Bright Future Ahead

Renewable Energy on Schools and in Classrooms

May 19, 2021

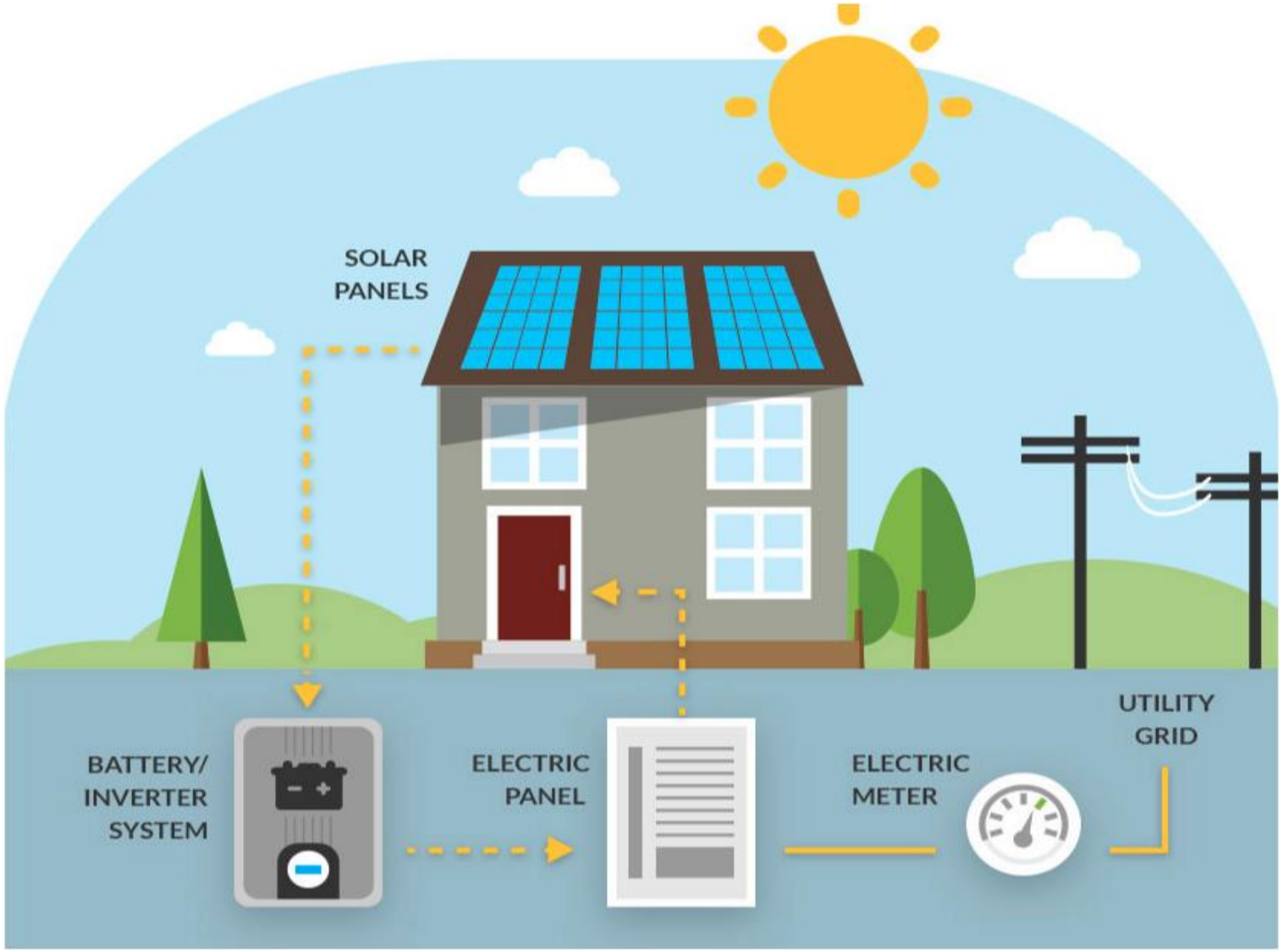
Presentation Highlights

- Site Assessments
- Analyzing Utility Data
- Incentives
- Monetizing the Value of Solar
- Economics and Finance
- Solar in the Classroom
- Questions and Answers

Welcome to the Solar Coaster!

- Is there **interest** in solar and/or energy storage?
- What ***motivates action*** in your district?
- Do you have a ***plan***?
- Do you have the ***resources***?
- Do you have a ***timeline***?

Solar PV and Energy Storage – How it Works



"Photovoltaic" means conversion of sunlight into electricity

Assessing Sites To Optimize Energy Production Value

Solar PV Design Options

Application	Cost	Production	Economic Value
Ground Mount	$	High	Very High
Rooftop	$	Average	High
Carport	$$	Average	Average
Parking Garage	$$$	Average	Poor

Questions to Ask?

- How much energy (kWh) is consumed each year on-site
- What site constraints must be managed to succeed
- Do my utility provider rates support a high value of solar

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Understanding the Utility Environment

Net Metering Policies

- *Influence:* **how energy production** is **valued** on utility invoice
- *Higher value:* credited at "**retail**" rate
- *Lower value:* valued at "**avoided cost**" rates

Energy Consumption Information (Utility Invoice History)

- *Compile:* **minimum of 12-months** of concurrent utility invoices
- *Consider:* are the bills from an **average year** (non-COVID)
- *Review:* **rate tariffs** to determine value of solar ($/kWh)

Interconnection Process

- *Understand:* **each utility** has its own interconnection process
- *Engage:* **developers and utility staff** to learn about the process
- *Plan:* **align resources** to avoid delays and mitigate ($$$) risks

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Incentives: Support Project Economics

Utility

- Check with local utility provider about available incentives

Federal, State and Municipal

- Grants and other funding matches
- Sales Tax Exemption (developer pass-through savings)
- Pass through ITC and MARCS depreciation (third-party financed projects ONLY)

Non-Profit

- Focus on Energy – Prescriptive Renewable Energy Incentive
- MREA / Couillard Foundation - Solar on Schools Program

Securing incentives is a time sensitive process often with limited funding.

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Monetizing the Value of Solar

Reduce Energy Consumption

- Energy production offset amount purchased from utility

Improve Operational Cashflow

- kWh produced by solar reduces amount purchased
- Lower monthly utility costs

Hedge Against Future Energy Costs

- Investing in solar energy places a hedge on escalating energy costs

Description	Energy Use (kWh)		Max Demand (kW)	Charges	
Annual	**On Peak**	**Off Peak**	**Max Peak**	**Other**	**Total**
Current	745,362	353,914	3,862	$2,274	$115,849
With Solar	580,482	289,846	3,667	$2,274	$97,447
Energy Production (Offset)	**164,880**	**64,068**	**195**	**$ -**	**$18,402**

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Project Economics and Financing

Project Economics

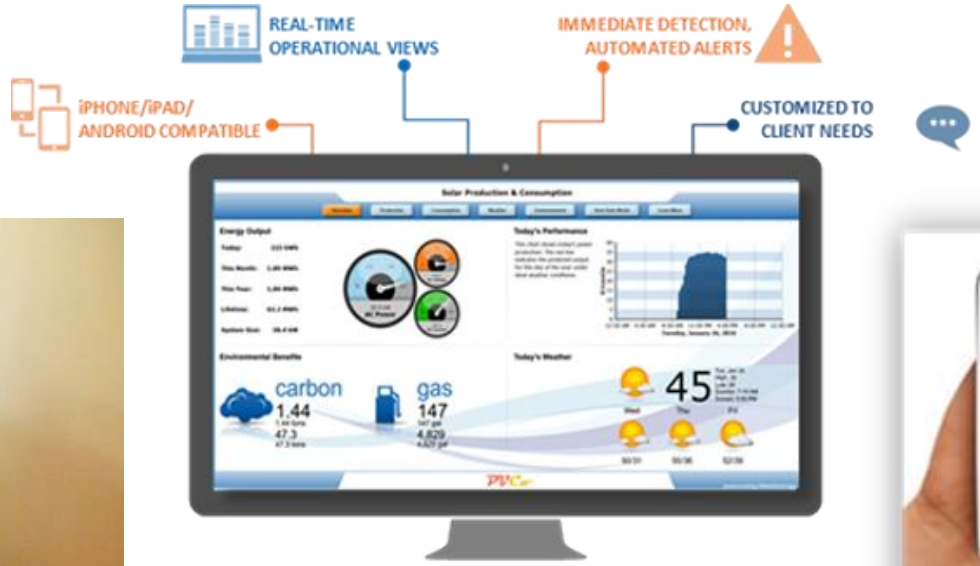
- **System Size (kW):** how large is the system
- **Annual Energy Production (kWh):** how much energy is produced per year
- **Value of Solar ($/kWh):** what is the monetized value of the solar production
- **Total System Costs ($/watt):** design, development, and construction costs
- **Operations & Maintenance ($/kW/Yr):** costs to maintain the system over time
- **Return on Investment:** good projects will return greater than 100%
- **Net Present Value:** investment in solar often generates strong NPV

Financing Options

- **Capital/Operating Funds:** capital improvement or allocated operating funds
- **Bonding:** low-cost capital can be used to hedge escalating future energy costs
- **Lease Purchase Financing:** use future energy savings to finance investment in solar using operating funds
- **Third-Party Financing:** require no-upfront $. Pass through benefit of solar ITC

Bring Solar into the Classroom

- **Data Acquisition Systems:** collect, record, & trend real-time and historical data
- **Data Accessibility:** url link connects anyone, anywhere to data set
- **Curriculum Opportunities:** tailor curriculum by grade level and class emphasis
- **Kiosk:** display information in high-traffic area to communicate value and action



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Is your school district ready to go solar?

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