Beloit 2025

USD 273-STEM Club

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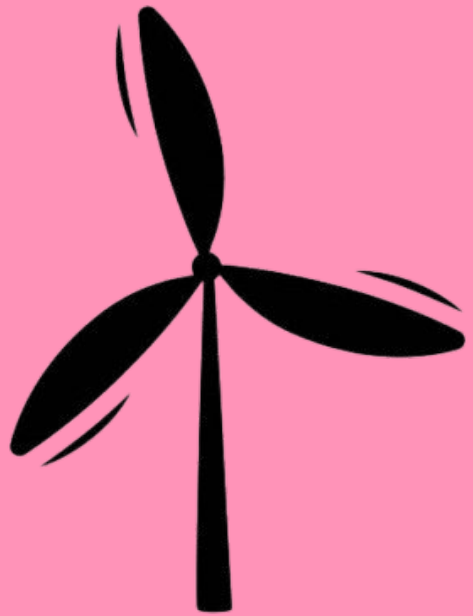
Advisor- Christie Fouts



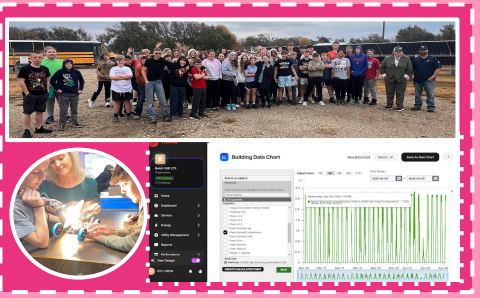
Goals

MRS. FOUTS 7th/8th GRADE GOALS

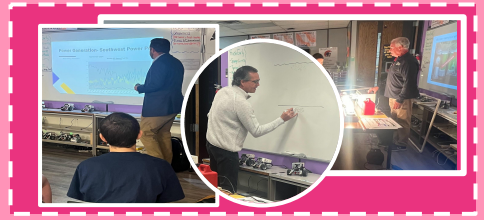
1) Students learn through hands-on activities with renewable energy and relating it to the real world
2) Bring in outside community resources to strengthen our understanding of energy and jobs in this field
3) Share our learning results and experiences with other school districts, students, and educational leaders

STEM CLUB GOALS

1) Build wind turbines for Kidwind competition, top 2 teams go to the event
2) Host an Energy Day at our local elementary where STEM Club students will teach 4th-6th graders about energy using the NEED kit Science of Energy Experiments
3) Host a STEM Camp in the summer for 4th-6th graders to learn about energy where STEM Club students will help teach the lessons



Sept- Solar cars & Data Analytics, Field Trip to Solar Farm



Oct/Nov- Class Wind turbine competition, Warren Martin presents on Petroleum, Dan Whisler presents on energy, Jason Rabe presents on buying electricity for Beloit.

December- CCCC comes to give energy experiment presentation, students test their wind turbine blades to see who the class winning group is!

January- STEM club starts meeting and starts building Wind turbines to go to the Kidwind Competition

February- Regional Kidwind competition, 1st place for JH and HS division

April- State Kidwind competition, JH & HS team qualify for Worlds, Field Trip to Cloud County Community College Solar and Wind programs for STEM club, BES Energy Day NEED experiments

May- World Kidwind Competition

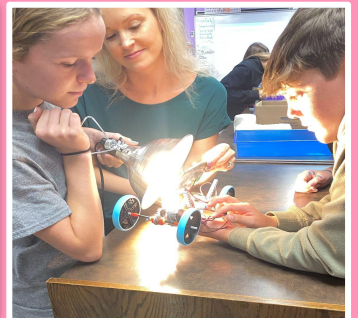
June- STEM Camp

Here's a timeline of what our USD 273 Beloit STEM Club has done to learn about energy in the 2024-2025 school year !!

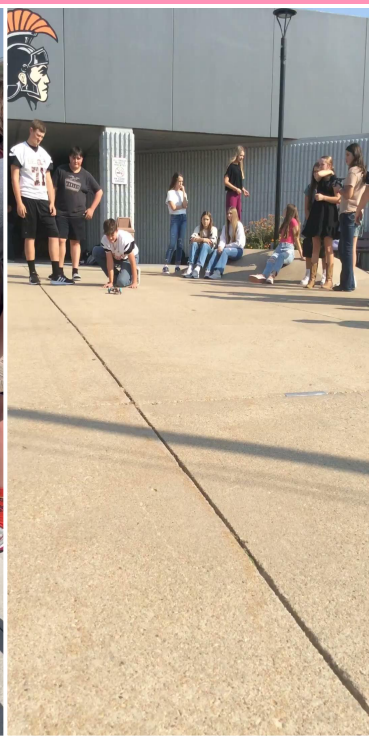
Solar Cars Unit

- This was a class project we did in groups
- We got groups and built a base/car using legos
- We attached solar panels and generators on the cars so they would move in the sun.

- In class we learned about solar energy
- We have Solar Panels outside of our school
- We learned how it all works
- We got to visit our town's solar farm



Testing solar panels



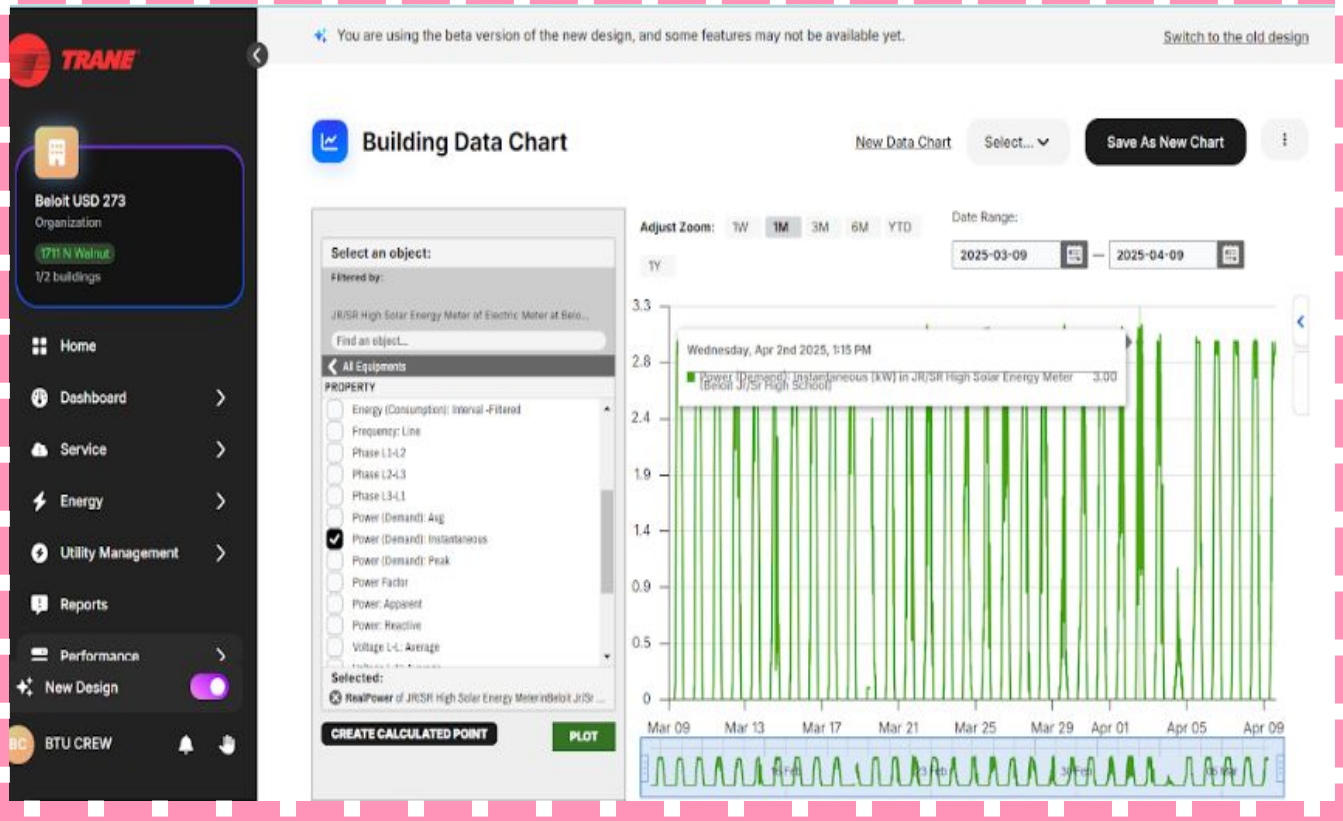
Racing Solar cars

Partnership with Trane-Solar Data Analytics

Smart Energy

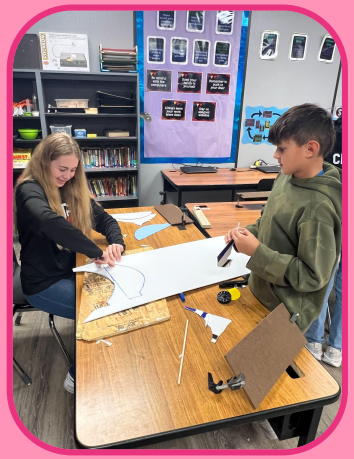
Smart Energy

- In 2016 Trane installed sensors into our buildings.
- We can track our energy usage every 15 minutes. Because of this, students have access to Trane's data and use it in the classroom as a learning tool.
- This is a picture from our solar panels.
- We look at the data during our solar car unit when we are talking about solar car panels to see how efficient they are.



Kidwind Class

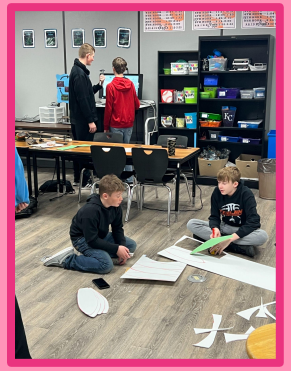
- Mrs.Fouts taught us about wind and other types of renewable energy sources in our classroom
- Everyone split into groups and made blueprints for blades with measurements and sizing
- Students then picked what material they would like to make their blades out of, how many blades they want, and what pitch they would like to angle their blades at
- Then used duct tape to attach dowel rods to the backs of blades so they could attach to the hub
- Once the turbines were ready we tested in the wind tunnel on the kid wind base
- The top energy producer from each grade got a pizza party!!



Stem Club Goals

1. Build wind turbines & the best producers go on to the Kidwind competition
2. Participate in an Energy Day at BES teaching younger students about energy with NEED experiment activities
3. Help Mrs. Fouts run a STEM camp in the summer for grades 4th-6th.
4. Submit a project to the NEED conference

Stem Club Starts Building Wind Turbines

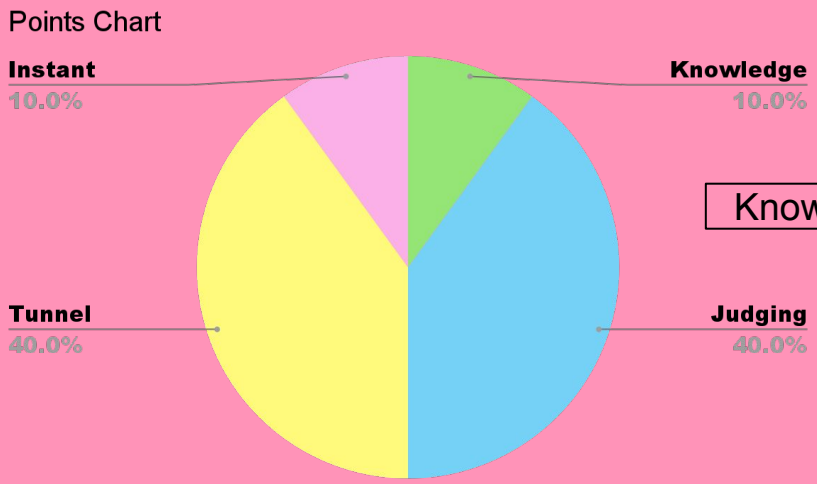





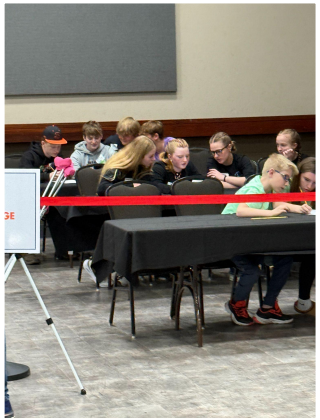

Kid Wind Competition Regionals

- Our Regional Kidwind took place in Manhattan, KS
- We took 3 teams to Regionals
- Instant Challenge-We had to try to light up a light bulb and it was worth 10 points
- Judging Panel-A panel of judges listened to our presentation about our turbine and asked questions. It was worth 40 points
- Knowledge Quiz- We took a quiz on energy
- Turbine Tunnel Testing- We tested our turbine in a tunnel to see how many Joules it produced in 30 seconds.
- Two of our teams made it to State Kidwind in Salina,Ks and now they are going to the World Kidwind event in Phoenix, AZ!!

Kidwind Competition State - Girl Energy



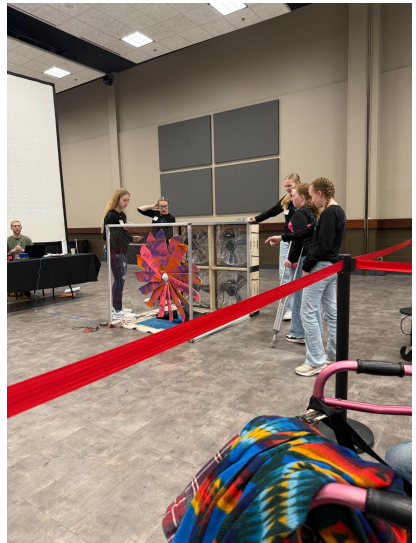
Knowledge Quiz



- State Kidwind- Salina, KS
- There were multiple challenges while we were there all similar to the Regional Kid-Wind competition
- We also did fun activities and made lots of new friends, but also learned new things.

Presentation

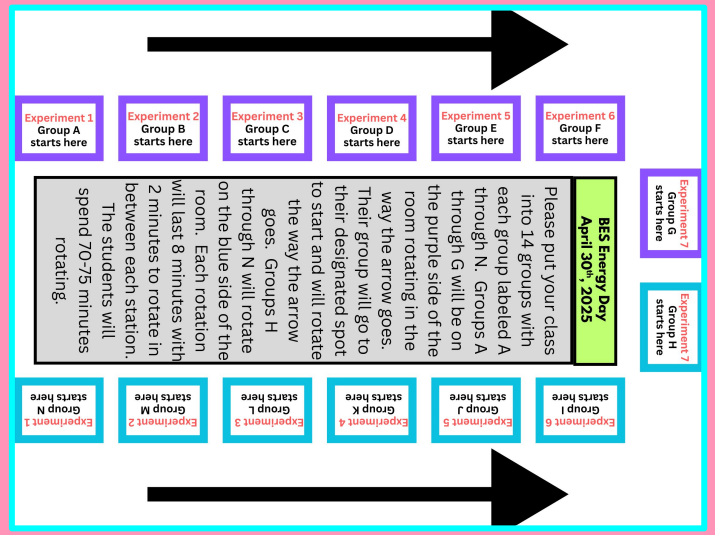
Tunnel



Energy Day at BES

Details

- Date: April 30th, 2025
- 25 STEM club students in 7th & 8th grade will teach all the 4th-6th grade students about energy through hands on experiments with the NEED Science of Energy kits
- TIME: 8am to 12pm
- Each grade level will spend 75 minutes rotating to the different tables run by the STEM club students, each with a different NEED experiment kit teaching about energy



NEED Science of Energy Kit

Rotation Chart

World Kidwind - Girl Energy

Wind Turbine Testing

- 30 Second Tests Measured In Joules
- 4 Different Wind Tunnels Set To Different Wind Speeds

Judging Session

- Present Project To A Panel Of Judges, Explaining Project
- Judges Ask Questions About Their Project, Design, And Presentation

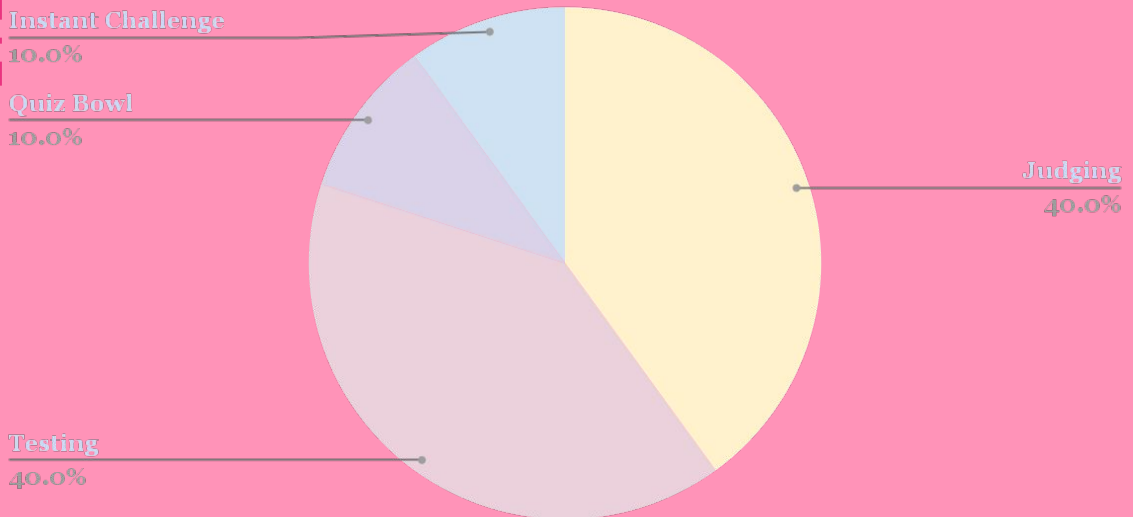
Instant Challenge

- On-The-Spot Challenge
- Clean Energy Related

Quiz Bowl

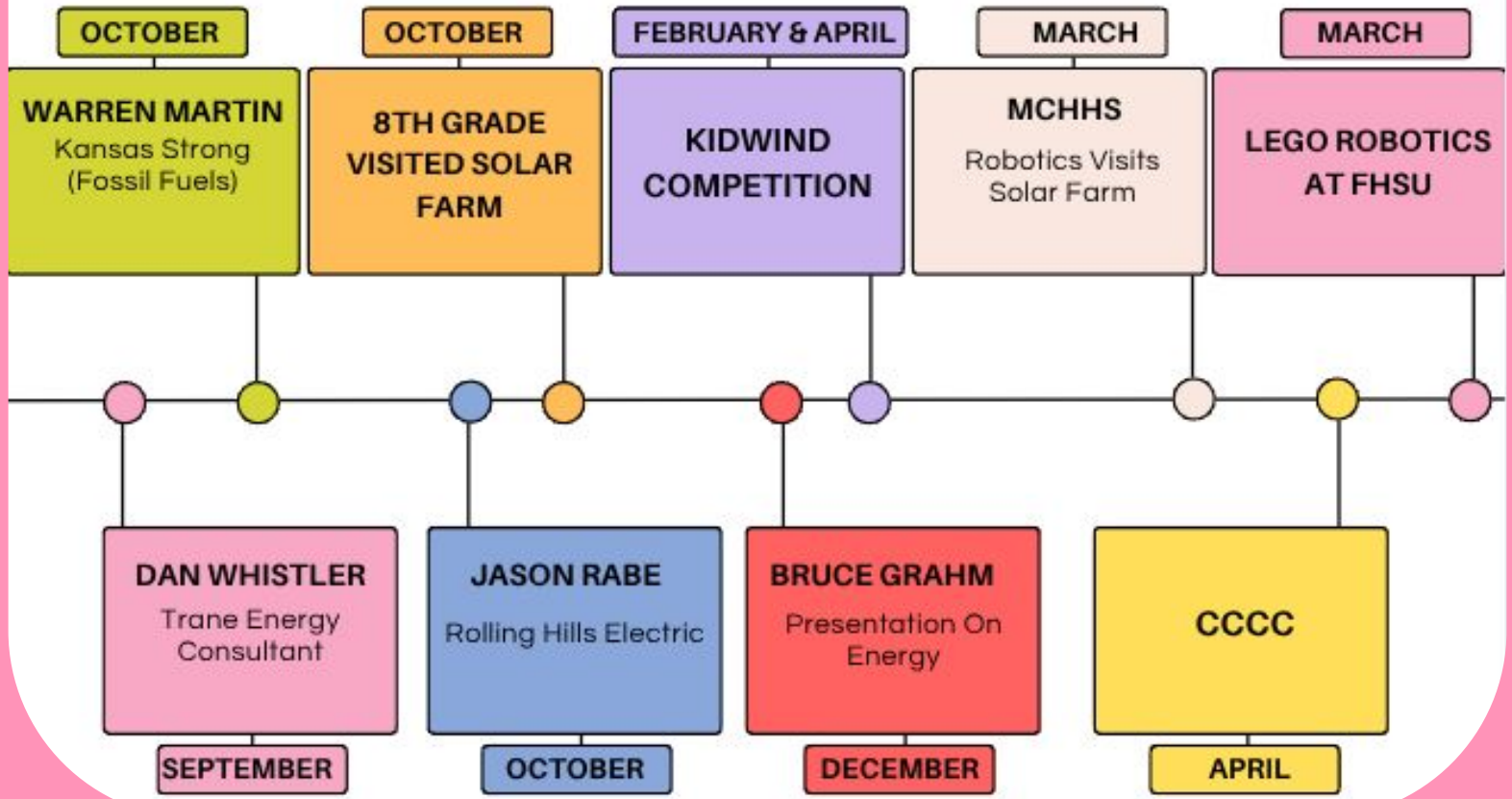
- Timed Clean Energy Quiz
- Given A Study Guide

Rubric



WORLD KidWind® CHALLENGE
PHOENIX, AZ
MAY 18 - 21, 2025

PRESENTERS AND FIELD TRIPS



PRESENTERS AND FIELD TRIPS


City Manager


Visiting College Programs


Dan Whisler-Energy Presentation


Field Trip to Solar Farm


Drone Presentation


Warren Martin-Petro Pro

STEM CAMP Hosted by Beloit STEM Club

DETAILS

- Location-BJSHS
- Dates- 4 Days late June/early July
- Time 8-12pm
- Sponsors provide Snacks and supplies
- Fundraiser for the STEM Club

STEM CLUB students will help Mrs. Fouts run the STEM Camp and will help each group of students accomplish their goals for the day. All STEM club students have completed these activities in class so they will teach the students what they already have learned!

Day 1- Solar Cars

Students will learn how solar panels work, how to build a solar car, how to connect a generator with gears to make a solar car move, test solar cars, and have a solar car race!

Day 2- 3D Printing

Students will finish solar cars if needed. Then students will learn how to 3D design in the software program called Tinkercad, these designs will be printed on 3D printers to take home

Day 3- Wind Turbines

Students will learn about wind turbines and how they work. Then they will build wind turbine blades and will test these blades on a wind turbine in a wind tunnel like the Kidwind challenge.

Day 4- Sumo cars/Scratch

Students will learn how to code a Lego Robot. Then they will battle robots in a sumo battle using electronic joysticks to control the robots. Lastly, they will create something in a program called Scratch using drag and drop coding.

Making new friends

Opportunities to teach others about energy

Hands on learning

Why STEM club rocks

Opportunities to go on trips to better our community

Fun experiences