

10 Years of Empowering Energy Education in Wisconsin

2005

2004

2003

2002

2001

2000

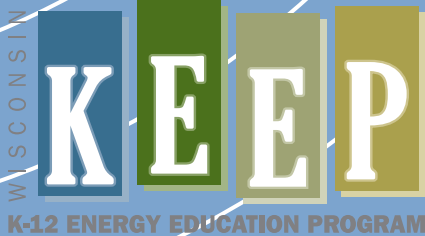
1999

1998

1997

1996

1995



K-12 ENERGY EDUCATION PROGRAM

The Wisconsin K - 12 Energy Education Program (KEEP)

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Wisconsin K - 12 Energy Education Program (KEEP)
Wisconsin Center for Environmental Education
Learning Resource Center
University of Wisconsin - Stevens Point
Stevens Point, WI 54481

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Energy is vital to our future. For many years to come, Wisconsin students will be faced with difficult decisions about energy and its relationship to environmental, socio-political, and economic issues. Through Project KEEP and energy education, Wisconsin teachers are able to empower students to make informed decisions about our energy future.

Elizabeth Burmaster
State Superintendent

Introduction to KEEP

The Wisconsin K-12 Energy Education Program (KEEP) was started in 1995 to promote energy education in Wisconsin by the Wisconsin Center for Environmental Education, located within the University of Wisconsin-Stevens Point College of Natural Resources. School systems and energy resource managers have come to recognize KEEP as an effective mechanism for increasing and improving energy education in Wisconsin. This success was accomplished in part by building productive partnerships among various state agencies and private organizations to support energy education in Wisconsin.

KEEP focuses on teacher empowerment. The staff and course instructors work together to provide a proactive program that supports teacher efforts to integrate energy education into curriculum. The success of KEEP from both the private and public standpoints reflects well on the various organizations that have invested in energy education, communicating their support of developing energy literacy among teachers and their students. This report highlights the successful outcomes of stakeholder investments, both in time and money.

Various projects KEEP has undertaken over the years are organized into four stages of KEEP's development.

Stage 1 (1995 - 1997): *Initial Funding: Development and Implementation*

Stage 2 (1998 - 1999): *Project Funding: Outreach and Networking*

Stage 3 (2000 - 2003): *Public Benefits: Innovation and Enrichment*

Stage 4 (2004 - 2005): *Budget Cuts: Maintaining and Refining*

Following the project highlights, visions and prospects for KEEP's continued efforts to achieve its mission are discussed. A history of KEEP along with other supplemental information is found at the report's end.

You are invited to contact the KEEP office to provide suggestions and ideas for further design and advancement of Wisconsin's K-12 Energy Education Program. We look forward to hearing from you and working with you over the years to come.

"KEEP is changing energy education in the same way the compact fluorescent is changing lighting - both are very efficient in getting their job done! I mean it; you guys are doing a great job!"

Al Dickman,
Wild Rose High School

KEEP Administration, Financial Support, and Staff

KEEP Financial Support

Focus on Energy
Energy Center of Wisconsin
Wisconsin Center for Environmental Education
University of Wisconsin – Stevens Point

Energy Education Scholarship Providers

Alliant Energy
Focus on Energy
Madison Gas & Electric Company
Manitowoc Public Utilities
We Energies
Wisconsin Public Power, Inc.
Wisconsin Public Service Corporation
Xcel Energy

KEEP Administration and Oversight

Randy Champeau, Director, Wisconsin Center for Environmental Education, 1995 to present

Kathy Kuntz, Director of Operations, Wisconsin Energy Conservation Corporation, 2000 to present (and while with Energy Center of Wisconsin, 1995 – 2000)

Chris Schultz-Buechner, Marketing & Information Education Manager, Focus on Energy, 2003 to present

Dan Ackerstein, Wisconsin Energy Conservation Corporation, 2002 – 2003

Midwest states can look to Wisconsin for energy education inspiration. The Wisconsin K-12 Energy Education Program (KEEP) at the University of Wisconsin-Stevens Point is the leading energy education program in the nation.

Minnesotans for an Energy Efficient Economy
Fall 2005 Newsletter

KEEP Founding Sponsors

Energy Center of Wisconsin
Badger Power Marketing
Authority of Wisconsin
Madison Gas & Electric
Company
Manitowoc Public Utilities
Marshfield Electric and Water
Department
Northern States Power
Company—Wisconsin
Pardeeville Public Utilities
Rice Lake Utilities
Superior Water, Light and
Power
Wisconsin Electric Power
Company
Alliant Utilities—Wisconsin
Power & Light
Wisconsin Public Power, Inc.
Wisconsin Public Service
Corporation
University of Wisconsin—
Stevens Point
Wisconsin Center for
Environmental Education
Wisconsin Environmental
Education Board

Program Support

Tim Byers, Outreach Manager, Wisconsin Center for Environmental Education (1995 to present)

Andrea Minniear, Senior Project Manager, Energy Center of Wisconsin (2000 to present)

KEEP Staff

Stage Four: 2004 – 2005

Jennie Lane, Program Director

Carrie Hembree, Outreach Specialist

Sara Windjue, Resource Specialist

Carrie Bea Zolkowski, Program Specialist

Lindsay Dahl, Program Assistant (2004)

Jill Weiss, Program Assistant (2005)

Stage Three: 2000 – 2003

Jennie Lane, Program Director

Susan Ermer, Outreach Specialist

Michelle Gransee-Bowman, Renewable Energy Education Specialist

Carrie Hembree, Project Coordinator

Carrie Bea Zolkowski, Program Specialist

Catherine Estes, Graduate Assistant

Stephanie Kane, Graduate Assistant

Stage Two: 1998 - 1999

Jennie Lane, Program Director

Bobbi Zbleski, Program Specialist

Bonnie Koop, Graduate Assistant

Stage One: 1995 – 1997

Randy Champeau, Director

Corky McReynolds, Team Leader

Ginny Carlton, Program Assistant

Steve Knudsen, Coordinator of Research

Jennie Lane, Coordinator of Curriculum Development



“Teaching KEEP courses is one of the most rewarding experiences I have had as an educator. The materials are well written, comprehensive, and fun. The course participants are enthusiastic and dedicated. And, the KEEP staff makes working with this program something to look forward to each year.”

Tehri Parker

Executive Director, Midwest Renewable Energy Association, KEEP Adjunct Faculty

KEEP Advisory Committee Members

Randy Champeau (chair), Director, Wisconsin Center for Environmental Education

Peter Hewson, Professor of Curriculum and Instruction, UW-Madison

Jim Jenson, Community Education Coordinator, Madison Gas & Electric

Kathy Kruthoff, Elementary School Teacher, Stevens Point

Kathy Kuntz, Director of Operations, Wisconsin Energy Conservation Corporation and Focus on Energy

Shelley Lee, Science Education Consultant, Department of Public Instruction

Pat Marinac, Teacher Induction & Staff Development Program Leader, Appleton Area School District

Andrea Minnlear, Senior Project Manager, Education and Outreach, Energy Center of Wisconsin

Mike Morlearty, Wisconsin Public Service Corporation

Tehri Parker, Executive Director, Midwest Renewable Energy Association

Jacquelyn Peck, Education Outreach, We Energies

Lynn Rinderle, Middle School Science Teacher, Milwaukee

Barbara Samuel, Marketing and Communications Coordinator, Department of Administration

Charlie Schneider, Sector Manager, CESA 10 and Focus on Energy Schools and Government Program

Chris Schultz-Buechner, Marketing and Information Education Manager, Focus on Energy

Dan Sivek, Professor of Environmental Education, UW-Stevens Point

Kelly Zagrzebski, Public Affairs, Wisconsin Public Service Corporation

Past Advisory Committee Members

Marge Anderson, Energy Center of Wisconsin

Dean Gagnon, Agriculture and Natural Resources Consultant, Department of Public Instruction

Mary Meunier, Energy Program Manager, Department of Administration

Ron Orman, Energy Education Specialist, Milwaukee

Jeanine Gelhaus, Middle School Teacher, Medford

“I cannot tell you how much I loved your class. I am putting our action plan to work. That is very cool to be able to turn education into action that will change the world a little bit.”

KEEP participant in the Chippewa Falls NR 734

“Let me know when it’s time to sign up [for the *Bright Idea* Fundraiser] again. I love doing this fundraiser - it’s so nice to be able to participate in a program where everyone ‘wins!’”

Cynthia Skinner,
Crandon Middle/High School

KEEP Adjunct Faculty

Pat Arndt, Berlin High School
Nick Baumgart, Florence High School
Terrie Cooper, Door County Land Trust
Gail Epping Overholt, Environmental Educator
Jack Finger, Retired Environmental Educator
Jeanine Gelhaus, Medford Area Middle School
Michelle Gransee-Bowman, Energy Education Specialist
Floyd Henschel, Retired Science Teacher
Jim Jenson, Madison Gas & Electric
Steve Knudsen, Newman High School
Don Lutz, Marathon Middle School
Pat Marinac, Appleton Area School District
Ted May, Environmental Educator
Ron Orman, Energy Education Specialist
Tehri Parker, Midwest Renewable Energy Association
Ann Quale, Sturgeon Bay School District
Meta Reigel, UWSP Academic Staff
Lynn Rinderle, Milwaukee School District
Dennis Welbel, Retired Elementary School Teacher
Dan York, American Council for an Energy-Efficient Economy
Kelly Zagrzebski, Wisconsin Public Service Corporation

Past Adjunct Faculty

Steve Brick, Energy Center of Wisconsin
Dave Engleson, Retired DPI Consultant
Mary Hemshrot, Environmental Education Consultant
Susan Stein, University of Wisconsin - Madison
Al Stenstrup, Wisconsin Department of Natural Resources
Bobbi Tannenbaum, Energy Center of Wisconsin

Four Stages of KEEP's Development and Evolution

The Wisconsin K-12 Energy Education Program (KEEP) was created to initiate and facilitate the development, dissemination, implementation, and evaluation of energy education in Wisconsin schools. KEEP has successfully reached thousands of teachers, including over 2,500 teachers throughout the state, with its graduate-level inservice course and high quality support materials. These professional development opportunities and resources have helped increase the quality and quantity of energy education for hundreds of thousands of K-12 students in Wisconsin.

The following four stages outline KEEP's development and evolution:

Stage 1 (1995 – 1997): *Initial Funding: Development and Implementation*

Stage 2 (1998 – 1999): *Project Funding: Outreach and Networking*

Stage 3 (2000 – 2003): *Public Benefits: Innovation and Enrichment*

Stage 4 (2004 – 2005): *Budget Cuts: Maintaining and Refining*

Selected projects are highlighted within each stage. These projects and many others were accomplished by KEEP staff with the support of our sponsors and stakeholders, including energy resource managers, adjunct faculty, teachers, and students. Each project has helped KEEP accomplish its goal of increasing and improving energy education in Wisconsin.

“It was the best professional development class I’ve ever taken! I came away with materials I can actually use in my classroom!”

KEEP participant in the Waukesha NR 730 course

“A grant made it possible to purchase fuel cell kits to teach about the impact this emerging technology may have on our energy future. Students are actively involved and enjoy this learning experience. Thank you KEEP!”

Al Wrobel,
*Fox Valley Lutheran
High School*

Wisconsin K-12 Energy Education Program Project Overview 1995 - 2005

Activity	Stage 1 1995 - 1997 \$850,000 3 Staff	Stage 2 1998 - 1999 \$100,000/yr 2 Staff/1 grad	Stage 3 2000 - 2003 \$400,000/yr 5 Staff/2 grads	Stage 4 2004 - 2005 \$350,000/yr 5 Staff
	Energy Center of Wisconsin Funding		Public Benefits Funding	
Professional Development				
KEEP Courses	Introductory course developed	Online course developed	Renewable energy education course developed	School building energy efficiency course developed
KEEP Adjunct Faculty	Initial identification and training	Refresher workshop	Refresher workshop	Refresher workshop
Renewable Energy Fair	Teacher workshops	Teacher workshops	Educator Tent developed	Host Educator Tent
Teacher participants	600	600	800	500
Resources				
Conceptual Framework	Focus groups identify concepts	Revised	Renewable energy concepts added	Revised
Activity Guide	Developed and published	Revised		Revised
Supplementary activity guide		Elementary Education	Renewable Energy	High School (online)
Support materials		Promising Practices identified	Energy Education Trunk developed	Energy Education Trunk and other resources disseminated
Student Involvement Activities				
Bookmark Contest (Students design artwork to illustrate an energy theme)			Adopted and coordinated state contest	Coordinated state contest
<i>Bright Idea</i> Fundraiser (Students sell compact fluorescent light bulbs to fund school projects)			Program piloted	Program implemented annually
Program support and consulting services		WCEE High School Conference	Wisconsin Public Service's Solar Olympics	- Electrathon - High School Conference
Networking and Outreach				
Information and updates		- First newsletter published - Online bulletin created - Web site created	- Newsletter and bulletin disseminated - Web site maintained and revised	- Newsletter and bulletin disseminated - Web site maintained and revised
Support for target audiences			Family and consumer education	Technology Education
Grants		Mini-grants program	Grants offered through WEEB	

Activities in yellow are highlighted on the following pages

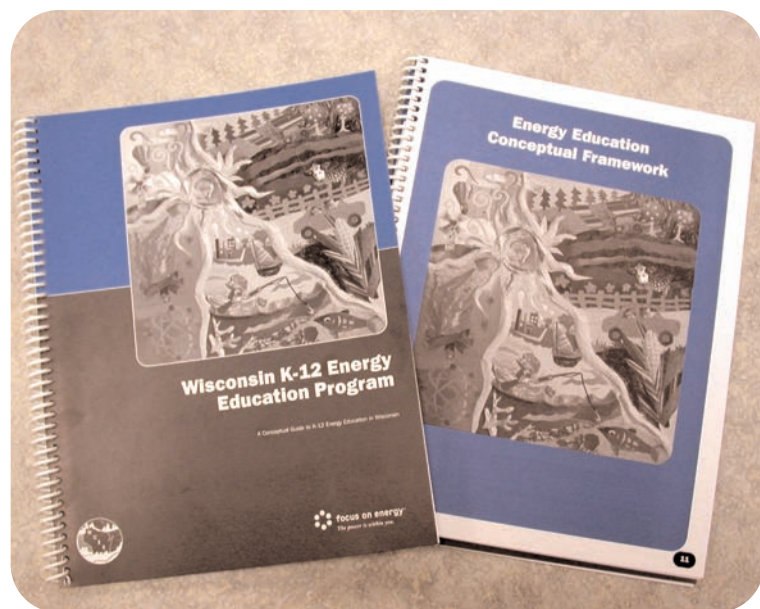
Wisconsin K-12 Energy Education Program Project Highlights 1995-2005

Stage 1 (1995 – 1997): KEEP's Development and Implementation

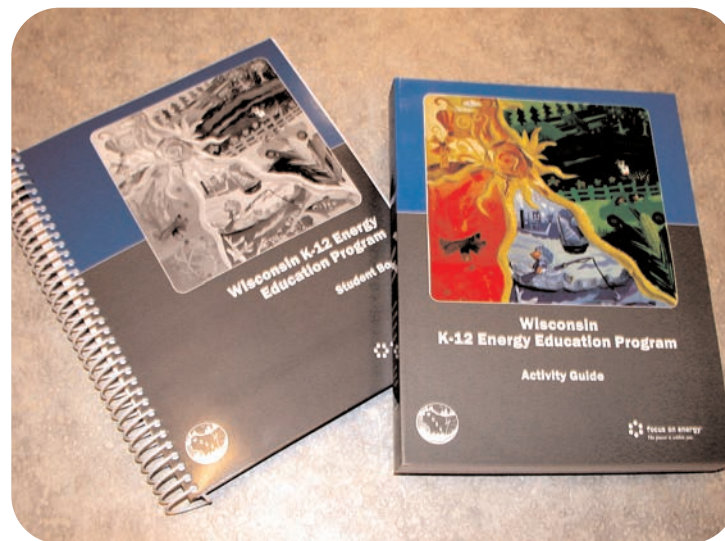
- ⇒ Operational funding support: Energy Center of Wisconsin, \$850,000 for 2.5 years
- ⇒ Teachers served: 1,000, including 600 participants in KEEP courses

Projects and Activities Highlighted: Conceptual Guide

A *Conceptual Guide to K-12 Energy Education in Wisconsin* contains nearly 60 concepts that provide the foundation for curriculum development. The framework includes concepts that address a variety of different issues and viewpoints. These concepts were derived from energy-related frameworks designed by other educational organizations and from physical and environmental science texts. It includes additional



concepts to reflect issues specific to Wisconsin. The concepts within the framework are organized under four themes: *We Need Energy*, *Developing Energy Resources*, *Effects of Energy Resource Development*, and *Managing Energy Resource Use*.



Activity Guide

A *Conceptual Guide to K-12 Energy Education in Wisconsin* directed the development of the *KEEP Activity Guide*. The *KEEP Activity Guide* provides K-12 teachers in a variety of subject areas with over 40 easy-to-use, hands-on, minds-on activities designed to promote energy literacy in Wisconsin students. The activities are divided into the four KEEP themes and address one or more concepts within each theme. The Wisconsin Department of Public Instruction's Academic Content and Performance Standards were referenced during the development of the guide. KEEP activities were selected based on reviews of published energy education resources conducted by Wisconsin K-12 teachers. These teachers drafted, reviewed, and revised activities. The *KEEP Activity Guide* was first published in 1997 and revised in 1999 and in 2005.

Adjunct Faculty

KEEP staff worked with its Advisory and Steering Committees to identify competent educators and energy resource professionals to serve as University of Wisconsin–Stevens Point Adjunct Faculty for KEEP inservice courses. Individuals from different regions of the state were selected to ensure that the course would be available to teachers throughout Wisconsin. These 20 faculty attended a workshop in May 1997 to learn about the guide and to help develop the inservice course. A list of current and past Adjunct Faculty is listed at the beginning of this report. KEEP Adjunct Faculty are the key to the success of the inservice courses. They are the frontline advocates of energy education and competently work with teachers from a variety of disciplines and grade levels. They are instrumental in helping KEEP staff revise the courses and develop new programs that meet the needs of teachers.

Inservice Course

The first KEEP course was piloted successfully in the summer of 1997. KEEP staff then scheduled courses over the next year and a half. Each adjunct faculty taught at least one course. They reported that they enjoyed teaching the class and appreciated the support materials provided by KEEP. Over 600 teachers participated in KEEP courses during the 1997–1998 school year. These first year teachers were also required to evaluate two KEEP activities to receive a \$100 stipend; their evaluations were used to revise the *KEEP Activity Guide* in 1999.

The KEEP inservice is a one-credit university course offered through the University of Wisconsin’s Continuing Education Program (formerly UW-Extension). During the 16 hours of class time, teachers receive an overview of important energy concepts, orientation to the *KEEP Activity Guide*, and through peer teaching, demonstrate

how they might integrate lessons from the guide into their curriculum. The course frequently includes field trips and guest speakers that help teachers understand energy concepts. The course assignment has teachers develop a unit plan that includes at least two energy education activities from the *KEEP Activity Guide*.



During the initial funding period of KEEP, the grant directive from the Wisconsin Center for Environmental Education included a UW-Extension tuition waiver. Therefore, teachers received a free graduate credit. In the years following this initial funding period, the Energy Center of Wisconsin has worked with energy utilities and other agencies to offer teachers scholarships to cover most of the tuition and course costs. These scholarships provide incentives for teachers to participate in KEEP courses and to improve their energy education teaching competencies. By offering scholarships, these groups demonstrate their commitment to promoting energy literacy in their community.

Stage 3 (2000 – 2003): KEEP's Innovation and Enrichment

- ⇒ Operational funding support: Focus on Energy, \$400,000 per year
- ⇒ Teachers served: 3,500, including 800 who participated in KEEP courses
- ⇒ Total teachers served since 1995: 7,500, including 2,000 who participated in KEEP courses

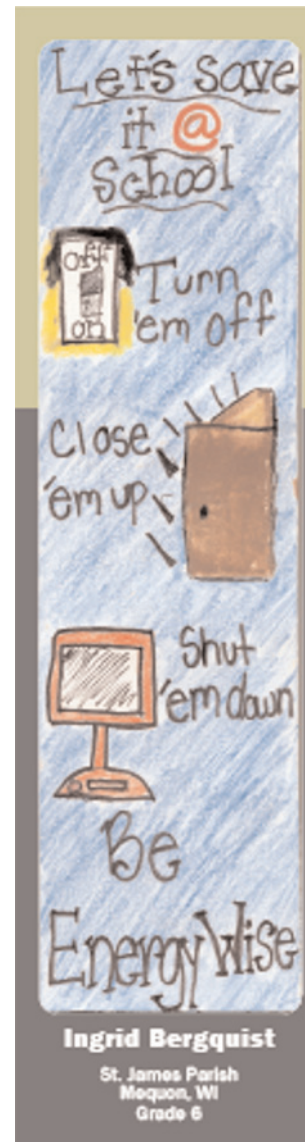
Projects and Activities Highlighted:

Bookmark Contest

KEEP took over the annual Energy Bookmark Contest from the Division of Energy, Department of Administration in 2002. Each year the contest has a different energy theme and is open to 5th, 6th, and 7th grade students in Wisconsin. To enter the contest, students design artwork that illustrates the theme. A panel of energy educators and resource managers judge the bookmarks, selecting three entries from each grade level that best represent the theme. Winners receive a \$50 savings bond that is presented at an awards ceremony in April. The winning artwork is published on bookmarks that are distributed to over 3,000 libraries in Wisconsin.

Contest Themes

- 2002: Energy Challenges/Energy Opportunities
- 2003: Doable Renewables: Renewable Energy in My Community
- 2004: Energy Superheros: The Quest for an Energy Efficient Planet
- 2005: Saving Energy: My School First



Educator Tent at Renewable Energy and Sustainable Living Fair

The first Renewable Energy Fair took place in 1990. Every year since then, the Wisconsin Center for Environmental Education through Continuing Education has offered teachers the opportunity to earn graduate credit while attending the fair. In 2003, KEEP partnered with the fair organizers, the Midwest Renewable Energy Association, to create an Educator Tent for teachers at the fair. The tent showcases energy education resources and workshops for educators and provides a venue for networking and sharing.



"[The Educator Tent at the Energy Fair] was a positive experience and one I want to be involved with in many more classes, workshops and - maybe at some point volunteering in the future? I would grade this experience as an A+++++ opportunity."

Alona Paydon, River Bluff Middle School

Online Course

In 1999, KEEP began designing an online course entitled Energy Education: Concepts and Practices. Students participate in online discussions, conduct assigned readings, and complete an assignment. KEEP piloted the course in 2001 and now offers it twice during each school year; approximately 15 teachers participate in each course. The course has provided an ideal venue

for teachers to explore their conceptions and misconceptions about energy and to communicate with each other and with an energy expert to have their questions answered.

Energy Education Grants through WEEB

Focus on Energy supplied funds to the Wisconsin Environmental Education Board through KEEP to fund energy education grants. KEEP staff developed and implemented a promotion and assistance plan that included consulting services, sample grants, a grant idea flyer, and a promotional brochure. Their efforts were a success! Over \$300,000 in funds was requested; awards were granted in July 2003.

Bright Idea Fundraiser

In 2002 KEEP began collaborating with the ENERGY STAR® Program at Focus on Energy to help support the fundraiser. Each year, students sell thousands of energy efficient light bulbs to community members who learn about energy efficiency through the fundraiser and save energy and money by installing compact fluorescent light bulbs in their homes. Students sell the bulbs for \$3.00 and earn \$2.00 for every bulb they sell. The money earned is then used to fund school projects.



Stage 4 (2004 – 2005): Maintaining and Refining KEEP

- ⇒ Operational funding support: Focus on Energy, \$350,000 per year
- ⇒ Teachers served: 4,000, including 500 teachers who participated in KEEP courses
- ⇒ Total teachers served since 1995: 10,500, including 2,500 who participated in KEEP courses

Projects and Activities Highlighted:

School Building Energy Efficiency Course for Teachers

In 2004, KEEP partnered with the Focus on Energy Schools & Local Government Program. KEEP staff designed a course that incorporates the results of school audits conducted by the Focus Schools Program. During the course, teachers experience presentations from district building managers, and speakers from the local utility and Focus on Energy. The assignment for this course is for teachers to develop an action plan or lesson plans for saving energy and money in school buildings.

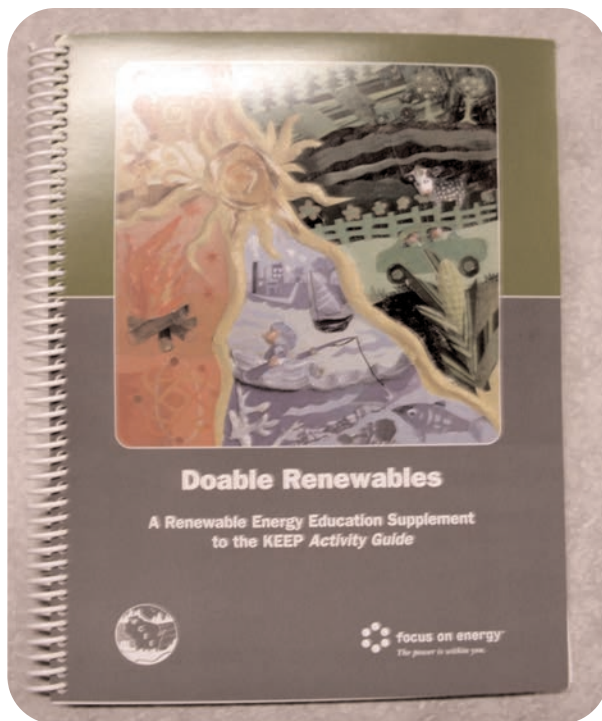


Resources and Support Materials

KEEP constantly seeks new ways to make energy education challenging and engaging for students. Among the demonstration tools the program has available are electricity-measuring watt meters, light bulb hand-crank generators, and a working model fuel cell kit. In 2005, KEEP purchased a Pedal Power® bicycle that generates electricity and can be used to compare efficiency of appliances such as light bulbs. KEEP also features an energy education trunk, a one-stop resource for materials like videotapes, experiments, and interactive models. Inside the trunk is a wealth of tools to make teaching about energy hands-on and enjoyable for students of all learning styles.

Doable Renewables: A Renewable Energy Education Supplementary Activity Guide

In 2002, KEEP staff and stakeholders recognized that additional concepts addressing renewable energy were needed within the KEEP conceptual framework. KEEP developed renewable energy concepts that were integrated into the existing framework. These new concepts directed the development of a supplementary activity guide titled *Doable Renewables*.



To develop the supplement, teachers participated in a scope and sequence workshop and identified activities that addressed the renewable energy concepts in the revised framework. Like activities in the *KEEP Activity Guide*, draft lessons in the supplement were reviewed for conceptual accuracy by experts in the field and pilot tested in classrooms across Wisconsin. The result is a comprehensive and enjoyable introduction to renewable energy.

Technology Education Connections

Technology education teachers and their students involved in home-building projects have had an invaluable resource in KEEP. Teachers have received informational mailings about energy efficient home building and the Wisconsin ENERGY STAR Homes program, as well as the offer to attend the Better Buildings: Better Business Conference—at no cost. In further support of these innovative educators, the KEEP staff has maintained an updated online guest speaker and field trip database to guide teachers towards learning opportunities for their students. KEEP has also partnered with the University of Wisconsin campuses in Stout and Platteville to offer energy education support for pre-service technology education teachers and attended various technology education events to promote energy efficiency and conservation activities relevant to this audience.



Hartford Union High School's 2004 student built home.

What's Next for KEEP?

The future of Wisconsin depends on energy literate individuals who possess the knowledge, skills, and attitudes that will allow them to use energy resources wisely. Energy education must be an integral part of the school curriculum to produce energy literate citizens. As KEEP moves forward, it must continue to support teacher efforts to integrate energy education effectively. This requires:

- Ongoing inservices for teachers who have not previously participated in KEEP
- Support structures for graduates of KEEP inservices

To date KEEP has reached thousands of Wisconsin teachers, including over 2,500 who have participated in our university-credited inservice courses. About one-fifth of Wisconsin's teachers have heard of KEEP. With future outreach and program activities, KEEP seeks to increase this percentage of teachers informed about energy education. Energy Center of Wisconsin's external evaluation of KEEP also found evidence that many other influential players such as school district curriculum coordinators know little or nothing about the program. Given energy's role in the state's academic standards as well as its critical role in the state's future, the number of teachers reached and district support of energy education must increase. KEEP will continue to offer inservices around the state and it will work with the state's teacher education programs to ensure that new teachers are exposed to energy education before they enter the classroom.



“The KEEP program does a great job of preparing teachers with ready to use information regarding responsible energy education as well as great workshops in integrating energy education into existing curriculum.”

Chris Brzinski,
*Bradley Technology and
Trade High School*

In the end, though, these initial materials and associated inservices are not sufficient to guarantee ongoing energy education. KEEP graduates need reliable and consistent support. Some graduates want additional opportunities to network with other energy educators. Many need help building school-community partnerships on energy issues. Some graduates have indicated they would like to integrate more extensive and in-depth energy practices in their school districts. These teachers have the potential to become leaders in their districts, provided KEEP can support their efforts.

KEEP builds statewide capacity by providing opportunities for teachers to become energy education leaders in their communities. KEEP will play an instrumental role in teacher networking and supporting school-community partnerships. Integral to these partnerships is the involvement of local energy professionals and KEEP can serve as the conduit between teachers and these professionals.

“I feel teachers who have participated in the program have found KEEP an extremely beneficial learning opportunity, both professional and personal. They have also become members of a network of educators where ideas, activities, and general information can be exchanged and shared.”

Jack Finger
*Environmental Education
Coordinator (retired),
Waukesha School District,
KEEP Adjunct Faculty*



Future Project Ideas for KEEP

- Add student-focused pages to the KEEP Web site
- Facilitate a student intern/practicum program for careers in energy
- Work with CESAs and other state networking programs to develop energy resource hubs to make energy teaching aids readily available throughout the state
- Design special topic courses and workshops that could be offered after school
- Explore hosting an energy-themed summer camp for teachers and students
- Further develop and expand KEEP's *Promising Energy Education Practices in Wisconsin: Creating a Network of Energy Educators*
- Enhance the annual KEEP awards program to recognize teacher achievements in community energy resource management
- Reinststate the energy education grants program, collaborating with WEEB
- Expand the KEEP concept to other states

Logistics: Ensuring Effectiveness

Collaboration

KEEP is effective in part because it is the product of collaboration between a variety of actively engaged partners. When KEEP was initiated, WCEE brought expertise in developing and fielding educational initiatives. The Energy Center of Wisconsin and its members brought expertise on energy issues and a variety of perspectives on those issues. The addition of Focus on Energy to this team enabled KEEP to evolve into a statewide capacity-building program for energy education. The collaboration among these stakeholders created an effective program that deals fairly with complicated and often controversial issues. Moreover, this collaboration supports the integration of energy education into school curriculum and helps to develop energy literacy in Wisconsin schools. KEEP will continue to work with these partners and will seek out new team members to further evolve KEEP's capacity-building abilities.



“After ten years, KEEP is even more relevant for students and teachers. Rising energy costs, energy supply disruptions and environmental issues affect all of us. Students, teachers and consumers increasingly demand answers, and KEEP delivers.”

Jim Jenson
*Community Education
Manager, Madison Gas and
Electric Co., KEEP Adjunct
Faculty*

“KEEP has been an invaluable ally and support for me in teaching energy awareness to my K-5 students. Through their professional development opportunities, lending library, newsletter, and special programs such as the 'Bright Idea' fundraiser, they've really helped bring energy education to life!”

Clare Seguin,
Lincoln Elementary School

Staffing

As mentioned in the introduction, a key element to ensuring the success of KEEP is dedicated staff. We employ and will continue to employ skilled and resourceful individuals who have the necessary strengths and insights to support the effectiveness of KEEP.



Budget Summary

KEEP requires a dependable, consistent source of funding to continue to evolve into a proactive program that supports the efforts of teachers to integrate energy into their schools. Teachers need us to be a reliable, consistent program they know they can turn to for help with their energy education efforts. KEEP needs secure funding to have the time and stability to further build and develop school-community partnerships. With secure base funding, we will have staff who possess the expertise and resourcefulness to design effective and innovative programs that will help institutionalize energy education in Wisconsin K-12 schools. After administering KEEP for the last ten years, it is determined that a base-funding figure of \$400,000 would be an appropriate estimate for the annual operations—including personnel, travel, services and supplies, and material productions—of KEEP.

Closing Remarks

A key element to ensuring the success of KEEP is dedicated staff. KEEP employs skilled and resourceful individuals who each have unique strengths and insights that contribute to the efficacy of KEEP. Our program effectiveness is also secured through the use of formative and summative



assessment strategies, including focus groups and nominal group analysis. These assessments have ensured that KEEP materials are conceptually accurate and pedagogically sound.

KEEP's success is important because of its mission. We aim to improve and increase energy education in Wisconsin. Energy is integral to every action and reaction on Earth. All of our technological advances as well as our environmental problems can be attributed directly or indirectly to our development and consumption of energy.



Through KEEP, teachers and students are empowered to take important steps toward a more sustainable energy future. KEEP was and is designed to be a comprehensive energy education program. The myriad energy concepts we address, including scientific, social, and cultural concepts, are all significant. With the continued support of teachers and resource managers throughout Wisconsin, KEEP will continue to strive to achieve our mission over the next ten years and beyond.



"I find the KEEP activities to be a rewarding experience for my students. I look forward to continuing to use the activities in my lessons and look forward to taking additional courses. I am grateful for the wonderful opportunities to further my knowledge in this area and pass energy education on to our students."

Cindy Reetz
*Thomas Jefferson
Middle School*

KEEP History

KEEP Steering Committee 1995-1999

Randy Champeau (chair),
Wisconsin Center for
Environmental Education

Carolyn Amegashire,
Wisconsin Department of
Transportation

Okho Bohm,
Wisconsin Power & Light
Company

Al Hovey,
Longfellow Middle School

Pat Marinac,
Wisconsin Association for
Environmental Education

Chuck Mitchell,
Alliance for Clean Energy
Systems

Cheryl Parrino,
Public Service Commission
of Wisconsin

Susan Stein,
Midwest Renewable Energy
Association

Mark Hanson (co-chair),
Energy Center of Wisconsin

Tom Bobrofsky,
Wisconsin Elementary
Science Teachers

Floyd Henschel,
Wisconsin Society of
Science Teachers

Jim Jenson,
Madison Gas & Electric

Corky McReynolds,
Treehaven Environmental
Center

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In 1993, the Wisconsin Center for Environmental Education (WCEE) proposed that a statewide energy education program be developed and implemented. In 1995, the Energy Center of Wisconsin (ECW), a non-profit energy efficiency research organization based in Madison, agreed to fund this three-year project. The Wisconsin Environmental Education Board and the University of Wisconsin-Stevens Point also provided support. With this initial funding secured, WCEE hired a coordinator of curriculum development, a coordinator of research, and a program assistant in the summer of 1995, and the Wisconsin K-12 Energy Education Program (KEEP) was born.



KEEP began with a three-phase project plan. These phases included developing a conceptual guide and activity guide for K-12 energy education (Phase I), developing and implementing an energy education inservice course for teachers (Phase II), and continuing these initiatives beyond the initial three-year funding period (Phase III).

Phase I and II resulted in a conceptual guide that identified key concepts in energy literacy. Lessons within the

activity guide were designed to address the concepts. These concepts and the corresponding activities are organized in the following themes:

Theme I: We Need Energy

Goal: To help students appreciate the nature of energy, providing them with an awareness of how energy is used to maintain, organize, and change systems that affect their everyday lives.

Theme II: Developing Energy Resources

Goal: To help students appreciate how they and other humans have become more and more dependent on the development and use of energy resources to satisfy their standard of living.

Theme III: Effects of Energy Resource Development

Goal: To encourage students to investigate how energy use has affected their lives.

Theme IV: Managing Energy Resource Use

Goal: To help students identify ways they can help ensure that energy resources will be available for future users.

By 1998, KEEP had successfully accomplished the goals of the first two phases, including the training of 20 Adjunct Faculty who offered the KEEP inservice course throughout the state. These Adjunct Faculty helped KEEP reach 600 teachers by the end of the initial funding period.



With the success of KEEP's first three years, KEEP entered the third phase of its development. Phase III is essentially the evolution of KEEP from a short-term project into a long-term program. Projects in environmental education can have successful and impressive results; however, without sustained funding and staff involvement, their outcomes are short-lived. Within a program, dedicated staff will continue to provide the time and resources to ensure that the achievements will grow and progress over time.

To help KEEP evolve into a program, the Energy Center of Wisconsin decided to provide the WCEE with additional funding to support KEEP for two more years. For each year, KEEP contracted with ECW to conduct specific energy education projects that met specific needs of K-12 educators and to create a statewide network of energy educators. There was a transition of KEEP staffing during this time. Staff involved in the first two phases moved on to other programs, while the coordinator of curriculum development was retained to direct the program. The WCEE hired a program specialist and graduate student to assist the program director to conduct the projects funded through ECW.

In 2000, the ECW worked with KEEP staff to ensure long-term financial support through Wisconsin's Public Benefits Program, Focus on Energy. This action further guaranteed KEEP's achievement of its third phase.

With the transition to long-term funding and to support program development, the Wisconsin Center for Environmental Education guided KEEP through a series of statewide focus groups to direct future program design. KEEP Adjunct Faculty conducted 14 focus groups involving over 100 teachers. During the sessions, the teachers

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KEEP Advisory Review Committee 1995-1999

Randy Champeau,
Director, Wisconsin Center
for Environmental Education

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answered the following question: What programs, projects, and/or resources should KEEP develop to make energy education effective and fun? KEEP staff collected their responses and organized them into the following categories which have been used to direct KEEP programming since the year 2000:

Professional Development

Offer courses and increase the variety and format of the inservice opportunities, including courses online and special topics such as renewable energy or energy efficiency.

Resources

Design or secure resources and support materials to teach about energy, including a statewide listing of field trip and guest speakers related to energy topics. Schools need financial support and funding sources to secure these resources.

Networking and Outreach

Provide teachers with updates on energy education news and opportunities. Offer networking forums for teachers to share ideas and experiences.

Student Involvement

Develop and offer a variety of activities involving students and the community in energy education activities, including contests and annual events.

Funding Opportunities

Help teachers identify grants and other funding sources to support their energy education efforts.



Since 2001, the Wisconsin Center for Environmental Education has been subcontracted through Focus on Energy to administer KEEP. These entities team together to develop, implement, and evaluate projects that address the program areas listed above. As the diversity and number of projects KEEP was contracted to conduct increased, it followed that the KEEP staff needed to increase as well. Therefore, KEEP hired an Outreach Specialist, a Renewable Energy Specialist, a Project Coordinator, and a Program Assistant. Two graduate students also contributed to the program, conducting research that validated aspects of KEEP support materials and services. These projects enable KEEP to work towards its goal of increasing and improving education while simultaneously helping Focus on Energy achieve its goal to encourage energy efficiency and use of renewable energy, enhance the environment, and ensure the future supply of energy for Wisconsin.

Being part of the state's Public Benefits program has broadened KEEP's development, enriching and advancing the program. Unfortunately, this program has suffered serious budget cuts over the past few years and KEEP, along with other Focus on Energy programs, has been affected. Therefore, KEEP currently employs a full time staff of four as well as a half time program assistant. The staff includes the program director, a program specialist, a resource specialist, and an outreach specialist. Despite these budget cuts, KEEP staff continue to develop and offer stellar programs to Wisconsin teachers.

For KEEP to continue at its current level of performance and especially to further evolve into a proactive energy education program, KEEP will require a dependable, consistent source of funding. Teachers need KEEP to be a reliable, consistent program they know they can turn to for help with their energy education efforts. Over the past ten years school systems, utilities, and cooperatives have come to recognize KEEP as an effective resource for implementing energy education projects. KEEP needs secure funding to have the time and stability to further build and develop school-community partnerships. With secure base funding, KEEP will continue to employ staff who possess the expertise and resourcefulness to design effective and innovative programs that will help institutionalize energy education in Wisconsin K-12 schools.



“My students and I are building better homes since I got involved with KEEP. Between the conferences, classroom support, and connections to ENERGY STAR[®], I have a better grasp of how to integrate energy efficiency into my teaching.”

John Lonergan,
Hartford Union High School

Project and Program Evaluations

The director of the Wisconsin Center for Environmental Education, Randy Champeau, often states that KEEP is one of the most heavily evaluated education programs in existence. Many of the evaluations were completed internally to direct project development and revisions. The *KEEP Activity Guide* in particular went through extensive formative assessments and has undergone several external reviews. Teacher evaluations of the publications and the inservice courses are especially valuable; their reviews provide KEEP with insights used to continually improve our products and services.

In 2000, the Energy Center of Wisconsin contracted with Primen, an information company that provides in-depth research and consulting services for companies involved in the retail energy industry, to conduct an independent evaluation of the Wisconsin K-12 Energy Education Program. Their assessments included surveys and interviews with KEEP stakeholders (Adjunct Faculty and program sponsors) and with hundreds of teachers who have participated in KEEP courses since 1997. Their research provided insights into program effectiveness and supplied feedback that has been used to facilitate program improvements. KEEP received the evaluation results in 2002 and the findings have been used to improve program outreach and marketing. In general, the Primen evaluation noted that KEEP teachers outdo non-KEEP teachers in several metrics including frequency and time of student exposure to energy concepts, teacher perception of student learning, attitudes, and energy use, and teachers' self-reported preparedness to teach about energy.



Letters and Notes of Support

Letter from Randy Champeau

Director

Wisconsin Center for Environmental Education

University of Wisconsin - Stevens Point

Bottom Line The energy flowing through planet earth constitutes a basic life support system of the planet which humanity cannot do without. It is a basic tenet of environmental education that energy, in its diverse forms, powers our ecosystems and it is the fundamental “fuel” of our economy. We all know, or should know, that creating a sustainable energy future is a “must” if humanity hopes to sustain “quality of life” and its very existence as a species.

Bottom Line An energy literate public is key to creating a sustainable energy future for society. That is, a public knowledgeable about energy and holding the values and motivation to practice behaviors and take actions toward creating sustainable energy systems. Creating an energy literate public is exactly what the K-12 Energy Education Program (KEEP) is doing. Prior to KEEP, there was no statewide effort to educate Wisconsin K-12 students about energy. Energy education in our schools was episodic at best. Today after 10 years of KEEP, thousands of teachers have become energy literate educators. These teachers are passing energy literacy onto hundreds of thousands of students.

Bottom Line The staff of KEEP can be proud of the accomplishments their hard work has produced over the last ten years. However, just as important, the energy community of Wisconsin should pat itself on the back for funding and participating in the creation of one of the most comprehensive and effective K-12 energy education programs in the nation. Creating an energy literate public is an enormously complex and elusive task. We can feel assured we are moving in the right direction with the existence of programs like KEEP.

Bottom Line Thank you to the hundreds of energy professionals and educators who have helped make KEEP a success, and we hope you will be there to support and participate in the program over the next ten years.



Notes of Support

Barbara Samuel

*Marketing and Communications Coordinator, Division of Energy,
Department of Administration*

“KEEP is a dream that became a reality, but it is much more than that. Thanks to the vision and stalwart dedication of its long-time leaders—Jennie Lane and Randy Champeau—and many other helpers along the way, KEEP has continued to stay vibrant, to grow and expand in new ways, while staying true to its underlying purpose. Hurray for the first ten years of KEEP! And may the next ten years be even more successful.”

Kathy Kuntz

Director of Operations, Focus on Energy

“Ten years ago KEEP launched with an enormously ambitious agenda—to increase and improve energy education in Wisconsin. Now, looking back, it is thrilling to see how much they have accomplished in a single decade. Wisconsin has the strongest comprehensive energy education curriculum in the country. More, our curriculum enables teachers and students to grapple with hard issues, promotes critical thinking, supports the state’s educational standards and is pedagogically appropriate at all levels.

Successes like KEEP are no accident. Lots of people had a role in creating and sustaining this program. Energy experts from utilities and non-profits reviewed curricula for technical accuracy while thousands of educators field tested the lessons and offered suggestions for improvement. Wisconsin’s energy leadership recognized that KEEP was the right thing to do and they have maintained their support for the program, despite a variety of potential distractions. And, perhaps most importantly, the state’s environmental leadership at the Wisconsin Center for Environmental Education assembled a dedicated team that consistently delivers a program that exceeds all expectations.”

Charlie Higley

Executive Director, Citizen Utility Board

“The Citizens Utility Board has been a long-time supporter for the KEEP program. Chuck Mitchell, who served on the CUB board during the 1990’s, helped secure the initial funding for KEEP from the Energy Center of Wisconsin. CUB supports KEEP’s mission due to the importance energy issues plays in our economy and environment. Education about energy issues is critical for an informed and involved citizenry, and KEEP plays the leading role in Wisconsin in making this education happen.”

Andrea Minniear

Senior Project Manager, Education & Outreach, Energy Center of Wisconsin

“We are very proud of KEEP. As an organization committed to the development and delivery of energy education, the Energy Center is pleased to have played a key role in funding and launching the program. Through the support of our utility members, we are dedicated to the program's continued success. KEEP is a superb example of the power of collaboration.”

Craig A. Hoffman

Merrill High School

“Keep the KEEP classes! Not only are the classes informative and educational, they provide an opportunity to evaluate the curriculum that helps examine present practices of energy use and inculcates the mindset of teachers and students to be further aware of the types of energy being used in their surroundings.”

Jon Rossmiller

Horace Mann Middle School

“I have nothing but great things to say about the KEEP program. I have been able to attend the Energy Fair in Custer for graduate credits and learned so much about renewable energy that I continue to share with my students! I helped pilot the KEEP Energy Trunks with my 7th grade classes. The students enjoyed the many hands-on activities provided with the trunk to supplement the curriculum! I received my KEEP training from Don Lutz in Marathon City. Don was an excellent instructor and at the time was the President of the state science teachers. As part of the KEEP class we were able to join the WSST and I've been a member ever since. Thanks for the great e-mail news each month....I share them with our entire science department.”

Dawn Pfaff

Homestead High School

“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. We were provided with many opportunities to practice lessons, modify them for our classes and teach them to our peers. Having an inservice on using the binder was essential to its successful implementation into a classroom. Thanks for the opportunity!!”