

HOWARD-SUAMICO SCHOOL DISTRICT

# K-8 Energy Education Plan

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2010-11

**Researched and Developed by:**

**Mona Forbes, Bay View Middle School  
Bonnie Koeller, Lineville Intermediate School  
Kim Lemberger, Lineville Intermediate School  
Mike Phillips, Bay Port High School  
Marylu Sachs, Forest Glen Elementary**

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## **Part 1: Executive Summary**

### **Goals**

- 1) HSSD will reduce the amount of energy used district-wide and save money on energy bills.
- 2) The HSSD staff will have an awareness of their energy usage and practice energy conservation behaviors as stated in the district energy policy.
- 3) The students of HSSD will be taught proactive behaviors in conserving energy throughout the building.

### **Objectives**

- 1) Greater than 90% of students will know what energy is and where it comes from.
- 2) Greater than 90% of teachers and adult building occupants will be aware of their energy-usage and reduce the amount of energy used in each building from the established baseline (2010-11 school year).
- 3) Greater than 90% of all HSSD employees will attend inservice/training on energy conservation practices during the 2010-11 school year sponsored by the district energy committee members.
- 4) The district business department contributes 5% of the money saved as shown on utility bills to support energy education curriculum materials and provide training for teachers to utilize those materials effectively in the classroom.
- 5) The district Facilities Manager communicates to all employees the energy usage and cost on a monthly basis via email.

### **Rationale**

It is the vision of the Howard-Suamico School District to excel in “developing productive, responsible, civic and globally-minded adults who prosper and serve.” Our mission is to work together with families and community to ensure that our students have the knowledge and skills to succeed in a changing world. As our students become adults in a global community, it is important for them to be aware and knowledgeable of the energy they use on a daily basis throughout their lives. Using our schools as a primary teaching tool in giving students meaningful learning experiences will help them practice energy conservation as a way of life.

### **Plan Development Process**

During the summer of 2008 the Howard-Suamico School District (HSSD) began its energy commitment by accepting Lt. Governor Lawton’s Energy Star School Challenge. Baseline ratings from EPA Portfolio Manager indicated a need for improvement in how the facilities were being managed. The HSSD Facilities Manager took leadership in creating the HSSD Energy Committee. It consisted of: the Assistant Superintendent of Business and Information Services, District Electrician & Maintenance Supervisor, technicians from the various buildings, a

representative from the District's Information Technology Department, building administrators, district residents & local business representatives, Focus on Energy representative, a representative of the district's energy provider, a representative from the teaching staff, and a member of the district support staff. Guidance and information was sought on how to create a district energy policy from other school districts that had already taken on that type of facility management planning.

A preliminary analysis of the curriculum in grades 5-8 completed during the summer of 2008 found gaps in the energy education being taught. A grant was secured from KEEP in May 2009 to provide funding for an ad-hoc committee (K-12 Energy Education Committee) to be formed by classroom teachers to do a further analysis of elementary and high school curriculum to determine if the gaps in energy education were covered at those levels. It also allowed for the committee to recommend revisions to the existing science curriculum so that it incorporates energy education utilizing project-based learning principles that will support the district's energy policy.

One challenge that was hard to overcome was that of finding time to hold the K-12 Energy Education Committee meetings. Although the grant was accepted by the Superintendent of Teaching and Learning, teachers were not allowed to be released from the classroom (ie. hiring a substitute) to attend meetings and develop the energy education plan, therefore all meeting times needed to be held outside of the contract day. A calendar was set for the year to include monthly meetings from 3:30-5:00 pm, and it became difficult to have every member of the K-12 Energy Education Committee attend all the meetings due to personal commitments (ie. coaching, parenting, etc.). Although members of the committee were compensated for their time outside the contract day, this group of individuals has a strong commitment and passion for teaching the students of HSSD to be better stewards of the environment, actively involving them in their learning to develop positive energy conservation attitudes and behaviors as adults.

It was important for the K-12 Energy Education Committee to do a thorough job analyzing the K-12 science curriculum. This became a challenge when some members of the committee decided to stop working on this project; therefore each grade level was not directly represented in the development of the education plan. Feedback was sought from all grade levels on energy content and resources that were being used, but a small amount of information was gained this way. From what the education committee did receive, it was evident that there was a need to educate the teaching staff on energy education content, as well as the HSSD policy and energy-saving initiatives.

Another obstacle that needed to be addressed was the changes in core curriculum standards that were being done at the national and state level. Although Wisconsin has standards for environmental education, they are not required by the district (or state) to be taught or assessed. Energy education is currently not a priority in the district's curriculum, so a strong case of justifying the importance of it being taught was needed. The K-12 Education Committee decided to create the energy education plan with an emphasis on project-based learning and connect the lessons into the district's recently adopted 21<sup>st</sup> century learning skills.

## **Part 2: Energy Management Policy**

The HSSD School Board approved the policy on April 21, 2009. There have been no significant changes made to that policy as of the writing of this document.

### **HSSD ENERGY CONSERVATION POLICY**

Energy conservation is necessary in order for the District to: minimize the impact energy cost increases will have on the budget, maintain a reliable supply of energy to meet the functional needs of the District, and ensure that energy is used efficiently.

A strong commitment on the part of the administration is important to an effective energy conservation program. **It will be the responsibility of each District employee to actively participate in conservation efforts in order to reduce consumption to levels prescribed by state, federal and local rules. In turn, it will be the responsibility of the District to ensure that staff receives information regarding energy conservation.**

Instituted as part of the District's plan to save energy, this policy is designed to save scarce resources without infringement of the educational mission of the District. The Superintendent, Cabinet members, Administrative team, Building Principal, Associate Principal, Building Janitor or Custodian, and their supervisors will share the accountability for ensuring that this policy is followed. All operations of District facilities will be governed by established energy conservation guidelines, and participation is mandatory for all District staff. The Facilities Manager/designee will implement, direct, monitor, evaluate and report District energy conservation efforts to the Cabinet.

### **HOWARD-SUAMICO SCHOOL DISTRICT**

#### **Policy**

#### **A. Heating and Air Conditioning – all building and room doors to remain closed to optimize efficiency for heating and cooling.**

1. Classroom thermostats will be set at 68 degrees for heating and 75-78 degrees for cooling during the occupied times. For unoccupied times, heating will be set at 55 degrees and cooling will not occur. Doors need to remain closed to optimize efficiency for heating and cooling.
2. Auditorium thermostats will be set at 68 degrees for heating and 74 degrees for cooling during the occupied times. For unoccupied times, heating will be set at 55 degrees and cooling will not occur. Doors need to remain closed to optimize efficiency for heating and cooling.
3. Mechanical/electrical rooms, elevator equipment rooms, unoccupied storage areas and similar spaces will be adjusted to 55 degrees during the heating season. Doors need to remain closed to optimize efficiency for heating and cooling.
  - a. Hallways, vestibules and stairwells will be adjusted to 60 degrees during the Heating season where feasible.
4. Locker and shower rooms will be maintained at 70 degrees during the heating season.

5. Locker rooms, swimming pools, food service occupancies, mechanical/electrical rooms, unoccupied storage spaces, vehicle service and storage buildings, industrial/shop occupancies, utility buildings and similar areas will not be air conditioned. Exceptions are the head-end rooms for Information Technology Services.
  - a. Gymnasiums with air conditioning – doors to remain closed to optimize efficiency for cooling; temperature to be maintained at 78 degrees when using gymnasium for public assemblies (i.e. graduation, varsity competitions with non-district players/teams) – otherwise areas not to be air-conditioned.
6. Operating schedules for the heating, ventilating, and air conditioning equipment will be optimized as follows:
  - a. For the heating season, the equipment will be started approximately one hour before building occupancy to allow the building to be at the occupied set point. The scheduled shut down time will be set the same as student release time.
  - b. For the cooling season, the equipment will be started 2 to 3 hours before classes start to allow the building to pre-cool; will also utilize cool nights to pre-cool with system.
  - c. For summer maintenance, only the air handling equipment will be operated. The scheduled time to run will be during the off peak rate hours.
7. Economizer operation will be enabled for free cooling.
8. Economizer programs will be modified to allow for maximum free cooling for schools with building automation systems.
9. Fresh air minimum requirements will be reviewed and set to state code levels. (7.5 CFM / person).
10. HVAC coil cleaning, unit ventilator cleaning and individual heating coil cleaning will be scheduled annually to assure the highest operating efficiency possible.
11. Air conditioning equipment will not be run in the November through April billing periods. Air conditioning units will be turned on in mid-May (on or around May 10th) annually.
  - a. Prior to May 10th if the temperature is above 78 degrees during any three day consecutive period the air conditioning equipment may be activated.
12. Air conditioning equipment operation will be optimized from May through October billing periods by starting the equipment before the peak demand electric rate is in effect. When possible, the air conditioning equipment will not be allowed to ramp up to 100% full load, which will help to lower the highest peak demands.
13. Window blinds will be adjusted, when and where appropriate, to allow the sun to warm the building during the heating season or to block out the sun during the cooling season.
14. Windows will be kept closed if the air conditioning or heating systems are in operation.
15. Classroom doors will be kept closed.
16. Staff will not obstruct ventilation ducts or return grilles with books, charts, furniture, plants or any other objects or materials.
17. Small group activities will not be scheduled in large areas such as auditoriums and gymnasiums. Use of such areas will be coordinated with the custodial staff to enable reduced lighting and heating during periods of non-use.

18. Outdoor air minimum requirements for the HVAC system for the gyms, auditoriums, and commons will be optimized to the actual occupancy levels of the area.
19. Summer school classes will be scheduled in an area of the building that would be scheduled to have air conditioning running or with dedicated air handlers.
20. Energy audits will be performed in the occupied and unoccupied conditions.
21. Buildings will be identified for HVAC energy improvement items.
22. New equipment purchases will be energy efficient models that are Energy Star rated.
23. All buildings have a current baseline rating (average energy performance rating) through Portfolio Manager. The District goal is to work toward being an Energy Star Leader.
24. The use of portable electric heaters or any other auxiliary heating devices will not be permitted.
  - a. Requests for exemptions and complaints must be addressed in writing to the Facilities Manager at which time he/she will investigate the complaint or request for exemption on a case by case basis. If the issue cannot be resolved while adhering to the energy policy, the Facilities Manager shall make the determination as to what action, if any, will be taken. If an exemption is granted for a portable heater or other auxiliary heating device, it will be a unit specified by the Facilities Manager. The appeal process will follow the normal chain of command.
25. Employees and students are encouraged to wear appropriate clothing during the heating season and cooling season.
26. The Facilities Department may adjust set points to provide the best overall performance of the HVAC system.

## **B. Lighting**

1. Lighting schedules will be optimized to reduce usage.
2. Lights will be turned off when space is not in use or natural day lighting is adequate.
3. Classroom lights will be turned off when the last person exits the room.
4. Cleaning staff will turn lights on only for the period when a specific area is being cleaned.
5. Hallway lighting will be turned off as soon as possible and pass-through lighting should be utilized.
6. Classroom lighting levels will be adjusted to state code levels (50-foot candles).
7. Gym lighting will be adjusted to state code levels for classes. Lighting levels for events and practices can be adjusted to foot candle level as needed.
8. Buildings will be identified for energy saving lighting projects.
9. Lights will be on when needed to reduce light time.

## **C. Food Service**

1. Run time of ovens, stoves, and fryers will be kept at the minimum levels.
2. Exhaust fans will run only when absolutely necessary.
3. Energy saving devices and/or practices will be identified.
4. Equipment will be energy star rated efficient models and natural gas if possible.

#### **D. Computers/Office Machines**

1. Copiers, laminating machines, calculators, and other office machines will be turned off at the end the day.
2. Computers, monitors, printers, smart boards, LCD projectors and other peripheral equipment will be turned off at the end of the day or when not in use for long periods of time during the day – this includes all equipment used by the summer school program throughout the district.
3. Computers will be energy efficient models.

#### **E. Building Improvements**

1. Building air leaks will be identified and sealed with caulking, energy efficient seals and/or insulation.
2. Facilities Department will be responsible for the identification and implementation of long-range projects.

#### **F. Other**

1. The domestic hot water temperature set point will be no higher than 115 degrees. Food service operations requiring higher temperature levels by code shall use booster units or dedicated water heaters when possible.
2. The use of personal appliances such as electric coffee makers, microwaves, refrigerators, toaster ovens, pizza makers, lamps, popcorn poppers and/or other cooking or refrigeration appliances from home, digital picture frames, etc. will not be allowed. Small fans and radios are allowed, but must be turned off when you are not at or near your work station. All approved items must be Energy Star Rated and UL Approved.
  - a. Special event functions requiring use of non-approved appliances mentioned in F(2) will require approval by the Building Principal and the Facilities Manager.
3. Requests for exemptions and complaints regarding set point temperatures considered to be too hot or too cold must be addressed in writing to the Facilities Manager at which time he/she will investigate the complaint or request for exemption. If the issue cannot be resolved while adhering to the energy policy, the Facilities Manager shall make the determination as to what action, if any, will be taken. The appeal process will follow the normal chain of command.
4. The Facilities Department may adjust set points to provide the best overall performance of the HVAC system.
5. Only energy efficient vending machines will be allowed within the District and must have vending misers.



## **G. Education**

1. Staff and students will be provided on-going education on energy saving measures through the Energy Committee.
2. District will utilize appropriate curriculum materials designed to inform students regarding the wise use of energy.
3. Every staff person will be expected to contribute to energy efficiency in the District.
4. This policy has the full support of the superintendent, cabinet members, administrative team and principals.

APPROVED: April 21, 2009 by Howard-Suamico School District Cabinet (Damian LaCroix, Dennis Krueger, James Freeman, Betty Zimdars, Bonnie LeMense, Susan Sinclair)

### **HOWARD-SUAMICO SCHOOL DISTRICT ENERGY COMMITTEE MEMBERS:**

Ken Baran  
Jim DeBaker  
Lance VandenElzen  
Joe Wallander  
Randy Johnson  
Yolanda Maricque  
Scott Jones  
Kim Lemberger  
Bob Gonzalez  
Betty Zimdars  
Jeff Henkelmann  
Jerry Gitlewski  
Ryan Welnetz  
Gary Caelwaerts  
Nancy Reynolds

## **Part 3: Energy Education Plan**

### **Philosophy statement**

Our purpose is to excel at assisting teachers in their efforts to maximize student learning about wise use of energy. The needs of the 21st century learners, our students, are at the core of what we do. In preparing them for the 21st century, it is imperative that higher-order thinking skills be embedded in all curricula and that students are asked to demonstrate their knowledge of conserving energy in a variety of ways. This purpose is realized through the collective efforts of all building occupants in the HSSD.

### **Goals:**

- To develop energy literate building occupants (faculty, support staff and students).
- Raise building occupants' awareness on energy use and the district's energy policy (specifics to be in energy policy)
- Every building occupant demonstrates personal responsibility for his or her contribution to the energy conservation efforts
- Collaborate and communicate energy education with community
- Staff and students will be educated on responsible use of technology; remember to turn off lights, computers, electronic devices, etc. when not in use for long periods of time and at the end of each day
- Staff members will use the designated common-use lounge facilities and not personal appliances that are stored outside of the common lounge area
- Students in grades 5-8 will voluntarily participate in an "energy/environmental science fair"

### **Curricular Framework**

The members of the Energy Education Committee believe that concepts of energy education are best taught and understood in cross-curricular context. However, the direction they were given by the Superintendent of Teaching and Learning was to limit the infusion or addition of energy content to the existing science curriculum only. The committee used a variety of resources including Wisconsin Environmental Education Standards, KEEP Conceptual Guide, and existing HSSD standards and benchmarks to develop the following curricular framework.

Two basic approaches were used in developing the framework. The first was to look at existing science units/lessons and pull in energy content that would be an easy extension to the lesson. The second was to add in new content that focuses specifically on energy conservation and the use of the school building as a teaching tool. Analysis of the science curriculum showed this was an obvious gap that would need to be addressed, especially to be in compliance with the district's energy management policy.

### **Kindergarten Science Content w/Energy Education Content**

KEEP Energy Concept Focus – 11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.

**Conservation/Efficiency (Project-Based Learning) - [Saving Energy at Home and School](#)** – teacher’s guide – (Focus on energy at home lessons) In the classroom, you and your students together will use the Saving Energy Classroom Kit, and students and their families can apply classroom lessons with the Home Energy Efficiency Kit. Students will learn about heat, light, electricity, natural gas, and much more. They will learn about ways to make simple changes that can save valuable natural resources and money on their utility bills. [Student/Family Guide](#)

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Used	Assessment
Alive	Understands basic needs of organisms.	11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.	THE SUN GIVES US LIGHT SO THAT WE CAN SEE. LIGHT IS ENERGY. _ Talk about day and night and how we must use artificial light at night to see. Compare cloudy and sunny days. Compare length of daylight in winter and summer. Explain how we can see when light bounces off objects and into our eyes. If we close our eyes, we can't see because no light can enter. _ Turn off the lights in the classroom and	<a href="#">NEED Primary energy Flipbook</a> Definition of energy pp. 6-7 Motion p. 12-13 Growth p. 16-17	

		<p>observe the light from the sun. Close the blinds and observe how much harder it is to see clearly when there is less light.</p> <p>_ CONCEPTS: The sun gives us light to see. Light is energy.</p> <p><b>DO PLANTS NEED THE SUN'S ENERGY TO GROW?</b></p> <p><i>Materials: 2 small potted plants</i></p> <p>_ Instruct the students to carefully observe the size and health of two plants.</p> <p>_ Place one plant in a sunny place and the other in a place without any light. Give both plants the same amount of water and observe daily for one to two weeks. Have students draw the plants on page 26.</p> <p>_ CONCEPT: Plants need the sun's energy to grow.</p>	<p><a href="#">NEED Primary energy Flipbook</a></p> <p>Solar Energy p. 57</p> <p><a href="#">NEED Primary energy Flipbook</a></p> <p>Biomass p. 23</p>	
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habitats	Knows what a habitat is and where they can be found.	11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.			
5 Senses	Knows the five senses and their function?	Energy in the form of sound waves.		<a href="#">NEED Primary energy Flipbook</a> Sound p. 14-15 Heat p. 10-11	
Weather	Understands the weather and seasonal changes affect the world around us?				

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-10.

### Grade 1 Science Content w/Energy Education Content

KEEP Energy Concept Focus – 11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.

**Conservation/Efficiency (Project-Based Learning)** - [Saving Energy at Home and School](#) – teacher’s guide – (Focus on energy at school lessons) In the classroom, you and your students together will use the Saving Energy Classroom Kit, and students and their families can apply classroom lessons with the Home Energy Efficiency Kit. Students will learn about heat, light, electricity, natural gas, and much more. They will learn about ways to make simple changes that can save valuable natural resources and money on their utility bills. [Student/Family Guide](#)

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Organisms	<p>Knows plants and animals cause environmental changes.</p> <p>Knows how parent/offspring of animals and parent/seedling of plants are alike and different.</p>	11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.	<p><a href="#">NEED Primary energy Flipbook</a></p> <p>Definition of energy pp. 6-7</p> <p>Motion p. 12-13</p> <p>Growth p. 16-17</p>		

Nutrition	Categorize foods into groups and explain how these foods provide energy and material for body repair and growth?	35. There health and safety factors associated with energy development and use. 36. The health and safety of Wisconsin citizens is related energy development and use.	<a href="#"><u>PRIMARY ENERGY STORIES AND MORE</u></a> You Kids Get All That Energy? P.12  The Tale of Johnny Energy Seed p. 15		
Solar System	<p>Knows the moon revolves around the Earth.</p> <p>Knows the Earth's motion of rotation and revolution around the sun.</p> <p>Knows that the sun is a star and applies heat and light to Earth.</p>				

Matter	<p>Knows that water can exist as a solid, liquid, and/or gas and <i>can be changed by the process applied to it.</i></p> <p>Knows that there are three states of matter: solid, liquid, and gas.</p>				
Scientific Method	Knows that learning can come from careful observations and simple experiments				

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-2010.



## Grade 2 Science Content w/Energy Education Content

KEEP Energy Concept Focus – 11. Living systems use energy to grow, change, maintain health, move, and reproduce.  
- definition of energy

**Conservation/Efficiency (Project-Based Learning)** – [Saving Energy “Building Buddies” – Teacher’s Guide](#) - Students learn basic concepts of energy management at home and at school. Students become school Building Buddies, monitoring energy use in their classrooms and school buildings and rewarding energy-saving behaviors. [Student Guide](#)

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Butterflies/Cycles	<p>Learning comes from careful observation and the use of scientific tools to conduct simple experiments.</p> <p>Understands that fossils provide evidence of the past as well as similarities to animals today. ???</p>	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>Animals and other heterotrophs convert chemical energy in plants or in other animals to chemical energy they can use via cellular respiration</li> </ul>	<p>During study of life cycle how do butterflies use energy?</p> <p>-larva stage = eating to store energy for next stage</p> <p>-adult stage = using nectar for food.</p>		

<p>Body Systems: Respiratory, muscular, circulatory digestive skeletal</p>	<p>Knows food provides energy and material for body repair and growth.</p>	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul>	<p>“Energy from Food” KEEP Energy Activity Guide p. 40 <i>Students are introduced to food as an energy source, and feel their heart beat before and after exercise to learn that physical activity requires energy.</i> <a href="#">Calculating Calories</a> - <i>Students investigate how much energy is stored in foods by burning a peanut and calculating how many calories of heat are released.</i></p>	<ul style="list-style-type: none"> <li>• Samples of foods such as fruits, vegetables and bread</li> <li>• 10 foot long ribbon/string</li> <li>• Diagram of digestive system</li> <li>• Cracker and glass of water</li> <li>• Small jar (big enough to hold ribbon)</li> </ul>	
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Magnets		Energy use and definition of energy	<p>“K-5 Energy Sparks for Theme I”, <u>KEEP Activity Guide</u> pp. 269-276</p> <p>**Good transition at end of magnets unit and beginning of Heat, Light, Energy and Sound unit or vice versa</p>		
Heat, Light, Energy and Sound	Understands forms of energy that cannot be touched (light, heat, sound and magnetism).	Definition of energy	<p>“Evidence of Energy” <u>KEEP Activity Guide</u> p 42</p> <p><i>By investigating motion, sound, heat, and light, students learn that they and other objects in the classroom use energy.</i></p> <p>-make a sound map of room/building (see p. 271 from “K-5 Energy Sparks for Theme I”)</p> <p>-identify light</p>	Flashlight Bell Radio (optional)	

			sources around home/school (see p. 273 “K-5 Energy Sparks for Theme I”)		
Scientific Inquiry	Learning comes from careful observation and the use of scientific tools to conduct simple experiments.				

Beginning of Year = “K-5 Energy Sparks for Theme I”, KEEP Activity Guide pp. 269-276 would be a good way to introduce all the science concepts you talk about throughout the year. The variety of activities suggested would also be a good way to review/introduce the scientific inquiry.

End of Year = Utilize the “K-5 Energy Sparks for Theme I”, KEEP Activity Guide pp. 269-276 to wrap-up the year’s science content.

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-2010.

### Grade 3 Science Content w/Energy Education Content

KEEP Energy Concept Focus = 19. Primary energy sources are those that are either found or stored in nature.

**Conservation/Efficiency (Project-Based Learning) - [Today in Energy](#)** - A reality-based activity that introduces students to the concepts of energy uses, costs, and trade-offs.

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Plants	Understands plant's basic needs and life cycle stages.	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.</p> <ul style="list-style-type: none"> <li>Plants and other autotrophs convert solar energy to chemical energy via photosynthesis</li> </ul>	<p><a href="#">Seed needs</a> - students experiment with varying the amount of sunlight and water</p> <p><a href="#">Biomass as Energy Source</a> – to increase student knowledge about biomass energy using web-based resources, and as groups, create a PowerPoint presentations about biomass energy.</p>	Packet of bean seeds, water, tablespoon, snack-size zip-lock bags	

<p>Human Body: Support Systems (skeletal and muscular)</p>	<ul style="list-style-type: none"> <li>○ Understands that the skeletal and muscular systems work together.</li> </ul>	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul>			
<p>Solar System: Moon, planets, sun</p>	<ul style="list-style-type: none"> <li>○ Knows the relationship of Earth to other objects in space.</li> <li>○ Understands what causes day and night and the seasons.</li> </ul>	<p>25.9 Solar energy is the radiation from the sun that reaches Earth’s surface.</p>	<p>“K-5 Energy Sparks for Theme II”, <u>KEEP Activity Guide</u> pp. 278-282</p> <p><a href="#">The Sun and It’s Energy</a> – NEED Project - Hands-on investigations and explorations to introduce primary students to the basic concepts of solar energy.</p>		

<p>Rocks and Minerals</p>	<ul style="list-style-type: none"> <li>○ Knows that there are three types of rocks that are composed of minerals.</li> <li>○ Knows that the Earth's surface is changed by weathering and erosion.</li> </ul>	<p>19. Primary energy sources are those that are either found or stored in nature.</p> <ul style="list-style-type: none"> <li>• The sun is the primary energy source and the principal source of Earth's energy. Energy from the sun is stored in other primary energy sources such as coal, oil, natural gas, and biomass (such as wood). Solar energy is also responsible for energy in the wind and in the water cycle (the hydrologic cycle).</li> </ul> <p>26. Wisconsin has primary energy sources.</p> <p>27. Most of the energy resources currently used in Wisconsin are fossil and nuclear fuels, all of which are imported into the state.</p>	<p><a href="#">Primary Stories and More</a> by NEED Project. Is formatted into short stories that address hydropower, solar, oil &amp; gas, geothermal, etc. After stories are suggested investigations to use to further teach science concepts.</p> <p><a href="#">This Mine of Mine</a> – NEED Project - Students build plots of land that contain coal deposits, mine the coal, then reclaim the land and explore the uses of coal to produce energy.</p>	<p>Copies of teacher-selected stories that apply to this unit or others in science curriculum.</p>	
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### Grade 4 Science Content w/Energy Education Content

KEEP Energy Concept Focus = 28. Supply and demand influence energy resource discovery, development, and use. The supply and demand for an energy resource is determined by resource availability, level of technological development, and societal factors such as lifestyle, health and safety, economics, politics, and culture.

**Conservation/Efficiency (Project-Based Learning)** = [Saving Energy “Monitoring and Mentoring”](#) – teacher’s guide - These activities explore energy use and conservation using the home and school as learning laboratories. Upper elementary and intermediate students can buddy with younger students to teach and learn. [Student Guide](#)

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Real-World Science: Scientific Method  Changing Technology / Careers in Science	Predict, observe, collect, and analyze data to demonstrate/explain a science related problem.  Critique how the influence of technology affects scientific careers.	79. New energy resources, new ways of managing energy resources, and new energy technologies will be developed in the future.	“K-5 Energy Sparks for Theme III” pp. 286-290 from KEEP Activity Guide – see especially, “Comparing Energy Use in the Past and Present”		



Electricity	Investigate electrical current, charge and flow.	28. Supply and demand influence energy resource discovery, development, and use. The supply and demand for an energy resource is determined by resource availability, level of technological development, and societal factors such as lifestyle, health and safety, economics, politics, and culture.	<p>Electric Charades, p. 112-113, KEEP Activity Guide</p> <p><a href="#">Transparent Energy</a> – Students use NEED Infobooks and transparencies to prepare and make presentations on energy sources and energy carriers.</p> <p><a href="#">Classroom Energy Poster Puzzle</a> – The poster depicts energy use and abuse in a classroom . Useful teaching aid for any teacher wishing to incorporate energy conservation into the regular teaching program.</p>	<p>Differentiated reading sources for Transparent Energy</p> <p><a href="#">Elementary Student Infobook</a></p> <p><a href="#">Intermediate Student Infobook</a></p> <p><a href="#">Secondary Student Infobook</a></p>	
Motion	Demonstrate how force and mass affect an object’s rate of speed and motion.				

Astronomy	Understand that our universe is constantly changing.				
Human Body: Control Systems	Determine how the nervous system (brain, spinal cord, nerves) and our senses help us to learn, move and survive.	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul>			

\*\*\*\*\* “K-5 Energy Sparks for Theme III” pp. 286-290 includes a lot of shorter energy activities that can be used throughout the school year while teaching the science curriculum.

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-2010.

## Grade 5 Science Content w/Energy Education Content

KEEP Energy Concept Focus – 13. Ecosystems use energy to maintain biogeochemical cycles – such as the sedimentary, gaseous, and hydrologic cycles- between living and nonliving systems.

**Conservation/Efficiency (Project-Based Learning)** - [Saving Energy “Monitoring and Mentoring”](#) – teacher’s guide – These activities explore energy use and conservation using the home and school as learning laboratories. Upper elementary and intermediate students can buddy with your students to teach and learn. [Student Guide](#)

\*\*\*Intentional replication of activity. All students in district transfer to Intermediate School and information will be different from fourth grade experience.

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Ecosystems	Examine the relationship between living and non-living factors as the environment changes.	<p>13.Ecosystems use energy to maintain biogeochemical cycles – such as the sedimentary, gaseous, and hydrologic cycles- between living and nonliving systems.</p> <p>14.Ecosystems are characterized by :</p> <ul style="list-style-type: none"> <li>• Types and characteristics of energy flows, such</li> </ul>	<p><a href="#">“Seeking Inhabitable Schools”</a> <a href="#">Energy and Your School</a> p. 29 – <i>Through a game of hide and seek, students identify systems in their school that use energy and make the schools environment livable.</i></p> <p>“Food Chain Game” <a href="#">KEEP</a></p>	<p>Teacher would need to have taken a tour of his/her building</p> <p>Access to <a href="#">Energy and Your School: KEEP Activity Guide</a> is available on e:drive/common/distwide/K-12 Energy Education committee/Curricular Framework/Resources</p>	

		as food webs.	<p><u>Activity Guide</u> p. 57  <i>By playing an outdoor tag game, students simulate the transfer of energy between organisms in a food chain.</i></p> <p>“Energy Use in an Ecosystem” <u>KEEP</u>  <u>Activity Guide</u> p. 55  <i>Students survey different environments and investigate how sunlight, soil moisture, temperature, and wind affect living elements—plants and animals—in an ecosystem.</i></p>	Teacher background information = Energy Flow in an Ecosystem -	
Human Body – Transport Systems	Compare and contrast transport systems.	11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is	<u>Eat Right, Stay Fit</u> – <i>students compare their regular eating habits with that recommended</i>		

		<p>stored for later use.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health – nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul>			
Microworlds	Investigate how cells are the basic building blocks of life.				
Matter	Illustrate the basic structure and movement of an atom.	<p>Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth. The two ways that energy can be transferred are by doing work (such as pushing an object) and by transferring heat (conduction, convection and radiation).</p> <p>5. Energy can neither be created nor destroyed, it can only be converted from one</p>		<p>Teacher background information: <a href="#">matter and energy laws: a primer</a></p> <p>scroll down document to “Section E” where it makes connection between conservation of matter and the quality of the environment</p>	

		<p>form to another. This is the first law of thermodynamics. For example, the chemical energy stored in coal can be converted into thermal energy.</p> <p>6. With each energy conversion from one form to another, some of the energy becomes unavailable for further use. This is the second law of thermodynamics. For example, the thermal energy released by burning coal is eventually dispersed into the environment and cannot be used again.</p>			
Scientific Inquiry	Plan and conduct simple experiments using the scientific method.		<p><a href="#">Energy Fair Document</a></p> <p><a href="http://energyquest.ca.gov/projects/index.html#">http://energyquest.ca.gov/projects/index.html#</a> - lists of project ideas for kids</p>		

Energy Fair Alternative Participation (drama) <http://www.need.org/needpdf/Energy%20On%20Stage.pdf>

Energy Fair Alternative Participation (singing) <http://www.need.org/needpdf/Great%20Energy%20Rock%20Performances.pdf>

There are a couple ways to infuse energy education into the “Ecosystems” unit

65. Energy resource development and use can alter environmental conditions leading to, for example, reduced air and water quality, deforestation, and changes in land use due to road building. These altered environmental conditions may pose risks to the health and well-being of human and other life forms. (focusing on how the environment is affected by energy resource use)

15. Wisconsin has five main biological communities: northern forest, southern forest, prairies, oak savanna and aquatic. (focusing on different types of ecosystems).

A neat tie-in would be to combine the law of conservation of matter with the changes that occur in an ecosystem. (Recycling, waste management –composting)

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-2010.

## Grade 6 Science Content w/Energy Education Content

KEEP Energy Concept Focus – 2. Energy exists in two main forms: potential energy (energy stored in matter) and kinetic energy (energy of motion). More specific forms of energy include thermal, elastic, electromagnetic (such as light, electrical, and magnetic energy), gravitational, chemical, and nuclear energy.

**Conservation/Efficiency (Project-Based Learning)** – [Saving Energy – Learning/Conserving](#) – teacher’s guide – These activities explore energy user and conservation using the school as a learning laboratory. [Student Guide](#)

Units	HSSD Power Standards (Draft)	KEEP Energy Concepts	Possible Classroom Activities	Resources Needed	Assessment
Electricity and Magnetism	Explain how electric current and magnets work together		<p>“Electric Motors and Generators” <a href="#">KEEP Activity Guide</a> p. 127 <i>Students build a model electric motor, experiment with magnetic induction, and investigate how motors and generators are used to meet many of the energy needs of modern society.</i></p> <p>“Fuel that Power Plant” p. 137-141 in <a href="#">KEEP Activity Guide</a> – <i>Students use mapping skills to locate Wisconsin’s major electric power plants and their fuel supply routes, and also to investigate why</i></p>	Teachers are already familiar and utilize the “Magnets and Motors” unit available from The Einstein Project.	



			<p><i>modern power plants are located next to bodies of water.</i></p> <p><a href="#"><u>Electroworks Unit</u></a> - <i>Hands-on explorations into the basic concepts of magnets, electromagnets, batteries, electricity, and circuits.</i></p>		
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<p>Forces, Energy and Motion</p>	<p>Apply Newton's three laws.</p> <p>Analyze the effects of gravitational forces.</p>	<ol style="list-style-type: none"> <li>1. Energy is the ability to organize or change matter or "the ability to do work".</li> <li>2. Energy exists in two main forms: potential energy (energy stored in matter) and kinetic energy (energy of motion). More specific forms of energy include thermal, elastic, electromagnetic (such as light, electrical, and magnetic energy), gravitational, chemical, and nuclear energy.</li> </ol>	<p><a href="#">R.E.A.C.T. – Renewable Energy Activities – Choices for Tomorrow</a> – teacher uses specific lessons to help students learn how Newton's three laws of motion are used to generate power.</p> <p>Activity #1 – Energy Detectives</p> <p>Activity #2 – Renew-a-Bean</p> <p>Activity #3 – Energy Conversions</p> <p>Activity #5 – How can we Generate Electricity?</p> <p>Activity #6 – wind energy</p> <p>Activity #7 – hydropower</p> <p>Activity #10 – solar energy</p>	<p><a href="#">Newton's Three Laws of Motion</a> – student created powerpoint that explains the laws of motion using visual techniques.</p> <p><a href="#">Newton's Laws</a> – Interactive intro to three laws</p>	
<p>Astronomy</p>	<p>Analyze the main components of the universe.</p>				

Animals	Classify animals based on characteristics and structures.				
Scientific Inquiry	Plan and conduct simple experiments using the scientific method.		<a href="#">Energy Fair Document</a>		

Energy Fair Alternative Participation (drama) <http://www.need.org/needpdf/Energy%20On%20Stage.pdf>

Energy Fair Alternative Participation (singing) <http://www.need.org/needpdf/Great%20Energy%20Rock%20Performances.pdf>

Created by Howard-Suamico School District K-12 Energy Education Committee provided by a KEEP grant, 2009-2010

Grade 7 Curricular Framework

Key concept	Activities— classroom connections	Site connections— use of building	Alignment with district standards	Alignment with 21 <sup>st</sup> Century Skills	Assessment	Resources
<p>2. Energy exists in two main forms: potential energy (energy stored in matter) and kinetic energy (energy of motion). More specific forms of energy include thermal, elastic, <b>electromagnetic (such as light, electrical, and magnetic energy)</b>, gravitational, chemical, and nuclear energy.</p> <p>5. <b>Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth.</b> The two ways that energy can be transferred are by doing work (such as pushing an object) and by <b>transferring heat (conduction, convection, and radiation).</b></p>	<p><b>Light Savers page 45</b></p>	<p>Classroom (Light sources: overhead lights, flashlight, computer monitor, windows allowing natural lighting, candle) and other sources of light (exit signs, cell phone, clock, desk lamp, fireflies, fireworks, glow-in-the-dark paint)</p>	<p>Investigate how electromagnetic and mechanical waves impact our lives.</p>	<p>Students will D. communicate clearly</p>	<p>Responses to Light Savers Activity Sheet, discussion on how students could use more natural light. Use <a href="#">Think, Pair, Share</a> for the discussion.</p>	<p><i>Energy and Your School: KEEP Activity Guide</i></p>

2. 5.	Review: <a href="#">Energy in the Round-Solar</a>		Investigate how electromagnetic and mechanical waves impact our lives.	Students will D. communicate clearly	Subjective: Are students able to identify correct responses? Can students explain and reach an agreement on responses that are initially in disagreement?	
2. 5.	<b>Lab:</b> <a href="#">Solar Distiller</a>	School grounds: sunny and shady areas	Investigate how electromagnetic and mechanical waves impact our lives.			
5. 25.11 Wind is air in motion and is produced by the unequal heating of Earth's surface by the sun.	<b>Lab:</b> <a href="#">Greenhouse Effect</a>		Analyze the relationship between weather/ climate and humans.			
25.11	Catch That Wind page 85		Analyze the relationship between weather/ climate and humans.	Students will A. think creatively and critically B. collaborate with others C. communicate clearly	Taken from lesson: Did students accurately organize career titles? Are students able to describe the steps of producing electricity from a wind farm? Can students identify the many career professionals needed in the development of an energy resource?	<i>Doable Renewables: KEEP Activity Guide</i>

<p>5. 25.11</p>	<p>Website: <a href="#">Heat transfer</a></p> <p>Spark: <a href="#">Spoon</a>, <a href="#">Spiral</a>, <a href="#">Balloon</a> <a href="#">Expansion</a>, <a href="#">and Penny</a> <a href="#">Experiment</a></p>		<p>Analyze the relationship between weather/ climate and humans.</p>	<p>Students will A. think creatively and critically</p>		
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Grade 8 Curricular Framework

Key concept	Activities— classroom connections	Site connections— use of building	Alignment with district standards	Alignment with 21 <sup>st</sup> Century Skills	Assessment	Resources
<p>5. Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth. The two ways that energy can be transferred are by doing work (such as pushing an object) and by transferring heat (conduction, convection, and radiation).</p>	<p><a href="#">Ice Cube Insulator</a></p>	<p>?? Connect to insulation in building and its purpose</p>	<p>Analyze the movement of energy and how best to utilize it.</p>	<p>Students will A. think creatively and critically D. communicate clearly</p>	<p>Construction of ice cube insulator, how well the insulator works</p>	

<p>5. 25. Certain energy resources are renewable because they can be replaced by natural processes quickly. Other energy resources are nonrenewable because they are either replaced very slowly or are not replaced at all by natural processes.</p>	<p>Let the Sun Shine In page 68</p>	<p>Classrooms or areas with windows facing N, NE, E, SE, S, SW, W, and NW: Connect to why rooms feel warmer/cooler during the various months of the year</p>	<p>Analyze the movement of energy and how best to utilize it.</p>	<p>Students will B. practice citizenship and personal responsibility (connect themselves and their learning to the real world) C. collaborate with others D. communicate clearly</p> <p>Note: Possible combine with math and/or social studies (latitude, compass use, measuring and calculating area)</p>	<p>Discussion, Data Tables, and (question from lesson): Can they list factors that influence solar heat gain?</p>	<p>Doable Renewables KEEP Activity Guide</p>
<p>25.</p>	<p>Over the Years page 47</p>		<p>Analyze the movement of energy and how best to utilize it.</p>	<p>Students will A. think creatively and critically B. collaborate with others C. communicate clearly</p>	<p>Taken from lesson: Did students recognize that solar energy has a long history of use by humans? Were students able to explain examples of solar energy use through time?</p>	<p>Doable Renewables: KEEP Activity Guide</p>



<p>10. Energy flows through and is stored within a variety of nonliving systems.</p>	<p>Seeking Inhabitable Schools page 29, and take class on a tour OR Classroom Energy Assessment page 246.</p>	<p>School: air handler, central cooling system, central heating system, chiller</p>	<p>Distinguish how matter changes</p> <p>Possibly: Evaluate the connection between living and non-living factors in our environment.</p>			
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HSSD K-8 Energy Education Scope and Sequence  
w/KEEP Focus Concepts

	KEEP Concept Focus
Kindergarten	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use. Energy in the form of sound waves.</p>
First Grade	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <p>35. The health and safety factors associated with energy development and use.</p> <p>36. The health and safety of Wisconsin citizens is related energy development and use.</p>
Second Grade	<p>12. Living systems use energy to grow, change, and maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>• Animals and other heterotrophs convert chemical energy in plants or in other animals to chemical energy they can use via cellular respiration</li> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul> <p>Energy use and definition of energy Definition of energy</p>
Third Grade	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.</p> <ul style="list-style-type: none"> <li>• Plants and other autotrophs convert solar energy to chemical energy via photosynthesis</li> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul> <p>25.9 Solar energy is the radiation from the sun that reaches Earth’s surface.</p> <p>19. Primary energy sources are those that are either found or stored in nature.</p> <ul style="list-style-type: none"> <li>• The sun is the primary energy source and the principal source of Earth’s energy. Energy from the sun is stored in other primary</li> </ul>

	<p>energy sources such as coal, oil, natural gas, and biomass (such as wood). Solar energy is also responsible for energy in the wind and in the water cycle (the hydrologic cycle).</p> <p>28. Wisconsin has primary energy sources.</p> <p>29. Most of the energy resources currently used in Wisconsin are fossil and nuclear fuels, all of which are imported into the state. Other resources used in WI include biomass, hydropower, solar energy, and wind, all of which are renewable and can be found within the state</p>
Fourth Grade	<p>11. Living systems use energy to grow, change, maintain health, move, and reproduce.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health-nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul> <p>79. New energy resources, new ways of managing energy resources, and new energy technologies will be developed in the future.</p> <p>28. Supply and demand influence energy resource discovery, development, and use. The supply and demand for an energy resource is determined by resource availability, level of technological development, and societal factors such as lifestyle, health and safety, economics, politics, and culture.</p> <p>***energy consumption</p>
Fifth Grade	<p>13.Ecosystems use energy to maintain biogeochemical cycles – such as the sedimentary, gaseous, and hydrologic cycles- between living and nonliving systems.</p> <p>14.Ecosystems are characterized by :</p> <ul style="list-style-type: none"> <li>• Types and characteristics of energy flows, such as food webs.</li> </ul> <p>11. Living systems use energy to grow, change, maintain health, move, and reproduce. Some of the energy acquired by living systems is stored for later use.</p> <ul style="list-style-type: none"> <li>• Energy is needed for maintaining the health – nutrition and the quality and quantity of food – of all organisms, including humans.</li> </ul> <p>5. Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth. The two ways that energy can be transferred are by doing work (such as pushing an object) and by transferring heat (conduction, convection and radiation).</p> <p>6. Energy can neither be created nor destroyed, it can only be converted from one form to another. This is the first law of</p>

	<p>thermodynamics. For example, the chemical energy stored in coal can be converted into thermal energy.</p> <p>7. With each energy conversion from one form to another, some of the energy becomes unavailable for further use. This is the second law of thermodynamics. For example, the thermal energy released by burning coal is eventually dispersed into the environment and cannot be used again.</p>
Sixth Grade	<p>1. Energy is the ability to organize or change matter or “the ability to do work”.</p> <p>2. Energy exists in two main forms: potential energy (energy stored in matter) and kinetic energy (energy of motion). More specific forms of energy include thermal, elastic, electromagnetic (such as light, electrical, and magnetic energy), gravitational, chemical, and nuclear energy.</p>
Seventh Grade	<p>2. Energy exists in two main forms: potential energy (energy stored in matter) and kinetic energy (energy of motion). More specific forms of energy include thermal, elastic, <b>electromagnetic (such as light, electrical, and magnetic energy)</b>, gravitational, chemical, and nuclear energy.</p> <p>5. <b>Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth.</b> The two ways that energy can be transferred are by doing work (such as pushing an object) and by <b>transferring heat (conduction, convection, and radiation).</b></p> <p>25.11 Wind is air in motion and is produced by the unequal heating of Earth’s surface by the sun</p>
Eighth Grade	<p>5. Energy can be transferred from one location to another, as in when the sun’s energy travels through space to Earth. The two ways that energy can be transferred are by doing work (such as pushing an object) and by transferring heat (conduction, convection, and radiation).</p> <p>25. Certain energy resources are renewable because they can be replaced by natural processes quickly. Other energy resources are nonrenewable because they are either replaced very slowly or are not replaced at all by natural processes.</p> <p>10. Energy flows through and is stored within a variety of nonliving systems.</p>

Howard-Suamico Energy Education Scope and Sequence  
w/21<sup>st</sup> Century Skill Focus

	Conservation/Efficiency (Project-Base Learning) All materials published by the NEED Project – www.NEED.org)	Materials Needed	Subject Integration
Kindergarten	<a href="#">Saving Energy at Home and School</a> – teacher’s guide ***Focus on home energy usage <a href="#">Student/Family Guide</a>	-1 class set of student/family guides (available online) -cellulose fabric -Compact fluorescent lightbulb -Kill-a-Watt Monitor -See page 5 of guide for other common materials needed	Science Social Studies Language Arts Technology
First Grade	<a href="#">Saving Energy at Home and School</a> – teacher’s guide ***Focus on school energy usage <a href="#">Student/Family Guide</a>	-1 class set of student/family guides (available online) -cellulose fabric -Compact fluorescent lightbulb -Kill-a-Watt Monitor -See page 5 of guide for other common materials needed	Science Social Studies Language Arts Technology
Second Grade	<a href="#">Saving Energy “Building Buddies” – Teacher’s Guide</a>  <a href="#">Student Guide</a>	- 1 class set of student guides (available online) *see p. 3 for other common materials needed	Science Social Studies Math Language Arts Technology

Third Grade	<a href="#">Today in Energy</a>	-1 set “Today in Energy” activity sheet for each student -Ten Energy Bucks for each student	Science Social Studies Math Language Arts
Fourth Grade	<a href="#">Saving Energy “Monitoring and Mentoring”</a> – teacher’s guide <a href="#">Student Guide</a>	Monitoring & Mentoring Kit (\$350.00) *see page 3 of teacher’s guide for details.	Science Social Studies Math Language Arts Technology
Fifth Grade  **depending on how teachers decide to infuse energy ed with the ecosystems unit will affect the KEEP concepts focused on	<a href="#">Saving Energy “Monitoring and Mentoring”</a> – teacher’s guide <a href="#">Student Guide</a> ***Intentional replication of activity. All students in district transfer to Intermediate School and information will be different from fourth grade experience.	Monitoring & Mentoring Kit (\$350.00) *see page 3 of teacher’s guide for details.	Science Social Studies Math Language Arts Technology
Sixth Grade	<a href="#">Saving Energy – Learning/Conserving</a> – teacher’s guide <a href="#">Student Guide</a>	-1 class set of student guides (online) -2 lamps -2 Kill-A-Watt Monitors -1 Light Meter -1 Flicker Checker -1 waterproof digital thermometer *see p.3 in teacher’s guide for other common materials	Science Social Studies Math Language Arts Technology

Seventh Grade	<a href="#">Saving Energy – Learning/Conserving</a> – teacher’s guide <a href="#">Student Guide</a> ****Intentional replication of activities due to all students moving to new facility for middle school.	-1 class set of student guides (online) -2 lamps -2 Kill-A-Watt Monitors -1 Light Meter -1 Flicker Checker -1 waterproof digital thermometer *see p.3 in teacher’s guide for other common materials	Science Social Studies Math Language Arts Technology
Eighth Grade	To Be Determined?		



**Staff Development Plan**

KEEP Course(s)	Staff Members & Grade Level
School Building Energy Efficiency Education	Marylu Sachs – K & 1 <sup>st</sup> Nick Maricque – 4 <sup>th</sup> Bonnie Koeller -5 <sup>th</sup> Kim Lemberger – 6th Mona Forbes – 7th Mike Phillips – high school Keith Schroeder – high school
Doable Renewables: Renewable Energy Education in the Classroom	Bonnie Koeller -5 <sup>th</sup> Mona Forbes – 7 <sup>th</sup>
Electrathon	Mike Phillips- High School Technology Education
Exploring Renewable Energy at the Energy Fair	Mona Forbes – 7 <sup>th</sup> grade
Renewable Energy Education Online	Bonnie Koeller – 5 <sup>th</sup> grade Mona Forbes – 7 <sup>th</sup> grade

A very small percentage of HSSD teaching staff, outside the K-12 Energy Education Committee, has taken courses offered by KEEP or other professional development opportunities that deal with energy education (NEED, Project Learning Tree, LEAF, etc.). Many, especially at the elementary level, don't have a strong background in teaching science. Staff development for teachers at the elementary will be focused on raising their awareness of energy use in their building, gaining knowledge of energy education content that will be infused in their existing science curriculum, and nurturing their comfort level in utilizing the school building as a teaching tool.

The same focus will also be used for the intermediate and middle school levels, however one of the outcomes of the education plan is for the students in grades 5-8 to be given an extra-curricular opportunity of participating in an energy/environmental science fair. Teachers who will be advising their students to enter the fair will be given an inservice to make them familiar with the energy/environmental content that will be expected, as well as resources available to them in helping their students succeed in entering the fair.

Due to the departmentalization of teaching at the high school, professional development will be more focused on educating them on the district's energy policy and their responsibilities in actively participating in energy conservation efforts. There is an environmental science class that teaches a lot of the energy content already, however this is an elective class for students. A few specialized departments, such as technology

education, have an invested interest in teaching energy education to students as well. Due to limited representation from this population of teachers, a more specific analysis of energy education content will need to be done. Perhaps, providing training in cross-curricular teaching may be beneficial to encouraging high school staff in collaborating on energy-specific projects with the students.

Upon the Energy Education Plan's approval from the Assistant Superintendent of Teaching and Learning, the members of the K-12 Energy Education Committee will provide professional development opportunities for all teachers in the district. The following opportunities already exist for professional development in HSSD:

- Professional Learning Academy – summer
- Summer Instructional Technology Academy (SITA), second week of August
- Inservice hours beyond the contract day
- Graduate credits (KEEP courses, etc.)
- Courses offered in the community (NWTC, UWGB, etc)
- Guest speakers (WPS, Discovery World, Bay Beach Wildlife Sanctuary, etc.)

### **Involving building occupants**

Office Staff – Members of the district energy committee will conduct brief personal interviews with each building's office staff to identify how they feel energy is being wasted and be asked to suggest ways of improving the energy efficiency of the office. They may need to be made aware of phantom loads, devices that have automatic shut-off programs need to be set for appropriate times, security cameras, and to empower office personnel to have motion sensors set for appropriate time limits. Efforts will be made to solicit a representative from this audience to participate in the district energy committee.

Building Rental Occupants - Add provisions to the contract and/or use of facilities form indicating the requirements for using building during non-school hours (weekends and evenings). Some things that will be included in the information will be:

- a. turning off all lights,
- b. turning off computers and monitors,
- c. turning off ceiling fans,
- d. not propping doors open,
- e. turning off LCD and SMARTBoards when not in use

## **Part 4: Monitoring & Reporting**

### **Energy Management Monitoring and Reporting**

The baseline for monitoring efforts was the 2009-2010 school year. The Administrative Assistant to the Facilities Manager uses a computer program (EPA Portfolio Manager) to input and track all data pertaining to monthly and yearly utility bills. These are reviewed regularly with the Facilities Manager, District's Electrician, and Superintendent of Business and Information Services and shared with the Administrative Cabinet members and school board once a year.

The District's Assistant Superintendent of Business and Information Services and the Facilities Manager will be responsible for comparing future utility bills to the baseline data. They will be monitoring the KWH and therms used on a monthly basis with a more thorough review at one time during the year to identify patterns of improvement and areas in need of improvement. Results of the energy analysis will be shared with the administrative cabinet members and school board once a year via a presentation.

The Superintendent of the district and the Assistant Superintendent of Business and Information Services will give presentations to each building concerning the budgetary process for the upcoming school year during staff meetings in January. The results of the energy analysis will be shared with staff and the public via publication on the district's energy webpage.

The Instructional Technology (IT) Department will provide a report to building principals of the number of computers left on after hours on a monthly basis via email. Building principals will be expected to share this information with their staff during monthly meetings. The IT department will also address habitual negligence in shutting down computer labs with the appropriate staff on an as needed basis. Recognition will be given to buildings who have the most number of computers shut down on a quarterly basis.

### **Energy Education Monitoring and Reporting**

Teacher representative(s) from the District Energy Committee will be responsible for gathering feedback from district staff regarding their energy education activities as stated in the curricular framework annually via electronic survey. The results will be shared with the District Energy Committee and staff district-wide through email. It will also be posted on the district's energy website.

4-5 questions will be given at the end of 8<sup>th</sup> grade to all students asking them to tell what energy is, ways to conserve it, etc. Student responses will be given to the K-12 Energy Education Committee Members to analyze and write a report of the effectiveness of the energy education curriculum. HSSD teaching staff will receive the results of the analysis from the Superintendent or building principal during the beginning of the year inservice.

## **Part 5: Sustaining Energy Initiatives**

### **Implementation of Building Management**

After the school board approved the district's energy policy in April 2009, the Facilities Manager gave presentations to each of the building's staff meetings held in May 2009. Copies of the policy were distributed and discussed with highlighted parts that directly impact the classroom teachers. Meetings were also held with the different organizations that would be utilizing the district buildings (summer basketball league, athletic department, community groups, etc.) to inform them of the changes that would be taking place with the cooling and heating of the facilities. The District Energy Committee (combination of district administrators, support staff, teachers and community members) continues to meet on a quarterly basis to discuss projects that have been implemented, as well as future projects that will be taking place in the next five years. Meetings are held on a Friday morning from 8:00-9:15 am, to limit the amount of release time needed for the custodial and teaching staff from their usual responsibilities.

### **Implementation of Education Plan**

First, we need to get approval and work out logistics of curricular framework with Assistant Superintendent of Teaching and Learning. Upon getting approval of the content, permission to pilot the plan in one elementary building will need to be given. Building principals will be asked to consider piloting the plan in their elementary school during the 2011-12 school year.

All district teachers will have an opportunity to attend the August 2011 summer institute for learning, sponsored by the HSSD, in which an introduction to project-based learning will be offered. Additional professional development will be available for teachers at the summer institute to connect their understanding of project-based learning to energy education content as stated in the curricular framework. It will be requested that teachers who pilot the plan be given non-teaching time to receive support and provide feedback on the energy education plan. Feedback will be given to the Energy Education Committee to determine effectiveness of the curricular framework. Modifications to the energy education plan will then be recommended if needed.

A presentation at a staff meeting or beginning-of-the-year inservice will be used to increase all building occupants' knowledge on energy use and conservation initiatives being undertaken. Information will be shared from the district's webpage of past accomplishments/savings and future projects. A representative from the facilities management department will be responsible for presenting the district energy policy with all staff.

A hurdle that will need to be addressed is that of funding the energy education plan. Costs for implementing the plan consists of purchasing materials and training teachers to use them. Given the district's budget has limited money available for adding something

new to the curriculum, outside funding for materials will need to be sought. Sources for possible funding include the following: a percentage of each building's science money for materials, applying for grants (WEEB, KEEP, etc.), community donations (ie. Parent Club), business sponsorship, and the Howard-Suamico Education Foundation.

Part 6: Appendix

- A) Energy Audit Report(s)
- B) District Energy Committee Minutes 2009-2010
- C) K-12 Energy Education Committee Minutes (2009-present)
- D) HSSD 21<sup>st</sup> Century Skills Power Standards
- E) KEEP Grant Acceptance Agreement

# Energy Audit Reports

May 22, 2009

Howard-Suamico School District  
C/o Ken Baran-Facilities Manager  
2700 Lineville Rd.  
Green Bay, WI 54313

Dear Ken:

On May 12<sup>th</sup> and 13<sup>th</sup> we conducted an energy audit of your facilities. I have made several recommendations that have potential savings in the attached reports. The recommendations are qualified with a high/medium/low rating that indicates the potential payback of each item.

Implementation grants from Focus on Energy are available to help offset the cost of upgrading to high efficiency equipment and systems. Feasibility study grants are also available to help pay for an in-depth engineering analysis of areas of your facility that warrant it. These grants must be applied for before a financial commitment is made by your organization to do the project. Please contact me ahead of time if you are considering doing an energy conservation project.

Should you have any questions about this report or any other energy related items please don't hesitate to call me. Thank you for working with Focus on Energy.

Sincerely,

Scott A. Jones  
Energy Advisor  
Focus on Energy  
Schools and Government Program  
1820 E. Marquette St.  
Appleton, WI 54911  
(888) 947-8522





# Howard Suamico School District

## Summary Sheet

### Organization Contact Information

Name	Address	City/State/Zip
Howard Suamico School District	2700 Lineville Rd	Green Bay WI 54313

Contact Name	Title	Phone	Email
Ken Baran	Facility Manager	Phone: 920-662-7705 Fax: 920-662-9777	kennbara@hssd.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:** Howard Suamico School District  
**Address:** 2700 Lineville Rd, Green Bay, WI 54313  
**Square Footage:** 141,456  
**Year Built:** 1972  
**Hours of Operation/Yr:** 3,024

### Energy Profile

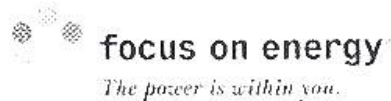
Block & Brick

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
<b>Electric:</b> Wisconsin Public Service Corp.	1144500			\$114,500.00		
<b>Gas:</b> Wisconsin Public Service Corp.			68555			\$68,555.00

### Comments

On Wednesday, May 13th, we identified the following energy saving opportunities:

- Replace existing boilers with condensing hot water.
- Investigate upgrading the pneumatic controls to digital.
- Watch building HVAC schedules closely and make adjustments at least twice a year.
- Get a pool cover.
- Install a VFD on the pool pump and open the valve to 100%.
- Close the doors to classrooms, and pools. Different environments have different heating/cooling needs.
- Replace computer CRT monitors with LCD.
- Make sure set back temperatures are 55/85 degrees for heating and cooling seasons.
- When school ends for the year, make sure HVAC systems are shut down.



## Project Technical Summary

After reviewing Howard Suamico School District 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. Maximize economizer cycle before using a/c.	High
<p>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.</p>			
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. This should be done at least twice a year.	High
<p>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.</p>			
4	Custom Boiler Replacement	Custom Boiler Replacement	High
<p>Replace existing Kewaunee boilers with condensing hot water boilers.</p>			
5	Door Thresholds	Replace the door thresholds and/or sweeps.	High
<p>Door thresholds can trap airflow and reduce infiltration. Replacing thresholds and/or sweeps when they wear out will improve comfort levels and save energy.</p>			
6	Energy Management System	Install an energy management system. Upgrade pneumatic controls to digital.	High
<p>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.</p>			
7	Hot Water Setback	Reduce the boiler set point temperature when the system is not in use	High
<p>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.</p>			
8	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces	High
<p>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.</p>			
9	PC Network Energy Management	PC Network Energy Management	High
10	Pool Cover	Install an automatic pool cover.	High
<p>Pool covers offer insulation as well as a barrier to reduce heat loss and evaporation, thereby saving energy and water waste. By installing a cover, pool maintenance staff ensure the pool is properly protected at all times. Also, as pool water evaporates, the chemicals in the water flow into the atmosphere and can damage areas around the pool. In indoor pool areas, this damage is in the form of corrosion on many interior steel structure surfaces. Damage also occurs in the form of water stains caused by condensation during the winter months.</p>			
11	VFD - Pool Pump	Install variable frequency drive on pool pump motor	High
12	Solar-Thermal	Heat generating solar	Medium
<p>Heat generating solar could be used to heat the pool in the summer.</p>			



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# Howard Suamico School District

## Summary Sheet

### Organization Contact Information

Name	Address	City/State/Zip
Howard Suamico School District	2700 Lineville Rd	Green Bay WI 54313

Contact Name	Title	Phone	Email
Ken Baran	Facility Manager	920-662-7705 920-662-9777	kennbara@hssd.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:** Forest Glen Elementary  
**Address:** 1935 Cardinal Ln, Green Bay, WI 54313  
**Square Footage:** 79,468  
**Year Built:** 1990  
**Hours of Operation/Yr:** 2,700

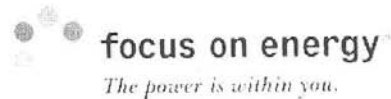
### Energy Profile

This building is operating at \$.86 per square foot (2003 data).

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
Electric: Wisconsin Public Service Corp.	690000	350		\$69,000.00		
Gas: Wisconsin Public Service Corp.			31000			\$31,000.00

### Comments

- On Tuesday, May 12th we identified the following energy saving opportunities:
- Take a look at converting to digital controls. This will make it easier to adjust building schedules and temperatures. The schedules should be adjusted at least twice a year for heating and cooling seasons. Set back temperatures should be 55/85 degrees winter and summer respectively.
  - Make sure vestibules and unoccupied spaces are kept at 55 degrees during the heating season
  - Take a look at using motion sensors to operate the gym air handler.
  - Install a condensing hot water boiler for shoulder months, nights and weekends.
  - Maximize the economizer cycle to postpone the a/c operation.
  - Perform a walkthrough after school to ensure that HVAC systems are off for the summer.



## Project Technical Summary

After reviewing Forest Glen Elementary 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. Maximize the benefits of this operation.	High
<p>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.</p>			
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. This should be adjusted at least twice a year.	High
<p>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.</p>			
4	Custom HVAC Measure	Use motion sensor to control air handler in gym.	High
5	Door Thresholds	Replace the door thresholds and/or sweeps.	High
<p>Door thresholds can trap airflow and reduce infiltration. Replacing thresholds and/or sweeps when they wear out will improve comfort levels and save energy.</p>			
6	Energy Management System	Install an energy management system.	High
<p>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.</p>			
7	Hot Water Setback	Reduce the boiler set point temperature when the system is not in use	High
<p>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.</p>			
8	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces	High
<p>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.</p>			
9	Custom Boiler Replacement	Custom Boiler Replacement	Medium
<p>Install a condensing hot water boiler for heating during shoulder months, nights and weekends.</p>			
10	Custom Hot Water Measure	Custom Hot Water Measure	Medium
<p>Put a timer on the booster heater so it goes off after hours.</p>			



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# Howard Suamico School District

## Summary Sheet

### Organization Contact Information

Name	Address	City/State/Zip
Howard Suamico School District	2700 Lineville Rd	Green Bay WI 54313

Contact Name	Title	Phone:	Email
Ken Baran	Facility Manager	920-662-7705 Fax: 920-662-9777	kennbara@hssd.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:** Meadowbrook Elementary  
**Address:** 720 Hillcrest Hts, Green Bay, WI 54313  
**Square Footage:** 61,439  
**Year Built:** 1976  
**Hours of Operation/Yr:** 2,520

### Energy Profile

Block & Brick

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
<b>Electric:</b> Wisconsin Public Service Corp.	308080			\$30,800.00		
<b>Gas:</b> Wisconsin Public Service Corp.			18004			\$18,000.00

### Comments

- On Wednesday, May 13th we identified the following energy saving opportunities:
- Add a condensing boiler to allow reset/cutout controls and minimum hot water temperatures.
  - Make sure set back temperatures are 55/85 degrees for the heating and cooling season, respectively.
  - Make sure the building management schedules are up to date and make seasonal adjustments.
  - Control gym air handlers with motion sensors.



## Project Technical Summary

After reviewing Meadowbrook Elementary 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 Boiler Controls-Outside Air Reset/Cutout	Install a hot water reset/cutout control on the boiler system	High
2 Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems. This should be done at least twice a year.	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.		
3 Custom Boiler Replacement	Custom Boiler Replacement	High
Add a condensing boiler with reset/cutout controls.		
4 Door Thresholds	Replace the door thresholds and/or sweeps.	High
Door thresholds can trap airflow and reduce infiltration. Replacing thresholds and/or sweeps when they wear out will improve comfort levels and save energy.		
5 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.		
6 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.		





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# Howard Suamico School District

## Summary Sheet

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Howard Suamico School District	2700 Lineville Rd	Green Bay WI 54313

Contact Name	Title	Phone	Email
Ken Baran	Facility Manager	Phone: 920-662-7705 Fax: 920-662-9777	kennbara@hssd.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:** Howard Elementary  
**Address:** 631 W Idlewild Ct, Green Bay, WI 54303  
**Square Footage:** 32,000  
**Year Built:** 1965  
**Hours of Operation/Yr:** 2,520

### Energy Profile

Block & Brick

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
Electric: Wisconsin Public Service Corp.	186240			\$18,600.00		
Gas: Wisconsin Public Service Corp.			17058.8			\$17,000.00

### Comments

On Wednesday, May 13th we found the following energy saving opportunities:  
 -Watch the energy management system schedules and make seasonal adjustments as appropriate.  
 -Make sure set back temperatures are at 55 degrees for the heating season.  
 -Evaluate controlling air handlers in gyms with motion sensors.  
 -Even though lights have motion controls, only use them when needed ie: cafeteria.



### Project Technical Summary

After reviewing Howard Elementary 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	Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems.	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.			
2	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.			
3	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.			



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Contact Name	Title	Phone	Email
Ken Baran	Facility Manager	Phone: 920-662-7705 Fax: 920-662-9777	kennbara@hssd.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:** Bay Port High School  
**Address:** 2710 Lineville Rd, Green Bay, WI 54313  
**Square Footage:** 356,535  
**Year Built:** 2003  
**Hours of Operation/Yr:** 4,200

### Energy Profile

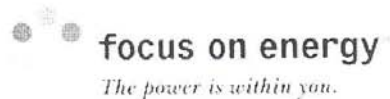
Block, brick and metal frame

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
<b>Electric:</b> Wisconsin Public Service Corp.	3000000	1100		\$300,000.00		
<b>Gas:</b> Wisconsin Public Service Corp.			175000			\$175,000.00

### Comments

On Tuesday, May 11th, we walked through Bayport HS to identify the following energy saving opportunities

- Install condensing hot water boiler to operate during the shoulder months and summers, if required. The existing boilers seem to operate at part load conditions, which make them less efficient.
- Invest in a feasibility study that evaluates the economics of using a cold storage system to cool the building. The existing chiller may be large enough to operate off peak, with a storage system. As a result, significant demand charges may be saved.
- Also evaluate the possibility of installing a smaller chiller to handle cooling loads during shoulder months.
- Install motion sensors in the auditorium, weight room, wrestling area to operate lighting and ventilation systems when occupied.
- Program more aggressive set back schedules and temperatures for the air handlers.
- Look at the volume of fresh air coming into the commons area for the number of students occupying it.
- Take a look at installing daylighting sensors in the commons and library areas. If too expensive, train operators to leave lights off when the sun shines.
- Take a look at how the combustion air feeds the hot water heater. Instead of taking air directly from outside, take it from the ceiling area of the mechanical room. Preheated combustion air saves money.
- Since two air handlers serve the field house, program them as lead/lag.



## Project Technical Summary

After reviewing Bay Port High School 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. Maximize the economizer cycle to pre-cool the school during the summer. Install enthalpy sensors to make sure that humidity levels are maintained.	High
<p>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.</p>			
2	Boiler Controls-Outside Air Reset/Cutout	Install a hot water reset/cutout control on the boiler system	High
<p>Make sure this control has aggressive settings for outdoor temperatures.</p>			
3	Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems. This should be done at least twice a year. Unoccupied temperatures should be 55/85 for winter and summer respectively.	High
<p>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.</p>			
4	Chiller Optimization Controls	Chiller Optimization Controls should be evaluated.	High
<p>Because the chiller is so big for the buildings summer needs, evaluate the economic feasibility of three options:                      -Purchase a smaller chiller to handle summer shoulder months.                      -Study the possibility of using chilled water storage for cooling needs                      -Study the feasibility of ice storage.                      The existing chiller may be able to supply all the building's cooling needs off peak with storage. This could save considerable demand charges.</p>			
5	Custom Boiler Replacement	Custom Boiler Replacement	High
<p>Install a smaller condensing boiler for use during shoulder months and nights/weekends.</p>			
6	Custom HVAC Measure	Install motion sensors in the weight room, wrestling area, auditorium areas to operate the air handlers when occupied.	High
7	Dedicated Boiler	Install a small condensing boiler to provide water heating during the summer months.	High
<p>As temperatures warm in the spring, schools require less heat from their boiler units. However, when boilers are not running at peak capacity, their efficiency levels drop. When large boilers are used for summertime hot water heating, efficiencies drop even more. In fact, they can use twice as much energy during summer months as other water heating systems. Facilities should consider installing small boilers to meet these summer hot water needs. These small units offer higher combustion efficiencies, can increase system efficiencies, and represent a much more energy-efficient solution.</p>			
8	Door Thresholds	Replace the door thresholds and/or sweeps.	High
<p>Door thresholds can trap airflow and reduce infiltration. Replacing thresholds and/or sweeps when they wear out will improve comfort levels and save energy.</p>			
9	Hot Water Setback	Reduce the boiler set point temperature when the system is not in use, especially during the summer months.	High
<p>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.</p>			
10	Large Space Air Management	Install controls to control outside air based on occupancy in applicable areas.	High
<p>This should be done in the commons/cafeteria area that is usually not at capacity.</p>			
11	Large Space Air Management	Install controls to control outside air based on occupancy in the gyms.	High
<p>Because there are two air handlers serving the gym, you may be able to program them to operate as lead/lag.</p>			



**focus on energy**

*The power is within you.*



12	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces to 55 degrees.	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.			
13	Daylighting Controls	Install automatic daylighting controls near the windows to control lighting operations. This could be done in the commons and library areas.	Medium
"Daylighting" refers to the use of natural light to illuminate a space, instead of electric-powered fixtures. In many spaces, sunshine fills the area with natural light and overpowers the light supplied by light fixtures. Many times these fixtures will not be turned off, even when they are not needed. This situation wastes energy unnecessarily. If a space offers good daylighting, several options can be used to reduce electric light use when not needed. The most obvious option is human intervention: simply turn off the lights. Dimming ballasts and lamps and interior photocells will automatically control the lights and may offer a more reliable option. Daylighting is "free"; taking advantage of it will decrease utility bills as well as long-term equipment and maintenance costs.			
14	DHW Temp Reduction	Reduce domestic hot water temperature for the summer.	Medium
Reducing hot water temperature is an easy way to reduce energy costs for most non-food service uses. Tests should be conducted to measure hot water temperature and if water temperatures measure 100 degrees or higher, reduce the temperature.			
15	Flue Dampers	Install flue air dampers on water heaters. Take a look at taking combustion air from the ceiling rather than from outside. This could save 2-5 percent on combustion efficiency.	Medium
Flue dampers help slow the heat escape from a domestic water heater's water tank as well as the boiler room. Flue dampers will automatically close when the water heater is not operating, trapping the heat. This action will keep the hot water in the tank warmer and reduce energy costs.			
16	PC Network Energy Management	PC Network Energy Management	Medium



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# Howard Suamico School District

## Summary Sheet

### Organization Contact Information

Name	Address	City/State/Zip
Howard Suamico School District	2700 Lineville Rd	Green Bay WI 54313

Contact Name	Title	Phone:	Email
Ken Baran	Facility Manager	920-662-7705 Fax: 920-662-9777	kennbara@hssd.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:** Bay View Middle School  
**Address:** 1217 Cardinal Ln, Green Bay, WI 54313  
**Square Footage:** 276,340  
**Year Built:** 1963  
**Hours of Operation/Yr:** 4,420

### Energy Profile

Block & Brick

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
Electric: Wisconsin Public Service Corp.	1224720			\$122,472.00		
Gas: Wisconsin Public Service Corp.			662623			\$66,263.00

### Comments

- On Wednesday, May 13th we identified the following energy saving opportunities:
- Take a look at replacing one of the Kewaunee boilers with a condensing boiler.
  - Consider replacing the pneumatic controls with digital.
  - Watch building schedules and adjust them at least twice a year.
  - Where possible tie motion sensors to gym air handlers.
  - Common areas where students eat lunch have lights on well before lunch occurs. Only use the lights you need for as long as you need them.
  - When school takes a break for summer, make sure HVAC systems are shut down.



## Project Technical Summary

After reviewing Bay View Middle School 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	Boiler Controls-Outside Air Reset/Cutout	Install a hot water reset/cutout control on the boiler system	High
<p>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.</p>			
2	Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems. This should be done at least twice a year. Make sure set back temperatures are at 55 degrees during heating season.	High
3	Custom Boiler Replacement	Custom Boiler Replacement	High
<p>Replace one of the Kewaunee boilers with a condensinig hot water boiler with reset/cutout controls.</p>			
4	Custom HVAC Measure	Use motion sensors in gyms to operate air handlers.	High
5	Energy Management System	Install an energy management system. Upgrade pneumatic controls to digital. This will make scheduling easier.	High
<p>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.</p>			
6	Hot Water Setback	Reduce the boiler set point temperature when the system is not in use	High
<p>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.</p>			
7	Minimum Temp Setting	Maintain minimum temperatures in unoccupied spaces	High
<p>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.</p>			



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

### Building Description

<b>Building Name:</b> Suamico Elementary
<b>Address:</b> 2153 School Ln, Green Bay, WI 54313
<b>Square Footage:</b> 64,318
<b>Year Built:</b> 1954
<b>Hours of Operation/Yr:</b> 2,520

### Energy Profile

Block & Brick

Utility Company or Companies	Annual Consumption			Annual Cost		
	Electricity	Electric Demand	Natural Gas	Electricity	Electric Demand	Natural Gas
<b>Electric:</b> Wisconsin Public Service Corp.	400000	130		\$40,000.00		
<b>Gas:</b> Wisconsin Public Service Corp.			27000			\$27,000.00

### Comments

On Tuesday, May 12th we identified the following energy saving opportunities:

- Convert from pneumatic to digital controls. This will make HVAC scheduling much easier.
- Make sure the pneumatic controls set building temperatures to 55 degrees at night.
- Replace the older Kewaunee boiler with a condensing boiler with reset/cutout controls.
- Install reset cutout controls for the boilers.
- Take a look at daylighting controls for the library.



After reviewing Suamico Elementary 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	Boiler Controls-Outside Air Reset/Cutout	Install a hot water reset/cutout control on the boiler system	High
2	Building Scheduling	Adjust the occupied/unoccupied schedule for the various air handling systems. The existing clocks were either not working or the time was off by over an hour.	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.			
3	Custom Boiler Replacement	Custom Boiler Replacement	High
Replace the older Kewaunee boiler with a condensing boiler.			
4	Energy Management System	Install an energy management system.	High
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.			
5	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.			
6	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.			
7	Daylighting Controls	Install automatic daylighting controls near the windows to control lighting operations. Take a look at this in the library.	Medium
"Daylighting" refers to the use of natural light to illuminate a space, instead of electric-powered fixtures. In many spaces, sunshine fills the area with natural light and overpowers the light supplied by light fixtures. Many times these fixtures will not be turned off, even when they are not needed. This situation wastes energy unnecessarily. If a space offers good daylighting, several options can be used to reduce electric light use when not needed. The most obvious option is human intervention: simply turn off the lights. Dimming ballasts and lamps and interior photocells will automatically control the lights and may offer a more reliable option. Daylighting is "free"; taking advantage of it will decrease utility bills as well as long-term equipment and maintenance costs.			



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# District Energy Committee Minutes 2008-2010





1. Make a commitment to improve energy efficiency by 10 percent or more;
  2. Measure and track the energy performance of our organization's facilities where possible. Tools are available through the EPA Energy Star program at no cost;
  3. Develop and implement a plan consistent with the Energy Star Energy Management Guidelines to achieve energy savings;
  4. Educate staff and community members about energy efficiency.
- Jim DeBaker ran down a list of some of the projects that have been undertaken already in the district as well as some potential projects that may impart energy savings. A detailed list will be provided at the next meeting.
  - Scott Jones talked about the Green Bay School District's Energy Conservation Committee which had its first meeting in March 2004. They have been working on energy conservation for over 20 years. The Green Bay School District has a staff person devoted to this initiative and they provide monthly energy figures to each facility. Scott talked about an educational course (Practical Energy Management) available through Focus on Energy and one through UW Stevens Point.
  - Scott Jones indicated the following guidelines for starters:
    1. Put together the benchmarking for each district building;
    2. Develop Energy Management Guidelines to be approved by Board of Education;
    3. Need energy champion for each building (they could possibly be part of the committee);
    4. Plot building energy levels monthly to share with each building;
    5. Need buy-in from staff, students and community;
    6. Need to come up with positive reinforcement – educate and encourage – maximize what we have and continue to foster ideas (i.e., maybe start with a kick-off, educate champions, publicize what district is doing, possible awards/rewards)
  - Jim DeBaker and Nancy Reynolds attended a Green Bay School District Energy Conservation Committee Meeting. They shared with us their Energy Committee Goals, their Energy Management Board Policy and Request for Exemption from the Board Approved Energy Policy.

- Ken Baran, Jim DeBaker and Nancy Reynolds are partaking of three webinars provided by the U.S. Green Building Council – Energy Efficiency Strategies for Schools. They are:
  1. November 6, 2008 – Top 10 No-Cost Ways to Lower Your School’s Utility Bills;
  2. December 3, 2008 – Top 10 Low-Cost Ways to Lower Your School’s Utility Bills;
  3. January 21, 2008 – Top 10 Investments to Lower Your School’s Utility Bills.
  
- Prior to next meeting the following will be provided to all committee members:
  1. Gas and electric square footage/cost for each building;
  2. Meter reading dates for gas and electric meters for all buildings;
  3. Draft of HSSD energy policy.

The next meeting will be held on January 9, 2009 starting at 8:00 a.m. Meeting will be held at Bay View Middle School in Room 246.

**HOWARD SUAMICO SCHOOL DISTRICT  
GREEN BAY, WISCONSIN**

**ENERGY COMMITTEE MEETING MINUTES**

DATE: January 9, 2009  
8:00 a.m. – 9:30 a.m.

LOCATION: Bay View Middle School, BV Activity Room 246

RECORDER: Nancy Reynolds

PRESENT:	Ken Baran	Betty Zimdars
	Jim DeBaker	Gary Caelwaerts
	Lance VandenElzen	Yolanda Maricque
	Joe Wallander	Jeff Henkelmann
	Randy Johnson	Scott Jones
	Ryan Welnetz	Jerry Gitlewski

EXCUSED: Bob Gonzalez

- Ken called meeting to order and had everyone go around and introduce themselves as Ryan is new to our district this school year.
- Reviewed minutes – no changes or comments – minutes approved.
- Started review of Green Bay School District Energy Management policy as a starting point for the HSSD Energy Management policy.
- Cover page - Add language as to why we are doing this – encompass community, staff and student involvement as well as emphasize “green theme”.
- **A1 – GBASD Policy – Classroom thermostats will be set at 68 degrees for heating and 76 degrees for cooling during the occupied times. For unoccupied times, heating will be set at 55 degrees and cooling will not occur.**
- **A1 Discussion** - 68 heating – air conditioning 75-78; don’t want bands set to close per Jerry – discussion ensued on set points; every degree set back amounts to 3% savings for heating; cooling would not amount to as much in savings; if you monitor humidity levels; BP gym doors need to be closed in summer – hallways are not air conditioned at BP;
- **A2 – GBASD Policy – Auditorium thermostats will be set at 68 degrees for heating and 74 degrees for cooling during the occupied times. For unoccupied times, heating will be set at 55 degrees and cooling will not occur.**
- **A2 Discussion** – BP – 70 for heating (?) for air conditioning; what is minimum outside air set at for gyms and auditoriums (check how those areas are operating); refine how used in modes – maximize outside air – every CFM you bring in you pay to heat or cool – pay attention to outside air; can be applied to any large space with dedicated air handling – opportunity to save lots of money;
- **A3 – GBASD Policy – Hallways, vestibules, stairwells, mechanical/electrical rooms, elevator equipment rooms, unoccupied storage areas and similar spaces will be adjusted to 55 degrees during the heating season.**
- **A3 Discussion** – educate better to keep doors closed to hallways;
- **A4 – GBASD Policy – Locker and shower rooms will be maintained at 70 degrees during the heating season.**
- **A4 Discussion** – ok;
- **A5 – GBASD Policy – Gymnasiums, locker rooms, swimming pools, food service occupancies, mechanical/electrical rooms, unoccupied storage spaces, vehicle service and storage buildings, industrial/shop occupancies, utility buildings and similar areas will not be air conditioned.**

- **A5 Discussion** – set up gyms as separate item for heating and air conditioning in this policy; add rules – keep doors closed, educate coaches – locker rooms are not air conditioned at BP; summer air conditioning in BP gym – 78 was suggested (35% level with air handler is what is trying to be maintained) – load on chiller needs to be addressed; gyms except for public assemblies should not be air conditioned; set point in gym would take several days to lower when having a public assembly; train staff to expect less;
- **A6 – GBASD Policy – Operating schedules for the heating, ventilating, and air conditioning equipment will be optimized as follows:**
  - a. **For the heating season, the equipment will be started approximately one hour before classes start to allow the building to be at the occupied set point. The scheduled shut down time will be set the same as student release time.**
  - b. **For the cooling season, the equipment will be started 2 to 3 hours before classes start to allow the building to pre-cool.**
  - c. **For summer maintenance, only the air handling equipment will be operated. The scheduled time to run will be during the off peak rate hours.**
- **A6 Discussion** – With BP we have worked with WPS and Gary has worked on this; need to work on FG and BH (watch summer school usage and other summer building use); utilize cool nights to pre-cool with system – sub-cool would use fan from system); which buildings will be air conditioned in summer and which will not (add to policy); also which rooms can be used for meetings in summer(add to policy); force Marian and Leslie to BP; FG – look at usage for daycare in summer; look at air conditioning at HO and MB for summer; need to keep doors closed in summer in buildings with air conditioning; door closing policy (add to policy);
- **A7 – GBASD Policy – Economizer operation will be enabled for free cooling.**
- **A7 Discussion** – ok;
- **A8 – GBASD Policy – Economizer programs will be modified to allow for maximum free cooling for schools with building automation systems.**
- **A8 Discussion** – ok;
- **A9 – GBASD Policy – Fresh air minimum requirements will be reviewed and set to state code levels. (7.4 CFM/person)**
- **A9 Discussion** – 15 CFM for new buildings (will need to verify);
- **A10 – GBASD Policy – HVAC coil cleaning will be scheduled annually to assure the highest operating efficiency possible.**
- **A10 Discussion** – we do in summer if possible – need to look at having this done annually; we do unit ventilators in all buildings each year – individual heating coils also need to be done;
- **A11 – GBASD Policy – Air conditioning equipment will not be run in the November through April billing periods.**
- **A11 Discussion** – ok – do we want to specify if we have degree days over a certain degree – check on meter readings (Jeff H. has those – currently read toward the end of the month); automation systems based on outside temperatures; condensing units are based on outside temperatures – need lock out/tag out to eliminate compressors from automatically coming on; train staff to not expect because we have one warm day we’ll turn on air conditioning before units are scheduled to be turned on for season;
- **A12 – GBASD Policy – Air conditioning equipment operation will be optimized from May through October billing periods by starting the equipment before the peak demand electric rate is in effect. When possible, the air conditioning equipment will not be allowed to ramp up to 100% full load, which will help to lower the highest peak demands.**
- **A12 Discussion** – ok (we need to check where we are at for all buildings. – peak times are critical – need to optimize non-peak times for air conditioning); have Jeff put together some info regarding this so it can be presented to staff – Jeff willing to present information);

- **A13 – GBASD Policy – Window blinds will be adjusted, when and where appropriate, to allow the sun to warm the building during the heating season or to block out the sun during the cooling season.**
  - **A13 Discussion** – ok (we have informational placard posted in each room – Ken will be meeting with all building staff to explain about Energy Committee initiative and expectations;
  - **A14 – GBASD Policy – Windows will be kept closed if the air conditioning or heating systems are in operation.**
  - **A14 Discussion** – ok;
  - **A15 – GBASD Policy – Classroom doors will be kept closed.**
  - **A15 Discussion** – ok (address MB);
- 
- **A16 – GBASD Policy – Staff will not obstruct ventilation ducts or return grilles with books, charts, furniture, plants or any other objects or material.**
  - **A16 Discussion** – ok;
  - **A17 – GBASD Policy – Small group activities will not be scheduled in large areas such as auditoriums and gymnasiums. Use of such areas will be coordinated with the custodial staff to enable reduced lighting and heating during periods of non-use.**
  - **A17 Discussion** – ok (need to talk to building secretaries on using appropriate rooms when scheduling events in buildings based on size of event);
  - **A18 – GBASD Policy – Outdoor air minimum requirements for the HVAC system for the gyms, auditoriums, and commons will be optimized to the actual occupancy levels of the area.**
  - **A18 Discussion** – need to review this in our district as we are not sure how we are currently set up;
  - **A19 – GBASD Policy – Summer school classes will be scheduled in an area of the building that would be supplied from one HVAC unit.**
  - **A19 Discussion** – use areas that are scheduled to have air conditioning running; isolate to areas of building with dedicated air handlers for air conditioning if possible;
  - **A20 – GBASD Policy – Energy audits will be performed in the occupied and unoccupied conditions.**
  - **A20 Discussion** – ok;
  - **A21 – GBASD Policy – Buildings will be identified for HVAC energy improvement items.**
  - **A21 Discussion** – Ken & Jim reviewing this;
  - **A22 – GBASD Policy – New equipment purchases will be energy efficient models that are Energy Star rated.**
  - **A22 Discussion** – ok;
  - **A23 – GBASD Policy – The use of portable electric heaters or any other auxiliary heating devices will not be permitted.**
  - **A23 Discussion** – add other items in that have cords (list specifically) – toaster ovens, refrigerators from home, etc.;
  - **A24 – GBASD Policy – Employees and students are encouraged to wear appropriate clothing during the heating season and cooling season.**
  - **A24 Discussion** – ok;
  - **A25 – GBASD Policy – The Facilities and Related Services Department may adjust set points to provide the best overall performance of the HVAC system.**
  - **A25 Discussion** – ok (some of our equipment is antiquated);
  - **B1 – GBASD Policy – Lighting schedules will be optimized to reduce usage.**

- **B1 Discussion** – ok;
  - **B2 – GBASD Policy – Lights will be turned off when space is not in use or natural day lighting is adequate.**
  - **B2 Discussion** – ok;
  - **B3 – GBASD Policy – Classroom lights will be turned off when the last person exits the room.**
  - **B3 Discussion** – ok;
  - **B4 – GBASD Policy – Cleaning staff will turn lights on only for the period when a specific area is being cleaned.**
  - **B4 Discussion** – ok;
  - **B5 – GBASD Policy – Hallway lighting will be turned off as soon as possible and pass-through lighting should be utilized.**
  - **B5 Discussion** – ok;
  - **B6 – GBASD Policy – Classroom lighting levels that are over lit will be adjusted to state code levels (50-foot candles).**
  - **B6 Discussion** – ok (starting to check these);
  - **B7 – GBASD Policy – Gym lighting will be adjusted to state code levels for classes. Lighting levels for events and practices can be adjusted to a higher foot candle level as needed.**
  - **B7 Discussion** – ok (75-80 for high – 35-40 for elementary – 50 – middle schools);
  - **B8 – GBASD Policy – Buildings will be identified for energy saving lighting projects.**
  - **B8 Discussion** – ok (per Randy J. some are turning emergency lighting systems off with a transfer switch); Lights will be on when needed only for as long as needed – reduce light time (add to policy);
- 
- **C1 – GBASD Policy – Run time of ovens, stoves, and fryers will be kept at the minimum levels.**
  - **C1 Discussion** – ok;
  - **C2 – GBASD Policy – Exhaust fans will run only when absolutely necessary.**
  - **C2 Discussion** – need to look at exhaust fans (BP on while in – 7 hours) – need to look at other buildings;
  - **C3 – GBASD Policy – Energy saving devices and/or practices will be identified.**
  - **C3 Discussion** – ok (what about booster heaters – have a dedicated hot water heater for kitchen if possible in each building);
  - **C4 – GBASD Policy – Equipment will be energy efficient models and natural gas if possible.**
  - **C4 Discussion** – ok;
- 
- **D1 – GBASD Policy – Copiers, laminating machines, calculators, and other office machines will be turned off at the end of the day.**
  - **D1 Discussion** – ok;
  - **D2 – GBASD Policy – Computers, monitors, printers, and other peripheral equipment will be turned off at the end of the day or when not in use for long periods of time during the day.**
  - **D2 Discussion** – power off PC’s – possible daily reminder could go out for this per Yolanda – sensor for special sockets to control this per Randy J. – will get information on these;
  - **D3 – GBASD Policy – District-wide software will be used to automatically shut down computers at the end of the day.**
  - **D3 Discussion** – this ties in with discussion from D2 above;
  - **D4 – GBASD Policy – Computers will be energy efficient models.**
  - **D4 Discussion** – ok.

The next meeting will be held on March 13, 2009 from 8:00 a.m. – 9:30 a.m. The location will be confirmed when meeting agenda is set out.





- HVAC developments – Scott said nothing much new from technology end; updating to digital will save;
- Kim asked about solar panels being hooked to AC (south side of LV) – Scott said it would be better to just buy an AC unit – current unit ventilators – no AC (just ceiling fans and small windows); Scott indicated anything solar is extremely expensive; currently one pipe system at LV – would have to AC whole building – would need to change current unit ventilators to implement usage of solar panels;
- Kim – received KEEP grant to put together education team – one meeting so far; middle school and high school teachers jumped on board; working on elementary group – would like one per building as a rep; trying to recruit for first class – Natural Resource class – need 8 – 9/22 deadline; Energy Policy – education portion – students, staff, communicate to community; Sue Sinclair cautious on adding/changing curriculum; needs input on reaching staff – little things (shut off printer each day, etc.); perhaps breaking out the policy in simple terms; public – energy fair 2011 for BP, BV, LV and open up to public – UWGB does something similar per Scott;
- Melissa Rickert, Outreach Specialist, KEEP, Wisconsin Center for Environmental Education, UW Stevens Point attended our meeting today;
- Scott – some district designated students in class as “light” for teacher (smiley faces to teachers turning off lights, etc.); competition among teachers to save on home utilities; quantifying savings in environmental aspects; societal aspects of savings;
- Kim is presenting at Wells in October and April in a session; energy literacy policy for grade levels; applying to everyday life;
- Randy spoke about the district he was in on 9/17 – they have maps that are antiquated and they were going to have CAD class to update; 24 computers turned on all the time per the district – evaluate pros/cons of this;
- Relaying building data on a regular basis to each building per Scott;
- Having meetings early morning rather than later in the day – more successful;
- Randy and Gerry mentioned that we should convert Kwh/therms per square foot - into BTU’s (see if Utility Direct program can convert this all to BTU’s); - note discrepancies (additions, technologies) – cost avoidance (cover rates going up);
- Scott – audit – April/May, 2009 – HVAC schedules, noting temps, lighting system improvements; (opportunities to reschedule HVAC for summer and winter – district has done this) – schedules very important – independently schedule zones with DDC; lighting opportunities in library - BP because of sky lights; motion sensors throughout district good – weight rooms need them; keep on top of schedules as seasons vary; look at them at least twice a year; possibly 10-20% savings on this;

Next meeting is scheduled for November 13, 2009, 8:00 a.m. – 9:00 a.m., Bay View Middle School, Room 246.



- Kim was at Dominion workshop - Professional Development on Energy – indicated some of the Green Bay School District staff attending indicated they were not aware of the GB energy policy. Scott said GB is looking at doing some education on their policy as many staff is unaware that it exists.
- Jerry said at MI Tech – created a game out of it – competition among dorms for whoever does the best in energy savings – way to get energy conservation awareness.
- Ken, Jim and Nancy to work with Kathy A. on developing a website with policy, etc. (mini facts can be added periodically).
- Ken would like to have Lance or John at each staff meeting to help explain some of the items in Energy Conservation Policy (they have a good way of explaining the why's and why not's) – Need to get list of meetings to them.
- Jerry will e-mail Ken a power point presentation that has a couple of slides that would be helpful –
- Kim – Melissa Rickert was contacted (KEEP Grant) – development of an education plan – 8 teachers participate in a class – fall of 2009 – grad credit of \$75 paid by teachers; met with Andrea (TLC) – shared education part of policy – Science Curriculum Meeting. – evaluate current curriculum – K-12 education committee – run committee for a year – take information from grad class to utilize current curriculum (looked at 5-8 aligned with WI environmental standards – just need to tweak that curriculum) – would like one teaching staff representative per building – ideally one per grade level – analyze curriculum – 42 teachers were at Dominion Workshop – free kit for month then can order 6 – some on-line – had handout which she passed out that she will send out.
- Scott Witico Southwest High School – taught KEEP course (good resource).
- Considering hooking up a bike to a generator, etc. (teacher at BP looking at it as a research project).
- Andrea suggested that Kim share information with Sue Sinclair - not sure enough money is available through grant to do everything –
- KEEP is a great program per Scott (supported by FOCUS).
- For KEEP project (Energy Fair) use 5-12 grades – WPS at UWGB has a solar/renewable energy fair Scott thought – possibly environmental club could start and promote.
- Scott will be doing energy audits in the district on 5/12 & 5/13 (doesn't get real detailed but will give suggestions on possible opportunities to improve – 1-2 hours per building – lighting, HVAC items, CFM's, operating schedules, zones) – provide report as follow-up by sometime in June; report is basic walk-through – can't tie dollar value savings into this – could possibly figure out – need staff person from each building to be available – e-mail John and Lance on the dates – 5/12 & 5/13 – Betty asked about IT Department – possible opportunities for improvement – we are doing some now – LV will be done on 5/13 – 8:00 a.m.
- Ken will be bringing some of the B&G staff to different buildings to evaluate them for another perspective from another set of eyes (will be done week of 5/4).
- Scott emphasized the necessity of being consistent from building to building and with exceptions granted, if any.

- Add to New Employee Training – ask about giving energy policy to all new staff.
- Jerry asked about getting information out to public – Betty explained about interview she had with Press Gazette and a call from the Lt. Governor’s office also – we are the 25<sup>th</sup> school district in the state to take on the Energy Star challenge.
- Bob suggested some informational handout on the energy initiatives being undertaken for the first few times to groups renting facilities, especially Bay Port.

Next meeting is scheduled for September 18, 2009, 8:00 a.m. – 9:30 a.m., Bay View Middle School, Room 246.

**HOWARD SUAMICO SCHOOL DISTRICT  
GREEN BAY, WISCONSIN**

**ENERGY COMMITTEE MEETING MINUTES**

DATE: November 13, 2009

LOCATION: Bay View Middle School, BV Activity Room 246

RECORDER: Nancy Reynolds

PRESENT: Ken Baran Jim DeBaker  
Scott Jones Jeff Henkelmann  
Mona Forbes Lance VandenElzen  
Betty Zimdars Ryan Welnetz  
Joe Wallander Kathy Anderson

ABSENT: Yolanda Maricque, John Samorske, Gary Caelwaerts, Jerry Gitlewski, Bob Gonzalez, Randy Johnson, Kim Lemberger

- Ken called meeting to order and minutes from 9/18/09 meeting approved with no changes;
- Kathy Anderson and Jim DeBaker presented the Facilities web page – includes projects we have done with before and after pictures – included information on each project – ready to go live with site – working on getting DDC projects on the site (Scott mentioned adding a school(s) to be able to click on and see what a DDC system is and the current temperature in a building) – maybe add information from a guest;
- Betty said to add site right below “Business Office” – add a blurb about a new web site on HSSD main web page;
- Ryan asked if we can show or highlight what we have done in regard to the Energy Star program – include article that we had achieved goal without expending a great deal of money – add student level and teacher level – add information about receiving KEEP grant;
- Mona talked to students about what they can do to motivate teachers – Mona indicated teachers had created action plans that had enrolled in class which is part of the KEEP grant; some examples of what could be done are (BP – turning off computers when not in use; MB – keep doors closed; applied for grant for mini – to check energy used; getting word out and getting the students involved and getting staff on board);
- Ryan liked the before and after pictures of projects completed;
- Ken needs to get on an Admin. Team agenda to showcase the new web page;

- A little blurb in each newsletter to let parents and community members know about new web page;
- Discussed long range energy management plan – spread out over five years – some projects already being done – lighting projects listed first;
- Would like to put DDC in FG, then SU and move to LV – Scott said more bang for buck if you do larger school first because of savings – we wanted to do FG first as it has air conditioning already;
- Have older boilers to be replaced – SU has one and HO has two but piping needs to be replaced at HO – not working correctly; MB – Kewanees to be replaced but PBBS says refurbishing would give them another 25 years – look over full life cycle of boiler – do a side by side evaluation and make a determination – over a 30 year period – need to look over life of unit for savings – everyone should review this for next meeting for determination on what should be done first and so forth; marginal projects that have longer paybacks you may want to hold for now;
- Joe had a question on page 2 of the “B&G Long Range Energy Management Plan 2009-2010” – asked if the lighting indicated under BV is classroom lighting – yes per Jim DeBaker – planning on doing whole school – going with standard 25 – none are hardcore costs – had quotes on some to get a ballpark figure;
- Any grants or rebates to look at boilers for BP? Yes per Scott – there are grants for feasibility studies also (boilers – no; geothermal – yes);
- Would chiller feasibility study be warranted – Scott would need to see the summer bills from BP to see if guidelines are working;
- With everything listed on the (B&G Long Range Energy Management Plan) Focus thinks they can help us out;
- Per Ken additions and changes will be made on five year plan – everything on first page could be done this fiscal year; put in an 80 horse boiler at BP; Ken will talk to Scott about what documentation we need to complete;
- Mona talked about KEEP School Building Energy Efficiency Education Course – she indicated Kim was looking for a rep from each building to participate in the class; class looked at home and school energy bills – Scott took the class on an energy audit tour of LV – talked about Green & Healthy School Program – class participants created a School Energy Action Plan for their respective building – Ken, Jim, Lance, Scott, and Jeff participated in one of the classes – class checked out KEEP energy site for lesson plans to use at each grade level; in addition to staff from our district their were staff from GBSD, Oconto, and Oconto Falls;
- Passed out KBTU/Cost by Building Report - sent Scott and Jeff spreadsheet via e-mail on square foot costs and electric and gas numbers for 2007-2008; 2008-2009;
- Ken passed out some information on “Green Energy Hoods” – Ken met with rep on this – adding technology to kitchen hoods, etc. to produce savings – Scott thought somewhere in Sheboygan there was a school that implemented this technology – allows you to convert any energy-wasting Constant Air Volume (CAV) system to an energy-efficient Variable Air Volume (VAV) system; this would be a custom grant item through Focus – more in line for kitchen hood systems which we have at BP, BV and LV;

- Discussed renewable with solar – WPS matches Focus – will pay a total of 70% - CP20 rate controls this – Jim asked about pool area (this is for tax exempt status businesses) – Jeff will send us some info on it – there is a four year window for this;
- We should add the solar-wise educational program at BP on website – they track energy and it goes back into our system;
- Handouts referred to in the minutes will be available at the next meeting for those who did not get them – if you would like any of them prior to that date please e-mail Nancy at [nancrey@hssd.k12.wi.us](mailto:nancrey@hssd.k12.wi.us).

Next meeting is scheduled for January 29, 2010, 8:00 a.m. – 9:00 a.m., Bay View Middle School, Room 246.

**HOWARD SUAMICO SCHOOL DISTRICT  
GREEN BAY, WISCONSIN**

**ENERGY COMMITTEE MEETING MINUTES**

DATE: February 5, 2010

LOCATION: Bay View Middle School, BV Activity Room 246

RECORDER: Nancy Reynolds

PRESENT: Ken Baran Jim DeBaker  
Scott Jones Jeff Henkelmann  
Lance VandenElzen Betty Zimdars  
Joe Wallander Yolanda Maricque  
John Samorske Gary Caelwaerts  
Jerry Gitlewski Randy Johnson  
Kim Lemberger

ABSENT: Ryan Welnetz, Bob Gonzalez

- Ken called the meeting to order;
- **Forest Glen DDC progress report** - Ken, Jim, John & Lance looked worked on the specifications for the DDC at FG – ad for bids was in paper on Thursday, 2/4/10 – once we have chosen a bid proposal shot it to Scott for grant possibilities – opening of bids on the 24<sup>th</sup> of February; anticipating 8/27 completion;
- Per Ken next year would be Suamico DDC; BV would be near \$1,000,000 – this building would involve more work – other parts and pieces need to be replaced first at BV before DDC work could commence;
- **Pool cover installation - LV** – worked with Green Bay & Pulaski school districts to get same pool cover – \$18568 lower on heating can be expected with use of pool cover – water consumption 64% - 2 year payback; engineering study to be worked up; use cover in between classes; air handlers would not have to be run as much – save 91,000 gallons of water a year; automatic cover – just hold button – about 2 minutes to cover; 2 – 20 foot sections; back stroke flags need to be taken down; putting together bid – 3 companies make cover; try and do this year; shoot proposal to Scott as soon as we have chosen contractor; with Focus we could get payback down to 1-1/2 years;
- **Boiler replacement at SU and piping at HO**; - Ken has specs and will review with Betty after the 15<sup>th</sup> of February; not getting enough water flow at HO on one of the boilers; to many boiler failures; to be done before 6/30;
- **Pool solar panels project** – Polk County School District shared their whole project with us; 35% of cost from WPS and 35% of cost from Focus - the roof layout might be an issue; use in the summer only; 10 year payback for Polk County School District; tie into domestic hot water for summer also; size of panel roof is a question – ideally if south facing – Randy suggested contacting company



working with Kalahari – get info from him; ready to do site assessment; keep Scott in the loop; (site assessment set for Thursday, 2/11/10);

- **Energy Star label for Bay Harbor** - ATS&R applied for Energy Star Rating for Bay Harbor – received a 79 rating – that info will be added to web site;
- **Bay Port booster boiler for reheat/cost/payback** - Had a study done - \$127,500 for an 80 hp – 12-15 year payback – need to re-pipe the boiler room for this – change DDC system to keep loop more equal – based on air outside temperature; tried turning off boilers; have to keep boilers on because some of the areas get too cold – change air flow to reduce amount of air flow – adjust on a seasonal basis – as long as air handler has chilled water; back minimum air flow to eliminate running boilers; Gary said minimums are reduced already and building is used all summer including classrooms; solar panel option? Could you tap into heat from the chiller as it cools? Check out with engineer – might need to re-pipe; condensing combustibles in spring with a pony boiler which provide savings; Focus would only be able to give about \$5,000 - \$10,000; Pony versus the 300 hp unit – possibly turn down the 300 hp; 20-30% reduction during the spring months using a Pony; approximately running 6 months on a Pony;
- **Kim Lemberger** – 2/9/10 is next meeting for KEEP committee – standards are changing – national – state – local; looking at state standards on Tuesday, 2/9/10 – committee will check and see where there are gaps;
- **Question from district staff** – When it starts to get hot again what can teachers do in the classrooms? Yes on fans but they have to be approved by the school district (floor fans and box fans) – work through principal
- **Question from district staff** – Can we get daylight into inner section of LV (art rooms and library)? – We are trying to improve lighting in those areas if they have no outside windows – working on areas as we have to change ballasts – we could do some additional studies to see what can be done; per Randy the quality is getting better but the price hasn't dropped much; 4100K stock now; 25W & 4100K at BP which has worked well; Kim said interest in going to a blue light because of no windows, etc. and it is closer to daylight – it is perception; we don't currently stock much of that bulb as only used at BP now; other issue would be more leaks with daylight roof windows, etc.;
- **Jerry Gitlewski** – His company put up a new building – built to “lean” standards; Jerry extended an open invitation to tour new building – comparing heat & electric usage;
- **Scott Jones** – Scott mentioned MB had a “green” Earth Day celebration – LV is looking at it per Kim; Kim also said we are looking at “interest fairs” – grade 5-8 to do “energy” fair in 2011 possibly and promoting within the community;
- **Randy Johnson** - Teaching a class at Paper Valley – Energy Center of WI run it - 2/11 – registration through Focus on Energy – condensed version of energy conservation options – 8 hour class; asked Randy to e-mail info on lead strips (sensors) for screens to be powered down to Jim DeBaker – figure difference between going with these and changing to LCD's; can they be wired to one power source – new installation yes; Focus not giving money on those new power strips; Randy has a meter type unit that we could use to monitor for a week to get readings on both type screens and do some calculations;

- **Jeff Henkelmann** - Ran gas and electric usage from 2003 – to present and gave us the documentation; hoped we liked the press from the article done involving the district which is now on the Facilities web page; WPS trying to get more publicity as to what is going on – rates have gone up 2% but there are rebates on each bill;
- **Betty Zimdars** – District is applying for a qualified school construction bond - applying for \$5,000,000 and hope to get \$2,000,000 – between July 1, 2010 and June 30, 2011 we would have to get the projects done otherwise have to give money back – by May of 2010 we should know if we get anything;
- **Scott Jones** - CRT replacement grants from Focus – needs specs on CRT's – voltage, etc. – what are you going to replace with – need specs – where are they to be installed; not sure how long grants available;
- **Jim DeBaker** - Wanted to thank Gary, John and Lance for all of their help on all of the energy projects; Ken wanted to thank Jim for all of his expertise and hard work and Betty for supporting us.

April 16<sup>th</sup> is next meeting.



**HOWARD SUAMICO SCHOOL DISTRICT  
GREEN BAY, WISCONSIN**

**ENERGY COMMITTEE MEETING MINUTES**

DATE: May 7, 2010

LOCATION: Bay View Middle School, BV Activity room 246

RECORDER: Nancy Reynolds

PRESENT: Ken Baran Jim DeBaker  
Jeff Henkelmann Lance VandenElzen  
Yolanda Maricque John Samorske  
Bob Gonzalez Randy Johnson  
Kim Lemberger

ABSENT: Scott Jones, Betty Zimdars, Jerry Gitlewski, Joe Wallander,  
Ryan Welnetz, Gary Caelwaerts

- Ken called meeting to order and minutes from February 5, 2010 meeting approved with no changes;
- Jim went over the changes on the Facility Department web page as it was updated – he had added a paragraph on continual savings annually for clarification;
- Jim also mentioned that he is working on a proposal for the solar system for the pool with Focus on Energy – engineering firms to look at project from a feasibility point, Focus and WPS would fund approximately 70% of project; could possibly tie domestic hot water into solar project;
- Jim will also be installing wall pack lighting at Bay Port – waiting for Focus approval;
- Per Jim a number of energy saving projects have been done so far – Bay Port (Library, Commons, Entries); Bay View (Room 246, Wrestling room, Van shop, Triton shop, Tech-ed Shop); Suamico (Gym, Library); Forest Glen (Gym, Commons, Computer Labs); Meadowbrook (Parking lot lights);
- Ken gave an update on upcoming projects: DDC installation at Forest Glen; pool cover for Lineville pool; boiler replacement for Suamico;
- Yolanda gave an update on what buildings are eligible for energy star rating – ATS&R applied for energy star rating for Bay Harbor and that documentation should be forthcoming; Bay Port, Meadowbrook and Howard are also eligible – the building needs a rating of 75 out of a 100 to be eligible; question was asked why we are doing this and what does Energy Star rated mean – reasons are:
  - Demonstrates environmental leadership
  - Demonstrates good management both energy wise and fiscally
  - Improved efficiency reduces pressure on the nation’s power systems

- Yolanda is working with Focus on incentive money for new monitors for district - \$6000 in additional savings - 700-800 monitors - 35-40% savings – Yolanda powers off whatever computers are still on in the evenings – e-mails those continuing to leave the computers on each night – labs continually left on; Randy said another district bills the cost center asking for higher levels of wattage, etc. – solved issue in that district; take energy savings and relate to a salary to see the difference and what we could do with the difference; Yolanda said have software that powers the PC's down but turning off the PC's is better;
- Randy asked payback question and to see spreadsheet from Focus on Energy; Yolanda offered to send information to Randy;
- Ken gave an update on upcoming projects: DDC installation at Forest Glen; pool cover for Lineville pool; boiler replacement for Suamico;
- Working with A&J Mechanical to put in DDC in at Forest Glen – materials will be in within the next week; starting to demo out controls; chiller will be down; try to start up the DDC the first of July; working with John and Lance on graphics; we can program and control ourselves; June 9<sup>th</sup> is the start date for A&J Mechanical at Forest Glen – offices on temporary cooling as they are open during the summer; will be able to adjust heating/AC in building from a website once DDC is installed; cost of project versus savings; going pneumatic to digital is 10 – 12%; run time control of chiller will bring up savings to 20%; Forest Glen is lowest rated elementary building now for Energy Star rating status;
- Possibly looking at Lineville next for DDC;
- Pool cover for Lineville pool – bids are in and requisition is entered for the unit; waiting for Focus on Energy approval and rebate amount; Ken indicated we would have energy savings \$18,709 dollars saved annually;
- Suamico boiler will be installed within the next week;
- We are getting quotes on replacement of Lineville boilers to be replaced with four package boilers – heat building only – pool is on a separate boiler; could save 12-14% possibly; coil sizes not set up correctly to go with condensing boilers at Lineville;
- Ken estimated that there will be approximately \$2,000,000 of work done over the next year and a half in the district on projects that will help with energy management;
- The question was asked if the money saved on utilities with the energy management projects goes into the Facility Department budget. No, just the incentive money from Focus on Energy for the projects that are done under the Facility Department budget;
- Jeff talked about the possible rate hikes – WPS is asking for a 6.9% increase – WPS is trying to cut costs – driving factors for increase are the economy and conservation – increase could come in lower than the 6.9%; gas rates possibly could increase by a couple of percent – there is a large supply of natural gas;
- Randy said his business has received several letters this week from customers asking about increases in products – Randy said steel prices are going up for one;

- KEEP committee update from Kim Lemberger as follows:
- Students – curriculum aligned with suggested curriculum by KEEP – sent to teachers to review – a lot of teachers don't understand the curriculum;
- KEEP committee staff took class on how the building runs last fall; how to involve everyone else is the issue; we could follow Kathy Anderson's example of alerting staff on savings per building regarding paper recycling; possibly do the same with energy savings per building and shared quarterly with each building; incentive needed for staff training;
- District staff – Randy suggested a monthly challenge by building and then provide an incentive; IT Department can track some of this per Yolanda; Yolanda has been sending e-mails with positive feedback when something good happens; maybe announce daily on the PA system to shut down PC's, printers, copy machines, etc.;
- Kim – public sector – hold a community energy fair – challenge students with using scientific methods; informational area for families, etc.; show case some of the projects done with tours; guest speaker; piggy back with another event to up participation – work with parent group to help; need to secure date and location – spring of 2011;
- Randy suggested an announcement at building events when using an area that has had energy saving enhancements – example would be pool event – bring up pool blanket and bring up savings numbers; perhaps an easel with info on what is being done in building and a sign/poster in room depicting what is done; multiple easels depicting each phase – perhaps electronic boards - what percentage and what is the payback time – how will it benefit me the taxpayer; communication is key;
- When changes are made in a building with heat and AC – communicate with staff - Here is what we are doing at school and here is what you can do at home – Jeff from WPS has a lot of informational handouts/brochures that can be used;
- Forest Glen, Meadowbrook, Bay View or Bay Port would be good buildings to use for fair; stress to staff and students to treat the school like your home;
- Add energy roll counter on website; talk to staff again; talk about how school systems work versus your home systems;
- Plan to get information to Forest Glen staff as to what was done in building over summer for DDC – lots goes on behind the scene; relay to other building staff how their building is set up for heating/cooling;
- May 17<sup>th</sup> is the next read date for meters; hold until after that before air conditioning gets turned on in any building;
- Next meeting is scheduled for Friday, September 17, 2010 at Bay View, Room 246 from 8:00 a.m. – 9:30 a.m.

**HOWARD SUAMICO SCHOOL DISTRICT  
GREEN BAY, WISCONSIN**

**ENERGY COMMITTEE MEETING MINUTES**

DATE: September 24, 2010

LOCATION: Bay View Middle School, BV Activity Room 246

RECORDER: Nancy Reynolds

PRESENT: Ken Baran Jim DeBaker  
Jeff Henkelmann John Samorske  
Yolanda Maricque Kim Lemberger  
Nate Curell Joe Wallander  
Gary Caelwaerts

ABSENT: Betty Zimdars, Lance VandenElzen, Jerry Gitlewski,  
Ryan Welnetz, Randy Johnson, Bob Gonzalez

- Ken called meeting to order;
- Ken passed out a list of possible HSSD upcoming energy and safety projects; funding for these projects would be through a \$2.5 million dollar loan; projects would have to be completed by June of 2013; Nate indicated just about everything on the list fits in with Focus on Energy rebates of some sort or other;
- Jim DeBaker pulled up the Facility Department's web page and explained additions regarding DDC (Direct Digital Control vs. Conventional Pneumatic Controls);
- Jim introduced Nate Curell who is our new Focus on Energy representative; Nate indicated he had been associated with WPS and Brown County in the past and has been with Focus on Energy for three months;
- Jim talked about solar for pool area – next step is engineering system (do we do a summer system and winter system, etc.) – longer process to get this type of project off the ground; WPS matches Focus dollars for solar rebate;
- Jim indicated all outside wall packs being replaced at Bay Port over the next two weeks;
- Jeff Henkelmann handed out a sheet on what the district has used and paid for gas and electric from September 2009 through August 2010 - \$888,000 plus; WPS match on projects increases based on number of projects through Focus;
- Nate indicated boiler tune-ups no longer available for rebates through Focus; 2011 Focus incentives should stay the same – not expanding on Focus end; Custom projects have to be approved by Focus before you start them; DePere Unified had a solar project approved last week by Focus; we could possibly tie in boiler replacement at Lineville with solar for pool; Before you put in a renewable project in a building Focus wants to make sure that you have done what you can in building to maximize energy savings; one question Nate said had been asked is

- once you do five projects can you do five again for bonus and incentives through Focus and WPS – answer is yes; 10 renewable projects were approved by Nate in last two weeks;
- Jeff – 6.9% rate increase overall was discussed by utility commission (recommended 2.1% increase by commission) – WPS cut 10% of work force to save month;
  - Yolanda - 800 monitors replaced by IT – rotated 17 & 19 inch monitors out – higher end monitors to those who needed them;
  - Nate mentioned virtualization of servers – Yolanda mentioned the district had been doing this for years;
  - Kim – rough plan of K-12 energy curriculum is put together – expanding current curriculum; final form by December to share with curriculum administrators; would like to use starting next school year – had KEEP Grant dollars for developing this curriculum; Kim said she was asked to be on the GoGreenSaveGreen committee through Village of Howard; Howard recycling of electronics – 10/24 – Cyberworks – contact Jamie at Village of Howard if you are a big customer and have electronics for disposal – October is energy awareness month – Community Energy Fair – pilot possibly at Lineville first (bring in businesses from community being recognized as going green) – possibly in spring 2011 – possible solar energy club at Lineville (at lunch);
  - John Samorske – Forest Glen is coming on line with DDC – more questions from staff with issues – might be a good idea to mention the comfort zones that we have set in Energy Policy to Forest Glen staff; Bay Harbor is running much smoother; it might help to explain how our heating and air conditioning work in the buildings versus how it works at your home;
  - Gary talked about the free cooling system work at Bay Port; another update available for Bay Port DDC system;
  - Jeff mentioned that the WPS newsletter that goes out to large commercial customers (600-800) featured Bay Port energy savings project in gym;

Next meeting is 12/17/10 at Bay View Middle School, Room 246.



K-12 Energy Education Committee  
Minutes (2009-present)

# WANTED: "Energized" Educators

Are you "Charged-up"  
to make a positive difference  
in the lives of the  
Howard-Suamico community?

**Who:** Any teacher, K-12 (8 people minimum)

**What:** K-12 Energy Education Committee

**Purpose:**

- Evaluate and/or develop resources to be used with students to teach energy education in a practical way with real-world applications,
- Provide professional development opportunities for staff to integrate energy education into all areas of the curriculum, as well as put that energy-saving knowledge into practice in our school buildings on a daily basis,
- Promote the district's commitment to energy conservation via student projects

**Terms of Commitment:**

- 1) Participate in a 1-credit graduate class through UW-Stevens Point. Cost will be \$75.00 and will take place sometime in late September - October 2009.
- 2) Attend regular meetings
- 3) Be willing to work beyond the contract day and receive compensation for developing the education plan.
- 4) Be a liaison between your building and the District Energy Committee and its initiatives.

If interested, please contact Kim Lemberger, Lineville Intermediate School

**K-12 Energy Education Committee Minutes  
Howard-Suamico School District  
Thursday, August 27<sup>th</sup>, 12:15-1:15 in Lineville LMC**

**I. Introductions**

A. See roster following minutes

**II. District Energy Policy**

A. Shared “Education” section from the policy

**Education**

1. Staff and students will be provided on-going education on energy saving measures through the Energy Committee.
2. District will utilize appropriate curriculum materials designed to inform students regarding the wise use of energy.
3. Every staff person will be expected to contribute to energy efficiency in the District.
4. This policy has the full support of the superintendent, cabinet members, administrative team and principals.

B. Entire Energy Policy is available at [e/common/distwide/K-12EnergyEducation Committee](http://e/common/distwide/K-12EnergyEducationCommittee)

**Discussion – There are basically three levels of education: students (curriculum), staff (building stewardship), community (district initiatives/classroom projects)**

**III. Grant Requirements**

A. Each member received a copy of the grant proposal that was accepted.

**Summary:**

Section E – Draft School Energy Policy and Education Plan - \$2,000.00

Section F – Solicit Administrative, faculty, and staff input and feedback - \$1,250.00

Section G – Disseminate information to the community related to the progress of the project. - \$250.00

Section K – Review and finalize the education plan and present it to administering body - \$500.00

B. Entire grant proposal is available at [e/common/distwide/K-12EnergyEducation Committee](http://e/common/distwide/K-12EnergyEducationCommittee)

**Discussion – Melissa shared the flyer for the KEEP course. She will email Kim an electronic version so that it can be posted to the staff within the district via MyLearningPlan to gather more participants. Kim will also contact Scott**

**Liddicoat, the course instructor to see if he can arrange for the energy-walk-through to take place during the second night of instruction rather than the first.**

**IV. Set Calendar**

\*All meetings will take place outside of contract day in the Lineville LMC

- A. Thursday, Sept. 24, 4:30-8:30 – KEEP class**
- B. Thursday, Oct. 1, 4:30-8:30 - KEEP class**
- C. Thursday, Oct. 8, 4:30-8:30 - KEEP class**
- D. Thursday, Oct. 15, 4:30-8:30 - KEEP class**
- E. Tuesday, Nov. 10, 3:30-5:00**
- F. Monday, Dec. 7, 3:30-5:00**
- G. Tuesday, Jan. 12, 3:30-5:00**
- H. Tuesday, Feb. 9, 3:30-5:00**
- I. Monday, March 8, 3:30-5:00**
- J. Tuesday, April 20, 3:30-5:00**
- K. Tuesday, May 4, 3:30-5:00**

**V. New Business**

**Communication** – Bonnie will look into getting us all information on using SharePoint to use for communicating information.

K-12 Energy Education Committee  
2009-2010

	School /Building	Grade/Subject	email
Mona Forbes	Bay View Middle School	7 - Science	<a href="mailto:monaforb@hssd.k12.wi.us">monaforb@hssd.k12.wi.us</a>
Julie Heim	Lineville Intermediate	Speech and Language	<a href="mailto:juliheim@hssd.k12.wi.us">juliheim@hssd.k12.wi.us</a>
Bonnie Koeller	Lineville Intermediate	5 - Science, math LA	<a href="mailto:bonnkoel@hssd.k12.wi.us">bonnkoel@hssd.k12.wi.us</a>
Kim Lemberger	Lineville Intermediate	6 – science, math, LA	<a href="mailto:kimlemb@hssd.k12.wi.us">kimlemb@hssd.k12.wi.us</a> <a href="mailto:kmarieb.3@juno.com">kmarieb.3@juno.com</a>
Heather Lichtfuss	Bay View Lineville Intermediate	7-8 – art 5 - Spanish	<a href="mailto:heatlich@hssd.k12.wi.us">heatlich@hssd.k12.wi.us</a>
Mike Phillips	Bay Port High School	Tech. Ed.	<a href="mailto:michphil@hssd.k12.wi.us">michphil@hssd.k12.wi.us</a>
Melissa Rickert	KEEP Outreach Specialist	Wisconsin Center for Environmental Ed.	<a href="mailto:mrickert@uwsp.edu/keep">mrickert@uwsp.edu/keep</a>
Nancy Reynolds	District Office	Buildings and Grounds Administrative Assistant	<a href="mailto:nancreyn@hssd.k12.wi.us">nancreyn@hssd.k12.wi.us</a>
Janis Schneider	Lineville Intermediate	5- Science, Social St.,	<a href="mailto:janischn@hssd.k12.wi.us">janischn@hssd.k12.wi.us</a>
Keith Schroeder	Bay Port High School	Library Media Specialist	<a href="mailto:keitschr@hssd.k12.wi.us">keitschr@hssd.k12.wi.us</a>
<b>Representative needed</b>	Bay Harbor Elementary		
<b>Representative needed</b>	Forest Glen Elementary		
<b>Representative needed</b>	Howard Elementary		
<b>Representative needed</b>	Meadowbrook Elementary		
<b>Representative needed</b>	Suamico Elementary		

## K-12 Energy Education Meeting Minutes 12-7-09

- 1) Discussion District Curriculum Situation
  - 2) Curriculum Exploration
    - 1<sup>st</sup> grade – nothing specific mentioned in science
    - 5<sup>th</sup> grade – civic responsibility (SS) and ecosystems (S)
    - 2<sup>nd</sup> grade – Dinosaurs (fossil fuels) (S) Citizenship & responsibility and environmental
    - 3<sup>rd</sup> grade – plants unit (greenhouse gases) (S) and citizenship
    - 4<sup>th</sup> grade – Electricity (S) – lots of possibility and responsibility (voting and helping community) (SS)
    - 7<sup>th</sup> grade – conversion between KW and W and megawatt (S) and electromagnetic energy (S)
      - Financial lit – budgeting, home, auto, food
    - 8<sup>th</sup> grade – Ecosystems (energy flow) (S) and Energy (S)
      - Financial lit -
    - 9<sup>th</sup> grade –
      - Social Studies (expansion/population/industry)
      - General Science (lots of stuff)
    - 10<sup>th</sup> grade –
      - Social Studies (modern world)
      - Science (biology)
      - Math – data analysis
- Electives – lots of opportunities

K-12 Energy Education Committee Minutes  
Tuesday, Jan. 12, 2010  
3:30-5:15 Lineville Computer Lab 106

- I. People Present
  - Kim Lemberger, Mona Forbes, Heather Lichtfuss
  
- II. Review work from Dec. 7<sup>th</sup> meeting (i.e.existing benchmarks/standards where energy is already being taught)
  - Discussion – We used the “Learning Expectations for HSSD” that are printed for parents at each grade level to identify where energy concepts are already being taught.
  - Action – We printed K-8 science intent documents (power standards and benchmarks) that are found on e/COMMON/Curriculum-Instruction-Assessment/Curriculum/Science/final new intents and went through them to see if there was any more detail on what students are expected to know and demonstrate. We also printed the K-4 social studies intent documents to identify if/where energy concepts are already being taught.
  
- III. Discussion & Decisions –
  1. What would you like to see our committee accomplish before the end of the school year? Do we have a common goal?
    - make sure there is a flow of energy concepts in all grade levels, especially in the science content areas, from grades K-8.
  
  2. Are you satisfied with our plan for informing staff on their roles/responsibilities of being good stewards of our energy usage at school? Do we need to do anything else?
    - we will need to continue to work on this, utilizing staff meetings, emails, lounge bulletin boards, etc.
  
  3. What do we want our students to learn about energy?
    - After looking at the existing and most current curriculum documents, it’s obvious that some energy concepts are included.
    - We’d like to see what the WI state standards have required for energy concepts
    - We’d also like to look at KEEP scope and sequence for energy education to see how that aligns with our current curriculum.
  
  4. Is there a need to develop and/or find an energy literacy assessment for our students?
    - Our students already participate in many assessments. It would be good if we made sure energy education is taught with quality resources and assessments throughout a student’s K-8? Or 12? education in HSSD, rather than developing another literacy assessment to administer to students.

5. What is the best plan for infusing energy education into the existing curriculum?

-Look at what state requirements are for 4<sup>th</sup>, 8<sup>th</sup>, and 12<sup>th</sup> grade concerning energy education.

-Put together clear energy education lessons with resources/materials that would make it easy for teachers to use.

-Possibly provide professional development opportunities for teachers to become familiar with the lessons/materials so they have a better chance of being utilized.

6. What will be the plan for providing professional development on the infused concepts?

- Did not discuss

7. How will we involve the community in our district's efforts toward energy education?

-We will need to look closer at this component of our district's energy policy.

IV. Begin researching/finding resources to compliment existing energy curriculum in HSSD.

Discussion – still need to identify what exactly is being taught and if there are any gaps in energy education before doing this.



K-12 Energy Education Committee Minutes  
Howard-Suamico School District  
Feb. 9, 2010, 3:30-5:00, Lineville LMC  
Submitted by: Kim Lemberger, Lineville Intermediate School

I. District Standards Analysis

At our January 12<sup>th</sup> meeting, we located and printed the district's most recent K-8 science power standards (Fall 2009). We printed the social studies power standards that were done as of this time. Mona, Heather, and Kim went through each power standard and identified if it already included energy education content or if energy education content could be easily infused to the K-8 science and/or social studies curriculum. More time will be needed to look at the high school curriculum due to the different structure of instruction at that level.

II. State Standards Discussion

Mike, Bonnie, Mona, and Kim explored the DPI website to look closer at the state science and environmental education (EE) standards to see where energy education content was found. We had some discussion about how the curriculum work in our district is at a stand-still. This is primarily due to the development of national education standards, which will affect our state standards, and in return impact our district standards. We certainly don't want to put together anything that isn't going to be useful once those changes are put in place. But we also don't want to stand by and do nothing.

III. Next Steps

Student Curriculum - It was decided that we would probably be better off focusing our K-12 energy education plan utilizing the state environmental education standards, as it is less likely they will be revised in the near future. Kim is working with a committee at the state level that will be investigating whether or not national EE standards are/will be written, which could affect our plan. Nevertheless, it would be beneficial for the state EE standards to become more obvious in our district's curriculum, in the event federal funds become available through the No Child Left Inside initiatives at the national level. We also had discussion about what energy education content students we want students to remember 10 years from now. We will need to seek resources to help us determine the direction to pursue.

Community Involvement – We also need to start looking at the possibilities of holding an energy education fair within the district. This would be an opportunity for students to showcase their ideas/learning to parents and community members, as well as an opportunity for inviting the community in to learn about the district's

initiatives and become an education resource for adults as well. We might also want to consider including experts in the energy field to give presentations to people who might attend. Planning for an event like this requires much coordination of people and their talents; therefore the event could be tentatively scheduled for February – March 2011.

Staff Involvement – Efforts have been made to share the action plans developed from the Building Energy Efficiency class the committee participated in last fall. It seems that more can/should be done. Possibilities include monthly emails to staff, promotion of the district's energy website, etc.

Next Meeting = Monday, March 8, 3:30-5:00 in Lineville LMC

Tentative Agenda Items

- 1) Energy Education Content – what are the concepts/experiences we want kids to remember 10 years from now? What do we want the average Bay Port grad to be aware of concerning their energy usage? What decision-making skills will students need to be an environmentally literate citizen?
- 2) District Energy Fair – plan timeline for implementation and divide responsibilities
- 3) Monthly emails to staff – begin a database or something that will include short, but informative correspondence that can be distributed to staff on a regular basis.



K-12 Energy Education Committee Minutes  
Tuesday, April 20, 2010  
3:30-5:00 Lineville LMC

- V. People Present  
- Kim Lemberger, Mona Forbes, Bonnie Koeller, Marylu Sachs, Melissa Rickert

- VI. Curriculum Alignment  
-During March 8<sup>th</sup> meeting we took the suggested scope and sequence from KEEP and aligned the energy concepts with the K-8 science power standards. (see attachments)

-We reviewed the documents and found:

- 1) Elementary level (K-4) – there are some concepts covered, but we are unclear if it's accurately aligned with what is really taught in the science units.

**Action** – Marylu will take the documents to Forest Glen to share with the teachers at the K-4 grade levels to see if it's accurate. She will also find out what resources teachers are using to teach the energy content and/or if they are in need of materials to help them teach the content. Once Marylu has done this at Forest Glen, Kim will be responsible for duplicating the procedure, if possible, with the other elementary buildings.

- 2) Intermediate & Middle School (gr., 5-8) – we found very few of the energy concepts are taught in the science units. We're wondering if maybe they are taught in other academic areas. There is a potential gap in energy education instruction that may need further work.

**Action** – Bonnie and Mona will check into conducting a staff survey to see whether or not the energy concepts are indeed taught in conjunction with the science units. They will also check with teachers in social studies and math to see if any concepts are taught there.

- 3) High School (gr. 9-12) – Chris Stubbe, environmental science teacher at Bay Port shared his alignment with the committee. It looks like most of the KEEP energy concepts are covered in his environmental science class. There are a few that may be covered in other classes. Another thing to note is that the environmental science class is an elective and not all students are required to take it. Therefore every Bay Port graduate doesn't receive this instruction.

**Action** – Distribute the energy concepts that aren't covered by environmental science class to other classes, departments, and find out if they are taught in those areas instead.

## VII. Community Energy Fair (Brainstorming Ideas)

### Why?

-to promote energy education instruction in the classroom utilizing the scientific method.

-to involve community members in our schools

-raise student, staff, and community awareness of our district's energy policy and initiatives.

### What?

-student project area

-will participation be mandatory or voluntary?

- how will judging occur?

-what prizes will be given to winners/participants?

-informational booths for parents/students to learn how saving energy at home/business

-guest speaker

-building tour of changes made and how it's reduced our energy usage

### When?

-Mid-April? Look at district calendar

-evening hours 6-8?

### Where?

-Lineville or Bay View?

### Who will/can be involved?

-Lineville & Bay View Parent Club

-Community of Promise (Brian Gronski)

-HSSD Buildings and Grounds Department

-Bay Port and Bay View Environmental Clubs

-Area Boy/Girl Scout Troops

-Lineville and Bay View Teaching Staff

-Go Green / Save Green Committee (Village of Howard)

-District Energy Committee partners

**Action:** Kim will make arrangements to speak with someone from the elementary buildings to learn about the process that was used to make the elementary Interest Fairs so successful. She will also share this information at the next district energy committee meeting on Friday, May 7<sup>th</sup>.

## VIII. Next meeting Tuesday, May 4, 3:30-5:00, Lineville LMC

Tentative Agenda

- 1) Curriculum survey findings?
- 2) Staff education efforts
- 3) Community Energy Fair

K-12 Energy Education Committee Minutes  
Tuesday, May 25, 2010  
3:30-5:00 Lineville LMC

IX. People Present

- Kim Lemberger, Mona Forbes, Marylu Sachs, Melissa Rickert

X. Curriculum Survey Findings

- 1) Elementary – 2<sup>nd</sup> grade – what is KEEP energy? Some questions about district Power standards. No resources – don't understand the big picture  
4<sup>th</sup> grade – resources and professional development needed for everything. Nothing is instructed/assessment. Working energy concepts into current curriculum would be a stretch.

**Action –**

- 4) Intermediate & Middle School (gr., 5-8) –  
5<sup>th</sup> & 6<sup>th</sup> grade – Not very many KEEP concepts covered in any of the content areas. See possibility in integrating energy ed. In social studies when talking about Progressive Era and Teddy Roosevelt. Positive feedback for supporting a community energy fair in spring. Teachers do see a need for resources (a few for professional development) if the energy concepts are REQUIRED.

7<sup>th</sup> and 8<sup>th</sup> grade – 8<sup>th</sup> grade still needs to be investigated by Mona. Looking specifically at methodology and KEEP standards are addressed in current curriculum. (quality of instruction)

**Action –**

- 5) High School (gr. 9-12) –

**Action –**

XI. Staff Education Efforts

Discussion – Staff's energy literacy is lacking and therefore would benefit from being nurtured

**Action-**

XII. Community Energy Fair

Discussion:

**Action –**

XIII. Next meeting **Tuesday, May 25, 3:30-5:00** Lineville LMC

Tentative Agenda:

- 1) Curriculum Survey Findings/Follow-up
- 2) Staff education feedback from district energy committee
- 3) Set summer work dates/times to continue work



K-12 Energy Education Committee Minutes  
June 16-19, 2010  
8:00-3:30 Lineville LMC

People Present

- Kim Lemberger, Mona Forbes, Marylu Sachs, Melissa Rickert

Action: Worked on developing the curricular framework for each grade level.

Next meeting: To Be Determined in Sept. 2010

K-12 Energy Education Committee Minutes  
November & December 2010  
3:30-5:00 Room 201, Lineville Intermediate School

People Present

- Kim Lemberger, Mona Forbes, Marylu Sachs, Mike Phillips, Melissa Rickert

Discussion:

A. Ken has retired and the district is in the process of hiring a new Facilities Manager. The District Energy Meeting scheduled for December is cancelled until the position has been filled.

B. The curricular framework will need to be shared with Andrea in the Teaching and Learning Department to get feedback and direction for where to proceed with the plan next.

Action: Reviewed curricular framework, drafted and revised Part 1, 3, 4, 5 of energy education plan.

# HSSD 21<sup>st</sup> Century Skills Power Standards

**Howard - Suamico School District  
21<sup>st</sup> Century Skills  
Power Standards and Benchmarks**

**Students will...**

**A. think creatively and critically.**

**1. Develop skills to solve local and global problems**

- Address problems as they occur
- Leverage social and cultural differences to create new ideas and increase innovation and work quality

**2. Demonstrate originality and inventiveness.**

**3. Integrate knowledge and ideas to create and produce high-quality products.**

- Use technology proficiently\*
- Research to build knowledge
- Evaluate information
- Produce high quality product in a timely manner
- Self-reflect

**4. Set goals and work toward improvement and achievement for self and society.**

- Prioritize, plan and manage and evaluate work
- Tactical (short term) goals
- Strategic (long term) goals
- Reflect on past experiences when setting goals
- Complete work in a timely manner

**B. collaborate.**

**1. Interact in a respectful, productive manner.**

- Cooperate with diverse people and groups with open-mindedness and respect
- Participate actively and appropriately
- Work together to reach a common goal
- Understand and utilize strategies for resolving conflict
- Listen attentively; restrain impulsivity and know when to speak

**2. Adapt to various roles and responsibilities.**

**C. practice citizenship & personal responsibility.**

**1. Practice legal and ethical behavior.**

- in regards to self
- in regards to global communities

**2. Participate effectively with respect to rights and responsibilities**

**3. Seek to understand diverse perspectives**

**4. Connect themselves and their learning to the real world.**

**D. communicate clearly.**

**1. Identifies key ideas and details when reading and listening to information**

**2. Articulates thoughts and ideas effectively using oral, written, and nonverbal communication skills in a variety of forms and contexts**

## KEEP Grant Application Form



# School Energy Education Grant Program

## School Energy Policy and Education Plan Grant Application

### Eligibility

School energy education funds are restricted to schools within the Focus on Energy territory. Email [mrickert@uwsp.edu](mailto:mrickert@uwsp.edu) or call 715.346.4320 to determine eligibility.

### Instructions

Download this document to your computer and complete the shaded boxes below. Print out your completed application and obtain the required signatures. Keep a copy of the completed application for your records.

#### Fax or mail complete application to:

2009 School Energy Education Grant Program  
 Wisconsin K-12 Energy Education Program  
 403 LRC, WCEE, UWSP  
 Stevens Point, WI 54481  
 Fax: 715.346.4698

**Deadline: Fax or Postmarked by May 18, 2009**

**Maximum Grant Request: \$5,000**

### Contact Information

<b>Name of school: Howard-Suamico School District</b>		
<b>Project Director (Contact Person): Kim Lemberger, Lineville Intermediate School</b>		
<b>Address: 2700 Lineville Road, Green Bay, WI 54313</b>		
<b>Phone(920)662-7762 (work)</b>	<b>Fax(920)662-7822</b>	<b>Email:kimlemb@hssd.k12.wi.us</b>
<b>Name of school electric utility: Wisconsin Public Service</b> (must be within Focus on Energy territory to be eligible)		
<b>Name of school gas utility: Wisconsin Public Service</b> (must be within Focus on Energy territory to be eligible)		
<b>Name of the Administering Body:Howard-Suamico School District Cabinet &amp; the Howard-Suamico School District Energy Committee</b> (individual or group that will oversee the adoption and enforcement of the School Energy Policy and Education Plan such as the School Board, District Administrator, Principal, etc.)		

## Signatures

	Print Name	Signature	Date
Administering Body Representative	Sue Sinclair		
District Administrator	Damian LaCroix		
Principal	N/A		
Project Director	Kim Lemberger		

## Need

Provide evidence (e.g., energy audit results such as electricity use/sq. ft. or heating BTUs per Heating Degree Day, utility bill data, teacher requests) that there is a need for developing a School Energy Policy and Education Plan:

During the summer of 2008 the Howard-Suamico School District began its energy commitment by accepting Lt. Governor Lawton's Energy Star School Challenge. Baseline ratings from EPA Portfolio Manager indicate a need for improvements in how our facilities are managed. In the classroom, we would like to walk the talk and use our schools as an example of responsible use of energy resources. This information will benefit students if used as meaningful classroom applications to the book-knowledge they are receiving.

Describe any previous efforts that have been made towards developing a School Energy Policy and Education Plan (e.g., adopted energy management policies, adopted energy education curricula):

A preliminary analysis of the curriculum in grades 5-8 done during the summer of 2008 found gaps in the energy education being taught. A further look at elementary and high school curriculum will need to be done to determine if these gaps are covered in those areas. Regardless, the existing curriculum isn't specific enough to ensure that energy education is actually being taught in every classroom at all grade levels. Currently two out of seven buildings in the district are in phases I and II of the Green and Healthy Schools Program through the Wisconsin DNR. Results from the required assessments (water, energy, waste/recycling) show there is room for improving the curriculum and learning experiences given to our students in these areas.

## Goals and Objectives

**Goal:** Develop or enhance a School Energy Policy and Education Plan that will improve a school's operational productivity, reduce costs, and integrate energy education into the school-wide curriculum.

**Objective:** By December 2010, the Administering Body will have adopted a School Energy Policy and Education Plan.

## Activities

The activities described below will require a significant amount of staff time to accomplish. These grant funds are intended to compensate a portion of the time required to carry out the

activities and meet the project goals and objectives. By submitting this grant application, it is understood that the activities outlined below will be completed unless otherwise indicated.

Following are some required\* and *recommended* steps for developing an Energy Policy and Education Plan for your school or school district. For each step you are asked to 1) indicate if you propose to complete the step, 2) provide supportive information, 3) note the expected date of completion, and 4) enter the funding amount requested. More information about what is involved in these steps and the maximum funds available for each step are provided in the document [Steps and Funds Available for the Development of a School Energy Policy and Education Plan](#).

**NOTE:** If any of the steps outlined below have already been completed, indicate the date of completion and provide a brief description of the activity in the space provided under the 2. **Supportive information/explanation** column. Funding will not be granted for activities that have already been completed.

Step	1. We propose to complete this step (Project Director initials)	2. Supportive information/explanation	3. Expected date of completion	4. Funds requested
A. *Form a Task Force and meet regularly (required - please list members in the table below)		Task Force Members and Energy Committee members are the same (expect to have more members once grant is approved as we'll have teacher members from various grade levels).	Ongoing	N/A

**Task Force Members**

Name	Title	Sector Represented (e.g., Administration, Faculty, Facilities)
See attachment "A"		

**NOTE: One of the most important criteria for determining which applications will be funded will be evidence that this Task Force is motivated and able to develop this plan. Please provide a statement that reflects the Task Force's interest and dedication:**

A commitment to energy conservation is consistent with the school district's vision of "excelling in the development of productive, responsible, civic-minded adults who prosper and serve."

In the summer of 2008 the Howard-Suamico School District became the 25<sup>th</sup> New Wisconsin District to sign on with Lt. Governor Barbara Lawton's Energy Star School Challenge. We agreed to the following:

1. Make a commitment to improve energy efficiency by 10 percent or more.



2. Measure and track the energy performance of our organization's facilities where possible. Tools are available through the EPA Energy Star program at no cost.
3. Develop and implement a plan consistent with the Energy Star Energy Management Guidelines to achieve energy savings.
4. Educate staff and community members about energy efficiency.

An Energy Committee was formed in the fall of 2008 and through their efforts an Energy Conservation Policy was developed and approved by the district Cabinet on April 21, 2009.

Currently there have been meetings scheduled with Curriculum Administrators on the evaluation of current district curriculum covering energy education to determine what is being taught now and what could potentially be added. From these meetings we hope to establish a K-12 Energy Education Committee. Members of the committee will consist of teachers from multiple grade levels and disciplines. A representative from each of the district's buildings is also a goal.

We are also looking at possible community outreach initiatives. An article has already appeared in the local newspaper and information will be shared in the district newsletter that goes to all households in the district.

#### Attachments

Step	1. We propose to complete this step (Project Director initials)	2. Supportive information/explanation	3. Expected date of completion	4. Funds requested
<b>B. Form an Energy Committee and meet regularly</b> (recommended)		Committee was formed in the fall of 2008. <ul style="list-style-type: none"> <li>• Met November 14, 2008</li> <li>• Met January 9, 2009</li> <li>• Met March 13, 2009</li> <li>• Met May 1, 2009</li> <li>• Next meeting – September 18, 2009</li> </ul>	Ongoing	N/A
<b>C. Review existing energy policies</b> (recommended)		No policy in place until April 21, 2009.		N/A
<b>D. *Participate in an energy audit</b> (required)		<ul style="list-style-type: none"> <li>• In 2005 Focus on Energy undertook a study to benchmark energy use in five of our schools.</li> <li>• On May 12<sup>th</sup> and 13<sup>th</sup>, 2009 Focus on Energy will conduct energy audits on all of our district schools.</li> </ul>	Report back from FOC possibly in June, 2009	N/A

		<ul style="list-style-type: none"> <li>Entered utility data in Portfolio Manager (EPA tracking system) and have baseline ratings for each district school.</li> </ul>		
<b>E. *Draft School Energy Policy and Education Plan</b> (required)		<ul style="list-style-type: none"> <li>Education Portion of Policy includes the education of staff, students, and community.</li> <li>Energy Conservation Policy drafted and adopted on April 21, 2009.</li> </ul>	April 21, 2009 (Energy Conservation Policy)	\$2000 toward Education Plan (staff time outside of contracted time)
<b>F. *Solicit administrative, faculty, &amp; staff input and feedback</b> (required – describe how you will do this in column 2)		<ul style="list-style-type: none"> <li>Energy policy was brought before the district cabinet for approval.</li> <li>Buildings and Grounds Department were directly involved with the writing of the energy policy.</li> <li>Facility Manager currently attending building staff meetings to review Energy Conservation Policy with building staff.</li> <li>Director of Curriculum will oversee an ad-hoc K-12 Energy Education Committee</li> </ul>	Ongoing	\$1250
<b>G. *Disseminate information to the community related to the progress of the project</b> (required – describe dissemination strategies in column 2)		<ul style="list-style-type: none"> <li>Energy Conservation Policy sent to all district staff on May 1, 2009.</li> <li>Article in local newspaper on May 2, 2009 indicating some of the district’s initiatives on energy savings.</li> <li>District newsletter will include information on the energy-saving initiatives.</li> <li>Energy conservation information will be publicized on the district’s web-page.</li> <li>Currently two schools are in the process of becoming a Green and Healthy Schools through the DNR program. Progress on the completion of this program will be made available on the building’s website and published</li> </ul>	Spring 2009  Summer 2009  Ongoing	\$250

	in the school newsletters.	Spring 2011	
H. *A minimum of eight (8) teachers will participate in the <a href="#">KEEP School Building Energy Efficiency Education</a> course (required)	<ul style="list-style-type: none"> <li>• Energy Fair (intermediate, middle and high school students).</li> <li>• Members from elementary, intermediate, middle and high school buildings will be asked to participate.</li> </ul>	Fall 2009	N/A
I. *Two (2) members of the Task Force or Energy Committee will attend a <a href="#">Practical Energy Management (PEM) - Schools</a> training (required)	<p>Three members of the Task Force/Energy Committee attended a Practical Energy Management Course in Green Bay on February 21, 2008.</p> <p>Other members may attend future training sessions.</p>	February 21, 2008	N/A
J. *One (1) member of the facilities department will participate in the <a href="#">Building Operator Certification (BOC)</a> program (required)	<ul style="list-style-type: none"> <li>• Jim DeBaker, Maintenance Supervisor/District Electrician currently working toward certification (3/12/09 – 5/28/09).</li> <li>• Will send one of district technicians to next session for BOC.</li> </ul>	June 1, 2009 Spring 2010	Possible scholarship of \$700 for Spring 2010 attendee
K. *The Task Force and Energy Committee members will review and finalize the School Energy Policy and Education Plan and present it to the administering body (required)	<p>1) Energy Conservation Policy approved April 21, 2009; e-mailed to all staff May 1, 2009; being reviewed with staff in meetings scheduled in May 2009.</p> <p>2) Formation of ad-hoc K-12 Energy Education Committee will:</p> <ul style="list-style-type: none"> <li>• Analyze the current curriculum to find evidence of energy education being taught in all curriculum areas in grades K-12.</li> <li>• Research programs and resources that may be integrated into the existing curriculum.</li> <li>• Provide professional development opportunities for staff to effectively teach the energy-related activities that are in the curriculum.</li> </ul>	Fall 2009 Summer 2010	\$500
L. <i>Evaluate the process of developing the School</i>	<ul style="list-style-type: none"> <li>• Energy Committee has met regularly since November 14,</li> </ul>	Ongoing	N/A

**Energy Policy and Education  
Plan (recommended)**

2008 and copies of the minutes  
from the meetings already held  
have been included in Section  
"B".

- Minutes will be kept from all  
meetings held related to the  
development of the Education  
Plan.

<b>TOTAL funds requested</b>	<b>\$4000 + \$700 scholarship</b>
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If you have any questions regarding this grant application, please contact Melissa Rickert, KEEP outreach specialist, at [mricket@uwsp.edu](mailto:mricket@uwsp.edu) or 715.346.4320.

# KEEP Grant Acceptance Agreement



Wisconsin Center for Environmental Education  
 Learning Resources Center, UW-Stevens Point  
 Stevens Point, WI 54481  
 715.346.4770; energy@uwsp.edu; www.uwsp.edu/keep

## GRANT AWARD ACCEPTANCE FORM

Project Title: School Energy Policy and Education Plan for the Howard-Suamico School District

Grant Award: \$4,000

Kim Lemberger  
 Lineville Intermediate School  
 2700 Lineville Road  
 Green Bay, WI 54313

The undersigned hereby accepts a grant in the amount indicated above, and certifies that:

- 1) The activities described within the applicant's 2009-2010 School Energy Policy and Education Plan grant proposal to the Wisconsin K-12 Energy Education Program (KEEP) will be carried out as proposed with the following changes:
  - a. Since this is the pilot year for this grant program, please inform the KEEP Outreach Specialist of ALL Task Force and Energy Committee meetings. The Outreach Specialist will attempt to attend as many meetings as possible to observe the process and act as a consultant as needed.
- 2) The enclosed *School Energy Policy and Education Plan Template* will be used to develop the School Energy Policy and Education Plan.
- 3) No grant funds will be used to replace or supplant existing funding.
- 4) No grant funds will be used to **implement** the School Energy Policy and Education Plan.
- 5) No funds will be encumbered or expended prior to July 1, 2009 and the receipt of the official *Notification of Grant Award* form. All funds will be expended and a final invoice will be submitted to KEEP on or before December 1, 2010.
- 6) The final School Energy Policy and Education Plan will be submitted to KEEP on or before December 1, 2010.
- 7) Budgetary changes not to exceed 10% of a budget item may be made without the advance approval of KEEP. Budget variances over 10% must be approved in writing **in advance** by KEEP.
- 8) Original receipts and documentation for expenditures will be kept by grant recipient for 5 years after grant period ending date.
- 9) A final report will be prepared and submitted within 60 days of the end of the project or January 31, 2011 whichever is earlier. The final report will include a copy of:
  - The End of Project Summary Report form
  - The final Budget Expense Summary form
  - A minimum of two photographs of representative activities. Photos must be at least 3" x 4". Digital images submitted must be at least 300 DPI resolution. A signed photo release, allowing KEEP and Focus on Energy to reproduce the image within KEEP and Focus on Energy publications, must be submitted for any and all recognizable person(s) within the submitted images.
  - Copies of all written, visual, or audio materials produced
- 10) All materials produced under the grant shall be copyright of the Wisconsin K-12 Energy Education Program and Focus on Energy, and bear the citation "Produced under a 2009 grant from the Wisconsin K-12 Energy Education Program and Focus on Energy." This statement applies to print, audio, electronic and all other media.

Kim Lemberger  
 Kim Lemberger, Intermediate School Teacher

6/4/09  
 Date

**Please sign and return this form by June 15, 2009**

Dennis [Signature], 6-4-09



