Local Jurisdictions Going Solar with Leases and Power Purchase Agreements

SOLAR POWERING IOWA CONFERENCE 2016
MARCH 24, 2016
THE POWER BUREAU
Overview

Introductions

Public Sector Considerations

Financing Structures
  ◦ Owner Financing
  ◦ Third Party Financing

Procurement with a Power Purchase Agreement

Key Questions

Discussion
Introductions

Mark Pruitt
Introductions

Mark Pruitt

- Currently
  - Principal, The Power Bureau – Energy Planning and Procurement
  - Principal, Illinois Community Choice Aggregation Network – Municipal aggregation planning, procurement
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◦ Currently
  ◦ Principal, The Power Bureau — Energy Planning and Procurement
  ◦ Principal, Illinois Community Choice Aggregation Network — Municipal aggregation planning, procurement

◦ Formerly
  ◦ Director, Illinois Power Agency — Wholesale Electricity Procurement for Ameren and ComEd. Managed the Illinois Renewable Portfolio Standard
  ◦ Program Director, Energy Resources Center — Retail Electricity and Natural Gas purchasing manager for 32 state agencies and local municipalities
  ◦ Project Developer, Nicor Energy Solutions — Cogeneration and efficiency project development for federal facilities
<table>
<thead>
<tr>
<th>BENEFITS</th>
<th>CHALLENGES</th>
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Public Sector Considerations
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**BENEFITS**

**Long term stability**
- Public sector facilities tend to remain in operation over the long term

**CHALLENGES**

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**Policy Positions**
- Sustainability
- Renewable Portfolio Standard

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- Competition for limited capital
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**Procurement Requirements**
- Project specifications
- Provider qualifications
- Selection criteria (price, value, etc.)
- Final approval from Board
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- **Contract Terms**
  - Non-appropriation clause
Financing Structures: Overview

Need for Financing with Solar PV Projects

◦ Secure capital to support development of projects
◦ Designed with specific project and owner characteristics in mind
Financing Structures: Overview

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Revenue Streams that Support Solar PV Project Finance
- Avoided Costs – Electricity supply/capacity/transmission/distribution/taxes
- New Revenue – SREC sales, Tax Credits, Depreciation, Grants
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- Avoided Costs – Electricity supply/capacity/transmission/distribution/taxes
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General Financing Structures
- Owner Financed – Cash, Debt
- Third Party Financed – Leases, Power Purchase Agreements
Financing Structures: Public Sector

Public sector project
- 500kW, $2 million capital cost
- Offsetting $0.09/kWh grid supply
- Funded with cash reserves, no grants, no tax or SREC benefits
- All savings retained by host
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Advantages
- Low Cost of Capital
- Most transparent
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Disadvantages
- Long term payback
- Tend to be driven by grants
Financing Structures: Private Sector

**Private sector project**
- 500kW, $2 million capital cost
- Offsetting $0.09/kWh grid supply
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![Break Even Graph](image-url)
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Advantages
- Low Cost of Capital
- Substantial tax benefits
- Near-Term payback
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- Near-Term payback

Disadvantages
- Must compete with other investment options

Break Even
Financing Structure: Third Party

**Third Party project**
- 500kW, $2 million capital cost
- Offsetting $0.09/kWh grid supply
- Capital funded by developer,
- Supported by payments from host through a lease or Power Purchase Agreement

![Break Even](image)
Financing Structure: Third Party

Third Party project
- 500kW, $2 million capital cost
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- No / little initial capital for host
- Tax benefits flow to the third party developer

Break Even
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- No / little initial capital for host
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Disadvantages
- Complexity
- Long term relationship between host and developer

Break Even

![Graph showing annual and total cash flow with Break Even point marked at 20 years.](chart.png)
## Financing Structure: Third Party Options

<table>
<thead>
<tr>
<th>Operating Lease</th>
<th>Capital Lease</th>
<th>Power-Purchase Agreement</th>
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<tbody>
<tr>
<td>◦ Host pays fixed periodic fee, equivalent to expected energy production</td>
<td>◦ Host pays fixed periodic fee, equivalent to expected energy production</td>
<td>◦ Host pays only for energy produced</td>
</tr>
<tr>
<td>◦ Host carries “technology risk”</td>
<td>◦ Host carries “technology risk”</td>
<td>◦ Eliminates “technology risk”</td>
</tr>
<tr>
<td>◦ Lessor takes all tax credits</td>
<td>◦ Lessor takes no tax credits</td>
<td>◦ Hedges against fluctuating utility and energy market costs</td>
</tr>
<tr>
<td>◦ Lessor responsible for O&amp;M cost</td>
<td>◦ O&amp;M may be Host’s responsibility</td>
<td>◦ PPA provider responsible for O&amp;M cost</td>
</tr>
<tr>
<td>◦ End-of-term cost is “fair market value”</td>
<td>◦ End-of-term cost is nominal</td>
<td>◦ More complicated agreement, difficult to work for smaller projects</td>
</tr>
</tbody>
</table>
Financing Structure: PPA Structure

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

**Developer**
- Coordinates finance, design, construction on Host’s site
- Captures all incentives
- Monitors and maintains PV system

**Host**
- Receives power from on-site PV system and utility
- Pays developer for delivered electricity

**Utility**
- Provides regular electricity service
- Provides net metering
- May reset PLC/NSPL to reflect on-site peak generation capacity

A. Agreement
B. kWh/kW deliveries
C. Regular Payments
D. Excess kWh
E. Regular kWh/kW services
## Procurement Process: Stages

### Purpose
- Allows public sector buyer to better control the procurement process

### Benefits
- Focuses expediting RFP process
- Sets appropriate internal expectation

### Requirements
- Internal staff resources
- External Engineering Review
- Board coordination

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<tr>
<th>Stage</th>
<th>Description</th>
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<tbody>
<tr>
<td>1. Preparation</td>
<td>Set project goals and preferences</td>
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<tr>
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<td>Assemble team and data</td>
</tr>
<tr>
<td>2. Issuance</td>
<td>Finalize solicitation documents</td>
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<tr>
<td></td>
<td>Distribute Request for Proposals</td>
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<tr>
<td>3. Receive and Review Proposals</td>
<td>Focus on Questions</td>
</tr>
<tr>
<td></td>
<td>Focus on Value</td>
</tr>
<tr>
<td>4. Interviews</td>
<td>Start with most expensive</td>
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<td></td>
<td>Identify what’s missing</td>
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<tr>
<td>5. Scoring</td>
<td>Focus on Value and Risk</td>
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<tr>
<td></td>
<td>Settle on top proposers</td>
</tr>
<tr>
<td>6. Selection</td>
<td>Best and Final Offers</td>
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<tr>
<td></td>
<td>Conditional Selection</td>
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<tr>
<td>8. Go / No-Go Decision</td>
<td>Review IPA Results</td>
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<td></td>
<td>Decide to proceed</td>
</tr>
<tr>
<td>9. Contract Execution</td>
<td>Negotiate final PPA language</td>
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<td>Board Action</td>
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Procurement Process: Tools

Site Assessment Tools
- MS Excel workbook to compare direct purchase, lease, and PPA costs

Model Solicitation
- Focuses on Power Purchase Agreements
- Checklist for internally-generated materials
- Core solicitation documents and respondent forms

Model Agreements
- Can be amended to meet internal requirements
Case Study: Illinois Sanitary District

Initial Project
- Initially 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: Illinois 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
Key Questions

How does management define value?
- Setting a long term hedge, meet policy objectives

What is the targeted price to meet or beat?
- Current market price, some level of escalation over time?

What is the optimal project size and other characteristics
- Location, duration

What level of investment is management willing to make?
- Staff time, capital, property options
Discussion

Thank you for your time and consideration

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