

# Fund for Lake Michigan

The Total Economic Impact from 2011-2018



UNIVERSITY OF WISCONSIN  
**WHITEWATER**

Fiscal and Economic Research Center





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## Executive Summary

Passage of the Clean Water Act in 1972 was a significant step in restoring waterways in the United States. Although the act is over 46 years old, much work remains. As of 2013, the Environmental Protection Agency (EPA) listed 55 % of U.S. waterways as impaired<sup>1</sup>, meaning they do not meet water quality standards and may not support fishing, swimming, recreating, or public health and welfare. Wisconsin's 15,000 lakes and 82,000 rivers and streams cover 17.3 percent of Wisconsin's land area, according to the U.S.G.S.<sup>2</sup> Roughly 18 percent of this fresh water is impaired.<sup>3</sup> Wisconsin's impaired waters represent ecological, social, and economic opportunities lost. Their restoration would have widespread benefits.

Ten years ago the Fund for Lake Michigan (FFLM) was created "to fund projects to address, reduce, and mitigate water quality impacts in Lake Michigan, such as the impact of invasive species, polluted runoff associated with storm water and erosion, toxic loadings, and habitat destruction on Lake Michigan." With grants to nonprofits and government organizations supporting a healthier and greener Wisconsin, FFLM aims to improve Lake Michigan water quality and to better the lives of the communities that depend on Lake Michigan.

The Fiscal and Economic Research Center (FERC) at the University of Wisconsin Whitewater was tasked with calculating the total economic impact of all FFLM funded projects between 2011-2018. Using IMPLAN, an input-output method of analysis that we describe in more detail later in the report, we find that FFLM has had, and will continue to have, a significant positive impact on the economy of southeastern Wisconsin.

Between 2011 and 2018, the Fund for Lake Michigan awarded 374 grants totaling just under \$22.9 million. These grants have had a significant and lasting economic impact on the region. Specifically, the Fund's investment:

- Created 1287 jobs
- Stimulated the economy with over \$124 million in economic output
- Generated \$52 million in labor income

Furthermore, we conclude that, if supported in the same way, funding from the Fund for Lake Michigan will continue to positively impact Wisconsin's economy.

<sup>1</sup> Noppen, Trip Van. "Dirty Water: Can US Clean Up Its Act?" LiveScience. April 11, 2013. Accessed July 27, 2017. <https://www.livescience.com/28669-dirty-water-report.html>.

<sup>2</sup> "How Wet is Your State?" U.S. Geological Survey, U.S. Department of the Interior, [http://www.usgs.gov/special-topic/water-science-school/science/how-wet-your-state-water-area-each-state?qt-science\\_center\\_objects=0#qt-science\\_center\\_objects](http://www.usgs.gov/special-topic/water-science-school/science/how-wet-your-state-water-area-each-state?qt-science_center_objects=0#qt-science_center_objects).

<sup>3</sup> "Assessing Wisconsin's Waters: How Healthy Are Our Lakes, Rivers, and Streams?" Wisconsin Department of Natural Resources, [dnr.wi.gov/water/wsWIMSDocument.ashx?documentSeqNo=150694241](http://dnr.wi.gov/water/wsWIMSDocument.ashx?documentSeqNo=150694241)

## Introduction

The University of Wisconsin Whitewater's Fiscal and Economic Research Center (FERC) analyzed all FFLM-supported projects and estimated the economic impact that they had on southeastern and eastern Wisconsin between the years 2011 and 2018. This was done using IMPLAN, an input-output method of economic modeling that will be discussed in detail later in this report.

Our findings indicate the Fund has had, and will continue to have, a tremendous impact on the region by creating between 200 and 225 jobs, providing employees with over \$8 million in labor income, and generating over \$20 million in economic output annually. This report details our methodology and findings.

## Background

The Fund for Lake Michigan was established in 2008 as a resolution for a dispute concerning the Oak Creek Power Plant and Elm Road Generating Station in southeastern Wisconsin. According to the Wisconsin Electric Power Company (WEPCO), the settlement saved ratepayers hundreds of millions of dollars—what it would have cost to construct cooling towers or to continue litigating the environmental issues at Oak Creek.<sup>4</sup> The agreement provides for payments of \$4 million a year from 2011 to 2035 to fund projects to improve water quality in Lake Michigan.

<sup>4</sup> Source: Docket No. 05-UR-104, *Direct Testimony of Frederick D. Kuester, Wisconsin Energy Corporation*, at SD.10 (Wis. Pub. Serv. Comm'n, Jul. 3, 2009)



An oversight committee of trustees manages the Fund, establishing grant making priorities and guidelines, and making funding decisions. Trustees include utility representatives (We Energies, Madison Gas & Electric, and WPPI Energy) and representatives from Clean Wisconsin, Sierra Club, and the Wisconsin Department of Natural Resources. In order to avoid the costs associated with establishing an independent organization, the Fund uses the Greater Milwaukee Foundation as its fiscal sponsor and grant administrator.

The mission of the Fund for Lake Michigan is to support efforts, in particular those in southeastern Wisconsin, that enhance the health of Lake Michigan, its shoreline and tributary river systems for the benefit of the communities that depend upon the system for water, recreation and commerce. When possible, the Fund invests in projects that provide multiple community benefits, such as economic development, job creation, enhanced recreational opportunities for local residents, and increased tourism. The vast majority of the Fund's grants support on-the-ground projects that have direct, near-term and quantifiable impacts on water quality and the communities served by the Fund.

From 2011 to 2018, the Fund operated with two annual grant cycles, soliciting pre-proposals and awarding grants twice each year. Grants during this period supported local governments, not-for-profit organizations, state agencies, tribes, utilities, universities and other educational institutions. While for-profit businesses are not directly eligible for grants, many local companies have partnered with government agencies or non-profit organizations to advance projects or have otherwise benefitted from Fund-supported projects. Grants range from \$500 to \$200,000, with an average grant award of roughly \$60,000. *Appendix B* lists all grants that the Fund approved from its inception to the end of 2018.

The Fund requires grantees to submit both interim and final reports and tracks qualitative and quantitative accomplishments for each project. Overall, the Fund's grants have provided a variety of environmental benefits including:

- Improving state and local parks, swimming beaches and other tourist destinations along the Lake Michigan coastline;
- Transforming miles of degraded waterways into popular locations for fishing, boating and other recreational activities
- Restoring hundreds of acres of wetland, creating high-quality habitat and reducing flooding downstream
- Revitalizing waterfronts and transforming polluted and neglected land into parks and sites for new development
- Advancing locally-developed technologies and products to reduce flooding and keep polluted runoff from entering our waterways.

## Literature Review

In order to measure the overall economic impact of the Fund, we first reviewed academic literature for guidance on how to assign numeric values to the various impacts of completed projects. The range of scholarly articles and studies enabled us to quantify project outcomes based on their respective focus areas and their ancillary benefits to the region, such as increases in property values. After we measured each individual outcome and assigned a dollar amount, we calculated a total dollar amount by summing the dollar amounts for all outcomes. This is the dollar amount estimate of the impact of project outcomes resulting from FFLM investments. Below is a summary of the most important studies we used to assign values to FFLM project outcomes.

Lutzenhiser and Netusil (*Contemporary Economic Policy*, 2001) studied the relationship between a home's sale price and its proximity to different types of open land, such as parks. They found that housing prices of properties within a 1,500-foot radius of open land were positively affected. We used this approach to measure how FFLM-funded projects affected nearby property values. Once we determined where the project took place, we used the 1,500-foot radius to delineate which properties were affected, and we determined their changes in value.





Green infrastructure is a growing and crucial part of efforts to improve water quality and reduce flooding. Green infrastructure improves sustainability in metropolitan areas by managing stormwater where it falls, reducing flooding, and keeping pollutants out of our waterways. Many FFLM projects include green infrastructure. According to Young (*Planting the Living City*, 2011), green infrastructure adds 10-30 % in property value in a 1,500-foot radius around the project. We applied a conservative 20 % multiplier to the value of the real estate in the 1,500-foot radius and then to the average value of real estate in the larger project area.

Projects that aimed to increase native plantings in an area were measured through the lens of a study titled “Integrating Valuation Methods to Recognize Green Infrastructure’s Multiple Benefits,” by the Center for Neighborhood Technology. In this study, property values were estimated to increase by 2-10 % in areas where new plantings took place. For the purpose of measuring outcomes of FFLM’s projects, we scaled down this range to 2-8 % and averaged it out to 5 %. We found average property value and the number of properties affected in each area, which enabled us to determine the increase in property values realized by the completion of native plantings projects.

Stormwater management is the biggest project grouping of all FFLM-funded project outcomes. The goal of these projects is to improve and/or prevent stormwater runoff and to reduce flooding. Braden and

Johnston (*Journal of Water Resources Planning and Management*, 2004) estimate that property owners who undertake stormwater management improvement projects increase their property value by 2-5 %. This range was averaged to 3.5 % in efforts to conservatively address home values in the FFLM project area.

Leggett and Bockstael (*Journal of Environmental Economics and Management*, 2000) determined that any increase in water quality led to a 2 % increase of property values. For any project that involved water quality (almost all of the FFLM projects) we applied the 2 % increase to the average property value in the area.

A few projects have involved the use of riparian buffers to help mitigate runoff pollution from farms. To account for the riparian buffers, we look to a study by Yang and Weersink that found that riparian buffers yield 14 % on investment (*Canadian Journal of Agricultural Economics*, 2004). For example, if \$1,000 is invested, then the expected return is \$140. For any project that installed a riparian buffer, we multiplied the grant money by 0.14 (14 %) to calculate the return on investment.

Thibodeau and Ostro (*Journal of Environmental Management*, 1981) studied the effects of wetlands on property values. Since wetlands provide natural water storage, they often act as a flood prevention measure in nearby areas. Thibodeau and Ostro estimated the savings due to flood damage mitigation for properties near wetlands to be approximately \$2,000 per acre. For every FFLM project that had wetland improvements, we found the number of acres improved and applied \$2000 to every acre affected.

## Methodology

To calculate the economic impact of all Fund for Lake Michigan project funding, we used an IMPLAN input-output model. The IMPLAN model is designed to determine the ultimate economic impact that initial spending by the organization has on the local economy using the funding data obtained by this research. IMPLAN estimates to what extent different spending categories affect the local economy in terms of direct spending, indirect spending, and induced spending. These categories are defined as follows:

- Direct Spending: Initial FFLM-provided funds.
- Indirect Spending: Spending brought on by organizations that received those FFLM funds.
- Induced Spending The additional spending by employees of the organizations who have more labor income due to putting in more hours.

Determining the extent of each of the spending categories is critical to measuring the extent of the impact that various forms of funding have on the local economy.



## Data

We used two different data sets in our impact analysis to account for both the disbursement of FFLM funds and the broader impact that FFLM-funded projects had on their surroundings once completed. From the first data set we simply calculated the total amount of grants awarded to all projects. From the second data set we calculated the anticipated outcomes of each project. Included in this second data set are things like how many acres of land were restored or were expected to be restored, how many native species were planted, and how many stream miles of waterway were restored or were expected to be restored. From these outcomes, we calculated a total dollar amount of the effects of these projects. This number was used to determine the total economic impact that would be realized upon completion of all FFLM-funded projects.

## Results

**Table 1** displays the economic impact of the funding provided by the Fund for Lake Michigan only. Only the impact of the funding is recorded, this does not include outcomes or leveraged funds. By funding projects between 2011 to 2018, the FFLM created over 470 jobs and provided those employees with over \$24 million in total income and stimulating the economy with over \$54 million in economic output.

The estimation of the completion of all related FFLM projects is shown in **Table 2**. The projects had a total impact of 454 jobs, over \$15 million in total income, and over \$39 million in total economic output.<sup>5</sup> The economic impacts are mostly attributed to an increase in property values.

**Table 3** shows the total economic impact of leverage funding (federal sources and non-Wisconsin funding). The leveraged funding created over 362 jobs, \$13 million in income, and over \$30 million in total economic output

## Conclusion

Table 4 shows the total economic impact that the Fund for Lake Michigan had on the economy of southeastern Wisconsin. The total was found by adding all of the estimates from the previous tables. This resulted in the creation of over 1287 jobs, providing over \$52 million in labor income, and stimulating the economy with over \$124 million of economic output. This is the estimate of projects from 2011 to 2018, assuming all projects were completed on time.

<sup>5</sup> It should be noted that some of the project outcomes could not be quantified, therefore, these estimates represent just over 80% of all FFLM project outcomes.

**Table 5** shows the average economic impact that the Fund for Lake Michigan is predicted to have every year if they continue to operate in the same way. Every year we could expect to see about 214 jobs per year, \$8 million in labor income, and \$20 million in economic output.

Estimates provided in this report show the numerical values of the Fund's projects, but it is often forgotten that there is a "triple bottom line" in the outcomes of these projects. Not only does FFLM-funding create jobs, provide labor income, and stimulate the economy, but it also improves the environment and enhances quality of life. These factors, although not entirely quantifiable, must be taken into consideration when analyzing the total effect, the Fund for Lake Michigan has had, and will continue to have, on Wisconsin's economy.





## Appendices

### APPENDIX A. TABLES

Table 1: Economic Impact of FFLM Grant Making

Impct Type	Employment	Labor Income	Output
Direct Effect	279.6	\$15,447,488	\$29,448,671
Indirect Effect	71.8	\$3,513,464	\$9,327,660
Induced Effect	119.1	\$5,107,534	\$15,427,930
<b>Total Effect</b>	<b>470.6</b>	<b>\$24,068,485</b>	<b>\$54,204,260</b>

Table 2: Economic Impact of Project Outcomes based on FFLM Investment

Impct Type	Employment	Labor Income	Output
Direct Effect	333.8	\$9,603,247	\$22,192,036
Indirect Effect	46.9	\$2,309,559	\$7,204,765
Induced Effect	73.9	\$3,204,228	\$9,634,429
<b>Total Effect</b>	<b>454.6</b>	<b>\$15,117,035</b>	<b>\$39,031,228</b>

Table 3: Economic Impact of Leverage Funds from Federal and Non-WI Fund

Impct Type	Employment	Labor Income	Output
Direct Effect	261.8	\$8,735,242	\$17,525,943
Indirect Effect	34.5	\$1,745,461	\$5,056,789
Induced Effect	64.9	\$2,817,374	\$8,358,823
<b>Total Effect</b>	<b>362.2</b>	<b>\$13,298,077</b>	<b>\$30,941,559</b>

Table 4: Total Impact of FFLM Grants

Impct Type	Employment	Labor Income	Output
Direct Effect	875.2	\$33,785,976	\$69,166,649
Indirect Effect	153.2	\$7,568,484	\$21,589,214
Induced Effect	258.9	\$11,147,135	\$33,421,183
<b>Total Effect</b>	<b>1287.4</b>	<b>\$52,483,595</b>	<b>\$124,177,046</b>

Table 5: Average Impact of FFLM Grants per Year

Impct Type	Employment	Labor Income	Output
Direct Effect	145.8	\$5,630,996	\$11,527,775
Indirect Effect	25.3	\$1,261,414	\$3,598,202
Induced Effect	43.15	\$1,857,856	\$5,570,197
<b>Total Effect</b>	<b>214.5</b>	<b>\$8,747,266</b>	<b>\$20,696,174</b>

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# About the Fiscal and Economic Research Center

The University of Wisconsin-Whitewater Fiscal and Economic Research Center provides research services for area businesses, not-for-profits organizations and government entities, including:

- Economic analysis
- Land-use planning
- Geographic Information Systems (GIS) analysis
- Market research, marketing strategy and planning
- Statistical analysis
- Ecological and biological analysis
- Government and public policy analysis
- Entrepreneurship
- Economic forecasting and business development

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**For More Information:** A full version of the Fiscal and Economic Research Center Evaluating The Total Economic Impact of the Fund for Lake Michigan from 2011-2018, complete with methodology, documentation, footnotes and appendices, is available at [www.uww.edu/ferc/completed](http://www.uww.edu/ferc/completed).

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