



On-Site Solar for Businesses, Farms, and Other Organizations

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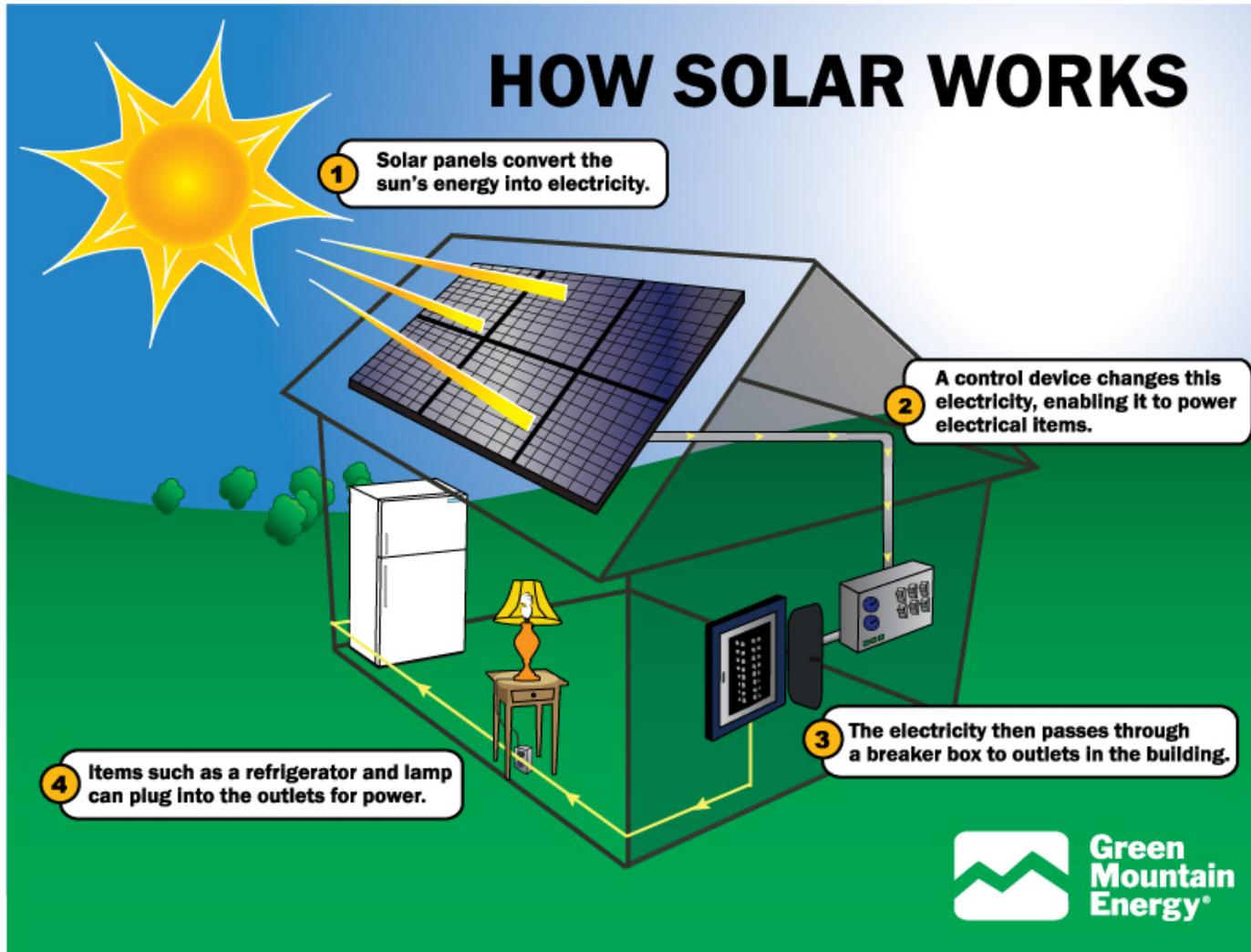


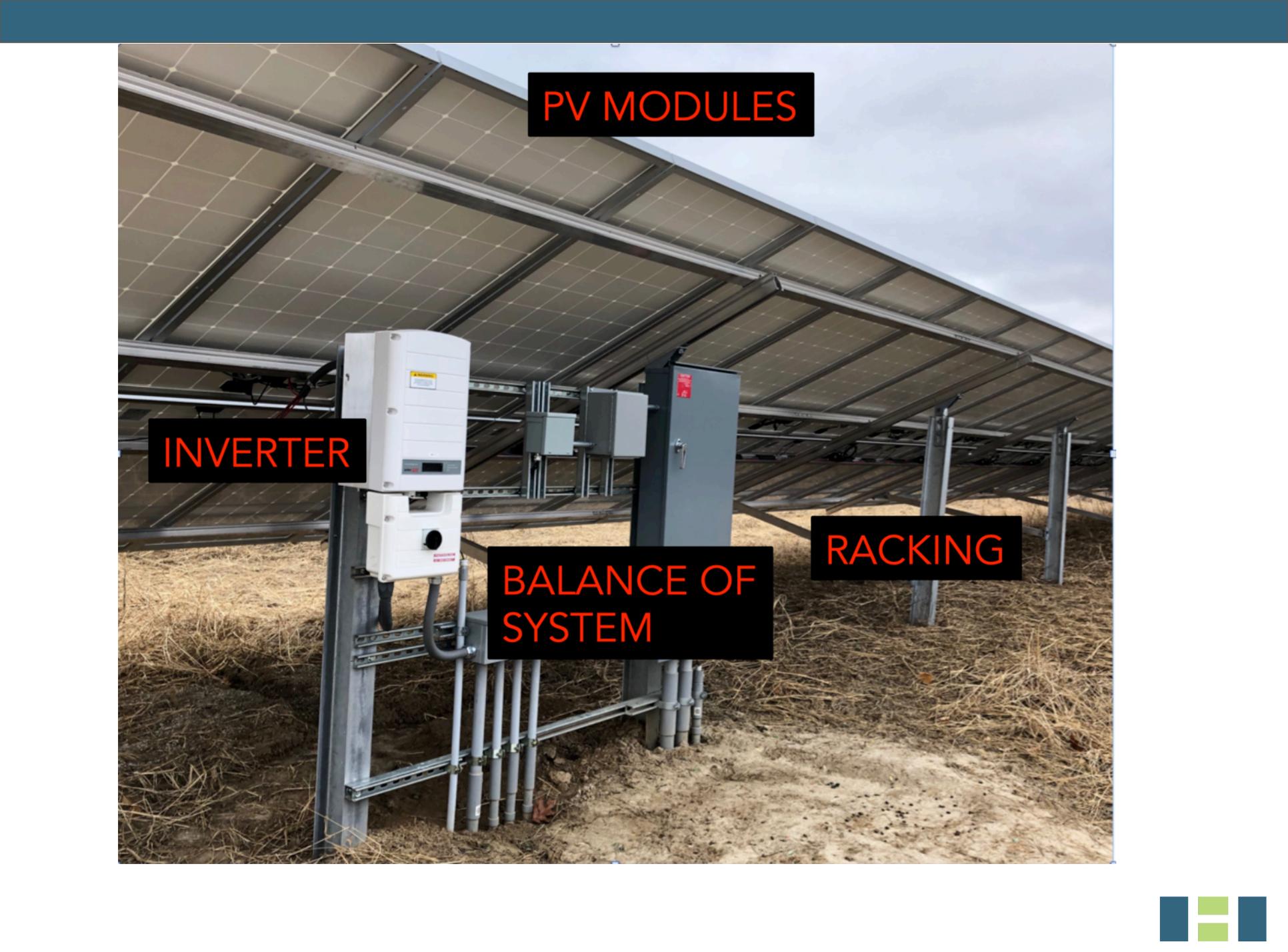
Why are we here?

- Describe your on-site solar PV (photovoltaic) system options
- Describe energy storage (batteries)
- Describe when and how solar is financially beneficial
 - On-site solar can provide electricity at a lower cost than buying it from your utility
 - Batteries can provide peak load management and back-up power
 - Utilize tax and other incentives
- Describe how to work with Wisconsin solar installers
- Answer your questions about solar energy



How are Solar PV panels used in a building?





PV MODULES

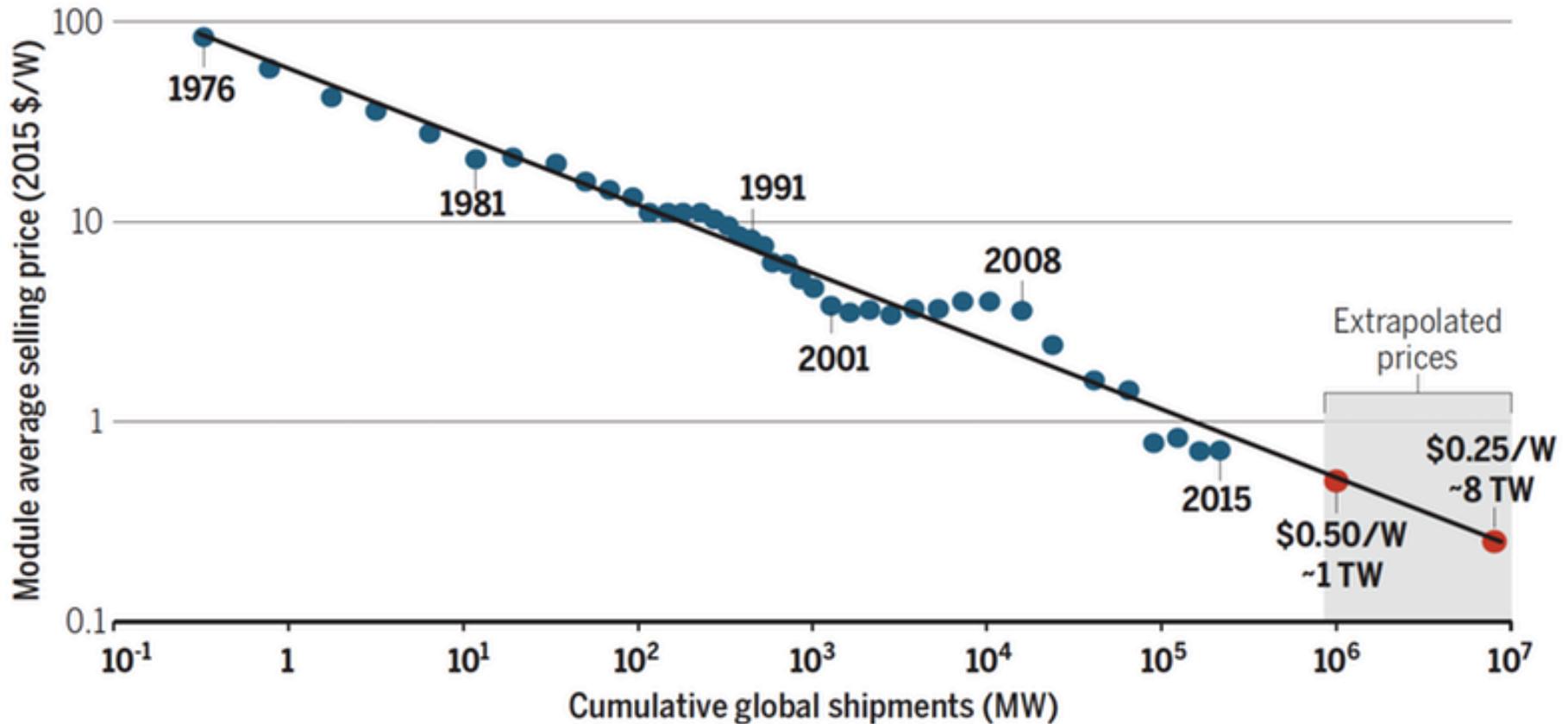
INVERTER

BALANCE OF
SYSTEM

RACKING



Declining Module (panel) Price



Solar Market Issues in 2022

- Increasing utility rates
- General inflation, labor shortages, component shortages, significant demand growth for PV
- Federal ITC (Investment Tax Credit) 30% rate is restored in 2022 with the IRA (Inflation Reduction Act)
 - Covers maximum 60% of system cost including batteries (10% adders for economically distressed areas, American-made components, low income...)
 - Rules are being defined
 - Non-tax-paying organizations can receive direct payments starting in 2023



Solar Options for your business

- Roof Mounted
 - Allow for up to 6 lbs/square foot
 - Have your structural engineer verify the roof can take the added weight (usually not a problem)
 - Install on new or newly resurfaced roofs (up to 5 years old) to avoid removing solar system to re-roof
- Ground Mounted
 - Requires open land that you can use for solar (and pollinators/grass)
 - Plan for at least 30 years (but you can change your mind later)
 - Locate solar panels at height and angles to help clear snow cover (36 inches) and allow occasional mowing if needed



Solar Options for your business - continued

- Parking Lot Mounted
 - Provides power as well as shade for cars – consider snow slide and plowing
- Battery Energy Storage for peak shaving, back-up, and arbitrage
- EV (Electric Vehicle) Charging Stations
 - Customer and employee service (they can pay for charging)





Baraboo Middle School





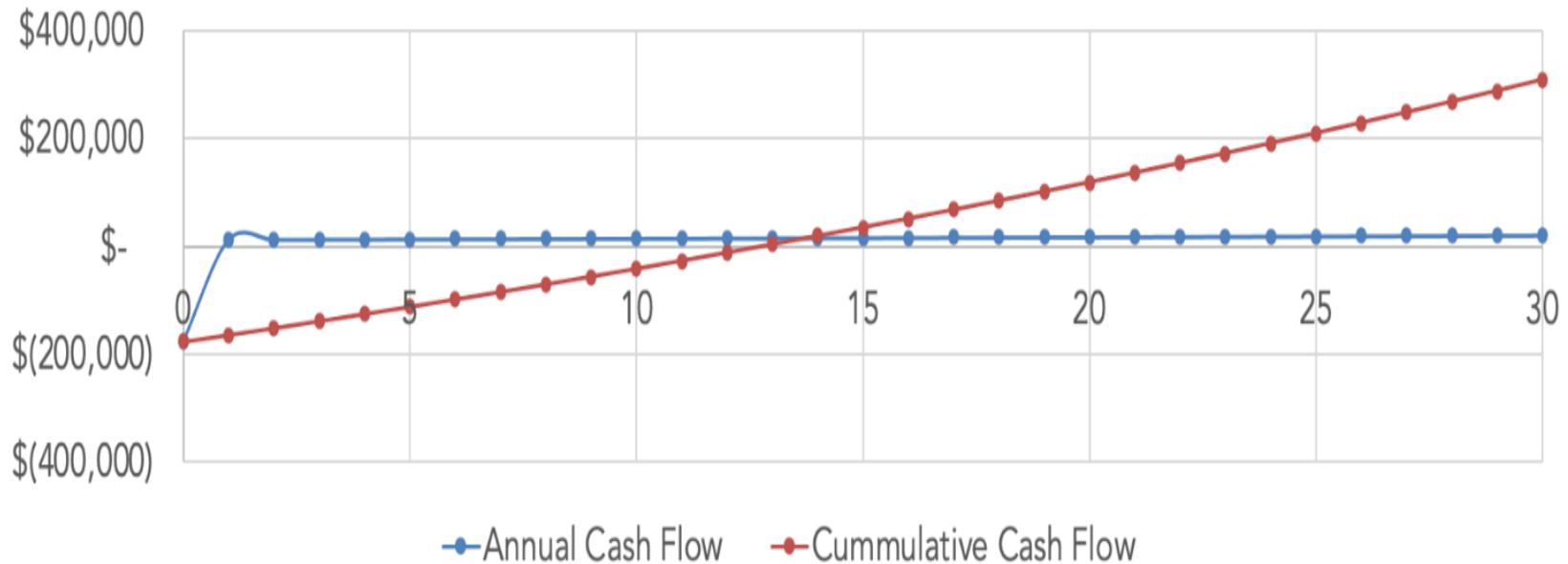
Baraboo HS



Sauk County HCC solar 226 kW-dc PV– Reedsburg



Baraboo School District Direct Purchase of 150 kW-dc solar PV without 30% tax credit direct payment



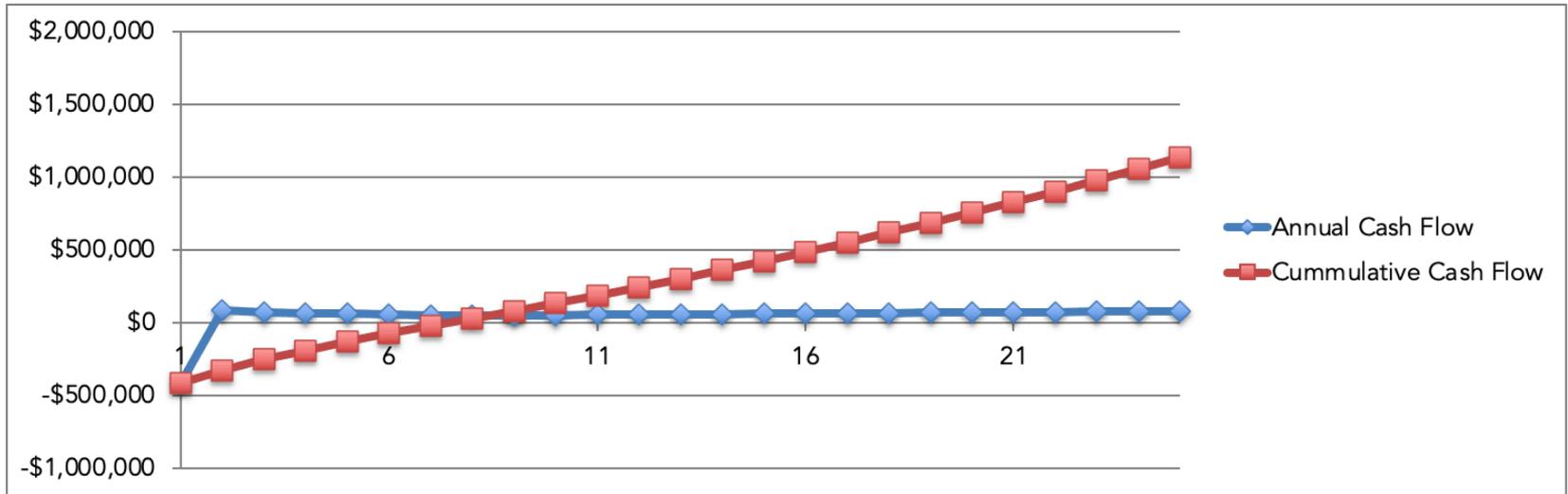
Year	IRR	Discounted NPV
20	5.1%	\$19,308
25	6.6%	\$56,282
30	7.4%	\$89,359



Proposed Cold Storage Facility in Central Wisconsin

400 kW DC PV System

includes 22% Tax Credit (will now be 30%)



Year	IRR	Discounted NPV
20	14.1%	\$299,200
25	15.0%	\$423,004
30	15.4%	\$533,996



Battery Storage System Benefits

- Energize the site when the grid does down
- Store power when it is of low value
- Discharge power when it is of high value
 - Clipping peak demands
 - Reducing peak time of day power use
 - Discharging power to the grid when of greatest value to the grid

Limitations

- Prices are still high
- If/when you want protection from grid outages, you cannot fully discharge the battery for other uses like clipping peak demand



Next Steps if a business wants to invest in solar

1. Study and plan the cost and financial performance of the solar (battery and EV) options: Feasibility Study
 - Siting options, PV system sizing and installed cost estimation, electricity use and demand cost savings, grants, and risk analysis
 - Work with your accountant to leverage the ITC and depreciation
2. Grant applications/writing (if applicable)
 - Solar for Good, Solar on School, etc.
3. Issue competitive solicitation for design and installation
 - Include project scope and pricing for a long-term maintenance agreement (annual inspection, cleaning, etc.)
 - Ensure you get training on monitoring and maintenance



Next Steps if a business wants to invest in solar - Continued

4. Evaluate results of the solar PV (EV charging, and battery system) bids. Make decision on whether and when to install solar PV and potentially battery and EV charging stations
5. Contract with the preferred system installer
6. Submit PV incentive reservation to the Wisconsin Focus on Energy Program.
7. Interconnect with your electric utility

Process can be completed within 12 months

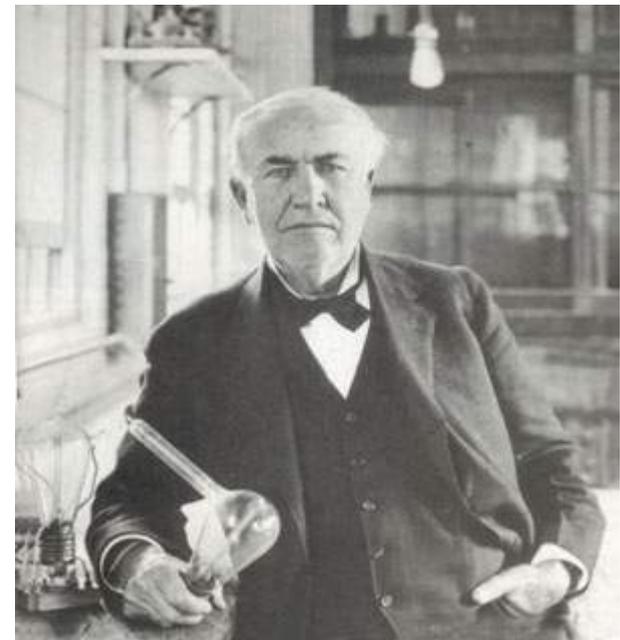


“I’d put my money on the sun and solar energy. What a source of power! I hope we don’t have to wait till oil and coal run out before we tackle that.”

- *Thomas Edison*

We are like tenant farmers chopping down the fence around our house for fuel when we should be using Nature’s inexhaustible sources of energy — sun, wind and tide. ... I’d put my money on the sun and solar energy...

In conversation with Henry Ford and Harvey Firestone (1931); as quoted in *Uncommon Friends : Life with Thomas Edison, Henry Ford, Harvey Firestone, Alexis Carrel & Charles Lindbergh* (1987) by James Newton, p. 31



What questions do you have?

