

ENERGY CENTER OF WISCONSIN

ANNUAL REPORT 2004

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004

The Energy Center of Wisconsin celebrates 15 years focused on its mission and engaged in a portfolio of solid and enduring work aimed at changing energy use behavior. Since 1990, our work has been informed by research, driven by data and dedicated to making a difference. Despite a landscape buffeted by changing political forces, the Energy Center has endured and grown, changed with the times and restructured its funding, focus, and programs.

As we look into our past we learn lessons that will shape our future and enable us to build on the foundation we have established in the world of energy efficiency. One such example is our long-term research project that

regularly tracks appliance sales and distribution in Wisconsin. The information gleaned from this effort is repeatedly used to inform residential programs and to supplement Energy Center research projects and educational presentations.

A study that we completed in 1994 on the potential for energy efficiency in Wisconsin attracted the attention of the 2004 Governor's Task Force on Energy Efficiency and Renewables. To inform future decisions about investment in energy efficiency and renewable resources, the Task Force has asked us to revisit and update the study.

Another Energy Center foundation, the Daylighting Collaborative, has provided a springboard for our development of the Advanced Buildings™ suite of education and outreach resources for the commercial new construction industry. From our research and experience we know that this sector holds incredible promise for energy efficiency and sustainability. Our past work on daylighting shows that building design decisions are the most critical and effective route to implement



Wisconsin Demand-Side Options database developed

First Appliance Sales Tracking study

Wisconsin's Statewide Technical and Economic Potential study

Market Shapers' Influence on Customer Energy Decisions

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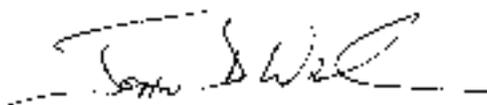
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daylighting and other long-term high performance measures that enhance comfort and function. We collaborated with the New Buildings Institute on this effort and have been rewarded with a national groundswell of support and interest as we rolled out the Advanced Buildings resources this year. We are convinced that our integrated research and program design efforts will reward Advanced Buildings users with significant energy savings, increased productivity and healthier, more comfortable buildings.

On the national front, energy research efforts have shifted from energy efficiency to hydrogen production technologies. While this shift has reduced the amount of federal dollars available to support several initiatives that we have worked on in past years, it has presented new opportunities as well. Earlier this year we joined with Virent Energy, here in Madison Wisconsin, to study the viability of markets for hydrogen. Virent has created a new technology for cost effective hydrogen formation. Our team is pleased to have been selected by the Department of Energy to investigate a new path to a sustainable energy future.

We also completed a collaborative project to explore possibilities for biorefining in Wisconsin. The biorefinery is similar in concept to the petroleum refinery, except that the process technologies transform renewable, biomass materials rather than crude oil. This is another bold step into the future of energy sustainability which we find has exceptional promise.

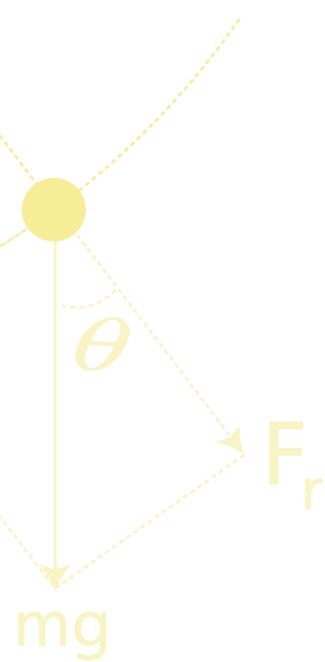
As we look back on our successes and learning experiences, we consider each year how our activities harvest best practices and deliver on our mission. To more effectively meet our mission of providing objective research, information and education on energy issues, we are focusing our activities for the coming years in four areas that capture the lessons of our history and the best of our current capabilities: Energy Literacy, Industrial Best Practices, Building Performance, and Energy and the Environment. We look forward to continuing to support our members, partners, clients and funders in our shared vision for a sustainable energy future.



John Wilson, Michael, Best & Friedrich
President, Board of Directors



Susan E. Stratton
Executive Director



Initiated the Daylighting Collaborative

Added room air conditioners and ENERGY STAR awareness to Appliance Sales Tracking

Initiated Wisconsin Industry of the Future Roadmaps

Began collaborating with Virent

Rolled out Advanced Buildings™

LOOKING BACK

Each year we reflect upon our progress in influencing and changing consumer behavior. While the landscape in which we work has changed in many ways, some constants remain: partnerships and collaborations are essential to our work. As we complete our 15th year, we've deepened many of the partnerships and collaborations formed during our early years and forged new ones. Here's a sampling of some of our activities.

ENERGY AND ENVIRONMENT

■ We launched the **Wisconsin Biorefining Development Initiative™**, a collaboration to help Wisconsin move bioscience to market by introducing new opportunities for refining multiple, higher-value products from biomass materials and waste streams. Partners include the Wisconsin Department of Administration, U.S. Department of Energy, the University of Wisconsin-Madison and Focus on Energy.

(right) Masood Akhtar presents an overview of where to go for biorefining financial and technical assistance.

(below) Professor Doug Reinemann and Kate Anderson review the impressive slate of local and national videoconference presenters.

We conducted a **videoconference** targeting the food/agribusiness and forest products industries and linked participants in Wisconsin, Minnesota, Illinois, North Carolina and Saskatchewan. We had over 150 attendees, including leaders from major food and papermaking companies.

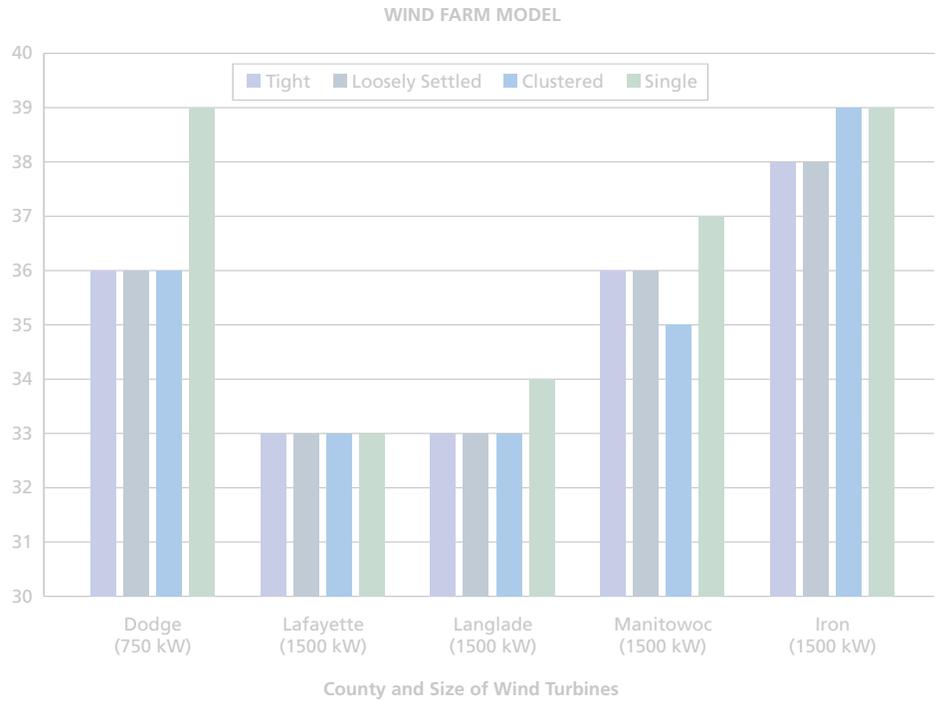


One speaker noted that biorefining technology available today could double the revenue at a pulp mill and return the investment in under two years. The potential economic growth for biorefining in Wisconsin reaches billions of dollars for that one industry.

*"Technologies and business models are emerging that can help reinvigorate Wisconsin's established industries, **create new product streams** and, at the same time, move the state forward **toward sustainable economic development.**"*

—Preston Schutt, Center for Technology Transfer



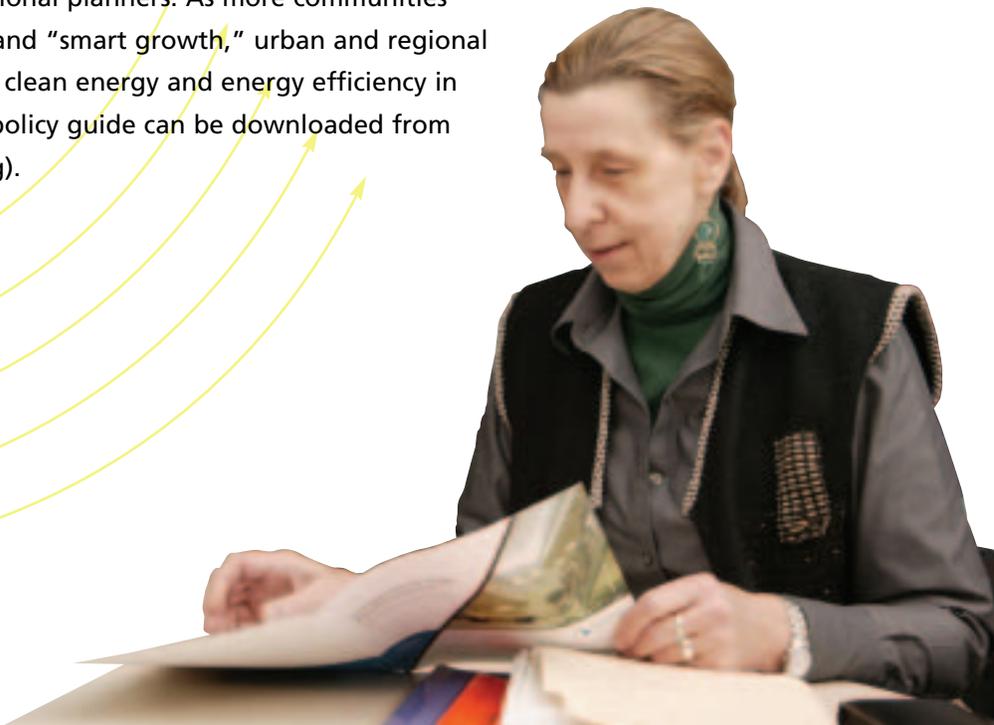
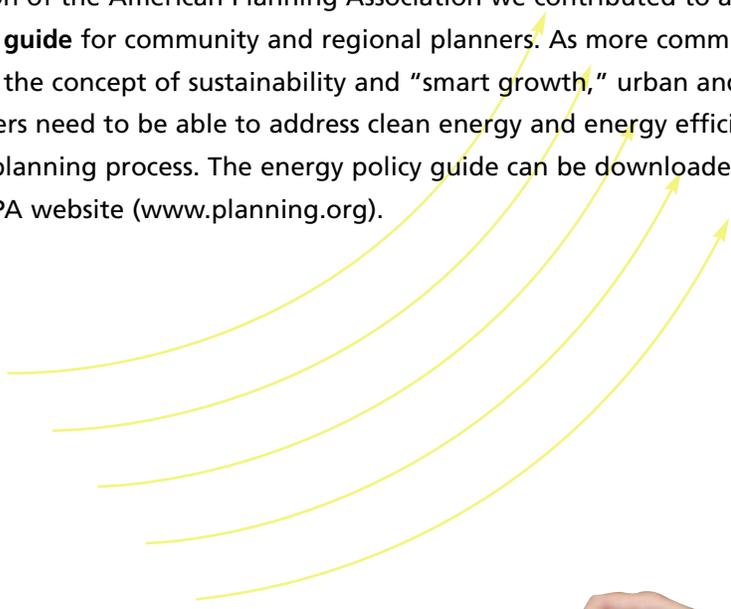


■ We partnered with colleagues at the Wisconsin Department of Administration, Division of Energy and the U.S. Department of Energy to fund ***"A Study of Wind Energy Development in Wisconsin."*** The study looks at some of the social and political impacts of existing wind farms in Wisconsin. Not surprisingly, deeply rural communities where the local economy is based on agriculture are more receptive to wind farm development than are suburban, residential housing developments.

■ In collaboration with the Environment, Natural Resources and Energy Division of the American Planning Association we contributed to an **energy policy guide** for community and regional planners. As more communities adopt the concept of sustainability and "smart growth," urban and regional planners need to be able to address clean energy and energy efficiency in their planning process. The energy policy guide can be downloaded from the APA website (www.planning.org).

(top left) The two turbine wind farm in Byron, built in 1999, can generate enough electricity for 360 homes.

(below) Ingrid Kelley gathers data on the potential for wind energy in Wisconsin.



(below) Andrea Minniear, Melanie Lord and Mary Hoerr roll out an Energy Literacy website plan.

(opposite right) Ingo Bensch evaluates many programs including all of the Energy Center's training events.

(opposite bottom right) Sean Weitner and Kevin Grabner discuss plans for using paper mill sludge in the manufacture of fiber-bonded cement products.

ENERGY LITERACY

■ We established **poweryourdesign.com**—the online community of practice for Advanced Buildings™.

The website is designed to **inspire action** among building planners, architects, engineers, contractors, developers and owners.

Attendees of the Advanced Buildings training receive special access to a secure online library containing **design checklists, training materials** and other tools they can adapt to their own presentations to effectively **promote high performance to their clients.**

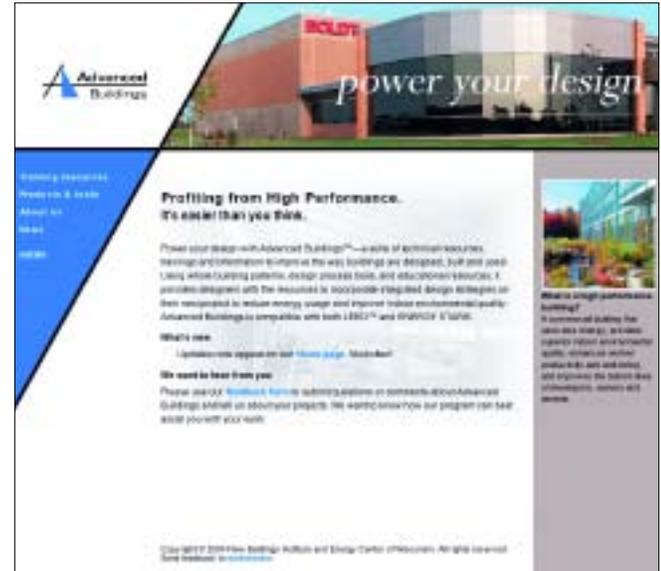
■ Information is a powerful tool and to sustain the momentum generated by the Wisconsin Biorefining videoconference we created a **website** (www.wisbiorefine.org). It houses more than 80 downloadable profiles of biobased feedstocks, processes and products. In addition to presentations given at the conference, the site also offers fact sheets that detail the most important biobased feedstocks, conversion technologies and biobased products.

■ With continued support from Energy Center members, we have helped the **K-12 Energy Education Program** train more teachers in more disciplines than ever before.

Now in its ninth year, the KEEP program has reached at least **200 school districts** across Wisconsin and delivered **1,200 member-funded scholarships** to deserving teachers. More than 200,000 students have benefited from the KEEP approach to energy education.

"The KEEP course was one of the most valuable experiences I have had as a teacher. The resources are top-notch and easy to use."

—Dawn Pfaff, high school teacher, Grafton, Wisconsin



■ We developed the **Unlocking the Savings Hidden in Your Electric Bill** curriculum in collaboration with our utility partners. Commercial and small industrial training participants, in turn, better manage their energy costs, lower their demand charges and save money. We predict this training will help customers find ways to reduce on-peak electricity usage and demand.

INDUSTRIAL BEST PRACTICES

■ Evaluation results of **Compressed Air Challenge® Training Program**

participants found that 75% of the end users made efficiency improvements



to their compressed air systems. The average value of savings achieved by program participants who implemented these improvements was \$7,428.

The Energy Center of Wisconsin is a founding sponsor of the Compressed Air Challenge® and shared the Midwest Energy Efficiency Alliance's 2004 Inspiring Energy Efficiency Impact Award with four other Midwest sponsors.

■ The Energy Center works with Focus on Energy Business Programs performing comprehensive, technical

reviews of projects receiving large grants. We also are evaluating methods for calculating energy savings and developing a simplified approach for determining energy savings and associated rebate amounts for commonly implemented energy efficiency measures. The Energy Center also assures quality, consistency and accuracy on measurement and verification reports generated by Focus on Energy programs.



Over 6,000 individuals have participated in CAC training since 1998

2004

2003

2002

3,029 individuals had attended the CAC Fundamentals of Compressed Air Training Systems and 925 individuals had attended Advanced Management of Compressed Air systems (since their inception)

2001

Compressed Air Challenge incorporated as a non-profit organization

2000

Pilot training program rolled out across the U.S.

1999

Energy Center selected as Administrator of the national Compressed Air Challenge

1998

Compressed Air Challenge® formed—Energy Center is a founding sponsor

1997

(top right) Kevin Pitts congratulates Dick Stone for being a top-notch presenter at the 2004 Better Buildings: Better Business conference.

(below) Governor Doyle addresses home builders and remodelers at the Better Buildings: Better Business conference.

(bottom) Scott Pigg presents trends in building tightness to builders and remodelers.

BUILDING PERFORMANCE

■ The **Better Buildings: Better Business Conference** delivered a successful educational and networking opportunity to more than 500 people from the residential building science community. This annual conference is recognized as the **gathering event for building professionals** and is earning its stripes as the **educational priority of mainstream builders**.

Sponsored by 16 organizations contributing a total of \$260,000, the conference showcased 43 concurrent sessions, four in-field sessions, eight exhibit demonstrations and 58 exhibits.



Governor Doyle praised the conference for furthering his “Grow Wisconsin” plan and giving Wisconsin builders the tools and skills they need to stay competitive. The Governor presented four awards and commended the residential building and remodeling industry for creating family supporting jobs in Wisconsin.

■ What are the **impacts of commercial daylighting strategies on lighting and HVAC energy use?** To answer that question, the Energy Center, with funding from the National Association of State

Building Tightness: Wisconsin buildings have been getting tighter for decades

Median air changes per hour





(left) Kathryn Schiedermayer, Tate Walker, Scott Carlson, Susan Stratton and Abby Vogen review high performance commercial building plans.

(below) Kate Anderson, Sharon Hanrahan and Jaime Barbian draft a timeline for Advanced Buildings marketing and website activities.

Energy Offices (NASEO), conducted a controlled experiment at the Energy Resource Station in Ankeny, Iowa. By directly comparing measured energy consumption and heating and cooling loads between rooms with and without photosensor dimming of lighting and windows with reduced visible light transmission, the experiment documented a **24 percent reduction in typical energy costs**. About half of these savings were from reduced demand charges associated with reducing space cooling and lighting loads.

■ We conducted the first-ever **statewide characterization study of rental housing** in Wisconsin. The study involved on-site data collection, surveys and analysis of utility usage histories for 180 rental properties in Wisconsin, ranging from single-family homes to large apartment buildings. Among the study's many findings are that, **while single-family and 2-4 multifamily housing make up about 50 percent of all rental housing units, they comprise 70 percent of the identified energy efficiency opportunities**. Making efficiency improvements in these buildings is difficult, though, because tenants are almost always directly responsible for utility bills, providing little incentive for landlords to make improvements.

■ The Energy Center, Wisconsin Department of Commerce and Wisconsin Builders Association developed the **Uniform Dwelling Code training**. Its focus is on compliance and building science concepts, tools and resources to ensure that new and remodeled homes are more energy efficient. This initiative trained more than 1,100 building and remodeling professionals.



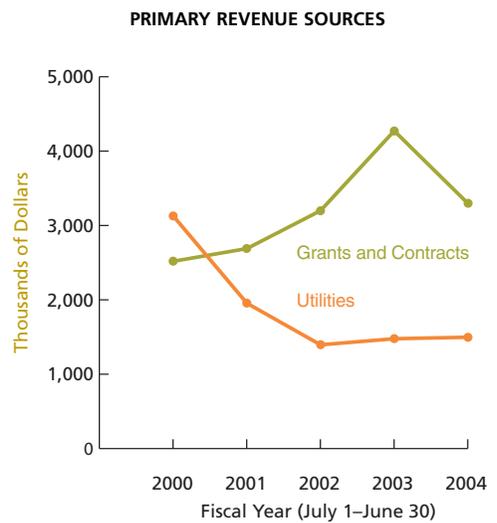
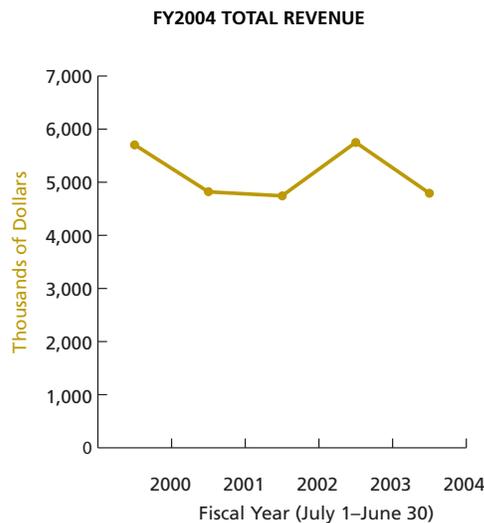
FINANCIAL PERFORMANCE

2004 was a year of building for the Energy Center. We invested in several new projects and initiatives to expand our reach and ensure a robust funding stream. The Energy Center continues to seek new partners and sources of funding that support our mission and create a stable base of revenue unbound by the vagaries of state and federal budgets.

Our financial position remains strong with over \$800,000 in net assets and revenue of \$4.7 million. As in the past, we continue to be debt free.

Revenue

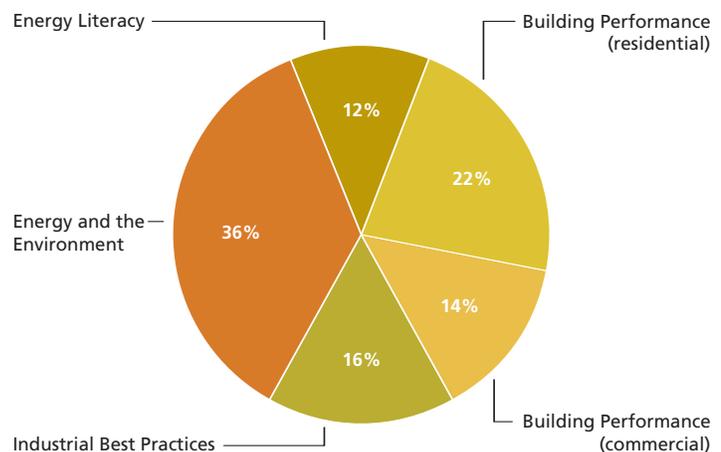
2000: \$5,704,000
 2001: \$4,819,000
 2002: \$4,744,000
 2003: \$5,750,000
 2004: \$4,793,000



(below) Accounting staff
 Mary Vander Velde and Sue
 Streveler analyze 2004
 financial data.



ENERGY CENTER INITIATIVES



BOARD OF DIRECTORS



In September, 2004, Energy Center Management and Board of Directors met to discuss and develop strategic directions for the next three years. (pictured from left) Brian Zelenak, Susan Stratton, David Benforado, Phyllis Dubé, Steve Brick, Rick Johnson, Marge Anderson, Gerald Kulcinski, Kate Bloomberg, John Wilson, John Farrow, Laura Williams, Kirby Anderson, Eric Lawson, Bill Ward, Todd Stuart (attending for Senator Cowles) and Terry Nicolai

(not pictured) Shannon Clark and Senator Cowles

KIRBY ANDERSON
Gateway Technical College

DAVID BENFORADO
Municipal Electric Utilities
of Wisconsin

KATE BLOOMBERG
Retired Mayor of Brookfield,
Wisconsin

SHANNON CLARK
Richland Electric Cooperative

**SENATOR
ROBERT L. COWLES**
Wisconsin Senate 2nd Senate
District

DAN EBERT
Public Service Commission
of Wisconsin

JOHN FARROW
Milwaukee School of
Engineering

RICK JOHNSON
BadgerMeter, Inc.

GERALD KULCINSKI
University of
Wisconsin–Madison

ERIC LAWSON
Potter Lawson, Inc.

TERRY NICOLAI
Alliant Energy

BILL WARD
Proctor & Gamble Paper
Products Company

BRIAN ZELENAK
Xcel Energy

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Vice President	PHYLLIS DUBÉ We Energies
Secretary	LAURA WILLIAMS Madison Gas & Electric Company
Treasurer	PAUL LIEGEOIS Wisconsin Public Service Corporation



ON THE HORIZON

(right) Steve Brick leads the climate change initiative with a grant from the Joyce Foundation.

(below) Sherry Benzmilller and Marge Anderson strategize on meeting logistics for the Better Buildings: Better Business Conference.

We look forward to expanding our impact on energy and environmental policy and continuing our successful endeavors in building performance, energy literacy and industrial best practices.



■ Climate change is a significant energy policy issue. With a \$250,000 grant from the Joyce Foundation, the Energy Center will lead policy discussions among state officials, industry and various non-profit organizations on **how Wisconsin can respond to climate change.**

■ We're working with Virent Energy Systems to facilitate the development of Virent's process of **producing hydrogen from biomass feedstocks.** Funded by a \$750,000 grant from the U.S. Department of Energy, this technology opens the door to the production of hydrogen and hydrocarbon fuel gas from renewable resources.



■ The Energy Center sponsors the annual Better Buildings, Better Business Conference February 1–2, 2005 in Wisconsin Dells. This two-day event gives residential builders, contractors and remodelers hands-on technical skills practice and business development skills to help them sell and build high performance homes in the Midwest.

■ We will continue our collaboration with the Wisconsin Green Building Alliance to present the Sustainability and Energy Efficiency Leadership Awards (SE²). These awards recognize **leadership in energy efficient and sustainable design, construction and operation of Wisconsin commercial buildings.** We believe

that by encouraging greater collaboration among owners, designers, builders and operators, we can make sustainability and energy efficiency a reality in every commercial and institutional building. The SE² awards will be presented at the annual SE² Leadership Conference on October 18–19, 2005.

■ We're building on the success of the **Wisconsin Biorefining Development Initiative™** originally funded by the Wisconsin Department of Administration and the U.S. Department of Energy. The Energy Center will be collaborating with the Wisconsin Department of Agriculture, Trade and Consumer Protection, the Center on Wisconsin Strategy and University of Wisconsin Extension to introduce new opportunities for refining multiple, higher-value products from biomass materials and waste streams.



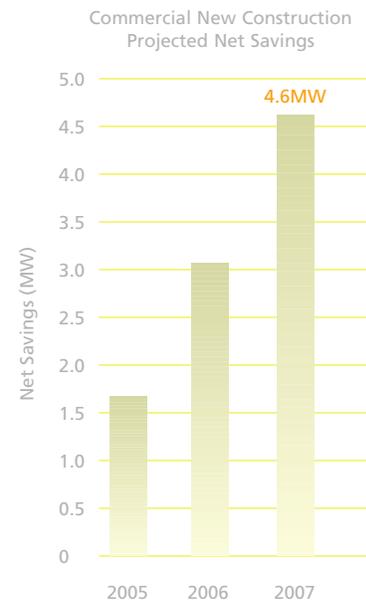
■ The Energy Center will manage a commercial new construction program for We Energies. Based on Advanced Buildings™ guidelines and incorporating incentives for achieving LEED certification, the program's projected net savings are 4.6MW over three years.

■ Advanced Buildings™ training hits the road with national reach in 2005. Advanced Buildings is partnering with Efficiency Vermont's Better Buildings by Design Conference in February, 2005, and training is planned for Massachusetts and

Hawaii as well. *Integrating High Performance* gives architects and engineers the technical and communication skills they need to make the business case for sustainable design.

■ The Energy Center will have a leading role in RE-AMP (**Renewable Energy Alignment Mapping Project**), sponsored by the Garfield Foundation. This process is designed to help non-profit organizations and the utility industry work more effectively for policies that will reduce greenhouse gas emissions.

■ We are updating our 1994 study on energy efficiency potential in Wisconsin at the request of the Governor's Task Force on Energy Efficiency and Renewables. We will present the results of the study to the Public Service Commission of Wisconsin in anticipation of its role in determining the optimum investment in energy efficiency and renewable programs in the state.



(left) **Brenda Jessen** develops curriculum for industrial programs.

(below) **Study on energy efficiency potential in Wisconsin team**—Susan Stratton, Kevin Grabner, Ingrid Kelley and Scott Pigg.



OUR STAFF



MANAGEMENT TEAM

Marge Anderson (*left*)
Chris Berg-Thacker (*left middle*)
Steve Brick (*left bottom*)
Susan E. Stratton



ACCOUNTING

Sue Streveler
Mary Vander Velde



EDUCATION & OUTREACH

Kate Anderson
Brenda Jessen
Andrea Minniear
Cherie Williams

INFORMATION TECHNOLOGY

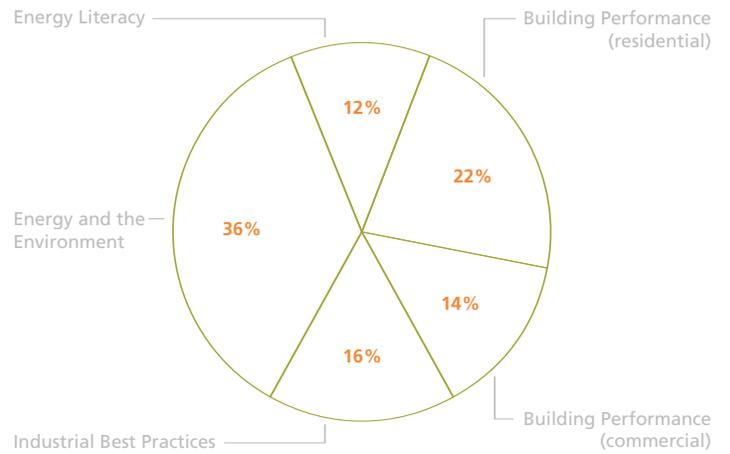
Mary Hoerr

PROGRAM COORDINATION

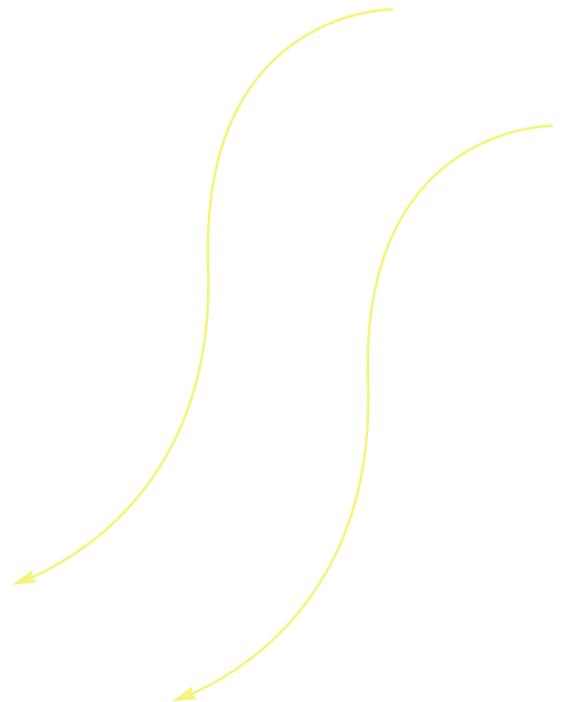
Jaime Barbian
Sherry Benzmiller
Sharon Hanrahan
Peggy Heisch
Melisa Perez
Trisha Stibor

TECHNICAL PROGRAMS AND RESEARCH

Ingo Bensch
Kevin Grabner
Ingrid Kelley
Melanie Lord
Scott Pigg
Kathryn Schiederemayer
Abby Vogen
Tate Walker
Sean Weitner



(below) Susan Stratton and Cherie Williams critique Energy Center of Wisconsin outreach materials.



OUR MISSION

MISSION

To be the leading Wisconsin organization providing objective research, information and education on energy issues to businesses, professionals, policy makers and the public.

VISION

Consumers and businesses make informed decisions regarding energy use that result in the sustainable and efficient use of energy resources, a healthy environment and a strong economy.

(below left) Sharon Hanrahan and Mary Vander Velde prepare conference registration materials.

(below center) Melisa Perez and Trisha Stibor check our online registration numbers.

(below right) Peggy Heisch coordinates Advanced Buildings curriculum activities.



Annual Report 2004

Editor

Melanie Lord

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Kate Anderson

Andrea Minniear

Art Direction

Cherie Williams



PLATINUM

Alliant Energy

We Energies

Xcel Energy

GOLD

Madison Gas & Electric
Company

Wisconsin Public
Service Corporation

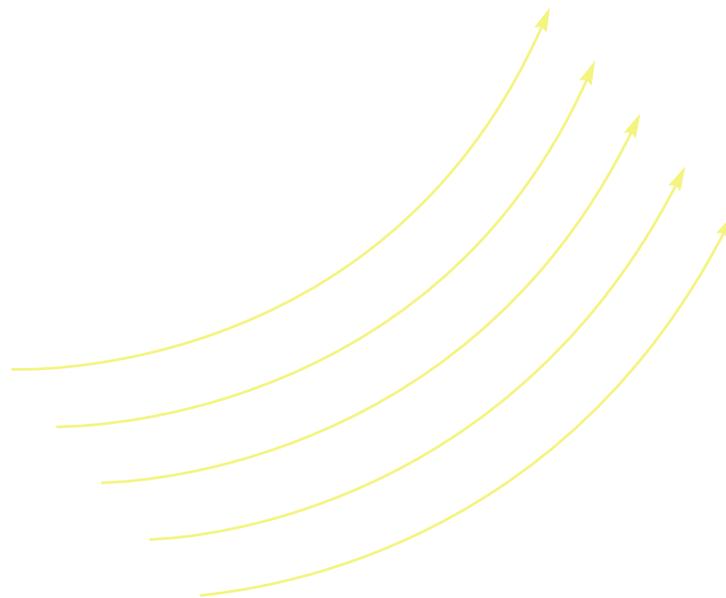
BRONZE

Wisconsin Public Power
Incorporated

CORPORATE MEMBERS

Sustainable energy means safeguarding our environment and building an economy that's less dependent on finite resources and foreign supply. It means recreating an energy industry that can fuel a steady growth of business and jobs without sacrificing our quality of life.

The Energy Center looks forward to working with our partners and customers to achieve that goal.



FIND OUT MORE

Find out more about the Energy Center of Wisconsin or download our reports at www.ecw.org

Learn about high performance building, renewable energy systems or biorefining at our specialized program websites.

Advanced Buildings™ www.poweryourdesign.com

Daylighting Collaborative www.daylighting.org

Wind Power in Wisconsin www.ecw.org/windpower

Wisconsin Biorefining Development Initiative www.wisbiorefine.org

WisconSUN Solar Use Network www.wisconsun.org



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