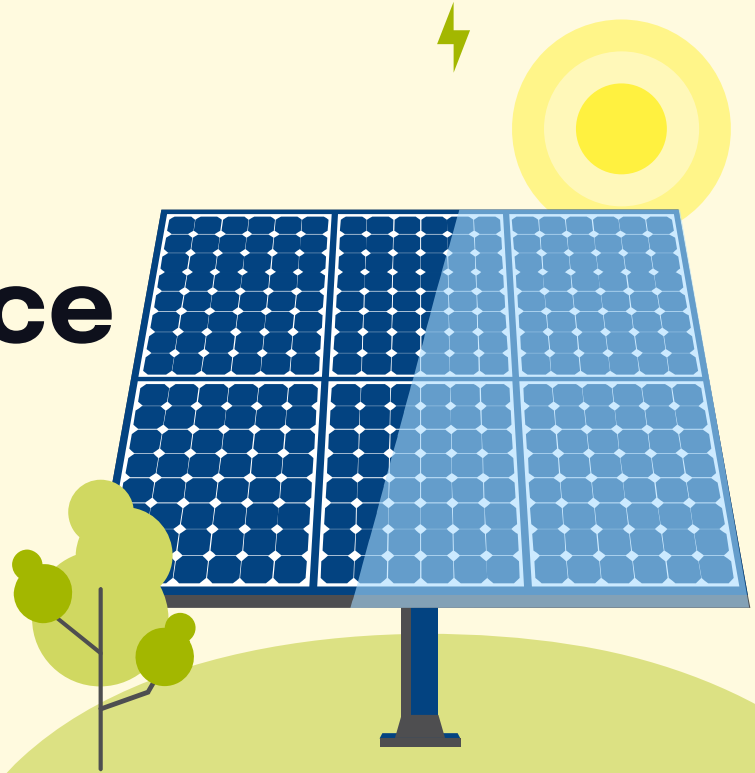


Making a Difference With Solar

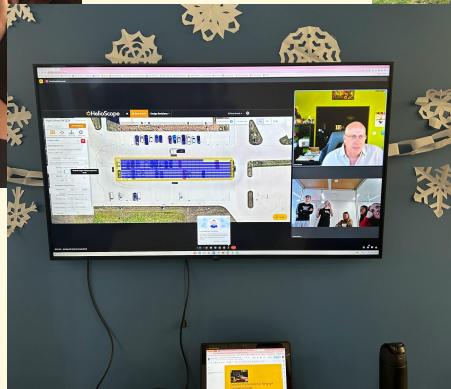
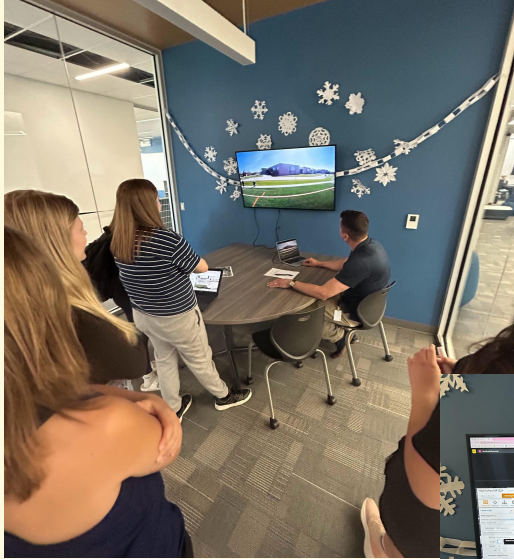


**\$5,000,000
Saved**

Why?

- Reduce our carbon footprint
- Demonstrate
- For our future
- Transitioning from fossil fuels
- AND Save money

How We Got Here





How Much Energy Do We Consume?

- Ames High School - 4,953,000 kWh
- Ames Middle School - 1,644,000 kWh
- Fellows Elementary - 600,240 kWh
- Meeker Elementary- 544,240 kWh
- Mitchell Elementary - 550,320 kWh
- Northwood Preschool - 342,160 kWh
- Sawyer Elementary - 599,680 kWh
- Other Facilities - TBD

In Total:


9,234,810 kWh/yr

Greenhouse Gas Emissions Equivalence

8,487,853 lbs/yr of CO₂*

916 gasoline-powered passenger vehicles
driven for one year 

433,220 gallons of gasoline consumed 

167,230 trash bags of waste recycled instead of
landfilled 

254,166,014 number of smartphones charged 

1,337 tons of waste recycled instead of
landfilled 

4,495 acres of U.S. forests in one year 

*national average

<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator#results>

**How Much
Needed
and
Where?**

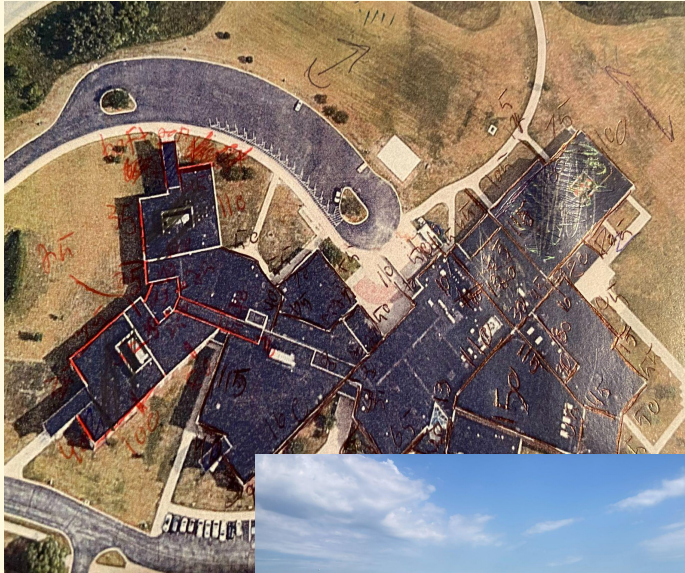
Ames High



Total Usage: 4,981,507 kWh

Location	kW	kWh	%
Roof 1	460	571,320	11.5
*Roof 2	1,196	1,485,432	30
Roof 3	86.2	106,836	2
Roof 4	77.7	96,553	2
Roof 5	99.82	123,976	2
Athletic PL	517	620,400	12.5
Staff PL	782	938,400	19
SE PL	825.5	990,600	20
*FB En	38.62	47,990	1
Total	4,082.82	4,953,000	100.5%

Middle School



Location	KW	kWh	%
Roof 1	195.5	242,811	15
Roof 2	107.6	133,639	8
Roof 3	66.24	82,270	5
Roof 4	101.2	125,690	7
Total	470.54	584,410	35%

Total Usage: 1,644,000 kWh

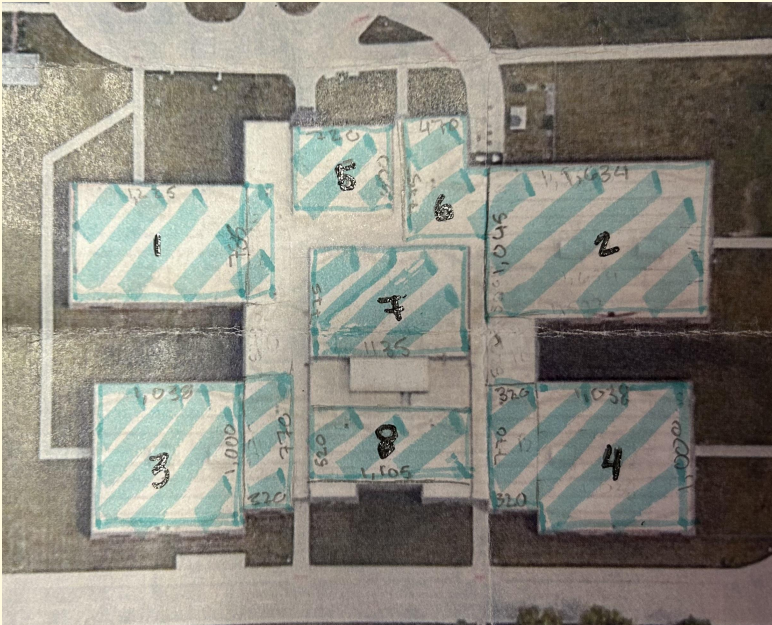
Fellows Elementary



Location	kW	kWh	%
Roof 1	226.78	281,660	46
Roof 2	45	55,989	9
Roof 3	77.74	96,553	16
Roof 4	125	155,399	25
Roof 5	14.72	18,282	3
Roof 6	36.80	45,705	7
Total	526.04	653,588	106

Total Usage: 600,240 kWh

Meeker Elementary



Location	kW	kWh	%
Roof 1	65.78	81,698	15
Roof 2	119.6	148,543	27
Roof 3&4	160.8	198,819	36
Roof 5	19.32	23,995	4
Roof 6	18.4	22,852	3
Roof 7	55.2	68,558	12
Roof 8	16.56	20,567	3
Total	455.66	565,032	100%

Total Usage: 544,240 kWh

Mitchell Elementary



Location	kW	kWh	%
Area 4	70.84	87,983	16%
Area 5	386	479,908	87%
Total	512.04	636,449	103%

Total Usage: 550,320 kWh

Northwood Preschool



Location	kW	kWh	%
Roof 1	133.86	166,254	48%
Roof 2	35.88	44,566	13%
South PL	11.5	14,283	4%
NE PL	16.56	19,872	5%
Total	197.8	244,975	70%

Total Usage: 342,160 kWh

Current Electricity Cost*

- High School - \$320,809
 - Middle School - \$105,837
 - Fellows - \$38,655
 - Meeker - \$35,050
 - Mitchell - \$35,440
 - NorthWood - \$22,035
 - Sawyer - \$38,619
 - Other Facilities - TBD
- Total: \$ 596,445**



**Energy portion of bill only*

Cost Benefit Analysis

Building	Solar array (kW)	kWh	Install cost \$	Savings	Payback (yrs)
High school	4,082.82	4,953,000	\$11,890,290	\$297,180	40 yrs
Middle school	470.54	584,410	\$1,058,715	\$98,640	10.7 yrs
Fellows	526.04	600,240	\$1,183,590	\$39,215	30.1 yrs
Meeker	455.66	544,240	\$1,025,235	\$ 32,654	31.4 yrs
Mitchell	512.04	550,230	\$1,152,090	\$35,440	34.9 yrs
Northwood	197.8	342,160	\$547,625	\$20,529	26.7 yrs
Sawyer	351.66	599,680	\$791,235	\$35,980	22 years
Total	6,596.56	8,173,960	\$17,648,780	\$557,218	10-40 years

Savings 75% avoided \$0.0644/kWh + 25% sent back to utility at \$0.0472/kWh = \$0.060/kWh | Does not include demand savings

How do we pay?

1. School budget from capital budget
2. Potential federal rebate 30%, 2 yrs to get
3. Power purchase agreement
4. Hybrid of above

Next Steps



Recommendations

- Add 1.2 MW at the high school 31% offset
- Add solar to the other buildings
- Investigate solar thermal for pool heating

Ames High



Location	kW	kWh	%
Roof 1	460	571,320	11.5
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Athletic PL	517	620,400	12.5
Staff PL	782	938,400	19
SE PL	825.5	990,600	20
*FB En	38.62	47990	1
Total	4,082.82	4,953,000	100.5%

Total Usage: 4,981,507 kWh

Our Ask

- Fully investigate phase one
 - Highschool rooftop 2 & Football entrance
 - \$2,826,170 install budget
 - OR**
 - 5.5 cents per kWh ppa

Questions?

Solar Rangers:

Maegan, Anna, Julian, Addy, Anleah, Ashley, Eleanor, Levi