Saving on Energy Costs
Residential and Commercial Markets
by Brent Boyd

GEO
2017 Conference
Series
Solar Power and Light

Saving on Energy Costs: Residential and Commercial Markets
Advancing Renewable Energy Technology and Reducing Energy Costs

Markets: Residential – Commercial – Public Sector – Utility Scale

Solar Solutions

Energy Solutions
Battery Storage, Demand Side S/W, EV Charging, LED Lighting

SP&L.
An Integrated Energy and Technology Company

Services
EPC Management, SP&L Money, Asset Management

Research and Education
SP&L. Solar for Home & Small Business

Sales, Finance, Install, Maintain
SP&L. Commercial Solar
Develop, Finance, EPC Management, Operate
SP&L. Utility Scale Solar

**Develop, Finance, EPC Management, Operate**

*Our first Ohio Utility Scale Project*

**Integrated Site Plan**

(See Separate PDF Documents of Site Plan)

- Inverter & Equipment Platform (35’x75’)
- Recloser on Pole (12.47kV POIC)
- Gated Entrance (Main)
- Armitage Rd
- Preexisting Power Lines
- Gated Entrance (Secondary)
- Gravel Service Access
- Fence

**PV SYSTEM INFORMATION:**
- PV System Size: 13MWDC / 10.3MWAC
- DC System Voltage: 950V
- 1,940 Strings of 20 Modules
- 98,800 335w GCL Modules
- 16” Pier to Pier Spacing
- 4 GCR
- ATI Tracker
- 1x20 Portrait Configuration
SP&L. SMARTenergy Solutions

Battery Storage

Solar Power Signs

EV Systems

LED Lighting
SP&L. Asset Management

PPA Administration, SREC Brokerage, State/Federal Compliance, Customer Billing, O&M, Reporting

O&M Services

SP&L SolarCity O&M Dashboard

SREC Brokerage and Reporting Services

PJM | EIS
Environmental Information Services
PPA Negotiations and Administration

SOLAR POWER PURCHASE AGREEMENT

The Solar Power Purchase Agreement (“Agreement”) is entered into by the parties listed below (each a “Party” and collectively the “Parties”) as of the date first set forth below (the “Effective Date”).

Parties

Purchase

Jenison College
Yellow Springs, OH 45387

Name and Address

Jenison College
Yellow Springs, OH 45387

SalesCity Corporation
1500 Corporate Dr.
San Mateo, CA 94404

Name and Address

SalesCity Corporation
1500 Corporate Dr.
San Mateo, CA 94404

Phone: 513-359-4874

Phone: 513-359-4874

Fax: 513-359-4875

Fax: 513-359-4875

E-mail: solardg@jenzoncollege.org

E-mail: solardg@jenzoncollege.org

Premises

Jenison College

Jenison College

This Agreement is in part a purchase and sales agreement for the purchase and sale of solar generated electric energy from the solar panel system described in Exhibit A to the “Purchase” and installed at the Jenison College as described in Exhibit B to the “Purchase.”

The Parties agree to the terms and conditions of the purchase and sale of solar generated electric energy from the solar panel system described in Exhibit A to the “Purchase,” and installed at the Jenison College as described in Exhibit B to the “Purchase.”

Please see Exhibit A and Section 7 for provisions regarding the purchase of solar generated electric energy.

This Agreement is subject to the terms and conditions of the purchase and sale of solar generated electric energy from the solar panel system described in Exhibit A to the “Purchase,” and installed at the Jenison College as described in Exhibit B to the “Purchase.”

Invoices

Invoice 69

Due: 03/25/2017

Amount Due: $596.00

Dear Customer:

Your invoice is attached. Please remit payment at your earliest convenience.

Thank you for your business - we appreciate it very much. Sincerely,

Divine Power & Light, LLC
937-247-9194
SP&L Money Services

SP&L Money Solutions is one of the most comprehensive platforms for funding Solar, Battery Storage and LED Lighting projects available on the market today for Commercial, Industrial and Public Entity solar projects.

Solar and Battery Storage Funds

National Grant and Loan Programs

Zero Out-of-Pocket Cost Programs
SP&L. Education

Pursuit of Great Jobs Start in School™

1 Day Hands-on Enrichment Program for Schools or Community Centers

GreenTECH STEM Connection Day

Mobile Environmental Learning Kiosk

Career Development Tools and Guidance

**STEM Curriculum:** Solar and Renewables Theme

**Job/Career Pathway:** Guidance, Higher Ed. And Jobs Network
SP&L. Research and Development

SP&L and its sister companies have won over $10M in federal and state R&D grant dollars since 2001

SP&L in collaboration with SRI International (Stanford Research Institute) has jointly won a $1M 2016 U.S. DOE Sunshot Award to lower the cost of solar-silicon material (polysilicon) using proprietary SRI technology and SP&L Trade Secrets and Commercialization Expertise in materials and manufacturing technologies. SRI-SP&L's R&D Project goal is to reduce the cost of Polysilicon by 50% by recovery and reuse of waste Si generated in the current wafer manufacturing process.

SP&L and Sister Company FOPAT are currently leveraging its patented technology to commercialize a new approach to making polysilicon ingots and wafers.
SOLAR AND RELATED TECHNOLOGIES IMPACTS…
Saving on Energy Costs: Residential and Commercial Markets
Energy Hedge Model: Cost of Solar Energy is known because the fuel (i.e. Sunlight) is FREE

SP&L, an Integrated Energy and Technology Company
LCOE Model*: Blended cost of energy over 20+ years using solar (Residential Solar)

LCOE = \frac{\text{Total costs over lifetime}}{\text{Electricity produced over lifetime}}

100% Grid

Avg Home spends $1K per year or $32K over 25 years (Assumes 2% increase in grid cost per year)

50% SOLAR 50% Grid

Energy charge

$16K or less over 25 years with Solar

If solar cost $9K after incentives then total cost over 25 year life is $25K vs. $32K with 100% grid yielding a 22% decrease in the Levelized Cost of Energy (LCOE)
Net metering is a billing mechanism that credits solar energy system owners for the electricity they add to the grid.

For example, if a residential customer has a PV system on the home's rooftop, it may generate more electricity than the home uses during daylight.

Some Utilities punish consumers for energy that is net metered.

Net metering is legislated and under attack in numerous states.
**Battery Storage: Savings achieved with Demand-Side S/W (Commercial Customers)**

**Batteries are Being Deployed in Ohio for this purpose**

- **Peak Demand Shaving** is achieved when battery systems absorbs energy peaks caused from a/c, motors, and other electrical equipment turning on. Utility companies penalize some customers for an entire 12 months when this occurs.

- **Peak Load Contribution (Capacity)** is established 5 times a year during the Summer and is a type of distribution charge tiered price level set by the utility companies.

- **PJM Ancillary Market** - Batteries sized at 100 kW or greater can be **monetized as a revenue stream** in addition to its uses described above.
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SAVINGS will increase as...

- Solar Installations continue to decrease in cost
- Rate of **Utility Grid Power increases** at a higher pace in coming years
- **Battery Storage is deployed** to tackle demand related charges in commercial markets
- **LED Lighting is deployed** along with Solar Installation

**SP&L**, an Integrated Energy and Technology Company
Thank You

Brent Boyd, COO
Solar Power and Light