Strategies and Resources for Local Jurisdiction Solar PV Procurement

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Grow Solar
An initiative of the Midwest Renewable Energy Association

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Introductions

Grow Solar

- An initiative of the Midwest Renewable Energy Association to promote solar installations in Minnesota, Wisconsin and Illinois (sponsored by the US Department of Energy).

Illinois Green Economy Network (IGEN)

- Grow Solar program manager for activities in Illinois

Metropolitan Mayors Caucus and Elevate Energy

- Grow Solar project partners responsible for outreach and coordination

The Power Bureau

- Grow Solar technical advisor responsible for site evaluations and solicitations

IAWA & CSWEA

- Industry associations representing the wastewater and water resource entities in the Midwest

Solar Background: Technology

Solar Photovoltaic (PV) Technology

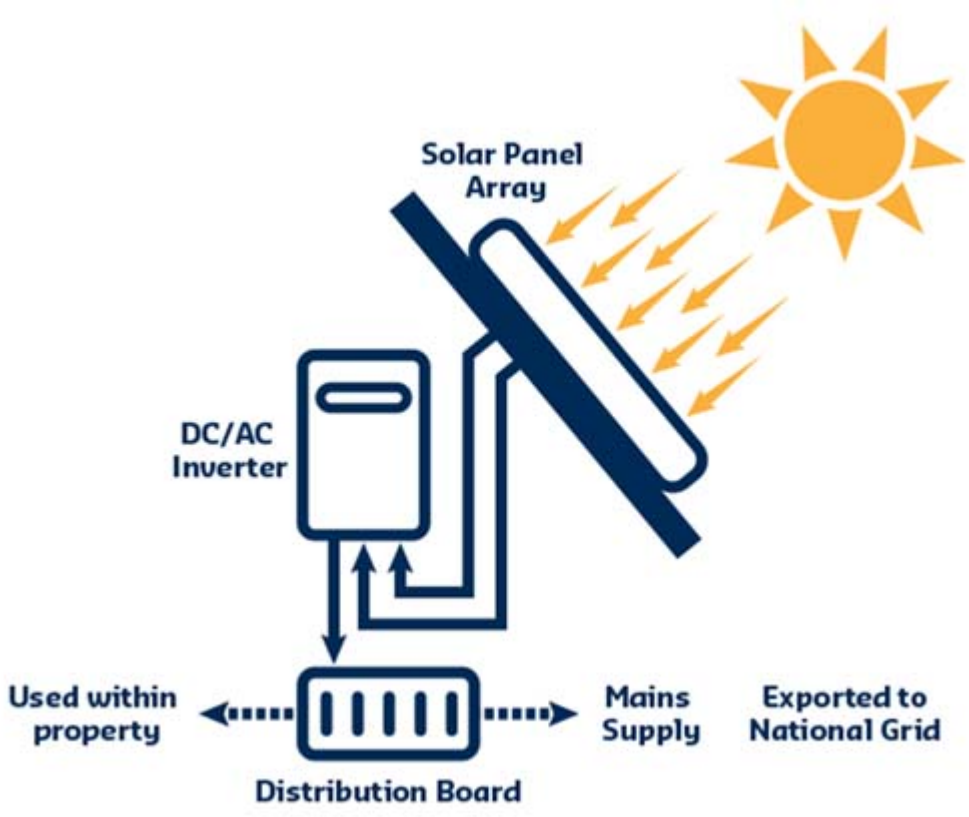
- Converts solar irradiance into electricity

Applications

- Single panels or multiple panels ('arrays')
- Roof-mounted or ground-mounted
- Distributed (on-site use) or grid connected (exported off-site)

Benefits

- Sustainable and non-emitting source of energy
- Long life-cycle for equipment (20+ years)
- Can offset all or a portion of traditional utility costs



Solar Background: Policies

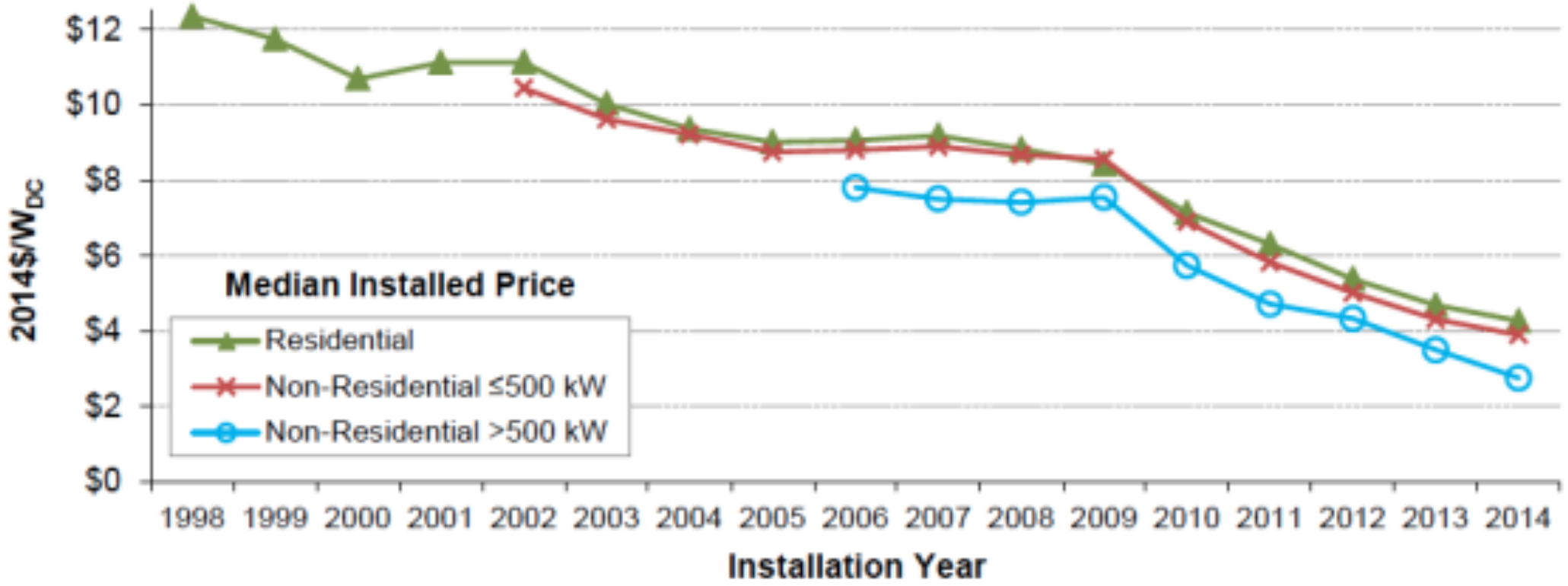
Renewable Portfolio Standard

- Sets a goal of 25% renewable energy by 2025
- Applies to areas in Illinois served by Commonwealth Edison, Ameren, and MidAmerican
- Goals must be met by electricity supply provider (either the utilities or a retail electricity supplier)

Solar Specific Items

- Solar Carve Out: 6% of annual RPS goal
- Compliance verified by the purchase of Solar Renewable Energy Credits (SRECs)
- Allows for net metering

Solar Background: Cost Trends



Note: Median installed prices are shown only if 20 or more observations are available for a given year and customer segment.

Solar Background: Finance

Typical sources finance for solar PV installations -

- Avoided Energy Costs
  - Peak Period Energy Supply + Capacity
- Tax Incentives
  - Investment Tax Credit (30% of capital cost for installation) + Accelerated Depreciation
- SREC Sales (1 SREC per 1,000 kWh of solar generation)
  - $20-150 per SREC
- Grants
  - Illinois Department of Commerce and Economic Opportunity
  - Illinois Clean Energy Community Foundation

Why POTW's

Net-Zero-Energy Wastewater Treatment

- Focus on generating on-site power resources to support water treatment activities

Focus on sustainability

- Many view POTW's as natural resource agencies

Large energy users

- Can support a range of potential solar project sizes and configurations

Long-term view and planning

- Sustained focus on engineering and capital project planning

Creditworthiness

- Make an attractive counterparty for solar developers

Finance and Funding: Self-Finance

Host finances project on its own, <u>but</u> cannot capture tax incentives

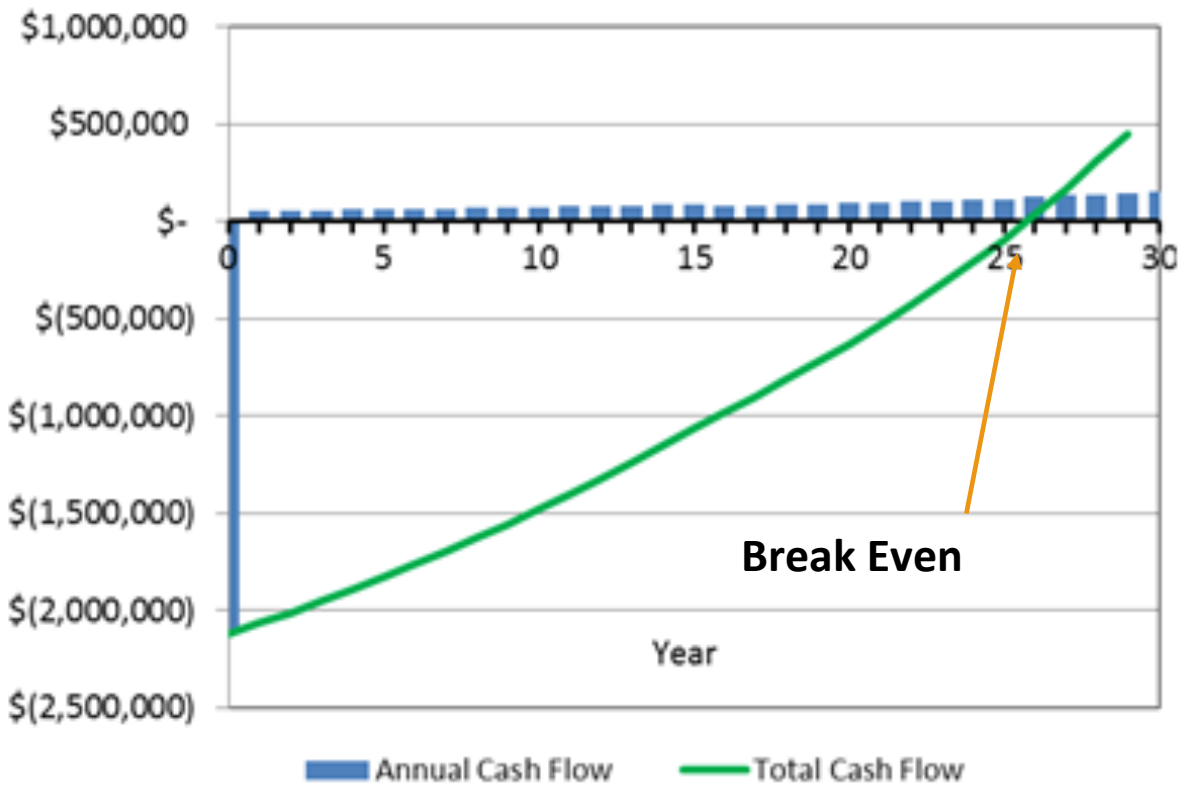
- Cash Reserves
- Operating Funds

Advantages

- Low Cost of Capital
- Most transparent
- Only internal parties

Disadvantages

- Long term payback
- Cannot capture tax benefits



Cash Purchase without tax incentives (500kW, $1M, $0.09/kWh)

Finance and Funding: Third-Party

Developer finances project capital with outside financial sources, and the host makes scheduled payments to the Developer

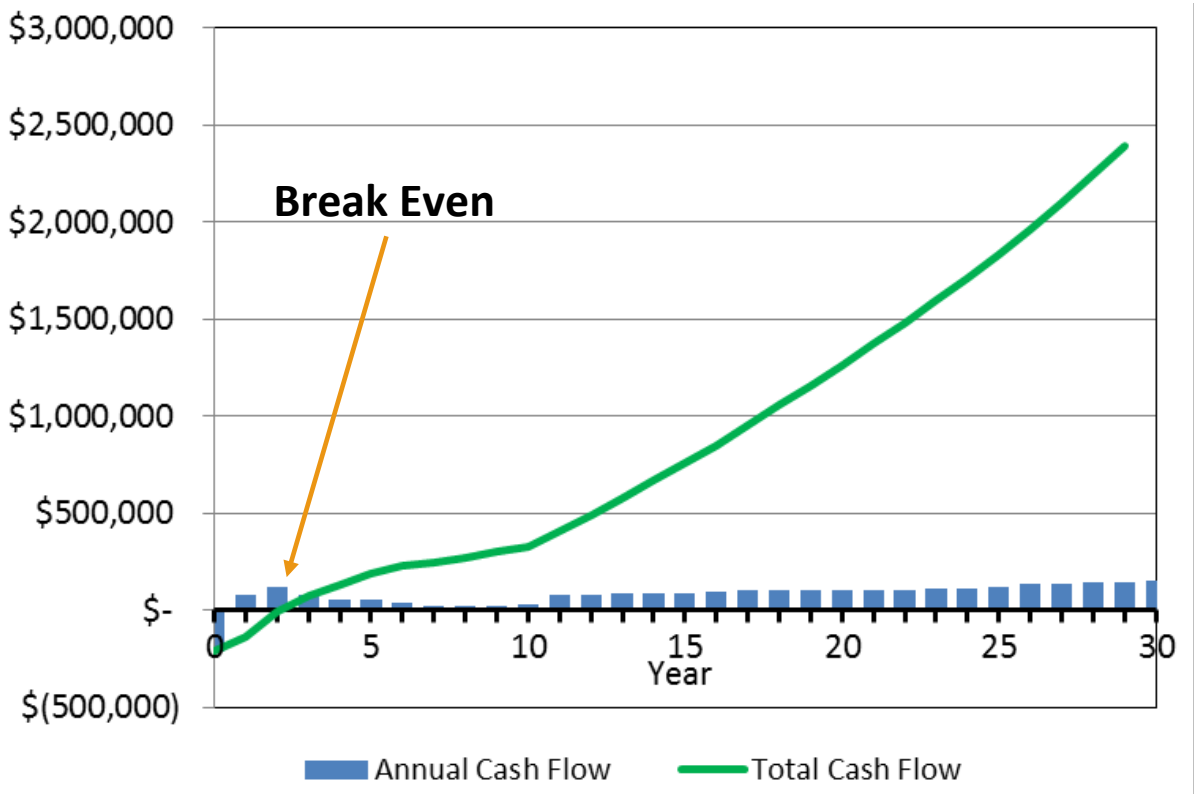
- Lease payments
- Power purchases

Advantages

- All incentives monetized, projects that were impossible without incentives now are viable

Disadvantages

- Higher cost of capital to Host



Power Purchase Agreement

Finance and Funding: Third-Party

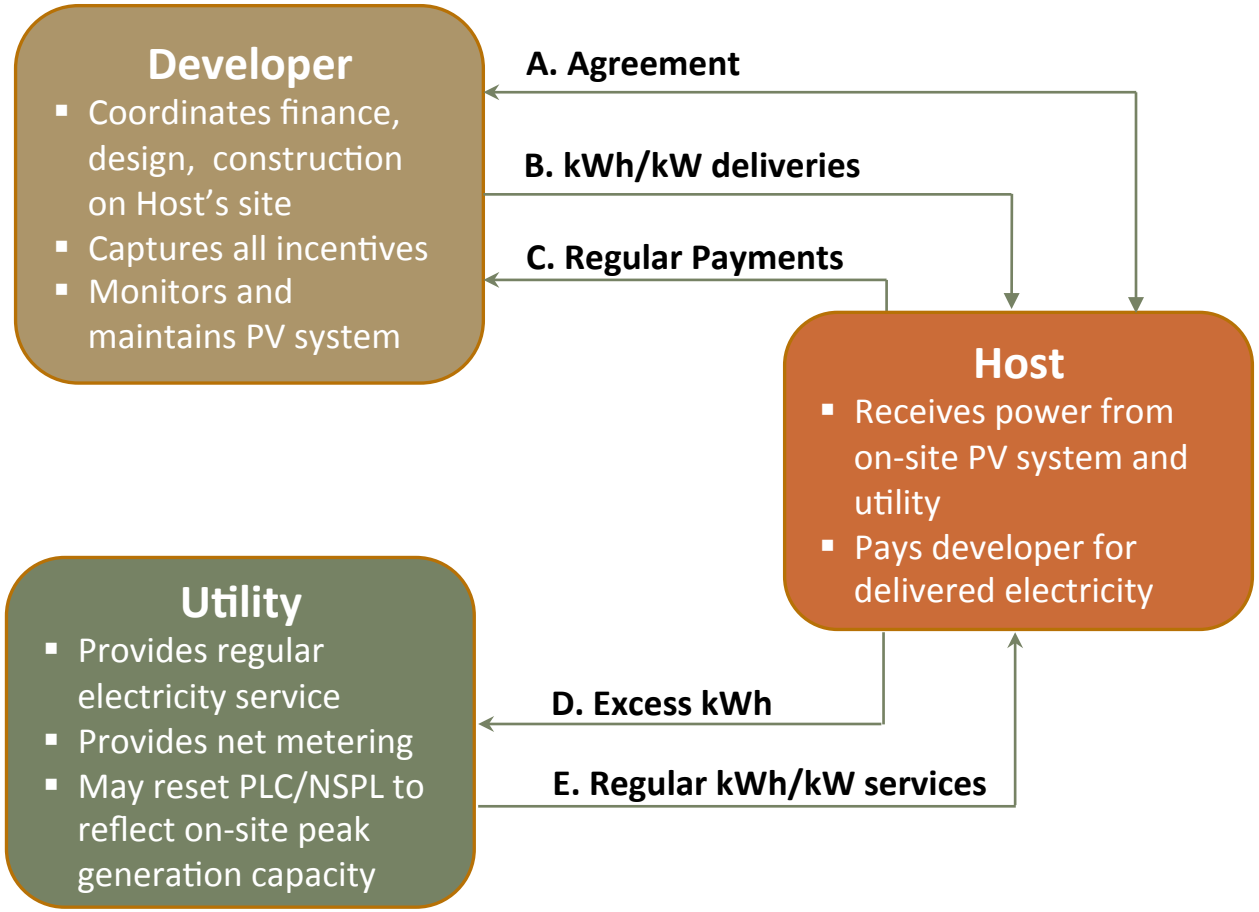
A. Negotiated Agreement
- Duration, prices, deliverables, etc.

B. Energy Deliveries
- As metered

C. Regular Payments
- Purchase the energy generated
- Negotiated price and schedule

D. Export Excess Energy to Grid
- Through local utility

E. Receive regular Utility Services
- Continued relationship



POTW Solar Project Approach

Objectives

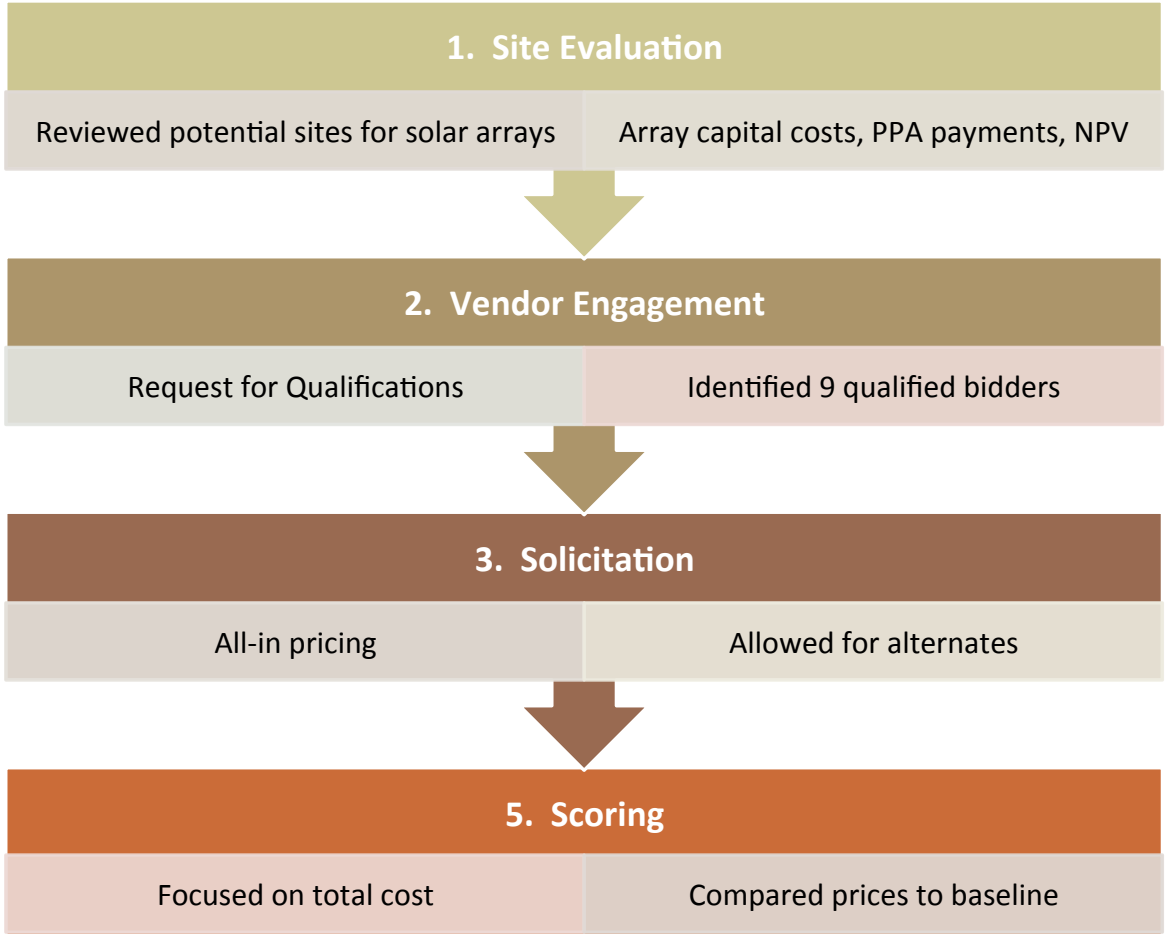
- Identify sites where solar could have high potential value
- Provide a pathway for soliciting offers from qualified solar developers

Benefits

- Provides a preview for project economics
- Allows POTW to eliminate low-value projects

General findings regarding solar value

- Higher value in ComEd region
- Power Purchase Agreements allowed for better economics than direct purchases



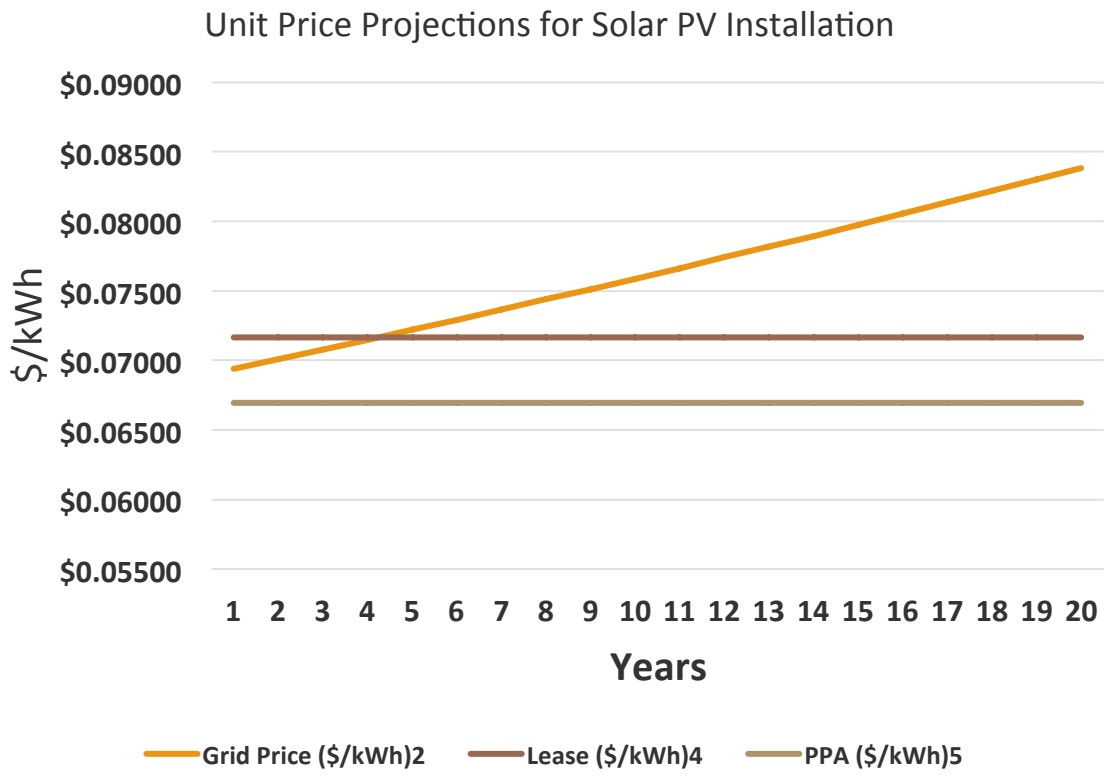
Case Study: DeKalb Sanitary District

Initial Project

- Identified 10 potential sites
- Ground- and roof-mounted systems

Economic Evaluations

- Using very conservative assumptions
  - **2 vacant sites eliminated**
  - **6 remaining sites showed potential**
  - **3 ground sites had the best potential (assuming a 1% per year increase in grid electricity supply)**
- Current site electricity costs: $0.069/kWh
  - **Electricity supply (volume related elements only)**
  - **Distribution (volume-related elements only)**
  - **Taxes (volume-related elements only)**



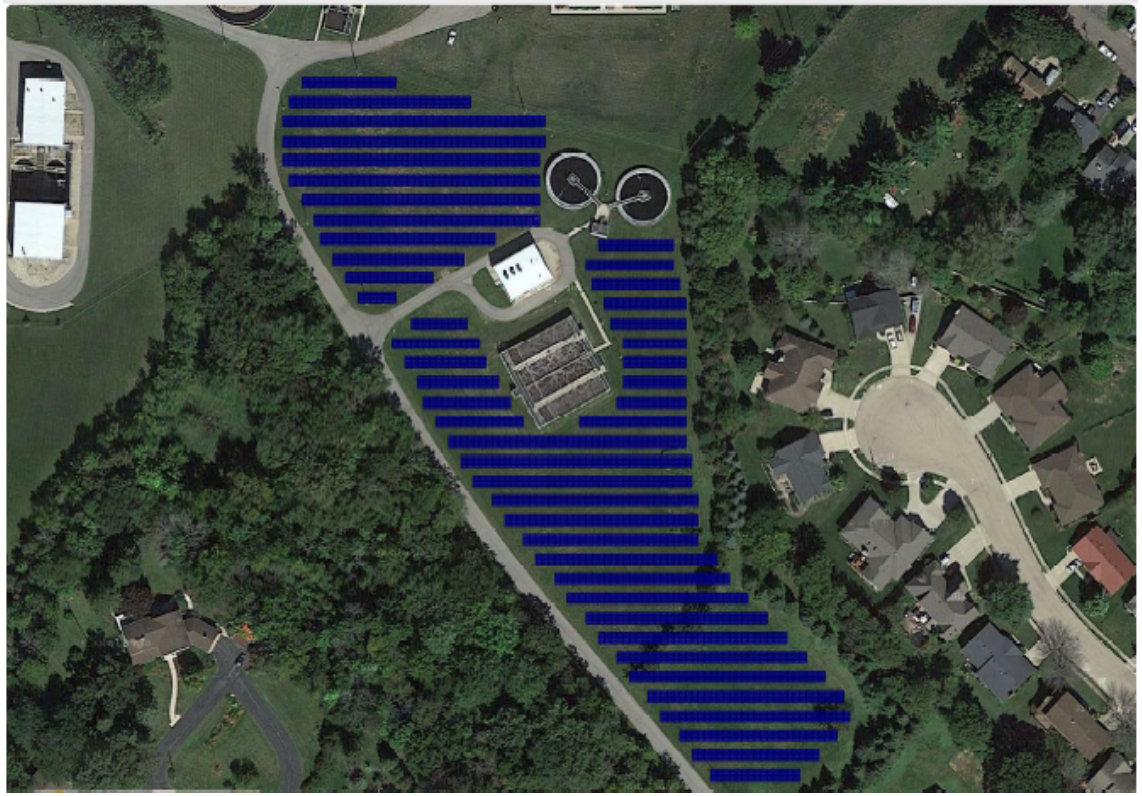
Case Study: DeKalb Sanitary District

Bid Results

- Lead bidder combined the three ground-mount locations into a single offer:
  - **kW AC Capacity: 1,360.80**
  - **kWh AC Output Year 1: 1,805,509**
  - **kWh AC Output 20-Years: 34,394,955**
  - **Total Area Requirement: 208,200 sq. ft.**
- Also included utilizing battery storage to improve system functionality

Economics (20 Year PPA)

- Fixed price without escalations
  - **SRECs sold at $100: $0.049/kWh**
  - **SRECs sold at $0: $0.059/kWh**



Discussion

Thank you for your time and consideration

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