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Introductions

Ron Richardson Role: Moderator
- *Job Title, School District, Business Name*



Tim Farquer Role: Speaker
- *Superintendent, Williamsfield Schools*
- *Administrative Lead, Bus-2-Grid Initiative*



Angie Smith Role: Speaker
- *Asst Supt for Operations & CSBO, West Aurora SD 129*



Lyndl Schuster Role: Speaker
- *Asst Supt for Business Services/CSBO, River Trails SD 26*



Introductions (ctd)

Katy Glynn Role: Speaker

- *Account Executive, Siemens Energy Performance Services*

SIEMENS

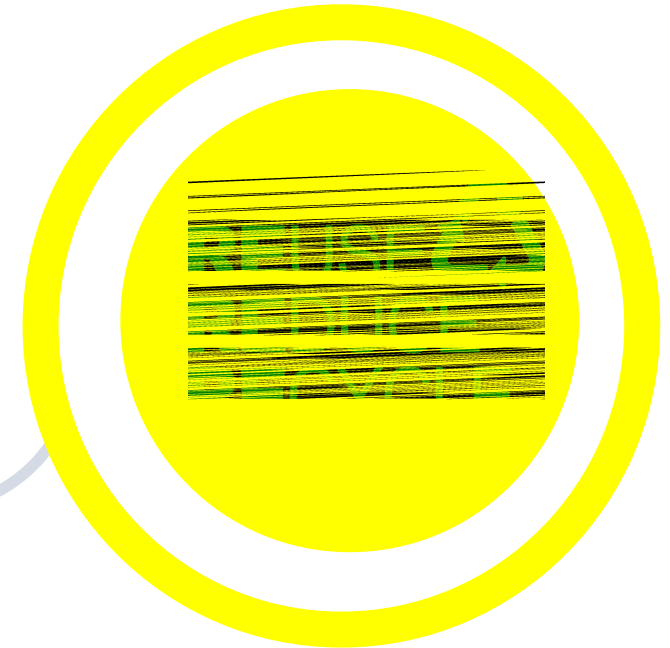
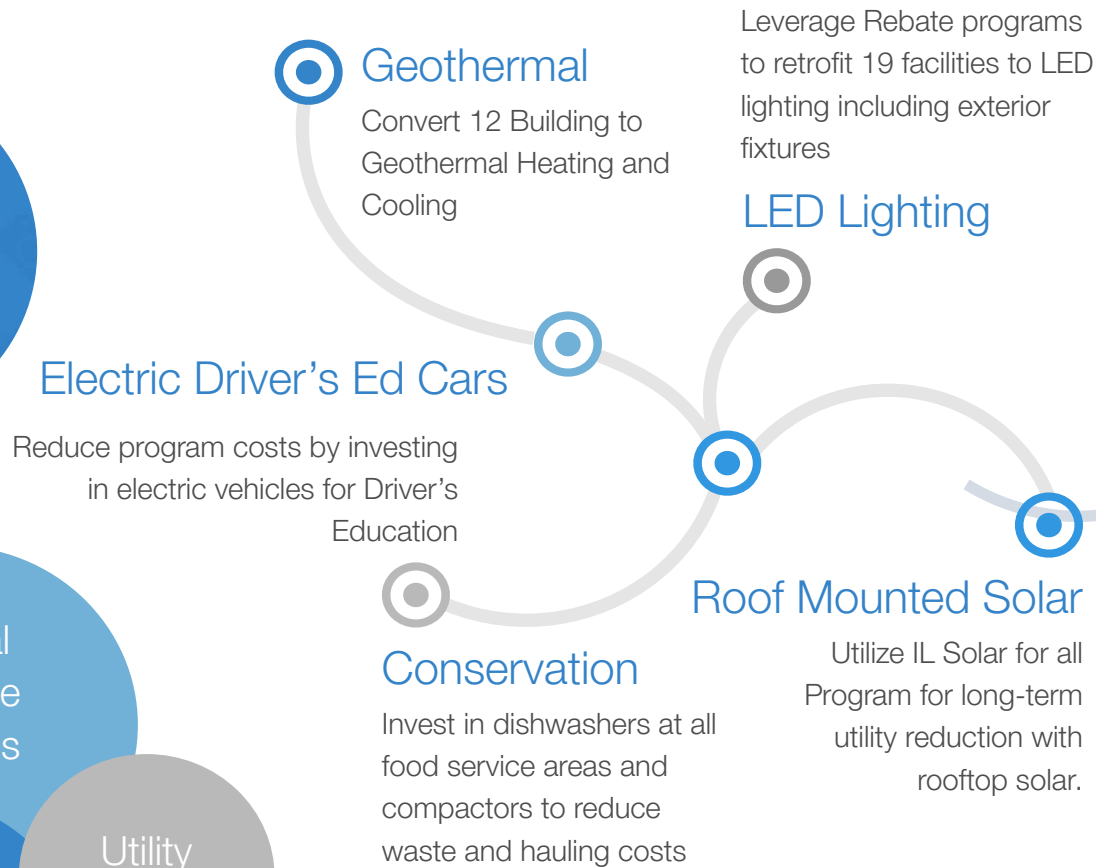
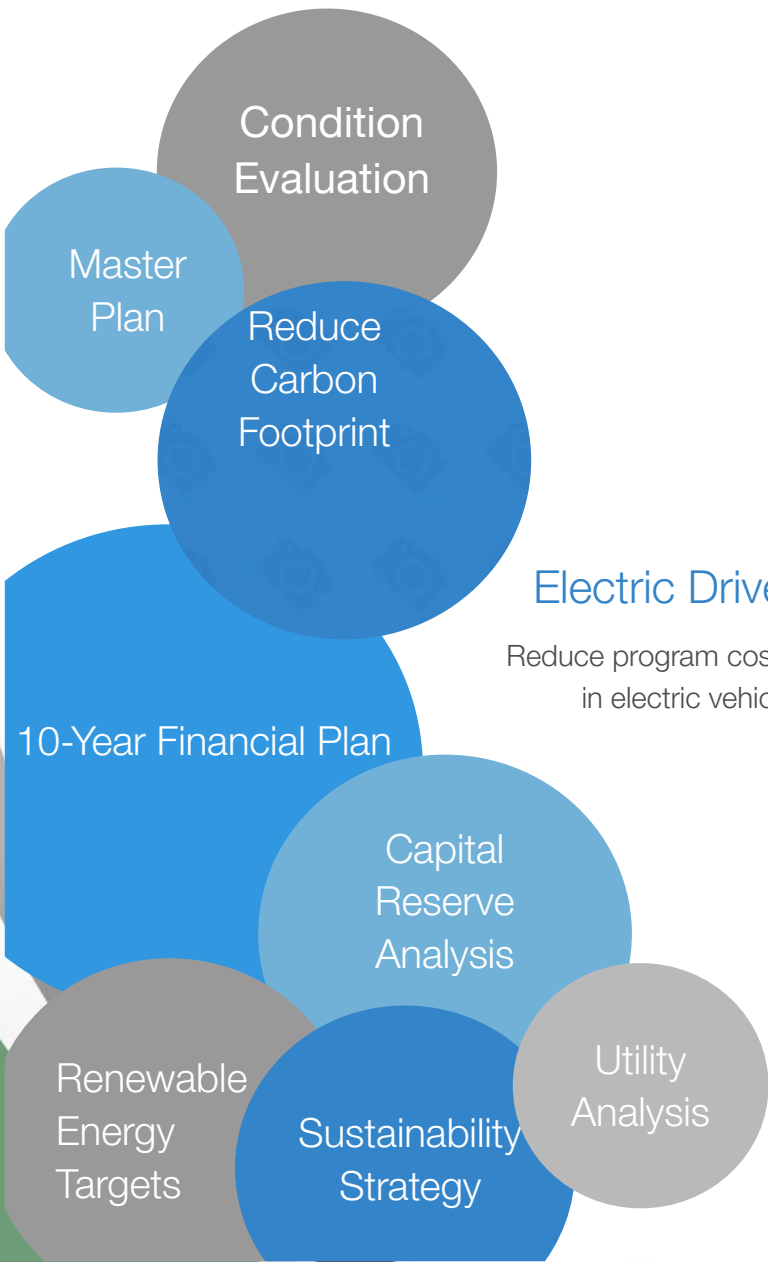
Aaron Raftery Role: Speaker

- *Solar PV + Storage Project Developer, SunVest*

SUNVEST
SOLAR LLC

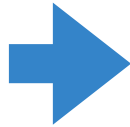
Agenda

- Introductions (Ron)
- West Aurora SD 129 – case study (Angie)
- River Trails SD 26 – case study (Lyndi)
- Williamsfield Schools – case study (Tim)
- Electric Buses – additional info (Katy)
- Solar Incentive Program Updates (Aaron)



LED LIGHTING
CONVERSION

20 Buildings



Replaced interior and exterior light fixtures over a 6-year period in all buildings

GEOTHERMAL
CONVERSION

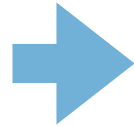
10 Buildings



Replaced aging heat only infrastructure with heat and cool geothermal with utility reductions

ELECTRIC
CARS

4 Cars



Replaced our fossil fuel fleet to electric to help reduce emissions and program operational costs

DISH WASHERS

15 Sites



Reduced overall expenses by adopting a "reuse" program to reduce landfill waste and purchase of biodegradables



TRASH
COMPACTORS

17 Sites



Reduced our overall expenses by reducing our refuse collection to once a week per site.

The Master Plan with a Phased Approach



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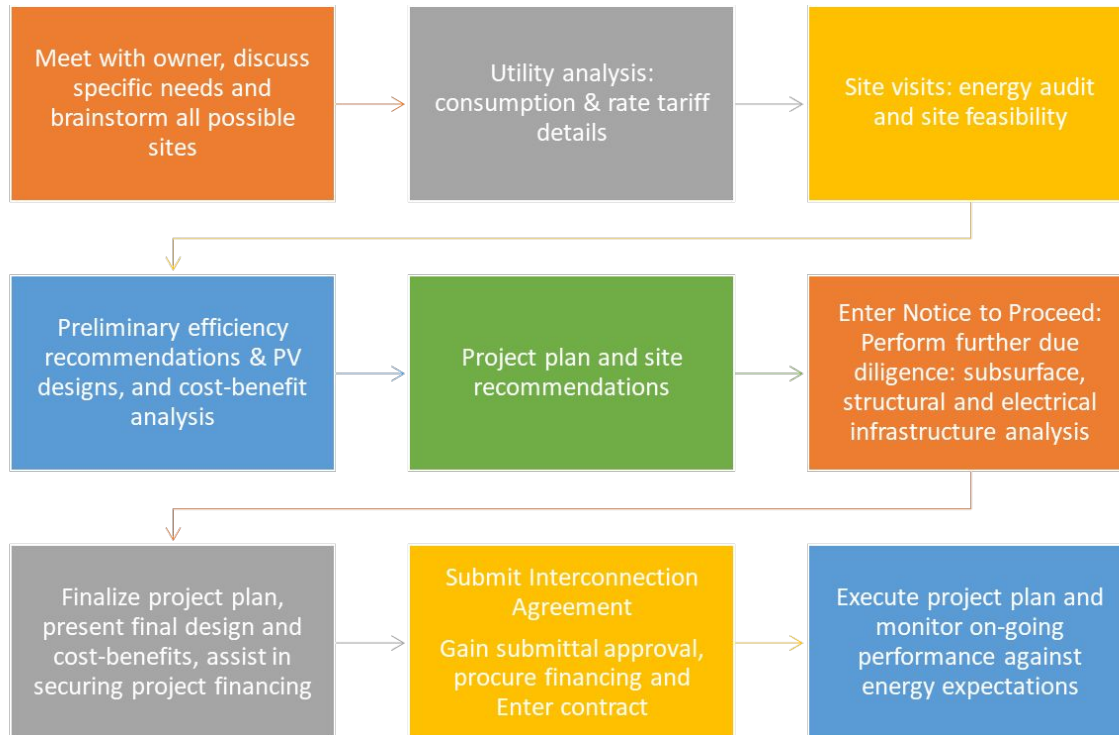


STRONGER TOGETHER. SMARTER TOGETHER.

Next logical step was solar

- Tied to roof replacement cycle
- Next step in our attempt to reduce operating costs: utilization down, reverse auctions
- Partnered with PSG to utilize IL Solar for All program
- First district approved
- District with most projects
- Projects constructed and energized at 6 with West extension on deck for 2022 and applying for more
- Why the project makes fiscal sense

Due diligence and consideration throughout the project is key in successfully navigating project incentives and execution.



- Customer and partner relationships
- Utility analysis and coordination
- Site visits and energy audits
- **Technical expertise and incentive application support**
- Conversations with project partners: Owner, City, County, Utility and Financing partners

Adjustable Block Program (ABP)

Program is reinstated and funded through 2030!

- ABP is a state-administered solar incentive program developed and managed by the Illinois Power Agency (IPA) also referred to as Illinois Shines
- The program provides payments in exchange for 15 years of Renewable Energy Credits (“RECs”) generated by new PV systems at a higher price than market.
- RECs represent the environmental attribute of the electricity generated from solar panels. (1 REC = 1,000 kWh of solar production).
- Portion protected for schools- Tier 1 and Tier 2 districts have their own set aside



Illinois Solar For All

Program is funded through 2036!

How the program works



Pre-qualified solar vendors

The program evaluates and approves vendors to meet program requirements and help protect consumers. Technical requirements and installation inspections help ensure quality workmanship.



Equitable participation

Income-eligible homeowners and renters, as well as non-profits and public facilities serving low-income or environmental justice communities, may be eligible for participation. [Click here for more on income eligibility](#) in Illinois.



Participant savings

With Illinois Solar for All, participants will see no upfront costs and ongoing costs and fees will not exceed 50% of the value of the energy generated from that system.

Sample timeline for ABP and ILSFA Projects

1 - 3 months		2 - 3 months	2 weeks	1 - 4 months	2 - 4 months		2 - 4 months
Provide 12 months utility bills	Utility review, preliminary design, cost/benefit analysis	Enter notice to proceed	Submit Project into ABP or ILSFA Application Process	REC contracts awarded (12 months to build project post award received)	Finalize contract, Procure material	Roofing & structure upgrades performed if needed	Array installation / Commissioning / Go Live
Schedule site visits	Prioritize sites	Electrical Engineering, Submit Interconnection Agreement	Provide roofing and structural recommendations			Stage material	
		Structural / Subsurface Analysis					

Annual Financial and Environmental Benefits

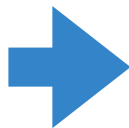
Electric utility savings of over \$45,000 annually: the savings is in addition to the already reduced utility cost from the reverse auction

Annual CO2 offset of 1,290 Metric Tons: equivalent to greenhouse gas emissions from 3.2 million miles driven by an average passenger vehicle



LED LIGHTING
CONVERSION

\$120K/year



Replaced interior and exterior light fixtures over a 6-year period in all buildings



GEO THERMAL
CONVERSION

\$400K/year

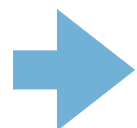


Replaced aging heat only infrastructure with heat and cool geothermal with utility reductions



ELECTRIC
CARS

\$10K/year



Replaced our fossil fuel fleet to electric to help reduce emissions and program operational costs



DISH WASHERS

\$50K/year

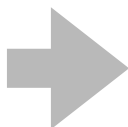


Reduced overall expenses by adopting a "reuse" program to reduce landfill waste and purchase of biodegradables



TRASH
COMPACTORS

\$75K/year



Reduced our overall expenses by reducing our refuse collection to once a week per site.



PHOTOVOLTAICS

\$45K/year



Reduced our carbon footprint and utility expenses

The Master Plan with a Phased Approach

\$685K per year in savings shifted to Capital Projects



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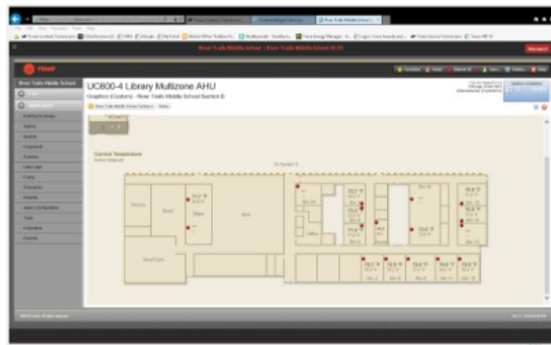
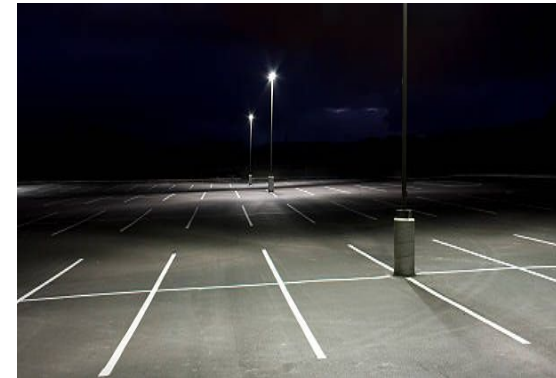


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Incentives Used for Energy Funding

Project	DCEO/ICECF Grants Received
Interior lighting	\$187,198
Exterior lighting	\$33,827
Solar arrays	\$13,700
Univents	\$73,162
Building Automation System	\$121,419
Total	\$429,305





River Trails
SCHOOL DISTRICT 26

Case Study

Incentives Used for Energy Funding



Up \$2,000,000 or 80% of the incremental costs to achieve net zero energy.

Grants are paid as follows:

Up to 60% once the building is occupied and building performance monitoring has started

Up to 40% after certification and 12 consecutive months of site net zero energy performance



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River Trails
SCHOOL DISTRICT 26

Case Study

Incentives Used for Energy Funding



- Net Zero energy usage
- Target EUI of 24 to 29
- Certification required through the **Passive House Institute US (PHIUS)**. The project must meet PHIUS+ and PHIUS+ Source Zero performance criteria.
 - PHIUS+ is a “high-performance building standard” – it challenges the building industry to construct buildings that can maintain a comfortable indoor environment **with very low operating energy**.
- No natural gas service to the school.



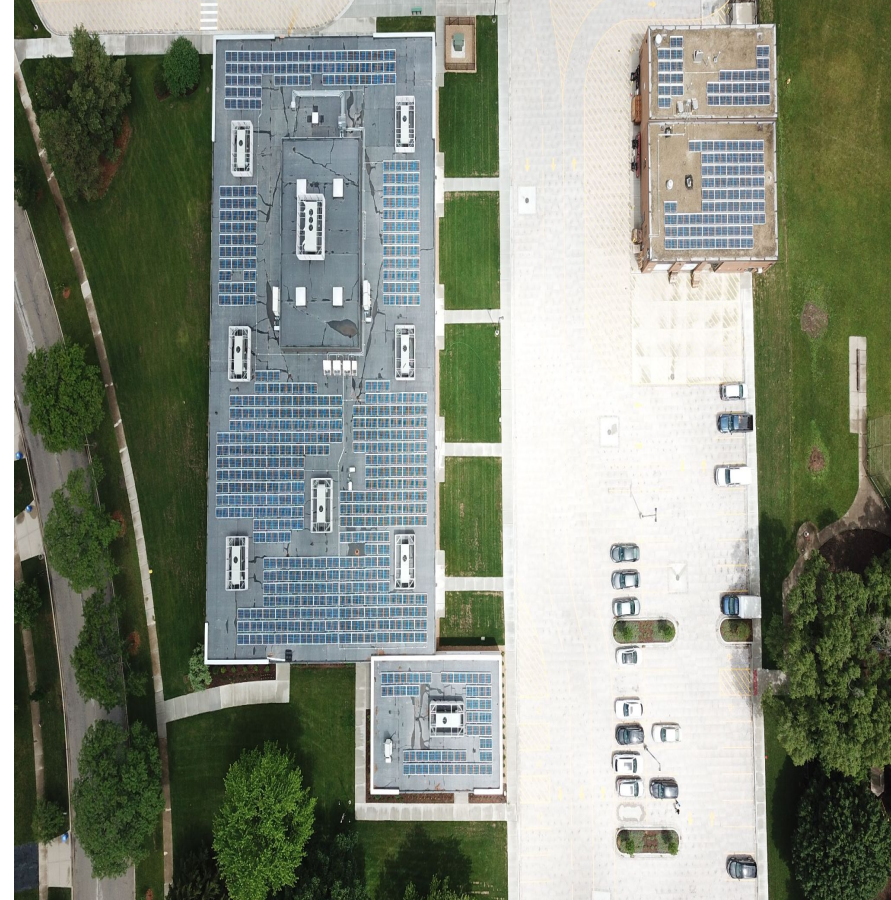


River Trails
SCHOOL DISTRICT 26

Case Study

Incentives Used for Energy Funding

- **ComEd**
 - Energy Efficiency Upgrades \$5,689
 - Solar Panels - \$51,600





Incentives Used for Energy Funding

- MWRD Partnership - \$650,000
 - Permeable Paving Parking Lot & Rain Gardens





River Trails
SCHOOL DISTRICT 26

Case Study

Incentives Used for Energy Funding

- ISBE Maintenance Grants
\$100,000



River Trails
SCHOOL DISTRICT 26

Case Study

Incentives Used for Energy Funding

- Illinois EPA VW Grant - \$288,215
 - Electric School Bus
 - Vehicle 2 Grid Charger



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Other Financing for Energy Funding

- Qualified Zone Academy Bond (QZAB)
 - Public School > 35% eligible for free or reduced-cost lunch
 - Provides an annual federal income tax credit instead of interest
 - ~0% interest loan
- Requires 10% charitable contribution
 - Business partnerships



Case Study

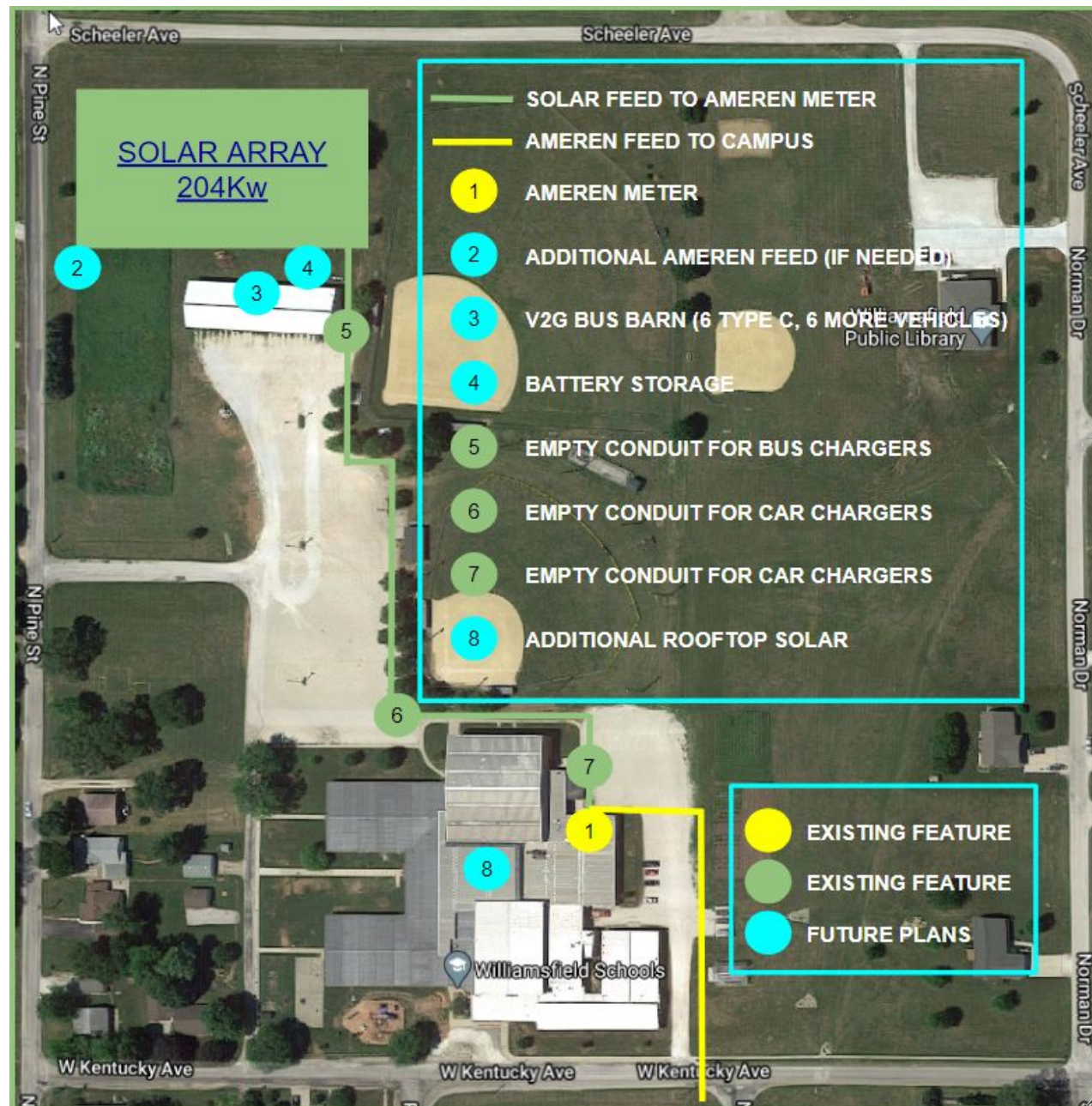
- Administrative Lead for the [Bus-2-Grid Initiative](#) (B2G)
- In Illinois, B2G is a service of the Future Green Energy Consortium
- B2G is a partner of the World Resources Institute
- B2G has a comprehensive list of industry partners
- B2G is at the forefront of electrification efforts in Illinois
- Helped secure funding for 2 electric school buses (ESBs) in central Illinois (Pekin & Hollis)
- Helped secure IL-VW funding last fall (Huntley, River Trails, Troy Triad, Waukegan)
- Secured ISBE school maintenance grant for ESB infrastructure (Williamsfield Schools)
- Helping schools apply for Clean School Bus funding this fall



Case Study

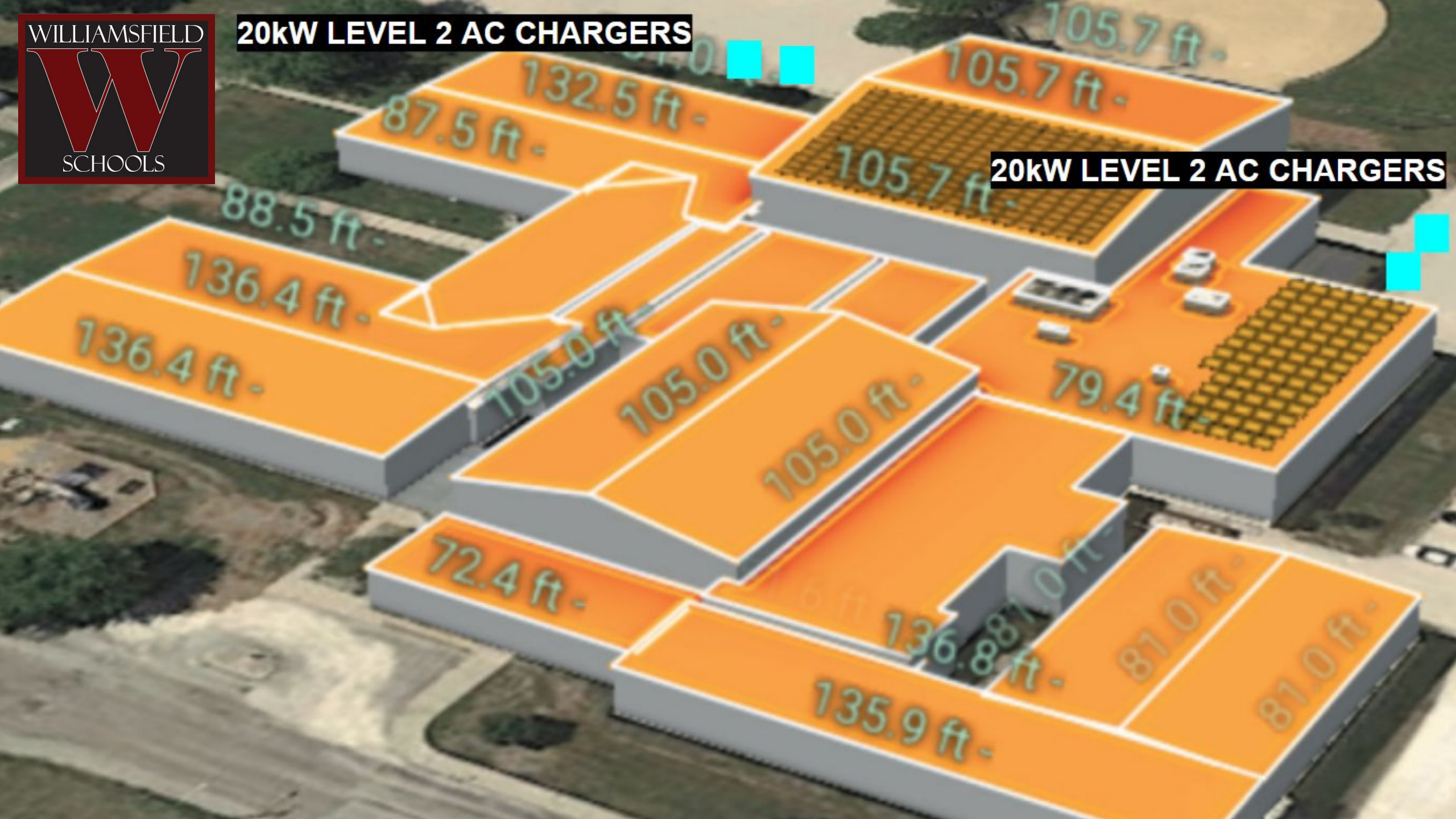
The Williamsfield Schools Mini-Microgrid Project

- Energy Production
 - Single axis ground mount solar array
 - Rooftop solar panels
- Energy Storage
 - Stationary battery storage (kWh TBD)
 - Electric School Bus batteries (1.5MW estimated)
- Energy Management
 - NUVVE 125kW power control system (PCS)
 - Up to (5) dispensers connected to each PCS



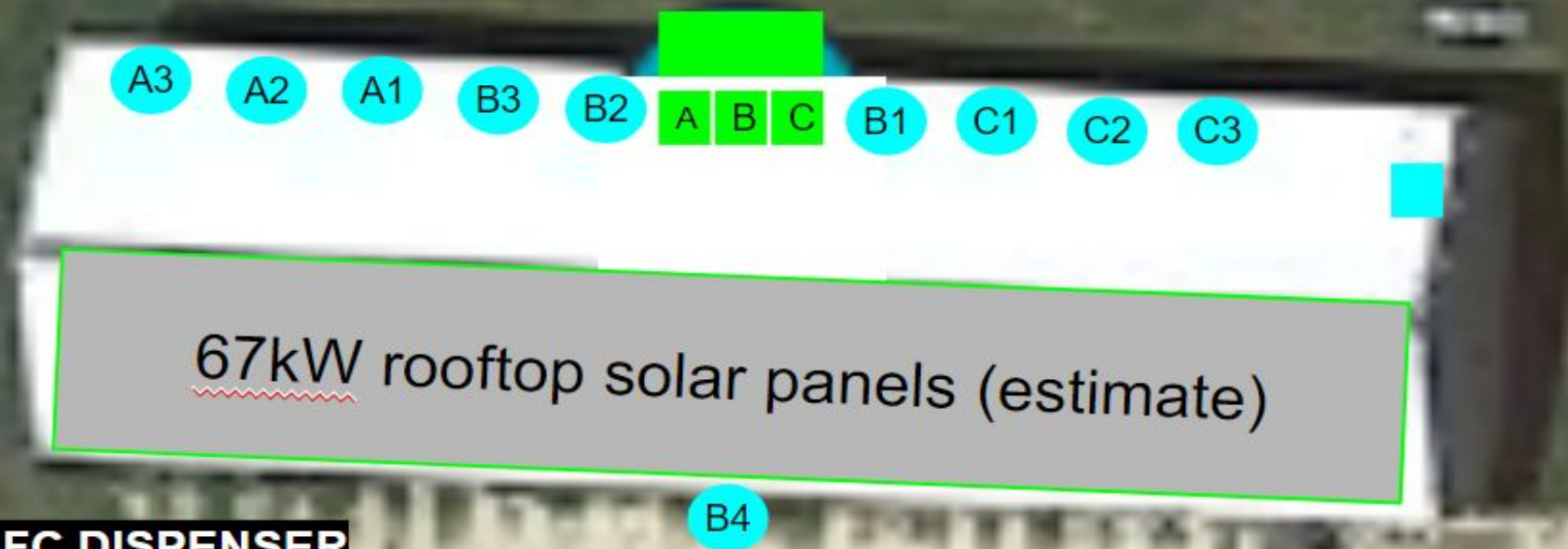


20kW LEVEL 2 AC CHARGERS



20kW LEVEL 2 AC CHARGERS

V2G SOLAR BUS BARN (with supplemental energy storage)



V2G DCFC DISPENSER

20kW LEVEL 2 AC CHARGER (mechanic bay)

125kW V2G POWER CONTROL SYSTEM

SUPPLEMENTAL BATTERY (outside north of barn)

(6) 180kWh bus batteries
(3) 130kWh bus batteries
(1) 500kWh suppl battery
1970kWh TOTAL capacity



Case Study

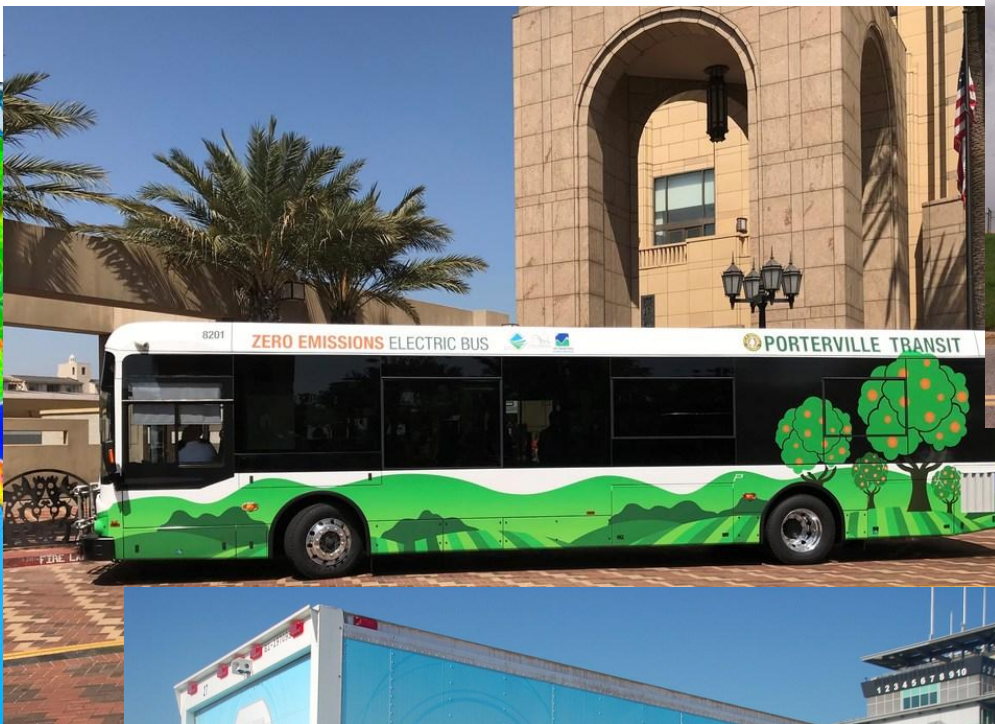
- Financial & Energy Asset Considerations
 - total cost of ownership (10 years)
 - gas/diesel vs. solar ppa
 - maintenance costs
 - V2B peak shaving
 - V2G utility programs
 - VPP opportunities down the road
 - Emergency back-up power (school & community)
- Government incentives will never again be this high







Everybody's Going Green!



STRONGER TOGETHER. SMARTER TOGETHER.



Dirty Buses = Sick Kids

School buses are the largest form of mass transportation in our country, transporting **25+million kids each day**

Children breathe **50% more air per pound of body weight** than adults and their lungs are still developing, making them especially vulnerable to cancer and respiratory diseases caused by diesel pollution.

A child sitting in the back of a school bus with windows closed is exposed to **4x more diesel** pollution than a child riding in a car in front of the same bus.



Benefits of Electric School Buses

ENVIRONMENTAL AND HEALTH BENEFITS

A single electric transit bus has been estimated to save **\$55,000 per year in health costs**;

A recent, peer-reviewed academic study suggests electric buses have a causal link to **higher academic performance**

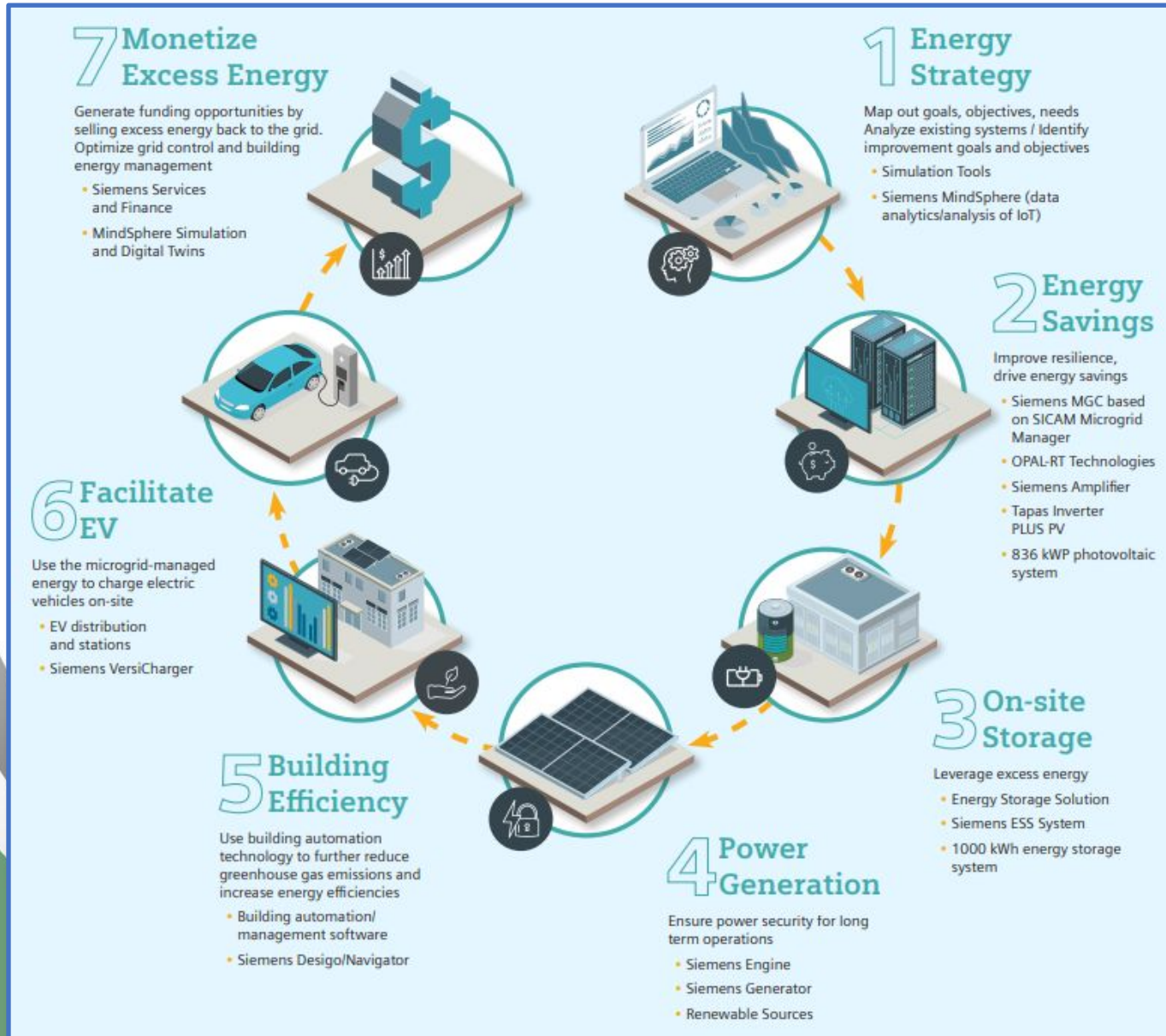
- Can be equipped with **seatbelts**
 - **Less noise pollution** and **no diesel smell**
 - Drivers report quieter bus leads to **quieter, more well-behaved children**
-



———— could result in ————

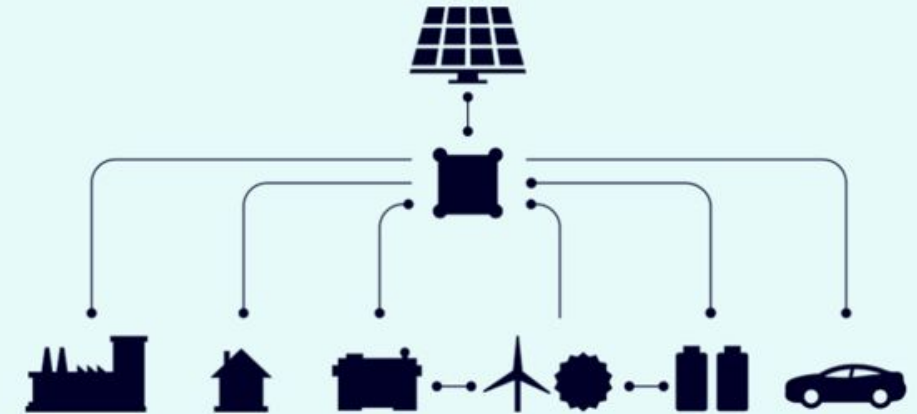
14 million fewer absences from school a year

Affordable Microgrid Technology



Connect & Manage all your Energy Assets

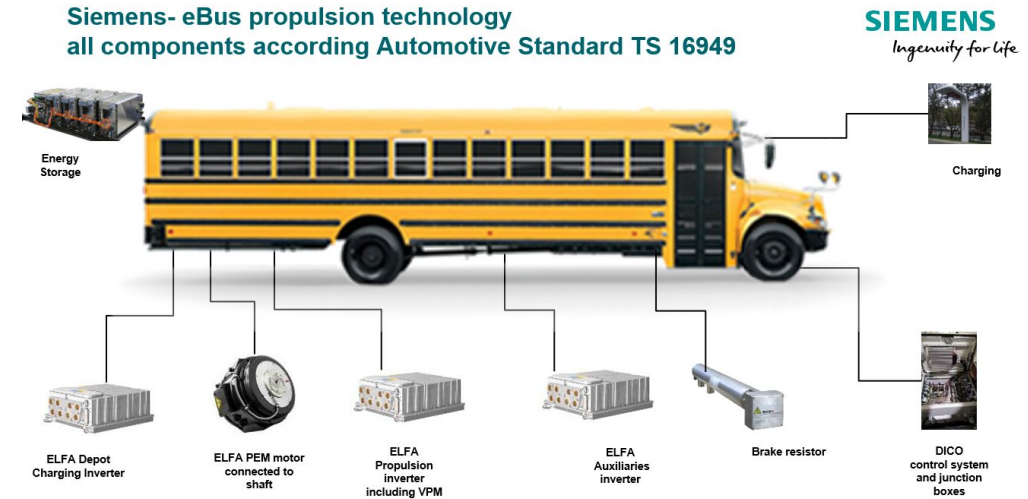
Microgrids offer a modern and efficient way to manage energy needs: They can work with the grid, independently or a combination of both. They can generate, distribute and store renewable energy for schools and campuses, among other institutions or remote areas.



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New State Incentives For Electric Vehicles



- ✓ Electric charging for cars: staff, students and guests
- ✓ Electric charging for vans, small buses and full-size school buses
- ✓ Provides EV charger rebates for customers who spread electric demand over time, benefiting the grid.

Federal Clean School Bus Program

Federal Agency: Environmental Protection Agency

Funding Amount: \$5,000,000,000

Funding Mechanism: Grant, Rebate and Contract

Recipients:

- Local or State Governmental Entities;
- An Eligible Contractor;
- A Nonprofit School Transportation Association; or
- Indian Tribe

Description:

- State or local governments, eligible contractors, and nonprofit school transportation associations are authorized to receive grant funds.
- Fifty percent of the funds are authorized for zero-emission school buses, and 50 percent of the funds are authorized for alternative fuels and zero-emission school buses.
- Funds may be prioritized for rural or low-income communities and entities that have matching funds available.
- The Environmental Protection Agency Administrator is authorized to provide funds to cover up to 100 percent of the costs for the replacement of the bus.

Timeline: Applications for funding will be made available Summer, Source White House BIL Guide, DOE



Office of Transportation and Air Quality
EPA-420-F-21-075
December 2021



Clean School Bus Program Worksheet

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		2022 Clean School Bus - Bus Inventory Sheet					Inventory Date	1/1/2022									
2	Bus Count	Bus # Used Internally by the Fleet	17-Character VIN (Check VIN tag and ensure each character is correct)	Vehicle Model Year (Click here to look up by VIN)	Gross Vehicle Weight Rating (GVWR) in Pounds (Check VIN tag)	Bus Type (A, B, C or D)	Bus Make (e.g., Thomas)	Bus Model (e.g., Vision)	Number of Student Seats	Wheelchair Lift (Yes/No)	Fuel Type (e.g., Diesel)	Avg. Annual Fuel Consumption (gallons or equivalent)	Avg. Annual Mileage	Maximum Daily Mileage	Avg. Days Used Per School Week in 21-22 School Year	Avg. Depot Dwell Time Mid-day (hours)	Avg. Depot Dwell Time Overnight (hours)
3	1																
4	2																
5	3																
6	4																
7	5																
8	6																
9	7																
10	8																
11	9																
12	10																

USDA Rural Development Program



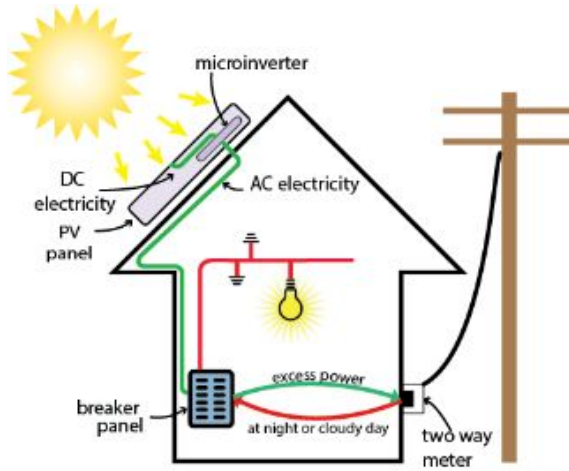
Leading the Charge: How USDA Rural Development Supports Climate Smart Solutions for Schools

USDA Rural Development (RD) is in a unique position to make climate-smart investments in rural infrastructure to help America build back better and stronger. Connecting and powering our rural schools and buses is part of that commitment. RD agencies play an important role in meeting the Biden-Harris Administration's economic recovery.

eliminate travel time and energy use for students, parents, and teachers. The DLT program also supports opportunities for lifelong – not just school-aged – distance learning.

Certain Community Facilities Programs (available at this link: <https://go.usa.gov/xzPBG>) can finance school construction and rehabilitation, as well as fund the acquisition of electric school buses and other service vehicles. Community Facilities funding can also support charging infrastructure owned by a school district, nonprofit or government agency.

Solar Incentive Program Relaunch



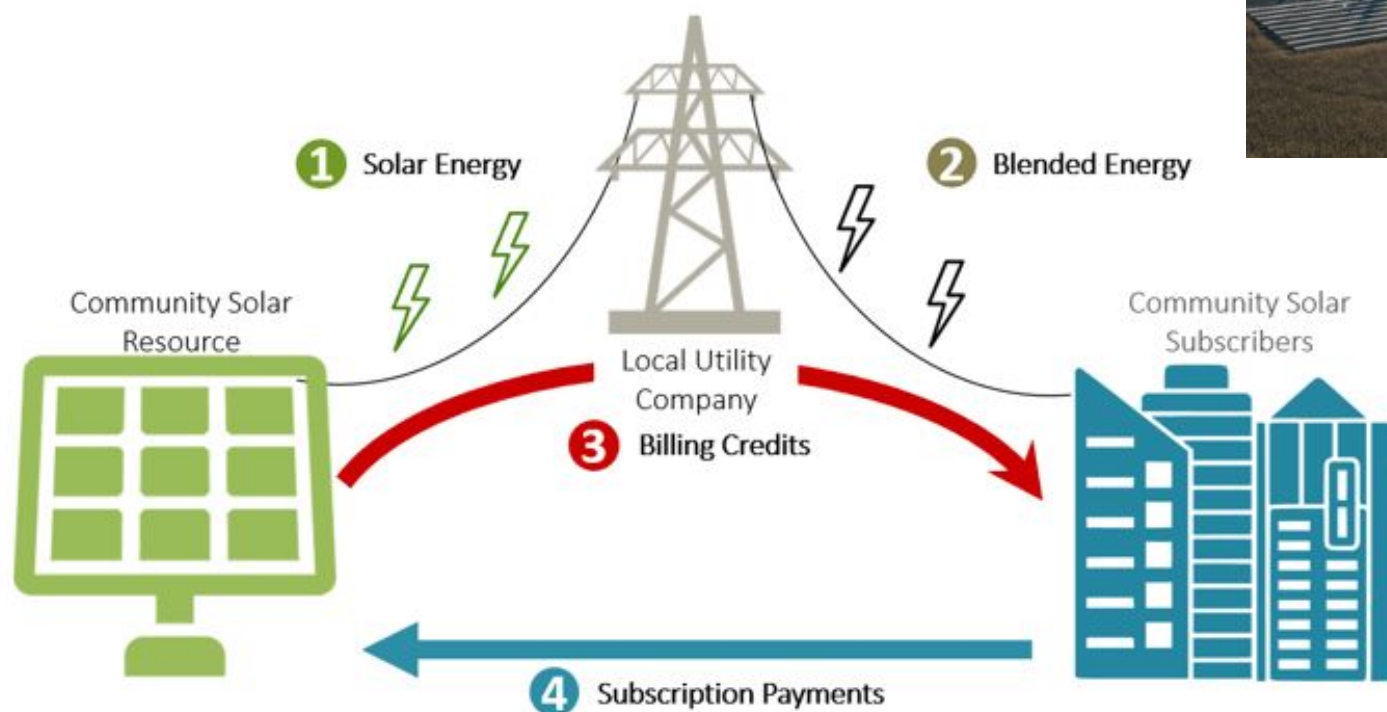
- Substantial increase in budget for most programs
- Budget resets annually, but incentives still decrease over time
- Open to 3rd party owned systems (Power Purchase Agreements)
- New set-aside for Public Schools (use it or lose it)
- New program launches August 2022

Net Metering & Utility Rebates



- Value of net metering & utility rebates stable thru Dec 31, 2024
- Then net metering & utility rebates to change once solar exceeds 5% threshold
- System size cap increased to 5 megawatts

Community Solar Subscriptions



- 1** Community Solar asset delivers energy to the Local Utility.
- 2** Local Utility delivers blended energy to consumers
- 3** Local Utility applies on-bill credits to Community Solar Subscribers.
- 4** Subscribers pay a portion of their on-bill credits to the Community Solar developer

New Incentive for Energy Storage



- Rebate value stable thru Dec 31, 2024
- Open to 3rd party-owned systems >> can combine with federal tax credits & no upfront costs
- Can be added to existing net metering systems

Questions and Answers

We thank you for your time!

Presenters:

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