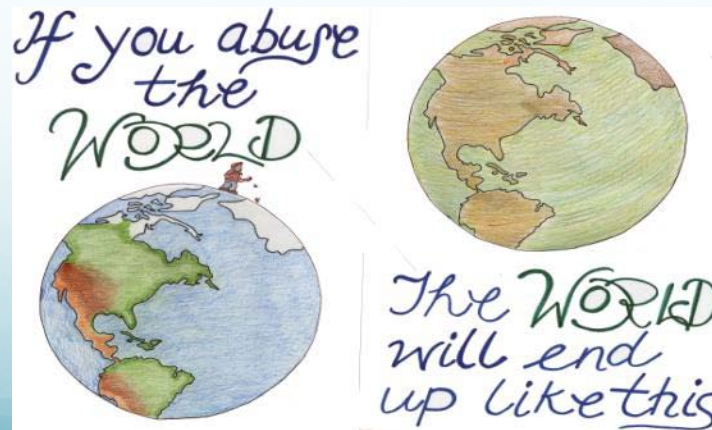




Cooling our Heels

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Rosemount High School



Pride in the Past Performance in the Present Promise in the Future Since 1918

South Metro School 2000 students

Baseline Carbon Footprint 6,734 tons CO₂ equivalents



	Rosemount High	Participating Schools Average
Electricity (kBTU/ ft ²)	28	28
Total Fuels Burned on Site (kBTU/ ft ²)	55	44
Total Energy (kBTU/ ft ²)	83	69



Goal



“Cooling our Heels” will reduce the school’s carbon footprint 11% by June 2011.

Reduction of 332 tons of CO₂



4 Grant Objectives

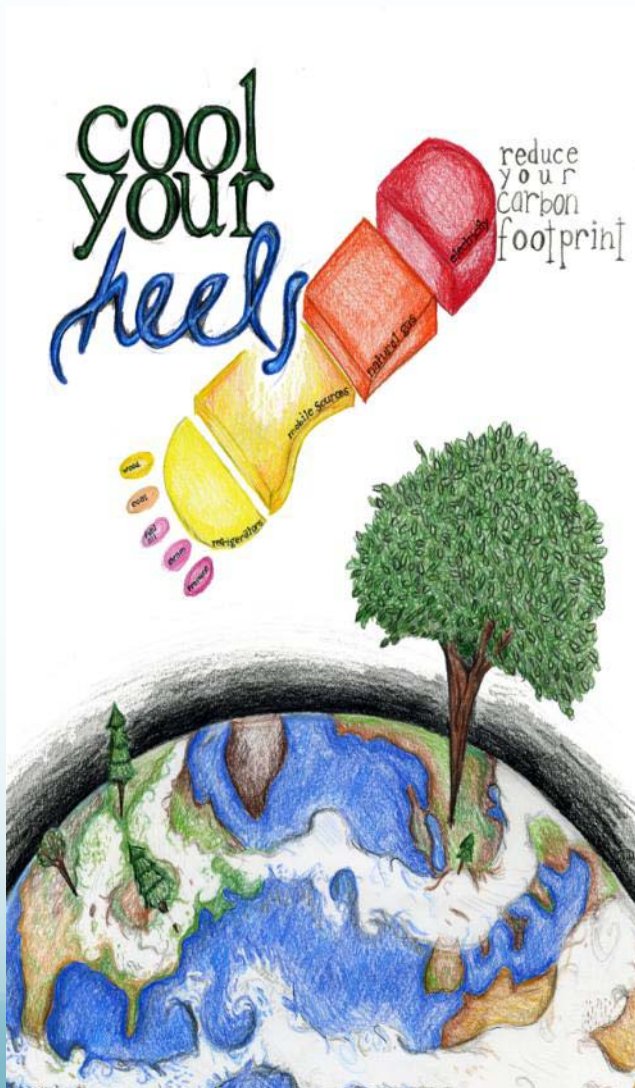


Objective 1

Educate the school of our current carbon footprint and our goal for reducing it.

- National Art Honor Society made posters
- Freshmen determine their Carbon Footprint in Energy Unit

NAHS posters



SAVE WHERE YOU LEARN, SAVE WHAT GIVES, SAVE WHERE YOU DOMINATE WHERE YOU RUN, SAVE WHERE YOU PLAY, SAVE WHERE THERE IS LIGHT, SAVE WHERE THERE IS DARKNESS, SAVE WHERE YOU DRINK, SAVE WHERE YOU FEEL, SAVE WHERE YOU FEAST, SAVE WHERE YOU ARE ENLIGHTENED, SAVE WHERE THERE IS JOY, SAVE WHERE YOU SMELL, SAVE WHERE YOU LEAD, SAVE WHERE YOU FOLLOW, SAVE WHERE YOU LIVE, SAVE WHERE YOU BUILD, SAVE WHAT IS HOME SAVE WHERE YOU FEEL SAVE WHERE YOU SURVIVE, SAVE WHAT YOU TASTE, SAVE WHERE THERE IS SADNESS, SAVE WHAT YOU MAKE, SAVE WHERE YOU GROW, SAVE WHAT IS GREEN, SAVE WHERE IT SNOWS, SAVE THE HABITAT, SAVE YOUR ENVIRONMENT, SAVE WHAT IS ART, SAVE WHAT IS GOOD, SAVE WHERE IT IS NATURAL, SAVE WHERE IT IS BORN, SAVE WHERE YOU ARE FREE, SAVE WHERE YOU ARE RESTRAINED, SAVE WHERE THERE IS HAPPINESS, SAVE WHERE YOU CONNECT, SAVE WHEN YOU SMILE, SAVE WHERE YOU DREAM, SAVE WHERE THERE IS HOPE, SAVE WHERE YOU IMAGINE, SAVE WHAT YOU LOVE, SAVE WHAT YOU CONTROL, SAVE WHERE THERE IS LIFE, SAVE WHAT PROVIDES, SAVE WHERE YOU DIVARTE, SAVE WHAT GIVES YOU PEACE, SAVE WHAT INSPIRES YOU, SAVE WHERE YOUR HEART LIES, SAVE WHAT YOU UNDERSTAND, SAVE WHERE YOU CHANGE, SAVE WHERE YOU EXPLORE, SAVE WHERE YOU FIGHT, SAVE WHERE YOU REVOLT, SAVE WHAT YOU ENJOY, SAVE WHERE YOU BELIEVE, SAVE WHAT YOU DECIDE, SAVE WHAT GIVES YOU IDEALS, SAVE WHAT GIVES YOU CHOICES, SAVE WHERE THERE IS KINDNESS, SAVE WHAT GIVES YOU SALVATION, SAVE WHAT YOU IMPACT, SAVE WHAT GIVES YOU SALVATION, SAVE WHAT YOU IMPACT, SAVE WHAT YOU HARM, SAVE WHAT GIVES YOU COMFORT, SAVE WHAT YOU DESTROY, SAVE WHAT GIVES YOU TIME, SAVE WHERE YOU DISCOVER, SAVE WHAT GIVES YOU KNOWLEDGE, SAVE WHERE YOU HEAL, SAVE WHERE YOU DESIGN, SAVE WHAT GIVES YOU VISION, SAVE YOUR EXISTENCE, SAVE WHERE YOU PROSPER, SAVE WHERE THERE IS WEALTH, SAVE YOUR FORTUNEDOM, SAVE YOUR WELLBEING, SAVE WHERE YOU STRENGTHEN, SAVE WHERE YOU ADAPT, SAVE WHAT YOU CELEBRATE, SAVE WHAT YOU PROMOTE, SAVE YOUR CURIOSITY, SAVE YOUR INTELLIGENCE, SAVE WHAT YOU PROTECT, SAVE WHERE YOU EXPERIENCE, SAVE WHAT YOU PROTECT, SAVE WHAT YOU PERFECT, SAVE WHERE THERE IS KINDNESS, SAVE WHERE THERE IS SHELTER, SAVE WHAT IS BLESSED, SAVE WHAT YOU CARE FOR, SAVE WHAT GIVES YOU TALENT, SAVE WHERE THERE IS ENERGY, SAVE WHERE YOU HAVE GOALS, SAVE THE COMMON GOAL, SAVE WHERE YOU ARE FAMILIAR, SAVE WHERE THERE IS UNITY, SAVE WHERE THERE IS CREATIVITY, SAVE WHERE YOU ARE CHALLENGED, SAVE WHAT YOU NARRATE, SAVE WHAT IT IS BASED ON, SAVE WHAT IS LIKELY, SAVE YOUR INTEREST, SAVE YOUR PERSISTENCE, SAVE WHAT YOU TRUST, SAVE WHAT IS TRUTH, SAVE WHAT IS REAL, SAVE YOUR PAST, SAVE YOUR FUTURE, SAVE YOUR PRESENT



If you abuse
the
WORLD



The WORLD
will end
up like this

Earth needs our help...



cooling
our planet



Mother earth
needs our



HELP

Freshmen Determine their Carbon Footprint with the MN Energy Challenge

- 279 team members pledged to save 2.8 million pounds CO₂
- Rosemount High moved to 1st place in school team rankings



Press

“What is a carbon footprint?”

- School news program *Irish Update* segment

“Light on their Feet”

- MN Parent Magazine article Oct. 2010

“Irish aim to shrink their environmental footprint”

- Rosemount Town Pages story March 2010
- NAHS posters displayed at state capitol on Earth Day

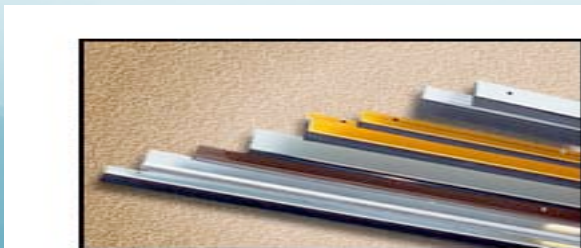


Objective 2 Energy Unit

- 9th graders will research, gather and evaluate data and formulate an action plan to reduce carbon footprint of RHS

Included in Action Plans and Provided by MSCC Grant

- No cost solutions – behavior changes
 - “Action of the Month”
 - Energy Rangers monitor lights on/off and leave stickers
- Low cost solutions – quick payback, 1 year or less
 - power strips, weather stripping, teacher Moodle training, Papercut software



- Grant funds purchase –
 - 16 new computer monitors – CRT replaced with high efficiency LCD
 - 3 Energy Misers for vending machines (16 month payback)



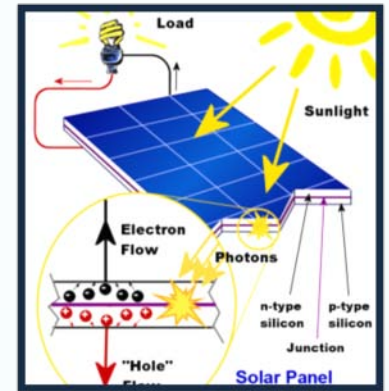
Investment

- Motion-Activated Light sensors
 - Installed in large lecture rooms



Proposed Ideas for Future

- Solar energy
- Wind energy
- Laptops for students
- Breezeway for school entrances
- More efficient lighting in gyms
- Dishwasher and reusable lunch trays and silver to replace disposable foam trays and plastic sporks



Grant Funds Purchase

- Tools used to find areas to save energy
 1. Kill A Watt meters
 2. Non-contact infrared thermometers
 3. Light meters



Kill a Watt Meter Data

Appliance	Watts On	Watts Off	Group #/Hour
pencil sharpener	62	0	1
power strip	0	20	1
T. V. monitor	77	8.2	1
Vending machine		176	1
microwave	1670	2.7	1
vending machine	34.8		1
refridgerator	18.3		1
computer	57.3	20	1
printer	700	20	1
VCR	12	2	1
Hot plate	980	0	1
mini fan	49.5		1
document camera	21	5.6	Group 3/ Hour 2
microwave	219	3.6	
projector	621	6	
computer	128	3.8	
TV monitor	100	3.7	
pencil sharpener	214	0	Group 3/Hour 3
Vending machine	166		
microwave	1745	4.1	
treadmill	284	9	
eliptical	15	9.8	
library TV	137	3.7	
document camera Avermagic	17.6	5.5	Group 1/Hour 3
dorm sizse refridgerator		1.1	
hallway TV monitor	59.7		Group 1/Hour 3
Older Document camera	20.9	5.3	Group 2/Hour 3
New computer	39.6	6.6	
TV monitor	60	2	
large refridgerator	126	0	
printer	17	0.9	
Fan	34.7	0	
Old computer	99	8.80	
New document camera	5.9	5.4	

<i>Appliance</i>	<i>Phantom Load In Watts That Run Only After School</i>	<i>Phantom Load in Kilowatts</i>	<i>Hours Plugged in, but not in Use (Even When Appliances are Off)</i>	<i>Number of Appliances in School</i>	<i>Cost per Day in Dollars</i>	<i>Savings per School Year if Unplugged After School Each Day (Including Weekends)</i>	<i>Savings per School Year if Unplugged During Breaks</i>	<i>Total Savings Year Round In Dollars</i>
Older Document Camera	5.3	0.0053	17	58	0.44	79.95	17.76	97.72246
New Computer	6.6	0.0066	17	175	1.67	300.41	66.75	367.1745
Printer	17	0.017	17	15	0.37	66.32	66.75	81.0645
Old Computer	8.8	0.0088	17	32	0.41	73.24	16.27	89.52064
New Document Camera	5.4	0.0054	17	21	0.16	29.49	6.55	36.04986
Microwave	2.7	0.0027	17	7	0.03	4.92	1.09	6.00831
Treadmill	9	0.009	17	3	0.04	7.02	1.56	8.5833
Elliptical	9.8	0.0098	17	4	0.06	10.19	2.26	12.46168

Areas	Lux	Recommended Lux	# of Bulbs	\$ per year
N22 (1 bank)	220-280	200-750		\$ per school yr
				252
N22 (2 banks)	530-770	200-750	48	376.2
Link Hallway (2 banks)	630-670	200-300	18	140.4
Link Hallway (1 bank)	430-450	200-300	6	46.8
PAC lobby (2 banks)	370-400	200-300	18	140.4
PAC lobby (no banks)	220-270	200-300	0	0
Senior Benches (2 banks)	400-470	200-300	18	140.4
Senior benches (1 bank)	220-250	200-300	3	23.4
107 (2 bank)	430-445	200-750	18	140.4
107 (1 bank)	250-300	200-750	6	46.8

Light meter data

- Compared the lighting level to recommended level for use
- Energy saving potential by using 1 bank of lights in classroom, using natural lighting and removing lights

Infrared Laser Thermometer Data Shows Leaky Doors need Weather Stripping

Area	Front Door (°F)	East hallway door (°F)
Door	47.9	58.5
Crack	51.8	44.8

The front door **with** weather stripping is 14°F warmer than the east hallway door **without** weather stripping. We spent about \$3.00 a foot on stripping making each door about \$60 to repair.

Doors in Need of Weather Stripping



Actions of the Month





RHS Action of The Month

-September-

“ Reduce ”

Reduce means to use less of everything: less energy, less paper, and less water.

Irish Pride In Action

- Reduce lighting levels to fit the use
- Reduce paper use— use Moodle, network folders, flash drive or email work home.
- Reduce heating bills – close blinds and doors
- Reduce water use - turn off the water when brushing your teeth or while adding soap to your hands, take shorter showers
- Reduce phantom loads –use power strips or unplug appliances when not in use.



RHS Action of The Month

-October-

“ Hike it or Bike it”

October is International Walk to School Month

Irish Pride In Action

- Walk, bike, take the bus, rollerblade, skateboard to school
 - Save money Burn calories Reduce stress
 - Reduce greenhouse gas emissions
 - Help lower our carbon footprint



RHS Action of The Month

-November-

“No Meat Fridays”

“According to the Food and Agriculture Organization of the United Nations (FAO), the animal agriculture sector is responsible for 18% of all GHG emissions, measured in carbon-dioxide equivalent.”

Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, and de Haan C. 2006. Livestock's long shadow: environmental issues and options (Rome: Food and Agriculture Organization of the United Nations, p. xxi

Irish Pride In Action

- Try to **not** eat meat on Fridays this month.
 - Eat fresh fruit and vegetables
- Eat whole grains, beans or nuts for protein
- Save money, improve your health, help the planet



RHS Action of The Month

-December-

“ Turn off the lights”

Much of our school’s wasted energy is associated with electricity use.

Turning off the lights whenever possible will greatly reduce the amount of electricity we consume as a school.

Irish Pride In Action

- TOLBY – turn off lights behind you!
- Turn off lights and open the blinds for notes.
- Turn off lights in the locker room before you go
- Turn off the lights in rooms that are not in use.



RHS Action of The Month

-January-

“Add a layer”

Turning the heat down 2 ° reduces the average MN family's carbon emissions by 568 pounds per year

- Minnesota Energy Challenge -

Irish Pride In Action

- Add your favorite Irish sweatshirt or jacket
- Add a layer for warmth



RHS Action of The Month

-February-

“Recycle it”

Classroom and hallway waste is sorted by our waste hauler.

Use the recycle bins by the student center exits.

Recycling can save 8822 pounds of carbon dioxide emissions per year.

MN Energy Challenge – based on average MN family

Irish Pride In Action

- Recycle brown bags, cans, glass and plastic bottles in the lunchroom recycle bins
- Recycle paper, plastic and glass bottles and cans in classrooms and hallway trash bins
- Keep lab waste separate from normal classroom waste in science classrooms



RHS Action of The Month

-March-

“Think before you print”

10% reduction in RHS paper use will save 54 trees that take in 1.2 tons of carbon /yr.
This will also greatly reduce our waste stream as 90% of classroom waste is paper.

Irish Pride In Action

- Save work to your online locker or a flash drive instead of printing
 - Use Moodle to submit work
 - Send your work home in an e-mail
 - Edit your work carefully before printing



RHS Action of The Month

-April-

“Eliminate phantom loads”

“Nationally, phantom loads makeup about six per cent of our entire residential electricity consumption.”

CAL_SSEC@YAHOO.COMRECYCLE.BERKELEY.EDU/SSEC

Irish Pride In Action

- Use a power strip to turn off all appliances after you're done
 - Remind others to unplug their appliances
 - 7th hour remind your teachers to unplug
- Unplugging document cameras after school will save the school \$100 in wasted energy costs
- Unplug appliances over the weekend or on school holidays to save even more energy!
 - Stop the vampire, unplug it or use a power strip!



RHS Action of The Month

-May-

“Put it to sleep”

Take care of the earth and she will take care of you.

-Author Unknown

Irish Pride In Action

- Put your computer monitor to sleep before you leave the lab.
- Reduce the energy used from 40 Watts to 7 just by putting it to sleep.



RHS Action of The Month

-June-

“Spread the word”

Now that you know ways to save energy and resources, take this knowledge and spread it to your family and friends.

Irish Pride In Action

- Tell family and friends how they can conserve energy
- Educate school, church and community groups on how they can save energy too
 - Take the Minnesota Energy Challenge
 - and help keep Rosemount High the number one school team!
- RHS students have pledged to save 849,135 lbs CO₂ and \$175,967 as of 8/28/10

Objective 2 Results



	Electricity Use kWh	Natural Gas Use Therms
Baseline (2007)	2,738,127	159,766
2009	2,650,268	146,111
2010 (Q1 – Q3)	2,601,221	138,997
% Reduction	5%	13%



Objective 3 – Bike/Walk Ride Bus to School Day

- Decrease the number of student cars by 10% by encouraging students to walk, ride, carpool or take the bus to school
 - Irish Green team organized spring and fall bike/walk days
 - Dakota County Safe Streets Grant used to purchase reusable water bottles for participants and drawing prizes for any who biked or walked to school in May
 - DQ donates tokens for free cones for walkers in the spring

International Walk to School Day – Oct. 6, 2010



Walk with Principal Wollersheim – May 20



Results Objective 3

- About 75 students participated in May event
- Number of cars not decreased in parking lot
 - Activity busses cut
 - Students who work or are in extracurricular activities need to drive to school
- Another walk/bike event this May



Objective 4 Paper Reduction

- Goal 10% reduction in paper use
- We printed 4.5 million sheets of paper 2009-2010 school year.
- 10% reduction saves 456,340 sheets of paper = 54 trees (6-8')
- 54 trees can sequester 1.2 tons of carbon/yr

Paper Use

- Software installed to monitor printing in computer labs
- Teacher Moodle training offered
 - Class resources linked to web page
 - Reduces the need to print documents
 - Students can submit work online
 - View teacher's notes, videos, take quizzes

Moodle Online Class Resources



Jan. 18 - 21	Class work	Homework
Tues.	Sedimentary rock lecture and ID rocks, do 7-17 Analysis in rock lab	Read 6.3 Metamorphic rocks and Rock Cycle, do # 1-7 p. 139 by Thursday
Wed.	Review Sedimentary Rocks, Watch video if time allows	
Thurs.	Metamorphic rock lecture and lab, do questions 18 - 25 lab	Review learning targets and practice with online quizzes
Fri.	Review metamorphics rocks and finish lab questions Rock Test Monday	Review learning targets and practice with online quizzes

- Rock Cycle Interactive and Quiz
- Chapter 5 Igneous Rocks
- Sulfide Mining Debate
- Sulfide Mining Debate assignments
- Chapter 6 Sedimentary Rocks
- Metamorphic rocks, Chapter 6
- Clastic Sedimentary Rocks Power Point
- Chemical Sedimentary Rocks Power Point
- Rock Notes
- Mineral Test

Objective 4 Results



- Paper use down over 8% first trimester compared to the last school year



Where do we go from here?

- We will continue to promote our *Actions of the Month*
- Energy Unit will be included in 9th grade science
- Students encouraged to take home energy meters to monitor home light, electricity use, and heating
- Overall energy use down 10% so far, close to our 11% goal

Future Green Team Plans

- Adding renewable energy to RHS
- Solar regatta? MRES
- Increase participation in Green Team
- Many thanks to MSCC and MPCA for the grant and to CERTS for the opportunity to share our project

