Southern Guilford High School

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Work Smarter, Not Harder?

Mark Case, Sr. Advisor

Hands On Labs

Inclusion

With an increasing changing student population, after school activities are getting hard. The team chose to change it up. Take it classes, and let them do it at home!

Goal # 1 - Sponsor Energy Audits

School: Southern Guilford High

ENERGY CONTENT ACTIVITIES

We used the energy audit kits and taught the PTA how to use them and collect data. Kill-A-Watt meters and thermal cameras were loaned to students and parents for two days at a time. As each was returned, the data was transferred to a master file.

STUDENT LEADERSHIP

After collecting the data we met with the principal about our energy use.

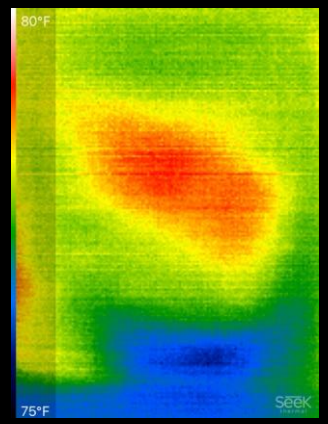
RESOURCES

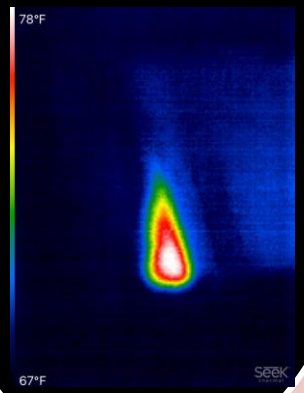
NEED Blueprint for Success, NEED Secondary Energy Infobook, worksheets and Kill-A-Watt meters

EVALUATION

Homes are not efficient! The thermal cameras showed EVERY SINGLE HOUSE leaked heat!

Our program went out to 206 families so far this year.





We now have three of these cameras we loan out to students.

206 homes were checked for air and heat leaks this year.

Minimum 1236 contact hours

Goal # 2 - Recycling

School: Southern Guilford High

ENERGY CONTENT ACTIVITIES

We use the Pepsi Recycling program to keep track of our energy savings

STUDENT LEADERSHIP

We went to science classrooms to recruit students to report their recycling at home on the Pepsi Recycle website.

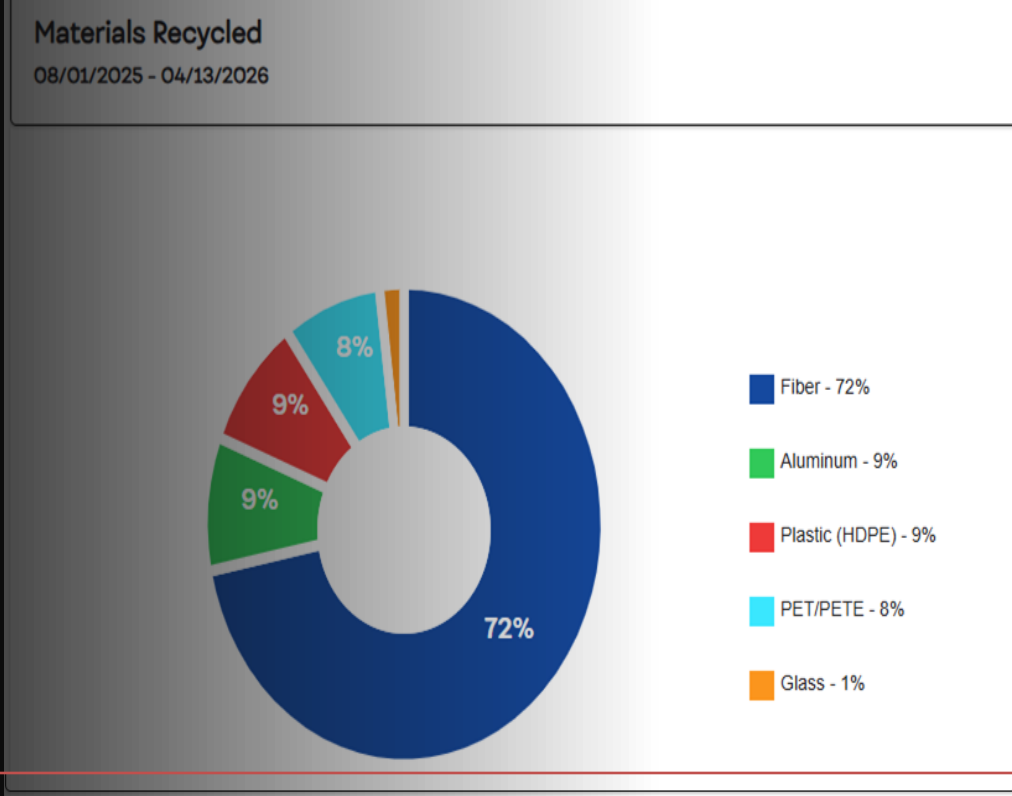
RESOURCES

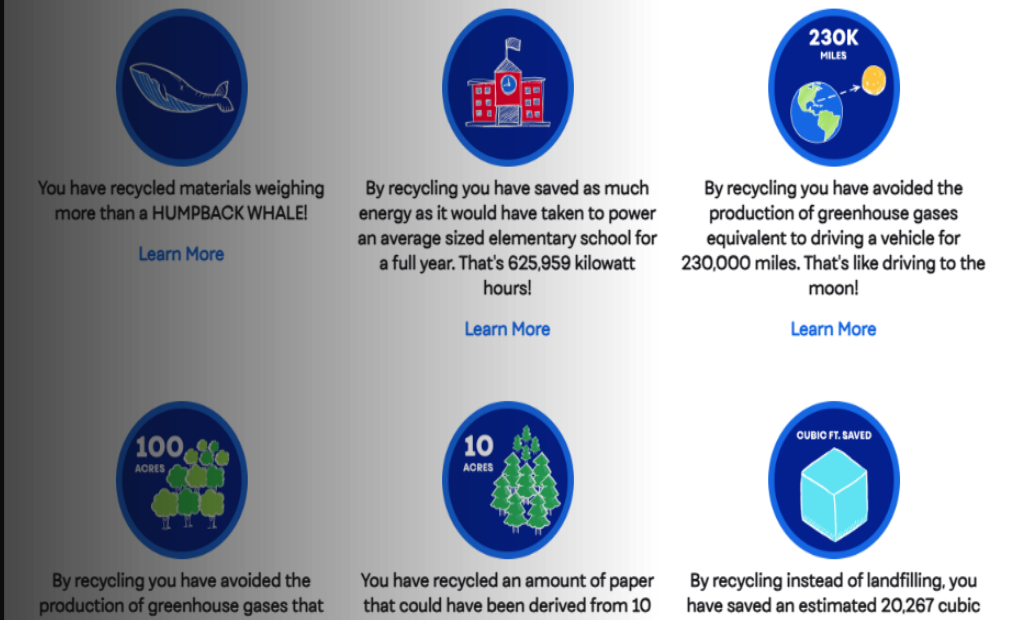
PepsiRecycling.com

EVALUATION

We placed first place in the nation with over 205,000 POUNDS collected.

Over 1100 people all year participated. (44,000 hours?)





Goal # 3 - Energy Outreach

School: Southern Guilford High

ENERGY CONTENT ACTIVITIES

Energy education and community outreach Energy Fair

STUDENT LEADERSHIP

Our robotics program.

RESOURCES

NEED Blueprint for success, NEED Secondary Energy Infobook, NEED Energy Fair Kit, FTC Robotics handbook, PITSCO.COM, 3D printers

EVALUATION

First Robotics of NC asked the team to come talk about energy. Our group was scheduled to be on site for 2 hours. We were so busy, 6 hours later they were done. Over 35,000 people were at the event and it felt like everyone of them stopped by!

Goal # 4 - Energy Outreach

School: Southern Guilford High

ENERGY CONTENT ACTIVITIES

Energy education and community outreach Energy Fair November 7, 2025

STUDENT LEADERSHIP

Our robotics program.

RESOURCES

NEED Blueprint for success, NEED Secondary Energy Infobook, NEED Energy Fair Kit, FTC Robotics handbook, PITSCO.COM, 3D printers

EVALUATION

Southern Guilford held the second annual fall festival and the robotics team featured an energy fair where we taught about kinetic and potential energy transfer, thermal energy and more. After the public finished one station, the got to race the robots! Over 612 people came to the fair. We were so busy, we wore the battery out of three robots!

Goal # 5 - Windmill Challenge

School: Southern Guilford High

ENERGY CONTENT ACTIVITIES

Energy education and community outreach

Wind can do work (NEED.ORG)

STUDENT LEADERSHIP

THE HONORS EARTH SCIENCE CLASS SPONSORED A WINDMILL GENERATOR CONTEST. THEY DID AN AFTER SCHOOL ACTIVITY TEACHING HOW WIND CAN DO WORK. STUDENTS CREATED WINDMILLS FROM MATERIALS PROVIDED BY A DONORS CHOOSE GRANT.

RESOURCES

NEED Secondary Energy Infobook, DonorsChoose

EVALUATION

Twenty students participated in the challenge and built windmills. The most electricity generated was 4 volts. Most students generated about .5 to 1 volt.

60 contact hours minimum

Going over our data and making ‘nuclear reactors!’

Reviewing our thermal images

Reflecting Upon Success

- **We tried something new. We took our ‘stuff’ to Mr. Case’s classes and got them to try it. It was a lot of work but worth it.**
- **Our best guess: 80,809 contact hours with EVERYONE involved in all aspects.**