

# Restoring Our Waterfront

# Strengthening Tonawanda's Economy, Community and Environment

**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"

- 1<sup>st</sup> 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)





Job 2963 Solar Energy Power Purchase Agreement and Site License for Solar Photovoltaic Town of Tonawanda Landfill - SolarCity



### Solar Power Purchase Agreement Bid Evaluation Tool

\$0

\$0

### Inputs

Discount Rate (Override if Alternate Value Preferred) 5%

Proposal Number	1	2	3	4	5	6	7	8	9	
Contractor Name	Provider 1	Provider 2	Solar City 1	Solar City 2	Provider 4	Provider 5	Provider 6a	Provider 6b	Provider 7	
Estimated Annual Electric Output (kWh/year)	3,111,000	3,143,797	3,281,900	3,281,900	2,818,791	2,298,000	3,136,372	3,136,372	2,574,400	
Guaranteed Annual Electric Output (kWh/year)	2,488,000	0	3,281,900	3,281,900	2,536,912	1,953,300	2,665,916	2,665,916	3,218,000	
Annual System Degradation Factor (%/year)	0.50%	0.75%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	
First Year Electricity Price (\$/kWh)	\$0.0490	\$0.0670	\$0.0690	\$0.0650	\$0.0890	\$0.1049	\$0.1145	\$0.1015	\$0.0995	
Electric Price Increase Escalator (%/year)	2.00%	2.00%	1.00%	2.00%	2.00%	1.90%	0.00%	2.00%	2.00%	

### Outputs

Annual Lease Payment (\$/year)

Levelized Cost of Energy (1)	\$0.0593	\$0.0810	\$0.0758	\$0.0787	\$0.1040	\$0.1258	\$0.1145	\$0.1229	\$0.1164
Net Present Value of 20-Year Energy Costs (2)	\$2,140,103	\$2,891,150	\$2,932,091	\$2,994,865	\$3,397,395	\$3,356,629	\$4,298,518	\$4,469,224	\$3,471,527
Net Present Value per First-Year kWh (3)	\$0.034	\$0.046	\$0.045	\$0.046	\$0.060	\$0.073	\$0.069	\$0.071	\$0.067

\$0

\$0

\$10,000

\$1

\$0.00

\$0.00

\$10,000

- 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
- 2. The 20-Year NPV is the total estimated amount of money that the municipality will pay to the developer through the contract, discounted to it's present value today. This is the best metric to understand the total dollar value or
- 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

## SolarCity

#### Town of Tonawanda

Landfill

795 East Park Road, Tonawanda NY, 14150

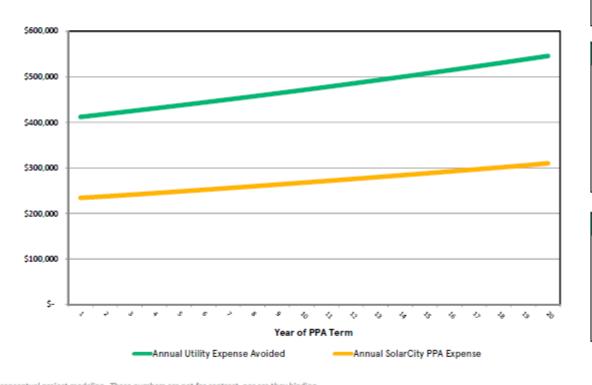
System Size: 2635 kW DC

National Grid (Niagara Mohawk)

## Solar PV Technical Summary Project Type Ground Mount System Size (kW<sub>DC</sub>) 2,635.00 System Yield (kWh/kW) 1,246 1st Year Production (kWh) 3,283,210 Annual System Degradation (%) 0.50%

## 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

nance Included

Immediate

Operations & Maintenance Incl

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** 



### **Town of Tonawanda**

Landfill

795 East Park Road, Tonawanda NY, 14150

System Size: 2635 kW DC

National Grid (Niagara Mohawk)

### **Results Summary**

Year 1 Savings: \$ 177,942 Total Savings: \$ 4,110,631 NPV of Total Savings: \$ 2,291,830

### **Model Assumptions**

Monetary Credit Value (\$/kWh) \$0.125
Discount Rate\* 6.00%
Annual Reduction in Production 0.50%
PPA Escalation Rate 2.00%
PPA Term 20
Utility Escalation Rate 2.00%

YEAR	SOLAR PRODUCTION (kWh)	MONETAF VAL	LUE	ANNUAL UTILITY SAVINGS FROM SOLAR KWH		SOLARCITY PPA RATE (\$/kWh)		ANNUAL SOLARCITY PPA EXPENSE		TOTAL SAVINGS		CUMULATIVE CASH FLOW		PRESENT VALUE OF CASH FLOW		PRESENT VALUE OF CUMULATIVE CASH FLOW	
1	3,295,229	\$	0.125	\$	411,904	\$	0.071	\$	(233,961)	\$	177,942	\$	177,942	\$	167,870	\$	167,870
2	3,278,753	\$	0.128	\$	418,041	\$	0.072	\$	(237,447)	\$	180,594	\$	358,536	\$	160,728	\$	328,598
3	3,262,359	\$	0.130	\$	424,270	\$	0.074	\$	(240,985)	\$	183,285	\$	541,821	\$	153,889	\$	482,487
4	3,246,047	\$	0.133	\$	430,591	\$	0.075	\$	(244,576)	\$	186,015	\$	727,836	\$	147,342	\$	629,829
5	3,229,817	\$	0.135	\$	437,007	\$	0.077	\$	(248,220)	\$	188,787	\$	916,623	\$	141,073	\$	770,902
6	3,213,668	\$	0.138	\$	443,519	\$	0.078	\$	(251,919)	\$	191,600	\$	1,108,223	\$	135,070	\$	905,972
7	3,197,600	\$	0.141	\$	450,127	\$	0.080	\$	(255,672)	\$	194,455	\$	1,302,678	\$	129,324	\$	1,035,296
8	3,181,612	\$	0.144	\$	456,834	\$	0.082	\$	(259,482)	\$	197,352	\$	1,500,030	\$	123,821	\$	1,159,117
9	3,165,704	\$	0.146	\$	463,641	\$	0.083	\$	(263,348)	\$	200,293	\$	1,700,323	\$	118,553	\$	1,277,670
10	3,149,875	\$	0.149	\$	470,549	\$	0.085	\$	(267,272)	\$	203,277	\$	1,903,600	\$	113,509	\$	1,391,179
11	3,134,126	\$	0.152	\$	477,560	\$	0.087	\$	(271,254)	\$	206,306	\$	2,109,906	\$	108,679	\$	1,499,858
12	3,118,455	\$	0.155	\$	484,676	\$	0.088	\$	(275,296)	\$	209,380	\$	2,319,286	\$	104,055	\$	1,603,914
13	3,102,863	\$	0.159	\$	491,898	\$	0.090	\$	(279,398)	\$	212,500	\$	2,531,786	\$	99,628	\$	1,703,542
14	3,087,348	\$	0.162	\$	499,227	\$	0.092	\$	(283,561)	\$	215,666	\$	2,747,452	\$	95,389	\$	1,798,931
15	3,071,912	\$	0.165	\$	506,665	\$	0.094	\$	(287,786)	\$	218,879	\$	2,966,332	\$	91,331	\$	1,890,262
16	3,056,552	\$	0.168	\$	514,215	\$	0.096	\$	(292,074)	\$	222,141	\$	3,188,472	\$	87,445	\$	1,977,707
17	3,041,269	\$	0.172	\$	521,876	\$	0.097	\$	(296,426)	\$	225,451	\$	3,413,923	\$	83,724	\$	2,061,431
18	3,026,063	\$	0.175	\$	529,652	\$	0.099	\$	(300,843)	\$	228,810	\$	3,642,733	\$	80,162	\$	2,141,593
19	3,010,933	\$	0.179	\$	537,544	\$	0.101	\$	(305,325)	\$	232,219	\$	3,874,952	\$	76,751	\$	2,218,345
20	2,995,878	\$	0.182	\$	545,554	\$	0.103	\$	(309,874)		235,679	\$	4,110,631		73,486	\$	2,291,830
				\$	9,515,349					\$	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

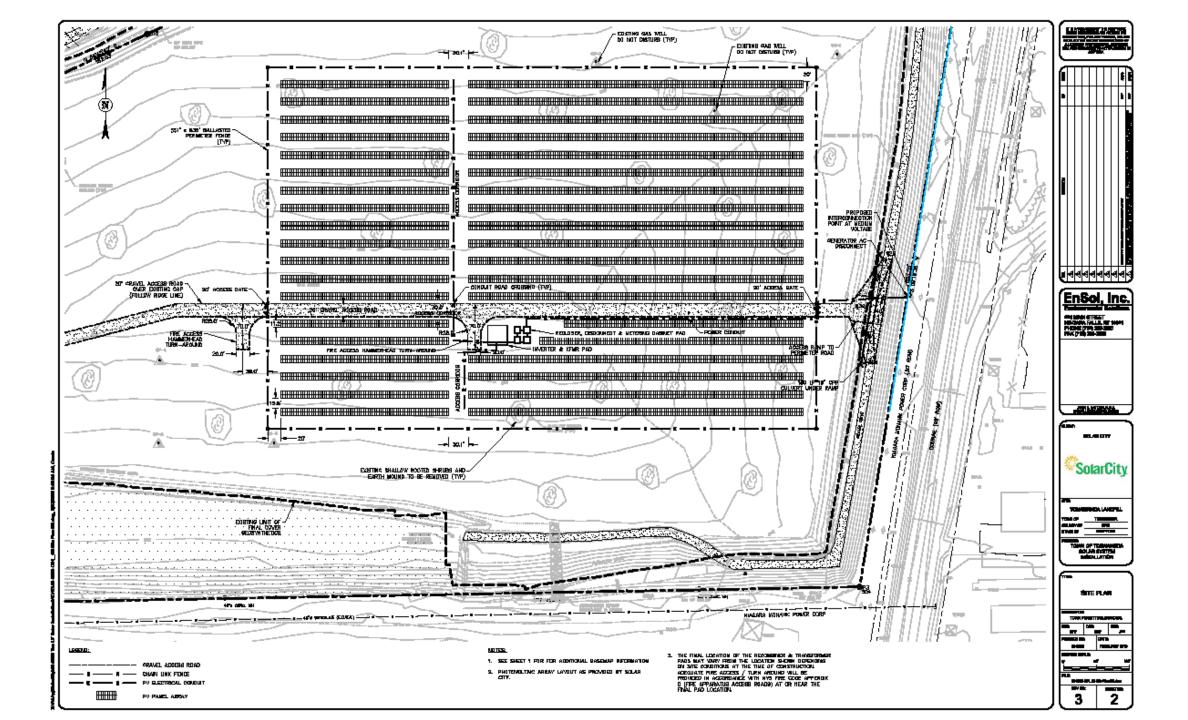
#### PSC No. 220, Rule 53 Standardized Interconnection Requirements and Application Process for New Distributed Generators 2 MW or Less Connected in Parallel to Utility Distribution Systems **B. Application Process Steps for Systems** C. Application Process Steps for Systems 25 kW or Less 25 kW up to 2 MW Step 2: Initial Inquiry from Potential Applicant Step 2: Initial Inquiry from Potential Applicant Inquiry is reviewed by Utility and Inquiry is reviewed by Utility and discussed with Potential Applicant discussed with Potential Applicant ≤3 days ≤ 3 days Step 3: Potential Applicant submits an Step 3: Potential Applicant submits an application application package to Utility. [Check if FERC package to Utility including a non-refundable \$350 application fee. [Check if FERC Jurisdictional or Jurisdictional or PSC Tariff Rule 53.] PSC Tariff Rule 53.1 Utility assesses if application is 1-8-2016: Provided revised complete Utility assesses if application is Documents to utility complete. ≤ 5 days < 5 days Utility makes initial technical assessment Step 4: Utility conducts preliminary review to 2-8-2016 to 3-23-2016 determine the proposed system interconnection Contacted utility 7 times is viable. An estimate of costs associated with Step 4: Determine how the applicant will be to request updates on the completion of the CESIR is developed and charged for any dedicated transformer(s) or provided to the Applicant. application status other safety equipment - see the Net Metering chart for max. contribution. Step 5: Applicant commits and provides advance 3-24-2016 requested approval for payment for costs associated to complete CESIR \$19,000 CESIR. Applicant installs system in (if applicable). Submitted check to utility 3-29-2016 accordance with Utility accepted Step 6: Utility completes CESIR. Upon 3-24-2016 to 5-16-2016; Design being completion, a detailed estimate of the total cost Applicant requests net meter and evised per utility request. associated with the interconnection is developed Utility installs 5-20-2016: Revised Design submitted and submitted to the Applicant. to utility and CESIR began with a Determine how the applicant will be charged for any dedicated transformer(s) or other safety Step 5: Applicant's facility is tested in -12-2016 equipment - see the Net Metering chart for max. accordance with Standardized Interconnection ompletion date contribution. Requirements Witness ≤ 10 days; ≤ 60 days Self Certification ≤ 5 days Step 7: Applicant commits to Utility construction of Utility system modifications. Applicant and Step 6: Acceptance of Interconnection Utility execute standardized contract for interconnection. Applicant provides Utility with advance payment for estimated costs associated Acceptance Letter to Applicant with completion of the interconnection. ≤ 5 days Step 8: Applicant installs system in accordance with Utility accepted design Step 9: Applicant's facility is tested in accordance with Standardized Interconnection Requirements Witness ≤ 10 days; Self Certification < 5 days Step 10: Interconnection Step 11: Acceptance of interconnection. If selfcertified test in Step 9 is not accepted, then Utility witnesses testing ≤ 20 days. Acceptance Letter to Applicant Within 90 days after acceptance/ Project Complete energization, the Utility reconciles costs with Applicant of actual costs related to the project against the Utility performs follow up visits as application fee and advanced necessary

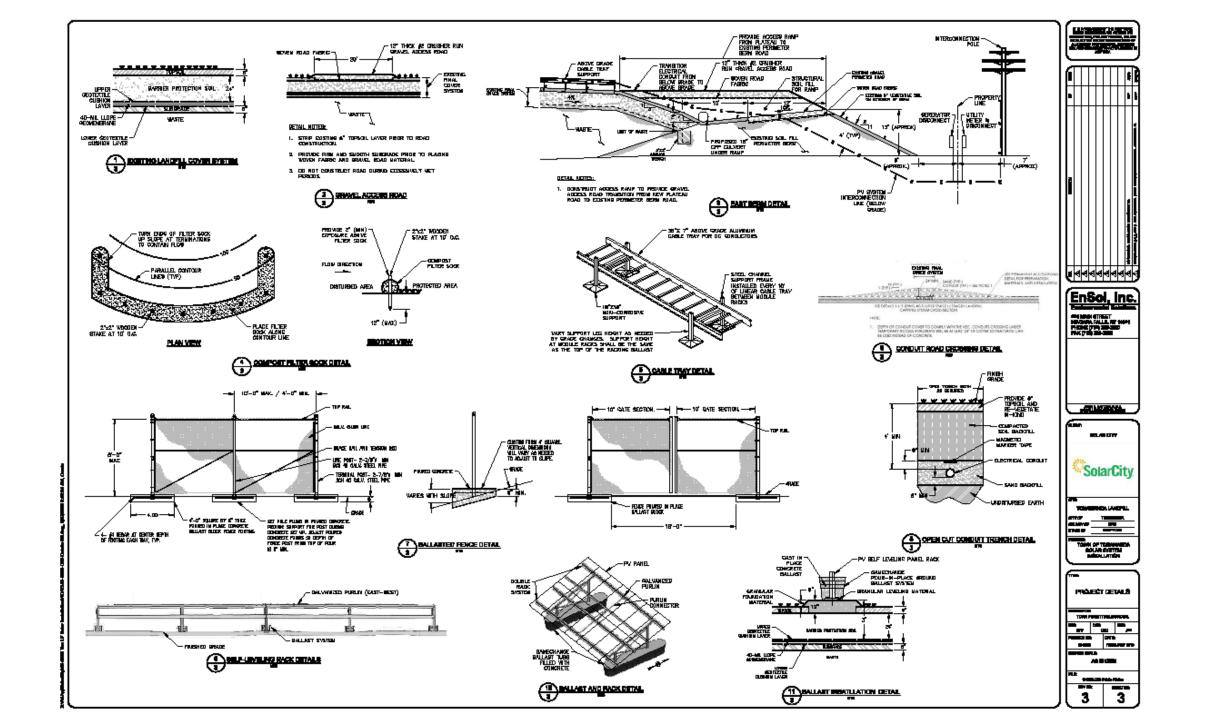
payments made by the Applicant

Note: "days" are "business days"

### **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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