Gillett School District Energy Policy and Education Plan

1. Executive Summary

A. Goals and objectives

i. To utilize the Gillett School district's buildings as a learning tool for energy education
   1. By December of 2009, establish an energy consumption baseline from which staff and students can investigate energy changes.
   2. By December of 2009, utilize concepts from the KEEP 734 course into lesson plans

ii. To develop a district-wide energy education plan for school board approval
   1. Create a policy to incorporate specific guidelines for staff, students and administration to follow.
   2. To create age appropriate lesson plans

iii. To improve energy education within the Gillett School District
   1. Incorporate student and staff lead teams to monitor energy consumption
   2. In the spring of 2011, Gillett staff members will receive training on energy education equipment and KEEP concepts
   3. In the spring of 2012, Gillett staff members will apply for additional WEEB grant money for energy education equipment
   4. Utilize the resources available from the Oconto Electric Cooperative as the need arises

iv. To achieve Green and Healthy School status
   1. In September of 2009, Gillett Science Club will meet to organize team to complete Green and Healthy Schools certification.
   2. By December of 2009, Science Club members will complete assessments
   3. By May 2010, Gillett School District will implement Green Healthy Schools

v. To make the Gillett School District more energy efficient
   1. By the fall of 2009, the energy education committee will create a list of best practices.
   2. During a fall early release day, Jeremy Pach will provide district training on energy consumption
   3. To create a district-wide energy management policy

B. **Rationale** – The importance of having the school building occupants learn the concepts as outlined in the energy education plan is to provide real-world applications of energy concepts. It is important to establish responsibility for energy management within the district so energy can be used more efficiently within the district. District employees will also be offered continuing education credits through KEEP and other training provided by internal and external sources.

C. **Plan Development Process** – Without having taken the 734 course, staff members are unsure how to go about developing an education plan. It is also difficult to develop a brand new plan without previous materials to refer to. It is also an obstacle that the Gillett School District does not have a policy on energy management.

D. **Planned Development Process** –

i. **Team Involvement** - Individuals involved with the development of the Energy Action Plan include Connie Scharenbrock (grant writer and secondary life sciences teacher), Danyell Franti (Energy Team committee member and business education teacher), Jeremy Pach (energy team committee member and Gillett Secondary Dean of Students), Rick Gruel (head custodian), Roy Jonjak (Gillett school District Superintendant), Miles Winkler (School Board Vice President)

ii. **Challenges -** There were a few challenges in the development of the energy action plan.

1. To begin with, we found that our school district had no existing energy plan/policy on file. We began with no baseline or district guidelines to follow. In the past, decision on energy was made between the head custodian and the superintendant. These guidelines were unwritten and shared only between the head custodian and the superintendant.
2. Secondly, we found that our current energy use practices were not in an acceptable range for energy savings based on research from other schools.
3. Some of the members of the energy committee felt their lack of energy awareness would be a hindrance on developing this plan.
4. Between receiving the grant and development of the plan and policy, our school district had a change in superintendants.

iii. **Strategies** – Although there were challenges during our process, each challenge proved to be a strength to our process.

1. It worked to our advantage that we did not have a policy in place in our district. We were able to identify many areas to improve upon and were able to implement many new policies for approval to our school board. These policies will allow our school district to save on energy costs as well as make changes that will help our environment.
2. After having an energy building audit conducted by Scott Jones of Focus on Energy, we were able to identify many problem areas and strategies to improve energy efficiency and cost savings to the district. We were able to make immediate changes in such areas as temperature control changes, lighting changes and non use electronics throughout both the elementary and secondary buildings.
3. Without prior knowledge of a thorough understanding of energy concepts, there was hesitation from members to formulate an effective plan. This proved to be untrue. All members were able to draw on their own experiences and areas of expertise to formulate an effective plan. Members found that by having less of a background was advantageous in that those members will be able to relay information to staff of similar energy knowledge level. Our team worked well together and were able to tap into the resources of experts from the K12 Energy Education Program and Focus on Energy as well as online resources.
4. We were challenged with a change in administration but were pleased level of commitment after only a few days in our district. His prior grant writing experiences and knowledge of the process of formulation district policies are an asset to our process and our district.

2. Gillett School District Energy and Resource Management Policy

All building occupants are expected to be energy savers as well as energy consumers. All building occupants are expected to adhere to the following policies in order to ensure that energy and resources are used efficiently.

The success of this policy depends upon the cooperation of all building occupants.

Background – The Gillett School District has not had an official policy regarding energy management. It is, therefore, necessary to formulate a policy to be adopted and followed to implement cost effective operating procedures.

Purpose – The purpose of the Gillett School District Energy Management Policy is to provide a document that will serve as a guide to educate staff, administration, students, and community members on energy consumption and the associated costs. The policy will serve as a means to ensure that every effort is made to conserve energy and natural resources. It is equally important, as stewards of public taxes, for the District to prevent wasted dollars being diverted away from District's educational mission.

Policies

Lighting

1. All lights in any area should be turned off in any unoccupied area except those as mandated by safety codes.
2. Any outside lighting should be turned off during daylight hours.
3. Gymnasium lights should only be turned on when it is being utilized.
4. Whenever possible, incandescent lights should be replaced with fluorescent lights.
5. Any new upgrades to lights should include evaluation of light levels. Foot candle recommendations include:
    a. Classrooms , computer labs, library and offices: 62-65 foot candles (fc) but not less than 50 fc
    b. Corridors: 20 fc but not less than 10 fc
    c. Storage: not less than 10 fc
    d. Gymnasium: 55-95 fc but not less than 30 fc
6. During the school day, lights will be turned on no more than 30 minutes before students arrive.
7. Teachers are encouraged to turn off banks of lights not in use during prep periods.

Temperature Control

1. The decision to fire up the boiler will be made between the head custodian and the superintendent.
2. When the building is occupied during the heating season, the temperature will be set 70º F +/- 2 degrees for all spaces including classrooms, computer labs, shops, offices, etc.

3. When the building is unoccupied during the heating season (weekends, holidays, evenings, etc), the temperature will be set at 64 º F +/- 2 degrees.
4. When the building is occupied during the cooling season, the temperature will be set at 74º F +/- 2 degrees.
5. When the building is unoccupied during the cooling season, the temperature will be set at ºF +/- 2 degrees.
6. Any temperature control issues should be brought to the immediate attention of the head custodian.
7. Unauthorized personnel or students found tampering with temperature regulating devices such as thermostats, valves or temperature control units will be subject to disciplinary action. Any desired changes to temperature control should be directed to the head custodian.
8. Personnel will not obstruct ventilation ducts or return grilles with books, charts, furniture or plants.
9. No doors should be propped open.

Electronics

1. All office equipment including laminators, copiers and computers should be powered off at the end of each day. (except for fax machines)
2. Phantom energy consumers should be unplugged during nonuse. Examples include DVD players, TVs, power strips, VCRs, computer speakers, monitors, projectors, etc.
3. Printers should be in common use locations for shared use.
4. All computers and monitors should be programmed to utilize energy savings capabilities – ex – going into screen saving (energy saving) mode after 10 minutes of inactivity.

Water and Bathroom Facilities

1. Turn the chiller off in water bubblers during unneeded times of the year.
2. Energy efficient plumbing fixtures (urinals, toilets, faucets, etc) shall be installed when replacement is deemed necessary.
3. Energy efficient hand drying mechanisms shall be installed when replacement is deemed necessary (hand dryers, automated toweling dispensers, etc).
4. The domestic hot water system should be set no higher than ºF.
5. Evaluate domestic hot water heater efficiency on a yearly basis.
6. Shut down domestic hot water recirculating pumps when unoccupied.
7. Repair leaking faucets, fixtures, valves and piping.

Recycling

1. All building occupants are required to recycle.
2. Recycling containers will be available in each classroom and in all common areas for use.
3. Recyclable materials shall be separated and made ready for pick up.

Sustainable Practices

1. The use of personal appliances such as electric coffee makers, space heaters, toasters, microwaves, refrigerators, toaster ovens, pizza ovens, pizza makers, and/or other cooking or refrigeration appliances will not be allowed without the prior approval of the Superintendent. The use of radios, small fans and desk lamps is allowed, but should be turned off when the room in not in use. Appliances will be available in the staff lounge.
2. Vending machines in the commons should be turned off during summer months.
3. The food service hot water heater should be set with a minimum of ºF. Food services operations requiring higher temperature levels by code shall use booster units or dedicated water heaters when possible.
4. If the auditorium is used as a classroom for 50 or fewer students, air conditioning and additional heating will not be provided.
5. As funding becomes available, a manual temperature control devise will be installed in the greenhouse.

Policy management

The policies within this document shall be the responsibility of the designated district energy manager. The energy manager shall implement, direct, monitor, evaluate and report district energy and resource conservation efforts to the Gillett School Board.

3. Gillett School District Energy Education Plan

I. Philosophy Statement – As part of the educational mission of the Gillett School District, energy education will be offered to all students in grades PreK-12. Staff and students will strive to incorporate best practices of conservation by following the Gillett Energy Policy while utilizing the elementary and secondary buildings as teaching tools. The District will follow the framework as provided by the K-12 Energy Education Program and will emphasize the Energy Education Conceptual Framework and the suggested scope and sequence. By implementing a plan that requires energy education, staff and students will understand and make decisions about energy issues.

II. Goals -

a. To increase PreK – 12 energy education in the Gillett School District
   1. Complete district-wide energy audit with the assistance of Focus on Energy experts
   2. Provide contact information to staff members from K-12 Energy Education Program, Oconto Electric Cooperative, Focus on Energy. These specialists will provide classroom resources and/or training.

3. During common staff development time, Gillett School District Energy Committee members will present and explain new energy education plan and management policy.
4. Utilize the elementary and secondary buildings of the Gillett School District as learning tools for energy education.

b. To assemble age appropriate energy education lessons for use by staff and student of the Gillett School District
   1. Assemble minimum of five lessons for each grade level that will be assembled and housed in secondary and elementary IMCs.
   2. Create pre and post *Zoomerang* survey to calculate progress in energy education.

c. To adopt the Gillett Energy Management policy for use by Gillett School District
   1. Formulate energy committee for the Gillett School District
   2. Present Management Policy for acceptance by the Gillett School Board

d. To offer college-credit energy education courses
   1. During the 2009-2010 school year, KEEP 734 through UW Stevens Point will be offered to staff in and around the Gillett School District.
   2. To make available any other energy courses as they become available.

III. Curriculum Framework –

Key Concept	Activities	Site Connection Use of building	State Standard	Assessment	Resources	Subject Areas
Evidence of Energy (pg 42) Grade K-2 <u>Theme 1:</u> We Need Energy	Uses a variety of energy items to help students identify energy	Students will use classroom and other objects to investigate energy use.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will be able to define energy and relate movement and sounds to energy sources.	Flashlight Bell Radio/CD Player	Phy Ed, Health, Science
Saving Energy Flipbook Grade k-3 **<u>Theme 1:</u> We Need Energy**	Student s will work with teachers to create a flipbook about energy. They will evaluate types of energy used at home.	Students will use the school building and home to identify types of energy used.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will evaluate the different types of energy used at home and then learn ways to save energy.	Handouts from http://www.need.org/needpdf/Saving%20Energy%20Flipbook.pdf	Science, Social Studies, LA
Taking Temperatures (50) Grade k-2 **<u>Theme 1:</u> We Need Energy**	Students will use a thermometer to measure different locations	School building & school woods.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will be able to read a thermometer and chart the changes	Handouts: Reading a thermometer, Taking temperatures Activity and Taking Temperature Activity 2.	Math, Health, Science
Energy in Balance Grade 3-5 **Theme 2: Developing Energy Resources**	Students will learn the advantages and disadvantages in the ten major energy sources.	Students will use classrooms to identify the 10 major energy sources.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will be able to identify energy sources throughout the buildings and know the advantages and disadvantages		Science Social Studies Technology

				of each.		
Coloring Book K **<u>Theme 1:</u> We Need Energy** **<u>Theme 2:</u> Developing Energy Resources**	This is a coloring book with text in English and Spanish. It focuses on the environmental aspects of energy production and use but also has pictures on solar energy.	School or home. Students will focus on environmental aspects of energy used at school.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2 E1 A.4.1	Students will be able to identify pictures with different energy production and solar energy	Coloring book http://apps1.eere.energy.gov/education/lessonplans/pdfs/environment_planetjanitor.pdf	Art & LA
Song Book K-3 **<u>Theme 1:</u> We Need Energy**	Students will sing songs about energy	School Lecture hall or auditorium.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will learn lyrics to music that teaches them about energy	http://www.need.org/needpdf/NEED%20Songbook.pdf	Music
Motion K-3 **<u>Theme 1:</u> We Need Energy**	Identify objects that burn fuel to move	School woods can be used to run the object.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will be able to identify objects that use fuel to make motion.	Motion activity handout. http://www.eia.doe.gov/kids/classactivities/PrimaryActivityMotionJan2002.pdf	Science LA
Energy surveys K-2 **<u>Theme 1:</u> We Need Energy**	Students will be surveyed on energies they use, what is used at home and school	School and Home. Students will look for different energy used at school.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2,	Students will identify and list energy used by themselves, at school and at home.	3 handouts: Student Survey, school survey and Home survey http://ww	Science LA Social Studies

			C.2		w.eia.doe.gov/kids/classactivities/PrimaryActivityMotionJan2002.pdf	
Waste Disposal K-3 **Theme 2: Developing Energy Resources**	Students will learn about the length of time items take to breakdown.	Classroom recycling area.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will learn how long items take to disappear.	Handout: http://www.eia.doe.gov/kids/classactivities/LandfillPrimaryJuly2003.pdf	Science Math Health
Comparing Light Bulbs K-3 **Theme 1: We Need Energy**	Students compare light bulbs to determine which ones are more efficient	School classroom lights or lights brought to school.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will evaluate different types of light bulbs to determine which ones are most efficient.	Handout: http://apps1.eere.energy.gov/education/lessonplans/pdfs/efficiency_comparinglightbulbs.pdf	Science Math
Draft-o-meter K-3 **Theme 1: We Need Energy**	Students will learn techniques to measure the presence of drafts at school and home	Home and School. School entry ways will be used.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will learn an easy technique to measure the presence of drafts in their homes and classrooms	Handout: http://apps1.eere.energy.gov/education/lessonplans/pdfs/efficiency_draftometer.pdf	LA Science Math
Electrical Energy K-3 **Theme 1: We Need Energy**	Students will be able to learn about item that uses electricity	Home and school. As school students will use varies classrooms and room in the building to find items that use electricity.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will be introduced to electricity and become aware of items that use electricity	Handouts: http://ase.org/uploaded_files/greenschools/lesson_plan_What_Is_Electrical_Energy.pdf	Science

Jar Races K-3 **Theme 1: We Need Energy**	Students will race an empty jar and a full jar to see which one is fastest	School gym or hallway will be used as a classroom.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will learn how an object that is lighter will be slower in motion vs an object that is heavier.	http://www.eia.doe.gov/kids/classactivities/primary%20jars.pdf	Science
Energy Puzzles K-3 **Theme 1: We Need Energy**	Students will use puzzle pieces to identify energy sources	Students will use the IMC or Gym to find energy sources.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will color puzzle squares according to the worksheet to identify energy sources.	http://www.eia.doe.gov/kids/classactivities/PuzzlesPriElem.pdf	LA Science
Classroom Energy Flow K-3 **Theme 1: We Need Energy**	Students will create an energy flow diagram of their classroom by labeling and describing how objects in their classroom transfer energy	Classroom with varies energy sources will be used .	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, B.4.1 FCE: A.1, A.2, C.2	Students will identify the flow of energy through various objects within their classroom	Energy Flow Arrows Page 13 Student Book, Masking tape	Physical Science, environmental education
Where Does it Get its Energy From? **Theme 2: Developing energy Resources**	Students classify things they like to do under the source of energy it requires	Students will use varies classrooms in the building to classify sources of energy.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, A.8.4, A.4.5 B.4.1 FCE: A.1, A.2, C.2	Students will be able to match things that happen to a source of energy, such as batteries, electricity, gasoline or human energy.	Energy Source Illustrations, page 6 Student book, Toys that are powered from different sources, paper,	Science

					masking tape, energy source Tally page 98 in Student Book. (Page 120)	
Electric Charades	Students illustrate through a whole-body demonstration on how electricity flows from the power plan to appliances in their classroom	Classroom setting with appliances or teachers lounge	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, A.8.4, A.4.5 B.4.1 FCE: A.1, A.2, C.2	Students will be able to describe electricity flows to items in their school.	Electrical Appliances (Page 112)	Physical Science, Environmental Education
Talking Trash Theme 1:	Students explore the relationship between trash and energy by constructing and presenting exhibits on different aspects of trash such as reducing, recycling, and landfilling, and incineration.	Classroom. Students will be able to see where the recycling at school goes after it leaves the classroom.	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5, A.8.4, A.4.5, A.8.4, A.4.5 B.4.1 FCE: A.1, A.2, C.2	Students will create exhibits on 8 trash and energy topics. They will enhance their reading, writing, graph analysis, public speaking and artistic skills in this project.	http://www.need.org/needpdf/Talking%20Trash.pdf	Science, Math, Social Studies, LA and Technology
Primary Energy Stories and More	Students will use these stories and activities to introduce energy	Classroom. Students will use different object in school to help understand basic energy	SC: A.4.2, B.4.3, F.4.4, G.4.1, EE: B.4.1, B.4.4, B.4.5 SS:A.4.6, A.4.4., B.4.2 TE: A.4.4,A.4.5,	Students will be introduced to a series of stories and hands-on activities for help introduce	http://www.need.org/needpdf/Primary%20Stories.pdf	Science, Social Studies, Math and Language Arts

	sources and basic energy concepts.	concepts.	A.8.4, A.4.5 B.4.1 FCE: A.1, A.2, C.2	basic energy concepts.		
Solar Cooking Grade 7 **Theme 3: Effects of Energy Resource Development**	Students will use a solar cooker to cook a hotdog	School. Students will use the school woods as a location to build a solar cooker.	SC:E.8.6, F.8.10, G.8.2, H.8.3 EE: B.8.5, B.8.9, B.8.10, B.8.12,D.8.3, D.8.4, D.8.5 SS: A.8.4, A.8.7, A.8.10, A.8.11, B.8.8, B.8.9, B.8.10, C.8.3, D.8.4, D.8.5 TE: A.8.2, A.8.4, A.8.5, B.8.6, D.8.3, D.8.4 FCE: A.1	Students will build a solar cooker to cook hotdog and tests its ability to function	http://www.eia.doe.gov/kids/classactivities/SolarCookingIntermediateActivity.pdf	Science
US energy use Grade 7 **Theme 3: Effects of Energy Resource Development**	Students evaluate the use of energy in the US and answer questions.	Students will use different classrooms in the building to gain a better understanding of the US energy use.	SC:E.8.6, F.8.10, G.8.2, H.8.3 EE: B.8.5, B.8.9, B.8.10, B.8.12,D.8.3, D.8.4, D.8.5 SS: A.8.4, A.8.7, A.8.10, A.8.11, B.8.8, B.8.9, B.8.10, C.8.3, D.8.4, D.8.5 TE: A.8.2, A.8.4, A.8.5, B.8.6, D.8.3, D.8.4 FCE: A.1	Students will evaluate the United States energy use and then answer questions and graph results	Handout: http://www.eia.doe.gov/kids/classactivities/CrunchTheNumbers.pdf Answers: http://www.eia.doe.gov/kids/classactivities/Answers.pdf	Science Social studies Math
Energy Divide Grade7 **Theme 2: Developing Energy Resources**	Students will play a game to simulate consumption of energy resources and explore how energy	Students will use the school building to help learn about energy conservation.	SC:E.8.6, F.8.10, G.8.2, H.8.3 EE: B.8.5, B.8.9, B.8.10, B.8.12,D.8.3, D.8.4, D.8.5 SS: A.8.4, A.8.7, A.8.10, A.8.11,	Students will be able to explain why they might concern themselves with the needs of future energy users.	Each student will need a bag of candy (200 pieces), KEEP activity	Science Social Studies

	conservation can help the future.		B.8.8, B.8.9, B.8.10, C.8.3, D.8.4, D.8.5 TE: A.8.2, A.8.4, A.8.5, B.8.6, D.8.3, D.8.4 FCE: A.1		Guide page 131-133	
People Power Grade 7 **<u>Theme 1:</u> We Need Energy**	Students will discover the difference between work and power by climbing stairs slowly and quickly and also learn to convert from one unit power to another	Students will use the school stairways to do this activity.	SC:E.8.6, F.8.10, G.8.2, H.8.3 EE: B.8.5, B.8.9, B.8.10, B.8.12,D.8.3, D.8.4, D.8.5 SS: A.8.4, A.8.7, A.8.10, A.8.11, B.8.8, B.8.9, B.8.10, C.8.3, D.8.4, D.8.5 TE: A.8.2, A.8.4, A.8.5, B.8.6, D.8.3, D.8.4 FCE: A.1	Students will be able to explain the difference between work and power; covert from one unit of power to another.	Page 82 KEEP Activity guide. Page 60-2 student handbook	Science Math
Energy Use in an Ecosystem Grade 7 **<u>Theme 1:</u> We Need Energy**	Students survey different environments and investigate how sunlight, soil, moisture, temperature, and wind affect living elements in an ecosystem.	Students can use the school woods to investigate how different types of energy effect the ecosystem.	SC:E.8.6, F.8.10, G.8.2, H.8.3 EE: B.8.5, B.8.9, B.8.10, B.8.12,D.8.3, D.8.4, D.8.5 SS: A.8.4, A.8.7, A.8.10, A.8.11, B.8.8, B.8.9, B.8.10, C.8.3, D.8.4, D.8.5 TE: A.8.2, A.8.4, A.8.5, B.8.6, D.8.3, D.8.4 FCE: A.1	Students will identify nonliving objects and effects on environment, relate living and nonliving components of ecosystems to energy and analyze how energy flow through an ecosystem influences the abiotic and biotic conditions of the ecosystem.	KEEP Activity Guide page 55. Student book page 24, 26, 27	Science

http://www.need.org/Guides-Grade.php#Primary

http://www.earth.uni.edu/EECP/

http://apps1.eere.energy.gov/education/lessonplans/

http://www.eia.doe.gov/kids/classactivities/teachers&students.html#primary

http://www.kidwind.org/lessons/LESSON_energynotions.html

http://www.eia.doe.gov/kids/

http://www.hmns.org/exhibits/permanent_exhibits/energy.asp?r=1

Lesson Plan ideas 4th-7th grade

Key Concept	Activities	Site Connection Use of building	State Standard	Assessment	Resources	Subject Areas
GRADE 4						
Theme 3: Effects of Energy Resource Development Collection of energy ed. Activities and handouts to be used as a unit or singular	Various activities and handouts on all energy.	Classroom	LA-A.4.2, LA-A.4.3, LA-A.4.4, LA-B.4.1, LAB.4.2, LAB.4.3, LA-C.4.1, LA-C.4.2, LA-C.4.3, LA-E.4.3, LA-F.4.1, MA-A.4.1, MA-A.4.2, MA-A.4.3, MA-D4.3, MA-E.4.1, MA-E.4.3, MA-E.4.4, MA-E.4.5, SC-C.4.2, SC-C.4.3, SC-C.4.5, SC-C.4.7, SC-C.4.8	Handouts, quizzes, tests, worksheets and activities.	http://www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/13/ce/ee.pdf	Science, Social Studies, Math, Reading, Writing
Theme 4: Managing Energy Resource Use Games and activities to learn more about reducing waste and conserving resources	Recycling ideas, activities and lesson plans	Classroom	LA-A.4.2, LA-A.4.3, LA-A.4.4, LA-B.4.1, LAB.4.2, LAB.4.3, LA-C.4.3, LA-E.4.3, LA-F.4.1, MA-E.4.1, MA-E.4.3, MA-E.4.4, MA-E.4.5, SC-C.4.2, SC-C.4.3, SC-C.4.5, SC-C.4.7, SC-C.4.8	Activities	http://www.epa.gov/epawaste/education/kids_activities.htm	Reading, Writing, Social Studies
Theme 3: Effects of Energy Resource Development Interesting information and ideas to help you make a difference in reducing the	Discover creative ways at home and at school to generate less waste	Classrooms and school building	LA-A.4.4, LA-B.4.1, LAB.4.2, LAB.4.3, LA-C.4.1, LA-C.4.2, LA-C.4.3, LA-E.4.3, LA-F.4.1, MA-A.4.1, MA-A.4.2, MA-E.4.4, MA-E.4.5, SC-C.4.2, SC-C.4.3, SC-C.4.5, SC-C.4.7, SC-C.4.8	Activities and lesson plans	http://www.epa.gov/epawaste/education/students.htm	Math, Reading, Writing, Social Studies

amount of waste that is created everyday!						
Theme 1: We Need Energy Purpose of Energy Smarts Team training is to provide students with tools and information they need to effectively monitor energy use within school building	Document has procedures, overview, training and agendas.	Classroom and building	LA-A.4.2, LA-A.4.3, LA-A.4.4, LA-B.4.1, LAB.4.2, LAB.4.3, LA-C.4.1, LA-C.4.2, LA-C.4.3, LA-E.4.3, LA-F.4.1, MA-A.4.1, MA-A.4.2, MA-A.4.3, MA-D4.3, MA-E.4.1, MA-E.4.3, MA-E.4.4, MA-E.4.5, SC-C.4.2, SC-C.4.3, SC-C.4.5, SC-C.4.7, SC-C.4.8	Simulations, poster building, ethics building and exercises	http://www.bpa.gov/Corporate/KR/ed/energysmarts/homepage.htm	Phy. Ed., Social Studies, Math, Reading and Writing
Theme 1: We Need Energy Fossil fuel page	The document contains examples of renewable and non-renewable energy sources	Classroom	LA-A.4.2, LA-A.4.3, LA-A.4.4, LA-B.4.1, LAB.4.2, LAB.4.3, LA-C.4.1, LA-C.4.2, LA-C.4.3, LA-E.4.3, LA-F.4.1, MA-A.4.1, MA-A.4.2, MA-A.4.3, MA-D4.3, MA-E.4.1, MA-E.4.3, MA-E.4.4, MA-E.4.5, SC-C.4.2, SC-C.4.3, SC-C.4.5, SC-C.4.7, SC-C.4.8	Examples	http://www.academyofenergy.org/games-answr.html	Reading, Writing
Key Concept	Activities	Site Connection Use of building	State Standard	Assessment	Resources	Subject Areas
GRADE 5						
Theme 3: Effects of Energy Resource Development	Lessons about different forms of electricit	Building and classroom	SC-A.8.1, SC-A.8.3, SC-A.8.6, SC-A.8.7 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1 MA-A.8.1, MA-A.8.3, MA-B.8.1	Tests, worksheets, online interaction	http://www.miamisci.org/af/sln/	Science, Math, Reading

Learn about energy conservation	y and electrical safety.					
Theme 4: Managing Energy Resource Use Introduction to Electricity	Lessons about the basic concepts of electricity	Building and classroom	LA-C.8.2, LA-C.8.3, LA-D.8.2, LA-E.8.1 SC-A.8.8, SC-B.8.4, SC-B.8.5, SC-B.8.5 SC-B.8.6	Labs and class work	http://sln.fi.edu/qa99/spotlight3/index.html	Science, Reading, Writing
Theme 4: Managing Energy Resource Use Students brainstorm a comprehensive list of electrical devices typically found in their homes.	Students create public service announcement advocating energy conservation to present in class and to the school.	Building and Classroom	SS-A.8.8, SS-A.8.10, SS-A.8.11, LA-F.8.1, LA-A.8.2, LA-C.8.1	Worksheets and finished project.	http://www.nytimes.com/learning/teachers/lessons/20060803thursday.html	Language Arts, Social Studies, Technology
Theme 2: Developing Energy Resources PBS site to show how to make home and school more energy efficient.	Using an interactive flash media player students interact with different areas of home and school learning about carbon footprints.	Building and Classrooms	SC-A.8.1, SC-A.8.3, SC-A.8.6, SC-A.8.7 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	Hands-on interaction with media flash player	http://www.pbs.org/wgbh/warming/carbon/playalready.html	Social Studies, Reading, Writing

Theme 2: Developing Energy Resources Where does energy come from?	Specific text regarding where energy comes from	Classroom	SC-A.8.6, SC-A.8.7 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1		http://www.enviroliteracy.org/category.php/4.html	Science, Reading
Theme 4: Managing Energy Resource Use Energy and environmental behavior changes	How to change bad behaviors	Classroom and home	SC-A.8.6, SC-A.8.7 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1 SC-C.8.1, SC-C.8.2, SC-H.8.1, SC-H.8.2	Detailed lesson plan with exact points, lists and summary	http://www.eduref.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Environmental_Education/ENV0213.html	Science, Social Studies, Reading, Writing
Key Concept	Activities	Site Connection Use of building	State Standard	Assessment	Resources	Subject Areas
GRADE 6						
Theme 2: Developing Energy Resources Home energy conservation tips	Specific activities for school and home	Classroom, building, and home	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6, SC-A.8.1, SC-A.8.3, SC-A.8.6, SC-A.8.7 SC-H.8.3, SC-C.8.4, SC-C.8.10	2 real life worksheets and activities	http://www.teachervision.fen.com/tv/printables/scottforesman/SCI_6_MS_C4.pdf	Math, Science
Theme 3: Effects of Energy Resource Development Water Conservation Tips	45 minute classroom activity designed to show water conservation	Classroom	SC-A.8.1, SC-A.8.3, SC-A.8.6, SC-A.8.7 SC-H.8.3, SC-C.8.4, SC-C.8.10	1 classroom activity	http://www.eduref.org/cgi-bin/printlessons.cgi/Virtual/Lessons/Science/Environmental_Education/ENV0039.html	Science
Theme 4:	How to make 6th	Classroom	LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1 SS-A.8.8, SS-	1 classroom activity	http://www.eduref.org/cgi-	Social Studies, Reading,

Managing Energy Resource Use Paper Recycling Lesson Plans	graders aware of why we should recycle paper		A.8.10, SS-A.8.11, SS-B.8.9, SS-B.8.9, SS-B.8.10, SS-D.8.4		bin/printlessons.cgi/Virtual/Lessons/Science/Environmental_Education/ENV0020.html	Writing
Theme 2: Developing Energy Resources Over 100 science and environmental web links for lesson	Science Lessons	Classroom, Building	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6, SS-B.8.9, SS-B.8.10, SS-D.8.4, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	Numerous classroom activities	http://www.cloudnet.com/~edrbsass/edsci.htm#environment	Social Studies, Math, Reading, Writing,
Theme 2: Developing Energy Resources Math & environmental concerns	Math lesson using aluminum cans	Classroom	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6,	1 45 minute activity using math and aluminum cans	http://illuminations.nctm.org/LessonDetail.aspx?ID=L208	Math
Theme 4: Managing Energy Resource Use Recycling website with lesson	Science lesson with in class activity	Classroom	SS-B.8.9, SS-B.8.10, SS-D.8.4, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	1 daily assignment	http://www.recycleworks.org/schools/6thgrade_lesson.html	Reading, Writing, Social Studies
Key Concept	Activities	Site Connection Use of building	State Standard	Assessment	Resources	Subject Areas
GRADE 7						
Theme 4: Managing Energy Resource Use Renewable Energy Activities	History of energy in the U.S and the technological inventions of the	Classroom & Building	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	3 assignments	http://www.rprogress.org/education/k-12pdf/renewableenergy.pdf	Science & Math

	20th century students will examine current and future energy needs.					
Theme 2: Developing Energy Resources Get smart about energy lesson plans	Various plans to devote an entire semester to energy.	Classroom, Building, & Community	SS-B.8.9, SS-B.8.10, SS-D.8.4, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1, MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6,	350 lesson plans from the Department of Energy	http://apps1.eere.energy.gov/education/lessonplans/	Each includes a short summary that identifies curriculum integration, time, materials, and national standards.
Theme 2: Developing Energy Resources San Juan Schools in California energy savings plan done by 7th graders	A plan to create weekly awareness by middle school students.	Classroom, Buildings, Community and Staff	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	Worksheets & activities		LA, Science, Math
Theme 2: Developing Energy Resources 8 renewable energy lesson plans	Cooking with solar, passive solar heating, and many others.	Building, Community, Classroom	MA-B.8.1, MA-D.8.3, MA-D.8.2, MA-D.8.6, LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	8 Lesson plans on renewable energy and how to use it in everyday life.	http://www.infinitepower.org/lessonplans.htm	Science, Math, LA
Theme 4: Managing Energy Resource Use Effective energy conservation for junior high students	Lessons explaining how energy is used and how it is wasted.	Building, Classroom and community	SC-A.8.1, SC-A.8.3, SC-A.8.6, SC-A.8.7 SC-H.8.3, SC-C.8.4, SC-C.8.10, SC-C.8.11, SC-D.8.8, SC-D.8.9, SC-G.8.3, SC-D.8.6 LA-A.8.2, LA-A.8.4, LA-B.8.3, LA-C.8.1	1 lesson plan with objectives and a full quiz at the end.	http://www.epa.gov/reg5rcra/wptdiv/p2pages/energy.pdf	Science, Reading and Writing

Grade 9

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 1: We Need Energy Measuring Electricity Physical Science, Env. Science, Math	To explain the concepts of electricity – wattage, current, Ohm's law, resistance, etc	A watt meter can be used to measure several appliances around the building	ES.C.12.2, ES.C.12.3, ES.12.3, M.D.12.3, M.D.8.1, MD.8.3	See if students can calculate electrical usage of several appliances to apply given formulas	www.eia.doe.gov secondary explorations *measuring electricity* The NEED project
Theme 4: Managing Energy Resource Use Underwater Oil Recovery Social studies and Economics	To understand the supply and demand of the oil market	Students can investigate types of energy used by the school and how those relate to the supply/demand of nonrenewable energy	SS.A.12.1, SS.B.12.2,	Completion of the webquest, creation and presentation of mural, answers to guided questions	www.eia.doe.gov secondary explorations *oil market basics* webquest, teacher resources and quiz
Theme 3: Effects of Energy Resource Development The Great Energy Debate Game Language Arts, Social Studies, American Problems	Students will debate the merits of several different energy sources including advantages and disadvantages	Students can determine (from the list of energy resources) which type are utilized in their school building	SS.A.12.1, SS.B.12.2, LA.D.LA.12.1, LA.D.12.2,LA.B.12.1, LA.B.12.2, LA.B.12.3	Students will advance on a game board for every reasonable advantage or disadvantage as approved by a judge	The NEED project www.need.org List of energy types used in the school building
Theme 1: We Need Energy Puzzling Wisconsin's Biological Communities Science, Social Studies, Language Arts	Students will identify food chains in WI, analyze energy roles and provide examples to illustrate use of natural resources	Students can use school forest to identify food chains within that biome	SS.A.12.1, SS.B.12.2, LA.D.LA.12.1, LA.D.12.2,LA.B.12.1, LA.B.12.2, LA.B.12.3	Students will be assessed on maps created detailing types of vegetative cover of Wisconsin	KEEP Activity Guide page 93 20 plastic eggs Copies of worksheets page 69, 70, 71, 80 and 83

Grade 10

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 1: We Need Energy Energy Efficiency and Conservation Plug Overload Science, Math, Tech Ed	Students will calculate carbon dioxide production from "phantom" electricity and the impact	Students can calculate how much phantom electricity is used on a daily basis throughout each of the school buildings	TE.D.12.1, TE.D.12.2, TE.D.12.3, SC.B.12.1, SC.B.12.2, SC.D.12.3, M.B.12.1, M.D.12.2	Completion of plug load spreadsheet	The NEED project www.need.org Plug load spreadsheet, calculator
Theme 3: Effects of Energy Resource Development The Future is Today – Transportation Fuels Science, Social Studies, Math, Language Arts	Students will learn about conventional and alternative transportation fuels	Students can identify the types of fuels currently used to transport students to and from school and calculate fuel efficiency of school vehicles	M.D.12.3, M.D.8.1, MD.8.2,SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed by completing The Future is Today evaluation form	The NEED project www.need.org or KEEP activity – Driving Reasons page 206 Survey of Vehicle Maintenance, Calculating Miles per Gallon worksheet
Theme 1: We Need Energy Fossil Fuel Products Social Studies, Science	Students learn about exploration, production, refining, chemical manufacturing and uses of petroleum in the industrial sector	Students can plot how our buildings fit into the energy sector based on our use of natural resources	SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3	Students will be assessed using rubric provided with activity resources from NEED	The NEED project www.need.org Jigsaw worksheet Fossil Fuels to Product Activity sheet
Theme 3: Effects of Energy Resource Development Sources of Energy Energy Sources on Public Land Am Problems, Social Studies, Environmental Science	Students learn about energy resources and how the Bureau of Land Management manages these resources	Students will investigate the connection between the BLM and the Gillett School District	SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3	Students will be assessed based on the Public Land Math and Definitions worksheets	The NEED project www.need.org Public Land Math and Definitions worksheets

Grade 11

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 4: Managing Energy Resource Use Making Connections between school and community Language Arts, Science, Social Studies, Math, Tech Ed	Invite a guest speaker from the electric cooperative to present information about usage within the school district	Guest speaker can utilize the resources within the school building to discuss usage and conservation	M.B.12.1, M.D.12.2SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed based on question and answer format with guest speaker	Oconto County Electric Cooperative contact person – Jan Stranz
Theme : 4 Managing Energy Resource Use Student Job Shadowing Tech Ed, Social Studies, Science, Language Arts	Students will select a career and explore energy-related occupations	One of the individuals who can be shadowed would be the head custodian to seek information on energy uses	SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,LA.D.LA.12.1, LA.D.12.2	Job shadow visit report	KEEP student guide pages 263 – 266 Job shadow report worksheet
Theme 4: Managing Energy Resource Use Don't Throw Away Energy FCE, Social Studies, Tech Ed, Science	Students will evaluate the pros and cons to new vs. recycled materials, including clothing	Students can brainstorm ways that the district can utilize pre-owned products to save resources	TE.D.12.1, TE.D.12.2, TE.D.12.3,SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will create a list of pros and cons between buying new products vs. pre-owned products	KEEP student guide page 247 – teacher guide page 236 Paper to be recycled, mixer, rolling pin, iron, paper toweling, starch, tub, screen
Theme 3: Effects of Energy Resource Development Effects of Energy Resource Development Social Studies, Language Arts	Students will read essays on energy use of the past to compare and contrast to usage of today with usage of yesterday	Students can research the changes that have taken place in energy usage. Research historical society records	SS.A.12.1, SS.B.12.2, LA.D.LA.12.1, LA.D.12.2	Students complete energy use then and now report	KEEP guide pages 187 – 196 Energy now and then report worksheet

Grade 12

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 1: We Need Energy The Science of Energy – Physical Science, Life Science,	Students will explain how energy flows and trace the flow of energy in a system	Students can use classrooms to see where energy begins, ends and is lost	SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will complete unit exam	The NEED project www.need.org Thermometers, water, tape, meter stick, copies of worksheet masters
Theme 2: Developing Energy Resources Circuit Circus Physical Science, Physics, Tech Ed	Students construct and experiment with simple circuits	Students can research circuits within the school building	SC.B.12.1, SC.B.12.2, SC.D.12.3, TE.D.12.1, TE.D.12.2, TE.D.12.3	Assessment based on whether or not students can successful light a bulb by completing a circuit	KEEP energy guide page 122 Electron E squares, Diagram of parallel circuits, which ones work sheet, crossword puzzle
Theme 4: Managing Energy Resource Use Energy Futures FCE, LA, Science, Social Studies,	Students will interpret energy trends and predict future energy scenarios	Students will interpret spreadsheets and graphs regarding trends of Gillett School energy usage	TE.D.12.1, TE.D.12.2, TE.D.12.3, FCE.B.12.1, FCE.B.12.2 SS.A.12.1 LA.B.12.1	Students evaluated through creation of Futures Wheel and possible consequences	KEEP activity guide page 253 Graphing materials
Theme 2: Developing Energy Resources The Miracle of Solar Cells Physical Science, Physics, Environmental Science	Students will explain how solar cells produce electricity and describe the basic electrical characteristics of a solar cell	Students can use sunshine naturally provided through windows to conduct tests. Students can also go outdoors to conduct tests	SC.B.12.1, SC.B.12.2, SC.D.12.3, ES.C.12.2, ES.C.12.3, ES.12.3	Students evaluated on list created of suggested experiments to learn about solar cells	KEEP activity guide page 158 Solar cells, solar cars, K-NEX kits

Grade 8

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 2: Developing Energy Resources Energy House Science, Social Studies, Math	Students learn about energy efficiency by insulating a cardboard house	Students can investigate insulation the school building or interview the head custodian to determine insulation of building	SC.B.8.2, SC.B.8.3 M.D.12.3, M.D.8.1, MD.8.2	Students will be evaluated by completing the energy house evaluation form	The NEED project www.need.org cardboard box, different types of insulation, light or lamp, thermometer, associated worksheets
Theme 1: We Need Energy NEED Songbook Music, band	Students will learn about energy sources by singing songs or playing band instruments to provided music	Students could discuss energy of sound based on different locations throughout the building	M.B.8.1, M.D.8.3	Assessment at discretion of instructor – usually based on level of participation	The NEED project www.need.org NEEDS song sheets
Theme 3: Effects of Energy Resource Development The Cost of Using Energy FACE, Math, Physical Science, Tech Ed	Students will calculate the cost of energy used by various products and compare the cost of buying and operating lights and appliances	Students will be able to calculate the costs of appliances found throughout the school building	SC.B.8.2, SC.B.8.3 FCE.B.8.2	Students will be assessed based on completeness and accuracy of cost analysis worksheet and the ability to list reasons for product choices	Keep Guide page 174 Cost of lighting worksheet, Cost of operating small appliances worksheet
Theme 2: Developing Energy Resources Energy Divide Science and Social Studies	Students will be able to explain concerns for future energy users, demonstrate conservation of energy, distinguish between renewable and nonrenewable energy resources	Students will be able to determine renewable and nonrenewable energy sources throughout the building and do a checklist for conservation of energy throughout the building	SC.B.8.2, SC.B.8.3 SS.A.8.2, SS.C.8.4	Assessment determined based on whether or not students can identify problems with resources and effectiveness of conservation ideas	KEEP activity guide page 131 Copies of energy source illustrations Bag of candy

Grade 8 and 9

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 3: Effects of Energy Resource Development Yesterday in Energy Science, Social Studies, Language Arts, Performing Arts	The purpose is to inform students of changes that have occurred over the past 100 years as those changes relate to energy sources and usage	Students can research changes that have occurred throughout the life of the school buildings and how those changes impact energy	LA.B.8.1, LA.B.8.2, LA.B.8.3 SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3, PA.B.12.1, PA.B.12.2, PA.B.12.3	Students will be assessed on completion of The Dark Ages worksheet	The NEED project www.need.org Paper, markers, scissors, history books, poster board The Dark Ages worksheet
Theme 1: We Need Energy Energy on Stage Science, Social Studies, Language Arts, Performing Arts	This activity reinforces major types of energy and how energy is used	The students will use the building and associated props to act out skits involving energy use	LA.B.8.1, LA.B.8.2, LA.B.8.3 SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Assessment will occur based on participation and enthusiasm in skit	The NEED project www.need.org simple props copy of skit
Theme 3: Effects of Energy Resource Development Global Trading Game Science, Social Studies, Math and Language Arts	Students role play geologist and play a game based on global resources associated	Students can explore how geology is related the school building	LA.B.8.1, LA.B.8.2, LA.B.8.3 SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Assessment will be based on accuracy and completion of student worksheet	The NEED project www.need.org Country Packets in Envelopes Student Worksheets
Theme 4: Managing Energy Resource Use Saving Energy Expo Science, Social Studies, Math and Language Arts	Students will create hands-on exhibits to teach others how to save energy at home and at school	Students will be able to utilize resources available in the building such as appliances to teach about energy conservation	LA.B.8.1, LA.B.8.2, LA.B.8.3 SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed using rubric created to grade exibits	The NEED project www.need.org Paper, markers, scissors, magazines, poster board

Grade 8 and 9

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 1: We Need Energy School Building Energy Survey Science, Social Studies, Language Arts, Tech Ed	Students will conduct a school-wide energy survey	The building will be the main focus of this activity. Uses and types of energy will be determined by students	LA.B.8.1, LA.B.8.2, LA.B.8.3 SS.A.12.1, SS.B.12.2, TE.D.12.1, TE.D.12.2, TE.D.12.3,	Students will be assessed based on completion of survey worksheets	www.eia.doe.gov Student building survey worksheets
Theme 3: Effects of Energy Resource Development Energy Analysis Using Graphs and Tables Science, Social Studies, Tech Ed, Math	Students will use data and graphs to determine trends in energy use	The history of the school building and trends in energy use can be plotted along with other date collected	M.D.8.1, MD.8.2 SS.A.12.1, SS.B.12.2, TE.D.12.1, TE.D.12.2, TE.D.12.3,	Students will be assessed based on individual and group results	www.eia.doe.gov Energy Perspectives Workbook Overhead projector
Theme 3: Effects of Energy Resource Development Balancing Forces Math, Science, Social Studies	Students will balance coins and determine how to best balance the ruler. This information will be compared to balancing of energy use and resources	Students can apply data collected from activity to determine how the school district must balance the use of natural resources with demands	M.D.8.1, MD.8.2 SS.A.12.1, SS.B.12.2, SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed by completion and accuracy of student worksheet	www.eia.doe.gov several coins rulers student worksheet
Theme 1: We Need Energy Simple Pulleys 6th grade science, physical science, math	Students will learn about simple machines and mechanical advantage of using simple machines	Students can brainstorm pulleys that occur throughout the building as well as other simple machines	M.D.8.1, MD.8.2 SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed by completion of worksheet and defining parts of a simple machine	www.eia.doe.gov brooms, cord or string

Grade 9 - 12

Key Concepts	Activities – Classroom Connections	Site connections Use of building	Alignment with State standards	Assessment	Resources
Theme 3: Effects of Energy Resource Development Alliance to Save Energy Tech Ed, Math, Physical Science	Students will compare energy costs with computer and book purchases	Students will research the cost of book and computers as opposed to energy costs for buildings – Students will recommend energy savings	M.D.8.1, MD.8.2 SC.B.12.1, SC.B.12.2, SC.D.12.3,	Completion of data collection worksheet and presentation of information	www.nationalgreenweek.com Data collection worksheet
Theme 3: Effects of Energy Resource Development Green Team Language Arts, Art, Social Studies, Environmental Science	Green and Healthy Schools Committee will create informational posters on Green Practices	Students can make energy suggestions as they apply throughout the school building	SC.B.12.1, SC.B.12.2, SC.D.12.3, SS.A.12.1, SS.B.12.2,	Based on thoroughness and completion of posters	www.nationalgreenweek.com Poster board, markers, magazines, construction paper, paint
Theme 2: Developing Energy Resources Ecological Footprint Biology, Physical Science, Social Studies	Students will compare their ecological footprint at home and at school	Students will use recycling, paper totals, energy use of building, etc. to calculate footprint at school	SC.B.12.1, SC.B.12.2, SC.D.12.3, SS.A.12.1, SS.B.12.2,	Assessment based on completion and accuracy of ecological worksheet	www.nationalgreenweek.com Ecological worksheet
Theme 4: Managing Energy Resource Use 12 Steps to a Sustainable High School Environmental Science, Physics	Students will assess sustainable practices at our high school and explore social barriers	Sustainable practices throughout the building will be explored	SC.B.12.1, SC.B.12.2, SC.D.12.3,	Students will be assessed based on summary of building assessment and student interviews	www.nationalgreenweek.com 12 Steps Lesson Plan 12 Steps Powerpoint

IV. Staff Development Plan –

a. Staff members that have currently taken a KEEP class include
   - Connie Scharenbrock – 9-12 Life Sciences Instructor
   - Shannon Brunnett – 9 – 12 Physical Sciences Instructor
   - Danyell Franti – Business Education Instructor
   - Jeremy Pach – Dean of Students
   - Jane Davis – Secondary Special Education Instructor
   - Tami McQuillan – Middle School Science and social Studies Instructor
   - Tammy Dantoin – Elementary Instructor
   - Margaret Nauke – Elementary Instructor

b. Energy Literacy Enhancement
   i. Creation and implementation of energy plan will shared at fall in-service
   ii. KEEP 734 course will be open to all staff members PreK-12 in the fall of 2009
   iii. Quarterly newsletter will update staff members on energy use and progress in elementary and secondary buildings
   iv. Articles
   v. Web page
   vi. Staff development training - inform staff of best practices
   vii. Superintendent will educate principals and enforce best practices

V. Involving Building Occupants

I. Common middle school unit
II. Kitchen staff composting project with middle school
III. Quarterly newsletter sharing graphs and spreadsheet to all building occupants
IV. Custodial training
V.

4. Monitoring and Reporting

Energy Management

I. Utility bills identified for energy management include baseline information on electricity, natural gas, water and sewer. Reporting will occur for each of these utilities on a monthly basis. Information will be provided to Jeremy Pach from bookkeeping and will be provided monthly. Jeremy Pach will graph results and create spreadsheets to provide information for comparison. Information will be gathered for the fiscal year and will begin with baseline information from June 2008 to June 2009.

II. Jeremy Pach, Gillett Secondary Dean of Students, will be the person responsible for comparison of future utility bills. Jeremy will gather information on a monthly basis from the bookkeeping department. After one calendar year, the Gillett Energy Committee will meet and discuss possible changes in the person responsible for energy reporting. On a quarterly basis, Jeremy will meet with Connie Scharenbrock and Danyell Franti and more in-depth reporting will occur to provide information to the Gillett School Board and other interested parties. Information will be shared at this time with Miles Winkler, committee member and Gillett School Board vice president. Miles also serves on the building and grounds committee of the school board, making his input vital to the success of the endeavor.

III. Specific information will include baseline utility costs for the 2008 – 2009 fiscal year with comparisons to future energy costs. As energy saving measures are put into place throughout the district, utilities will be graphed to determine energy savings that may occur. These utility costs will be monitored for not less than five years.

IV. Utility bills will be added into baseline information on a monthly basis. This information will allow graphs and spreadsheets to be created to follow any changes that occur with energy costs, including savings that may occur. The Energy Committee (including, but not limited to, Jeremy Pach, Danyell Franti and Connie Scharenbrock) will meet quarterly to add any additional information to be shared.

V. Information will be shared with Gillett School District Superintendant, principals, teachers, custodians, school board members, and will also be posted on the Gillett School District Web page which will allow community members to view the data gathered.

VI. Information will be shared through a quarterly newsletter, emails, school board presentations, articles in the local newspaper and during staff in-service time. Miles Winkler will serve as liaison between the Energy Committee and the Gillett Board of Education. It is anticipated that information will be shared with all building users and community members.

VII. The target audience will include any and all building user or community members. We would like our school to serve as a leader to surrounding school

districts in both energy education and energy conservation within a school district.

VIII. Individuals responsible for developing, proofreading and disseminating reports include Jeremy Pach (Dean of Students), Connie Scharenbrock (biology teacher) and Danyell Franti (business education teacher). Miles Winkler (school board member) and Rick Gruel (head custodian) will also be asked for input in the reporting process.

Energy Education

I. Primary monitoring for energy education will be Connie Scharenbrock. Individuals also involved in monitoring energy education include Jeremy Pach and Danyell Franti.

II. Specific information will include feedback on energy education plan, use of lesson plans provided to teachers, feedback on KEEP 734 course, and continual monitoring of webpage access.

III. Initial data will be gathered at the beginning of the 2009-2010 school year through surveys provided to teachers. Energy Committee members will meet and discuss progress quarterly. Teachers will be surveyed again at the end of the 2009-2010 school year and committee will determine whether or not more surveys need to occur. It is the goal of the Committee to be involved with tracking information for 2 school years. After that period of time, it is expected that teachers will take the initiative to research additional lessons or resources needed to implement added energy education topics.

IV. Results involving energy education will be shared with staff, administration and school board members. Information will be posted on the Gillett School Web page and articles will be submitted to the local newspaper.

V. Reports will be created using pre and post surveys given to Gillett staff members. After these surveys are completed, results will be posted on the Gillett School Web page. Information will also be shared with principals and superintendant, as well as school board members.

VI. The target audience for reporting information will include energy committee members, staff and administration. This information will determine whether additional energy resources will be sought through future grants.

VII. Individuals responsible for developing, proofreading and disseminating information include Connie Scharenbrock, Jeremy Pach and Danyell Franti.

Sustaining Energy Education Initiatives

How can your school redirect cost savings from utilities to resources used to improve energy literacy?
Using the internal grant processes the money saved (approx. $20,000) has been set aside in a separate fund to fund energy initiatives. Internally teachers, staff and community will be allowed to write grants in order to use the money. The money has been earmarked for use in curriculum, purchase of energy enhancement for curriculum needs, or energy saving initiatives that will help propagate future savings to keep the internal grant process moving forward. Examples include: writing future energy saving grants, paying for teachers to write the grants, energy saving light installation, possible purchase of solar power panels, grants may include installation of sensors to shut off lights in lightly used portions of the building, energy upgrades and a host of other ideas not presented to the energy committee yet.

2. If funding is needed to fulfill any of the components above, explain how your school intends to meet that fiscal responsibility.
   After tracking the savings over a full year, that money was set aside by the school board to promote energy saving initiatives. This money will be properly distributed using the internal grant process. The funding is awarded to grant a recipient after they have met the grant proposal guidelines and the grant is approved by the energy committee. The grant then moves forward to be paid for through the internal grant energy savings fund.

Appendices:

Appendix A - 733 Energy Conservation - Policy
Appendix B - 733 Energy Conservation – PROCEDURE
Appendix C – 733 Energy Conservation Rule
Appendix D – Energy Educator of the Year
Appendix E – Energy Spreadsheet
Appendix F – Focus on Energy
Appendix G– Focus on Energy
Appendix H– Focus on Energy

APPENDIX A

POLICY

Energy Education will be offered to all students in grades PK-12 as part of the educational mission of the Gillett School District. Staff and students will strive to incorporate best practices of energy conservation by following the Gillett Energy Policy and utilizing the elementary and secondary buildings as teaching tools. Through the implementation of the Energy Education curriculum and plan, staff and students will understand and make informed decisions about energy issues.

LEGAL REF.: Wisconsin Statutes

Sections 1.12	State Energy Policy
66.0133	Energy savings performance contracting
101.027	Energy Conservation
115.001(3)	Energy Emergency
120.12(1)	Board duty: Care, control, and management of school district property

COMM 63, Wisconsin Administrative Code	Energy conservation regulations
COMM 64.05, Wisconsin Administrative Code	Inside design, temperature, and ventilation requirements

CROSS REF.: 732 Building and Grounds Maintenance
Elementary and Secondary Curriculum

APPROVED: September 17, 2009

APPENDIX B

Lighting

1. All lights in any unoccupied area will be turned off except those mandated by safety codes.
2. All outside lighting will be turned off during daylight hours.
3. Gymnasium lights will only be turned on when the gym is being utilized.
4. Whenever possible, incandescent lights will be replaced with fluorescent lights.
5. Any new upgrades to lights will include evaluation of lighting levels. Foot candle recommendations include:
    a. Classrooms , computer labs, library and offices: 62-65 foot candles (fc) but not less than 50 fc
    b. Corridors: 20 fc but not less than 10 fc
    c. Storage: not less than 10 fc
    d. Gymnasium: 55-95 fc but not less than 30 fc
6. During the school day, lights will be turned on no more than 30 minutes before students arrive.
7. Teachers are encouraged to turn off banks of lights not in use during prep periods.

Temperature Control

1. The decision to fire up the boiler will be made by the Head Custodian.
2. When the building is occupied during the heating season, the temperature will be set at 70°F +/- 2°F for all spaces including classrooms, computer labs, shops, offices, etc.
3. When the building is unoccupied during the heating season (weekends, holidays, evenings, etc), the temperature will be set at 55° F +/- 2°.
4. When the building is occupied during the cooling season, the temperature will b set at 74°F +/- 2°.
5. Unless otherwise determined by the head custodian, the temperature will be set at 76°F +/- 2° in any air conditioned area.
6. Any temperature control issues will be brought to the immediate attention of the Head Custodian.
7. Unauthorized personnel or students found tampering with temperature regulating devices such as thermostats, valves or temperature control units will be subject to disciplinary action. Any desired changes to temperature control will be directed to the Head Custodian.
8. Personnel will not obstruct ventilation ducts or return grilles with books, charts, furniture, plants, or any other objects or materials.
9. No doors will be propped open.
10. If the auditorium is used as a classroom for 50 or fewer students, air conditioning and additional heating will not be provided.
11. As funding becomes available, a manual temperature control device will be installed in the greenhouse.

Electronics

1. All office equipment including laminators, copiers, and computers will be powered off at the end of each day, except for fax machines.
2. AC/DC converters will be unplugged during nonuse. Examples include DVD players, TVs, power strips, VCRs, computer speakers, monitors, projectors, etc.
3. Printers will be in common locations for shared use.
4. All computers and monitors will be programmed to utilize energy savings capabilities – e.g. monitors will be turned off after 10 minutes of inactivity.

Water and Bathroom Facilities

1. The chiller in water bubblers will be turned off during unneeded times of the year.
2. The domestic hot water system will be set no higher than 120°F.
3. The domestic hot water heater will be evaluated for efficiency on a yearly basis.
4. The domestic hot water recirculating pumps will be shut down when unoccupied.
5. Leaking faucets, fixtures, valves and piping will be repaired.
6. The food service hot water heater should be set with a minimum of 140°F. Food services operations requiring higher temperature levels by code will use booster units or dedicated water heaters when possible.

Recycling

1. All building occupants are required to recycle.
2. Recycling containers will be available in each classroom and in all common use areas.
3. Recyclable materials will be separated and made ready for pick up.

Sustainable Practices

1. The use of personal appliances such as space heaters, toasters, microwaves, toaster ovens, pizza ovens, pizza makers, and/or other cooking or refrigeration appliances will not be allowed without the prior approval of the head custodian. The use of radios, small fans and desk lamps is allowed, but should be turned off when the room in not in use. Appliances will be available in the staff lounge.
2. Individuals desiring the use of personal refrigerators and/or electric coffee makers will be assessed an annual user fee to be determined by the Gillett Science Club. Funds collected from these fees will go to the Science Club.
3. Any club, organization or group (e.g. Market Day, clubs with vending machines, concessions, etc.) using any energy consuming device shall be required to pay a user fee. This schedule will be developed by the Gillett Science Club and will include annual fees as well as one-time use fees. Fees collected will go to the Gillett Science Club. These fees are in addition to any other user fees that may be assessed (building fee).
4. Vending machines in the commons will be turned off during summer months.

5. Outdoor air minimum requirements for the HVAC system will be optimized to the actual occupancy levels of the area.
6. Cost benefit analyses will determine short and long term purchasing and maintenance of all energy consuming devices and systems.
7. Annually, mechanical systems will be adjusted to maximize efficiency (air handlers, heating and cooling systems, water systems, etc.)

APPENDIX C

Connie Scharenbrock Named Wisconsin Energy Educator of the Year

The K – 12 Energy Education Program (KEEP) of the University of Stevens Point has announced the 2010 Formal Energy Educator of the Year Award winner. Local high school life science teacher Connie Scharenbrock learned last week that she has been selected for the award based on her contributions in the area of energy education. Scharenbrock, who has taught at Gillett High School for fourteen years, was nominated by Gillett Dean of Students, Jeremy Pach. In recognition of her contributions to energy education, Ms. Scharenbrock will be awarded $1000 and will be eligible to receive up to $250 of energy-related resources to support her educational efforts in her classroom.

In the spring of 2009, Scharenbrock learned of the successful acquisition of a $5000 Wisconsin Environmental Education Board (WEEB) grant. During the summer months, Ms. Scharenbrock, along with Gillett Dean of Students, Jeremy Pach and Gillett High School Business Education Instructor, Danyell Franti created the Gillett School District Energy Conservation Team. This team, with the assistance of Melissa Rickert (UWSP), Miles Winkler (Gillett School Board Vice President) and Rick Gruel (Head Custodian of Gillett School District), formulated a comprehensive plan designed to cut costs throughout the school district. In addition to energy saving measures, Scharenbrock, Pach and Franti created a comprehensive education program designed to meet the needs of all students in grades PreK – 12. Lesson plans and activities were gathered, organized and accepted as District policy by the Gillett School Board in the fall of 2009. In addition, the team (along with building principals and district administrator) met with Scott Jones of Focus on Energy to do a school survey. After making changes suggested by Jones, the District expects to cut energy costs by 20 – 30%. These changes include simple adjustments such as changes in air conditioning habits, closing classroom doors, freeing vents of blockages and turning off lights when not in use.

In addition to these endeavors, Scharenbrock received a $5000 WEEB grant in the spring of 2006 to purchase equipment used to teach energy education. The money was used to purchase watt meters, solar panels, solar race cars, a windmill model, etc. Ms. Scharenbrock (along with other Gillett teachers) uses these materials to supplement material presented to high school students when teaching about energy topics. This, year, for example, Scharenbrock's Environmental Science class conducted home energy audits, made model energy houses and tested the energy output of several appliances throughout the high school building. Scharenbrock feels that it is important to stress energy conservation throughout the district. With the tough economic times, students need to be aware of where there parent's money is going within the district as well as being aware of personal spending habits of families.

On April 23rd, Connie will accept the Wisconsin Energy Educator of the Year award at the KEEP Annual Energy Awards Ceremony in Madison. The ceremony will recognize the formal and non-formal educator of the year educator, both who have taken the extra step to improve energy literacy in Wisconsin.

APPENDIX D

Gillett School District Electric Conservation Efforts

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$11,152.95	$10,158.18	$13,938.12	$16,243.01	$14,162.81	$14,896.54	$16,211.71	$15,088.00	$14,486.25	$14,516.68	$14,067.74	$14,332.54	
2009/2010	$9,678.44	$14,077.56	$13,809.04	$13,875.18	$14,381.46	$13,710.70	$13,755.86	$13,670.97	$13,794.24	$14,802.15	$14,888.05	$9,296.13	
Savings or loss	$1,474.51	($3,919.38)	$129.08	$2,367.83	($218.65)	$1,185.84	$2,455.85	$1,417.03	$692.01	($285.47)	($820.31)	$5,036.41	**$9,514.75**
2010/2011													
													$0.00

Possible estimated savings if we cut our electric usage by 25%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$11,152.95	$10,158.18	$13,938.12	$16,243.01	$14,162.81	$14,896.54	$16,211.71	$15,088.00	$14,486.25	$14,516.68	$14,067.74	$14,332.54	
2009/2010	$2,788.24	$2,539.55	$3,484.53	$4,060.75	$3,540.70	$3,724.14	$4,052.93	$3,772.00	$3,621.56	$3,629.17	$3,516.94	$3,583.14	$42,313.63
Savings or loss	$ 8,364.71	$7,618.64	$10,453.59	$12,182.26	$10,622.11	$11,172.41	$12,158.78	$11,316.00	$10,864.69	$10,887.51	$10,550.81	$10,749.41	$126,940.90
											New total for year		$84,627.27

Possible estimated savings if we cut our electric usage by 20%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$11,152.95	$10,158.18	$13,938.12	$16,243.01	$14,162.81	$14,896.54	$16,211.71	$15,088.00	$14,486.25	$14,516.68	$14,067.74	$14,332.54	
2009/2010	$2,230.59	$2,031.64	$2,787.62	$3,248.60	$2,832.56	$2,979.31	$3,242.34	$3,017.60	$2,897.25	$2,903.34	$2,813.55	$2,866.51	$33,850.91
Savings or loss	$ 8,922.36	$8,126.54	$11,150.50	$12,994.41	$11,330.25	$11,917.23	$12,969.37	$12,070.40	$11,589.00	$11,613.34	$11,254.19	$11,466.03	$135,403.62
											New total for year		$101,552.72

Possible estimated savings if we cut our electric usage by 15%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$11,152.95	$10,158.18	$13,938.12	$16,243.01	$14,162.81	$14,896.54	$16,211.71	$15,088.00	$14,486.25	$14,516.68	$14,067.74	$14,332.54	
2009/2010	$1,672.94	$1,523.73	$2,090.72	$2,436.45	$2,124.42	$2,234.48	$2,431.76	$2,263.20	$2,172.94	$2,177.50	$2,110.16	$2,149.88	$25,388.18
Savings or loss	$ 9,480.01	$8,634.45	$11,847.40	$13,806.56	$12,038.39	$12,662.06	$13,779.95	$12,824.80	$12,313.31	$12,339.18	$11,957.58	$12,182.66	$143,866.35
											New total for year		$118,478.17

Gillett School District Natural Gas Conservation Efforts

	July	August	September	October	November	December	January	February	March	April	May	June		
Gillett School District														
2008/2009	$745.76	$40.21	$337.36	$136.62	$2,489.23	$9,456.19	$15,246.45	$23,587.13	$10,908.64	$8,934.45	$2,287.02	$688.67		
2009/2010	$425.33	$429.66	$1,415.72	$4,520.22	$7,684.03	$11,217.33	$11,312.07	$7,847.44	$5,143.68	$3,681.24	$720.24	$3,083.16		
Savings or loss	$320.43	($389.45)	($1,078.36)	($4,383.60)	($5,194.80)	($1,761.14)	$3,934.38	$15,739.69	$5,764.96	$5,253.21	$1,566.78	($2,394.49)	**$17,377.61**	savings from previous year
2010/2011														
													$0.00	savings from previous year

Possible estimated savings if we cut our Natural Gas usage by 25%.

	July	August	September	October	November	December	January	February	March	April	May	June		
Gillett School District														
2008/2009	$745.76	$40.21	$337.36	$136.62	$2,489.23	$9,456.19	$15,246.45	$23,587.13	$10,908.64	$8,934.45	$2,287.02	$688.67		
2009/2010	$186.44	$10.05	$84.34	$34.16	$622.31	$2,364.05	$3,811.61	$5,896.78	$2,727.16	$2,233.61	$571.76	$172.17	$18,714.43	Poss. Est. savings
Savings or loss	$559.32	$30.16	$253.02	$102.47	$1,866.92	$7,092.14	$11,434.84	$17,690.35	$8,181.48	$6,700.84	$1,715.27	$516.50	$56,143.30	savings from previous year
2010/2011														
										New Yearly Amount			$37,428.87	

Possible estimated savings if we cut our Natural Gas usage by 20%.

	July	August	September	October	November	December	January	February	March	April	May	June		
Gillett School District														
2008/2009	$745.76	$40.21	$337.36	$136.62	$2,489.23	$9,456.19	$15,246.45	$23,587.13	$10,908.64	$8,934.45	$2,287.02	$688.67		
2009/2010	$149.15	$8.04	$67.47	$27.32	$497.85	$1,891.24	$3,049.29	$4,717.43	$2,181.73	$1,786.89	$457.40	$137.73	$14,971.55	Poss. Est. savings
Savings or loss	$596.61	$32.17	$269.89	$109.30	$1,991.38	$7,564.95	$12,197.16	$18,869.70	$8,726.91	$7,147.56	$1,829.62	$550.94	$59,886.18	savings from previous year
2010/2011														
										New Yearly Amount			$44,914.64	

Possible estimated savings if we cut our Natural Gas usage by 15%.

	July	August	September	October	November	December	January	February	March	April	May	June		
Gillett School District														
2008/2009	$745.76	$40.21	$337.36	$136.62	$2,489.23	$9,456.19	$15,246.45	$23,587.13	$10,908.64	$8,934.45	$2,287.02	$688.67		
2009/2010	$111.86	$6.03	$50.60	$20.49	$373.38	$1,418.43	$2,286.97	$3,538.07	$1,636.30	$1,340.17	$343.05	$103.30	$11,228.66	Poss. Est. savings
Savings or loss	$633.90	$34.18	$286.76	$116.13	$2,115.85	$8,037.76	$12,959.48	$20,049.06	$9,272.34	$7,594.28	$1,943.97	$585.37	$63,629.07	savings from previous year
2010/2011														
										New Yearly Amount			$52,400.41	

Gillett School District Sewage Conservation Efforts

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$2,166.59	$2,347.37	$2,536.26	$2,815.82	$2,822.77	$2,857.99	$2,719.59	$2,753.77	$2,742.35	$2,687.17	$2,922.17	$2,624.94	
2009/2010	$2,210.72	$2,191.07	$2,630.94	$2,920.57	$2,864.86	$2,700.95	$2,777.15	$2,947.90	$2,835.92	$2,892.08	$2,914.92	$2,545.25	
Savings or loss	($44.13)	$156.30	($94.68)	($104.75)	($42.09)	$157.04	($57.56)	($194.13)	($93.57)	($204.91)	$7.25	$79.69	**($435.54)** savings from previous year
2010/2011													
													$0.00 savings from previous year

Possible estimated savings if we cut our SEWER usage by 25%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$2,166.59	$2,347.37	$2,536.26	$2,815.82	$2,822.77	$2,857.99	$2,719.59	$2,753.77	$2,742.35	$2,687.17	$2,922.17	$2,624.94	
2009/2010	$541.65	$586.84	$634.07	$703.96	$705.69	$714.50	$679.90	$688.44	$685.59	$671.79	$730.54	$656.24	$7,999.20
Savings or loss	$1,624.94	$1,760.53	$1,902.20	$2,111.87	$2,117.08	$2,143.49	$2,039.69	$2,065.33	$2,056.76	$2,015.38	$2,191.63	$1,968.71	$23,997.59
											New Yearly Amount		$15,998.40

Possible estimated savings if we cut our SEWER usage by 20%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$2,166.59	$2,347.37	$2,536.26	$2,815.82	$2,822.77	$2,857.99	$2,719.59	$2,753.77	$2,742.35	$2,687.17	$2,922.17	$2,624.94	
2009/2010	$433.32	$469.47	$507.25	$563.16	$564.55	$571.60	$543.92	$550.75	$548.47	$537.43	$584.43	$524.99	$6,399.36
Savings or loss	$1,733.27	$1,877.90	$2,029.01	$2,252.66	$2,258.22	$2,286.39	$2,175.67	$2,203.02	$2,193.88	$2,149.74	$2,337.74	$2,099.95	$25,597.43
											New Yearly Amount		$19,198.07

Possible estimated savings if we cut our SEWER usage by 15%.

	July	August	September	October	November	December	January	February	March	April	May	June	
Gillett School District													
2008/2009	$2,166.59	$2,347.37	$2,536.26	$2,815.82	$2,822.77	$2,857.99	$2,719.59	$2,753.77	$2,742.35	$2,687.17	$2,922.17	$2,624.94	
2009/2010	$324.99	$352.11	$380.44	$422.37	$423.42	$428.70	$407.94	$413.07	$411.35	$403.08	$438.33	$393.74	$4,799.52
Savings or loss	$1,841.60	$1,995.26	$2,155.82	$2,393.45	$2,399.35	$2,429.29	$2,311.65	$2,340.70	$2,331.00	$2,284.09	$2,483.84	$2,231.20	$27,197.27
											New Yearly Amount		$22,397.75

POSSIBLE ESTIMATED SAVINGS PER YEAR.

Possible estimated savings if we cut our overall usage by 25%.

$69,027.26

Possible estimated savings if we cut our overall usage by 20%.

$55,221.81

Possible estimated savings if we cut our overall usage by 15%.

$41,416.36

APPENDIX E

Gillett School Distrcit

Summary Sheet

Organization Contact Information

Name	Address	City/State/Zip
Gillett School Distrcit	208 W Main St	Gillett WI 54124

Contact Name	Title		Email
Stuart Rivard	Superintendent	**Phone:** 920-855-2137 **Fax:** 920-855-1557	srivard@gillett.k12.wi.us

Wisconsin Focus on Energy Technical Assistance

Focus Rep Name	Title	Phone	Email
Scott Jones	Energy Advisor	888-947-8522	sjones@cesa10.k12.wi.us

Building Description

Building Name: Gillett School Distrcit
Address: 208 W Main St, Gillett, WI 54124
Square Footage:
Year Built:
Hours of Operation/Yr:

Energy Profile

The following is a summary of the natural gas and electricity usage. A review of the current utility expenditures helps in determining what potential exists for savings opportunities. Establishing a profile of usage allows us to produce a measure of comparison to similar facilities. The energy profile for the facility is based upon a twelve-month period.

		Annual Consumption			Annual Cost		
	Utility Company or Companies	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
Electric:	WE Energies						
Gas:	WE Energies						

Comments

On July 14th we walked through the Gillett Schools to identify energy saving opportunities. The following opportunities were identified:
-Air handler schedules should be adjusted at least twice a year for summer and winter seasons. Most of them had the winter schedule and operated that way all year long. Try to operate them when the space is occupied and no longer.
-Adjust set back temperatures to 55/85 for winter/summer seasons. Make sure the HVAC system is setting temperatures back according to occupancy. Manage occupants expectations for evenings and weekends when the space is unheated.
-Make sure hallways, rest rooms and vestibules are only heated to 55-65 degrees. Those spaces are intermittently occupied.
-Try to schedule the operation of exhaust fans throughout the facilities. They suck heated or cooled air out of the building that has to be made up with air from outside.
-Manage the refrigeration loads during the summer and consolidate if possible.
-Install timers or vendormizer on vending machines.
-Take a look at a feasibility study for the heating system at the high school. Focus can help with studies that look at energy reductions for consolidated heating systems.

Project Technical Summary

After reviewing Gillett School Distrcit and its operations, the following projects have been chosen as items that should either be implemented immediately or further studied to better determine the feasibility of the project.

1	Air-Conditioning Economizer	Install an automatic air-conditioning economizer.	High

An air conditioning economizer can take advantage of cool outside air (such as during evening hours or cool days) and use this "free" air for cooling. During the air-conditioning season, the heat generated by internal loads such as people, lighting, and electronic equipment will build up in a building. It can be warmer inside than outdoors. Instead of relying on mechanical cooling, an economizer will allow the cooler outside air to enter the school building through the outside air intakes and be distributed through the ductwork. The outside air is then tempered with the inside air to allow the temperature to reach the desired level.

2	Boiler Controls-Outside Air Reset/Cutout	Install a hot water reset/cutout control on the boiler system	High
3	Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems. It appeared that the schools were being operated at the winter schedules. Schedules should be adjusted at least twice a year for summer and winter seasons.	High

Buildings have basically two modes of operations, occupied and unoccupied. When a building goes to occupied mode, the outside air dampers open and the temperature goes to the daytime level. When the building returns to the unoccupied mode, the outside air dampers close and the temperature may drop. Going to the occupied mode too soon or going into the unoccupied mode too late will cost the school significant dollars. Having the occupied/unoccupied times reflect the true occupancy of the space will yield the best savings potential.

4	Custom Boiler Replacement	Custom Boiler Replacement	High

Take a serious look at replacing the older large boiler with a condensing boile system.

5	Custom HVAC Measure	Hire a firm to help you develop a five year plan to replace and maintain HVAC equipment. This plan would look at replacing old antiquated equipment over the years, and have a plan if premature failure occurs.	High

Focus may be able to help fund this type of study.

6	Hot Water Setback	Reduce the boiler set point temperature when the system is not in use	High

The boiler system maintains a store of steam or hot water at the set point temperature so it is able to respond immediately to system demand. Energy is required to maintain the temperature of the stored fluid whether or not the system is currently in use. A time clock temperature control would allow the storage set point temperature to be reduced when the boiler system is not in use.

7	Large Space Air Management	Install controls to control outside air based on occupancy in applicable areas.	High

Take a look at this opportunity for your gyms.

8	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces	High

Often, storage rooms, vestibules and other unoccupied areas are kept at higher temperatures than necessary during winter months. School buildings should install controls (or adjust existing ones) to reduce the heating temperature in these areas.

9	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces	High

Often, storage rooms, vestibules and other unoccupied areas are kept at higher temperatures than necessary during winter months. School buildings should install controls (or adjust existing ones) to reduce the heating temperature in these areas.

10	Occupancy Sensors-Wall Mount 201W to 500W+	Install wall mount occupancy sensors to control lighting operation.	High
11	PC Network Energy Management	PC Network Energy Management	High
12	Reduce Operation of Exhaust System	Reduce operating hours of exhaust system.	High

Schools should closely examine their operating hours and processes and determine if they can reduce exhaust system operating hours. The purpose of exhaust fans is to draw air from areas that need to remove odors, but in practice they draw already conditioned air from the interior space. When air is removed from the space, new air must be conditioned to replace it. Turning off the exhaust fans prevents excess conditioned air from being removed from the space and will save money and energy.

13	T8 Fluorescent Upgrade	Upgrade the existing T12 lighting with T8 lamps and electronic ballasts.	High

Ten years ago standard lighting technology was based on T12 lamps and magnetic ballasts. More recent improvements in lighting technology have resulted in lamps that use less energy but produce the same light output. These lamps, called T8's, run with electronic ballasts and are available in a wider range of color outputs. The new system will use approximately two-thirds the energy of the existing system.

14	Thermostat Calibration	Implement a thermostat calibration program.	High
Thermostats may not be properly calibrated and thus yield incorrect readings. Maintenance staff should ensure that thermostats are calibrated; this action will give more accurate temperature control, ensure higher occupant comfort levels, and save energy.			
15	Unoccupied Setup/back Controls - WPS Hometown Energy Check Up	Install unoccupied setup and setback thermostat or controls on heating and cooling equiment.	High
Unoccupied temperatues for winter should be 55 degrees. Unoccupied temperatures for summer should be 85 degrees.			
16	VendingMiser-Cold Beverage Machine	Install VendingMiser controller on beverage vending machines to reduce run times during unoccupied periods	High
17	Energy Management System	Install an energy management system in the secondary school.	Medium
Energy management systems (EMS) can automatically control the temperature and ventilation throughout a school. For example, they can automatically adjust setpoint temperatures to save energy, based on seasons, time-of-day, or day of the week. They can also limit the use of outside air for ventilation during times when the school building is unoccupied. This action will reduce the system's operating time and save energy and money.			
18	HVAC - VFD (Schools & Govt.)	Utilize variable speed drives on the fan and pump motors in the HVAC system.	Medium

Wisconsin Focus on Energy Program

The Wisconsin Focus on Energy program is designed to assist Wisconsin natural gas and electric utility customers in the identification and implementation of cost effective, energy efficient facility improvements. These services range from assistance in the initial identification of projects through the bidding and installation. Wisconsin Focus on Energy provides an unbiased consultant's perspective when offering assistance.

Wisconsin Focus on Energy is considered a public benefit. Any comments or concerns about the program are encouraged, as we hope to continue to better serve the businesses of Wisconsin. We here at Wisconsin Focus on Energy thank you for becoming a partner and holding an interest in energy efficiency.

Participation in the program is voluntary. Wisconsin Focus on Energy staff pledge to work with participants to the extent that the opportunities exist and that the partner wants to proceed toward implementation. Opportunities presented within the scope of this preliminary report are best opinions of savings and costs. However, further technical assistance is available for detailed studies that might be required for capital investment and decision-making. For more information please visit our website at www.focusonenergy.com.

APPENDIX F

Energy Committee Grant Approval Form

*GRANT TITLE*_____

1.

Specific amount of energy saved/listed if grant is approved **YES----------NO**

2.

Internal grant includes an approved curriculum component **YES----------NO**

3.

Internal grant serves the district/community/students directly **YES----------NO**

4.

Internal grant will be used <u>within</u> the current school year **YES----------NO**

5.

The grant will create/teach savings to its intended audience **YES----------NO**

6.

Return on investment is explained within the grant **YES----------NO**

7.

Grant explains who will be installing the project/curriculum **YES----------NO**

8.

Describe the development method, proposed schedule for each activity starting and ending dates

YES----------NO

To be approved: The grant must have a minimum of FIVE or more YES votes and be approved by each of the three grant entities. The three grant entities are as follows:

1) Energy Committee
2) Student Energy Committee
3) Superintendent