



FACTS WISCONSIN

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: Wisconsin

By the close of the century, Wisconsin's winter temperatures will rise by 6-11°F. Summer temperatures will likely experience an even steeper climb, rising by 8-18°F. Such increases are likely to cause the northernmost forests of many tree species to shift further north, damaging Wisconsin's \$18 billion forestry industry.¹

The projected increases in heat and precipitation could have profound impacts on Wisconsin's agricultural production;² in 2007, agricultural commodities brought nearly \$9 billion to the state.³

Investing in a clean energy economy could lead to a net increase of about \$2.8 billion in investment revenue and create 35,000 jobs.⁴ This would be highly beneficial to the state's labor force—where over 230,000 Wisconsinites are currently unemployed.⁵

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 Wisconsin \$6.2 billion in GDP and nearly 39,000 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/cfdocs/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 Wisconsin faces significant losses in industries crucial to its economy if no action is taken to combat the effects of global warming.

Moreover, data shows Wisconsin is poised to benefit from the research, development, and distribution of renewable energy technologies. The state recently considered the Clean Energy Jobs Act, which would have curbed greenhouse gas emissions, increased renewable energy usage, and created thousands of new jobs.⁶ In 2007, Wisconsin ranked 20th in the nation in the number of clean economy

jobs.⁷ Several rivers that cross the state provide hydroelectric power potential, and significant amounts of ethanol could be produced from Wisconsin's high level of corn production.⁸ Should we fail to take action against climate change, Wisconsinites have much to lose.

Pay Later: The Costs of Inaction

The predicted effects of climate change on Wisconsin could have disastrous impacts on the state's economic security. The past two centuries have seen the average ice cover on Wisconsin's lakes slowly recede, and that trend is expected to continue.⁹ Other

anticipated effects of climate change include: a decline in the Great Lakes water levels; a reduction of 55-70% in the forested areas of the state; and more frequently occurring extreme floods.¹⁰ Such events will disrupt wildlife and the state's ecosystems, thereby causing harm to agriculture, tourism, and forestry.¹¹ For example, more frequently occurring drought, resulting in reduced levels of water in the soil, may force farmers to rely more on costly irrigation measures, putting a financial strain on the thousands of small farmers in the Badger State.¹²

Other anticipated effects of climate change include: a decline in the Great Lakes water levels; a reduction of 55-70% in the forested areas of the state; and, more frequently occurring extreme floods.

In 2008, southern and eastern Wisconsin experienced their wettest June on record. In one day, roughly six inches of rain fell on the Town of Ontario; flash flooding that followed caused significant damage to critical infrastructure, homes and businesses.

Central to Wisconsin Dells' billion-dollar tourism sector, Lake Delton needed repairs; a result of too much rain, it had flooded, eroded banks, wiped out homes, and damaged

roadways. Billions were lost as a result of destroyed crops, reduced yields, and the inability to plant at the appropriate time.¹³

Trouble in Dairyland

Wisconsin is the largest producer of cheese and second-largest producer of milk and butter in the United States.¹⁴ Reflecting the diversity of Wisconsin's crops, the state also ranks among the top five states in the production of 13 other important agricultural commodities.¹⁵ **Temperatures will likely rise by at least 6°F in winter and as much as 18°F in summer by 2100—roughly comparable to the warming that has taken place since the last ice age.**¹⁶ Moreover, precipitation during the winter months is likely to increase by 15-30%, falling by as much as 20% during the summer.¹⁷

Severe rainstorms and floods will likely seriously affect Wisconsin's approximately 78,000 farms, which had an income totaling almost \$10 billion in 2008—roughly two-thirds of which came from livestock, dairy, and poultry.¹⁸

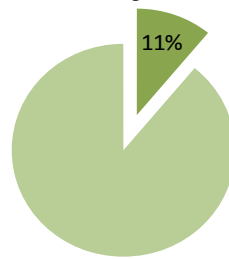
Dairy products are the state's most profitable agricultural product, accounting for nearly \$4.6 billion in 2007 revenue.¹⁹ The likely increase in summer temperatures will curb appetite and, accordingly, weight gain in livestock. The quality of milk will likely suffer as a result of warmer winters and less snow cover which could reduce the quantity and quality of spring forage.²⁰

Extreme heat represents a significant threat to Wisconsin's economic security as it is projected to cause heat stress for much of the state's livestock.

Dairy cattle are particularly vulnerable to high temperatures, and milk production can decline when temperatures, depending on humidity, exceed 75°F. From 1960-1991 (the historical baseline), average summer temperatures and humidity in Wisconsin did not exceed levels known to cause stress in livestock. Under a higher-emissions scenario, however, dairy cattle and other livestock will suffer near-permanent heat stress during a typical Wisconsin summer toward the end of the century.²¹

Corn crops, which took in over \$1

Wisconsinite Labor Force Projected to be Directly Affected



Source: Bureau of Economic Analysis²²

billion in 2009,²³ can fail at 95°F with the risk increasing the longer the heat lasts. During 1960-1991, periods of intense heat were extremely rare in the Midwest, with three-day heat waves occurring about once every 10 years. Under a higher-emissions scenario, however, a three-day period with temperatures exceeding more than 95°F is predicted to occur in three of every four summers in Wisconsin within the next few decades.²⁴

Northern Wisconsin's forests are an integral economic asset, accounting for over \$18 billion in shipments and 74,000 jobs. A hotter climate, however, could threaten this, altering natural ecosystems and likely

causing the northernmost spruce, hemlock, and fir forests to shrink and other species to migrate northward.²⁵ Perhaps the greatest economic loss for the forestry industry in the Great Lakes region would be experienced by the strong virgin pulping/wood fiber industry.²⁶ A shift toward oak and hickory trees (hardwoods) would completely eliminate the soft wood pulp industry and create difficulty for forest product industries that rely predominantly on softwood feed-stocks such as board mills and oriented strand board (OSB) plants. This would most likely require closing many mills in Wisconsin unless substantial technological advances were made that allow for larger consumption of hardwood fiber for use in these vulnerable industries.²⁷

An Outdoorsman's Culture in Jeopardy

Wisconsin's lakeshores and inland waters attract anglers, hikers, birders, and other outdoor sports enthusiasts.

Tourism and recreation generate nearly \$7 billion each year in gross income for those employed in these sectors.²⁸ More than 40 globally important sites (places that repeatedly provide habitats for at least 1% of the world's population of a bird species) are located in the Great Lakes region, five of which can be found in Wisconsin.²⁹ Harm to the state's ecosystems could cause significant damage to the Wisconsin economy. For example, in 2006, hunting, fishing, and wildlife viewing alone were responsible for employing more than 90,000 people, and over 4.1 million tourists spent in excess of \$3.7 billion.³⁰ Winter sports—including the famous American Birkebeiner ski race—are also threatened by climate change. Businesses associated with skiing, snowmobiling, and ice

fishing could be hampered by lesser amounts of snow and diminishing levels of ice-cover on the state's lakes.³¹

Pay Now: The Benefits of Taking Action

Between 2006 and 2008 the state's green economy attracted \$46.7 million in venture capital investment, and in 2007, 15,089 Wisconsinites held jobs in the sector.³² Clean energy investments will create opportunities for welders, carpenters, electricians, operations managers, machinists, and industrial truck drivers, to name a few. Wisconsin is home to more than 304,000 jobs which require the same skills as clean energy industries, and which could see job growth or wage increases by investing in such technologies.³³ The benefits of those new jobs would create positive ripple effects throughout the entire economy.

A recent study computed the projected benefits to Wisconsin from implementing a 25% renewable electricity standard (RES) by 2025. The benefits were numerous: a \$59 million reduction in electricity bills; "\$2.4 billion in new capital investment; \$630 million to farmers and rural areas from bioenergy production;" and, 2,650 new jobs from renewable energy production.³⁴ In 2025, renewable energy development from the RES would also generate an additional \$137 million for Wisconsin's economy and \$91 million in personal income. Furthermore, such a program would increase the security and reliability of Wisconsin's energy supply by using local energy sources, protecting consumers from future increases in energy prices.³⁵

The recently considered Clean Energy Jobs Act (CEJA) was expected to increase Wisconsin's gross state product "by \$250 million in 2015, by \$710 million in 2020, and by \$1.41 billion in 2025."³⁶ Similar results were expected for employment—over 16,000 net new Wisconsin jobs were expected in 2025 as a direct or indirect benefit of CEJA.³⁷ **Though it would have required an investment of \$700 million, over \$1.9 billion in net savings—more than \$330 in savings for each state resident—could have been realized had Wisconsin achieved the 2% annual energy savings by 2015 as planned in the CEJA. Such a plan would have created roughly 11,000 to 13,000 net new jobs.**³⁸ Wisconsin's attractiveness to businesses would climb if the state touted energy efficient buildings and lower operating costs.³⁹

Energy efficiency would reduce greenhouse gas emissions while lowering consumers' bills and creating local jobs for people who perform energy audits, weatherize homes, and manufacture efficient windows. A \$350 million annual investment in energy efficiency would reduce energy use by 1.6% and save an estimated \$900 million by 2012—saving each household \$431 each year.⁴⁰

Conclusion

Wisconsin must consider action on climate change not just in terms of cost, but also in terms of opportunities. If we give Wisconsin's population, businesses, and investors clear and consistent signals by properly offering initiatives and cultivating



demand, investment and innovation in renewable technologies will follow.

Wisconsinites 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)

- 1 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region: Impacts on Wisconsin Communities and Ecosystems*, April 2003, 2, 4. <http://www.ucsusa.org/greatlakes/pdf/wisconsin.pdf> (accessed July 14, 2010).
- 2 Melanie Fitzpatrick et al., *Confronting Climate Change in the U.S. Midwest: Wisconsin*, Union of Concerned Scientists, July 2009, 7. http://www.ucsusa.org/assets/documents/global_warming/climate-change-wisconsin.pdf (accessed July 20, 2010).
- 3 U.S. Department of Agriculture, *State Fact Sheets: Wisconsin*, September 2010. <http://www.ers.usda.gov/StateFacts/WI.htm> (accessed September 14, 2010).
- 4 Robert Pollin, James Heintz, and Heidi Garrett-Peltier, *Clean-Energy Investments Create Jobs in Wisconsin*, 99. http://images2.americanprogress.org/CAP/2009/06/factsheets/peri_wi.pdf (accessed July 14, 2010).
- 5 U.S. Bureau of Labor Statistics, *Economy at a Glance: Wisconsin*, July 30, 2010. http://www.bls.gov/eag/eag.wi.htm#eag_wi.f.1 (accessed August 2, 2010).
- 6 Steven Miller, Dan Wei, and Adam Rose, *The Macroeconomic Impact of the Wisconsin Clean Energy Jobs Act on the State's Economy*, Center for Climate Strategies, February 18, 2010, 1-2, 5-11. <http://www.climatestrategies.us/ewebeditpro/items/O25F22680.pdf> (accessed July 15, 2010).
- 7 Pew Charitable Trusts, *Clean Energy Economy: Repowering Jobs, Businesses, and Investments Across America*, June 2009, 8. http://www.pewcenteronthestates.org/uploadedFiles/Clean_Economy_Report_Web.pdf (accessed July 14, 2010).
- 8 U.S. Energy Information Administration, *State Energy Profiles: Wisconsin*, July 1, 2010. http://www.eia.doe.gov/state/state_energy_profiles.cfm?sid=WI (accessed July 14, 2010).
- 9 National Wildlife Federation, *Global Warming and Wisconsin*, February 2009, 1. <http://cf.nwf.org/globalwarming/pdfs/wisconsin.pdf> (accessed July 14, 2010).
- 10 Ibid., 1-2.
- 11 Ibid., 2.
- 12 Ibid., 2; Wisconsin Initiative on Climate Change Impacts: Agricultural Working Group, *Impacts*, 2009. <http://www.wicci.wisc.edu/agriculture-working-group.php#impacts> (accessed July 15, 2010); U.S. Department of Agriculture, *State Fact Sheets: Wisconsin*.
- 13 National Climatic Data Center, *Climate of 2008: Midwestern U.S. Flood Overview*, July 2008. <http://www.ncdc.noaa.gov/oa/climate/research/2008/flood08.html> (accessed July 20, 2010).
- 14 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*.
- 15 Wisconsin Initiative on Climate Change Impacts: Agricultural Working Group, 2009.
- 16 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*.
- 17 Ibid.
- 18 Wisconsin Initiative on Climate Change Impacts: Agricultural Working Group, 2009.
- 19 Fitzpatrick et al., 8.
- 20 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*, 3.

- 21 Fitzpatrick et al., 8.
- 22 Based on the employed 2009 labor force in Wisconsin; includes farm, forestry, fishing and related sectors and tourism industry. Bureau of Economic Analysis, *SA25N Total full-time and part-time employment by NAICS industry 1/ -- Wisconsin*, September 10, 2010. <http://www.bea.gov/regional/spi/default.cfm?selTable=SA25N&selSeries=NAICS> (accessed October 8, 2010).
- 23 U.S. Department of Agriculture.
- 24 Fitzpatrick et al., 7
- 25 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*, 4.
- 26 Great Lakes Regional Assessment Group, U.S. Global Change Research Project, *Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change*, October 2000, 62. http://www.geo.msu.edu/gdra/PDF_files/GLRA_report.pdf (accessed July 20, 2010).
- 27 Ibid., 62.
- 28 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*, 4.
- 29 Great Lakes Regional Assessment Group, 65.
- 30 Jobs are an average of 2001 and 2006 data; National Wildlife Federation, 2
- 31 Union of Concerned Scientists, *Findings from Confronting Climate Change in the Great Lakes Region*, 4.
- 32 Pew Charitable Trusts, 8.
- 33 Natural Resources Defense Council, *Job Opportunities in a Green Economy: Wisconsin Can Gain from Fighting Global Warming*, May 2008. <http://www.nrdc.org/globalWarming/jobs/wisconsin.pdf> (accessed July 15, 2010).
- 34 Union of Concerned Scientists, *Raising the Bar in Wisconsin*, March 2010, 1. http://www.ucsusa.org/assets/documents/clean_energy/Wisconsin-renewable-portfolio-standard.pdf (accessed September 15, 2010).
- 35 Ibid., 4, 5.
- 36 Miller et al., 1.
- 37 Ibid., 1.
- 38 U.S. Department of Agriculture; Energy Center of Wisconsin, *Toward a More Energy Efficient Wisconsin*, 2010, 2. <http://www.ecw.org/ecwresults/potentialstudyfactsheet.pdf> (accessed July 20, 2010).
- 39 Energy Center of Wisconsin, 1.
- 40 Energy Center of Wisconsin, *Energy Efficiency and Customer-sited Renewable Resource Potential in Wisconsin*, August 2009, EE-2-3. <http://www.ecw.org/ecwresults/potentialstudyfactsheet.pdf> (accessed September 16, 2010); U.S. Census Bureau, *State and County QuickFacts: Wisconsin*. <http://quickfacts.census.gov/qfd/states/55000.html> (accessed September 16, 2010); calculated by using estimated savings of \$900 million divided by 2,084,544 (2000) households.