

Wisconsin K-12 Energy Education Program (KEEP)

2013 Annual Report



Photos Submitted



Wisconsin Center for Environmental Education
College of Natural Resources
University of Wisconsin-Stevens Point

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"...by educating staff and students about how to change their energy behavior, we can start to reduce our energy consumption. By addressing the no-cost energy conservation practices, we can then address the larger energy cost challenges."

– Matt Vande Sande, Mount Horeb

Program Overview

Mission

The mission of KEEP is to initiate and facilitate the development, dissemination, implementation and evaluation of energy education programs within Wisconsin schools.

Goal

The goal of the Program is to leverage teacher education to improve and increase energy literacy in Wisconsin's K-12 schools as a means of contributing to statewide energy savings.

Vision

To be nationally recognized for creating an energy literate citizenry in Wisconsin actively engaged in energy conservation, efficiency and renewable energy initiatives.

Brief History

The Wisconsin K-12 Energy Education Program (KEEP) was created in 1995 to promote energy education in Wisconsin after the Wisconsin Center for Environmental Education (WCEE), located within the College of Natural Resources at the University of Wisconsin-Stevens Point, proposed that a comprehensive guide to K-12 energy education in Wisconsin be developed. KEEP is the product of an innovative partnership between educators and energy professionals. Initial funding from the Energy Center of Wisconsin (ECW) launched the project with support from the Wisconsin Environmental Education Board (WEEB) and UW-Stevens Point. As the initial project grew into a comprehensive program, Wisconsin's Public Benefits Program, Focus on Energy, provided financial support which continued for 12 years (2000-2012). Since then, Wisconsin's major utilities, in partnership with the ECW, the Wisconsin Environmental Education Foundation and Cool Choices, have ensured the continuation of KEEP, its programs and services to teachers and their students while enhancing its effectiveness.

KEEP has provided effective energy education for more than 18 years making it one of the most successful statewide K-12 energy education programs in the nation and arguably the world.

KEEP's programming aims to improve and increase energy literacy, as well as save energy in Wisconsin. KEEP accomplishes these objectives by:

- helping **teachers** integrate hands-on, standards-based, energy education into classrooms through professional development;
- bridging the divide between **student** learning that takes place at school and the implementation of energy-saving behaviors that result in savings impacts at **home**; and
- connecting the school to the surrounding **community** which enables students to assist their communities as they help residents manage their energy consumption and allows community resources to provide service experiences to students.

KEEP is the product of an innovative public private partnership between educators and energy professionals including Wisconsin's major utilities. The University of Wisconsin-Stevens Point's Wisconsin Center for Environmental Education — a center of the College of Natural Resources and UW-Extension - Cooperative Extension — launched this effort in 1995.



Photo Submitted by Wisconsin Public Service

"...it is our obligation to teach our students the importance of conservation. Energy saved is money saved...students and staff can work together to keep down costs and have an impact on our building budget."

– William Clouse, Durand

2013 Scope of Work Overview

In 2013, KEEP continued to promote energy education to Wisconsin’s K-12 educators and their students, providing support services and materials to thousands of teachers statewide. KEEP’s 2013 scope of work was developed through input from KEEP ad hoc instructors, WCEE staff, Wisconsin utility representatives and teachers who have participated in several KEEP courses.

Areas of Focus

KEEP’s scope of work is designed around three areas of focus that expanded programming efforts to include home and community initiatives in addition to existing school initiatives.

School-based initiatives facilitate efficient and effective schools where students learn about energy and begin practicing good energy habits.

Home-based initiatives empower students to be ambassadors for good energy practices in their homes.

Community efforts encourage students and teachers to reach out and contribute to their community energy resources.

Enrichment Pilot

KEEP, in coordination with the Energy Center of Wisconsin (ECW) and Wisconsin utilities, developed an enrichment pilot to help document energy savings of current KEEP activities. This pilot had three components:

- Measure the energy efficiency of the school building where KEEP has a presence;
- Collect data from teachers, students and their families regarding behavior changes and energy savings resulting from KEEP activities; and
- Partner with Cool Choices to offer an online behavior change game to schools that are part of the Green & Healthy Schools Wisconsin (GHSWI) program.

Green & Healthy Schools Wisconsin Partnership

KEEP is a collaborating partner of Green & Healthy Schools Wisconsin, along with the Wisconsin Department of Natural Resources and Wisconsin Department of Public Instruction. Green & Healthy Schools Wisconsin supports and encourages schools to create safe and healthy learning environments and prepares students to understand, analyze and address the major environmental and sustainability challenges now and into the future. It is a Web-based, self-paced, voluntary program available to all Wisconsin PK-12 public and private schools.

Thank you to our partners and advisers who helped develop KEEP's areas of focus, enrichment pilot and collaboration with Green & Healthy Schools Wisconsin.





"I think it is great that KEEP and local utility companies see the need to keep educators informed of various aspects of energy and changes in technology..."

– Better Buildings, Better Business Conference Participant

Program Highlights

Professional Development: One hundred and ninety-one Wisconsin teachers participated in KEEP courses in 2013. With each teacher reaching an average of 60 students annually, the potential reach through this year's courses is 11,460 Wisconsin students.

KEEP Going Online: Ten newsletters were sent in 2013 (one per month except for June and July) reaching an average of 3,986 people each month.

Publications: KEEP staff were published in the *Middle Grades Research Journal* in the article "Ensuring Teacher Education Program Success Through Formative Assessments: An Overview of the Wisconsin K-12 Energy Education Program."

Enrichment Pilot Development: KEEP staff created plans for documenting energy savings of KEEP activities in coordination with the Energy Center of Wisconsin, Alliant Energy, Madison Gas and Electric, We Energies, Wisconsin Public Service, WPPI Energy and Xcel Energy.

School-based Initiatives: Thirty-seven educators participated in four School Building Energy Efficiency Education courses, developing eight Energy Action Plans to contribute to energy savings within their schools. KEEP awarded \$1,267 for the purchase of resources to support these plans.

Home-based Initiatives: As part of KEEP's Enrichment Pilot, online data collection tools have been created for use in classroom and home settings. These tools will help estimate kWh savings and behavior changes based on participation in KEEP activities. In 2013, more than 22,842 kWh were saved.

Community Efforts: KEEP helped coordinate the Educator Tents at the Midwest Renewable Energy Association's annual Energy Fair holding 17 workshops for 349 workshop attendees and bringing 587 of the more than 18,000 fair attendees through the Resource Tent.

Energy Educator of the Year: KEEP awarded the 2013 Energy Educator of the Year awards to Jenny Heinzen (nonformal) of the Midwest Renewable Energy Association and Scott Liddicoat (formal) from the Green Bay Area Public School District. See more about Scott Liddicoat on page 6.



Nonformal Energy Educator of the Year: Jenny Heinzen

More than 1,200 students benefitted from Jenny Heinzen's energy education efforts at Lakeshore Technical College (LTC), where she taught for 10 years. Currently, as the Curriculum and Training Coordinator at the Midwest Renewable Energy Association (MREA), Jenny teaches more than 10 different courses and has developed curriculum for MREA courses. She has also helped to develop the nationally recognized Wind Energy Technology Program and assisted in writing the Safe Access, Fall Arrest, Evacuation and Rescue curriculum at LTC. She sits on RENEW Wisconsin's Board of Directors, is a member of the Small Wind Conference Coordinating Committee and Wisconsin's Public Service Commissioning Wind Siting Council and won the 2008 Small Wind Conference Small Wind Educator Award, to name a few accomplishments.



“All the KEEP courses have helped provide current information timely and practical...I have always looked forward to working with the entire staff and faculty with these courses.”

– NRES 735 Online Course Participant

School-based Initiatives

School-based initiatives facilitate efficient and effective schools where students learn about energy and begin practicing good energy habits.

Professional Development: KEEP offers graduate level courses to Wisconsin K-12 teachers through the University of Wisconsin-Stevens Point via face-to-face and online course platforms. The courses are taught by 22 ad hoc instructors. More than \$81,000 was provided in scholarships to participants to offset tuition costs. Of that, \$42,500 was contributed by Wisconsin utilities.

KEEP held the following courses in 2013:

Course Title	Number of participants in 2013	Number of Courses held in 2013
Energy Education in the Classroom	42	6
School Building Energy Efficiency Education	37	4
Doable Renewables: Renewable Energy Education in the Classroom	23	3
Energy Education: Concepts and Practices Online	35	2
Renewable Energy Education Online	20	1
Exploring Building Science	1	1
Wind Energy Education	14	1
Exploring Renewable Energy and Sustainable Living at the Energy Fair	19	1
Total	191	19

It is estimated that since 1995 KEEP has reached more than three million students who are our future homeowners, decision makers and energy leaders.

Course Hybridization: KEEP piloted its first combination online and face-to-face hybrid course with Doable Renewables: Renewable Energy Education in the Classroom. Half of the course was held online via Moodle, while the other half was held face-to-face. The hybrid format reduces the meeting time commitment making the course more available and appealing to teachers.

Pre- and Post-Course Surveys: In an attempt to identify what behavior changes are initiated by participation in KEEP courses, KEEP began implementing a pre- and post-course survey to participants in three of its face-to-face courses. Pre-course surveys were sent out to 102 teachers; the response rate was 83.7 percent. Post-course surveys are sent six months after participating in a course. The last course offered in 2013 took place in October, results will be compiled in 2014.



"This course was filled with applicable, cost free ideas and activities that could be put to use immediately! It was an excellent motivator."

– NRES 734 Adams-Friendship Course Participant

School-based Initiatives continued

School Building Energy Efficiency Education Course: Thirty-seven Wisconsin teachers from 16 different schools in Alliant Energy, We Energies, WPPI Energy and Xcel Energy participated in four course offerings.

Action Plans: Educators developed eight course-required action plans implementing energy efficiency projects in their classroom, school building or school district. Examples of 2013 energy action plans include:

- Implementing high school energy curriculum, including data collection and proposed energy savings, for the district to inform various audiences;
- Students surveying high school staff about light use behavior in classrooms, providing light intensity data for each classroom coupled with light energy conservation tips, then reassessing light use behavior at the end of the semester;
- Installing energy saving devices such as equipment timers, vending misers, desk lamps and occupancy sensors, then educating staff and students about the cost of using energy; and
- Focusing Ecology Club activities on energy efficiency projects, hands-on energy investigations, sharing energy conservation tips with students and staff and monitoring and rewarding energy-saving behaviors.

Mini-Grant Program: KEEP supported 13 course participants from five different schools in Alliant Energy, We Energies and Xcel Energy service territories with mini-grant funds (up to \$100 per teacher) to help implement course-required energy action plans totaling \$1,267. Examples of 2013 mini-grant resource requests include:

- LED and CFL desk lamps for staff rather than utilizing overhead lights; and
- Watt meters to measure energy use of appliances and computers at school.

NEW Wind Energy Course: KEEP provided a Wind Energy Education course in partnership with the Midwest Renewable Energy Association and KidWind, a renewable energy science education program. Fourteen participants learned how to integrate wind energy concepts into their curriculum to provide students with introductory knowledge and skills that prepare them for engineering and energy-related STEM careers. KEEP and KidWind supplied each participant with wind activities and materials to construct a model wind turbine for use in their classrooms.

Energy Education Certificate: Two teachers received the Energy Education Certificate through the University of Wisconsin-Stevens Point. The certificate reflects comprehensive professional development and experiences in energy content and teaching competencies. The certificate is awarded after completing at least three KEEP courses and providing evidence of involvement in at least three energy education activities. There are now thirteen teachers with this certificate.



Formal Energy Educator of the Year: Scott Liddicoat

Scott has been a science teacher at Southwest High School in Green Bay for 28 years. In the last three years, Scott taught classes he developed on energy conservation and renewable energy. Students taking those classes are eligible to earn transcribed credits for Renewable Energy courses through a partnership with Northeast Wisconsin Technical College and the University of Wisconsin-Green Bay. Liddicoat has also played an important role in the development and implementation of Wisconsin Public Service's SolarWise for Schools curriculum. SolarWise received national recognition as the recipient of the Green Power Education Outreach Program Award for 2012.



School-based Initiatives continued

STEM Collaboration: Wisconsin students gained the awareness, skills and knowledge vital for growing Wisconsin's economy while protecting the environment. Through Science, Technology, Engineering and Mathematics (STEM), students explored the nature of energy, analyzed processes involved in developing energy resources, discovered the effects of energy resource development and realized ways in which we manage energy resource use. KEEP played an important role in these areas in multiple ways including:

- Supported a Fort Atkinson High School teacher to attend an introduction to photovoltaics (PV) workshop, which enabled him to integrate renewable energy concepts into PV labs for students;
- Co-hosted a STEM Weekend Warriors workshop at the Aldo Leopold Foundation through the Green Schools National Network;
- Hosted an activity station focused on energy efficiency at the Girl Scouts of Wisconsin-Badgerland Council Family Science and Engineering Night; and
- Introduced an activity using watt meters for 23 educators from the Wausau and Rhinelander School Districts as part of their Math and Science Partnership grant called STEM for the FUTURE.

Green & Healthy Schools Wisconsin (GHSWI)

- KEEP staff assisted GHSWI in conducting twelve regional workshops, reaching 146 teachers, administrators, support staff, parents and students from various schools around Wisconsin;
- KEEP courses and resources were promoted in the GHSWI regional workshops and their energy-themed October newsletter;
- Through a partnership with Cool Choices, an online game was developed as a benefit to being a GHSWI participant, as well as a tool to help schools complete their GHSWI application. The game will be available in 2014;
- KEEP staff gave a presentation on the Cool Choices game at the annual Wisconsin Association for Environmental Education conference in La Crosse;
- KEEP staff participated in U.S. Department of Education tours of three schools/districts that were awarded and recognized nationally as 2013 Green Ribbon Schools; and
- KEEP staff participated in an evaluation of GHSWI applications for the 2014 Green Ribbon Schools Award.



New Staff Member Annie Baker

Annie Baker started as KEEP's School Energy Education Specialist on June 3, 2013 and serves as project lead for various activities within KEEP, including the School Building Energy Efficiency Education course and the Mini-Grant and School Energy Policy and Education Plan grant programs. She has a B.S. in Park Management and Conservation and an M.S. in Curriculum and Instruction, both from Kansas State University. She can be reached at Annie.Baker@uwsp.edu or 715-346-4320.



“The Scavenger Hunt gave students the opportunity to think about their energy use and what type of carbon footprint they are leaving on the environment.”

– Tina Gleason, Milwaukee

Home-based Initiatives

Home-based initiatives empower students to be ambassadors for good energy practices in their homes.

Energy Action Month: KEEP developed two tools to help engage Wisconsin residents in learning about energy including where it comes from, how much they consume and what actions they can take to reduce their usage in order to bring awareness to Energy Action Month in October. Almost 200 individuals completed an online energy scavenger hunt and about 100 people made an energy pledge (video pledges are available on KEEP’s SchoolTube Channel). With both tools, participants indicated they would take actions such as replacing two hours of screen time with participation in activities that don’t require electricity. Some of these activities included playing soccer, reading, practicing taekwondo, walking and playing board games. Responses to home energy savings included unplugging small electronics when not in use, replacing inefficient light bulbs to more efficient models, using the sun to heat their home and taking shorter showers.

KEEP in Action: This Web portal, created in cooperation with the Energy Center of Wisconsin, was developed to enhance student energy awareness and encourage energy conservation behaviors at school and home, as well as track behavior change commitments.

Take it Home: A new section has been added to KEEP’s monthly newsletter, KEEP Going Online. The Take it Home section is designed to increase usage of online utility account services and Focus on Energy programs and incentives and to share activities and resources.

Energy Saving Tips: An Energy Savings Tip is included in KEEP’s monthly newsletter to promote energy saving actions and behaviors for home and school.



New Staff Member Kelly Smith

Kelly Smith is KEEP’s School to Home Energy Education Specialist. Her focus is developing KEEP’s School to Home programming, including various online data collection tools regarding energy consumption at home and how behaviors change after learning about energy in the classroom. Kelly has been with KEEP for a couple of years, helping with the *iCanConserve*® program through Wisconsin Public Service as well as with Family and Consumer Science outreach. If you’d like to help Kelly with this program or have any ideas, questions or suggestions, please contact her at Kelly.Smith@uwsp.edu or 715-346-4651.



Photo Submitted

"...informative, concise and thought provoking... The topics were relatable to any grade level; more importantly...to our own lives."

– NRES 733 Online Course Participant

Community Efforts

Community efforts aim to encourage students and teachers to reach out and contribute to their community energy resources.

Boys & Girls Club of Portage County: KEEP is partnering with the Club to incorporate energy curriculum, provide energy resources, create student pre/post tests for the program and help integrate take-home pieces to encourage the engagement of parents and families as part of a \$1,500 Green Gift from Cellcom.

Incourage Community Foundation, Wisconsin Rapids: KEEP will provide a Doable Renewables: Renewable Energy Education in the Classroom course in 2014 to enhance renewable energy education efforts resulting from a 2013 Constellation E2 Energy to Educate grant, received by Mid-State Technical College and four central Wisconsin high schools.

Adams County: KEEP provided a School Building Energy Efficiency Education course for 13 school faculty and staff members and buildings and grounds personnel as part of the Wisconsin Center for Environmental Education's partnership with the Adams County Community Children's Concern Committee and the Promise Neighborhood Grant.

Energy Fair, Custer: KEEP staff helped organize the Educator Tents at the Midwest Renewable Energy Association's annual Energy Fair, including hands-on workshops, classroom resources and networking opportunities. KEEP provided 19 teacher scholarships for continuing education credit through the WCEE's Exploring Renewable Energy and Sustainable Living at the Energy Fair course.

Random Lake High School: Attended the Science Club's 2nd annual "Health, Wellness, & Going Green Fair" that included education and fun for the entire family including KEEP's Pedal Power energy bike and hand-crank generator which participants used to generate electricity for light bulbs, a TV and other accessories. The event attracted 600-800 people from the Random Lake community.

River Trail School, Milwaukee: Attended Parents Night to promote energy saving tools, services and resources offered by KEEP, We Energies and Focus on Energy including the Express Energy Efficiency program.

Lakeland Family Festival, Washburn County: KEEP and Xcel Energy co-exhibited at this event in which attendees received tips to save energy in the home, played an energy-themed game (with prizes), learned about Focus on Energy incentives and were entered into a drawing for home energy savings devices. Approximately 650 people attended from nearby cities including Spooner, Shell Lake and Hayward.

Madison Gas and Electric (MGE) Shareholder's Meeting: KEEP was invited to exhibit at the "Caring for Future Generations" Shareholder's Meeting to highlight K-12 energy education efforts in the MGE territory and across the state. The event was attended by 1,900 shareholders.



"The materials were plentiful and easily adaptable to every grade. I really feel that I got something useful out of the course."

– NRES 730 Kenosha Course Participant

Curriculum and Resources

Curriculum guides, hands-on resources and online tools engage and motivate students to learn about energy.

Curriculum Guides: KEEP curriculum guides were distributed to 102 educators and included the *KEEP Activity Guide*, *Doable Renewables* and *Energy and Your School* by participating in KEEP graduate-level courses through UW-Stevens Point.

Hands-on Resources: Various hands-on energy education resources are available through the Wisconsin Center for Environmental Education's Resource Library. The most popular are the hand-crank generator, Pedal Power energy bike, energy trunk and sun oven.

Online Appliance Survey: As part of the online Energy Education: Concepts and Practices course, KEEP requires that course participants complete an appliance survey. In 2013, behavior change questions were added and the survey's use was expanded and adapted for use in the K-12 classroom (via KEEP in Action).

- Thirty-one online Energy Education: Concepts & Practices online course participants pledged to replace 188 inefficient light bulbs with CFLs or LEDs, potentially saving 8,178 kWh; and
- Forty-eight classroom students pledged to replace 376 inefficient light bulbs with CFLs or LEDs, potentially saving 14,664 kWh.

New Website: KEEP's website was redesigned to showcase the new areas of focus and interactive tools while streamlining usability.

KEEP in Action: This new Web portal contains downloadable activities that aid in energy efficiency efforts at school and home.

To date, KEEP has successfully reached thousands of teachers throughout the state with its graduate-level courses and high quality materials. These resources have helped increase the quality and quantity of energy education for hundreds of thousands of K-12 students in Wisconsin.





“What a great course for teachers to be able to gain the resources to teach about energy in their classrooms ... Thank you for the opportunity and the scholarship really helped in deciding whether to go forward with other courses in the KEEP repertoire.”

– Sara Gauthier, Racine

Building Networks

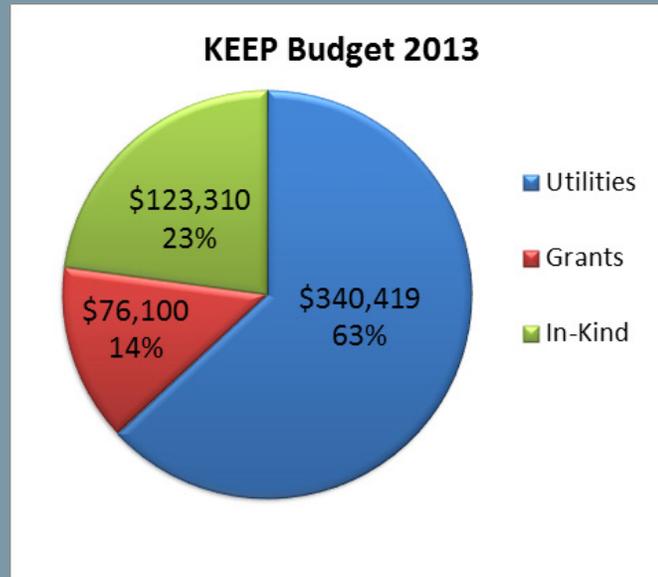
KEEP would like to thank our partners from the past 12 months:

Alliant Energy
 Cooperative Educational Service Agency (CESA) 10
 Cool Choices
 Energy Center of Wisconsin
 Green & Healthy Schools Wisconsin
 KidWind
 LEAF – Wisconsin’s Forestry Education Program
 Madison Gas and Electric
 Midwest Renewable Energy Association
 University of Wisconsin–Stevens Point
 UW-Stevens Point College of Natural Resources
 UW-Extension – Cooperative Extension

Wisconsin Association for Environmental Education
 We Energies
 Wisconsin Center for Environmental Education
 Wisconsin Department of Natural Resources
 Wisconsin Department of Public Instruction
 Wisconsin Environmental Education Board
 Wisconsin Environmental Education Foundation
 Wisconsin Public Service
 Wisconsin Technology Education Association
 WPPI Energy Wisconsin Member Utilities
 Xcel Energy

2013 Budget

KEEP’s base funding comes from a partnership between the Wisconsin Utilities and the Energy Center of Wisconsin. The University of Wisconsin-Stevens Point and the Wisconsin Center for Environmental Education provide in-kind support for the program. Additional funds are generated through grants, contracts and program revenue through Cool Choices, the Wisconsin Environmental Education Foundation and other partnerships.





"...I have found the KEEP courses and website and the resources on the website to be some of the best aides to me as an educator. Add to that, the always willing to help staff at KEEP do all they can to assist you in finding the training and resources you need to help your students achieve more. I am so thankful they are there to help."

– NRES 732 Appleton Course Participant

KEEP Staff

Annie Baker • School Energy Education Specialist
Dan Martinson • Communications Coordinator
Jamie Mollica • Program Specialist
Susan Schuller • Program Coordinator
Kelly Smith • Home Energy Education Specialist
Sara Windjue • Energy Education Specialist

KEEP Ad Hoc Instructors

Pat Arndt	Berlin High School, Berlin
Janie Besharse	Milwaukee
Jennifer Brinker	GDS Associates, Green Bay
Terrie Cooper	Door County Land Trust, Ellison Bay
Doug Dimmer	Homestead High School, Mequon
Cindy Edlund	Crandon High School, Crandon
Jeanine Gelhaus	Medford Middle School, Medford
Jim Jenson	Madison Gas and Electric, Madison
Steve Knudsen	Midwest Renewable Energy Association, Custer
Bobbi Kubish	UW-Stevens Point College of Natural Resources, Stevens Point
Jennie Lane	Bilkent University, Ankara, Turkey
Nels Lawrence	Kaukauna High School, Kaukauna
Scott Liddicoat	Southwest High School, Green Bay
Beth Piggush	Viterbo University, La Crosse
Laureanna Raymond-Duvernell	Sussex-Lisbon
Melissa Rickert	CESA 10, Stevens Point
Charlie Schneider	CESA 10, Chippewa Falls
Susan Schuller	Wisconsin Center for Environmental Education, Stevens Point
Dria Setter	Horizon Elementary School, Pewaukee
Ken Walz	Madison Area Technical College, Madison
Kelly Zagrzebski	Wisconsin Public Service, Wausau
Carrie Ziolkowski	LGL Limited, Anchorage, Alaska

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