

# Graham Middle School

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## Signature NEED Project The First Year of the Graham Middle School Energy Team



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**Goal 1: To increase student and our community's knowledge of alternative energy sources, forms of energy, and energy conservation.**

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### Energy Content Activities:

1. AEGIS Bike Build
2. Third Grade Presentation on Alternative Energy Sources
3. Sixth Grade Presentation on Renewable and Nonrenewable Resources
4. STEAM Showcase
5. Fourth Grade Presentation on Circuits
6. Visit to Wright State University for Energy Fair Training from Ohio Energy Project

## Goal 1: cont.

### Student Leadership:

1. Four members of the GMS Energy Team attended Ohio Energy Project Activating and Energizing Girls in Science Workshop. The girls built the Energy Bike and also were trained how to use the bike to teach others about Energy.
2. GMS Energy team planned and delivered a third grade presentation on forms of energy, reasons you should recycle, built a wind turbine with students, and did an energy bike demonstration to discuss energy conservation.
3. GMS Energy team planned and delivered a presentation to 6th graders on renewable and nonrenewable energy. The team concentrated on the nonrenewable energy source of coal since the 6th graders were studying rocks.
4. GMS Energy team did two STEAM Showcase nights at GMS. The team did an energy bike demo and three energy stations (Watt's up?, Sound, Pitch, and Thermal imaging) for students and parents.
5. GMS Energy team planned and delivered a lesson to 4th graders on insulators and conductors as well as circuits.
6. GMS Energy team visited Wright State University to be trained to put on our own Energy Fair by Ohio Energy Project. This project will be in May with our 5th graders.



## Bike Build at AEGIS

In this activity, four members of the GMS Energy Team were chosen to go to Ohio Energy Project's Activating and Energizing Girls in Science to build an Energy bike so we could teach people about energy efficiency. While there we learned how to strip wires, crimp the wires, as well as learning how to use a schematic. We also had to collaborate as a team and use critical thinking skills. We practiced our leadership and presentation skills by delivering a lesson using the bike to the other workshop participants.

# 3rd Grade Presentation

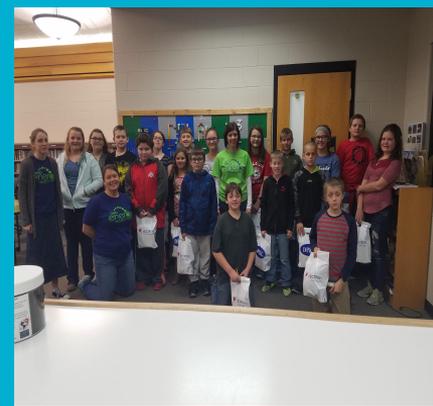
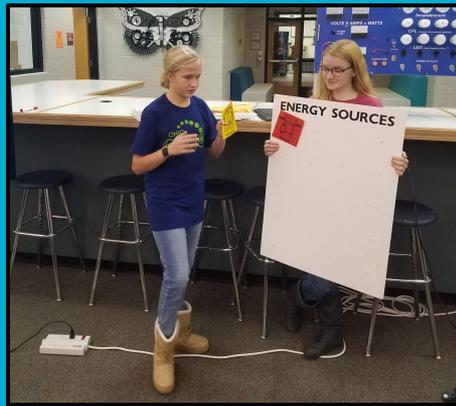
Third graders from Graham Elementary visited GMS to learn about Energy Sources. This was the first time the team planned and delivered a program for other students. The third graders rotated through stations. The stations were:

- Energy Bike Demo
- Energy Sources Matchup
- Energy Sources Relay
- Making a toy or wind turbine from recycled bottles.



# 6th grade presentation

GMS Energy Team taught sixth graders about renewable and nonrenewable resources with an emphasis on coal since the sixth graders were learning about rocks at the time. Sixth graders received a bike demonstration and completed the coal sequence activity. The sixth graders received a take-home kit to save energy from DP&L.



# STEAM Showcase

GMS hosted two STEAM Showcase nights. The GMS Energy team did a bike demonstration during each showcase and also ran the stations Sound Pitch, Watt's Up, and Thermal Imaging. The team was trained on these stations when they attended the Youth Leadership Summit held at Wright State University.



# 4th grade presentation

GMS Energy Team planned and delivered a program to fourth graders that focused on the topics of circuits and insulator and conductors. The 4th graders rotated through energy stations.

- Station 1 : Snap Circuits
- Station 2: Makey Makey
- Station 3: Energy Baton and Insulators and conductors.



# Wright State University Visit

The GMS Energy Team attended Ohio Energy Project's Youth Leadership Summit held at Wright State University. Our team was given the opportunity to take a tour of Wright State University. While at Wright State, our team received training and the materials to put an Energy Fair on at our own school. Our Energy Fair will be in May.



## Goal 2: Increase the Amount of Recycling to GMS.

### Energy Content Activities:

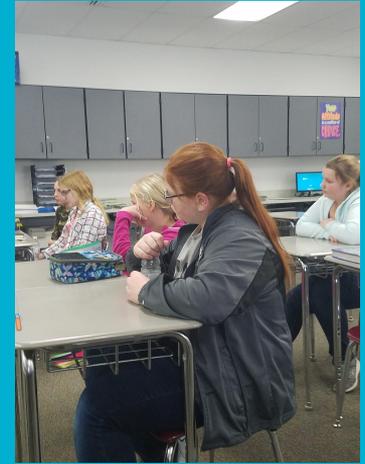
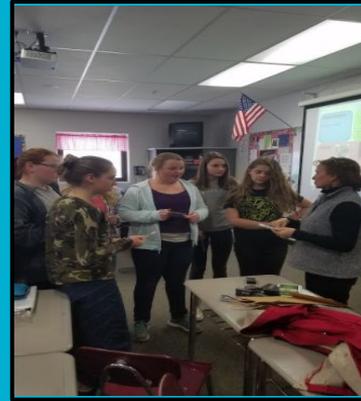
1. Invited Susan Hiltibran from North Central Ohio Solid Waste District to speak to the GMS Energy Team about recycling.
2. Created new containers to encourage recycling.
3. Worked with our District's Operation Manager to get a recycling container at GMS to be able to recycle more than just paper.
4. Competing in the Bring the Green Competition.
5. School Waste Assessment

### Student Leadership:

1. Students made a plan of action to increase the amount of recycling at GMS. The GMS Energy team made posters and created a new container to collect cans and plastic bottles in during the school day and at sporting events.
2. GMS Energy team educated the staff and students of GMS about our new recycling program. The team will educate others on the importance of recycling, what can be recycled, and will be part of collecting the recycled materials. A school waste assessment was completed to help decide areas that we can increase recycling at GMS.
3. The GMS Energy team has completed activities for the Bring the Green Competition that has gained points for GMS.

# Hosted Guest Speaker Susan Hiltibran from North Central Ohio Central Solid Waste District

Susan Hiltibran met with the GMS Energy Team to educate the team about recycling. Our team learned about what can be recycled and the importance of recycling. The GMS Energy team has been instrumental in increasing recycling at GMS. A recycling bin was delivered to GMS on April 5th. GMS will now be able to recycle more than just paper. We are well on our way to becoming a zero waste school.



# Bring the Green Competition

GMS is competing in the Bring the Green Competition. The team received 300 points for having an Energy Team. Other challenges that our team completed are: Wear your trash, Turn off the Lights Campaign, What's in that bin?, Take One (created videos about our new recycling program), Show your Art (create new recycling containers), and Explore the Outdoors. We also plan to install sink aerators and low flow shower heads on United Service Day on April 30, 2018



## Goal 3: Work with Energy Optimizers to bring solar panels to GMS.

### Energy Content Activities:

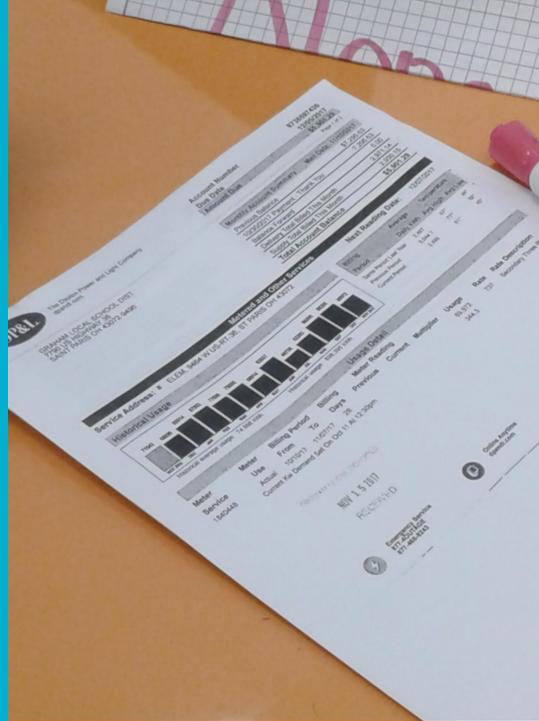
1. Solar Energy Workshop with Energy Optimizers
2. Create a Google Slide Presentation about Solar Energy
3. Present to the Board of Education about Solar Energy

### Student Leadership:

1. Students worked with engineers and staff from Energy Optimizers to learn about solar energy during an all day workshop. The team analyzed utility bills, learned the pros and cons of solar energy, learned about solar panels and arrays, and the possibility of bringing solar panels to GMS.
2. The GMS Energy Team created a Google Slide Presentation using what they learned from the Energy Optimizers Solar Workshop about solar energy and why Graham Local Schools should consider getting solar panels.
3. GMS Energy Team presented their Google Slide Presentation to the Graham Board of Education.

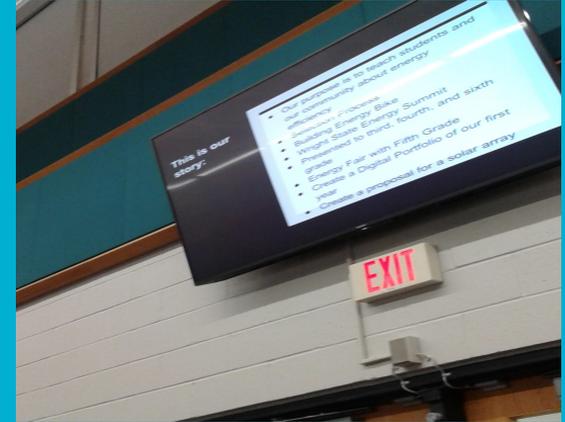
# Solar Workshop with Energy Optimizers

Energy Optimizers Staff provided an all day training for our team. We learned about solar energy, analyzed Graham Local School utility bills, were informed of the efforts that Graham Local Schools have made to reduce utility bills. The team worked with Energy Optimizers to create a proposal to install a solar array between Graham Middle School and Graham Elementary.



# Solar Panel Proposal Presentation to Graham Board of Education

GMS Energy Team presented a proposal to the Graham Board of Education to install a solar array. The team worked with Energy Optimizer Staff to research the pros and cons of solar energy and to put together a proposal for the Board. Our team was notified at this meeting that we had won the 2018 Green Energy Ohio Award for their work to teach others about Clean Energy.



# Resources and Evaluation

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## Resources:

Snap Circuit Pro, Makey Makey, Energy Baton, Energy Bike

Ohio Energy Project Resources: Energy Sources, Energy Relay, Electric Circuits, Sound Pitch, Thermal Imaging, Watt's Up?, Coal Sequence, Energy Bike Resource Guide

NEED Resources: Elementary Energy Infobook, Intermediate Energy Infobook, School Energy Survey

## Evaluation:

Teacher evaluation

Student Participation

Surveys

# video

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