ANNUAL REPORT 2007

OBJECTIVE **INFORMATION** ON ENERGY IMPACTS

INNOVATIVE **IDEAS** ON REDUCING ENERGY USE

INTELLIGENT **SOLUTIONS** TO ENERGY AND ENVIRONMENTAL CHALLENGES

ENERGY CENTER
OF WISCONSIN

The Energy Center is an independent nonprofit that seeks solutions to energy challenges. Our dedicated and talented staff includes analysts, architects, economists, engineers, evaluators and planners. We are a source for objective research, information, and education on energy issues.

SEEK LEARN ACT

www.ecw.org

Looking to the future…

perspectives from Susan Stratton and Phyllis Dubé

"I think the most important thing we can do in the near term is to prove the value of efficiency as the least cost fuel of the future."

SUSAN: You and I have worked in the energy industry long enough to have weathered a number of significant shifts in energy markets and policy. While it's never easy to predict what's on the horizon, let's try to do that for a moment and imagine where the Energy Center could travel in the future.

PHYLLIS: You're right, we've seen a lot of change, and climate change is a significant new addition to the challenges confronting energy companies, energy policy makers and consumers.

SUSAN: Yes, carbon is the new currency, the new measuring stick of our success. Recently, many of our research projects have measured impacts and benefits of energy efficiency and renewable energy in terms of carbon reduction. The trouble is—we don't know exactly how to value a ton of carbon reduction until a more robust market develops.

PHYLLIS: How did the Governor's Task Force on Global Warming address the value of carbon?

SUSAN: The Task Force created an up-to-date inventory of our baseline carbon emissions and is creating a path to reduce those emissions to 1990 levels. If we participate in a regional or national carbon trading market, the proceeds may help fund other important energy initiatives.

PHYLLIS: Many other government initiatives here in the Midwest are considering markets for carbon. There's no doubt that sometime in the future, carbon will be regulated and a market price will be set. What can the Energy Center do to help businesses and institutions be prepared for a carbon constrained future?

SUSAN: I think the most important thing we can do in the near term is to prove the value of efficiency as the least cost fuel of the future. Efficiency is a "fuel" that we know how to "manufacture." Our research has shown that we are not taking advantage of all of the efficiency opportunities that exist. For example, buildings consume 40% of the energy used in this country. Every building that is built without regard to life cycle energy use misses an opportunity to reduce carbon over its 50-year lifespan. We have found many opportunities to work with firms that build buildings to

(left) Phyllis Dubé, Board Chair
(right) Susan Stratton, Executive Director

convince them to build the lowest carbon (greenest) new building possible. I think there is plenty of work to keep us busy for many years to come.

PHYLLIS: Looking around my company's home city of Milwaukee, I see a lot of historic buildings. Can the Energy Center help with existing buildings?

SUSAN: Existing buildings are more difficult to address for many reasons, but we have begun to work with communities of buildings like campuses, downtowns, municipalities, to determine how a system or group of buildings could reduce energy use, perhaps through geothermal heat or a combined heat and power system. When we get creative we can imagine many new opportunities. We look forward to working on many of these challenges with buildings and communities.

"When we get creative we can imagine many new opportunities."

PHYLLIS: What role should renewable energy play in this new world?

SUSAN: Renewable energy, particularly wind and solar will increasingly contribute to reduced green house gases. Together, renewable energy and energy efficiency are the foundation for a sustainable energy policy. By reducing our demand through energy efficiency improvements, we are in a better position to meet that demand with clean, renewable energy.

PHYLLIS: What about the bio-energy trend? Can this offset some of our fossil energy use?

SUSAN: Absolutely. Some big opportunities in the Midwest are anaerobic digestion (primarily animal and food waste) and replacing coal with biomass for electricity generation. Our timber and wood products industries are good sources of waste wood and the Energy Center is looking at the potential for using these resources. We also have opportunities to grow dedicated energy crops specifically for fuel. The Energy Center is currently creating a map of all of these opportunities in Wisconsin to get a better understanding of the potential.

PHYLLIS: It sounds like the Energy Center has many great opportunities to make a contribution to our carbon reduction in the Midwest. Speaking on behalf of the Board, I welcome the Energy Center's contributions and solutions to our energy challenges. There's lots of work to do!

SEEK

The Energy Center's…

Technology and field research provides a picture of building energy use and the effectiveness of energy-efficient technologies.

Community energy analysis establishes baseline energy use at the neighborhood, college campus, town or village, city or tribal land scale.

Market and evaluation research captures market trends, consumer perceptions, and program effectiveness.

Biomass resource assessments map the availability and cost-effectiveness of regional renewable energy.

Regulatory finance and economic policy analysis informs and connects utility regulation and energy policy.

…to make a search or inquiry

RESULTS FROM TECHNOLOGY & FIELD RESEARCH

On 90°F+ afternoons in Wisconsin, one in five AC systems is not running at all, one-quarter to one-third are running flat out, and the rest are cycling on and off under thermostat control.

Many households in Wisconsin practice discretionary use of their air conditioners: central AC use is one-quarter to one-third less than what it would be if everyone simply set their thermostat and forgot about it.

From *Central Air Conditioning in Wisconsin: A compilation of recent field research, 2008*

RESULTS FROM MARKET & EVALUATION RESEARCH

Fifty-eight percent of Midwesterners believe global warming is both real and primarily human-caused. However, only 61 percent of these "believers" consider the effects of climate change to be clearly negative.

When asked what individuals could do about climate change, Midwesterners think of changing the way they travel, reducing consumption and recycling more rather than reducing electricity use in their home or office.

From the Energy Center's Midwest Energy Survey

RESULTS FROM BIOMASS ASSESSMENT

In order to increase the use of wood as a substitution for coal at the Bay Front generating station in Ashland, Wisconsin, Xcel Energy needed to identify a larger, secure supply of wood. Energy Center staff gathered information on harvest and primary wood-using-industry residues and also examined options for growing dedicated energy crops in the region. After consulting with numerous public and private sector wood industry professionals, we found that the most promising source for near-term expansion in supply is to contract with existing harvesters, who are currently under utilized due to industry trends.

In addition to helping support the regional economy through buying wood locally rather then buying coal from out of state, this arrangement also helps insure that the expertise and capital in these businesses will remain available and viable to support expected future increases in demand for wood and residues.

From *Assessment of Biomass Resources for Energy Generation*

Energy Center University, the gateway to the Energy Center's live and on-line professional education programs, is home to our…

Residential Training Series providing residential home building professionals with the tools and resources they need to build and remodel homes customers want: high performance; energy-efficient; renewable-ready; zero-energy; eco-friendly.

Commercial Training Series providing practical guidance to commercial building professionals to design, construct and operate buildings to be energy efficient, environmentally responsible, profitable and healthy places to work.

Special Events providing customized energy education programs tailored to a unique audience.

LEARN

…to acquire knowledge of a subject or skill through education or experience

RESIDENTIAL TRAINING SERIES

More than 1,200 home building professionals yearly participate in programs in the Energy Center's residential training series. They learn air sealing methods, ventilation best practices, cold climate home building and remodeling techniques, and renewable energy strategies for making homes energy-efficient and environmentally-friendly.

COMMERCIAL TRAINING SERIES

More than 1,000 commercial building professionals yearly participate in this blend of in-person and on-line education programs. Architects, engineers, facility managers, building developers, lighting professionals and contractors learn to design, build, and maintain high performance energy efficient buildings from local, regional and national experts.

BETTER BUILDINGS: BETTER BUSINESS

The Energy Center's flagship event for residential builders and remodelers draws more than 700 participants from the Midwest for three days of seminars focusing on building science for cold climates.

GREEN BUILDINGS

The stakes are high—we need to transform the way our buildings work and reduce their impact on the environment. The Energy Center is one of the United States Green Building Council's Educational Providers and offers **LEED AP-Qualified Training**.

A C T

The Energy Center's research initiatives and professional education programs make a difference in Wisconsin, the Midwest and the nation.

The Energy Center develops…

Innovative programs founded on an understanding of the market and its business process that deliver energy savings in traditionally hard-to-reach sectors such as commercial new construction.

Regional forums and electronic gateways that give policy makers, business executives and industry practioners the tools and knowledge to implement solutions to reduce our energy impact.

Online tools that let you get a ballpark idea of how much energy your new commercial building might use or how your home energy use translates into your carbon footprint.

…to produce an effect

WE ENERGIES COMMERCIAL NEW CONSTRUCTION PROGRAM

When this program concludes in 2008, it will exceed its megawatt reduction goal by more than 40% at a cost per megawatt that is less than was projected. The program received recognition in 2007 as an Exemplary Program by the American Council for an Energy Efficient Economy, and was awarded Honorable Mention for Innovation by the Midwest Energy Efficiency Alliance in their 2008 Inspiring Efficiency competition.

BETTER BUILDINGS: BETTER BUSINESS

Eighty-nine percent of participants at the Better Buildings: Better Business conference pick up new ideas that they plan to try out or implement.

ENERGY TRANSITION 2050

ET2050 is a forum for building the connections among Midwestern leaders needed to effectively address solutions to climate change. At the 2008 forum, participants developed proposed action plans addressing four challenges included in the Midwestern Regional Greenhouse Gas Reduction Accord.

DAYLIGHTING COLLABORATIVE

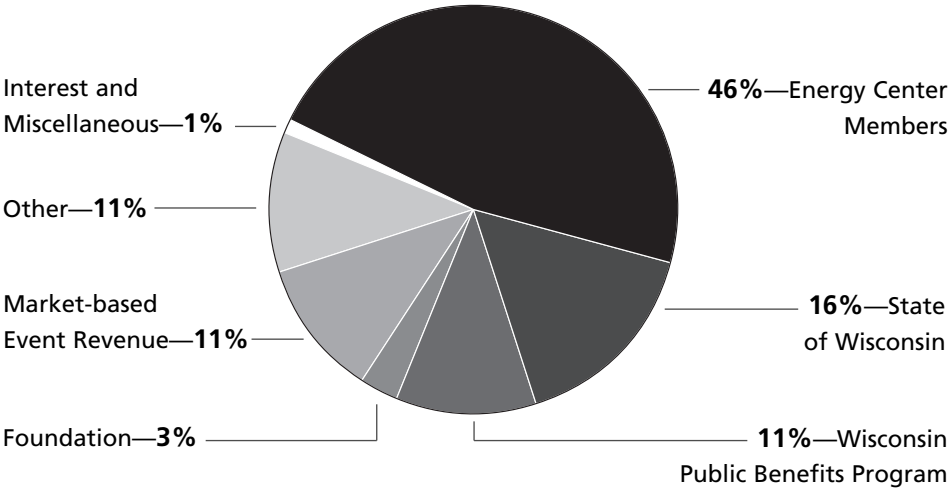
This electronic gateway empowers building designers and owners to incorporate daylighting into every project. It provides them with one place to locate all the information they need. Research by the Energy Center, *"Energy Savings from Daylighting: A Controlled Experiment,"* shows that good daylighting saves energy.

EFFECTING POLICY DECISIONS

Energy Center staff contribute their expertise locally, regionally and nationally through participation on boards, task forces and advisory committees addressing energy and climate initiatives and solutions.

Energy Center Funding

Energy Center funding comes from grants and contracts for research, professional education, outreach and technical assistance. Our funders include utilities, state governments, efficiency program administrators, foundations and private businesses. The Energy Center has net assets of $286,000 and is debt free.



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Alliant Energy
We Energies
Xcel Energy

GOLD

Madison Gas & Electric
Wisconsin Public Power Incorporated
Wisconsin Public Service Corporation

BRONZE

Superior Water Light & Power/
Minnesota Power Company

(pictured standing from left)
Terry Nicolai, Eric Callisto, Nancy Frank, Bill Ward, Roy Thilly, Tim Daley, Marge Anderson, Rick Johnson, Chris Berg-Thacker

(pictured seated from left)
Laura Williams, Bill Oemichen, Donald Aitken, Phyllis Dubé, Susan Stratton, John Wilson, Eric Lawson

(not pictured) **Ralph Cavanagh, Senator Robert Cowles, David Benforado, Gerald Kulcinski, Tom Meinz, Don Reck**

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