"Make the Switch"

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Katelyn Clark

Sustainability Challenge
Trenton Middle School FCCLA
Trenton Middle School
Trenton, Missouri

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FCCLA Planning Process Summary Page Template

(This template may be modified, but all headings must be used in the correct order. The FCCLA logo, STAR Events logo, and Planning Process graphics are encouraged but not required.)

IDENTIFY CONCERNS

People are wasting energy and fuel.
They aren ' t carpooling or biking.
They aren ' t using renewable energy.
People need to be educated on alternative fuel use and many other renewable energy resources.
People also need to be informed of ways to fix or modify driving behaviors.

SET A GOAL

To inform the community and to get our peers involved with conserving fuel and energy. We want to use alternative fuels, carpools, electric cars, driving behaviors and renewable resources. We wanted to make an impact on our community as a whole by involving many people.

FORM A PLAN (WHO, WHAT, WHEN, WHERE, HOW, COST, RESOURCES, AND EVALUATION)

Form a Plan:
Who - Our Sustainability Challenge team
What - Inform students, families, and our community about efforts to conserve fuel and how they can contribute.
When - December-May
Where - Trenton Middle School and the community of Trenton.
How - We would promote carpooling, biking, alternative fuels, electric cars, modifying driving behaviors, and renewable resources.

ACT

First we researched alternative fuels and efforts to use renewable resources. Then we evaluated what resources and problems we had in our community. We want to involve as many people in our community as possible. Education is the only way to effectively do this. We made a flyer and a survey on ways to implement and use alternative fuels and renewable resources in our community. Lastly we presented at different organizations in our community and on the local radio station.

FOLLOW UP

We have been able to present several times. We feel that informing the community of their options with alternative fuels, renewable resources, and smart or electric cars could help our environment. We would like to thank our teacher, Mrs. Beck, for helping us with the project and the community and school groups for listening to our presentation. We feel that our community is not quite ready to use only all alternative fuels since we do not sell more than one kind in our county but could work on driving behaviors and using renewable resources.

EVIDENCE OF PROJECT SUMMARY SUBMISSION

Thank you for completing the project summary form for your STAR Event. To receive the point for submission, print this email and have your adviser verify by signing and dating below for including in a display, file folder, or portfolio. One survey per entry is required.

Chapter Name: Trenton MS - 13790

State: Missouri

Members: Katelyn N Clark, Abby G Simpson

Event Name: Sustainability Challenge

Level: Level 1 (through grade 8)

Project Title: Make the Switch

Adviser's Signature Angie Beck

Date Jan 14, 2020

Evidence of Research

Evidence of Research

Energy is the ability to do work

Energy comes in different forms:

* Heat (thermal) * Light (radiant) * Motion (kinetic)

* Electrical * Chemical

* Nuclear energy and * Gravitational

Energy sources can be categorized as renewable or nonrenewable

When people use electricity in their homes, the electrical power is probably generated by burning coal or natural gas, by a nuclear reaction, or by a hydroelectric plant on a river, to name just a few sources. When people fill up a car's gasoline tank, the energy source is petroleum (gasoline)- refined from crude oil and may include fuel ethanol made by growing and processing corn. Coal, natural gas, nuclear, hydropower, petroleum, and ethanol are called energy sources.

Energy sources are divided into two groups:

- Renewable (an energy source that can be easily replenished)
- Nonrenewable (an energy source that cannot be easily replenished)

Renewable and nonrenewable energy sources can be used as primary energy sources to produce useful energy such as heat or used to produce secondary energy sources such as electricity.

Renewable energy

There are five main renewable energy sources:

- Solar energy from the sun
- Geothermal energy from heat inside the earth

- Wind energy
- Biomass from plants
- Hydropower from flowing water

Nonrenewable energy

Most of the energy consumed in the United States is from five nonrenewable energy sources:

- Petroleum products, Hydrocarbon gas liquids, Natural gas, Coal and Nuclear energy

Crude oil, natural gas, and coal are called fossil fuels because they were formed over millions of years by the action of heat from the earth's core and pressure from rock and soil on the remains (or fossils) of dead plants and creatures such as microscopic diatoms. Most of the petroleum products consumed in the United States are made from crude oil, but petroleum liquids can also be made from natural gas and coal.

Nuclear energy is produced from uranium, a nonrenewable energy source whose atoms are split (through a process called nuclear fission) to create heat and, eventually, electricity.

End-use energy consumption in Missouri for the year 2017, estimates

Coal use at (1.8%); Natural gas (18.6%); Petroleum (54.0%) Renewable Energy (3.3%) Electricity (22.4%)

The End-use consumption by sector in Missouri, excluding losses comes from commercial at 15.6%, Industrial at 17.5%; Residential at 19.6 % and Transportation at 47.3 %

Biodiesel is a renewable, biodegradable fuel manufactured domestically from vegetable oils, animal fats, or recycled restaurant grease. Biodiesel meets both the biomass-based diesel and overall advanced biofuel requirement of the

Renewable Fuel Standard.

Biodiesel is a liquid fuel often referred to as B100 or neat biodiesel in its pure, unblended form. Like petroleum diesel, biodiesel is used to fuel compression-ignition engines.

Biodiesel performance in cold weather depends on the blend of biodiesel, the feedstock, and the petroleum diesel characteristics. In general, blends with smaller percentages of biodiesel perform better in cold temperatures. Typically, regular No. 2 diesel and B5 perform about the same in cold weather. Both biodiesel and No. 2 diesel have some compounds that crystallize in very cold temperatures. In winter weather, fuel blenders and suppliers combat crystallization by adding a cold flow improver. For the best cold weather performance, users should work with their fuel provider to ensure the blend is appropriate.

Renewable fuels are fuels produced from renewable resources. Examples include: biofuels (e.g. Vegetable oil used as fuel, ethanol, methanol from clean energy and carbon dioxide or biomass, and biodiesel) and Hydrogen fuel (when produced with renewable processes)

Use of biodiesel - U.S. Energy Information Administration

A blend of 20% biodiesel with 80% petroleum diesel is known as B20. Some federal and state government fleets, such as school and transit buses, snowplows, garbage trucks, mail trucks, and military vehicles, use biodiesel blends of B20 and higher. Public fueling stations that sell biodiesel blends to the public are available in nearly every state.

Vehicle Maintenance to Conserve Fuel

A comprehensive vehicle maintenance strategy can help fleet managers and drivers conserve fuel. Your fleet may already rely on these practices to ensure vehicle efficiency.

Proper Tire Inflation

Properly inflated tires last longer, increase fuel economy, and are safer. Every decrease in pressure by 1 pound per square inch for four tires can decrease fuel economy by 0.2%. By keeping your tires properly inflated, you can improve your gas mileage by 0.6% on average, and up to 3%. Some fleets use nitrogen inflation, tire pressure monitoring systems (standard equipment in light-duty vehicles newer than model year 2007), and other technologies to maintain optimum tire pressure. To find the proper tire pressure for your vehicle, you can refer to the tire specifications provided by the manufacturer.

Recommended Motor Oil

Using the manufacturer's recommended grade of motor oil in an engine can improve fuel economy by 1%–2%. Check your owner's manual for the manufacturer's recommended grade of motor oil. Also, you may select motor oil that contains friction-reducing additives that improve fuel economy; look for oil labeled "Energy Conserving" on the American Petroleum Institute service symbol. Drivers can also consider synthetic oils which may improve fuel economy in light-duty vehicles by reducing friction in the engine.

Engine Tune-Ups

Regular engine tune-ups ensure that your vehicle is running efficiently and can save you time and money in the long run. Tuning a neglected vehicle or fixing one that

failed an emissions test can increase fuel economy by an average of 4%, based on the repair type and quality. See your owner's manual for manufacturer recommendations on when to get tune-ups. For more information on key maintenance areas to focus on to improve fuel economy, refer to the North American Council for Freight Efficiency's maintenance confidence report.

Techniques for Drivers to Conserve Fuel

Drivers can conserve fuel by learning how driving behaviors affect fuel economy and by adopting techniques to save fuel and money. The amount of fuel your vehicle consumes depends heavily on how you drive. See the information below and FuelEconomy.gov for information about driving efficiently.

Slow Down

Speeding increases fuel consumption and decreases fuel economy as a result of tire rolling resistance and air resistance. While vehicles reach optimal fuel economy at different speeds, gas mileage usually decreases rapidly at speeds above 50 miles per hour (mph). For example, every 5 mph you drive over 50 mph is like paying $0.17 more per gallon of gas (based on the price of gas at $2.39 per gallon). Reducing your speed by 5 to 10 mph can improve fuel economy by 7%–14%.

Drive Conservatively

Driving conservatively can help you save fuel and money. Vehicles use the most energy when accelerating. Using cruise control on the highway can help drivers maintain a constant speed. Obeying the speed limit, gentle and well-timed acceleration and braking, and reading the road ahead can improve the fuel economy of your vehicle by 15%–30% at highway speeds and 10%–40% in stop-and-go-traffic. Driving more sensibly is also safer for you and others.

Combine Trips

Combining trips can save you time and money by avoiding unnecessary stopping and starting of your vehicle, which can be an issue in colder climates where it takes longer for your engine to reach its most fuel-efficient temperature. Shorter trips can use twice as much fuel as one long, multi-purpose trip covering the same distance when the engine is warm and at its most fuel-efficient temperature. Engine and transmission friction increases with cold engine oil and other drive-line fluids, making the engine less efficient. Trip planning can reduce the distance you travel and the amount of time you drive with a cold engine. For information on how cold weather affects fuel economy, see FuelEconomy.gov's Fuel Economy in Cold Weather page.

Reduce Vehicle Load

The additional weight of items left in a vehicle requires more fuel to propel your vehicle. An extra 100 pounds in your trunk, for example, could reduce your fuel economy by about 1%. Hauling rooftop cargo also increases drag. This can reduce fuel economy from 2% to 8% in city driving, 6% to 17% on the highway, and 10% to 25% at 65–75 mph. Offload any unnecessary items to reduce the fuel consumption of your vehicle.

Modify Driver Behavior

For passenger cars, the primary idle-reduction strategy is to turn the engine off when parked or stopped for more than 10 seconds (except in traffic). Drivers can also:

- Avoid using a remote starter, which encourages unnecessary idling.
- Avoid using drive-throughs. Shut off the engine and walk inside instead.
- Obey signs indicating no-idle zones at schools and other locations.
- Consider the purchase of an electric-drive vehicle or one with stop/start technology, both of which limit idling at traffic stops and while waiting in queue.

Idle reduction describes technologies and practices that reduce the amount of time an engine idles. Idling wastes fuel and increases engine wear, so small changes in idling time can lead to noticeable benefits, including cost savings, less pollution, and reduced noise.

Engines idle for a variety of reasons, such as to keep vehicles warm, operate emergency lighting or radios, or power off-board equipment. Each year, U.S. passenger

cars, light-duty trucks, medium-duty trucks, and heavy-duty vehicles consume more than 6 billion gallons of diesel fuel and gasoline—without even moving. Roughly half of that fuel is wasted by people operating passenger vehicles.

Gas Mileage Tips

Our gas mileage tips can help you reduce the amount of gas you use. If you are already following these tips, you are probably getting the best gas mileage your car can deliver.

- Drive more efficiently
- Keep your car in shape
- Plan & combining trips
- Choose a more efficient vehicle

Also check out

- Tips for hybrids, plug-in hybrids, and electric vehicles
- Fuel economy in cold weather
- Fuel economy in hot weather

Energy from the sun

The sun has produced energy for billions of years and is the ultimate source for all of the energy sources and fuels that we use today. People have used the sun's rays (solar radiation) for thousands of years for warmth and to dry meat, fruit, and grains. Over time, people developed technologies to collect solar energy for heat and to convert it into electricity. Source: NASA

Collecting and using solar thermal (heat) energy

An example of an early solar energy collection device is the solar oven (a box for collecting and absorbing sunlight). In the 1830s, British astronomer John Herschel used a solar oven to cook food during an expedition to Africa. People now use many different technologies for collecting and converting solar radiation into useful heat energy for a variety of purposes.

We use solar thermal energy systems to heat

- Water for use in homes, buildings, or swimming pools
- The inside of homes, greenhouses, and other buildings
- Fluids to high temperatures in solar thermal power plants

Solar photovoltaic systems convert sunlight into electricity

Solar photovoltaic (PV) devices, or solar cells, change sunlight directly into electricity. Small PV cells can power calculators, watches, and other small electronic devices. Arrangements of many solar cells in PV panels and arrangements of multiple PV panels in PV arrays can produce electricity for an entire house. Some PV power plants have large arrays that cover many acres to produce electricity for thousands of homes.

Solar energy has benefits and some limitations

Using solar energy has two main benefits:

- Solar energy systems do not produce air pollutants or carbon dioxide.
- Solar energy systems on buildings have minimal effects on the environment.

Solar energy also has some limitations:

- The amount of sunlight that arrives at the earth's surface is not constant. The amount of sunlight varies depending on location, time of day, season of the year, and weather conditions.
- The amount of sunlight reaching a square foot of the earth's surface is relatively small, so a large surface area is necessary to absorb or collect a useful amount of energy.

Last reviewed: December 4, 2019

Wind Energy

- The daily wind cycle is very important. **How Wind Energy works**
- During the day, air above the land heats up faster than air over water. Warm air over land expands and rises, and heavier, cooler air rushes in to take its place, creating wind. At night, the winds are reversed because air cools more rapidly over land than it does over water.
- In the same way, the atmospheric winds that circle the earth are created because the land near the earth's equator is hotter than the land near the North Pole and the South Pole.
- Wind energy is used for electricity generation
- Today, wind energy is mainly used to generate electricity. There are many wind turbines located in many flat land states. Water-pumping windmills were once used throughout the United States and some still operate on farms and ranches, mainly to supply water for livestock.

Geothermal energy comes from deep inside the earth

- The slow decay of radioactive particles in the earth's core, a process that happens in all rocks, produces geothermal energy.

- The earth has four major parts or layers:
- An inner core of solid iron that is about 1,500 miles in diameter; an outer core of hot molten rock called magma that is about 1,500 miles thick; a mantle of magma and rock surrounding the outer core that is about 1,800 miles thick; and a crust of solid rock that forms the continents and ocean floors that is 15 to 35 miles thick under the continents and 3 to 5 miles thick under the oceans
- Scientists have discovered that the temperature of the earth's inner core is about 10,800 degrees Fahrenheit (°F), which is as hot as the surface of the sun. Temperatures in the mantle range from about 392°F at the upper boundary with the earth's crust to approximately 7,230°F at the mantle-core boundary.
- In a nutshell - **Geothermal energy** is heat that comes from inside Earth. It is an alternative energy source that can be used f
- or cooking, bathing, and heating. It can also be converted into electricity. **Geothermal energy** is available anywhere on Earth's surface.
- Last updated: December 5, 2019

- **Hydropower is energy in moving water**

People have a long history of using the force of water flowing in streams and rivers to produce mechanical energy. Hydropower was one of the first sources of energy used for electricity generation and is the largest single renewable energy source for electricity generation in the United States.

- In 2018, hydroelectricity accounted for about 7% of total U.S. utility-scale electricity generation and 41% of total utility-scale electricity generation from renewable energy sources. Hydroelectricity's share of total U.S. electricity generation has decreased over time, mainly because electricity generation from other sources has increased.
- Hydropower relies on the water cycle
- Understanding the water cycle is important to understanding hydropower. The water cycle has three steps:
- Solar energy heats water on the surface of rivers, lakes, and oceans, which causes the water to evaporate.
- Water vapor condenses into clouds and falls as precipitation—rain and snow.
- Precipitation collects in streams and rivers, which empty into oceans and lakes, where it evaporates and begins the cycle again.
- The amount of precipitation that drains into rivers and streams in a geographic area determines the amount of water available for producing hydropower. Seasonal

variations in precipitation and long-term changes in precipitation patterns, such as droughts, have a big impact on hydropower production.

- Hydroelectric power is produced with moving water
- Because the source of hydroelectric power is water, hydroelectric power plants are usually located on or near a water source. The volume of the water flow and the change in elevation (or fall) from one point to another determine the amount of available energy in moving water. Swiftly flowing water in a big river, such as the Columbia River that forms the border between Oregon and Washington, carries a great deal of energy in its flow. Water descending rapidly from a high point, such as Niagara Falls in New York, also has substantial energy in its flow. But hydroelectric power is unable in our area.

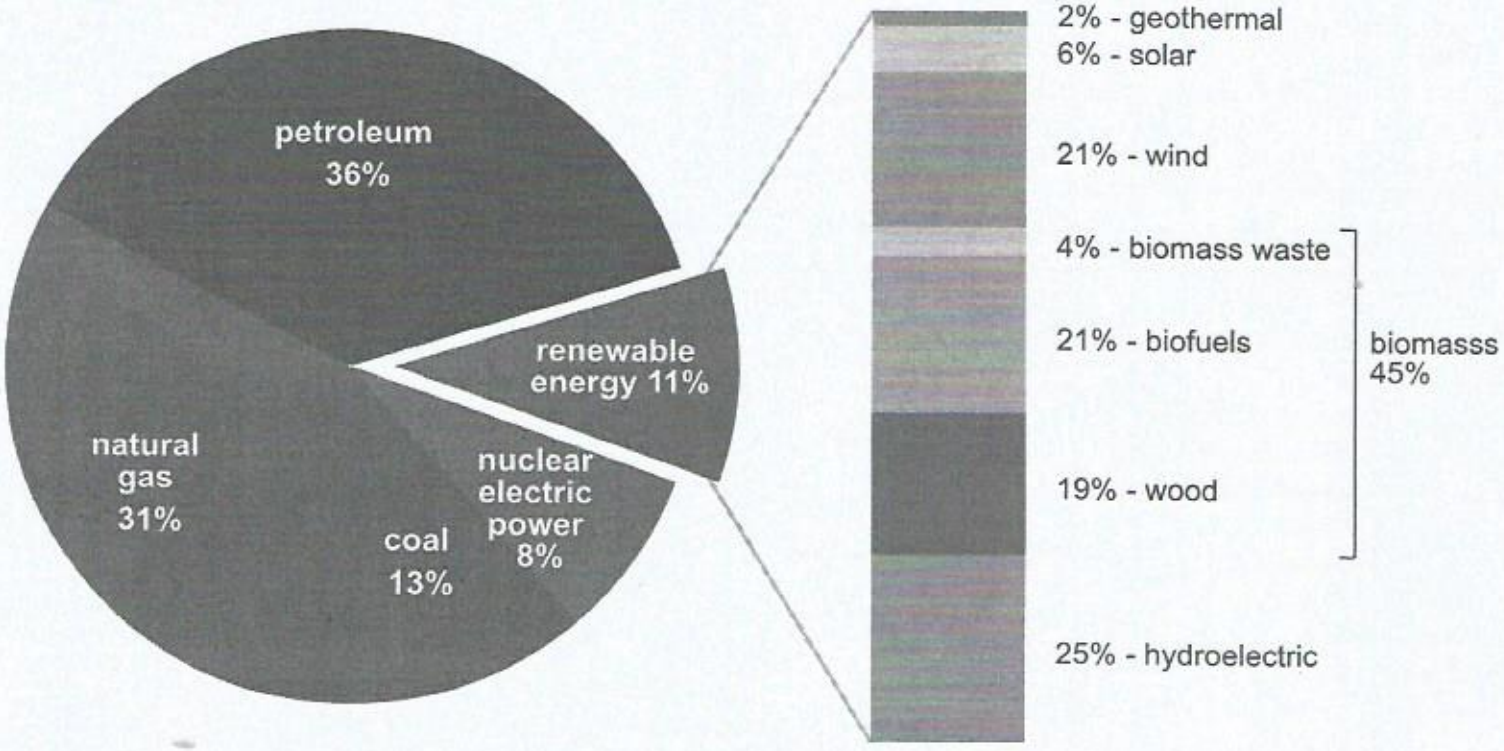
Most of our energy is nonrenewable

- In the United States, most of our energy comes from nonrenewable energy sources. Coal, petroleum, natural gas, propane, and uranium are nonrenewable energy sources. They are used to make electricity, to heat our homes, to move our cars, and to manufacture all kinds of products.
- These energy sources are called nonrenewable because their supplies are limited. Petroleum, for example, was formed millions of years ago from the remains of ancient sea plants and animals. We can't make more petroleum in a short time.
- Use of renewable energy is growing
- Renewable energy sources include biomass, geothermal energy, hydropower, solar energy, and wind energy. They are called renewable energy sources because they are naturally replenished. Day after day, the sun shines, the wind blows, and the rivers flow. We use renewable energy sources mainly to make electricity.
- How are secondary sources of energy different?
- Electricity and hydrogen are different from the other energy sources because they are secondary sources of energy. Secondary sources of energy—energy carriers—are used to store, move, and deliver energy in easily usable form. We have to use another energy source to make electricity or hydrogen. In the United States, coal is the number one energy source for generating electricity.
- Today, the cheapest way to get hydrogen is by separating it from natural gas, a nonrenewable energy source. Hydrogen can also be separated from water and from renewables, but hydrogen made from these sources is currently too expensive to compete with other fuels. Scientists are working on ways to make hydrogen from water and renewables more affordable.

U.S. energy consumption by energy source, 2018

total = 101.3 quadrillion British thermal units (Btu)

total = 11.5 quadrillion Btu



Note: Sum of components may not equal 100% because of independent rounding.
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2019, preliminary data

What role does renewable energy play in the United States?

Until the mid-1800s, wood was the source of nearly all of the nation's energy needs for heating, cooking, and lighting. From the late 1800's until today, fossil fuels—coal, petroleum, and natural gas—have been the major sources of energy. Hydropower and solid biomass were the most used renewable energy resources until the 1990s. Since then, the shares of U.S. energy consumption from biofuels, solar, and wind energy have increased.

In 2018, renewable energy provided about 11.5 quadrillion British thermal units (Btu)—1 quadrillion is the number 1 followed by 15 zeros—equal to 11% of total U.S. energy consumption. The electric power sector accounted for about 56% of total U.S. renewable energy consumption in 2018, and about 17% of total U.S. electricity generation was from renewable energy sources.

Renewable energy plays an important role in reducing greenhouse gas emissions. Using renewable energy can reduce the use of fossil fuels, which are major sources of U.S. carbon dioxide emissions.

The consumption of biofuels and other nonhydroelectric renewable energy sources in the United States more than doubled from 2000 to 2018, mainly because of state and federal government requirements and incentives to use renewable energy. The U.S. Energy Information Administration projects that U.S. renewable energy consumption will continue to increase through 2050.

Knowledge of the Relationship of Environmental Concern to Participant's Home, School, and/ or Community

Knowledge of the Relationship of Environmental Concern to Our Community

Our community is very unknowledgeable about renewable and non-renewable resources. In the town of Trenton we have around 6,000 people, and this is where we can make a difference. We knew this was a chance to change how our peers, families and neighbors think about renewable and non- renewable resources. So we took this opportunity to do something.

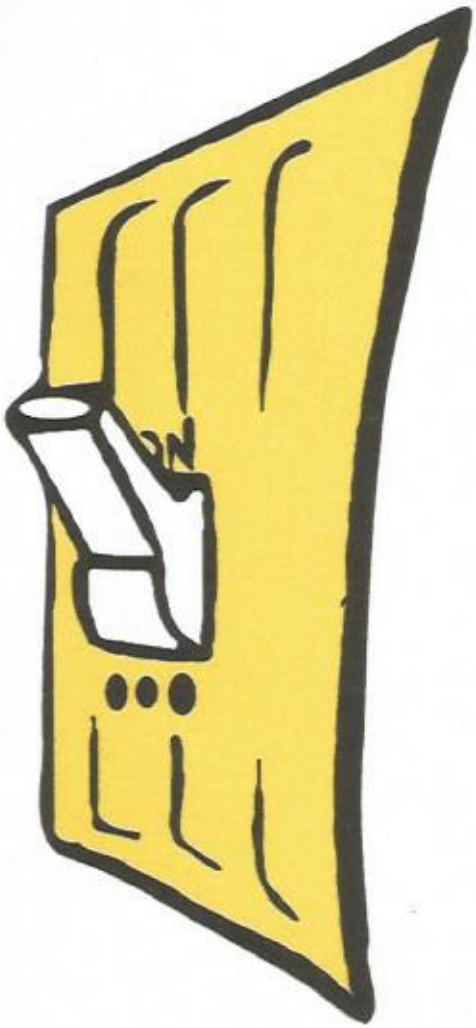
Situation - Saving fuel is a must. Our vehicle fuel is made mainly from non renewable resources. Not many people acknowledge this, or quite frankly care. This is why we need to spread the word about the importance of saving fuel and what will happen if we don't stop using so much fuel.

Solution - To save fuel we think people should start combining trips, use vehicle maintenance in order to conserve fuel. Driving at 55 saves more fuel than driving at 60, proper tire air, engine tune ups, reducing vehicle load and modifying driver behavior. We also feel that kids could ride their bikes more to go to a neighborhood friend's house. We believe that will help save fuel but there is more you can do to save.

Situation - Long ago people were not worried about clean air, because there seemed to be an endless supply of it. Today, many more people live in our world, and we are quickly polluting this essential resource. Air pollution can destroy our environment and can cause humans and other living things to become sick. Air pollution of particulate matter and smog can cause rashes, eye/nose irritations, headaches, coughing and sneezing.

Solution - We need to make people aware of ways to better protect our air. We need to limit our burning of items, Particulate matter is anything that has been burned, ash, smoke, soot, dust, pollen, soil or even chemicals. Smog is the mixture of smoke and fog in the air. Smog is a problem in a number of cities and continues to harm human health. Let people know that it is better to start a compost pile/bin for those leaves, decaying wood and vegetable peelings that will not make a dust, soot or ash to fly in the air, and to be mindful of their use of cars and electricity in and around their home and work.

Creativity and Duplication of Project



Creativity and Duplication of Project

Teaming up with organizations around Trenton to promote conserving fuel has been a big job. Organizations that were part of our project were the Scrappy Quilters Club, 8th grade Social Studies Skills Lab, and the KTTN Radio Station.

Our first partner was the 8th grade Social Studies Skills Lab. We chose to present in front of these students because they wanted a community project to help with. We educated them on our "Make the Switch" project in ways that they could save energy as a non-driver. They wanted to be leaders with us therefore we taught them about using less electricity by turning off lights, using the ceiling fan to move around warm or cool air, and riding bikes or walking instead of having their parents take them to the neighbors house. We asked them to unplug their electronic devices when they're done so vampire energy drain doesn't use electricity. And secondly to turn their devices off completely instead of using sleep mode.

Another option is to ditch the television and pick up a book. It's no secret that television and video games run on power. Turn them off to save on electricity, and pick up a book instead! By saving electricity we will be improving air quality.

For gamers and kids who love to watch television or use their iPads, phones, and computers to connect with friends, create a checklist of what should be turned off each time they leave their room. Think of lights, computers, and wall switches. Discourage your kids from wasting energy and ask them to not turn lights on during daylight hours. Find creative ways to allow light in without the heat of the sun coming in alongside it. Window films made for energy efficiency can help reduce the heat coming in through the window. Rather than using electricity to run the dryer, teach your kids to hang their wet pool towels and swimsuits on the porch in the

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but by giving out good information and making little suggestions as to how they can make changes in their lifestyle we may be able to make a difference.

Overall Environmental Responsibility of Project

Overall Environmental Responsibility of Project

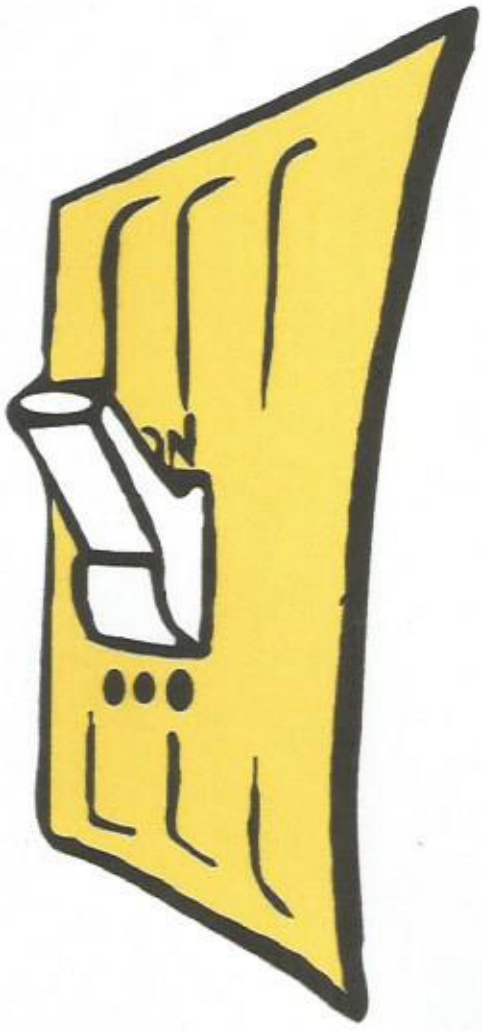
This project addresses the environmental concern topic for the Sustainability Challenge. " Efforts to increase usage of renewable energy". without causing additional harm to the environment. Our goal is to not waste fuel and to utilize the alternative fuels that are not fossil fuel based. This has to be taught slowly to our community because they are old school and habits are hard to break.

By placing information in different locations around the community about reducing our energy footprint and including ways to save fuel is how we addressed this. We felt that it was important to have our peers and community members change their habits instead of spending big money on changing fuel types and vehicles. It was easier to teach them about ways to conserve fuels in our homes and in the community.

Our largest push for making efforts to conserve fuel were through the winter months when we taught our fellow students about turning lights off, wearing more clothes so that the heater does not have to run as much and to turn down the thermostat at night. We also taught them about phantom power losses and how to keep that from running up the electric bill.

With one of our teachers having an electric car, this is putting ideas into parents' heads of the thought of possibly saving money and having one. A downfall was when it was snowy or icy outside, Mrs. Link did not bring the car to school as it did not travel well in these conditions.

Evaluation of Project



Evaluation of Project

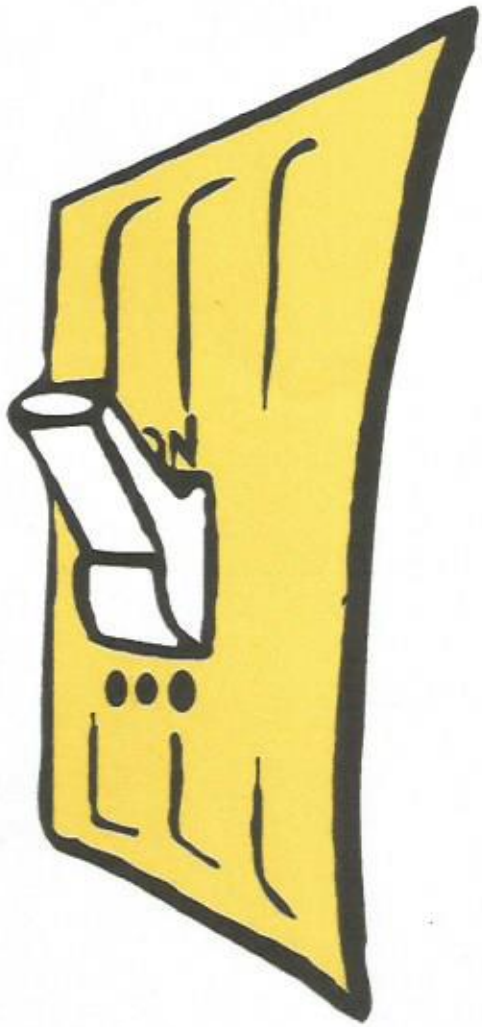
We have evaluated our project by the number of people we reached and a survey. We gave our audiences a survey to fill out at the end of our presentation. These surveys are located in this section of our portfolio. The Scrappy Quilters Club and 8th grade Social Studies Skills Lab were a big help to our project. They were inquisitive and had many questions about ways to reduce the amount of energy they use.

We are limited in our area since we are very rural, and with the amount of alternative fuels that we have. Ethanol can be purchased within 30 miles and biodiesel is at least 80 miles away. Propane is used as a heating fuel or for water heaters. We have many of our community members that live in the country and so they already think about making less trips to town and making lists to eliminate a second trip to town. We felt our best use of time would be to teach our peers about saving energy and also work with the adults in our community about education.

Placing flyers around Trenton Middle School was our first step. It helped students and teachers get involved in our project by telling them how to conserve fuels by modifying their driving habits and letting the students know that they needed to take all of their ball gear out of the trunk along with not fussing at their parents when they drove slower to increase fuel savings. Students were also targeted for helping to lower heating bills by utilizing various methods of temperature control of their living spaces.

When we visited KTTN we talked about saving energy in the home, and used our time to increase the knowledge of community members about modifying driving habits to save fuel when driving. Each of the groups that we talked to were interested in trying to save fuel which in essence saved them money. As far as our effectiveness and ability to reach others, we felt that we reached many people over the radio. We also made an impressionable splash with the students when talking about saving energy with their cell phones.

Evidence of Educational Presentations



Evidence of Educational Presentations

1. Date : January 4, 2020
    a. Group - Scrappy Quilters Club
   Location : Grundy Electric Community Room

2. Date : January 10, 2020
    a. Group - 8th Grade peers
   Location : Mr. Hultman's 8th Grade Skills Lab

3. Date : January 27, 2020
    a. Group - Local Radio Station
   Location : KTTN Radio Station

Katelyn & Abby

Thankyou for bringing your presentation on Alternative energy to our organization. It is really great that you girls are caring for our environment. If we can help you in any way please letus Know.

The Scrappy Quilters

6

Thank you for coming to our skills lab class and giving your presentation.

Dylan
&
Emma

Make the Switch

More than a dozen alternative fuels are in production or under development for use in alternative fuel vehicles and advanced technology vehicles. Government and private-sector vehicle fleets are the primary users for most of these fuels and vehicles, but individual consumers are increasingly interested in them. Using alternative fuels and advanced vehicles instead of conventional fuels and vehicles helps the United States conserve fuel and lower vehicle emissions.

Biofuels, bioproducts, and biopower provide modern and fresh ideas to the old belief that trash for one person is a treasure for another. That's good news considering that Americans produce 236 million tons of waste each year.

The use of biofuels that depend on crops produced and processed locally help to support farmers for their dedicated and hard labor. Biodiesel and ethanol cooperatives are a result of the great outmoded farmer cooperatives that assist with returning power to the hands of the people. Ethanol can be purchased within 30 miles and biodiesel is at least 80 miles away.

Does your home have any solar panels, free low-watt light bulbs/ LED light bulbs, bike parking, on-site composting, recycling services, or do you have a garden or utilize a community gardens? No greenhouse gas emissions are released into the atmosphere when you use solar panels to create electricity. And because the sun provides more energy than we'll ever need, electricity from solar power is a very important energy source in the move to clean energy production.

Make the Switch
Scrappy Quilters Presentation Quiz

1.Modifying driver behavior - Which of these will save you fuel? _____

a. Avoid using a remote starter, which encourages unnecessary idling.
b. Avoid using drive-throughs. Shut off the engine and walk inside instead.
c. Obey signs indicating no-idle zones at schools and other locations.
d. Consider the purchase of an electric-drive vehicle or one with stop/start technology, both of which limit idling at traffic stops and while waiting in queue.
e. All of the above

2. Which gas mileage tips can help you reduce the amount of gas you use?

- Drive more efficiently
- Keep your car in shape
- Plan & combining trips
- Choose a more efficient vehicle
- **All of the above**

True or False

_____Properly inflated tires last longer, increase fuel economy, and are safer.

_____By slowing down from 65 - 55 it will save 7-14% of your fuel.

_____The amount of fuel your vehicle consumes depends heavily on how you drive?

_____The additional weight of items left in a vehicle requires more fuel to propel your vehicle.

_____Combining trips can save you time and money by avoiding unnecessary stopping and starting of your vehicle.

Make the Switch
Student Skills Lab Presentation Quiz

_____Can you remember the direction of airflow on the ceiling fan?

a. warm air counter clockwise
b. cool air clockwise
c. warm air counter clockwise
d. cool air clockwise

_____ T/F Phantom Drain represents the amount of charge an electric vehicle loses when it is not being driven or operated by a person, similar to how smartphones lose battery power while in standby mode.

_____ T/F Phanton Energy drain is the power that maintains your TV settings and keeps the clock going on your VCR and microwave and it costs you.

_____What does sleep mode do?

a. Can receive incoming messages
b. Can receive emails
c. Can receive phone calls
d. None of the above

Mark all of the below ways to save resources :

___ turn off lights
___ unplug things you are not using them
___ hanging wet towels up to air dry
___ keep doors closed
___ use windows when weather is nice
___ turn off water when brushing teeth
___ use wood stove in winter

Scope of Educational Presentations

Scope of Educational Presentation

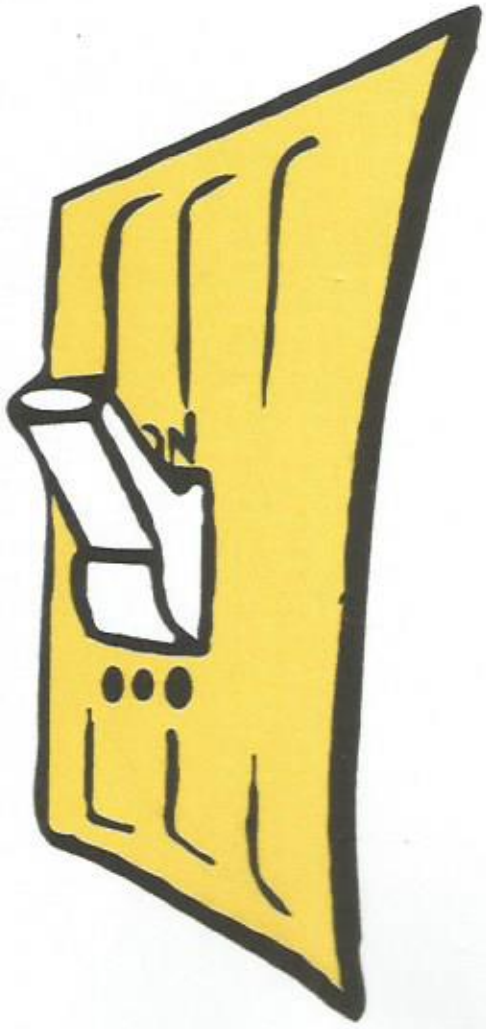
Our first presentation was in the 8 the grade Social Studies Skill Lab class in December. We chose to present in front of these students because they had helped with community projects before and wanted to help with another project. We educated them on "Make the Switch", so they could be leaders with us. During our presentation we informed them about turning off lights, riding bikes and walking to places. We asked them to unplug their electronic devices when they are done and turn off the T.V. and pick up a book.

The second presentation was at the Scrappy Quilters club in January. We wanted to present in front of them because they have a nice size group of members and my grandma is a part of that group. She felt like we had good information and felt the need that we should share with them. We gave them a list of things they could do to save energy. We educated them about solar energy, geothermal energy, wind energy, biomass, and hydropower. We felt like they would benefit because they all want to save money and save the environment.

For our third presentation we felt it was beneficial to present at the local Radio Station, KTTN, which we presented in January. We feel that there are many people in the community that would share our view point of taking care of our environment by using alternative energy and reducing the amount they use.

We have visited with many people with varied backgrounds and feel that our scope was large. This made for a unique audience group that was able to take away many benefits from our presentations.

Effectiveness of Educational Presentations



Effectiveness of Educational Presentations

Evaluation of Presentations : Presentation 1

Our first partner was the 8th grade Social Studies Skills Lab. We chose to present in front of these students because they wanted a community project to help with. We educated them on our "Make the Switch" project in ways that they could save energy as a non driver. They wanted to be leaders with us therefore we taught them about using less electricity by turning off lights, using the ceiling fan to move around warm or cool air, and riding bikes or walking instead of having their parents take them to the neighbors house. We asked them to unplug their electronic devices when they're done so vampire energy drain doesn't use electricity. And secondly to turn their devices off completely instead of using sleep mode.

Evaluation of Presentations : Presentation 2

Our second presentation was the Scrappy Quilters club. We chose to present it to them because it has a group of about 40 members and my grandma is part of that group. She felt like we had good information to share with this group. We gave them a list of things that we felt were important about our project and how they could make the switch. Their list consisted of ways to limit electrical use but mainly we talked to them about techniques for drivers to conserve fuel and how vehicle maintenance could conserve fuel.

Evaluation of Presentations : Presentation 3

Our third presentation we felt it would be beneficial to present at the Radio Station KTTN which was scheduled for January 27th in the morning. This was exciting as we were taped and needed to be as professional as we could. While talking about techniques for drivers to conserve fuel and how vehicle maintenance could conserve fuel, we were confronted by how we knew about these ways. We answered that there is a lot of information on the web at the energy information administration website:

Through our educational presentations we have had many new members join our project and many have listened to our presentation on the radio and we can only hope that they have joined the movement. We feel that making the switch to participate in conserving energy is one that takes a while for families to grasp and finally see an outcome.

Our presentations came in the form of learning about saving our environment through driving and vehicle modifications, learning about the many alternative fuels that we can use and learning how vehicles, burning and energy plants affect our air pollution. Many of our listeners were ready to make a change in the way they used fuel and try out the modifications to vehicle maintenance. When they have a change of opinion and can see the difference that is a win for our project.

The "make the switch" ambassadors who joined our team consist of community radio listeners, Scrappy Quilters, and 8th grade students.

Connection to Family and Consumer Sciences

Connection to Family Consumer Sciences

Our FCCLA is all about helping the environment and keeping our family and people in our community healthy. In Family and Consumer Science class we learned about how to take care of the environment. This encompasses the saving of our water by using less, and not polluting it. The saving of our air by not burning items and lowering the amount of chemical smoke and chemicals in the air. We also learned about saving our soil and learning how to compost it. We tried to do what we can to make our world a better place by reducing pollution, recycling, and refurbishing.

Lastly, we learned about saving energy and how important it is that we find new fuels that are not fossil fuels to use. These are called alternative fuels and can consist of fuels made from soybeans, corn, hog manure, propane, wind power, solar power and many more to come. As an eighth grader we cannot drive cars and modify our driving habits but we can encourage parents to. We also have a choice in burning items or using them in a compost bin and helping to keep our air clean. Saving the environment should not be left to the next generation. It is up to us to make the switch to alternative fuels for both transportation and keeping the air clean.

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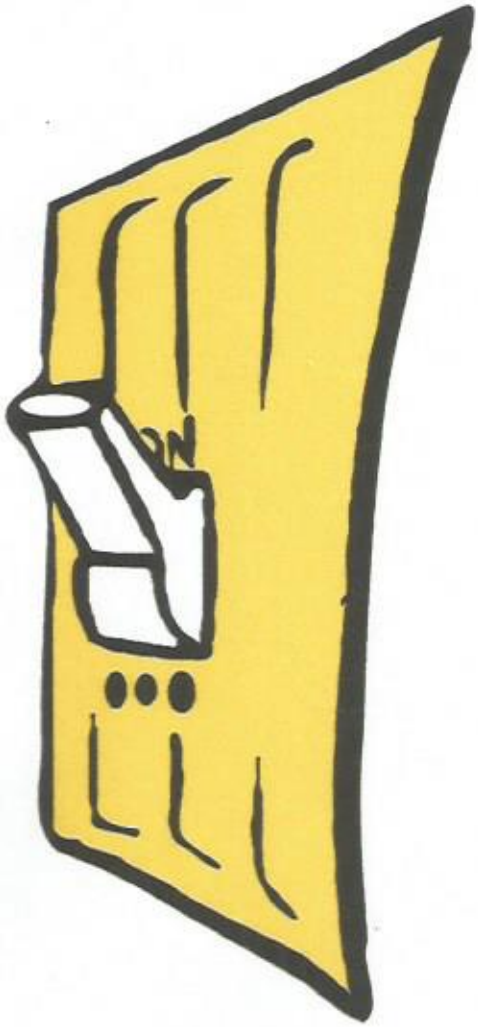

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