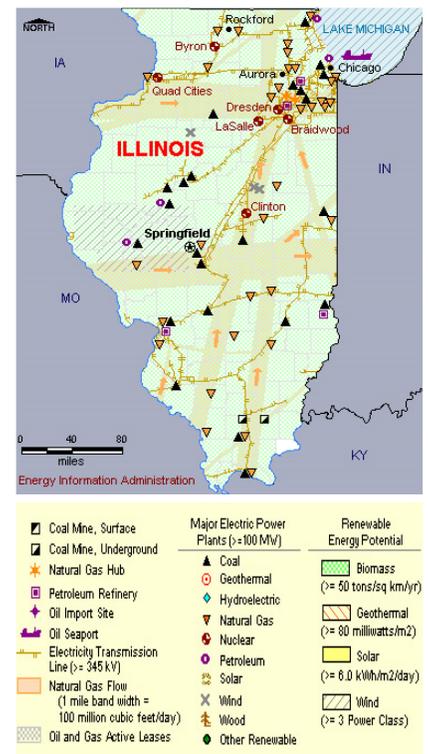
Pay Now: The Benefits of Taking Action

Illinois has enacted strict standards for its electric companies, including mandates requiring that 25% of electricity be generated from renewable sources by 2025, and that 75% of each year's target come from wind power. These mandates should decrease the cost of electricity and ensure the prosperity of the renewable energy sector throughout the state by essentially guaranteeing a market for its products.²⁷

The Chicago Climate Exchange (CCX), launched in 2003, is made up of roughly 450 organizations—agriculture, manufacturers, and universities included—that have voluntarily pledged to decrease their emissions. Emission reductions now total over 700 million metric tons of carbon dioxide—the amount emitted of 140 million cars in a given year.²⁸ **The formation of the CCX demonstrates Illinois' leadership in the fight against climate change and illustrates the opportunity to generate profits while increasing environmental responsibility.**

Yet more can and must be done. In 2005, Illinois accounted for less than 1% of the total power generated by wind energy in the United States,²⁹ yet it has far greater potential. It has 6,980 MW of potential capacity and is ranked 16th in potential for wind power production. By investing, on a national level, in 50,000 MW of new wind energy, Illinois **could realize almost 9,000 jobs and \$2.84 billion in investment**, thus strengthening the state's economy.³⁰ Moreover, the state has a net metering program, allowing customers generating excess renewable energy on their property to sell it back to the utility.³¹

Illinois also ranks first in nuclear power production in the country. With 11 nuclear reactors, the state produces over 10% of all nuclear power in the United States.³²



Conclusion

Illinois must consider action on climate change not just in terms of cost, but also in terms of opportunities. If we give Illinois' population, businesses, and investors clear and consistent signals by properly offering initiatives and cultivating demand, investment and innovation in renewable technologies will follow.

Illinoisans will have to pay for the effects of climate change. The only remaining question is whether they will pay now, or pay later and run the risk of paying significantly more.

(Endnotes)

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