



# Wisconsin Profitable Sustainability Initiative

## First Report

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prepared by



The Wisconsin Manufacturing Extension Partnership

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## Introduction

Sustainability is an essential driver of global competitiveness and success. Manufacturers that embrace sustainability in products and processes are gaining competitive advantage, attracting new customers and driving business growth in the U.S. and around the world.

Sustainability started as an environmental movement but is increasingly viewed by manufacturers as a catalyst for improved financial performance, revenue growth, and risk mitigation. With growing resource scarcity and rising demand, profitably sustainable products, practices and processes will become the defining factor between weak and strong competitors. Sustainable practices are likely to replace lean as the primary driver of innovation and operation improvements over the next three to five years. Development of sustainable strategies typically begins with waste reduction and resource efficiency, two key attributes of Lean Manufacturing. Simply put, sustainability promotes the efficient use of resources which translates to improved productivity. In its broadest sense productivity is a measure of output over input, and has long been the fuel of economic growth.

Adoption of sustainable practices in large multi-national firms is well documented. Firms such as GE, Wal-Mart, IBM, and Google have made the connection between profits and sustainability. They are ahead of the curve and leading the charge. In contrast, many small and midsize manufacturers continue to be challenged with sustainability concepts and adoption. The 2008 Next Generation Manufacturing Study found that one third of manufacturers saw sustainability as critical to their strategic direction. The study also found that fewer than 20% of responding manufacturers had made good to world-class progress on sustainability. These numbers are even lower for smaller firms. Reasons cited for lack of progress include:

1. Manufacturers saw no visible link between sustainable practices and profits.
2. Lack of time and resources.
3. Lack of knowledge about sustainable practices.

The Profitable Sustainability Initiative was launched in response to these findings. The program was conceived, designed, and executed specifically to meet the needs of small to mid-sized manufacturers and address their unique



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sustainability challenges. The purpose of the Profitable Sustainability Initiative is to make Wisconsin the most sustainable manufacturing state in the nation. Owing to the substantial and rapid progress achieved by small and midsize manufacturers in the PSI Pilot Program, Wisconsin has made a significant leap, through documented progress, toward that goal.

## Profitable Sustainability Powers Financial and Environmental Benefits

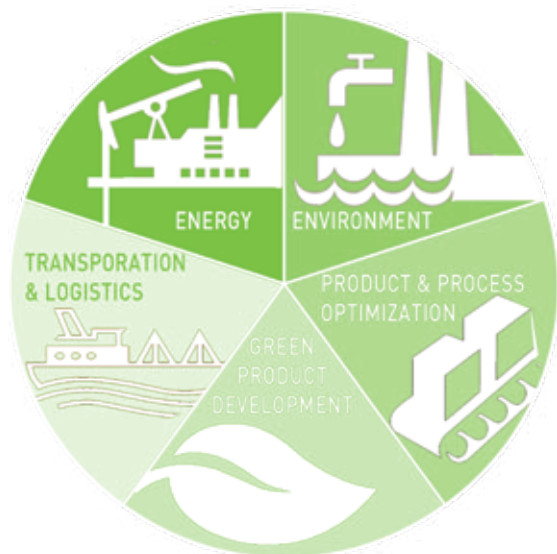
This report presents findings of the Wisconsin Profitable Sustainability Initiative (PSI) launched in April 2010. The goal of PSI is to establish Wisconsin as a leader in sustainable manufacturing — a state where a high percentage of manufacturers are implementing sustainable practices and processes, and manufacturing sustainable products.

Reported findings from the PSI pilot program represent results to date. Results exceed expectations and demonstrate the power of sustainability to drive profitable growth and enhance competitive advantage for Wisconsin's small and midsize manufacturers. This report represents findings from 45 companies — less than one half of one percent of the state's more than 9,000 manufacturers. Over the next five years, these companies are projected to reap \$26.9 million in savings and \$23.5 million in retained and increased sales.

PSI was funded with a \$1.75 million investment from the Wisconsin Department of Commerce and State Energy Program.

## Program Status

Fifty diagnostics and sixty-seven assessments are complete. Cost/benefit analyses were completed for more than one hundred unique projects. Eighty-seven projects met investment criteria set by individual participants and the PSI program. The average number of projects implemented per participant is 1.9. Projects are either complete, in implementation, or scheduled for completion prior to the end of 2011.



Assessments and projects fall under one of the following general categories:

- ▶ Energy
- ▶ Environment
- ▶ Product Process Optimization
- ▶ Transportation & Logistics
- ▶ Green Product Development

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## Financial Benefits and Impacts

Forty-five PSI participants report the following economic impacts as a result of their participation in the program:

Reduced Costs:	\$4.1 million in annual savings; \$ 26.9 million projected savings over five years. (this includes fuel savings of \$6,325,386)
Sales:	\$23.5 million in increased/retained sales projected over five years
Investment:	\$3.6 million investment in more than 87 projects to promote sustainability in products and processes
Jobs:	Participants report that 7 jobs will be created this year; this number is expected to increase as implementations mature
Total Economic Impact:	\$54 million projected over 5 years representing a 31-1 ROI to the State of Wisconsin

## Key Environmental Impacts:

	Annual Reduction	5 Year Projection
Kilowatt hours:	3.46 million kWh	17.3 million kWh
Natural Gas:	342,358 therms	1.7 million therms
Carbon Dioxide Equivalent:	9.1 metric tonnes	45.6 metric tonnes
Solid Waste:	2,249 tons	11,245 tons
Caustic Materials:	2,580 gallons	12,900 gallons
Water:	2.4 million gallons	11.9 million gallons
Air emissions:	16.7 tons	83.7 tons
Transportation:	2.16 million miles	10.8 million miles
Diesel Fuel:	366,666 gallons	1.8 million gallons

**kWh =** kilowatt hours, unit of electrical energy equal to 1000 watt hours.

**therms =** unit of heat energy, equal to 1000 BTU.

**metric tonnes =** equal to 1000 kilograms or 2,204.6 pounds.

## Return on Investment

Cost/benefit analyses were completed for each project leading to simple payback and return on investment projections. The projections were used in project selection and decision making. The following table presents aggregate participant investment, projected savings, payback, and return on investment by general project category.

General Category	Number of Planned Implementations	Participant Investment in Implementations	5 Yr Projected Savings	Payback in Years	ROI
Energy	49	\$957,258	\$2,401,267	2.0	151%
Environment	6	\$248,984	\$2,813,332	0.44	1,030%
Optimization	16	\$1,235,390	\$7,775,345	0.79	529%
Green Product	5	\$1,081,573	\$4,981,161	1.09	361%
Transportation	11	\$126,340	\$2,646,439	0.24	1,995%
<b>Total</b>	<b>87</b>	<b>\$3,649,545</b>	<b>\$20,617,544</b>	<b>0.85</b>	<b>485%</b>

Program results establish a clear hierarchy of potential sustainable returns for manufacturers. Energy typically is the first place manufacturers and service providers look for savings. However, PSI results clearly demonstrate that manufacturers will realize more significant financial and sustainable gains by adopting a broader strategy.

Typical strategies include:

1. More efficient use of raw materials
2. Substitution of high energy-intensive materials with materials of lower energy intensity
3. Minimization of waste and unwanted by-products
4. Improved machine utilization
5. Reduced scrap and rework
6. Transportation, logistics, and supply chain improvements

Generally speaking, optimization strategies require lower initial investment, deliver more substantial and immediate payback, are better aligned with current knowledge and skill sets, and offset two of three reasons cited by manufacturers for lack of progress, including:

1. No visible link between sustainability and profits
2. Lack of knowledge about sustainable practices

## Partners and Approach

While program management and leadership was provided by WMEP, the PSI program was built on an extended enterprise model. Four strategic partners played significant roles in the development, introduction, and execution of this program. Partners include:

- ▶ Northwest Manufacturing Outreach Center (NWMOC)
- ▶ B T Squared, Inc.
- ▶ LogiServe®
- ▶ Baker Tilly Virchow Krause, LLP

NWMOC is a sister organization to WMEP covering the northwest region of Wisconsin. Their involvement enabled the extension of program benefits to greater Wisconsin locations, including Ashland and Superior. Nine companies from that region participated in the program. Without NWMOC participation it would not have been economically feasible for these firms to participate.

BT Squared, Inc., a Madison-based civil, environmental and energy engineering firm, developed the diagnostic tool and spear-headed the energy and environmental projects. PSI energy projects targeted inefficient lighting, aging HVAC units, heat recovery and leaky compressed air systems. Environmental projects reduced solid waste and hazardous materials.

LogiServe®, a logistics management firm with offices in Wauwatosa and Rome, Ga., led the eco-transportation and logistics projects, which include the consolidation of inbound and outbound freight, use of EPA Smart Way carriers, continuous logistics improvement and electronic processing of freight orders and payment.

Baker Tilly Virchow Krause, LLP, one of the nation's largest accounting and advisory firms, created the ROI template used by the program, documented participant results and provided services in the areas of green product development and financial forecasting.

WMEP is a private, nonprofit organization committed to the growth and success of Wisconsin manufacturers. Since 1998, WMEP has helped to generate more than \$1 billion in economic impact and create and save more than 13,000 state manufacturing jobs, according to results documented by customers. WMEP receives financial support from the Wisconsin Department of Commerce and the NIST Hollings Manufacturing Extension Partnership. WMEP also partners with many public and private organizations to serve Wisconsin manufacturers.

## Participants

PSI program participants were selected from more than 90 applicants. Acceptance was based on multiple factors including; geographic location, industry sector, size, intensity of energy and environmental impact, demonstration of company's commitment to see implementation projects through to completion, and senior executive essay. On average, participants received \$32,000 of grant funded support.

## Program Model

A 3-step model was developed and deployed specifically for this program. The steps include:

1. Diagnostic
2. Assessment
3. Implementation

## Diagnostic

The diagnostic process is a unique approach designed to discover and prioritize a participants' primary opportunities for profitable, sustainable improvements. Designed for small and midsize manufacturers, the diagnostic introduces aspects of sustainability and gauges the participant's maturity in each area to ascertain the project most likely to provide significant profitable, sustainable gains. Diagnostic teams included subject matter experts from each of the primary partners offering participants an opportunity to explore multi-faceted improvement strategies. The diagnostic process utilizes a qualitative tool to determine the area of greatest potential impact.

## Assessment

Based on diagnostic output, one or more assessments were designed and conducted for each participant. Assessments are designed to drill down into a sustainable aspect to identify current conditions and costs to determine the feasibility of specific improvement opportunities. The output of the assessment process is a rigorous cost/benefit analysis used to prioritize improvements based on sustainable impact and ROI. In some cases an assessment was required to establish the feasibility of concept and to determine the engineering or technical support required for the projects. Several firms with previously identified projects meeting program criteria by-passed this phase and moved directly to implementation. In the PSI model, early focus is brought to bear on the most impactful profitable sustainability opportunities, with both immediate and recurring returns and speed to benefit.

## Implementation

Implementation projects are planned and executed based on a variety of factors including available capital, return on investment, ease of implementation, and technical expertise requirements. It is typical that multiple projects are selected, prioritized and planned. Implementations are scheduled for completion prior to December 31, 2011. Some projects are deferred based on competing needs for capital and/or pending regulatory rulings. PSI partner firms have been, or are in the process of, assisting several participants in securing project financing. Reported economic and sustainable impacts are based on projected results for completed and planned projects.

## Conclusion

Efficient use of resources is the axiom of sustainable business practices. Improved environmental outcomes are a direct result of improved resource utilization. The message to manufacturers is simple and straight forward: to improve sustainable outcomes, manufacturers must seek and accelerate activity that drives improved resource utilization. For the state, improving resource utilization will lead to improved environmental outcomes, economic expansion, and job growth — a clear win/win. Focusing on the drivers (efficient use of resources) not the outcomes (environmental impacts) will reduce confusion and dramatically accelerate progress.

PSI was positioned as a pilot program. By definition the program was intended to serve as an experimental trial prior to full scale operation. Based on the findings, continuation of the program with on-going diligence on maximizing return on investment should be a priority. PSI touched forty-five out of more than 9,000 small to midsized manufacturers operating in Wisconsin. The obvious potential for economic growth, environmental impact reduction and job creation simply cannot be ignored.

The results clearly establish that economic growth and improved environmental outcomes are not mutually exclusive and are the result of implementing sustainable improvements. PSI should be viewed as a strategy for driving productivity, competitiveness and job growth, securing the long-term prosperity for Wisconsin. Small, targeted investments to improve productivity of Wisconsin manufacturers will result in job growth and improved environmental outcomes. Profitable sustainability is the clear choice for Wisconsin manufacturers. The scope and scale of this initiative have positioned Wisconsin as the leading state for sustainable manufacturing practices, improving the competitive position of Wisconsin as a leading manufacturing state.

A final report on the financial and environmental impacts is expected in March 2012.

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## Appendix A

Company	City
ACH Foam Technologies	Fond du Lac
AFW Foundry, Inc.	Lannon
Alive & Kickin' Pizza Crust	Green Bay
Ashland Industries, Inc.	Ashland
ATACO Steel Products Corporation	Cedarburg
Ball Metal Food & Household Products Packaging	DeForest
Cardinal Insulating Glass	Spring Green
Cardinal Solar Technologies	Mazomanie
Copps Industries, Inc.	Mequon
Didion Milling, Inc.	Cambria
Dutchland Plastics Corp	Oostburg
Edstrom Industries, Inc.	Waterford
Foremost Farms USA	Rothschild
Foremost Farms USA	Plover
Future Foam, Inc.	Middleton
H Window Company, LLC	Ashland
Humane Manufacturing Co., LLC	Janesville
Hydrite Chemical Co.	Cottage Grove
Jarp Industries, Inc.	Wausau
Johnson Electric Coil Co.	Antigo
KCS International, Inc.	Oconto
Klondike Cheese Co.	Monroe

Company	City
KMC Stampings	Port Washington
Lakefront Brewery, Inc.	Milwaukee
Megtec Syetems	De Pere
Modern Equipment Company, Inc.	Port Washington
NWP Inc.(Saco Polymers)	Sheboygan
Oxbo International Corp.	Clear Lake
Professional Power Products	Darien
Quality Packaging, Inc.	Fond du Lac
Quick Cable Corporation	Franksville
R & B Wagner Inc.	Brown Deer
Rayovac Corporation	Portage
Regal Ware, Inc.	Kewaskum
Salm Partners	Denmark
Shelmet Precision Casting Co., Inc.	Wild Rose
Spectrum Industries, Inc.	Chippewa Falls
Superior Lidgerwood Mundy Corp.	Superior
Trans-Coil International, LLC	Milwaukee
W S Darley & Co.	Chippewa Falls
Washburn Iron Works, Inc.	Washburn
Wausaukee Composites Inc.	Wausaukee
Webcrafters, Inc.	Madison
Whitefield Industrial Coatings	Oshkosh
Wildeck, Inc.	Waukesha

## Appendix B - Aggregate Results Table

Project Classification	Number of Projects	Initial Investment	Future Year Investment Required	Total Investment	5 Year Savings	Payback on Initial \$	ROI	5 Year Fuel Savings	5 Year Gross Margin	Increased/ Retained Sales
Energy	49	\$957,258	\$0	\$957,258	\$2,401,267	2.0	151%			
Environment	6	\$248,984	\$0	\$248,984	\$2,813,332	0.44	1,030%			
Optimization	16	\$1,235,390	\$0	\$1,235,390	\$7,775,345	0.79	529%			
Green Product	5	\$744,141	\$337,432	\$1,081,573	\$4,981,161	1.09	361%		\$6,673,265	\$23,495,040
Transportation	11	\$126,340	\$0	\$126,340	\$2,646,439	0.24	1,995%	\$6,325,386		
Total	87	\$3,312,113	\$337,432	\$3,649,545	\$20,617,544	0.85	485%	\$6,325,386	\$6,673,265	\$23,495,040

<b>Total Economic Impact:</b>	<b>\$54,087,515</b>
(Total Investment + 5 Year Savings + 5 Year Fuel Savings + 5 year New Sales Projections)	
<b>Initial State Investment:</b>	<b>\$1,750,000</b>
<b>Dollar Returned per State Dollar Invested:</b>	<b>31 to 1</b>

## Appendix C - Sustainable Benefit Table (5 year projection)

Reduction In	Unit of Measure	Energy Projects	Environmental Projects	Optimization Projects	Transportation Projects	Total Reduction
Electricity	kWh	17,268,245		48,205		17,316,450
Natural Gas	therms	1,711,791				1,711,791
Carbon Dioxide Equivalents	mt	27			18.6	45.6
Solid Waste Diverted from Land Fill	tons		10,265	980		11,245
Hazardous Waste Reduced	tons		67.3			67.3
Caustic Materials Reduced	gallons		12,900			12,900
Water	gallons		11,953,990			11,953,990
Paper	tons			3.3		3.3
Air Emissions	tons			83.7		83.7
Transportation	miles			48,000	10,752,000	10,800,000
Diesel Fuel	gallons			8,000	1,792,000	1,800,000

**kWh =** kilowatt hours, unit of electrical energy equal to 1000 watt hours.

**therms =** unit of heat energy, equal to 1000 BTU.

**mt =** metric tonnes, equal to 1000 kilograms or 2,204.6 pounds.

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## Appendix D - Participating Staff and Partner Staff

Company	Name	Title	Contact Info
WMEP	Randy Bertram	Program Manager	bertram@wmep.org
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Baker Tilly Virchow Krause, LLP	Lisa Van Lieshout	Manager	lisa.vanlieshout@bakertilly.com

The logo features the acronym 'WMEP' in a bold, dark blue, sans-serif font. A light green, stylized leaf graphic with a white vein curves behind the letters. Below the letters, a blue swoosh underline is partially visible.

**WMEP**

EXPERIENCE. RESULTS.

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