



ENVIRONMENTAL LAW & POLICY CENTER

Climate Change Impacts on the Great Lakes



POLICY SOLUTIONS

Climate Change Impacts on the Great Lakes: Policy Solutions

Solving our climate change problems is the moral, economic, policy, political and technological challenge of our generation. The Great Lakes states account for more than 25% of the nation's CO₂ pollution and 5% of the world's. This pollution is generated primarily by the Midwest's heavy concentration of old, highly polluting coal plants and the fact that it is America's transportation crossroads and the center of the nation's transportation industry. The Midwest is at the center of our nation's carbon pollution problems, and should be a fulcrum for solutions that make good economic and environmental sense. Robustly implementing the following policies would reduce greenhouse gas pollution, decrease public health costs, create local jobs and grow the region's clean energy economy for the future.

The threats from climate change to the Great Lakes are serious and severe so it is all the more important for Great Lakes states to lead in reducing pollution. Solutions that mitigate climate change often achieve multiple pollution and public health benefits:

- Advancing renewable solar energy, storage and wind power development creates jobs and spurs economic growth while avoiding carbon pollution.
- Improving energy efficiency saves residential and business consumers money on their utility bills, creates new installation and retrofit jobs, and keeps energy dollars in the Great Lakes region instead of sending those energy dollars to places where more coal, natural gas and uranium are extracted and mined.
- Investing in clean electric vehicles, modern higher-speed rail, and better transit avoids carbon pollution while increasing mobility options, reducing air pollution, and creating transportation industry jobs of the future.
- Achieving the airline industry's goal of reducing its carbon emissions by 50% by 2050 will reduce particulates and other pollutants that harm public health and the environment.

Solutions that recognize and adapt for climate change also reduce stress on the Great Lakes ecosystem:

- Reducing agricultural runoff of phosphorus pollution from manure and excess fertilizer will, in turn, reduce harmful algae blooms that are exacerbated by climate change and threaten safe drinking water, fisheries and outdoor recreation in western Lake Erie, Green Bay and other shallow bays.
- Green infrastructure, ranging from wetlands restoration to permeable pavement, helps to protect shorelines and clean water, as well as marinas, docks and shoreline neighborhoods from flooding.
- Developing a more decentralized electricity system using more distributed renewable energy generation will be more resilient than large central generating plants requiring high-voltage transmission lines and very high towers that are vulnerable to ice and snow, high winds during storms, and failures due to heat waves exacerbated by climate change.

Restoring the proposed \$475 million of annual federal funding for the successful Great Lakes Restoration Initiative will strengthen protection of fisheries, shorelines and wetlands, while helping to reduce nutrient pollution exacerbated by climate change.



1. Accelerate development of renewable energy in order to reduce greenhouse gases and other pollutants from fossil fuel plants, create jobs and grow the Great Lakes clean energy economy.

Most of the electricity generated in the Midwest still comes from coal- and natural gas-fired power plants. Less than 10% of the Midwest's overall electricity supply comes from renewable energy resources like solar energy and wind power. Burning fossil fuels is a major source of greenhouse gas pollution and other harmful air pollutants, including particulates, sulfur dioxide, nitrogen oxides and mercury. These pollutants threaten air and water quality, and they increase public health costs, school absences, and missed work days.

Renewable energy is more cost-effective and available now than ever before as the technologies improve and prices decline. Today, close to 35,000 megawatts of wind power and solar energy are now running in the Midwest. Illinois, alone, is on track to install 3,000 megawatts of new solar energy generation over the next few years. Minnesota requires that utilities procure 25% of their energy from renewable sources by 2025, and Michigan requires 15% renewables by 2021 and sets a goal of 25% by 2025.

Declining costs and new methods for purchasing clean renewable energy accelerate opportunities for carbon pollution reduction solutions in the Midwest. Local and on-site distributed renewable energy generation provides additional benefits, including stabilizing energy costs, creating local jobs and growing the local economy, and adding tax revenues.



2. Accelerate implementation of energy efficiency in order to reduce greenhouse gases, create jobs, reduce the energy dollar outflow from the region, and grow the regional clean energy economy.



Energy efficiency is the best, fastest, and cheapest solution to carbon pollution problems. Smart energy efficiency investments produce cost savings and avoid pollution. LED lights, smart thermostats, modern appliances, efficient commercial lighting and HVAC, and more efficient industrial pumps and motors save businesses and residents money on their utility bills and reduce greenhouse gases and other pollutants. The Retrofit Chicago program is a model that others can replicate, as are programs to encourage consumer installation of smart thermostats. The time has never been better for people, businesses, cities and states to reduce their energy use, save money, and avoid pollution through energy efficiency improvements that avoid wasted energy. What's more, energy efficiency improvements create installation jobs, produce cost savings, keep money in our communities, and reduce pollution.

3. Accelerate adoption of electric vehicles across the region and in business, state, municipal and school bus fleets. Power electric vehicle charging stations with clean renewable solar energy and wind energy.

The Midwest is America's transportation crossroads and the center of the nation's transportation industry. Transportation is now the leading source of carbon pollution. Electric vehicles for municipal buses, fleet vehicles and school buses enable cities and states to reduce air pollution, cut fuel costs, and improve public health by switching from gasoline to electricity generated by renewable energy.

Many models of electric vehicles are now available on the market. In addition to passenger vehicles and commercial delivery trucks, there are a wide range of electric vehicles becoming available to meet the specialized needs of cities, including public transit buses and vans, street sweepers, school buses, and garbage trucks that can help to decarbonize transportation. City and state leaders should accelerate smart electric vehicle deployment, especially in dense urban areas where emissions most endanger public health.

Electric vehicles (EVs) are a central part of the strategy to reduce greenhouse gases, but the vehicles are only much cleaner if they are charged by renewable energy. The solution is to greatly ramp up the overall market share of solar energy and wind power generation. In the near term, to accelerate the benefits EVs will deliver for cleaner air and avoiding carbon pollution, EV charging stations should be powered with renewable energy through on-site installations, contracts with solar and wind energy producers, or renewable energy credits. The best time to seize this opportunity is now, when the electric vehicle charging station infrastructure is poised to rapidly grow in cities and along the Midwest's interstate highways. Moreover, funding is available now through the VW Settlement Trust Funds to support EV infrastructure, public school buses and heavy duty electric vehicles.

4. Align federal and state transportation policies and funding with climate change goals.

Enabling people to rely less on cars and to have more transit, walking, and biking choices will reduce greenhouse gas pollution. Today's transportation market is distorted by federal and state policies that encourage auto-dependent communities and limit transportation choices. Those policies should be changed.

For example, the federal government will fund up to 80-90% of a road project, while it will only fund up to 50% of a public transit project. That longstanding policy distorts wise transportation choices in ways that increase greenhouse gas pollution and climate change problems.

Likewise, for the federal transit programs, new public transit "capacity" projects must compete for funding, and successful projects must demonstrate that they advance national and local goals, including environmental benefits and economic development. There is no similar standard for new highway projects. Congress should require funding for new highway capacity to compete for funding, and preference should be given for projects that reduce greenhouse gas pollution and vehicle miles travelled per capita. States should be required to measure the climate impacts of their transportation policies and infrastructure.



5. Support strong national policies to reduce greenhouse gas pollution throughout the United States.

The United States must return to leading on climate change solutions in ways that stimulate innovation, create jobs, and spur domestic manufacturing and exports of clean energy and clean transportation technologies and equipment. Setting strong Clean Car Standards as the U.S. Environmental Protection Agency and U.S. Department of Transportation did in 2012 stimulates technological innovation and means that new cars – every year until 2025 – will emit less pollution and use less oil. In December 2018, the Trump Administration proposed freezing the standards at model year 2020 levels through 2026. A federal analysis conducted in 2017 of the Clean Car Standards concluded that the technologies to continue to improve mileage and reduce pollution are available and cost-effective, with benefits exceeding costs by \$90 billion. If the federal government continues to step back, then states should step up and move forward by adopting California’s stronger clean car standards.

The U.S. EPA’s Clean Power Plan, adopted in August 2015, required states to deploy an array of flexible tools and approaches to reduce greenhouse gas emissions by specific amounts from the electric power plant sector by 2030. The Trump Administration has begun dismantling this important program by rolling back the Clean Power Plan standards and proposing to replace them with a business-as-usual approach that will allow continued use of polluting fossil-fuel power plants. The better approach: reverse the rollback of the Clean Power Plan, implement it effectively and move forward with other federal-state actions to reduce greenhouse gas pollution from the energy and transportation sectors.

6. States and cities should continue their “We Are Still In” actions to support the Paris Climate Change Accord.

Solving climate change problems will ultimately require international cooperation to dramatically reduce greenhouse gas pollution. When it comes to the atmospheric impacts, it doesn’t matter whether carbon emissions come from power plants in Indiana or Indonesia. The Paris Climate Change Accord is a key step for necessary action. Under the Trump Administration, the United States stepped back and became the only G-20 nation not to recommit to the Paris Accord. That’s not in our national security, global competitiveness, or environmental interests.

In the meantime, Great Lakes states and cities should lead by example by purchasing renewable energy and clean fleet vehicles, and by taking actions to make public buildings more energy efficient. Through both direct and joint procurements, state and local governments have tremendous purchasing power to help grow the markets for renewable energy and cleaner transportation. The United States has been a leader in clean technology for decades and in developing chemicals that are less harmful to the ozone layer and to the climate. States and cities can be powerful policy and market drivers to advance sustainability and climate change solutions.



7. Develop a more decentralized electricity system based on more distributed renewable energy.

The electricity grid was built with large central power plant “hubs” and large high-voltage transmission line “spokes” and high towers to deliver electricity supply across long distances to consumers. This traditional utility infrastructure is aging and is increasingly vulnerable to changing climate conditions. Instead of spending billions of dollars to rebuild the grid of the past, state public utility commissions and other federal, regional and state policymakers and regulators should design and adopt policies to support building a smarter, more distributed and flexible, and more dynamic grid of the future.

This “smarter grid” will be built around a decentralized network of clean distributed generation, including solar energy with storage, demand response and energy efficiency, smart building energy management control systems, electric vehicles, and software that optimizes supply and demand across the grid. Developing a more decentralized electricity system based on more distributed renewable energy generation will be more resilient than large central generating plants requiring huge high-voltage transmission lines that are vulnerable to ice and snow, high winds during storms, and heat waves during the summer exacerbated by climate change.

8. Achieve the airline industry’s stated goal of reducing its carbon emissions by 50% by 2050.

While aviation comprises a relatively small, but significant and growing share of overall carbon emissions, its energy intensity is much higher per person-mile than other modes of travel. The Great Lakes region has major airline hubs at Chicago O’Hare Airport, Detroit Metro Airport, Minneapolis-St. Paul Airport and Toronto Pearson Airport, among others. Moreover, United Airlines’ and Boeing’s global headquarters are in Chicago.

The U.S. airline industry has formally supported the International Civil Aviation Organization’s goal of improving airline fuel efficiency by 1.5% each year through 2020, carbon-neutral growth thereafter, and ultimately a 50% reduction in carbon emissions over 2005 levels by 2050. Achieving these goals is an important action for climate change solutions in the Great Lakes region and globally.

9. Limit agricultural runoff of phosphorus pollution from manure and excess fertilizer to reduce harmful algae blooms that are exacerbated by climate change and threaten safe drinking water, fisheries and outdoor recreation in western Lake Erie, Green Bay and other shallow bays.

More extreme weather caused by climate change will lead to more agricultural runoff of manure, fertilizers and pesticides being washed downstream into the Great Lakes. At the same time, warmer water temperatures will lead to more rapid, harmful algae growth. When this nutrient pollution reaches a certain level, the phosphorus disturbs the natural ecological balance of the lakes and results in the growth of toxic algae blooms that harm drinking water supplies, fisheries and outdoor recreation, especially in shallow bays adjacent to Toledo and Green Bay.

Concentrated animal feedlot operators (CAFOs), which produce large amounts of manure that run off into rivers that flow into the Great Lakes, should be required through enforceable regulatory standards to reduce their pollution sufficiently to avoid harmful algae blooms. Likewise, large soy and corn growers whose fertilizer use creates phosphorus and nitrates, which run off into rivers that then flow into the Great Lakes, should be required through enforceable regulatory standards to reduce their pollution sufficiently to avoid harmful algae blooms. Effective regulatory policies combined with technological innovations and best management practices, along with education and assistance, and market mechanisms are necessary to reduce agricultural runoff pollution as climate change exerts further pressure on the Great Lakes ecological and economic health.

10. Design, develop and install green infrastructure, ranging from wetlands restoration to permeable pavement, to adapt to climate change and protect shorelines and wildlife.

As extreme storm events become the new normal, the “hard infrastructure” of storm sewers and retaining walls is proving to be both too expensive and too inflexible to meet growing pressures. Green infrastructure – using wetlands, permeable pavement, and swales – is economical and resilient. It also provides important secondary benefits including groundwater recharge, fish and wildlife habitat, and outdoor recreational space. Restoring wetlands and floodplains provides a natural buffer to reduce flood damage and should be part of sensible planning and zoning. Stormwater management systems should be improved to manage the type of heavy rain events that are more common today in both urban areas and in rural areas where agriculture faces erosion and crop losses, and flooding threatens homes and communities.

11. Restore the proposed \$475 million of annual federal funding for the successful Great Lakes Restoration Initiative.

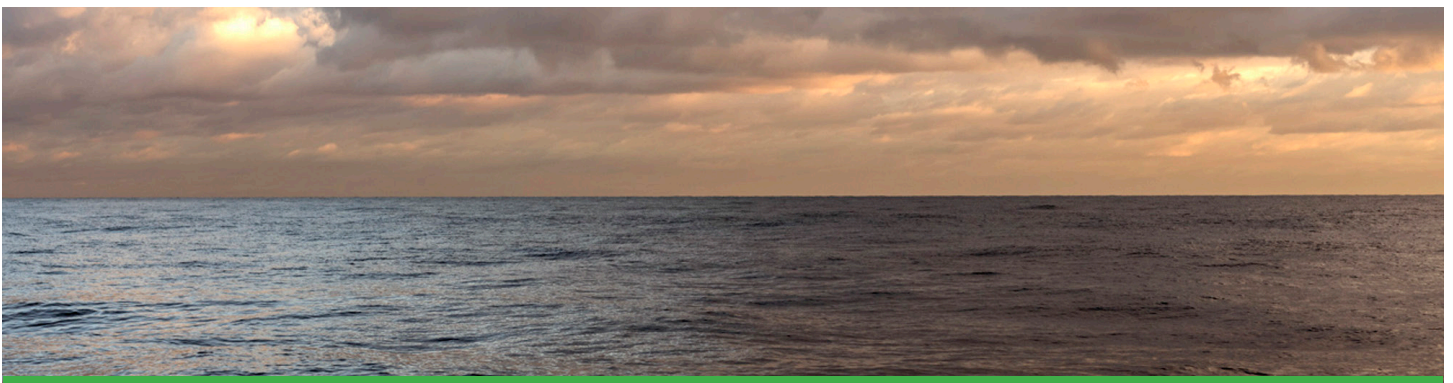
Over the past 25 years, there have been many plans to restore the Great Lakes, but they were constrained by the lack of significant federal funding. The Great Lakes Restoration Initiative was a breakthrough. This program was initially planned for \$475 million of annual federal funding and a vision that it would add to existing programs. Over the past ten years, the Great Lakes Restoration Initiative has achieved strong results and sustained funding. Climate change impacts now present a growing threat to the Great Lakes.

The Great Lakes Restoration Initiative has funded and supported more than 4,000 projects across the Great Lakes states since it was launched in 2010 to:

- Improve water quality for safe drinking water supplies, fisheries and aquatic habitats.
- Protect shorelines and restore wetlands.
- Protect and restore native habitats and species.
- Help prevent and control invasive species.
- Clean up toxic sediments on lake bottoms.
- Reduce nutrient runoff that contributes to harmful algal blooms.

Congress’s understanding of the effectiveness of the Great Lakes Restoration Initiative is reflected in the bipartisan support to twice reject President Trump’s proposed budget cuts for this successful program, and instead, restore the full authorized funding of \$300 million annually.

Increased funding is justified as harmful algae blooms in western Lake Erie, Green Bay, other shallow bays and Lake Superior, and the impacts of climate change realities create much more stress on Great Lakes infrastructure and the ecosystem.





Environmental Law & Policy Center

The Environmental Law & Policy Center is the Midwest's leading public interest environmental legal advocacy and eco-business innovation organization. We develop and lead successful strategic advocacy campaigns to improve environmental quality and protect our natural resources. We are public interest environmental entrepreneurs who engage in creative business dealmaking with diverse interests to put into practice our belief that environmental progress and economic development can be achieved together. ELPC's multidisciplinary staff of talented and experienced public interest attorneys, environmental business specialists, public policy advocates and communications specialists brings a strong and effective combination of skills to solve environmental problems.

ELPC's vision embraces both smart, persuasive advocacy and sustainable development principles to win the most important environmental cases and create positive solutions to protect the environment. ELPC's teamwork approach uses legal, economic and public policy analysis, and communications advocacy tools to produce successes. ELPC's strategic advocacy and business dealmaking involves proposing solutions when we oppose threats to the Midwest environment. We say "yes" to better solutions; we don't just say "no."

ELPC was founded in 1993 and has achieved a strong track record of successes on national and regional clean energy development and pollution reduction, transportation and land use reform, including high-speed rail development, and natural resources protection issues. ELPC's creative public advocacy effectively links environmental progress and economic development together and improves the quality of life in our Midwestern communities.

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