Town of Tonawanda
Solar Energy Power Purchase Agreement and Site License for Solar Photovoltaic
NY Solar Summit
Monday, June 20, 2016
About Tonawanda, “swift waters”

- 1st ring suburb of Buffalo located along 6 miles of Niagara River in Western NY
- Population 73,567 in 2010 Census
- Share border with 5 other communities and Canadian international border
- 28,828 parcels, 92% Residential, 4.5% Commercial
- Formed in 1836
- Full service municipality including weekly sanitation/recycling pickup, Tree City USA forestry division, 165 miles of local streets, waste water recovery facility, water treatment plant, sanitary sewer collection system, water distribution system, storm sewer system, two 18 hole golf courses, extensive recreation
- Operated municipal landfill from 1930’s to late 1980’s
- Eastern portion of landfill capped in 2012
Town Electrical Usage

- 76 Buildings or Facilities – Civic buildings and facilities, Pump Stations, Plants, Libraries, Flow Meters, Pools, Skating Rinks, etc.
- Street Lighting – 112 Consolidated Districts and General Highway Lighting
- Traffic Signals – 29
- Security Cameras and radar system
- Total KWH in 2013 – 27,304,478 (3.21 MW/year)
- Total electric bill in 2013 - $3,926,857.58 includes co-op program cost & NG delivery costs
Power Purchase Agreement - Background

• Vendors began approaching town in 2014 and alerted us to possible arrangements
  • TM Montante Solar, June 2014, Year 1 PPA Rate offer $0.11/kWh
  • Solar Liberty, May 2015, Year 1 PPA Rate offer $0.1027/kWh

• Attended NY-Sun PVTN Municipal Solar Procurement webinar March 11, 2015

• Attended NY-Sun PVTN Intro to Solar Policy Workshop May 8, 2015

• Began working with NY-Sun PVTN Technical Assistance provider, Meister Consultants Group using provided PPA template

• Customized PPA template and solicited Request for Proposals May 27, 2015
Request for Proposal

- Identified region on town owned landfill to support 8 – 10 acre array
- Worked with landfill consultant and town attorney on feasibility of array being supported on landfill cap and NYSDEC experience
- Issued RFP on May 27, 2016
- Advertised on NY State Contract Reporter
- Conducted mandatory site meeting, 9 providers attended
- Addendum 1, August 3, 2016 – clarifications on project description, site description, special requirements (monitoring & reporting of town’s existing rooftop arrays), SEQRA review, requirement to use prevailing wage rates and miscellaneous background items
- Addendum 2, August 5, 2016 – updated target timeline and proposal due date
- Received 8 proposals, August 25, 2016
Proposal Elements

- Included provisional price adjustment securing either Block 1 or Block 2 incentives, assumed 2% baseline utility rate escalator
- Utilizes Remote Net Metering, established master meter account
- Exempt from property tax
- 20 year PPA with up to 3 - five year extensions
- System size 2,635 kW (DC)
- Provisioned for costs of interconnection ($175,000)
- Include all costs required for permitting, construction & decommissioning, tying in 5 existing rooftop sites for monitoring
- Attachments
  - Site description
  - Town Energy Use (2013)
  - Provider Information Form
  - Pricing Proposal Template (NY-Sun PVTN)
  - Model Power Purchase Agreement (NY-Sun PVTN)
### Inputs

Discount Rate (Override if Alternate Value Preferred) 5%

<table>
<thead>
<tr>
<th>Contractor Name</th>
<th>Provider 1</th>
<th>Provider 2</th>
<th>Solar City 1</th>
<th>Solar City 2</th>
<th>Provider 4</th>
<th>Provider 5</th>
<th>Provider 6</th>
<th>Provider 6a</th>
<th>Provider 6b</th>
<th>Provider 7</th>
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<tbody>
<tr>
<td>Estimated Annual Electric Output (kWh/year)</td>
<td>3,111,000</td>
<td>3,143,797</td>
<td>3,281,900</td>
<td>3,281,900</td>
<td>2,818,791</td>
<td>2,298,000</td>
<td>3,136,372</td>
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<tr>
<td>Guaranteed Annual Electric Output (kWh/year)</td>
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<td>2,536,912</td>
<td>1,953,500</td>
<td>2,665,916</td>
<td>2,665,916</td>
<td>3,218,000</td>
<td>3,218,000</td>
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<tr>
<td>Annual System Degradation Factor (%/year)</td>
<td>0.50%</td>
<td>0.75%</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
<td>0.50%</td>
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</tr>
<tr>
<td>First Year Electricity Price ($/kWh)</td>
<td>$0.0490</td>
<td>$0.0670</td>
<td>$0.0690</td>
<td>$0.0650</td>
<td>$0.0890</td>
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<td>$0.1145</td>
<td>$0.1015</td>
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<tr>
<td>Electric Price Increase Escalator (%/year)</td>
<td>2.00%</td>
<td>2.00%</td>
<td>1.00%</td>
<td>2.00%</td>
<td>2.00%</td>
<td>1.90%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>2.00%</td>
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<tr>
<td>Annual Lease Payment ($/year)</td>
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<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$10,000</td>
<td>$1</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$10,000</td>
<td>$10,000</td>
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</tbody>
</table>

### Outputs

1. The Levelized Cost of Energy is the average per-kwh price (undiscounted, in nominal terms) that the municipality will pay for energy over the life of the contract. This is the best metric to use to understand how proposals with different system sizes and energy generation levels compare.

2. The Net Present Value of 20-Year Energy Costs is the total estimated amount of money that the municipality will pay to the developer through the contract, discounted to its present value today. This is the best metric to understand the total dollar value of each proposal.

3. The per-kWh NPV is the same calculation divided by the estimated first-year production of the system. This allows you to compare the total value of contracts that offer you different system sizes and energy generation levels.
Review & Award

• Compiled proposal summary (Bid Evaluation Tool)
• Review team evaluated proposals and short listed 4 potential providers for interviews
• Conducted interviews with 7 providers October 2015: SolarCity got second interview
• SolarCity provided PPA and Performance Guarantee Agreement (PGA)
• PPA included NY-Sun PVTN Block 1, 20 year pricing and Block 2 contingency pricing
• PPA & PGA approved November 20, 2015
Town of Tonawanda
Landfill - Ground Mount - SolarCity PPA Savings Summary

Solar PV Technical Summary
- Project Type: Ground Mount
- System Size (kWp): 2,635 kW
- System Yield (kWh/kW): 1,246
- 1st Year Production (kWh): 3,283,210
- Annual System Degradation (%): 0.50%

SolarCity PPA Structure Summary
- PPA Rate ($/kWh): $0.071
- Annual PPA Rate Escalation: 2.00%
- PPA Term (years): 20

Annual Savings Estimates

Model Assumptions
- Grid Avoided Cost ($/kWh)*: $0.125
- Discount Rate*: 6.00%
- Annual Reduction in Production: 0.50%
- Utility Escalation Rate: 2.00%

PPA Financial Results Summary
- Estimated 1st Year Savings: $177,942
- Savings Over 20 Years: $4,110,631
- NPV of Savings over 20 Years: $2,291,830

SolarCity PPA Information
- Performance Guarantee: Included
- Payback: Immediate
- Operations & Maintenance: Included

This analysis is illustrative only and has been prepared in good faith by SolarCity to provide conceptual project modeling. These numbers are not for contract, nor are they binding.

* Model Assumptions are inputs that should be mutually agreed upon by the customer and SolarCity. The customer may request any changes to more closely model their specific situation.
SolarCity has used good faith efforts to represent the savings from this project before state and federal income tax.
Please consult your tax advisor regarding your specific tax situation.
### Town of Tonawanda

**Landfill - Ground Mount - SolarCity PPA Savings Cash Flow Table**

<table>
<thead>
<tr>
<th>Town of Tonawanda</th>
<th>Results Summary</th>
<th>Model Assumptions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Landfill</td>
<td>Monetary Credit Value ($/kWh)</td>
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<tr>
<td></td>
<td>795 East Park Road, Tonawanda NY, 14150</td>
<td>Discount Rate*</td>
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<tr>
<td>System Size: 2635 kW DC</td>
<td>Total Savings: $ 4,110,631</td>
<td>Annual Reduction in Production</td>
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<tr>
<td>National Grid (Niagara Mohawk)</td>
<td>NPV of Total Savings: $ 2,291,830</td>
<td>PPA Escalation Rate</td>
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<tr>
<td></td>
<td>Year 1 Savings: $ 177,942</td>
<td>PPA Term</td>
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<td></td>
<td>Total Savings: $ 4,110,631</td>
<td>Utility Escalation Rate</td>
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<td>NPV of Total Savings: $ 2,291,830</td>
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</table>

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SOLAR PRODUCTION (kWh)</th>
<th>MONETARY CREDIT VALUE ($/kWh)</th>
<th>ANNUAL UTILITY SAVINGS FROM SOLAR kWh</th>
<th>SOLARCYT PPA RATE ($)</th>
<th>ANNUAL SOLARCYT PPA EXPENSE ($)</th>
<th>TOTAL SAVINGS ($)</th>
<th>CUMULATIVE CASH FLOW ($)</th>
<th>PRESENT VALUE OF CASH FLOW ($)</th>
<th>PRESENT VALUE OF CUMULATIVE CASH FLOW ($)</th>
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</tr>
</tbody>
</table>

**Total** | $ 9,515,849 | $ 4,110,631 | $ 4,110,631 | $ 2,291,830
Niagara Mohawk Power Corp. Tariff PSC No. 220 Rule 53

CESIR - Coordinated Electric System Interconnection Review

PPA estimated a $175,000 allowance to make required adaptations
Current Status

• SolarCity submitted initial interconnection application to National Grid December 18, 2015
• March 29, 2016 SolarCity commits CESIR application payment
• Planning Board approved Site Plan April 6, 2016
• NYSDEC engineering control changes to landfill – in progress
• National Grid CESIR anticipated August 12, 2016
• Construction October 13, 2016 – December 28, 2016
• Outside Commercial Operation Date – February 10, 2017
Questions ??

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