Synergy with Energy

Hamilton Southeastern Schools

Get Started →

ABOUT US

1 **DISTRICT**

2 **HIGH SCHOOLS**

Several projects to inspire the next generation of energy leaders.

Career and technical pathways education or future STEM careers.

ON FEBRUARY 2, 2023, MS. RAMER ADDRESSED STUDENTS ON HOW ENERGY RESOURCES PLAY A KEY ROLE IN GEOPOLITICS AND THE PART THAT ALTERNATIVE ENERGY CAN PLAY IN THE AREAS OF HSE AND FHS HIGH SCHOOLS.

RAMER EXPLAINED TO STUDENTS THAT ENERGY IS POWER. ENERGY CAN FUEL THE PLANT, CHANGE POLITICS, START WARS, AND CAUSE BOUNDARIES TO BE REDRAWN.

HER FIRSTHAND ACCOUNT OF LIFE IN UKRAINE, WHERE THE GEOPOLITICAL CONFLICT HAS CRIPPLED BASIC INFRASTRUCTURE, INTRODUCED STUDENTS AT BOTH SCHOOLS TO A PROJECT-BASED LEARNING PROGRAM THAT ALLOWS STUDENTS TO IMAGINE THEMSELVES DESIGNING AND BUILDING THEIR OWN ALTERNATIVE ENERGY TECH.

Svitlana Ramer, a native Ukrainian woman now living in Indianapolis and cofounder of the Indiana Ukrainian Society.

This program is a collaboration between Maker Youth Foundation & Raineman Solutions and is sponsored by Duke Energy.

LETS GET THE PROJECT STARTED

01 Tinker Trailer

As part of the program, students engaged with the Energy Pathway exploration Trailer which contained career specific activities, technology, and equipment to provide early exposure future career and technical pathways.

NEXT STEPS

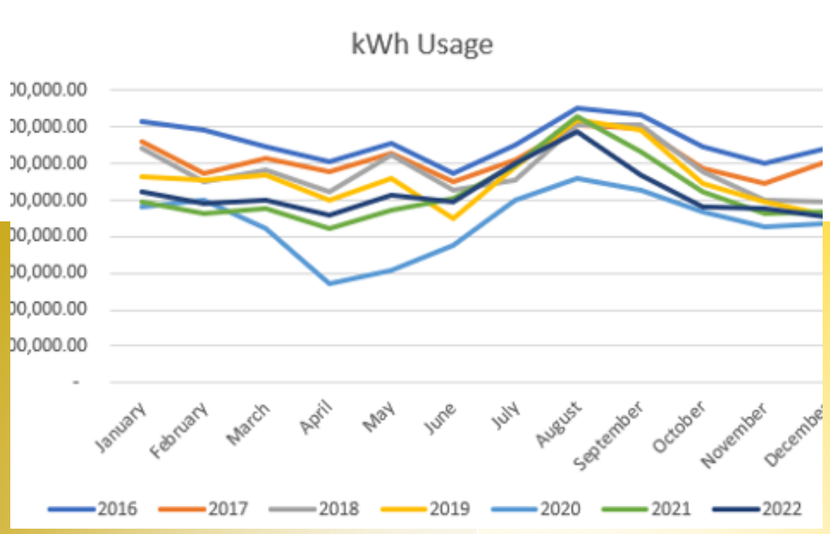
02

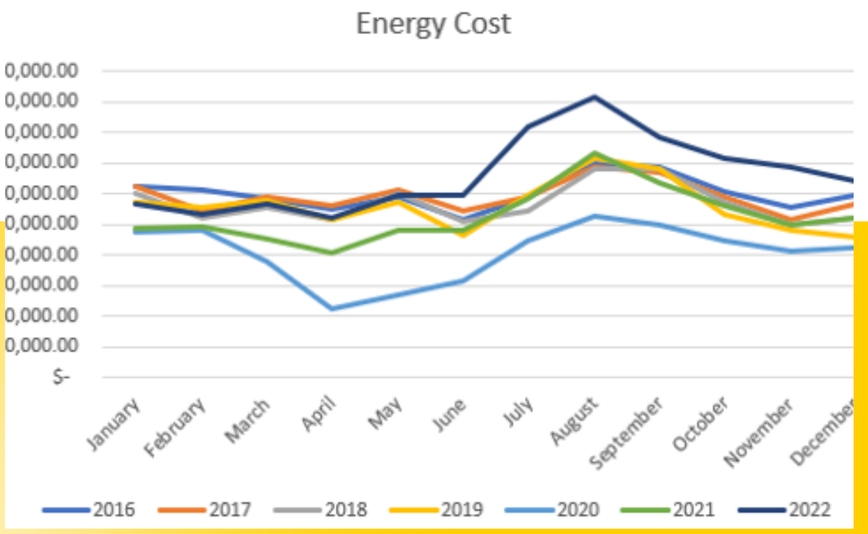
Students engaged with the Districts Energy Manager reviewing energy data from their home schools and other district buildings. Students helped identify ways the school is using energy and conducted a visual audit of the space to help find potential ways of reducing energy.

03

Students were given information from the Facilities Department about the operations of the building and the process by which schools can make capital investments to reduce their energy consumption.

	2021 kWh used	2022 kWh used	Difference between kwh used in 2022 vs 2023	Percent change
trict	31,285,877.59	31,249,433.12	36,444.47	0.12%
oks School Elem	1,194,187.06	1,177,223.36	16,963.70	1.42%
rnin	397,927.06	402,183.96	(4,256.90)	-1.07%
mberland Road Elem	436,658.82	437,166.94	(508.11)	-0.12%
er Creek Elem	81,586.51	730,168.56	(648,582.05)	-794.96%
CUS at Durbin Elem	969,207.35	905,770.96	63,436.40	6.55%
l Creek Elem	685,900.00	678,279.88	7,620.12	1.11%
l Creek Intermediate	928,610.29	906,613.58	21,996.72	2.37%
l Creek Jr High	1,474,179.30	1,644,463.21	(170,283.91)	-11.55%
hers Elem	442,762.35	462,713.96	(19,951.61)	-4.51%
hers High	6,411,508.90	6,493,640.48	(82,131.58)	-1.28%
hers Jr High	1,306,259.32	1,312,994.02	(6,734.69)	-0.52%
ist Elem	1,070,736.36	1,075,013.49	(4,277.13)	-0.40%
rrison Parkway Elem	862,767.06	835,881.74	26,885.32	3.12%
osier Road Elem	889,764.71	943,316.17	(53,551.47)	-6.02%
E High	6,231,670.96	6,292,324.64	(60,653.68)	-0.97%
JH	733,156.09	503,463.02	229,693.07	31.33%
ntern Road Elem	881,976.47	960,091.37	(78,114.90)	-8.86%
w Britton Elem	529,752.94	551,037.54	(21,284.59)	-4.02%
rerside Inter & Jr High	3,351,319.47	2,919,076.21	432,243.26	12.90%
d Creek Elem	424,814.37	247,684.58	177,129.79	41.70%
d Creek Intermediate	397,704.81	95,748.27	301,956.54	75.92%
utheastern Elem	498,764.71	566,094.75	(67,330.04)	-13.50%
rpe Creek Elem	691,219.47	803,015.13	(111,795.66)	-16.17%
nsportation Bldg	304,051.76	256,208.15	47,843.62	15.74%





PUT IT INTO PRACTICE

Students used kits from KidWind to design, construct, and test wind turbines as part of the engineering process and scientific method.

Design

Support a hypothesis and give results in terms of measurable, objective data.

Contruct

Carrying out research in an objective and controlled fashion so that precision is maximized.

Test

Figuring out what we would expect to observe if an idea was correct and comparing that expectation to what we actually observe.

ENGINEERING PROCESS

Identifying the problem or need

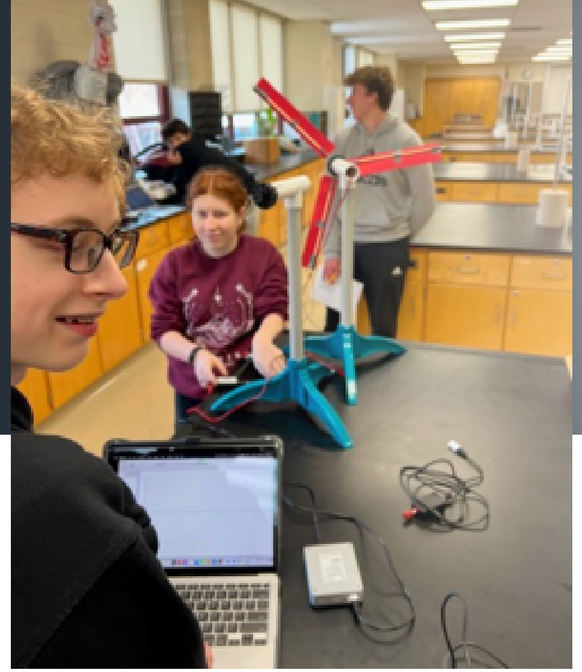
Exploring

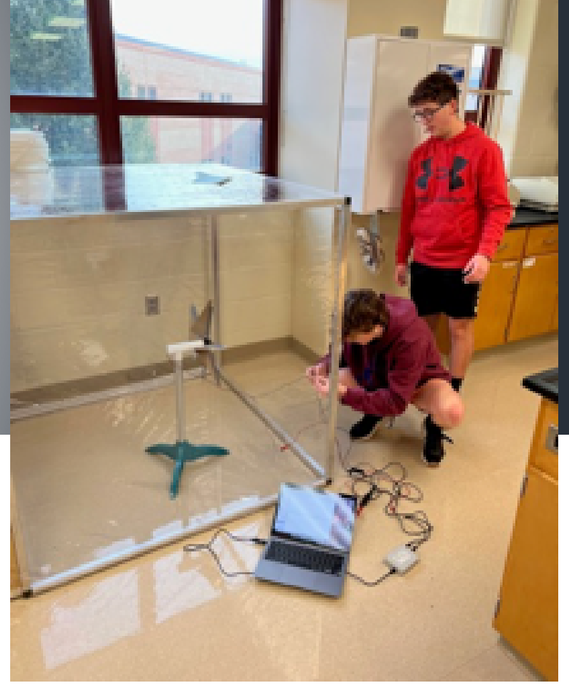
Designing

Creating

Testing

Making it Better





WHAT WAS TESTED?

1. SHAPES OF BLADES
2. NUMBER OF BLADES
3. PITCH OF BLADES
4. MATERIALS OF BLADES

Some students were able to use software to design their blades and print them using a 3d printer!

STUDY, LEARN, GROW

Students studied solar panels by accessing data from a solar power wagon.

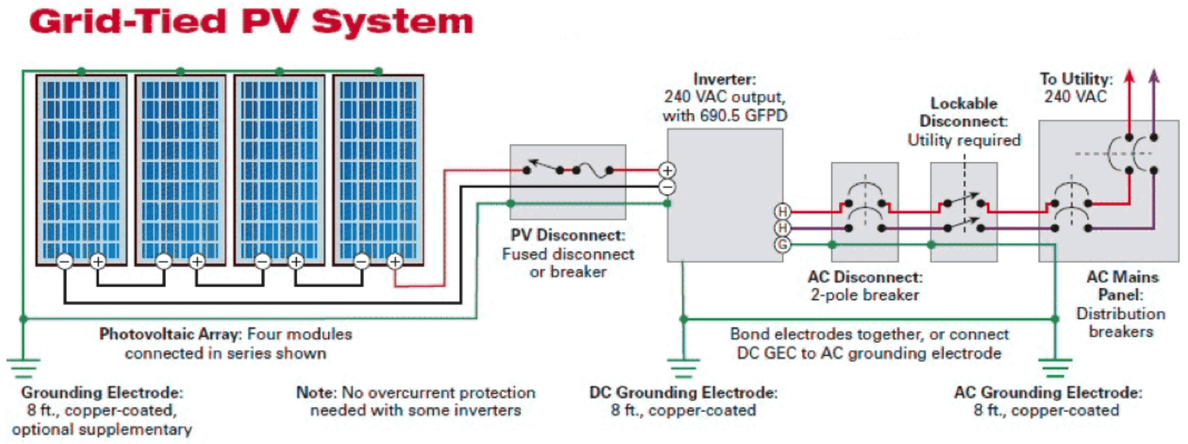
WHAT'S NEXT?

See!

Students are planning a trip in April to the Districts' solar arrays located at Sand Creek Elementary and Sand Creek Intermediate.

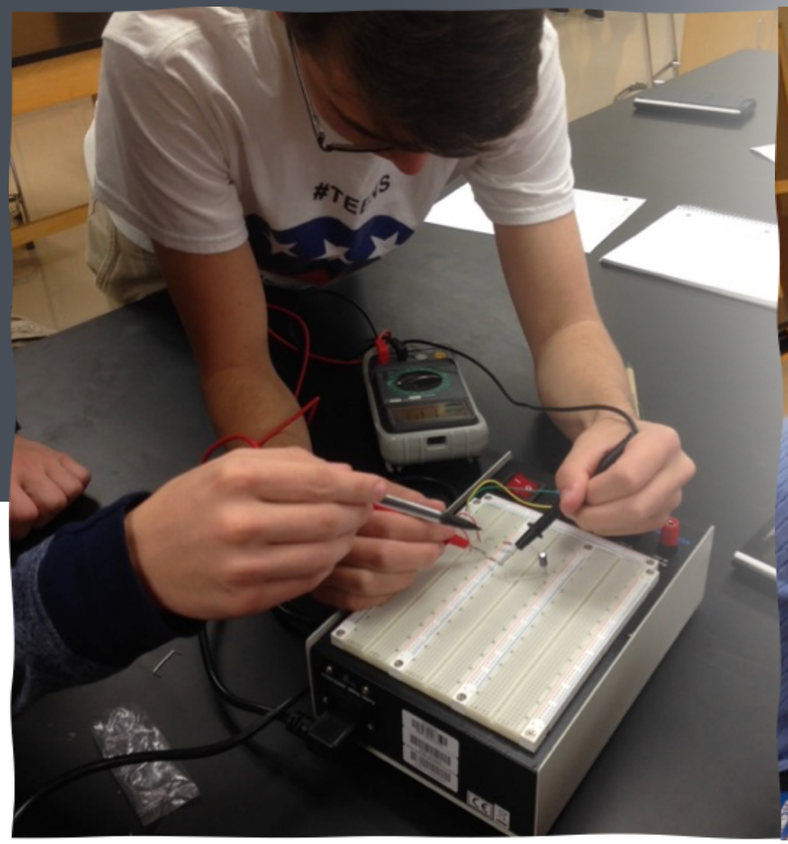
Learn!

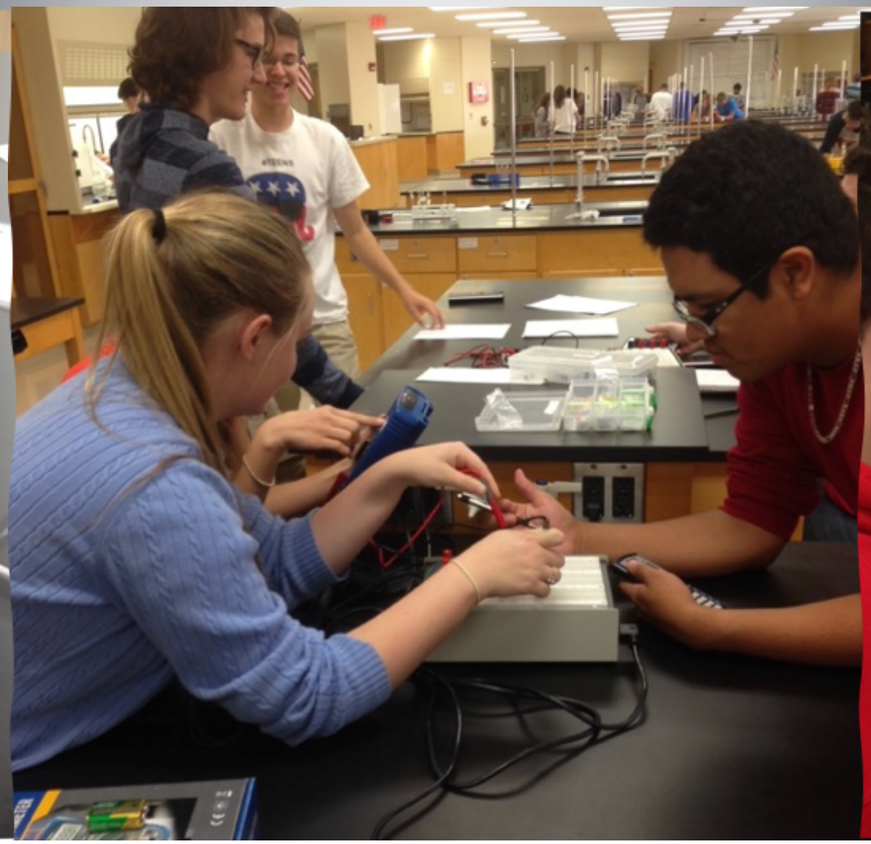
Students will learn about the panels, inverters, electrical panels, electric meters, and switchgear.

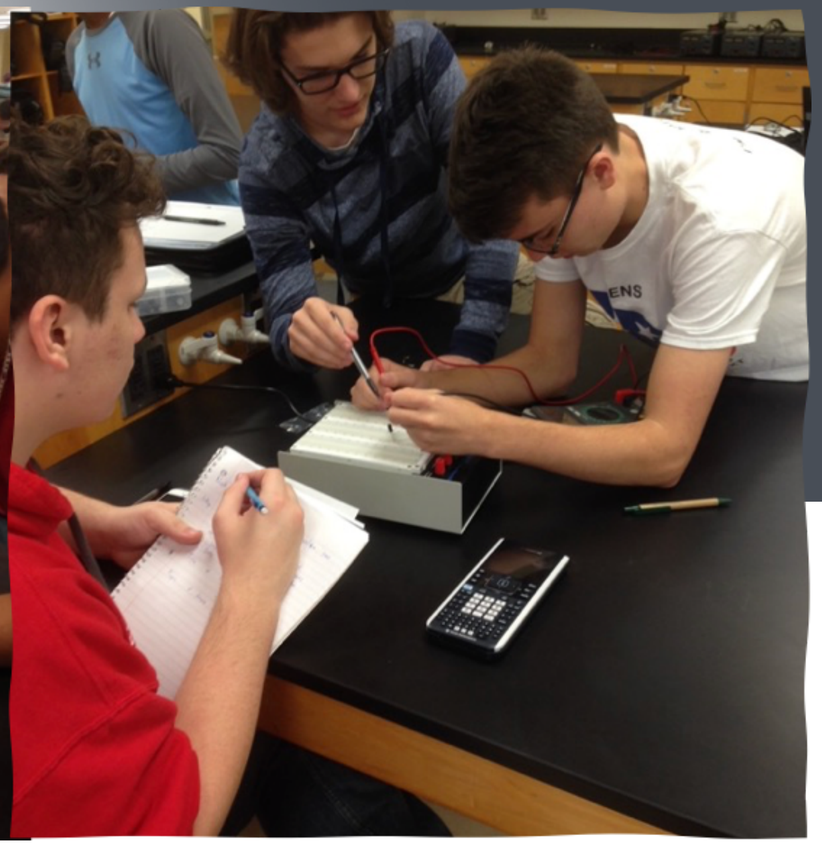


Capstone Project

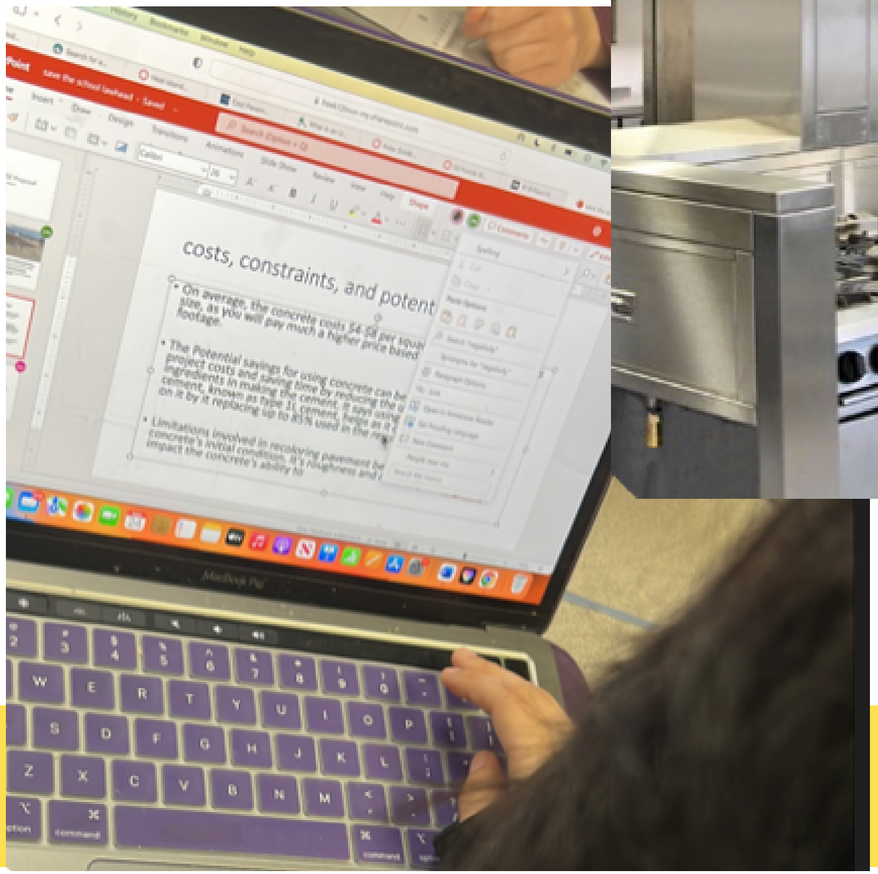
Students will design and calculate a renewable energy system (solar or wind) large enough to power their school. They will then present their information to other students and stakeholders.







Students used breadboards to create basic circuits for resistors and capacitors.



OTHER AREAS OF INDEPENDENT STUDY CONDUCTED BY STUDENTS INCLUDED:

01 Heat Island

02 School Audits

03 Green Roof

04 Radiation vs Conduction Kitchen Equipment

05 Agrivoltaics

CONCLUSION

Goal

Inspire the next generation of energy leaders at Hamilton Southeastern High School and Fishers High School

Evaluation

- Formative Evaluation – students provide feedback through the various design and testing
- Summative Evaluation – Final design and presentation given to stakeholders

Activities

- Keynote address by Svitlana Ramer – How energy impacts the world
- Tinker Trailer
- Energy Audit and energy usage study
- KidWind turbine design challenge
- Solar energy study
- Breadboard circuits
- Various other self-directed energy projects

Partners

- Duke Energy
- Ameresco
- 1st Maker Space
- Hamilton Southeastern School Corporation
- Dan Mach (FHS) & Courtney Lawhead (HSEHS)