Abstract For 2008 Minnesota Schools Cutting Carbon Project Ending June 30, 2011.

PROJECT TITLE: GLOBAL WARMING: REDUCING THE CARBON FOOTPRINT OF MINNESOTA SCHOOLS

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FUNDING SOURCE: Environment and Natural Resources Trust Fund
LEGAL CITATION: ML 2008, Chap. 367, Sec. 2, Subd. 6(b).

APPROPRIATION AMOUNT: $ 750,000.

Project Outcome and Results

Minnesota Schools Cutting Carbon (MnSCC) is a three-year project that engaged over 7,000 students in 100 public high schools, colleges and universities across Minnesota to save energy and reduce greenhouse gas emissions at their schools.

Results: The 100 MnSCC schools collectively saved their schools about 5 million kWh of electricity (totaling 18 billion BTUs) and $325,000 in energy costs annually, which means the three-year program paid for itself in two and a half years. The project also avoided 9.5 million pounds of carbon dioxide emissions (CO_2 is a greenhouse gas).

In addition, 23 of the MnSCC schools received a total of $202,828 in competitive grants for renewable energy, energy efficiency, recycling, and transportation reduction projects. Fourteen schools were able to measure and report savings of over 3 million kWh of electricity; 10,500 therms of natural gas; and 26,000 gallons of gasoline - totaling 14.4 billion BTUs. These projects saved approximately $300,000 in annual energy costs and avoided 6.2 million pounds of CO_2 emissions.

The cumulative impact of all 100 MnSCC school projects saved schools 32.4 billion BTUs of energy, $625,000 in energy costs, and reduced carbon dioxide emissions by 15.7 million pounds, the equivalent of taking 1,700 cars off of Minnesota roads.

Our project team helped schools create clean energy teams, personally visited every school, provided individual school reports with recommendations on saving energy and resources, and gave students the opportunity to develop and lead energy-saving projects, network with other schools, and share success stories.

Student leadership was a key focus of our project, and there are many great examples of students having a direct impact on their schools and communities:

- Students presented at the biennial Clean Energy Resource Teams (CERTs) conference in St. Cloud in February 2011 to over 100 conference attendees over two days.

- Students rallied in the State Capitol Rotunda on Earth Day 2010, meeting fellow students and several legislators.

- Students presented before the LCCMR and the House Environment Policy and Oversight Committee to talk about how their work has impacted their school.

Overall, MnSCC demonstrated that our students are highly motivated and very effective. They achieved significant energy savings, and they directly influenced their schools and communities through their leadership and interactions with school officials, teachers, fellow students, and community representatives.

Project Results Use and Dissemination

1. How Project Information Has Been Used and Disseminated.

One of the primary objectives of this project was to raise awareness of energy issues and to implement low cost and no cost energy-saving actions in schools through the leadership of students. We also were focused throughout the project on creating opportunities for students to talk about their projects, share results, and for MnSCC to recognize their successes. The following is a list of the resources we created to enable schools to take clean energy actions. Many of our students presented their projects to school boards, local officials, and others in their schools and communities through dozens of events throughout this project. Examples of some of these and our main recognition events are listed below. Many more school events are described in appendices 3 and 4 of our final report.

Project Planning Resources: The outreach materials created and published on the MnSCC website to assist school teams during the project include:

- ***Planning Tips:*** Basic questions to start thinking about, and specific tips for how to go about planning projects at high schools, colleges and universities.
- ***Planning Documents:*** Eight presentations and fact sheets geared toward project planning in general and specific types of projects.
- ***Case Studies:*** Sixteen case studies, mostly of previous CERTs-supported projects—each one has a basic description and link to a pdf.
- ***Funding Opportunities:*** A funding toolkit and updates on specific current and future funding opportunities for schools, each with a basic description and proposal due date.
- ***Useful Links:*** Including project partners, other organizations working with schools, technical resources, and educational resources.

Features of the MnSCC website include:

- A home page that has colorful navigation boxes to drive visitors to certain places on the site. The highlight boxes include: Grant Opportunity; Sponsorship Program; Mentorship Program; School Spotlight. We also added a fun image to the homepage that speaks to teamwork and the student-led initiatives that each school is working on. Link: http://www.schoolscuttingcarbon.org. The site also includes basic program description, news and event highlights, and map-based and project-based navigation to school pages.
- A page with more information on the MNSCC program, partners, grant application information and forms, and a timeline. A video introducing the Schools Cutting Carbon staff team was posted to the public 'About' page and the internal Site Intro page (where users are taken when they log in).
- Statewide and regional listings of participating schools, with interactive map navigation and regional event and news highlights. Link: http://www.schoolscuttingcarbon.org/full-map
- A public web page for every school that allows students to track their carbon footprint reduction and share their team name and photo, the projects they are working on, all of their news and events, and any other information. Each school has a master account holder who has permission to edit their school's content. Many schools used the website to update their projects, posting text, pictures, and videos. We have captured many success stories from individual schools and intend to preserve this data on the CERTs website after the MnSCC website becomes inactive.
- Project planning resources, sponsor and mentor opportunities, information about energy efficiency, renewable energy and other projects that MnSCC schools are doing across the state, funding opportunities available to schools, and links to find more information on specific topics and technologies, including narrative tips, project case studies, and planning guides.
- An internal forum that allows students to discuss energy efficiency and clean energy issues and connect and collaborate on their projects. School leaders create and manage their own school's forum users, allowing students at each school more opportunity to be involved. More than 500 Minnesota students and teachers interacted through the forums. Topics discussed include waste reduction strategies in the lunchroom, webcast announcements, energy efficiency presentations, goal-setting and accomplishment celebrations, Earth Week events, green roofs, Project Green Fleet, greenhouses, solar projects, fundraising ideas, and Lights Out Day.
- There are links to on-line resources for all MnSCC partner organizations in the "Useful Links" page under Project Planning.

Website statistics. From the website launch in December of 2008 until the end of August 2011, there were 14,038 visits with 86,958 page views. The average person visited 6.19 pages per visit. The average time spent on the site was 4:13 minutes. The website had visitors from every state in the United States except Wyoming and visitors from 70 countries worldwide with the majority from the United States, followed by India, Canada, and Australia.

Many schools used the website to update their projects, posting text, pictures, and videos. We have captured many success stories from individual schools and intend to preserve this data on the CERTs website after the MnSCC website becomes inactive.

Recognition Events that Publicized Project Information

Earth Day at the Capitol 2010. Students from Central High School and LEAP High School in St. Paul; The City, Inc. in Minneapolis; Ortonville High School; Henry Sibley High School in Mendota Heights; Osseo Senior High School; and the School of Environmental Studies in Apple Valley participated in "Earth Day at the Capitol: Thumbs Up for Clean Energy!" This celebration of student-led energy efficiency and clean energy projects showcased Minnesota's future leaders on clean energy and green jobs. It featured presentations by the seven school teams as well as Senator Ellen Anderson, Representative Kate Knuth, and Abby Fenton of the Will Steger Foundation. WCCO Radio also interviewed students from Ortonville High School about their initiatives to reduce their school's carbon footprint during the Noon News Hour.

Student Presentations to Legislature and Elected Officials. Several student teams were invited to present their projects to the LCCMR in November 2010, and still others had the opportunity to present before the House Environment Policy and Oversight Committee to talk about how their work has impacted their school.

Minnesota Environmental Initiative Award – Energy and Climate Protection Project of the Year. The annual Environmental Initiative Awards honor innovative projects that have achieved extraordinary environmental outcomes by harnessing the power of partnership. The Environmental Initiative (EI) is a non-profit organization that believes that partnership is an effective way to find solutions to Minnesota's environmental problems. EI established the Environmental Initiative Awards in 1994 to honor innovative projects and their many partners, to inspire other organizations to create similar successful projects, and to encourage innovative collaborative approaches to environmental problem solving. Awards are given in five categories, and the Schools Cutting Carbon project received the award in the Energy and Climate Protection Category at the Environmental Initiative Awards dinner on May 27, 2010.

CERTs Bi-Annual Energy Conference. The CERTs Conference in February 2011 featured several MnSCC schools in the "Creating a Clean Energy School" conference track. Students from Aitkin, Rosemount, and Ortonville High Schools had the opportunity to develop their leadership and networking skills by attending and presenting at this conference. The two-day student track attracted over 110 people.

Minnesota State Lottery Twentieth Anniversary Celebration. The MnSCC Team, including Patrick Santelli, Project Coordinator, Dan Reinke of ERM, and Bill Sierks, Project Manager, spoke about the MnSCC project at the twentieth anniversary celebration of the Minnesota State Lottery at the Mall of America on April 17, 2010.

Greening the Heartland Conference. Through our partnership with the Minnesota chapter of the U.S. Green Building Council, MnSCC had the opportunity to participate in the Greening the Heartland Conference in May 2010 at the Minneapolis Convention Center. MnSCC participated in the conference workshops and had a table to display school projects in the exhibit hall for the duration of the conference, which was sponsored by the Minnesota USGBC Chapter and Green Communities.

2. Communication and Outreach Activities for MnSCC.

Communication and outreach have been at the heart of this project since it began. MnSCC began with a major communication and outreach effort to all Minnesota public high schools, colleges and universities to let them know about our project and encourage them to participate. Specific outreach included:

Specific outreach methods included:

- Contacting the lowest 25 performing schools identified in the B3 database project. The B3 database allows school teams to see how their buildings are performing compared to an energy benchmark and determine where efficiency improvement options exist.
- The U.S. Green Building Council (USGBC) and MNSCC project team issued a joint press release sent out to the USGBC mailing list.
- The Minnesota Technology Education Association, the Minnesota Rural Partners, National Teach-in, and NextStep posted the project on their websites and newsletters.
- Team members presented at the Science and Nature Conference at Gustavus Adolphus College.
- Diana McKeown was a featured guest on the “Everything Green” radio show on 12/6/08 (KTNF 950 AM)
- Attended four Youth Environmental Activist! MN (YEA! MN) and Youth Environmental Summit (YES) meetings.
- Met with the Minneapolis sustainability director to assist in reaching the Minneapolis school district, and sent emails to all of the relevant Minneapolis teachers and administration.
- Met with the St. Paul Public Schools service-learning department, sent emails and made phone calls made to administration and interested teachers.
- Contacted professors within the Minnesota State Colleges and Universities (MnSCU) system who are experts in their respective fields.
- Sent emails to all MnSCU media contacts about the program.
- The Minnesota Science Teachers Education Project (MN-STEP) sent out a blast email for MNSCC to its list serve of Minnesota science teachers.
- The Minnesota Environmental Partnership, the Will Steger Foundation, the Bog Walker, the Science Museum newsletter, and Education Minnesota placed MNSCC in their newsletters.
- Promoted MNSCC at the Will Steger Summer Institute in August 2008.

- Phone calls were made and follow up emails sent to over 40 charter school science teachers and administrators.
- Discussed MNSCC at a meeting of the Minnesota State Colleges Student Association advisors.
- Spoke about MNSCC at the Powershift conference.
- Contacted Rebuild America Building Efficiency Workshops attendees.
- Contacted all schools that applied for the recent Environmental Learning in Minnesota (ELM) grant program and all schools that took the Minnesota Energy Challenge.
- Emails were sent to all members of SEEK (Sharing Environmental Education Knowledge).

Regular and consistent communication with schools was a very important component of this project. Patrick Santelli prepared a regular MnSCC newsletter that highlighted events, funding possibilities, and highlighted different schools in a "school spotlight" segment**.** He personally phoned teachers to talk about the project, our goals and objectives, what schools were doing, and followed this with regular updates. We also held several webinars for schools throughout the project to explain the grant application process and to explain how they could follow up on the individual school action plans to implement low cost and no cost energy actions at their schools.

In addition, the recognition efforts discussed above, including Earth Day at the Capitol, student presentations to the LCCMR and the House Environment Policy and Oversight Committee, the Environmental Initiative Award, CERTs Bi-Annual Conference, Minnesota Lottery Celebration, Greening the Heartland Conference, and the many presentations by student teams to their schools, school boards, local elected officials, and their presentations at fairs, festivals, and other events all resulted in widespread communication and outreach of the MnSCC projects and results.

Environment and Natural Resources Trust Fund
2008 Work Program Final Report

Date of Report: September 30, 2011
Final Report
Date of Work Program Approval: June 10, 2008
Project Completion Date: June 30, 2011

I. PROJECT TITLE: GLOBAL WARMING: REDUCING THE CARBON FOOTPRINT OF MINNESOTA SCHOOLS

Project Manager: **William Sierks**
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Location: Statewide

Total Trust Fund Project Budget:	**Trust Fund Appropriation:**	**$ 750,000**
	Minus Amount Spent:	**$ 748,393**
	Final Balance:	**$ 1,607**

Legal Citation: ML 2008, Chap. 367, Sec. 2, Subd. 6(b).

Appropriation Language: (b) Global Warming - Reducing Carbon Footprint of Minnesota Schools --- $750,000 is from the trust fund to the commissioner of the Pollution Control Agency to provide student-focused grants to high schools, colleges, and universities to identify their carbon footprints and develop and implement innovative plans to reduce carbon emissions. This appropriation is available until June 30, 2011, at which time the project must be completed and final products delivered, unless an earlier date is specified in the work program.

II. and III. FINAL PROJECT SUMMARY.

Minnesota Schools Cutting Carbon (MnSCC) is a three-year project that engaged over 7,000 students in 100 public high schools, colleges and universities across Minnesota to save energy and reduce greenhouse gas emissions at their schools.

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Overall, MnSCC demonstrated that our students are highly motivated and very effective. They achieved significant energy savings, and they directly influenced their schools and communities through their leadership and interactions with school officials, teachers, fellow students, and community representatives.

IV. OUTLINE OF PROJECT RESULTS*:*

Result 1: Education and Outreach Budget: $25,000

Through in-person, written and on-line outreach, phase one of the project will explain the importance of determining a school's carbon footprint, becoming carbon neutral, and how student-led behavioral and operational changes can have significant climate change impacts. Outreach will include information about how to participate in this project, the importance of acting to stop global warming and becoming carbon neutral, and an emphasis on the opportunity for student-led teams to work with other schools across Minnesota on a project that will directly affect their schools, curriculum, and

community. The outreach materials will explain that schools can access a broad range of resources through this project.

Priority Outreach:

In particular, our outreach will target the following public school sectors:

- **School buildings with high energy-savings opportunities:** The school buildings with energy performance falling in the lower 50% as determined by the Minnesota Buildings, Benchmarks and Beyond (B3) database (http://www.mnbenchmarking.com) or the ENERGY STAR Portfolio Manager (http://www.energystar.gov/index.cfm?c=evaluate_performance.bus_portfolio manager)

- **Schools demonstrating environmental leadership:** Past participants in the Clean Energy Resource Teams (CERTs) Rebuild America workshops, the Will Steger Foundation, EPA's Energy Star program, or similar sustainable campus initiatives.

- **Schools with active student leaders:** Environmental student groups like MPIRG (http://www.mpirg.org), WeCAN (http://wecannetwork.org/), Youth Energy Summit teams (http://www.prairiewoodselc.org/YES%20flyer%2007.pdf), and the Minnesota Colleges and Universities that have signed the Climate Commitment (http://www.presidentsclimatecommitment.org/html/list_state.php).

Rationale for Prioritized Categories. The buildings with energy performance falling in the lower 50% as determined by the Minnesota B3 database or the EPA ENERGY STAR Portfolio Manager will most likely have significant opportunities to conserve energy and reduce carbon at very low or no cost (the B3 program is described in Result 2). Project partners will contact these schools directly and encourage them to participate in the project. In addition, we will work with the B3 program to encourage any public school districts, colleges and universities who have not yet entered their schools into the benchmarking database to participate in that effort so they can identify the potential energy-saving opportunities in their schools. Based on the additional resources and incentives we will provide, schools already active in developing a sustainable campus or reducing greenhouse gas emissions are also likely well-positioned to work with us to integrate project actions into their curriculum and implement behavior-change actions in areas such as building operation, transportation, and land and water use practices that reduce carbon.

Summary Budget Information for Result 1:	**Trust Fund Budget:**	**$ 25,000**
	Amount Spent:	**$ 25,000**
	Balance:	**$ 0**

Deliverable	Completion Date	Budget	Status
1. Create program education and outreach materials; develop and implement strategies for use.	January 31, 2009	$14,000	Completed.
2. School officials, teachers, and students receive information about the project and an invitation to participate through targeted mailings, administration, teacher or student conferences, and other outreach/events.	January 31, 2009	$0	Completed.
3. CERTs website updated to inform schools of project, provide on-line grant applications, resources, and access to technical assistance.	June 30, 2011	$11,000	Completed.

Final Report Summary - Result One: The first steps in this project were very important, since we had an ambitious goal of recruiting 100 schools across the state to participate in the project during the first six months. Through a major outreach effort by all project team members, we reached our goal of recruiting 100 schools statewide. The list of MnSCC schools organized by region is presented in Appendix 1. The schools are listed by city in Appendix 2. The project team outreach and education efforts were led by University of Minnesota (UM) Humphrey Institute graduate student Patrick Santelli, who was hired as project coordinator in October 2008. As discussed below, we are proud of the outcomes we achieved under Result 1. In addition to reaching our goal of 100 schools, we created a robust website and developed many resources to help student teams.

Deliverable 1 - Develop Outreach Strategies and Materials.
The UMN hired Patrick Santelli as the project coordinator. Mr. Santelli, as well as U of M CERTs coordinators Lissa Pawlisch, Joel Haskard, and Dan Thiede, Diana McKeown of the Green Institute (now part of Eureka Recycling), and others of the project team contributed significant in-kind hours to designing and implementing the outreach strategy to reach hundreds of schools across the state.

Project team efforts included developing an outreach database, strategy, press release and other materials to inform students, teachers, school administrators, and school building officials about the project and announce the launching of MnSCC. The project team's methods of communication included personal phone calls and using many different organizations' list servers to contact school administration and science/interested teachers, building operators, and student organizations; and speaking at a number of meetings, conferences, and community events to promote the project and distribute project information.

Project Planning Resources: The outreach materials created and published on the MnSCC website to assist school teams during the project include:

- ***Planning Tips:*** Basic questions to start thinking about, and specific tips for how to go about planning projects at high schools, colleges and universities.
- ***Planning Documents:*** Eight presentations and fact sheets geared toward project planning in general and specific types of projects.
- ***Case Studies:*** Sixteen case studies, mostly of previous CERTs-supported projects—each one has a basic description and link to a pdf.
- ***Funding Opportunities:*** A funding toolkit and updates on specific current and future funding opportunities for schools, each with a basic description and proposal due date.
- ***Useful Links:*** Including project partners, other organizations working with schools, technical resources, and educational resources.

Deliverable 2 - Contact school officials, teachers and students. The project team spent many hours informing Minnesota high school, college and university officials, students and teachers about our project and encouraging them to apply. Specific outreach methods included:

- Contacting the lowest 25 performing schools identified in the B3 database project. The B3 database allows school teams to see how their buildings are performing compared to an energy benchmark and determine where efficiency improvement options exist.
- The U.S. Green Building Council (USGBC) and MNSCC project team issued a joint press release sent out to the USGBC mailing list.
- The Minnesota Technology Education Association, the Minnesota Rural Partners, National Teach-in, and NextStep posted the project on their websites and newsletters.
- Team members presented at the Science and Nature Conference at Gustavus Adolphus College.
- Diana McKeown was a featured guest on the “Everything Green” radio show on 12/6/08 (KTNF 950 AM)
- Attended four Youth Environmental Activist! MN (YEA! MN) and Youth Environmental Summit (YES) meetings.
- Met with the Minneapolis sustainability director to assist in reaching the Minneapolis school district, and sent emails to all of the relevant Minneapolis teachers and administration.
- Met with the St. Paul Public Schools service-learning department, sent emails and made phone calls made to administration and interested teachers.
- Contacted professors within the Minnesota State Colleges and Universities (MnSCU) system who are experts in their respective fields.
- Sent emails to all MnSCU media contacts about the program.
- The Minnesota Science Teachers Education Project (MN-STEP) sent out a blast email for MNSCC to its list serve of Minnesota science teachers.

- The Minnesota Environmental Partnership, the Will Steger Foundation, the Bog Walker, the Science Museum newsletter, and Education Minnesota placed MNSCC in their newsletters.
- Promoted MNSCC at the Will Steger Summer Institute in August 2008.
- Phone calls were made and follow up emails sent to over 40 charter school science teachers and administrators.
- Discussed MNSCC at a meeting of the Minnesota State Colleges Student Association advisors.
- Spoke about MNSCC at the Powershift conference.
- Contacted Rebuild America Building Efficiency Workshops attendees.
- Contacted all schools that applied for the recent Environmental Learning in Minnesota (ELM) grant program and all schools that took the Minnesota Energy Challenge.
- Emails were sent to all members of SEEK (Sharing Environmental Education Knowledge).

We designed the MnSCC application process to be user friendly, minimize demands on teachers' busy schedules, and not intimidate schools who may be interested in the program. The application was also designed to encourage students, teachers, and administration to start thinking about ways to reduce their carbon footprint. The section on the B3 database came with instructions of how to enter data and who to contact if the school was not in the database.

Official Launch of Schools Cutting Carbon - Earth Day Media Coverage: The Schools Cutting Carbon Program was officially launched to the Minnesota public and media on April 21st, 2009—Earth Day—in a press release titled, "100 Schools Launch Massive Effort to Reduce Carbon and Save Energy": http://www.cleanenergyresourceteams.org/files/SchoolsCuttingCarbon_Release_EarthDay2009.pdf. This release attracted a great deal of media attention, with one highlight being coverage on the Fox 9 Evening News: http://www.schoolscuttingcarbon.org/schools/metro/lakeville-south-high-school/news/lakeville-south-schools-cutting-carbon-fox-9.

Timing for Project Launch: The deadline for schools to apply for MnSCC was December 15, 2008. This gave us time to conduct outreach and assure that we reached as many schools as possible. The downside is that the school year was almost half over, and it would be preferable to engage the schools in the fall as students and teachers are getting into their school routine. We reached over 7,000 students, and working with them early in the school year is important to gain as much time as possible to help design and carry out projects

Deliverable 3 - Website Development and Operation. The Minnesota Project designed the project website from October through December 2008, with input from the rest of the project team. The website design was officially launched on February 19, 2009. This was timed to coincide with the four MnSCC Kickoff webinars that were organize by our consultant, Environmental Resources Management (ERM), held on

February 18-19, 2009. The website will remain active at least through the December 30, 2011.

Features of the Web site include:

- A home page that has colorful navigation boxes to drive visitors to certain places on the site. The highlight boxes include: Grant Opportunity; Sponsorship Program; Mentorship Program; School Spotlight. We also added a fun image to the homepage that speaks to teamwork and the student-led initiatives that each school is working on. Link: http://www.schoolscuttingcarbon.org. The site also includes basic program description, news and event highlights, and map-based and project-based navigation to school pages.
- A page with more information on the MNSCC program, partners, grant application information and forms, and a timeline. A video introducing the Schools Cutting Carbon staff team was posted to the public 'About' page and the internal Site Intro page (where users are taken when they log in).
- Statewide and regional listings of participating schools, with interactive map navigation and regional event and news highlights. Link: http://www.schoolscuttingcarbon.org/full-map
- A public web page for every school that allows students to track their carbon footprint reduction and share their team name and photo, the projects they are working on, all of their news and events, and any other information. Each school has a master account holder who has permission to edit their school's content.
- Badges were added to each school page if they worked with certain partners. Badges were created for Transcampus Energy Action Movement (TEAM MN); Youth Energy Summit (YES!); Youth Environmental Activists of Minnesota (YEA MN); and Project Green Fleet.
- Project planning resources, sponsor and mentor opportunities, information about energy efficiency, renewable energy and other projects that MnSCC schools are doing across the state, funding opportunities available to schools, and links to find more information on specific topics and technologies, including narrative tips, project case studies, and planning guides.
- We added information about the Sponsorship and Mentorship Programs to the site explaining how organizations and individuals can support schools, and the benefits of various sponsorship levels. The Sponsorship Program offered sponsorship three different levels of sponsorship ($500, $1000, and $1500) to assist school teams. Sponsors could select a specific technology or an individual school to support. Mentors were individuals who supported school efforts by sharing ideas, time, expertise, recommendations, and connections to help teams donating their time and expertise. Over twenty mentors volunteered to work with MnSCC schools during the project. Links: http://www.schoolscuttingcarbon.org/about-program/sponsor; http://www.schoolscuttingcarbon.org/about-program/mentor
- An internal forum that allows students to discuss energy efficiency and clean energy issues and connect and collaborate on their projects. School leaders create and manage their own school's forum users, allowing students at each school more opportunity to be involved. More than 500 Minnesota students and teachers interacted through the forums. Topics discussed include waste reduction

strategies in the lunchroom, webcast announcements, energy efficiency presentations, goal-setting and accomplishment celebrations, Earth Week events, green roofs, Project Green Fleet, greenhouses, solar projects, fundraising ideas, and Lights Out Day.

- The website gave schools access to application forms, instructions, webinars and powerpoints containing information about how to apply for both the competitive and small grants. Competitive grant assistance included an Application How-To Webinar from one of the several instructive webinars that were given to introduce schools to this opportunity. Link: http://www.schoolscuttingcarbon.org/project-planning/funding/RFP. All schools that applied for these grants successfully used the online form.
- There are links to on-line resources for all MnSCC partner organizations in the "Useful Links" page under Project Planning.

Website statistics. From the website launch in December of 2008 until the end of August 2011, there were 14,038 visits with 86,958 page views. The average person visited 6.19 pages per visit. The average time spent on the site was 4:13 minutes. During this time frame the most common visited pages were the home page, schools sites, and project planning sites. The website had visitors from every state in the United States except Wyoming. The website had visitors from 70 countries worldwide with the majority from the United States, followed by India, Canada, and Australia.

Examples of some websites that were extremely active include:

- Bemidji State University
- Dakota County Technical College
- Hibbing Community College
- Lac qui Parle Valley Schools
- Lakeville South High School
- Rainy River Community College
- Rosemount High School
- Springfield High School
- Staples-Motley High School
- Stephen-Argyle High School
- Two Harbors High School

The project website was originally developed as a place in which schools could design and update their own web pages and share information. We limited access to assure that only appropriate content was posted, but this may have limited the ability of students to interact in the website forums. Many schools used the website to update their projects, posting text, pictures, and videos. We have captured many success stories from individual schools and intend to preserve this data on the CERTs website after the MnSCC website becomes inactive.

The information area of the website was also very successful, although it required a large time commitment from the project team to keep current. Using Google analytics to track web traffic, we learned that visitors spent the most time on the funding information,

with visits averaging nearly twice as long as any other page. Our effort to aggregate funding information and experiences required a large time commitment, but also gave Patrick Santelli good grounding on funding opportunities for schools.

Ongoing School Outreach. Regular and consistent communication with schools was a very important component of this project. Patrick Santelli prepared a regular MnSCC newsletter that highlighted events, funding possibilities, and highlighted different schools in a "school spotlight" segment**.** He personally phoned teachers to talk about the project, our goals and objectives, what schools were doing, and followed this with regular updates. A future program should also provide more support for teachers to strengthen our relationship with school teams and build a stronger network across participating schools.

We held several webinars during the course of the project to recruit schools for the program; explain the grant requirements; and explain how they could continue to save energy and measure results of their actions. These webinars were successful in generating school interest. We recommend that a subsequent project schedule webinars on a regular basis to not only explain project features but also to showcase work that schools are doing. School teams would have the opportunity to present their project to the web audience, and we could facilitate a dialogue during the webinar. This would create more networking and connection opportunities for school teams.

We did not have funds to cover travel costs for schools to meet face to face. When they did have opportunities to meet in person, such as Earth Day at the Capitol and the Bi-annual CERTs conference, students welcomed the opportunity to talk about their work. These events also provided opportunities for recognizing their good work.

Result 2. Carbon Footprint Identification and Initial Reduction Budget: $467,172

Overview of Result 2. In phase two of the project, schools will receive technical and financial assistance to determine their carbon footprint, identify the most effective actions to reduce their footprint, and take steps toward becoming carbon neutral. After developing their carbon footprint reduction plans, this phase of the project will emphasize the leadership role of students in changing behavior to reduce greenhouse gas emissions and track the impact of their actions through the remainder of this three-year project. We expect to reach approximately 100 schools. To maximize the reach of our project, applicants will be required to provide a financial or in-kind match and identify faculty, student and administrative commitment to the project. Result 2 will provide the following assistance to schools:

1. **Technical Assistance.** A team of technical experts will work with school teams to evaluate between one and three of their school buildings (participating high schools will typically assess one building; colleges and universities may assess up to three buildings) and identify actions that can reduce greenhouse gas emissions. We will select a consultant to assemble this team via a request for proposal process. Using the

Minnesota public building B3 benchmarking database to identify school buildings with the greatest potential for cost-effective greenhouse gas reductions, the consultant will explain how changes to building operations, including student behaviors, can reduce energy use and greenhouse gas emissions. We will also provide on-line resources and other materials that explain the connection between behavior change and reducing greenhouse gas emissions and demonstrate how students can monitor changes in building energy use and carbon emissions. Students can participate in developing and implementing no cost and low cost energy savings actions.

2. **Assistance to Student Teams.** Our consultant team, assisted by CERTs teams and project partners, will help student-led teams to identify and implement greenhouse gas reduction actions that they can take at both their school and in their communities. The focus will be on topics such as sustainable land and water use practices; promoting ride-share, walking, and other alternatives to student driving; promoting school bus "green fleets"; purchasing of environmentally-friendly products; and promoting waste reduction and recycling. Students will develop their own school carbon reduction plans, selecting those options most appropriate for their schools.

3. **On-line Resources.** School teams will access an on-line mechanism to connect to project partners in their area, exchange information with each other, publish case studies, and form teams to compete against other schools to see who can achieve the greatest carbon footprint reductions.

How Schools Will Be Selected. Interested Schools will apply through the CERTs website and provide the name/contact of the project leader (a faculty advisor such as a science teacher); student organization/student leader; school superintendent; school facility manager; local utility provider; number of buildings on the campus; and student body size. Schools will be able to apply to enroll in the project through January of 2009.

We will apportion the funding for Result 2 between public high schools and higher education institutions so that we involve 100 schools overall. In selecting participants, we will strive for geographic representation of both the metropolitan area and greater Minnesota schools; small, medium, and large schools; and schools with one or more buildings identified in the lower half of the Minnesota benchmarking database. Those schools who identify and commit to broader student participation, schools with a history of student leaders addressing sustainability issues, and those demonstrating commitment of outside partners or additional financial resources to the project will also receive priority consideration.

Consultant Technical Assistance Available to Schools in Result 2:

Schools selected to participate in the project will work with project consultants to develop carbon footprints and identify greenhouse gas reduction actions during the winter and spring of the 2008-2009 school year. The state will issue an RFP to assemble a team of technical experts who will work with school teams to develop carbon footprint action plans. A project consultant will assess the school building

operations and work with the school team to identify and implement no cost and low cost actions to reduce the building carbon footprint, implement low cost/no cost actions most appropriate to their schools, and monitor the impact of those actions during the remaining two years of the project. We have allocated $467,172 in project funds to work with school teams to carry out this work, allocated as follows:

- $361,693 for a consultant team to work with school teams to reduce building carbon footprints, with an estimated cost of $2500 to $2800 per school for building assessments and to develop student-led carbon footprint action plans to address transportation, commuting, land and water use, recycling, and similar topics.

- $60,479 for grants of $250 to $500 that will be awarded directly to school teams to develop and begin implementing student carbon footprint action plans; $8,307 of this amount will be used to purchase vending misers that will be given as an incentive during the spring 2011 semester to school teams that maintain updated energy databases and are reporting project results.

- $45,000 for the UMN project coordinator to work with school teams to apply for and implement grant projects, and assist the consultant team and school teams in implementing carbon reduction action plans.

Result 2 will offer schools several sources of technical assistance and resources to reduce their carbon footprint. These include:

1. **Minnesota Benchmarking for School Buildings**: In 2001, the Minnesota Legislature established a benchmarking tool for public buildings, including schools larger than 5,000 sq. ft., to maintain energy use information, establish benchmarks, and track building performance. M.S. Sec. 216B.241. Many public schools have entered energy data for their buildings into this database. The legislature intended that the Benchmarking database evaluate building performance and identify those with the highest return on investment for energy conservation funding. There are hundreds of school buildings already in the Benchmarking database.

Our project will use this database by working with school teams to analyze their benchmarking data and identify the greatest opportunities for cost-effective energy and greenhouse gas reductions. Schools will be able to compare the energy usage of their buildings to school buildings of similar size and use in Minnesota. Those buildings performing in the lower half of the Benchmarking database will most likely have significant opportunities to save energy and reduce greenhouse gas (GHG) emissions (primarily carbon dioxide emissions) at little or no cost. Because of the potential carbon reduction opportunities of school buildings, we will encourage schools not yet participating in the Benchmarking project to do so.

2. **Energy and Carbon Reduction Actions - Buildings**: After identifying the most cost-effective opportunities through the Benchmarking database, student-teacher teams

will work with our technical experts to walk through their campus buildings and identify low and no-cost actions that can reduce their energy use and greenhouse gas emissions. The consultant team selected through the RFP mentioned earlier will discuss with school teams a plan for efficient operations and annual energy awareness campaigns, training, and utility tracking. The focus includes eliciting behavior change aimed at staff and students to identify low and no-cost operational changes for schools to save energy. Our technical experts will visit schools and work with school teams to develop their energy/carbon reduction actions.

3. **Carbon Footprint Reduction Actions – School-wide:** Student-teacher teams will also identify behavior changes in areas such as commuting to school, land and water use, recycling, and other areas that can reduce greenhouse gas emissions. Our consultant team will work with project partners, including CERTs regional teams, to provide information, including web-based tools that can help school teams calculate their carbon footprint and learn how to reduce greenhouse gas emissions in the areas discussed above. We will discuss how the Benchmarking website will be used to track changes to the carbon footprint of school buildings. Our consultant team will also provide a web-based tool to track changes to campus-wide greenhouse gas emissions. To assist students in developing and implementing greenhouse gas-reducing actions and behavior changes, we will designate a portion of the funding in the RFP for this task to be made available by the consultant to individual schools to assist in implementation.

As mentioned above, $361,693 in project funds will be awarded through a consultant RFP for assistance to schools in developing and implementing carbon footprint reduction actions in their buildings and school-wide. In addition, the project will provide funds directly to schools to begin implementing their plans. School teams may apply to the state to receive between $250 and $500 in grant funds to cover expenses such as developing their team's carbon footprint action plan, hosting a conference, implementing some low-cost actions, or preparing materials to publicize and encourage support for their action plan. There is $60,479 in project funds that will be awarded through the school grants and to purchase vending misers as an incentive during the spring 2011 semester to school teams that maintain updated energy databases and report project results.

4. **Resource Materials:** Schools will receive technology and resource information about various technologies (e.g., wind, solar, geothermal, green buildings), energy efficiency options, Project Green Fleet and clean-car technologies, recycling and waste reduction, and other resources through our project partners and the CERTs website. Each school will be able to learn what other schools in the project are doing through the CERTs website. Each school will have a designated slot into which they can post text updates, YouTube videos, flyers, etc. At the end of this phase of the project, the school will receive a template to create a case study that will report the actions that the school has identified, the actions the school is implementing, and the impact on its carbon footprint. The school can use this information in applying for the Result Three competitive grants during the second year of the project.

Summary Budget Information for Result 2: **Trust Fund Budget: $ 467,172**
Amount Spent: $ 467,039
Balance: $ 133

Deliverable	Completion Date	Budget	Status
1. Schools receive technical assistance to develop carbon footprint, identify low cost/no cost EE options, and implement carbon cutting actions.	June 30, 2011	$361,693	Completed.
2. Schools receive grants to prepare and implement student-based climate change action plans.	December 31, 2009	$60,479	Grants have been awarded to 93 schools; remaining funds were used for incentives on projects during 2010-11 school year.
3. School teams implement low cost/no cost actions and report changes to carbon footprint.	June 30, 2011	$45,000	Completed.
4. Students see the impact of behavior changes in everyday life on school carbon footprint.	June 30, 2011	$0	Funding included above.

Final Report Summary - Result 2:

Deliverable 1 – Technical Assistance to Schools. The MPCA issued an RFP in the fall of 2008 requesting proposals to provide technical and educational services under Result 2. Five proposals were received. The MPCA entered into a contract with the successful bidder, ERM, in January 2009. The ERM team then worked with our project team to design a kickoff webinar for the schools, populate the project website with resources and information for schools, and prepare for in-person site visits and meetings with each school team.

1. Project Kickoff Webinars. ERM hosted and led four live project kick-off webinars on February 18 and 19, 2009. All of the webinars were recorded and made available through the project website. 111 participants from 76 schools participated in the live webinars. Many schools participated as a group with their school teams using one registration. Registrants included school team leaders (coaches), principals and administrators, students, facility directors and district energy coordinators.

2. School Data Collection. ERM requested that each school team collect data such as quantity of energy used as well as behaviors around the use of energy. ERM created a web-based data collection tool for schools to provide energy use data as well as building- specific information and showed school teams how to input their data. We strongly encouraged school teams to enter their data before their school visits, so that ERM could make the best use of the time available for the school visit to discuss the school's actual carbon footprint and the specific data contributing to its carbon emissions. The data collected included:

a) Building information (building material of construction information)
b) Electricity use including lighting types
c) Interior spaces including computers, swimming pools and kitchens
d) Fuel burning equipment
e) Heating, ventilation and air conditioning
f) Commuting
g) Water Use
h) Waste Generation
i) Refrigerant Leakage

3. School Visits. To help ensure consistency in the school visits, ERM conducted an in-depth training class for all its school energy auditors. Topics covered included carbon footprint calculations, energy and HVAC basics, school energy systems and best practices, the auditing process, engaging students and school teams, and ERM energy audit tools. Following the one day classroom training, participants joined a school energy audit. ERM distributed ninety-three vending misers that were donated by the MPCA during school visits. ERM completed the majority of the school visits in the spring of 2009 and the remainder in the fall of 2009.

ERM observed that many schools have similar carbon reduction opportunities. Some examples include:

- Creating an energy policy.
- Reduce light levels. Using lighting to illuminate areas adequately lit by day-lighting, excess light levels in corridors, and lighting on in areas not in use were some examples of electricity use that can easily be reduced.
- Increase night, weekend, and holiday setbacks. One degree setback = 1% energy savings. Some schools maintain temperature levels throughout the evening and weekend hours and many only set back to 65˚F.
- Install vending misers.
- Turning off refrigerated water fountains.
- Insulating door frames and hot water/steam piping.
- Turning off equipment such as computers when not in use and during evening and weekend hours.
- Encourage commuting changes to reduce use of single occupancy vehicles.

Importance of Personal Interaction and Suggestion for Enhanced Effectiveness. In our opinion, the on-site personal contact is the most effective way to build and maintain interest. Although the travel and time commitment to visit 100 schools was

significant, the in-person site visits were an extremely effective component of our project. Face-to-face interaction with students, teachers and school officials created a strong sense of partnership and interest. The visits validated the commitment of our project team to the individual schools and showed that the student teams have an important voice in helping to develop their school projects and influence their success. We believe that having an in-person visit during the second and third years of the project would have been very helpful in maintaining interest, particularly as school teams change with departing seniors and new student members.

4. School Reports. After the school visit, ERM provided each school with a report that included background information about the school, a summary of their energy data, information about the ERM site visit, and photographs and thermal images where applicable. The reports also contained recommendations for reducing their carbon footprint, focusing mostly on low and no cost energy-saving solutions. For each recommendation, ERM calculated estimated energy savings, estimated carbon reduction and cost and return on investment for any investment recommendations. The carbon calculator includes instructions and was uploaded to the website. See http://www.schoolscuttingcarbon.org/project-planning/carbon-calculator.

In addition, ERM provided each school with a carbon footprint calculator in excel format that shows the school's baseline carbon footprint. School teams can use this tool to measure changes to their carbon footprint. A sample school report and carbon footprint calculator were submitted with an earlier report. All reports are available upon request.

5. Community outreach tool. ERM completed a PowerPoint template and project flyer based on the statistical data submitted by the schools that were visited. The materials were intended as tools for school teams to share with their communities.

6. School Assistance by Project Coordinator. Patrick Santelli, the CERTs project coordinator, provided assistance to schools in a number of areas. Examples of these activities, which support both Results Two and Three, include:

- Scheduled and attended meetings with the Hennepin County River Watch to learn more about their programs and how they teach about water conservation and quality as Schools Cutting Carbon moves forward with water conservation. In addition, explored how Schools Cutting Carbon can best complement this work, reduce overlap, and provide a more comprehensive experience for schools involved in both programs.
- Met with John Geissler of the University of Minnesota Duluth and the Boulder Lake Environmental Learning Center to discuss his upcoming project looking at carbon sequestration in school forests. Discussed how to do outreach and whether schools in our program may be candidates for their project.
- Met with MPCA staff and the CERTs Northeast Coordinator to discuss how to do outreach with high schools under a replacement lamping grant coordinated by the MPCA. The grant, funded by U.S. EPA, focuses on proper handling of PCBs in fluorescent lighting ballast when those lights are replaced.

- Met with various utilities to discuss moving our proposed Utility Pilot forward, and worked with Otter Tail Power to form a partnership for the Utility Pilot project.
- Attended both Youth Environmental Summits Career Fairs in the fall of 2010, and attended their winter workshops.
- Worked closely with the Youth Environmental Activists to help plan meetings and events at metro area schools.
- Presented at the Minnesota State College Student Associate annual meeting. Presentation included success stories of peer schools, common things the students could do to reduce their carbon footprint, and group discussion on best strategies for achieving success.
- Worked with the Steger Institute to promote and do outreach about their new British Council grant designed to recognize and reward Minnesota schools for innovative energy reduction projects.
- Worked with a group including the Minnesota Renewable Energy Society on a grant they were awarded by the Office of Energy Security to create a guide for schools interested in pursuing renewable energy. This work included looking at various renewable energy projects already implemented in schools in Minnesota and nationally.
- Extensive contact with an initiative in its infancy regarding formalizing energy concepts into school education. This work within the initiative has been to do the background on what schools are currently teaching, and if schools with renewable energy have incorporated the renewable energy source as a learning opportunity in the classroom or through their MnSCC team.
- Planned and organized the "Creating a Clean Energy School" two day tracks for the CERTs biennial conference in February 2011.
- Met with the MnSCC team and ERM to discuss webinar content to be designed for school administration, to be followed by a technical training for students and building operation managers regarding energy usage in schools.
- Wrote monthly newsletters which highlighted a new school each month, various funding opportunities, and other relevant school information for energy conservation.
- Discussed with a number of schools how to create a revolving loan fund to provide a continuous incentive, motivation, and ongoing means to fund school energy efficiency projects.
- Supervised and helped create a work plan for an MPCA GreenCorps member assigned to CERTs. The member is working with schools to help benchmark, understand, and analyze the schools' energy usage through the Buildings, Benchmarks, and Beyond energy database.

Project consultant ERM also continued to provide technical assistance to schools during the remainder of the project. ERM prepared and presented several webinars in the spring of 2011 to educate students, school administrators, and building operators about the impact that low cost and no cost energy efficiency actions can have on energy costs. One webinar focused on school administrators; the second targeted building operators and have more detail on specific building operating and maintenance practices that save energy costs. Students were encouraged to attend one or both

webinars.

Each webinar was presented live at least twice to enable maximum participation. The webinars also encouraged school teams to update and maintain their school energy database and share the results of their projects. The CERTs project coordinator, a CERTs intern, and ERM also offered to assist schools that have questions or need assistance in the areas addressed by the webinars.

The Department of Commerce sent letters to the utilities servicing each of our schools in the early months of 2010. The letters encourage utilities to work with school teams in implementing energy-saving recommendations in the ERM reports to the schools.

7. Finding Additional Funding Sources for Schools. Our project team made strong efforts to link schools with other available funding sources to assist in implementing energy efficiency and carbon reduction projects. We encouraged schools to take advantage of the Clean Energy Resource Teams ACT campaigns! The ACT campaigns are designed to be simple, concrete ways to reduce energy usage. During this reporting period, the CERTs ACT campaigns featured a bulk-buy Vending Miser campaign allowing organizations to buy Vending Misers for a reduced price. The second campaign featured Project Green Fleet which offers free retrofit equipment to school districts to reduce the amount of pollution produced by their school bus diesel fleets. With the free retrofits, diesel emissions are reduced by 30-50% per vehicle.

We were very active in raising awareness of various grant opportunities for schools along with creating committees to study how schools can best utilize grant opportunities and leverage additional funding. Examples include promoting the Department of Commerce's Facility Cost-Share program, which awarded between $4 and $6 million Minnesota school districts and local governments to make energy efficiency improvements to existing facilities for cost-effective projects ready for immediate implementation. We have included regular updates on the Public Buildings Enhanced Energy Efficiency Program, which will provide financing for energy efficiency projects in school buildings, in our school newsletters.

Deliverables 2, 3 and 4 – Small School Grants for student-based actions. Each school was eligible to receive a $500 grant to help them get started implementing a carbon reduction project of their choice. The schools completed an online application through the project website. Ninety-three schools applied for and received grants. Five schools did not apply for the grants, and two schools applied but did not execute grant contracts. The MPCA entered grant contracts and awarded 93 grants during the spring of 2009 and continuing into the fall of 2010.

We allocated the remaining small grant funds to provide energy efficient equipment to schools that achieved certain energy benchmarking milestones and incorporate student learning and behavioral change at their schools. For example, energy misers have been very popular with student teams. We used $3227 of the remaining funds to purchased 20 vending misers at a reduced rate through a bulk purchase event created

by CERTs. In addition, we used $176 for costs charged by the Department of Administration to reserve equipment, tables and chairs at the Capitol Rotunda for the Earth Day event. (See Result 4).

The 93 school teams implemented a wide range of projects that are listed in Appendix 3. Several of these creative projects include:

The **Gibbon Fairfax Winthrop High School** Wind Energy Team and the Carbon Team "Carbon Fever" have committed significant amounts of time and resources to reducing the carbon footprint of GFW. The team has not only been working hard around the high school to reduce the amount of energy used, but has also taken their lessons to the GFW Middle School to talk to younger students about the importance of Reduce/Reuse/Recycle. By incorporating energy awareness and education into the school's curriculum, the team has been encouraged to research and raise awareness of renewable energy and carbon footprint issues. The Team's promotion of Project Green Fleet was featured on local television in May 2010. In addition to building relationships with local community partners, the team also toured the Great River Energy headquarters

The **Proctor High School** "Green Bandits" have emphasized their commitment to energy efficiency by outlawing excessive energy use at Proctor High! Using light meters to identify optimal locations for occupancy sensors and light harvesters, they were able to ensure that certain lights are only on when necessary. Also, they replaced metal halide with high-intensity fluorescent lamps in their field-house, which are twice as energy-efficient. In addition, they worked to convert old computer monitors to higher-efficiency LCD monitors and to implement an energy saving computing system in their media center computer lab. In an effort to decrease food waste, the Bandits partnered with Western Lake Superior Sanitary District in Duluth to help increase recycling and start composting food waste on the high school campus.

The "Something Green" team from **Winona High School** has made many changes to encourage clean energy at the organizational and individual level throughout the district. The new Winona Area Learning Center uses geo-thermal HVAC, light harvesting sensors that dim classroom lights when enough natural light is available, as well as other technologies to reduce the school's carbon footprint. The team involved the Winona Area Public Schools (WAPS) in an effort working with 14 other school districts to create a wind farm cooperative reducing carbon emissions and creating revenue for the schools. The students used the grant to purchase equipment to measure and monitor energy usage in each classroom. From there they will recommend methods for reducing energy consumption. The Winona Team also worked with Sustain Winona and Winona State University to highlight bike and walk commuting to school and by creating new bike facilities.

Jordan High School's Environmental Science program is creating behavioral change and reducing their carbon footprint by having students apply stickers to the light switch plates in all of the classrooms as a reminder to shut off lights. The team also collects

recycling and manages the ‘Second Chance’ paper program for the entire school, going into the elementary schools to talk to students about relevant environmental issues such as recycling and the importance of shutting off lights when leaving the room. The Team is also responsible for taking lessons learned about water contaminants and testing home tap water.

The **Eden Valley Watkins** Carbon Eating Eagles are taking control of their clean energy future and reducing their schools carbon footprint through many actions. At the EVW’s "Green Day" on May 28th, 2010, the school unveiled its new solar panels funded and made possible entirely by the hard work of the students and coach; hosted classes at the school aimed at creating knowledge and sparking interest in the community about renewable energy and energy conservation; created games around energy conservation to take into the elementary school and trivia questions for high school students; installed more recycling bins around the campus; hosted a "green" science fair; and sent letters to the editor of the local paper urging support for their solar project at the school.

Lessons Learned – Result 2.

On-Site Visits To Keep School Teams Engaged. The ERM site visits, involving the first face to face contact with students and the project team, were a resounding success. During the first year, ERM visited every school, meeting with students, teachers and building officials, walking through their school buildings, identifying energy saving actions and allowing students to use equipment that experts use during building audits, such as digital thermometers, infrared cameras, and light meters. The on-site visits involved ERM staff meeting with school administration, the building operator, and the school team. The building walk through typically involved the boiler room, with ERM explaining to students how their building’s energy systems worked. ERM met with the team after the walk through for a debrief, discussing initial observations, and answering questions. The student involvement in the site visit, combined with recommending low and no cost actions that students could lead, gave them a sense of ownership and opportunity.

ERM’s site visits created a high level of interest and involvement, engaging school teams to not only learn about energy practices at their schools, but also to get information to determine their schools energy baseline and carbon footprint, create their own project web pages, and raise awareness of energy issues in their schools. The site visits developed an initial relationship with the school team and provided them with an understanding of the overall project goals and objectives. In cases where the school “coach” and students were less engaged, ERM found the school visits to be a mechanism to energize and educate the team on carbon emissions and energy behavior. At the conclusion of the visits, ERM received numerous thank you emails with details of the climate change team’s project efforts. For most participating schools, ERM found the building mechanical staff supportive and appreciative of the visit, even if they were apprehensive at the beginning of the visit.

In sum, the ERM visits were a huge success, and they reinforced the importance of meeting people in person as a key to creating enthusiasm and support for the project. These site visits, including travel, building audits, data analysis and follow-up individual reports, were relatively inexpensive, averaging about $2,000 to $2,500 per school. The challenge was that we did not have the financial resources to continue these in-person visits during the second and third years of the project. It was difficult to keep a high level of interest in the schools that did not receive the second-year grants, particularly as students who were involved in the first year graduated and were replaced by others who were not familiar with MnSCC.

One suggestion for strengthening school connections in the future is to seek funds to have trained energy auditors from CERTs follow-up with schools to encourage them to follow through with actions recommended in their reports. The CERTs regional teams have a good network of contact who would likely be interested in working with the schools on local energy projects. Also, the regional organizers and other CERTs partners, such as YES! Coordinators, could do follow up visits to schools to maintain in-person contacts at a low cost.

More Support for Implementing School Action Plans. Every school visited by ERM received an individual report with specific low cost and no cost actions that would save energy and reduce their carbon footprint. The report also contained the school's carbon footprint based on actual energy, transportation, water, and other data for the school. Students really enjoyed the energy audit and site visit. With more resources to follow-up with schools, we can better link the audit enthusiasm with the recommendations in the report. (See utility partnership recommendation below). We also recommend site visits by regional CERTs coordinators or other staff to keep enthusiasm high after the report has been issued.

Tracking school energy usage proved more challenging than anticipated. We expected that most schools would enter their data into the statewide B3 database. Many schools lacked the resources, knowledge, or access to the database. Because of the difficulties working with B3, we instead worked with school teams to get one year of utility data before the audit visit, so that ERM could discuss the data during the visit. In the future, we would use a single database, allocate more effort to helping school teams gather and understand the energy data, and offer training and technical support for those entering and interpreting school energy data. It is important for school teams to understand how energy benchmarking serves an important tool in determining the effectiveness of energy saving actions.

Simplifying Small Grant Program. Each school was eligible to receive a $500 grant during the first year. Although small, these grants helped create significant enthusiasm for MnSCC. High school teams in particular were thrilled to receive these grants. Overall, the level of engagement in the 100 schools was highest in the first year because of the ERM visits and small grants. Students had a strong sense of ownership in the program, since they selected and implemented the projects in their schools, with assistance from their teachers and our project team.

We encountered several challenges in administering the small grants. First, many schools thought that by applying to participate in MnSCC, they had already submitted their $500 grant application and no additional paperwork was needed. Also, many teachers and teams were not familiar with state contracting requirements. Applications were delayed as we worked with school teams to explain the process; we also assisted a number of schools in completing their applications. Because of these issues, many schools received grants late in the spring, when students were preparing for finals or focusing on graduation. Most of the schools expected to receive the grants quickly, and many were disappointed that funds were not available until late in the school year.

These grants were paid electronically to schools through the state system, and this created an unanticipated difficulty. The e-payments were not identified as a grant award when transmitted, and the amounts were small so did not trigger the attention of school accounting staff, who then did not notify school team when grant funds were received. This contributed to delays as school teams were uncertain when they could start their projects.

The small grants were difficult to monitor. While schools were eager to tell us how their projects turned out, reporting results was challenging. Because we wanted to keep paperwork to a minimum to encourage schools to apply for these small grants, we encouraged but did not require written reports for the $500 grants. While many schools provided updates through newsletters or their websites, attempting to quantify measurable outcomes was difficult in many cases.

To minimize these issues In the future, we would offer schools a limited selection of energy saving actions or devices, such as vending misers, kilowatt meters, or pre-rinse spray valves I n lieu of awarding a monetary grant, eliminating the grant paperwork and making it much easier to measure results.

Creating Stronger School-Local Utility Partnerships To Implement Energy-Saving Actions. One of the biggest challenges for schools is a lack of technical and financial resources. Although energy is a major part of school budgets, they do not have the expertise to identify and design energy-saving projects nor money to finance these projects. Because a primary focus of MnSCC was low and no cost energy saving actions, many of our projects did not involve utility rebates or other utility financing programs (other than several competitive grant projects). Nonetheless, one of the most significant opportunities we identified is the development of stronger partnerships between schools and their local utilities. Developing a stronger relationship with local utilities can help schools identify energy efficiency projects that will save money and offer quick return on investment.

Most schools were unfamiliar with utility financing options and utility rebates, and did not have a working relationship with their local utility. In many rural and smaller districts, schools are the local utilities' biggest energy user and offer significant energy efficiency opportunities. We encouraged these partnerships in several ways. The Department of

Commerce Division of Energy Resources sent a letter to CIP representatives of all utilities that serviced MnSCC schools. The letter explained the MnSCC program, invited the utility representatives to participate in the ERM building walkthroughs and on-site visits. Only a few utilities accepted this offer.

In the last year of the project, we worked closely with Ottertail Power Company and talked with other utilities about designing a pilot project with a school district. Our intended pilot project involved creating an energy team including school members and a utility representative. Patrick Santelli and others at CERTs, with support from the Commerce Division of Energy Resources, developed details of a pilot project that would focus on energy and water conservation. If project financing develops in the future, this school-utility pilot partnership should be a major focus of Phase-Two.

Result 3. Grants for Carbon Reduction Projects. Budget: $224,328

Phase three is a competitive grant program to award grants of up to $20,000 to schools to implement innovative ways to reduce or sequester carbon. Any school with an identified carbon footprint and a carbon reduction/sequestration plan is eligible. This competitive grant program begins in the second year of the project.

Criteria for awarding the competitive grants will include the ratio of students/student body who participated in Result 2, the actions that were taken and any carbon reductions that have occurred through those actions, the number of building retrofits/upgrades or other carbon reductions identified, the extent of student leadership in the project, the extent to which the project will serve as an educational tool in the school, whether the project proposed is sustainable and replicable, the amount of public engagement on the topic, and the outside partnerships for additional funding and technical assistance that were established.

Summary Budget Information for Result 3:	**Trust Fund Budget:**	**$ 224,328**
	Amount Spent:	**$ 222,854**
	Balance:	**$ 1,474**

Deliverable	**Completion Date**	**Budget**	**Status**
1. Schools receive competitive grants.	March 2010	$202,828	Completed.
2. School teams report results of grant project implementation.	May 31, 2011	$21,500	Completed by most schools.

Final Report Summary - Result 3:

Deliverable 1 – Awarding Competitive Grants. We issued the Competitive Grant Request for Proposal (RFP) in October 2009, and the MnSCC team developed a

powerpoint and webinar to explain the application process to schools. We made a significant effort to strongly encourage all MnSCC schools to apply for grants through several efforts. We promoted the project through our website and monthly newsletter. Project coordinator Patrick Santelli contacted schools, and email and website announcements were sent to schools publicizing the webinars and on-line instructions. Patrick Santelli and ERM answered questions and advised student teams in developing their project ideas. We offered six interactive webinars over a three-week period in November, explaining how to prepare grant applications, the importance of student leadership, and the need to focus on cost effective actions that will save energy and reduce greenhouse gases. School teams had the opportunity to ask questions during and after the webinars.

The grant submission deadline was December 3, 2009. We received forty-one applications requesting more than three times the amount of grant funding available. The grant review team awarded $202,838 in grant funds through nineteen grants to twenty-three schools. The offers were communicated to the schools in early January 2010.

Deliverable 2 – School Teams Report Results. School grant projects began in early spring when contracts were entered and work plans approved; all grant projects ended on June 30, 2011. Projects range from making energy improvements such as energy efficient lighting and motion sensors; installing renewable energy projects including solar photovoltaic and solar thermal systems; increasing recycling and composting; reducing paper use and food waste; supporting community greenhouse production of local foods; and increasing sustainable transportation options by encouraging walking, biking, carpooling and bus riding to school. Detailed summaries and results of all 23 competitive grant projects are in Appendix 4.

Patrick Santelli, Schools Cutting Carbon Project Coordinator, worked closely with the school teams to help them implement these grant projects, report their results, and track energy use on their school campus over the long term. In addition, much of Patrick's work reported under Result 2 (see pages 15-16 above) applies to this Result 3 as well.

We also used the remaining Result 2 grant funding to develop incentives to motivate and encourage school teams that did not receive competitive grants. Some ideas included creating sponsorship and mentoring programs that link schools with entities that are interested in supporting their efforts with additional funding or in-kind support; contacting utility companies to request that they work with school teams to implement energy-saving actions identified in ERM's school reports; and identifying conferences and other events at which student teams can display and receive recognition for their actions.

Lessons Learned – Result 3. The highlight of our second year was the competitive grant projects. The twenty-one schools that received competitive grants in the second year continued a high level of active participation in the project. Our observations on what worked and what could be improved are outlined here.

Improve Timing of Competitive Grants. We established a December 3, 2009 deadline for schools to file competitive grant proposals, primarily to give schools enough time to understand the grant requirements, develop a good project, and write their grant application. Because of the time involved in entering grant contracts, including developing workplans that were included in each grant, these projects did not begin until April and May of 2010. As with small grants, this created some frustration because senior students who worked on the grant proposals had only a short time to actually work on them before graduating. By working more closely with schools to get them more familiar with state contracting requirements, we anticipate that we could have grant projects begin several weeks earlier in the future.

Assist Schools That Did Not Receive Grants. We received over forty applications but were able to fund only about half of them. Many of the unsuccessful applications were from high schools that lacked grant-writing expertise and thus did not score well during the review process. The grant process also did not enable us to follow up with the unsuccessful applicants to work with schools to either find alternative funding or continue to build on their ideas. We would recommend exploring a way that the project team could keep a copy of both funded and unfunded proposals after the evaluation process concludes. The second recommendation involves the role of the project coordinator. Patrick Santelli worked with most of the schools to help them develop applications. Because of his involvement in grant development, we did not include him on the evaluation team, which was limited to those with no involvement in preparing the grant proposals. Mr. Santelli could have provided more information on those applications that were not as well written as others. If it were possible to get this additional input in the review process, it would strengthen the basis for decisions by the review panel.

Leveraging Resources. We emphasized and encouraged schools to develop competitive grant projects in partnership with utilities or local businesses. Very few grant applicants were able to leverage resources, although the ERM reports identified a number of school projects that were eligible for utility rebate. Several school proposals did involve utility rebates, which were then used to fund additional energy saving actions in the schools.

Result 4. Measurement and Evaluation – Case Studies. Budget: $33,500

Phase four, the measurement and evaluation phase, will primarily occur in the third year of the project. The main aspects of this phase are to quantify and document actual carbon reductions from grant projects, recognize and promote success of school actions, and encourage behavior change to continue. The CERTs Minnesota Project will provide communications assistance to project participants to increase recognition from the CERTs partners and the broader community. Assistance will include presentation materials, press releases, media visits, help in scheduling presentations within the community as well as highlighting projects and publishing case studies on the

web page. Funding will be used for the UMN graduate student project coordinator, web technical costs, and materials.

Summary Budget Information for Result 4:	**Trust Fund Budget:**	**$ 33,500**
	Amount Spent:	**$ 33,500**
	Balance:	**$ 0**

Deliverable	**Completion Date**	**Budget**	**Status**
1. Students will develop case studies to show how well the plan was implemented.	June 30, 2011	$3,500	Completed. Many schools have uploaded case studies and school project highlights on the website.
2. Schools that reduced their carbon footprint the most, demonstrate notable school and community participation, or identify innovative actions will receive special recognition from the project partners.	June 30, 2011	$30,000	Completed. CERTs project coordinator assisted in developing case studies and recognizing school teams.

Final Report Summary - Result 4:

We began working on school recognition and sharing project results early in January 2009 and continued throughout the project. A number of schools have reported results of actions they have taken through the MnSCC website. As explained in our Result 2 Status update, we also presented several webinars that included examples of successful school projects in the spring of 2011 to educate students, school administrators, and building operators about the impact that low cost and no cost energy efficiency actions can have on energy costs. School recognition opportunities occurred throughout our project. Students had the opportunity to discuss their projects with legislators and each other at unique events such as Earth Day at the Capitol; student team presentations at the biennial CERTS conference; testifying before the LCCMR and the House Environment Policy and Oversight Committee; and attending a leadership training workshop sponsored by the Steger Foundation. Patrick Santelli, the Project Coordinator, and other partners such as the Steger Foundation, YES and YEA, encouraged student participation in a number of energy-related events during the past three years.

Deliverable 1 – Case Studies Showing Project Implementation. The small grant projects are discussed in Result 2 and Appendix 3. Result 3 and Appendix 4 similarly describe the outcome of the competitive grant projects.

Deliverable 2 – Special Recognition and Leadership Opportunities. One of the most exciting and enjoyable aspects of the MnSCC project was to see how many students demonstrated leadership skills in their schools and communities. Many students had the opportunity to present to their administration, school boards, local elected officials, and members of the community. Students from several schools discussed their projects before the LCCMR and House Environment Policy and Oversight Committee. Students attended and presented at the bi-annual CERTs conference in St. Cloud; other students shared their projects with legislators and students at the State Capitol on Earth Day 2010. We have also sponsored or attended a number of events intended to promote MnSCC, recognize schools successes, and gain additional support and resources. The more significant are described below.

Earth Day at the Capitol 2010. Students from Central High School and LEAP High School in St. Paul; The City, Inc. in Minneapolis; Ortonville High School; Henry Sibley High School in Mendota Heights; Osseo Senior High School; and the School of Environmental Studies in Apple Valley participated in "Earth Day at the Capitol: Thumbs Up for Clean Energy!" This celebration of student-led energy efficiency and clean energy projects showcased Minnesota's future leaders on clean energy and green jobs. It featured presentations by the seven school teams as well as Senator Ellen Anderson, Representative Kate Knuth, and Abby Fenton of the Will Steger Foundation. WCCO Radio also interviewed students from Ortonville High School about their initiatives to reduce their school's carbon footprint during the Noon News Hour.

Student Presentations to Legislature and Elected Officials. Several student teams were invited to present their projects to the LCCMR in November 2010, and still others had the opportunity to present before the House Environment Policy and Oversight Committee to talk about how their work has impacted their school.

Minnesota Environmental Initiative Award – Energy and Climate Protection Project of the Year. The annual Environmental Initiative Awards honor innovative projects that have achieved extraordinary environmental outcomes by harnessing the power of partnership. The Environmental Initiative (EI) is a non-profit organization that believes that partnership is an effective way to find solutions to Minnesota's environmental problems. EI established the Environmental Initiative Awards in 1994 to honor innovative projects and their many partners, to inspire other organizations to create similar successful projects, and to encourage innovative collaborative approaches to environmental problem solving. Awards are given in five categories, and the Schools Cutting Carbon project received the award in the Energy and Climate Protection Category at the Environmental Initiative Awards dinner on May 27, 2010.

CERTs Bi-Annual Energy Conference. The CERTs Conference in February 2011 featured several MnSCC schools in the "Creating a Clean Energy School" conference track. Students from Aitkin, Rosemount, and Ortonville High Schools had the opportunity to develop their leadership and networking skills by attending and presenting at this conference. The two-day student track attracted over 110 people.

Greening the Heartland Conference. Through our partnership with the Minnesota chapter of the U.S. Green Building Council, MnSCC had the opportunity to participate in the Greening the Heartland Conference in May 2010 at the Minneapolis Convention Center. MnSCC participated in the conference workshops and had a table to display school projects in the exhibit hall for the duration of the conference, which was sponsored by the Minnesota USGBC Chapter and Green Communities.

Other Activities. We promoted school successes through the project website, newsletters, and other events. We offered to assist schools in the areas addressed by the webinars and in carrying out energy saving actions. In addition, we offered schools a second free Vending miser as an incentive to encourage school teams to maintain their energy database and report project results. Vending misers have been popular with school teams, since each miser reduces energy usage by an estimated 45% and saves approximately $130 in electricity costs per year. A number of schools have purchased additional vending misers. With many Minnesota utilities offer a rebate of $50-$75 per vending miser, the payback is under a year.

Recommendations for Future MNSCC Efforts. There are several recommendations we offer that relate to the broader program rather than a specific deliverable.

Maintaining School Team Engagement. One of the biggest challenges of our three year project was to maintain the level of engagement created in the first year during the remainder of the project. The personal on-site visits by ERM during the first year of the project were highly effective in catalyzing student involvement. We did not have the funding to continue those on-site visits during the second and third years, but we believe we could maintain a personal connection by relying upon regional CERTs coordinators to a greater extent in a future phase of the project. This regional connection could help to build and institutionalize school teams to maintain student interest during the second and third years of the project with reduced travel costs. Personal visits during the second and third years would be a very effective and relatively inexpensive way to maintain school engagement and encourage student teams to follow through on action items identified in their ERM reports.

Strengthen Support of School Administrators and School Districts. The support of school administrators can determine whether a project succeeds or fails. Administrators often can connect a team to external resources and help to make connections that significantly boost a project's influence. To create real momentum around school energy projects, a strong team must include students, teachers, administrators and building officials.

Equally important to the success of school energy projects are school district officials, since they often play a central role in implementing district wide energy saving measures. They also can help with program administration by providing centralized expertise for reporting, project tracking, and grant writing. In several districts, there is top-level support for energy benchmarking of all school buildings in the district. In addition, grant opportunities or energy funding exists at the district level, not at the

individual school building level. The authority to sign grant applications and contracts often is at the district level, which makes good communication with and support by district officials an important step in the success of a school project. Relations between districts and schools have a wide range; typically, the bigger districts have more centralized control, while smaller districts often have greater autonomy for schools to address building maintenance and education issues.

Student Leadership and Energy Reduction. MnSCC strongly encouraged students to lead low and no cost energy saving actions at their schools. We also sought to achieve measurable reductions in school building operations. These goals did not easily complement each other. Not surprisingly, the student-led energy conservation projects included a strong education and outreach component. Several schools had teams which focused on actions involving building energy use, such as identifying areas needing insulation or weather-stripping, rooms with equipment such as computers running all night, or lighting upgrades. Students were not able to evaluate whether building systems were operating effectively or whether similar aspects of building operation and maintenance had energy saving opportunities. An effective evaluation of the operation of the school building required a more detailed evaluation by energy experts than we were able to do through ERM. This in-depth building audit would likely have identified some significant energy saving opportunities but limited opportunities for student leadership.

Expanding to Elementary and Middle Schools. During the project, we had the opportunity to visit Miltona Elementary School. The students were very engaged and excited about how their own actions could help their school energy use. They were very active in the building walkthrough, and responded with enthusiasm to the opportunity for hands on experience with the infrared camera. Exposing these students to energy and sustainability concepts is a great opportunity.

Long-Term Sustainability. One overarching goal of our project was to learn how to incorporate energy awareness and energy-saving actions into the daily routine of schools. One way to help maintain focus and interest is to reward various participants for energy savings. By sharing dollars saved among students/teachers, administrators, and building operations, each group is rewarded for the results of their conservation actions.

There are a number of good energy efficiency opportunities in the 99 schools that ERM visited, and we were only able to address a handful of them. The potential energy and cost savings that still exist in these schools is significant. The enthusiasm of students and their interest in leading projects at their schools also is strong. The challenge is to connect the potential projects with the students' enthusiasm and access financing mechanisms to address the opportunities that need funding. Student involvement and enthusiasm are affected by graduation, exams, the demands of other events during the school year, and having time and resources to implement, measure, and reward outcomes.

V. TOTAL TRUST FUND PROJECT BUDGET:

Grant funds to be passed through: $750,000

1. Consultant hired through RFP to administer Result 2: $361,693
   a. Reducing Building Carbon Footprint -
   b. Help Student-Teams Develop Action Plans -

2. Grants awarded directly to schools $263,307

   a. Grants for student action plans (result 2) $60,479
      ($104.00 remains unspent)
   b. Carbon reduction projects (result 3) $202,828

3. Grant to The Minnesota Project to design, operate and maintain the project website that will support school teams with educational materials, technical information, grant applications, case studies, and information exchange. $14,500

4. Grant to the University of Minnesota to provide a project coordinator and project supervisor to lead project outreach and education efforts and assist school teams in implementing carbon reduction action plans and applying for and carrying out grant projects, measuring and reporting results, preparing case studies, sharing information, and recognizing success. ($29.00 remains unspent) $110,500

TOTAL TRUST FUND PROJECT BUDGET: $750,000
($1607.00 remains unspent)

VI. OTHER FUNDS AND PARTNERS:

A. Project Partners: Project partners include the Minnesota Pollution Control Agency; Minnesota Department of Commerce Division of Energy Resources; the Clean Energy Resource Teams, including the University of Minnesota Regional Sustainable Development Partnerships, The Minnesota Project, and the Green Institute; Environmental Resources Management (ERM); the Mississippi Headwaters Chapter of the U.S. Green Building Council; the Will Steger Foundation; Environmental Initiative; Project Green Fleet; Environmental Resources Management (project consultant); Youth Environmental Activists of Minnesota (YEA MN); Youth Energy Summit (YES); and the Transcampus Energy Action Movement. We also consulted the Department of Education on aspects of this project.

B. Other Funds Spent during the Project Period:.

Final Project Update: The project team dedicated significant in-kind hours throughout this project, as did many of the project partners. In designing and delivering outreach; evaluating grant proposals; creating opportunities for student participation and recognition; recruiting additional partners and mentoring and sponsorship opportunities; MnSCC benefitted and is deeply grateful for these efforts. The MPCA provided 125 vending misers at no cost. These were distributed to schools as an example of a low-cost energy saving measure. The vending misers have a retail value of about $150 per unit, for a total in-kind contribution of approximately $18,750. The MPCA also donated time and materials for producing flyers, posters, pictures, and other handouts for conferences and events.

Commerce staff contacted all utility representatives for participating schools to request that they work with school teams to implement energy efficiency actions identified in the school reports prepared by MnSCC consultant ERM. During the last months of the project, we had discussions with the Minnesota Municipal Utilities Association, Xcel Energy, and Ottertail Power about agreeing to become project partners in anticipation of continuing the next phase of the project.

The Department of Commerce awarded a grant contract to the Minnesota Renewable Energy Society and its partners to develop a guide for Minnesota schools interested in renewable energy in September 2010. The project is supported by a $40,000 grant from the U.S. Environmental Protection Agency under its Clean Energy-Environment State Partnership program. That project created a step-by-step Renewable Energy Guide for Schools to help school districts in Minnesota and elsewhere evaluate different renewable energy technologies, determine which are the most appropriate for their situation, identify financing options, and address operation and maintenance issues. The guide compares the energy and other environmental impacts of renewable energy systems, including the effect on greenhouse gas emissions; economic costs and benefits; financing options; ownership, operation and maintenance factors; and methods for integrating energy data and information about their renewable energy system into educational activities. The resource materials will be publicly available through the Department of Commerce website.

C. Past Spending: This project benefitted from access to data on energy use in school buildings in the B3 Minnesota Benchmarking Project. The legislature has provided funding to this program, administered by the Department of Commerce and the Department of Administration. This data assisted the project by identifying those schools with accurate energy information in the database having the greatest potential for cost-effective energy reductions. In addition, the MPCA allocated over $40,000 to support the Retired Engineers Technical Assistance Program. These engineers assisted some MnSCC schools in areas such as energy, waste management, recycling, and reducing toxics in schools at no additional cost to the project. Finally, the Minnesota Project, one of the MnSCC partners on this project, allocated funding to

upgrade its website which matched the $8,000 allocated to enabling the CERTs website to function interactively as described in Results 1 and 2 of the proposal.

D. Time: This is a three year project that began on July 1, 2008 and ended on June 30, 2011.

VII. DISSEMINATION: The information collected from this project has been available via the MnSCC website, which will remain operational through December 31, 2011. The LCCMR has been acknowledged in the website, in promotional materials, project press releases, webinars, project handouts, grant information, appearances at workshops and conferences, including Earth Day at the Capitol in April 2010, and the Greening the Heartland Conference in May 2010, and the project presentation at the Mall of America in conjunction with the MN Lottery.

VIII. REPORTING REQUIREMENTS: Periodic work program reports were submitted not later than January 31, 2009; July 31, 2009; January 31, 2010; July 31, 2010; January 31, 2011; and July 31, 2011. The final report summary is being submitted not later than September 30, 2011.

APPENDIX 1. SCHOOLS PARTICIPATING IN MN SCHOOLS CUTTING CARBON LISTED BY REGION

Metro Region Schools - 36	City		Metro Region Schools Continued	City
Como Park Senior High School	St. Paul		Minneapolis Community and Technical College	Minneapolis
Dakota County Technical College	Rosemount		North High School	St. Paul
Eagle Ridge Junior High School	Savage		North Lakes Academy	Forest Lake
Edina High School	Edina		Northfield School of Arts and Technology (ARTech)	Northfield
Farmington High School	Farmington		Northwest Passage High School	Coon Rapids
Gordon Park High School	St. Paul		Osseo Senior High School	Osseo
Harding High School	St. Paul		Patrick Henry High School	Minneapolis
Henry Sibley High School	Mendota Heights		Roosevelt High School	Minneapolis
Higher Ground Academy	St. Paul		Rosemount High School	Rosemount
Highland Park Senior High School	St. Paul		School of Environmental Studies	Apple Valley
Hopkins High School	Minnetonka		South High School	Minneapolis
Humboldt Senior High School	St. Paul		Southwest High School	Minneapolis
IA Leap High School	St. Paul		St. Michael-Albertville High School	Albertville
Interdistrict Downtown School	Minneapolis		St. Paul Central High School	St. Paul
Irondale High School	New Brighton		Tartan High School	St. Paul
Jordan High School	Jordan		The City Inc	Minneapolis
Lakeville South High School	Lakeville		University of Minnesota – Twin Cities	Minneapolis
Metropolitan State University	St. Paul		Washburn High School	Minneapolis
Supporting Schools:				
Macalester College	St. Paul			

Southwest Region Schools - 8	City		Southwest Region Schools Continued	City
Lincoln High School	Ivanhoe		Round Lake Brewster Secondary	Round Lake
Marshall School District	Marshall		Springfield High School	Springfield
Mountain Lake Public School	Mountain Lake		St. James High School	St. James
Redwood Area Schools	Redwood Falls		Wabasso Secondary School	Wabasso

Southeast Region Schools - 13	City		Southeast Region Schools Continued	City
Austin High School	Austin		Minnesota State College-Southeast Technical	Winona
Byron High School	Byron		Pine Island High School	Pine Island
Century High School	Rochester		Plainview-Elgin-Millville Junior High School	Elgin
Faribault High School	Faribault		Spring Grove High School	Spring Grove
John Marshall High School	Rochester		Winona State University	Winona
La Crescent Public Schools	La Crescent		Winona Senior High School	Winona
Mayo High School	Rochester			

West Central Region Schools - 13	City		West Central Region Schools Continued	City
Atwater-Cosmos-Grove City School	Grove City		Lac Qui Parle Valley Schools	Madison
Canby High School	Canby		Morris Area School	Morris
Dawson-Boyd School	Dawson		Ortonville High School	Ortonville
Eden Valley-Watkins High School	Eden Valley		Ridgewater College – Willmar Campus	Willmar
Gibbons-Fairfax-Winthrop Schools	Winthrop		University of Minnesota - Morris	Morris
Glencoe-Silver Lake Public Schools	Glencoe		Willmar High School	Willmar
Hutchinson High School	Hutchinson			

Central Region Schools – 10	City		Central Region Schools Continued	City
Battle Lake Public School	Battle Lake		Parkers Prairie High School	Parkers Prairie
Central Lakes College	Brainerd		Perham-Dent Public Schools	Perham
Crosby-Ironton High School	Crosby		Princeton High School	Princeton
Minnesota State Community and Technical College	Fergus Falls		Sebeka Public School	Sebeka
New York Mills Public School	New York Mills		Staples Motley High School	Staples

Northeast Region Schools - 11	City		Northeast Region Schools Continued	City

Aitkin Public Schools	Aitkin		Rainy River Community College	International Falls
Hibbing Community College	Hibbing		Two Harbors High School	Two Harbors
Itasca Community College	Grand Rapids		University of Minnesota - Duluth	Duluth
Lake Superior College	Duluth		Vermillion Community College	Ely
Mesabi Range Community and Technical College – Eveleth Campus	Eveleth		Virginia Secondary School	Virginia
Proctor High School	Proctor			

Northwest Region Schools - 9	**City**		**Northwest Region Schools Continued**	**City**
Bemidji High School	Bemidji		Northland Community and Technical College	Thief River Falls
Bemidji State University	Bemidji		Northwest Technical College	Bemidji
Fertile-Beltrami Schools	Fertile		Stephen-Argyle Central High School	Stephen
Hawley Public Schools	Hawley		University of Minnesota Crookston	Crookston
Minnesota State University - Moorhead	Moorhead			

APPENDIX 2. PARTICIPATING SCHOOLS LISTED BY CITY

CITY	SCHOOL		CITY	SCHOOL
Aitkin	Aitkin Public Schools		Minnetonka	Hopkins High School
Albertville	St. Michael-Albertville High School		Moorhead	Minnesota State University Moorhead
Apple Valley	School of Environmental Studies		Morris	Morris Area School
Austin	Austin High School		Morris	University of Minnesota Morris
Battle Lake	Battle Lake Public School		Mountain Lake	Mountain Lake Public School
Bemidji	Bemidji High School		New Brighton	Irondale High School
Bemidji	Bemidji State University		New York Mills	New York Mills Public School
Bemidji	Northwest Technical College		Northfield	Northfield School of Arts and Technology (ARTech)
Brainerd	Central Lakes College		Ortonville	Ortonville High School
Byron	Byron High School		Osseo	Osseo High School
Canby	Canby High School		Parkers Prairie	Parkers Prairie High School
Coon Rapids	Northwest Passage High School		Perham	Perham-Dent Public Schools
Crookston	University of Minnesota - Crookston		Pine Island	Pine Island High School
Crosby	Crosby-Ironton High School		Princeton	Princeton High School
Dawson	Dawson-Boyd School		Proctor	Proctor High School
Duluth	Lake Superior College		Redwood Falls	Redwood Area Schools
Duluth	University of Minnesota Duluth		Rochester	Century High School
Eden Valley	Eden Valley-Watkins High School		Rochester	John Marshall High School
Edina	Edina High School		Rochester	Mayo High School
Elgin	Plainview, Elgin, Millville Jr. High		Rosemount	Dakota County Technical College
Eveleth	Mesabi Range Community and Technical College – Eveleth Campus		Rosemount	Rosemount High School
Ely	Vermillion Community College		Round Lake	Round Lake Brewster Secondary
Faribault	Faribault High School		Savage	Eagle Ridge Jr. High
Farmington	Farmington High School		Sebeka	Sebeka Public School
Fergus Falls	Minnesota State Community and Technical College		Spring Grove	Spring Grove Public School
Fertile	Fertile-Beltrami Schools		Springfield	Springfield High School
Forest Lake	North Lakes Academy		St. James	St. James High School
Glencoe	Glencoe-Silver Lake Public		St. Paul	Como High School

	Schools			
Grand Rapids	Itasca Community College		St. Paul	Gordon Park High School
Grove City	Atwater-Cosmos-Grove City High School		St. Paul	Harding High School
Hawley	Hawley Public Schools		St. Paul	Higher Ground Academy
Hibbing	Hibbing Community College		St. Paul	Highland Park Senior High School
Hutchinson	Hutchinson High School		St. Paul	Humboldt High School
International Falls	Rainy River Community College		St. Paul	IA Leap High School
Ivanhoe	Lincoln High School		St. Paul	Metropolitan State University
Jordan	Jordan High School		St. Paul	North High School
La Crescent	La Crescent Public Schools		St. Paul	St. Paul Central High School
Lakeville	Lakeville South High School		St. Paul	Tartan High School
Madison	Lac Qui Parle Valley Schools		Staples	Staples Motley High School
Marshall	Marshall School District		Stephen	Stephen-Argyle Central High School
Mendota Heights	Henry Sibley High School		Thief River Falls	Northland Community and Technical College
Minneapolis	Interdistrict Downtown School		Two Harbors	Two Harbors High School
Minneapolis	South High School		Virginia	Virginia Secondary School
Minneapolis	Minneapolis Community and Technical College		Wabasso	Wabasso Secondary School
Minneapolis	Patrick Henry High School		Willmar	Ridgewater College – Willmar Campus
Minneapolis	Roosevelt High School		Willmar	Willmar High School
Minneapolis	Southwest High School		Winona	Winona Senior High School
Minneapolis	University of Minnesota – Twin Cities		Winona	Minnesota State College - Southeast Technical
Minneapolis	The City Inc		Winona	Winona State University
Minneapolis	Washburn High School		Winthrop	Gibbons-Fairfax-Winthrop High School

Appendix 3
SUMMARY OF $500 GRANT PROJECTS

Ninety-three schools received $500 grants. Five schools did not apply - Irondale High School, John Marshall High School, North Lakes Academy, Virginia Secondary School, and Wabasso Secondary School. The University of Minnesota - Twin Cities and Como Park Senior High School applied but did not sign the grant agreement sent to them.

School	Project
Aitkin HS	Install wind anemometer to measure viability of wind turbine, or install small PV array on a light in parking lot and measure energy savings
Atwater-Cosmos-Grove HS	Purchase supplies and materials to build composting bins
Austin HS	Purchase materials to encourage students to join the "Go Green" club
Battle Lake HS	Purchase supplies to build compost bins and materials to build a home-made wind generator
Bemidji HS	Purchase recycling containers to be placed across campus
Bemidji State University	Purchase native plants to plant on campus and signage to discuss benefits of plants and impact of bottled water waste
Byron HS	Work with Go Green Group to purchase recycle bins for plastic and aluminum
Canby HS	Purchase recycle bins for paper; hire consultant to write program to shut down computers after 5:00 pm
Central Lakes College	Purchase recycling containers larger than garbage containers in common areas
Century HS	Purchase and install 4.8 kwh solar array for roof of school
Crosby-Ironton HS	Conduct a study of school vending machine power usage by using kill-o-watt meter; purchase additional vending misers
Dakota County Technical College	Produce educational materials to encourage recycling and other green initiatives; purchase energy-efficient light bulbs to give to students
Dawson Boyd Schools	Document the installation and operation of new geo-thermal heating/cooling system with photos and articles; describe benefits of this system compared to alternatives and advantages compared to the 100+ year old boiler system.
Eagle Ridge Jr. HS	Purchase trees for school grounds and generators hooked to stationary bikes in weight room to generate electricity for school use
Eden Valley–Watkins HS	Purchase two vending misers and occupancy sensors for entryways & hallways
Edina HS	Create signage to advertise Bike to School Day; purchase composting bins for cafeteria and art rooms for food and paper waste
Faribault HS	Purchase up to ten recycling bins
Farmington HS	Purchase IR Thermal Temperature gun and watt meters for use in school; if funds remain, purchase recycling bins
Fertile Beltrami Schools	Purchase materials and supplies to assist in processing vegetable oil into biodiesel fuel
Gibbon-Fairfax-Winthrop HS	Determine if purchase of wind generator is feasible; alternatively, sponsor an event for electronics recycling with licensed recyclers
Glencoe-Silver Lake HS	Purchase photo sensor lights to replace timed outside lights; install LED exit lights in place of incandescent signs
Gordon Parks HS	Purchase additional bike racks and create materials to encourage students to bike to school; host a bike repair event
Harding HS	Purchase kill-a-watt monitor; infrared thermometer laser; digital light meter to evaluate energy use and demonstrate how behaviors impact the environment; send ten students to Camp Widjiwagon in May 2009 to study about carbon footprint issues
Hawley Public Schools	Develop educational materials to promote monthly energy-environment themes and implement carbon cutting initiatives
Henry Sibley HS	Develop educational materials describing effects of diesel emissions from school buses
Hibbing Community College	Study commuting patterns at college and encourage students to spend time on campus and

	reduce commuting between classes; develop database to track process and store survey information
Higher Ground Academy	Purchase recycling bins for paper, cans and bottles, and energy audit tools to measure electricity use in school.
Highland Park Sr. High	Purchase solar powered kits and accessories for student use
Hopkins HS	Host a bike-to-school event, purchase materials to promote event, and assist in purchase of bike rack for campus
Humboldt Senior HS	Purchase materials for display to encourage energy conservation; and distribute reusable water bottles and materials for teachers to give presentations to explain the project
Hutchinson HS	Purchase signage, bags and bins to increase composting efforts; purchase "no-idling" signs; purchase supplies and host event to educate students on weather stripping, plastic and caulking of windows for energy efficiency.
IA Leap HS	Purchase materials to design and sew Bonita Ifas to cover windows in winter and summer to reduce energy usage. Purchase measuring tool for research on energy use and conservation.
Interdistrict Downtown School	Purchase materials and supplies for Green Rooftop to be planted and maintained by students
Itasca Community College	Purchase recycling bins to be placed around campus and educational materials to promote energy saving ideas.
Ivanhoe Public Schools	Purchase small recycling bins for classrooms and larger bins for hallways
Jordan HS	Purchase up to 3 recycling bins for athletic complex area and seven Kill-a-watt monitors
La Crescent Public Schools	Purchase recycling bins and supplies to build a compost bin
La Qui Parle Valley HS	Purchase materials and supplies to create a vermicomposting system and a larger composting bin for grass clippings and other waste
Lake Superior College	Purchase five Kill-a-watt monitors for computer labs and other areas; purchase software to change energy use in computer labs
Lakeville South HS	Purchase equipment to electronically transmit homework to students and decrease amount of paper used in school
Marshall HS	Replace less efficient lighting fixtures and create promotional materials explaining the changes and upgrades to lighting
Mayo HS	Plant trees on school grounds
Mesabi Range Community and Technical College	Purchase recycling bins and educational materials to educate on the types of items to be recycled
Metropolitan State University	Purchase five or six no-sort recycling containers to increase campus wide recycling
Minneapolis Community and Technical College	Purchase books on sustainability issues that will be stored in 3-legged Frog library display; purchase art supplies for campus displays to encourage recycling and energy conservation.
Minnesota State College – Southeast Technical	Purchase recycling bins to be placed around campus
MN State Community and Technical College	Purchase recycling containers for classrooms across campus
Minnesota State University Moorhead	Survey to determine students' energy use during peak hours; produce educational materials to educate students on reducing energy use in campus residence halls
Morris Area School District	Purchase more recycling containers and upgraded containers for Morris Tigers Recycle program
Mountain Lake Public School	"Going Green" by implementing one or more: solar panel for school; replace paper towels with air dryers in bathrooms; recycling in school and cafeteria.
New York Mills Public School	Purchase supplies to build compost bin near community garden site and purchase recycling canisters for gym, common areas, and cafeteria
North HS	Purchase materials to design and build a rain garden on campus; purchase CFL bulbs to replace incandescent
Northfield School of Arts and Tech (ARTech)	Host an event to encourage attendees to become carbon neutral; purchase trees for planting on campus
Northland Community and Technical College	Purchase additional recycling bins to be placed around campus
Northwest Passage HS	Create an awareness campaign about what it means to be "off the grid". Help school explore alternative energy options, including wind, solar and geothermal, and emphasize water and energy conservation and recycling. Funds spent primarily on printing and

	copying costs for environmental awareness campaign
Northwest Technical College	Host a tour of Great River Energy facility in Maple Grove for students and teachers to learn how to become more energy efficient
Ortonville School District	Purchase electricity usage meter, motion sensors and timers, and additional recycling containers; produce and distribute survey to determine how to develop materials to educate students on actions to reduce their carbon footprint
Osseo Senior High	De-lamp vending machines and purchase 3 vending misers; also purchase durable recycling bins.
Parkers Prairie HS	Purchase recycling bins for plastic for locations where wastebaskets/garbage cans are located and additional recycling bins for classrooms
Patrick Henry HS	Purchase recycling containers for school
Perham-Dent Public Schools	Purchase equipment to build red wigglers vermiculture bed in HS boiler room, use soil in school greenhouse or garden
Pine Island HS	Purchase gloves and aprons for use by students collecting recyclables on campus; plant trees on campus; purchase 2 kill a watt energy monitors
Princeton HS	Purchase insulation strips and recycling bins and disposal fee for items collected during the student "River Clean Up" project.
Plainview Elgin Millville HS	Purchase vending miser and equipment to install on water fountains
Proctor Public Schools	Evaluate feasibility of installing solar panels at athletic field
Rainy River Community College	Purchase CFL bulbs for student exchange to replace incandescent; purchase recycling containers and produce educational flyers to promote recycling on campus
Redwood Area Schools	Purchase supplies and materials for a food digester and composter and a bike to generate energy when pedaled
Ridgewater College	Purchase Energy Misers and more recycling stations for campus
Roosevelt HS	Create an advertising campaign to encourage students to sort garbage and to be more green conscious
Rosemount HS	Purchase signage and implement educational campaign to create a No Idling Zone to reduce emissions from cars and buses in school parking lot
Round Lake-Brewster	Purchase thermostats and new lighting with the proper foot-candles for classrooms. Purchase supplies and materials to create educational awareness displays.
School of Environmental Studies – Rosemount Apple Valley Eagan	Purchase energy efficient bulbs and other energy saving devices, and sell them through school green energy store, using any proceeds to purchase additional energy saving devices
Sebaka Public School	Purchase recycling bins to place around campus
South HS	Purchase vending misers to be placed on campus machines
Southwest HS	Build interior storm windows to insulate single pane glass windows in metal frames; work performed by volunteers and students
Spring Grove Public School	Purchase energy saving equipment to assist school in reducing energy and greenhouse gases
Springfield Public School	Purchase composting bins and additional supplies necessary to begin compositing in school cafeteria
St. James HS	Purchase energy monitors, timers for water coolers, and reduced flow showerheads to reduce energy and water use throughout school
St. Michael-Albertville HS	Purchase composting bins and educational materials for waste reduction strategies with cafeteria food waste
St. Paul Central HS	Purchase food waste collection bins to provide waste to pig farm in Anoka County. Purchase art supplies and materials for signs to encourage sustainable behavior.
Staples-Motley HS	Purchase vending miser; energy usage monitor; infrared non-contact thermometer; and additional recycling bins; produce and distribute materials encouraging carpooling, walking and taking the bus to school
Stephen-Argyle Central HS	Create materials to promote the school's Click Off- Green Up campaign, which is directed at reducing unneeded lighting by turning off lights when not in use and encouraging use of naturally available light. Also purchasing additional recycling bins for small electronics.
Tartan HS	Purchase materials to design and build a rain garden on campus; purchase CFL light bulbs to replace incandescent bulbs
The City, Inc.	Create music video to instruct viewers on changes they can make to reduce energy use,

	intended for students, staff, family and community. May also purchase materials such as CFLs, weather stripping for school building
Two Harbors HS	Host a school event to raise awareness on environmental and energy issues; may purchase energy misers for use on school vending machines
U of M – Crookston	Purchase materials to build an educational kiosk to engage and educate students on benefits of sustainability and LEED certified building construction
U of M – Duluth	Create and distribute educational materials for students on the importance of energy conservation; produce signs to promote an energy challenge between dorm buildings; purchase materials to support Earth Day campus events
U of M – Morris	The goal of the project is to raise awareness in the area of energy conservation. Purchase three vending misers and document energy savings via Kill-a-watt devices. Make the results public so both students and faculty are aware of their presence on campus.
Vermilion Community College	Purchase a scale to measure cafeteria food waste and moveable white board to place in cafeteria next to trash cans to inform on progress in recycling; purchase up to eight recycling receptacles with grant and matching funds
Washburn HS	Students will take trip to learn about waste to energy facility
Willmar HS	Purchase materials to build shelter to protect the biomass being used to heat the greenhouse; purchase a hopper for biomass with any remaining funds
Winona Senior HS	Purchase equipment to assist in measuring energy usage in classroom; purchase materials and supplies to launch educational campaign to reduce energy use and lower carbon footprint
Winona State University	Purchase solar panel for use on school fountain

Appendix 4
SUMMARY AND RESULTS OF THE 23 COMPETITIVE GRANT PROJECTS AND SCHOOL TESTIMONIALS

1. Gobblers Go Green -- Aitkin High School

Project Summary: An energy audit by Environmental Resources Management (ERM) from the Schools Cutting Carbon program indicated that Aitkin High School's carbon footprint was "above average." Using suggestions from the ERM audit report, the school's Green Team created a list of energy-saving projects that is saving energy and reducing the school's carbon footprint. Building upgrades that provide visible and teachable energy-savings include replacing existing exit lights with LED signs, replacing mercury vapor lights in the gym with more efficient lighting, installing motion detectors, and installing vending misers on school vending machines.

Project Results: The Gobblers Go Green project is a great example of student leadership and significant energy savings. Its two objectives were to save energy through replacing lights and to raise awareness of energy use to change behavior on campus. This project involved replacing lights in the gymnasium with energy-efficient T5 lamps; replaced fluorescent exit signs with LED signs; installed occupancy sensors in 26 areas; and installed three vending misers in the cafeteria. The school also replaced 40 overhead lighting in the district office with energy efficient lights. The cost to replace these lights exceeded the budgeted grant amount, but the school district decided to replace all fixtures at one time because of the energy savings payback.

The team also successfully completed its objective to hold a school-wide promotion. The Gobbler Green Team worked throughout the school year to develop an educational display focused on energy use and savings, which was displayed during Earth Week 2010 in the cafeteria. Students played an energy trivia game and won “green” prizes.

The Green Team also exhibited the display at the annual River and Lakes Fair in June 2010. This event attracts thousands of regional visitors. The team has also partnered with their local municipal utility to fund more energy efficiency projects as the original grant has proven so successful. The Student Green Team presented a summary of the project to the Aitkin School Board, and discussed its project at the CERTs conference in St. Cloud in February 2011.

The calculated energy savings for this project are 20,571 kwh/year, 31.7 tons of GHG/year, and a cost savings of $3,137/year.

Testimonial - Aitkin High School: “*Schools Cutting Carbon has been a worthwhile and exciting opportunity for the Aitkin Schools. Being selected into the Minnesota Schools Cutting Carbon Program (MnSCC) was a highlight as it allowed us to focus on some upgrades that improved our energy efficiency even further.*

MnSCC allowed us the opportunity to bring together a group of community members to discuss the energy efficiency of the Aitkin Schools, and discuss ideas on how we might best make improvements. Forming the "Aitkin Green Gobblers" student group was fun. The students learned from the upgrades that were made to the building.

The MnSCC project allowed students to grow as individuals and take some pride and ownership in their school building.” Ruth Reeves, Adviser, Aitkin High School

2. Beavers Cut More than Trees - Bemidji State University

Project Summary: Three campus facilities at Bemidji State University installed more efficient lighting technology to reduce energy use, operating costs, and safety concerns associated with these buildings. Deputy Hall, the BSU Gymnasium, and Bangsberg Fine Arts Complex are locations with high visibility because several thousand students, faculty, staff, community members, and visitors pass through these buildings each year. The project team used various outreach methods to make the benefits of these lighting retrofits even more visible.

Project Results: The Bemidji State University project was very successful! The first objective was to replace inefficient T12 lighting in Deputy Hall with fluorescent T8 fixtures. This task was completed at a cost of $26,768, and qualified for a rebate of $22,757 from Ottertail Power Company. The rebated funds were used to achieve additional lighting upgrades.

In the BSU gymnasium, 400 watt metal halide lamps were replaced with energy efficient fluorescent T5 high bay fixtures. The school paid $2500 in additional costs for renting a lift and electrical work; it qualified for a $1747 rebate.

The third objective was to replace high wattage incandescent lights with higher efficiency and LED lighting in performance areas of the Bangsberg Fine Arts Complex. This work was completed with a significant match by the university ($19,500), and reinvestment of a rebate from Ottertail Power Company ($8,094), which enabled the replacement of even more inefficient lights. The Bangsberg Fine Arts project bids were under budget, enabling the University to replace six additional worklight lamps with more efficient lighting.

The campus education and outreach started in the Spring of 2010 and lasted through this year. Outreach included articles in the student newspaper regarding the gym lighting retrofits. The Athletic Department announced the lighting retrofit in the gymnasium at athletic events. That announcement emphasized both energy and cost savings of about 15,000 kWh and $920 annually. The Deputy Hall retrofits are expected to save 191,000 kWh per year and $11,460 in energy costs annually. Twenty posters are hanging in the gym and Deputy Hall to publicize the lighting retrofits. These were all completed with matching funds. Finally, the students coordinated an Earth Day event last April with five other on-campus student organizations to emphasize their relationship to this project and to the environment.

The school energy retrofits are saving energy. The Deputy Hall lighting retrofits are saving approximately 191,030 kw annually, with an annual savings of $11,461 and a return on investment of two years. The BSU Gymnasium retrofit is saving an estimated 15,288 kw annually, yielding a $917 annual savings and a return on investment of about sixteen years. The Bangsberg lighting retrofit will save an estimated 30,000 kw annually.

The team spent a great deal of time performing energy calculations and was somewhat disappointed with the calculations. The calculations for Deputy Hall and the Bangsberg Complex show that energy use in those buildings increased by about 22,000 kw between FY 10 and FY 11. Calculations for the Gymnasium showed a savings of over 26,100 kw between FY 10 and FY 11. The team noted the challenges posed by university buildings include variations in heating degree days, special events, and construction activities. They were not able to determine the impact that special events and activities in particular had upon the energy use data. The team was satisfied that the objectives for this project were achieved.

3. We Only Have One Earth: Reducing Our Carbon Footprint and Emissions - Crosby-Ironton High School

Project Summary: Crosby-Ironton High School is an Energy Star school that implemented a multi-faced project driven by students using behavior change and technological advances to continue reducing carbon emissions. One focus involved

eliminating the “phantom load” from electronic devices by installing power strips and working with students and staff to shut down appliances and electric devices during the night. (Phantom load refers to the fact that many devices continue to use electricity even when turned off if they remain plugged into an outlet.) Another focus was an analysis of the building structure to identify areas of energy inefficiency by using energy-audit equipment such as an infrared camera, and identifying areas needing proper insulation, sealing, and other energy efficiency actions on an annual basis. Students participate in these building inspections annually and present their recommendations to the school district.

Project Results: One of the team’s objectives, to reduce phantom load on electronic devices and appliances, raised many obstacles. The team found it difficult to track results due to several factors: new computer labs, new roof top air handlers, extended use of art kilns, and extended hours in the auto shop. These made a year-to-year comparison difficult.

The team changed focus and used a kill-a-watt meter to monitor energy use in several individual classrooms using power strips. Their results indicate a savings of $18 to 20 per month for each television/DVD player using the power strip. With 70 units in the district, the cost savings totals $1260 to $1440 monthly with full participation. Student teams are helping to monitor the use of the power strips district wide. They continue to work on behavioral aspects of this step and evaluating complications with shutting off electronic devices. To date the school has reduced energy consumption and indicated that its baseline energy star rating increased from 66 to 87. The school team has also purchased an infrared camera to survey the building for air leaks and heat loss and identify areas of the school that appear to need additional insulation and sealing. The team will present their findings to the school board and administration in February 2011.

In the other main focus of the project, the school team, led by two teachers/mentors, worked with building staff to identify and address areas of the building in need of energy efficient repairs and upgrades. The team identified leaking and inefficient doorways that were addressed by installation of weather-stripping. The school team noted that the school’s energy star rating declined from 89 to 86 during the past year. The team noted that weather conditions and the school administration’s decision to increase the base temperature of the building from 68 to 69 degrees, and other changes in building operations and activities, were a contributing factor.

4. LED Retrofit of Exterior Lighting - Dakota County Technical College

Project Summary: Standard High-Intensity Discharge (HID) exterior parking lot fixtures were replaced with LED lamps to improve and lower energy consumption, carbon emissions, and maintenance costs. Existing light poles were used, with only the head and arm of the fixture needing replacement. A significant portion of this work was integrated into the technical program curriculum and performed by students in this program. The project provided valuable insight for future lighting decisions on campus

and in the community, ongoing classroom learning, and the opportunity for a student-led team to share their experience with other students and community members.

Project Results: Dakota County's original workplan proposed to retrofit three poles in the exterior parking lot with LED lighting. The grant awarded was $13,400, which at the time was estimated to retrofit two poles with three LED heads each. The team was able to identify an LED lamp at a lower cost than originally estimated. As a result, the team was able to increase the scope of the project to complete an LED retrofit for all three poles as originally proposed. The installation of the three retrofits was completed on time and on budget. Students in the Electrical Lineworker program and the Electrical Construction and Maintenance program completed the installation, which took a full day using 30 students and two bucket trucks. Students in these classes benefited from the learning opportunity during installation and evaluation, and will continue to learn from the maintenance opportunities.

Before installation of the LED lights, students inspected the lights and took light readings from the existing HID lamps (20 readings per pole). Students reviewed these light readings and took new readings to calculate changes in the spring of 2011. The cost savings equals $51.58 per year for the lights, with light levels more even and less wasted light. The team is using various media to notify the campus of LED lighting, and hosted an interactive student display and a learning booth at spring and fall events.

5. Triple Purpose Solar Training and Demonstration Project - Eden Valley-Watkins High School

Project Summary. The Carbon Cutting Eagles were awarded a grant to support their solar photovoltaic project. Assisted by volunteer construction workers, as well as labor and materials donated by local businesses, high school students built a solar project that will be used in the Eden Valley-Watkins science, math, and computer curriculum. Several photovoltaic modules were mounted on a sun-tracker on the southeast corner of the school building, with an additional module incorporated into a solar training and demonstration unit. The team also built an informative display in the main entrance lobby. In addition, the project will continue to involve the community through student-assisted community education courses.

Project Results. The Eagles created four teams to implement their solar project: a Cabinet Team focused on design, construction and installation of the kiosk display system; a design team to finish designing the solar system; a Publicity Team to raise public awareness; and a Floating Team to help other teams and for miscellaneous tasks. The students worked directly with the electrical engineer to finalize the design; coordinated the construction, welding, and concrete companies; promoted an "installation day" for the solar panels that they paired with a Green Fair. They have also partnered with Sterns Electric and Meeker Cooperative. The project team managed many changes in materials and schedule, including discovering an old school foundation while digging a trench for the electrical conduit.
The team worked on setting up a wireless internet for their solar installation over the summer of 2010, and their project was featured on the front page of the St. Cloud Times

in August 2010! The school had a very successful Installation Day/Green Fair, including presenting classes on living green, home energy audits, demonstrations of solar technology (i.e. a solar powered corn dryer), and an energy rally. Nearly 100 people participated, even though it was competing with high school baseball playoffs. The school sponsored community education classes on topics including alternative energy, home energy audits, tax rebates, credits and incentives and other topics relevant to the community regarding clean energy. Through additional fundraising and other efforts, the team was able to install two additional solar panels and micro inverters on the side of the building next to the panels funded by the grant located on the tracking array.

Additional projects for the team school year included a second round of outreach to elementary students, another Green Fair, an enhanced website for the solar array, more recycling bins, and a carbon cutting scrapbook. During the past year, the team's focus was primarily on community education. The team raised additional grant funds this spring to help with the expanded recycling program. The school participated in the CERTs conference in St. Cloud in February 2011, sharing the results of their project.

The education department was given the task of getting solar related curriculum into the Eden Valley- Watkins classrooms. The department helped the 8th grade science teacher run the "alternative fuels" segment of his class, which lasted a full week. Students in the class learned and did projects about ten types of alternative fuels and some of the environmental effects of these fuels compared to fossil fuels.

The marketing and education departments teamed up to make a presentation for the 4-6th graders at the Eden Valley-Watkins elementary school science fair in April 2011. The presentations lasted all day, and the Carbon Cutting Eagles received great reviews and were rated as one of the top 3 presenters. The team used a miniature solar panel to power a DC fan to show how solar systems work and demonstrated how to use a solar oven to show other uses for solar energy. The children received booklets called "101 Ways to Save Energy" (donated by Stearns and Meeker Coop) to bring home to their parents.

The education department would like to integrate more solar curriculum into classes. A survey of the high school seniors revealed that only 32.5% of the seniors had a basic understanding of how our solar energy system worked (panels collect DC, inverter transfers to AC, school uses power); 45% could remember what kWh stands for (which they learned in 9th grade science); 25% knew what a CFL was; and only 17.5% knew (within 25 cents) how much they pay for a unit of energy. The team strongly believes that the state should have alternative energy curriculum requirements written into the state standards. Steph Wirz, the team's student leader, was asked by the American Solar Energy Society to present at their national conference about the school's project. She said people at the conference were also shocked by the survey results. Her speech was meant to sound the alarm to solar companies, educators and the lawmakers present.

The team did its best to provide information to the community about green energy and energy conservation. They continue to go to the elementary school to help the students form “green” habits and teach about recycling. They will also continue to find ways to work energy and green technology related curriculum into high school classes. The team knows that no one type of alternative energy can solve the energy crisis, but maybe teaching can. Their hope is that teaching will not only touch a life, but touch the community and even the state.

Testimonial - Eden Valley Watkins High School. “*The MNSCC program is the reason that our school created a "green team". We have built a solar system for the school, educated students about green topics, and have held green community education classes and community events all because of the MNSCC Program. This organization has provided the funding and support to help our school group succeed. It would be great to see required funding from the state for a "green team" at every school so that every student would have the opportunity to learn about alternative energies, green technologies, etc. We were very fortunate to have come across such a supportive organization.” Stephanie Wirz, Student Team Leader, Eden Valley Watkins High School*

6 – 10. Northeast Higher Education District Sustainability Collaborative - Hibbing, Itasca, Mesabi Range, Rainy River, and Vermilion Community Colleges.

Overall Project Summary: Five community colleges comprise the Northeast Higher Education District (NHED). Student sustainability teams at each NHED campus focused on one of five areas relevant to the carbon footprint of higher-education institutions: student housing (Rainy River), commuting (Hibbing), food service (Itasca), solid waste (Mesabi Range), and lighting (Vermilion). Each sub-project included a strong educational component to promote carbon emissions reductions throughout the NHED campuses and communities of greater Northeastern Minnesota. Each campus will share their challenges and triumphs with the other campuses.

6. Sustainable Transportation - Hibbing Community College (HCC)

Project Summary: The student project at Hibbing Community College involved reducing carbon emissions through developing and promoting a more effective rideshare program; more bicycle commuting; and greater use of public transportation.

Project Results: The team worked with the IT staff to improve the on-line rideshare database and establish a permit program to allocate priority parking for rideshare participants. The team organized a bike collection and bike loan program; set up a secure bike storage area and repair workshop; and promoted these efforts in the local paper. To promote public transit, the team worked with Hibbing Area Transit to include the college as a regular stop; arranged for subsidized transit passes for students; and promoted this program at the college and in the community.

In a major achievement in December 2010 on promoting ridesharing and carpooling, the Dean of Students at Itasca Community College wrote a successful grant to the Blandin

Foundation to pay for NHED college access to "Zimride", an online social ride-sharing and transportation software (http://www.zimride.com/rideshare/university). The NHED purchased a three-year license to use the Zimride rideshare database. Access to Zimride is available at all five NHED campuses. Advertising will begin during the fall orientation in August 2011, and hang tags distributed. The program is being rolled out this fall. In addition, HCC has purchased and installed "Carpool Parking Only" signs in the main college parking lot. It is likely that signs will also be purchased for the North Parking Lot. Carpool mirror hang tags have been purchased. The carpool only spaces are being used frequently.

HCC launched its bike loan program in September 2010. The project included a public request for donation of bicycles – over 40 bikes were donated during collections in August! Students sign up through a bar code system similar to the library book checkout program. Bike repair and maintenance equipment and supplies have been purchased and a repair workshop established in the former vo-tech building.

Finally, the team negotiated with Hibbing Area Transit to secure three daily bus stops on campus. The team arranged for subsidized transit passes through a contract between the City and HCC and a special vote by the City Council. The ridership program has been very successful - with 1,176 rides have occurred since the program launch in September 2010!

Testimonial - Hibbing Community College. "*The MN Schools Cutting Carbon grant has opened up a whole new set of opportunities for Hibbing Community College: TASC (Toward a Sustainable Campus) students were awarded $4000 as part of the Northeast Higher Education District's Schools Cutting Carbon grant initiative. Students decided to work on issues of transportation. They now have an agreement with the City of Hibbing to subsidize student bus passes and HCC is now a regular stop on the Hibbing Area Transit bus route; our student bike loan program is now loaning bikes to students at no charge; four new "Carpool parking Only" signs are now in place; and ZimRide will soon be available to link up those wishing to carpool These student-led initiatives would not have been possible without this funding!" Don Graves, Project Director, Hibbing Community College*

7. Composting and Tray-less Dining -- Itasca Community College

Project Summary: Itasca Community College focused on reducing the carbon footprint of its cafeteria by introducing a composting initiative and implementing tray-less dining with reusable dishes and utensils.

Project Results: Tray-less dining has been successfully implemented, first on a pilot scale and then permanently. Two hundred and fifty polycarbonate plates and bowls were purchased and put in use. Thirty-five plates have disappeared, possibly "borrowed" by students, but this was not a continuing problem in the full-scale rollout.

The second objective of the grant project, construction of a composting unit for cafeteria organic food waste, was less successful. Attempts to separate organic compostable food from other trash have not been successful. Students appeared to ignore posted signs, and without continual supervision of compost sorting during meal times, students do not separate compostable items. The team decided not to construct a composting unit for cafeteria organic food waste as a result, which means that the second objective was not completed.

The school team's third objective, developing an education campaign for the campus on sustainability issues relating to food, dining, and resource use, is underway, with the first goal to meet with student life and student housing directors to create a training program for Resident Assistants and students. The team plans to work on this program during the Fall 2011 semester. The school has been diligent in keeping its B3 energy database up to date.

One of the lessons learned in this project was the importance of maintaining student interest. With five NHED colleges splitting the grant, Itasca focused on composting. The students had a much stronger interest in engineering-related projects such as solar or dorm renovation, but less interest in composting. This feedback will help shape future projects at the school.

8. Improving Recycling and Minimizing Waste - Mesabi Range Community College

Project Summary: The Mesabi Range Community College project includes an overhaul of the campus recycling programs and reducing the campus solid waste stream.

Project Results: Mesabi Range's team has not submitted a final report yet. This update is based on their second interim report. portion of the grant was used to purchase new indoor and outdoor recycling bins for high traffic areas of both the Virginia and Eveleth campuses. Grant funds were also used to purchase two large 500 gallon composting bins. These tasks are complete and bins are in place.

The school team created marketing posters and clear labeling for recycling and waste containers. The team worked with food service staff to reuse kitchen and cafeteria waste. Students created "Garbage" sculptures, such as one using pop pebbles and cans. The sculpture will hang in the Commons area starting in the spring of 2011. Students also planned to create a campus native plant garden. The student sustainability team has written articles and press releases for the school and local paper and planned a Green Week celebration for this spring.

Testimonial - Mesabi Range Community College: "*Minnesota Schools Cutting Carbon for helping Mesabi Range College to initiate a Green Team on campus and to help the college become more sustainable. MNSCC was instrumental in creating a sustainability team on campus. With their grant assistance, a small team was formed to*

create a sustainability initiative on campus. Since receiving the grant, we have become very successful in our recycling efforts. We have also seen sustainability become more mainstream on campus and have begun working with other two-year institutions in the area. Thank you again MNSCC!" Toby Anderson, Project Coordinator, Mesabi Range Community College

9. Energy Competition! - Rainy River Community College

Project Summary. The Rainy River Community College project included engaging students in an energy competition and encouraging other energy strategies to reduce energy use, improve recycling, and implement other sustainable living strategies in dorms.

Project Results. The energy competition is planned for the Rainy Hall orientation in the fall of 2011. Student Senate and Rainy Hall RAs will lead the project. Due to inability to monitor energy use in individual floors, the college will hold educational games with student competitions based on properly sorting recycling, sustainability themed questions, and other hands on activities. Sustainable living strategies were emphasized during orientation activities in the fall of 2010 and updated for the fall of 2011.

The project also includes other actions to reduce energy consumption in Rainy Hall. Compact fluorescent bulbs were installed on two floors; power strips with switches have been distributed in rooms with instructions for use; drying racks and clothes lines are checked out by students; and signage for laundry, lounge, and individual rooms to educate students on energy and waste are in place.

The school also focused on increasing recycling on campus. Additional recycling bins were placed in each room, one for paper and one for plastic. Can collection bins are also located in common areas. The school purchased a trailer for storage and transport of recycled materials is in progress. Signs for common areas were developed and installed with our grant funds and a matching grant from the Rainy River Community College Foundation.

Two to four large bags of recyclables are collected from Rainy Hall each week. There are three central collection bins in the laundry room – plastic, paper, and cans. In total, over 1000 gallons of paper and plastic by volume were recycled last year. Over the life of the MnSCC project, starting with the $500 grant in 2009, approximately 3,600 gallons of plastic and 4,200 gallons of paper by volume have been recycled.

10. Energy Efficient Lighting - Vermilion Community College

Project Summary: The Vermilion team project was to reduce GHG emissions by replacing lighting fixtures in a prominent space on campus with an energy efficient lighting system and to develop and mount an interpretive display relaying information

about the project, including information about sustainability and carbon emissions reductions.

Project Results: The project concluded successfully. Eighteen metal halide lighting fixtures in the Fireside Lounge have been replaced with compact fluorescent fixtures and lights. The team also intends to replace lighting in two residence hall corridors adjacent to the Fireside Lounge was replaced with more efficient compact fluorescents and occupancy sensors at a later date. The team also completed a lighting upgrade of the gymnasium, with all new florescent lights and occupancy sensors. Although too early to know for certain, the estimate is that this upgrade will save the college at least $500 to $600 per month in electric costs.

The team created an interpretative display for the Fireside Lounge. The poster is in final printing and framing phase and will be displayed shortly. The team has been using the B3 database to determine changes to energy use in the building.

11. Mix, Match, Recycle - Higher Ground Academy, St. Paul

Project Summary: High school students organized a recycling program at the school for paper, plastic, glass and aluminum. They led the project by locating recycling bins throughout the school; educating students, teachers, and staff in how to separate recyclable products in the classroom and cafeteria; collecting and sorting recyclables; and measuring and reporting results. The project emphasized teaching students, staff and the community about the importance of recycling and the impact of recycling on reducing the school's carbon footprint. Elementary and high school students also went to see recycling centers. An important project goal was to foster a shared understanding of the benefits of recycling among the campus and community at large.

Project Results: Higher Ground Academy is very proud to have established a full-scale recycling program. Full implementation began in February of 2011. They are very proud of what they have established. All students, who are mostly of East African background, are now recycling. There are containers placed in three locations in the schools hallways being used to collect plastic bottles, cans, and glass bottles. Students are able to visualize and actively participate in the process of separating recyclable materials from other waste products. Approximately 97% of students completely empty their milk cartons and deposit them in the clearly labeled recycling container. They wait their turn to deposit their carton into the specially designed one-hole topped container that was purchased to expedite the separation process.

One problem has been observed with the recycling containers in the hallways. These specially designed blue recycling containers have one-hole on top and have printed signage indicating that they are for recyclables only. The containers, however, do not have a clearly visible recycling emblem on them. This may be part of the reason for other waste being placed inside. The team placed a waste basket next to the recycling container. This offered some improvement, but not a 100% correction rate. The team

also purchased several recycling stations that are clearly labeled for paper, waste, cans, and bottles. The team hopes this will make recycling even more inviting and fun!

Eureka Recycling Company collects the recyclables once a week and provides monthly data to the school. The team receives weekly and monthly recycling amounts in pounds, separated by types of material and carts collected. The team will do a follow-up in the fall to determine who has taken the idea of recycling into their homes. With this information, they will determine if there is a need to further educate families about the need to recycle and the how-to's in their households and in their communities. The idea of having the high school art class create brochures to spread the word about recycling was discussed.

The school currently has 2 paper carts and 7 bottle, can, [milk cartons] carts. Service Learning students are assigned to collect recycled materials weekly. Each class is asked to place their recycling containers outside their classroom door by 9 a.m. every Friday.

High school biology students began preparing for the school-wide recycling program by studying the positive effects of recycling on the environment. The biology teacher and the students gained knowledge about the benefits of recycling and what the students at Higher Ground Academy would do to help the environment. This information was shared with the entire student body by the biology students who did a presentation on recycling in each class.

The data collected for this project indicates that the Higher Ground green team has made a real difference in improving their environment. Over 4000 pounds of recycled materials have been collected in only 6 months, with an estimated reduction of 2 tons of GHG emissions. The team was excited about the opportunity and results that this project offered.

Testimonial – Higher Ground Academy. "*Thank you for giving us the opportunity to make a real difference in our school, families, communities and our country by choosing Higher Ground Academy as a recipient of the grant. I am pleased with what has occurred as a result of our implementation of our Mix. Match, Recycle project at Higher Ground Academy, where we will continue to do great things." Brenda Hassan, Teacher, Higher Ground Academy*

12. Walking Softer: Lightening John Marshall High School's Carbon Footprint - John Marshall High School, Rochester

Project Summary: John Marshall students promoted awareness of alternative energy sources and the efficient consumption of fossil fuels to their peers and the community.

Project Results: The John Marshall school team purchased the pool cover, but it not been installed due to administrative issues at the school. The school expected to recover the installation costs within six months and anticipated realizing energy and cost

savings for the remaining 4.5 years of the pool cover's expected lifetime. The school team still intends to install the cover at John Marshall, but there is no installation date at this time.

13. Reducing Electricity Use in Our School and Community - Ortonville School District

Project Summary: Ortonville's Local Environmental Focus Team (LEFT) identified ways to reduce electricity usage after reviewing recommendations in the school's ERM energy audit report. The team replaced T12 bulbs with more efficient T8 bulbs in all classrooms that use those bulbs, install energy misers, and replace less efficient lighting in other classrooms. Electricity monitors eliminated phantom electricity use, and the team programmed laboratory computers to be more easily shut down. Through in-kind donations of radio time and newspaper space, the school has educated the community about reducing energy use and the impact these actions have on the school's carbon footprint.

Project Results: The Ortonville High School successfully completed its project, although some work will continue long after the conclusion of the grant. The team hired an electrician to refit all light fixtures in elementary classrooms from T12 to T8 fixtures. The grant and utility rebate allowed replacement of light fixtures in all classrooms, the gym, music areas, offices, and shop areas. Lighting upgrades continued with higher efficiency lights replacing older ones in the high school. The school also purchased additional energy misers through the CERTs bulk-purchase campaign this spring. Students installed the energy misers under supervision of the building custodian.

The team began a reminder campaign to reduce phantom electrical usage by shutting down computers and turning off lights when not in use. The student team also gave presentations to fellow students from 10 other high schools on reducing electricity usage in school at an Earth Day event and at a Regional Middle School Science and Nature Conference at Southwest Minnesota State University in Marshall. The team was also featured on a WCCO Radio to talk about the work the school is doing related to energy efficiency.

There was a measurable decrease in energy use between 2009 and 2010 according to comparison reports using the state B3 database. There was an increase in usage between 2010 and 2011, which may be attributable at least in part to the colder 2010 winter, since the increases occurred during the December-March time period. Savings from the 182 fixture retrofits and bulb changes are estimated at 58,600 kWh and $3,300 in reduced energy costs each year. The school received a utility rebate of $4,887, which was used to complete additional retrofits and bulb changes. The installation of 10 energy misers reduces vending machine electricity use by about 45%, saving $850 in annual electric costs and 17,000 kWh of electricity.

The team was also working on reducing phantom wattage by sending regular reminders to faculty and staff to turn off computers and lights when not in use. These efforts continued throughout the project and will be continuing after the project ends. The

school worked with its utility to install a free computer program that automatically shuts off computers after a period of idleness. This has been installed on all computers that are able to accept the installation. This should save up to $530 and 10,719 kWh annually.

Finally the team continues to work on increasing awareness of the importance of reducing energy use in school and in the community through presentations in elementary classes, a booth at the local Sports and Leisure Show, working with presenters at the Sports and Leisure Show to reduce waste and increase recycling, and publicizing their efforts in the local newspaper, local radio talk show, school website, and Earth Day presentations.

14. The Green Take-Over - Proctor High School

Project Summary: Reducing electricity consumption and waste are the primary focus areas for reducing the carbon footprint of Proctor High School. To increase the energy efficiency of the building, eight motion sensors and two light harvesters were installed in the secondary school building to assure that lights are on only when necessary. Students read energy meters before and after the implementation of this system to determine energy savings. Also, the school replaced fifteen of its CRT computer monitors with energy efficient LCD monitors. To decrease food waste, Proctor implemented a composting campaign. Purchasing additional reusable dishes and utensils for the cafeteria also helped the school realize its goal of recycling at least 50% of its waste.

Project Results: The Proctor team focused the majority of work on food composting, recycling, and reducing use of disposable bowls and plates in the school cafeteria. The High School was recycling 27% of its waste in the spring of 2010, and increased to 38.5% in the spring of 2011, an improvement of 11.5% and a savings of 30.5 tons of GHG emissions.

The team purchased biodegradable garbage bags to increase composting, and placed a blue composting can in the cafeteria. Student volunteers staff the composting station to assure program success. The school monitored waste levels in compost, recycling, and garbage dumpsters. There was a significant decrease in garbage to the point where the district could cost effectively remove one six cubic yard dumpster and replace it with a six cubic yard recycling dumpster. The team collected 85.5 gallons of food waste each week, for a total of 13.4 tons of food waste annually. This program is labor intensive and requires a commitment from kitchen staff and the school district to continue in the future. In addition, students are emptying recycling containers, not custodial staff.

The school food service has replaced Styrofoam containers with reusable bowls and plates in most instances. The team partnered with the Western Lake Superior Sanitary District and its GreenCorps worker to print signage to encourage composting and recycling throughout the school. Green Bandit students have taught lessons on

composting and recycling in all elementary classrooms. They made a video about how to compost and recycle in the cafeteria that was shown to all 6-12 grade students. They have hung large posters in several locations in school buildings to encourage recycling, composting, and reduced energy use. Green Bandit students have educated the entire student body at the composting site during lunch periods. Recycling bins are located in classrooms, but more are needed in hallways, teachers' lounges, and workrooms.

The team updated the computer lab, installed two light harvesters, added motion sensors to two hallways, and updated the lighting in the school fieldhouse. The cost of the light harvesters and motion sensors was $2,380, and with an $839 utility rebate and an estimated energy savings of $567/year, the payback period is 2.72 years.

The team also replaced 35 of the school's 260 CRT monitors with LCD monitors. They then completed a partial transformation of the school's computer systems to nComputing desktop virtualization solutions, allowing the school to reduce the number of needed PCs while at the same time increasing the available amount of computing stations, splitting CPU cycles by various computer terminals simultaneously. The energy savings are significant: three nComputing terminals attached to an Energy Star dual core PC use the same electricity as one non-Energy Star computer with a CRT monitor. Two complete computer labs have been switched to nComputing with new LCD monitors. All classroom desktop computers used by teachers have been upgraded and replaced with LCD monitors.

Proctor students showcased their results at the "Earth Fair for Proctor's Future" in May 2011. This event involves community groups, education stations along a school hiking trail, a wind turbine monitoring building, and other features. A project survey indicates that knowledge of GHG and carbon footprint increased by 25.5%, with students even in kindergarten mentioning composting and recycling as ways to reduce garbage. About 75% of high school students are knowledgeable about their carbon footprint.

15. Cooling Our Heels - Rosemount High School

Project Summary: Rosemount High School's energy audit report by ERM indicated that Rosemount High has a larger than average carbon footprint. The team's project was intended to reduce energy use by over 10%, as well as reduce the amount of paper used at the school by a similar percentage. Students used light meters and infrared thermometers to identify areas needing energy efficiency improvements such as caulking, insulation and weather-stripping. Motion activated sensors, power strips, and energy misers are used for energy management. Sixteen LCD computer monitors replaced half of the existing CRT monitors. Paper reduction training for teachers and monitoring software reduced the amount of printing by teachers and students. The student team also organized and promoted a walk/bike/carpool/bus day.

Project Results: Rosemount High School's project has produced very impressive results. The project goal was to reduce the school's carbon footprint by 11% by June 2011, and reduce paper use by 10%. The school decreased its use of natural gas by 21% and electricity by 7% compared to 2008 baseline data. The GHG emissions from

these two sources were reduced by 374 tons, which is an 11% reduction and achieves the team's goal. Each strategy included a strong educational component and engaged a large portion of the student body. The team gathered data on energy use, lighting, and temperature readings around the school. They used that data to form action plans to conserve energy and improve energy efficiency.

The project's first objective was to educate the school about the team's goal of reducing the school carbon footprint. This was done through school news articles, web page outreach, and posters created by students displayed throughout the school. All ninth graders completed an assignment to determine their own carbon footprint and studied the schools' carbon footprint using the ERM report and the Schools for Energy Efficiency (SEE) data. One measure of success of this objective is the school's top team ranking in the Minnesota Energy Challenge, with 466 members. The number one action pledged was to turn off lights and unplug unused appliances.

The second objective was to develop and conduct an Energy Unit in 9th grade Earth Science. Students collected and evaluated data and formulated action plans to reduce their carbon footprint. Tools used to measure energy, lighting, and remote temperature readings were also available for students to use at home. Students also created public service announcements on energy or water conservation and re-checked lighting and energy use data during the second year of the project. In addition, students selected and promoted a different "Action of the Month" that was featured throughout the school year.

Students presented their action plans and supporting data to faculty and staff as well as high school administrators. The school's administrators worked with custodial staff to implement ERM project recommendations and student action plans. Specific energy saving actions taken at the school include adjusting lighting levels in classrooms and hallways; installing motion activated sensors; installing weather-stripping on external doors; programming TV monitors to shut down at days' end; installing energy misers; replacing 32 CRT monitors with energy star rated LCD monitors; providing power strips to 70 staff members; and allowing students to borrow the Kill A Watt and Luxmeters for home use.

The team worked on reducing student cars driven to school by 10% through several strategies, including sponsoring several monthly reward days for taking alternative transportation or walking; sponsoring walk/bike/carpool to school days; and twice sponsoring a "Walk with the Principal" event. While the school did not reach its goal, it received a county grant to make improvements to the bike rack area.

Finally the school's goal of reducing paper use by 10%, or 456,340 sheets, was partially successful. The school installed "Papercut" software and trained teachers in its use in the spring of 2010. Staff reported a reduction of 100,525 sheets. The team anticipates greater reductions as the staff get more familiar with on-line programs that reduce paper, such as Moodle and Papercut.

In sum, the team reported that the project greatly enriched the energy curriculum at Rosemount High School. Students developed important math and communication skills on this project, presenting their data and action plans to students, administrators, other schools, at the CERTs February 2011 conference, and to the LCCMR committee. The Green Team also earned two second place trophies for their wind turbine design and energy output at the first Renewable Energy Challenge.

Testimonial – Rosemount High School. ***"As a 9th grade science teacher at Rosemount High School, I have seen the benefits of this program for my students and their families. Students have been actively engaged in hands on learning experiences and collecting and analyzing meaningful data. Using Materials the grant funds provided such as Kill A Watt Meters, Lux meters, and Infrared laser thermometers, students have found ways to save money and conserve both energy and resources both at school and at home." Veda Kanitz, Teacher and Project Coordinator, Rosemount High School***

16. Reducing Our Carbon Footprint through Alternate Energy - St. Michael-Albertville High School

Project Summary: Through a shop class design-and-build project, students constructed a passive solar air heating system in the school's greenhouse and a small solar thermal hot water heating system to demonstrate the power of solar thermal. Both projects are being integrated into the school curriculum. In addition, students evaluate the effectiveness of these projects through an electronic monitoring system that trains students in all grades through web-based system integration or video monitoring.

Project Results: St. Michael-Albertville's team worked with an expert to design and install two solar panels and related equipment to supplement the heating of the school greenhouse. The panels serve as a demonstration of the capabilities of solar power on a small scale. The electronic monitoring system reads how much energy the panels are providing continually. The greenhouse also has a solar thermal system and serves as a student learning center on alternative energy.

Testimonial – St. Michael – Albertville High School. "*The Minnesota Schools Cutting Carbon Grant enabled Patrick Lindquist, an independent study student, to design and create a solar panel system that will demonstrate to students the power of solar energy in Minnesota. Patrick worked with the Project Lead the Way engineering course as he researched and designed the demonstration system. Patrick gained an authentic learning experience that cannot be taught in a standard classroom. He plans to pursue a career in engineering at the University of Minnesota." Kay Nowell, Teacher and Project Coordinator, St. Michael-Albertville High School*

17. Southwest Community Education Green Team Solar Lighting Project - Southwest High School, Minneapolis

Project Summary: Nearly forty percent of the school's greenhouse gas emissions are from electricity usage. The Southwest Community Education Green Team ("SWCEd") proposed to educate the student body, community, and elementary students about

alternative energy sources, with an emphasis on the beneficial applications of solar energy. The team demonstrated how solar energy can reduce carbon emissions by building a solar lighting module and solar heating module. The team uses these materials in elementary school and community workshops to illustrate how solar energy can be effectively produced and used to reduce reliance on fossil fuels and reduce our carbon footprint.

Project Results: The Southwest Green Team successfully developed demonstration models of solar heating and lighting with assistance from a solar engineer in planning and construction. The solar electric water heating system was completed and delivered in June 2010. The solar electric model was completed and delivered at the end of June 2010. The water heating unit shows temperature, temperature changes, and water flow rates. The solar electric panel converts the sunlight to electricity to power a light and a fan.

The Green Team also developed materials for the elementary school and community workshops to illustrate how solar energy can be effectively produced and used to help reduce our reliance on fossil fuels and reduce our carbon footprint. Drawing from their own work, the team documented the potential savings that solar energy applications, as well as passive use of solar lighting, can provide in the home, business and school environments. This information, along with demonstrations of the Green Team's solar energy and solar heating modules, was shared with the elementary students in Green Team workshops, with the general public in community workshops, and with the Southwest High School teaching staff for integration into their classroom curriculum.

18. *EcoCity Works!* Cuts Carbon - The City, Inc., Minneapolis

Project Summary: The *EcoCity Works!* student environmental club conducted an energy audit to determine improvement options for the school and recommended that The City, Inc. replace the school's washing machine and milk cooler, which were not energy efficient due to their age and condition, with Energy Star qualified appliances to realize energy savings. The *EcoCity Works!* team promoted the project and the resulting energy savings through its website, Face Book account, newsletter, and at a planned special event to educate the school and community about the benefits of saving energy.

Project Results: The City, Inc. used its grant funds to purchase an Energy Star washer and Energy Star refrigerator for school operations. The impact of this purchase was to reduce the school's electric bill by about $230 per year. Unfortunately, severe budget issues forced a shut down operations and closed the North Minneapolis alternative school in January 2011.

Testimonial – The City, Inc. "*The City, Inc. is a nonprofit organization that exists to provide various programs that benefit inner-city residents. We serve primarily people of color or people in poverty. Two alternative contract high school sites are run from the organization; North campus and South campus. MnSCC has sparked a tremendous change in direction for our schools, in that students have become empowered through*

their actions to make changes in their lives and at school, and are learning about environmental processes and stewardship. With MnSCC grant monies we purchased two much-needed major items: an energy efficient new cooler, and an energy efficient new washing machine. We provide school lunches from the cooler and needs-based access to the washing machine for students, many of whom are transient. We also changed out some of the lighting at the north side building to improve efficiency.

We could not have made these purchases without the MnSCC funding. These changes, however, have opened even more possibilities for us. We are now in process of furthering our environmental focus by expanding our activities and curriculum to include a local community food growing operation, acquiring green energy sources for our school site, and perhaps starting a community rain garden outreach program for the north side. With these new initiatives we hope to provide students with the skills and knowledge that will prepare them for a much-needed environmentally wise future. We are truly grateful for the work that MnSCC is doing to help organizations like us to head in new energy wise directions!" Carla Beaudette, Teacher, The City, Inc.

19. UMD Cutting Carbon: Conservation, Education and Investigation - University of Minnesota – Duluth

Project Summary: The University of Minnesota – Duluth (UMD) team work plan had four objectives – promoting student green events; auditing UMD buildings to identify energy saving projects; creating student sustainability displays; and establishing a Sustainability Pledge that campus community members could join. Students and staff led an energy conservation outreach campaign targeted at behavioral changes to reduce electricity use on campus. Campaigns included: Dorm Energy Wars, a UMD-Energy Saver pledge (with a web-based tracking component), departmental energy mini-audits, and a 'Green Your Office' presentation series providing energy-saving incentives (i.e. power strips, and possibly wool socks or sweatshirts funded by UMD). The project also offered the UMD community a way to pledge to save energy and track promised energy savings through a web-based database and modification of an existing energy conservation program pledge.

Project Results: The UMD team was very active during this project, completing a number of impressive sustainable actions. Students sponsored a major Earth Hour event on March 27, 2010, with a concert and information about energy issues, UMD greenhouse gas emissions, and energy saving ideas. On April 29, 2010, the Student Sustainability Coalition and the Cycling Club organized a Bike-to-School celebration and promotion. Following the success of that event, the team helped to arrange the first Bike-to-Work day at UMD.

UMD building staff purchased a multi-meter to help identify areas on campus that are over-cooled, over-heated, or over-lighted. Grant funds have also purchased kill-a-watt meters and smart strips. These have been distributed, and students are evaluating whether these reduce energy, measure energy use by refrigerators, and provide information to support further use of Vending Misers. The team continues to promote

the Sustainability Pledge to draw student attention to carbon emissions on the UMD campus. The Pledge is 10 simple actions that students can take to reduce energy on campus, such as using cold water whenever possible; washing full loads of dishes; double-sided printing; using reusable bags and water bottles. Students can join on-line, committing to some or all actions.

During Bulldog Welcome Week, incoming freshman are greeted with sustainability presentations, waste-free dining events, power strip give-aways, and "sustainability-themed bingo night." The school promotes reduced paper use, such as using recycled flash drives to reduce paper use. Waste reduction is also a priority during Bulldog Welcome Week, and two events were "zero waste", with an emphasis on sustainable action and carbon-cutting.

The Fall Sustainability Fair was attended by an estimated 250 students. Topics included energy conservation and reducing carbon emissions as well as many other sustainability topics. Students will promote the Energy Pledge in the school's spring campaign for energy awareness. The team also promoted energy awareness announcements on KUMD; public service announcements highlighting energy saving, carbon-light commuting, and encouraging recycling ran in November and December 2010. They collected 780 pounds of electronic waste for recycling. A week later, the UMD Honors Students held an Energy Forum, a day long event featuring discussions on a number of aspects of energy policy, including peak oil, biofuels, nuclear energy, and fossil and renewable fuels.

On March 27, 2010, UMD students celebrated Earth Hour (a week-long event), using posters, a concert, and displays of energy-saving information for attendees. The 2011 Earth Hour featured a trayless cafeteria, energy-saving pledges in Residence Halls, music, and a movie about fossil fuel issues. Students also launched the UMD Energy Action Plan as part of the American College and University Presidents' Climate Commitment, with a goal of 1,000 pledges. The team worked on the pledge for two years and now has over 340 signed pledges. They will continue working towards their goal.

UMD students sponsored bike-to-school days in April 2010 and again in 2011, with a fair including a raffle, tables about bike safety, a bike repair station, and other promotional materials. The event attracted over 50 students in 2011. A student intern helped to organize the first bike-to-work day at UMD as well. The team engages Resident Advisors in UMD housing to increase awareness of energy conservation. They distributed 42 smart power strips and provided information about energy, water, and resource conservation.

In the Dining Center, 37 light figures were retrofitted to use LED bulbs in the spring of 2011. These bulbs use 75% less electricity than existing bulbs, resulting in a payback of less than 3 years. In addition, the life expectancy is four times that of the existing bulbs, yielding an estimated savings in labor of $30 over the lifetime of each LED bulb.

School electricity use was reduced by 1% (320 mwh) during the grant period despite opening two new buildings, equivalent to a reduction of 236 metric tons of GHG emissions.

The team has reached hundreds of students through the Sustainability Facebook page, blog, and website. There was significant press coverage of events held during the project. Student leadership was extremely important in all aspects of project implementation.

Testimonial – University of Minnesota Duluth: "*Having a grant from MN Schools Cutting Carbon was truly a great motivator for our campus. The grant helped kick-start many ongoing activities and partnerships working on energy conservation on the UMD campus. An added benefit beyond the grant period: students who participated and led grant energy conservation activities are now playing leadership roles on campus sustainability committees." Mindy Granley, Project Supervisor, University of Minnesota Duluth*

20. Students Using Natural Energy (SUN-E): Solar Thermal Installation and Education Project - University of Minnesota – Morris

Project Summary: A new solar-thermal heating system was installed on the Recreation Fitness Center (RFC) community pool and serves as a demonstration site for the project. The Students Using Natural Energy (SUN-E) team at the University of Minnesota – Morris (UMM) used LCCMR grant funding to support the RFC solar-thermal project by recruiting student volunteers to support the technical and educational outreach objectives of the project and to educate the campus, other colleges, and local communities about solar-thermal energy. Funds were also used to purchase two of the solar thermal panels. The benefits of a solar-thermal heating system for the pool are reductions in natural gas consumption and resulting greenhouse gas emissions. The University of Minnesota-Morris (UMM) shares the RFC with Stevens County residents and the Morris Area Education System (MAES).

Project Results: The SUN-E project definitely achieved its goals, and the team is very pleased with the outcomes. The solar thermal panels on the RFC pool have been installed, and the school has established an ongoing performance monitoring process. The system is operating as planned so far. The installation will produce 280MBtu per year and will offset the commensurate amount of natural gas that would have been used to produce this energy. Roughly 30,000 lbs of carbon dioxide are offset each year. A note on operation, at 70F external temperatures, the system is producing 145F fluid at the panels.

The education and outreach campaign is also continuing. A Solar Swim was held in February 2011. Invitations were sent out to MnSCC schools to alert them about the Solar Swim date and time. There were several related events. The first event was focused on a more mature audience, and the team educated several seniors in the community about the solar thermal system. The second event was targeted at youth

and college students. The youth event featured music, education, and food, with about 100 people in attendance. The third outreach event was a collaboration with another local initiative, called Stevens Forward! For this event, called 'Cookies, Cocoa and Carbon Neutrality', the SUN-E team constructed a fun solar education game for children to play and offered education to community members about solar thermal technology.

The team also achieved its video-related goals. They obtained a video from United States' Senator Amy Klobuchar highlighting the solar thermal project at the RFC and renewable energy efforts in Morris. The *SunRay* films initiative was undertaken. Multiple videotaping sessions were conducted with campus and community stakeholders. The videotape material is currently being edited for an educational video describing the project that will be publicly available.

The team installed a solar powered informational kiosk, *Kiosk del Sol*, in the RFC, which provides information to community members about the project. A green kiosk was installed previously on campus for another project, and the team developed the *Kiosk del Sol* based on experiences with this initial kiosk. The installation of *Kiosk del Sol* was completed in February 2011.

The University is developing a campus-wide Green Ambassadors program to train students to conduct tours and share information about all the green initiatives at UMM. The solar thermal system is an important component of the training. Training materials have been developed, and students are giving tours that incorporate the RFC solar thermal system into the tour. The first ambassadors were trained and ready to lead tours in February 2011. The team has plans to grow the ambassador program, and a student was hired as a National Wildlife Campus Ecology Fellow to continue this development.

Finally, the school successfully planning a Solar Festival to kick off the Earth Day celebrations in the spring. They did this event in collaboration with the 'Cookies, Cocoa, and Carbon Neutrality' event discussed earlier. The event was held at a local park in Morris and was open to community members.

An informational brochure was completed for this project and is being distributed to visitors to the RFC. A web-based story was completed about the SUN-E project and posted on the UMM website, and a story appeared in the UMM alumni magazine about the project. Finally, the SUN-E team presented a poster about the project and their collaboration with MnSCC at the Upper Midwest Association for Campus Sustainability Conference in September 2011 to about 180 people.

The University reports that this experience has been very valuable to the student SUN-E team -- they have gained professional skills, and they have provided visibility for this community-based renewable energy system in a way that would not have happened without Minnesota Schools Cutting Carbon involvement and support. They expressed gratitude to MnSCC and staff for working with them to create this engaging project and to help fund a portion of the installation. The combination of support by MnSCC for both

the installation of the panels and funding student engagement was invaluable. The SUN-E project has been important in advancing the University's renewable energy efforts on campus. The 32-panel installation is highly visible in the community and is near Big Cat stadium. So, each time there is a campus football game or event, community members can see this installation.

The SUN-E student team has already continued their work, presenting at the UMACS conference in September 2011. They designed a poster and presented it on their own and without financial compensation. University student leaders are interested in continuing to convene events like the "Solar Swim", and they are looking for other opportunities to advance these efforts. The University intends to grow the ambassador program in the next year as well. This project was a catalyst for UMM efforts in this area, and will continue to be so in the years to come.

Testimonial – University of Minnesota Morris: "*I am thankful for the partnership with this program, the practical hands-on opportunities that it is providing for students, and for helping to catalyze a significant, and new investment, in a homegrown energy solution." Troy Goodnaugh, Campus Sustainability Coordinator, University of Minnesota Morris*

21. Willmar Community Greenhouse Expansion - Willmar Public School

Project Summary: The Willmar Community Greenhouse was created in fall 2007 as a student project by the Youth Energy Summit (YES) student team at Willmar Public School. A unique hybrid heating system heats the greenhouse, fueled primarily by passive solar heating, hot water solar collectors, and a biomass burner. This project involved expansion of the current operation by building more planting beds, improving delivery of produce, and increasing vermiculture. Expanding the number of planting beds involved building a new frame for insulation that increased production, heat retention, and thermal mass. The expansion of planting beds also helps the project move closer to becoming self-sustaining by generating more revenue. The vermiculture increase produces more heat, which helps maintain more consistent growing conditions and produces a high quality soil supplement.

Project Results: The Youth Energy Summit team has been growing and providing fresh produce for Willmar Public Schools, the Willmar Area Foodshelf, and individuals all year. The team used part of the grant to build new planting beds, which increased heat retention and thermal mass. Results of this project include increasing sustainability, increasing renewable energy by expanding production, reducing fossil fuel consumption, and improving harvest and delivery. The team reduced natural gas use by using solar collectors to heat the main hot water tank, insulating the north wall, using water tanks and rain barrels for thermal storage, vermiculture, and burning biomass produced locally and delivered in bulk.

The students maintain graphs showing temperature, relative humidity, and light intensity profiles. They also measure heat in the water storage tank and used software to

calculate growing days. In March 2010, the team built a suspended growing shelf and completed prototype planting beds in time for Prairie Wood's Earth Day celebration. They hosted an open house attended by 50 people. They also hired a new part time greenhouse coordinator in collaboration with Willmar School District's Nutritional Services and Kandiyohi County's Statewide Health Improvement Program.

The team purchased two 60-gallon rain barrels in June 2010 which provided over 500 gallons of water for the outdoor gardens the rest of the year. During winter, they are filled to provide the greenhouse with additional thermal mass. The team has two students serving as greenhouse managers to help with harvest and delivery of produce, as well as coordinating a compost pickup and delivery to the Willmar Municipal Compost site. A Team Dual tricycle and bike trailer were purchased in July 2010 to haul produce to market, make deliveries, and ride in a community parade. They applied for a Southwest Initiative YES grant, which was approved.

This project raised awareness of energy issues by demonstrating renewable solar and biomass systems, as well as why we should rely more on local foods. In addition, the team developed a greenhouse educational program through MinnWest Daycare. Volunteers engage an average of ten daycare students every Monday afternoon during the summer. Students learn gardening skills as well as energy conservation. The team has measured and reported data showing temperature, relative humidity, and light intensity profiles, and calculated the number of growing days.

This youth-driven project improved community confidence in them and the school system, and also fostered a strong collaboration among diverse community organizations. The project exposed over 1,200 students and staff to locally grown produce and concepts of sustainability. The team donated several hundred pounds of food to the local food shelf. The students partnered with the local market, city of Willmar, and Minnwest Technology Campus in various aspects of the project.

The student team determined that solar panels have offset over 6,000 hours of fuel from the natural gas furnace, saving about $1,924 and avoiding 7785 pounds of GHG emissions. The students also calculated the impact of burning biomass instead of natural gas. For the life of the project, biomass avoided about 1,360 therms of natural gas, saving about $952 in natural gas costs, although the school did not save money because the cost of purchasing biomass fuel exceeded the savings. Burning biomass is carbon neutral, so the team prevented about 3,852 pounds of GHG emissions.

22. Winona Senior High School Farm to School, Bike to School, and Water to School - Winona Senior High School

Project Summary: This project's goal is to increase the number of students and staff biking to school. The student team led the construction of a bike shelter equipped with a security system, and promoted these improvements and the benefits of biking to school to students and staff. In addition, the school team supported the use of reusable water bottles by making them available and creating an educational campaign to

increase student awareness about the benefits of replacing their disposable bottles with reusable bottles. The student team also sought to incorporate more local foods as options for its lunch program.

Project Results: These results are based Winona High School's December 2010 report, since the school has not yet submitted a final report. The Winona Senior High School project has attracted significant external funding. The school district applied for a local government renewable energy grant from the Minnesota Department of Energy Security to purchase and install solar panels on the new bike shelter that is being constructed under our grant. The location's high visibility and pedestrian traffic make this ideal for public education. Solar panels should be installed in March 2011. Educational materials will be on display at the bike shelter, and materials will be created to incorporate into the high school curriculum. The project also includes a security camera for the bike storage area, which will be installed when the shelter is completed. The Student Council will work with the student team to promote the bike shelter and solar panels as construction proceeds.

The school team has also focused on promoting reusable water bottles and decreasing dependence on non-reusable bottled water. Students from Something Green are now selling the Winona Senior High reusable water bottle that they designed. The bottles were produced by a local vendor. The High School administration has agreed to install a spout at the two drinking foundations to allow faster refill of bottles between classes.

Testimonial – Winona Senior High School: "*A Winona Senior High School survey indicated more students would bike to school if their bikes had protection from sun, rain, snow and from theft. The school received a grant through the Minnesota Schools Cutting Carbon program to build the bike shelter and add a security camera. Then the committee thought the bike shelter would be the perfect location for solar panels. The Minnesota Office of Energy Security awarded a grant to Winona Senior High to install and connect 27 solar panels as the shelter roof. Thanks to the Cutting Carbon grant that initiated this project, the high school will reduce its carbon footprint, save on energy costs, and provide a wonderful educational tool to the community." Valerie Williams, Teacher, Winona Senior High School*

23. A Million Miles per Gallon: Transitioning to a Bicycle-Based Community - Winona State University

Project Summary: This project promotes a viable alternative to automobiles by purchasing 20 industrial cruiser bicycles and helmets to expand Winona State University (WSU)'s student-led bike rental program. The project also provided student staffing for the recently launched WSU Bike Station, as well as installation of bicycle racks on school shuttles to enable mixed bike/public transportation options. WSU's goal for this program was to achieve a more sustainable, bicycle-based community throughout the City of Winona.

Project Results: Winona State's "Million Miles per Gallon" project promoted bicycles as a viable alternative to automobiles, supporting the tremendous growth in recent years of bicycling among Winona State students. The grant had three facets: (a) Expanding the current bike rental program by purchasing 20 bicycles for semester long student use; (b) guaranteed student staffing of the recently launched university bike station; and (3) installing bike racks on the student shuttle service, enabling mixed bike-public transportation options.

The daily rental program began in 2009 with five refurbished abandoned bikes. In the fall of 2010, with 30 new industrial cruiser bikes, the Purple Bike Program dramatically increased its daily rentals. Twenty were purchased through the grant, 10 by the WSU student senate. Bike rentals increased from 781 in the ten months from September 2009 through June 2010, to 2,121 rentals from July 1, 2010 to June 30, 2011. The Student Senate allocated $3,550 in matching funds for two years of bike maintenance and program management. The student billing process, tracking system and other aspects of the rental program are now in place. Bikes, helmets, and locks have been purchased, and the Student Senate approved the long term rental model and allocated funding for ongoing maintenance of rental bikes. The results of a student survey also have helped to shape the structure and operation of the program. The team worked with WSU's legal department to develop a long term bike rental contract for those renting by the semester or year. Also, they coordinated with the WSU Business Office to integrate billing for long term rentals into the campus student billing system.

The second objective of the project is staffing the bike station and educating students on bike repair. New staff have been hired and trained, and education on this aspect of the project occurred during the annual WSU bike week. Student staff operating the bike station contributed over 925 hours of in-kind project support. The Bike Station oversight and staffing is a collaboration involving the Parking Department, Enrollment Services, the Environmental Club, and Housing. The project is promoted and plays a key support roll in the annual WSU Bike Week, typically the 2nd week in April each year.

The third objective for this project was to install bike racks on the campus bus. A used rack was purchased and installed at a cost that enabled WSU to also purchase one or two racks for the vans used for intercampus transport during less busy hours. Since the bus operates only during peak hours, having racks on the smaller vans will provide more options for students transporting bikes. The racks are now in operation on campus.

In sum, the MnSCC project has assisted in continuing growth of bicycling at WSU, particularly the dramatic increase in the bike rental program. The bike racks on the intracampus bus and vans provide an essential component to a community that supports bicycling. The program has received a good deal of press coverage in the *Winona Daily News,* the *Winona Post,* on television and in local campus news coverage.

Attachment A: Final Budget Detail for 2008 Project - Summary Prepared by Minnesota Pollution Control Agency

Project Title: GLOBAL WARMING: REDUCING THE CARBON FOOTPRINT OF MINNESOTA SCHOOLS

Project Manager Name: Bill Sierks, MPCA Project Manager

Trust Fund Appropriation: $ 750,000.00

2008 Trust Fund Budget	Result 1 - Budget	Amount Spent as of 6/30/2011	Final Balance 6/30/2011	Result 2 Budget as amended 1/31/11 report	Amount Spent as of 6/30/2011	Final Balance 6/30/2011	Result 3 - Budget	Amount Spent as of 6/30/2011	Final Balance 6/30/2011	Result 4 - Budget	Amount Spent as of 6/30/2011	Final Balance 6/30/2011	TOTAL BUDGET	TOTAL BALANCE
	Education and Outreach			**Carbon Footprint Identification and Initial Reduction**			**Grants for Carbon Reduction Projects**			**Measurement and Evaluation - Case Studies**				
BUDGET ITEM														
Grant Contract with University of Minnesota for project coordinator and supervisor	14,000	14,000	0	45,000	44,971	29	21,500	21,500	0	30,000	30,000	0	110,500	29
Grant contract with Univ of MN for grad student project coordinator to assist project team in completing this project; CERTs project supervisor(s) will assist and supervise grad student. Project coordinator will lead assistance and outreach under Result 1, support project teams and assist consultant during Result 2, assist school teams in implementing grants under Result 3, and assist in recognizing achievements, assembling project results, and help school teams measure and report results and prepare case studies in Result 4														
Contracts														
Professional/technical	11,000	11,000	0							3,500	3,500	0	14,500	0
Grant contract with The Minnesota Project to design, operate, and support the project website, which will provide school teams with information, grant application forms, project tracking, case studies, information exchange, and other functions. Work on web design will be subcontracted to Triangle Park Creative														
Professional/technical				361,693	361,693	0							361,693	0
Grant contract entered with Environmental Resources Management (ERM) for professional services to: 1) Work with school teams to identify school carbon footprint and options to reduce greenhouse gas (GHG) emissions; 2) Work with school teams to develop and implement action plans to reduce their school carbon footprint, 3) Educate student teams and empower them to take action to address climate change, and (4) Measure and report results. Propose moving $5,000 from this budget to supplement small school grants.														
Other contracts: Grants to school teams				60,479	60,375	104	202,828	201,354	1,474				263,307	1,578
Funding for two types of grants: (1) Small grants of approx. $500 to each school team to fund carbon reduction project developed by school teams, and five or six small competitive grant awards of approx. $500 to promote innovative carbon reduction projects at schools; (2) 10 to 12 competitive grants of up to $20,000 awarded to schools with the most innovative carbon reduction and education projects														
Other														
COLUMN TOTAL	25,000	25,000	0	467,172	467,039	133	224,328	222,854	1,474	33,500	33,500	0	**750,000**	**1,607**