THESE MINUTES ARE SUBJECT TO APPROVAL BY THE SUSTAINABLE ENERGY COMMISSION

The Sustainable Energy Commission held a special meeting Wednesday, June 8, 2016 in shared meeting room 3 of the Municipal Center located at 3 Primrose Street, Newtown, CT 06470.

The meeting was called to order by Chairman, Kathy Quinn at 6:00 pm.

Present: Chairman Kathy Quinn, Mark Sievel, Karen Pierce, Barbara Toomey, George Brown, Jeff Jorgenson, David Stout
Also Present: Fred Hurley
Absent: Joseph Borst, Steve Goglietinno

Public Comments: None
Business:

Review submitted proposals for the development, finance, installation and maintenance of a 600 KW Photo Voltaic Electric System under a Power Purchase Agreement at the Reed 5-6 school to be submitted for the 5th year ZREC bid: Fred Hurley reviewed the proposals and determined that there were three proposals to look at(attachment A); Greenskies, Direct Energy and Solar City. This only gets you a vendor on board and you still have to negotiate. This is to get the application in next week. We are essentially buying a utility service, not the system itself.

David Stout articulated that he represents Direct Energy and as a commission member cannot deliberate or vote, but will be available for technical questions only.

There was concern about a company not being around in 20 years. Fred Hurley stated that there will be a performance bond and a savings guarantee to protect the town.

Annual usage on the Reed School is 1.9 million KWH.

There RFP was simplified due to overall time constraints so the vendors only had 10 days to get these back. This was rushed and there will be errors. You are not paying for the system; you are only paying for the KWH.

Solar City does their own financing, Greenskies uses Niagra Financial and Direct Energy used Green Bank which is quasi-public. The privately funded have more on the line.

There can be an option after 25 years to buy out the equipment outright.

To narrow down the RFP selection they focused on average annual production and a unit cost per KWH using $65 ZREC for 25 years.

David Stout left the meeting at 7:09 when deliberations began.

Fred Hurley articulated that there are three firms that can do the job and the bottom line is the numbers. All the firms are Connecticut based. Under the Town purchasing regulations there is no allowance for local consideration.

Mr. Brown moved to recommend the selection of Direct Energy, based on a 25 year term with a $65 ZREC at the annual rate of $.058 per KWH to the Purchasing Authority. Ms. Toomey seconded, motion unanimously approved.

Adjournment: Ms. Pierce made a motion to adjourn the meeting at 7:13pm. The motion was seconded by Ms. Toomey. The motion was carried unanimously.

Submitted, Arlene Miles, Clerk Pro Tem

Sustainable Energy Commission 600 KW PV Reed School Vendor Proposal Evaluation:

June 8, 2016

There were six proposals submitted by five vendors, on June 7, 2016. One proposal was an alternate to use Virtual Net Metering (VNM) from a 10 MW Agricultural Solar Farm, in Windham, Ct, in lieu of placing a system on the school. The other five proposals were for an installation on the school roof as proposed in the RFP offering.

The options have been reviewed by both the BOE Business Manager and the BOE Facilities Manager for the school system and they concur in the general recommendation of how to proceed that will be presented below, but leave the vendor selection to the Commission.

All proposals recommend either abandoning the re-roofing issue, separating it out and or point out the legal entanglements with financing if it is included. BOE personnel now agree that the reroofing issue may be separated from the decision process. It is assumed that the covering of the project area will substantially extend the usefull life of the underlying roof through the entire operational life of the solar facility. All the following analysis and unit price per KWH presented will exclude any consideration of roof replacement.

1. Sunlight General Capital (532.8 KWAC): This proposal which is summarized by the vendor in Attachment "A" was the highest cost per KWH at $.112, the first year, after adjusting for a roof credit. The price continued to escalate each year although we had asked for a fixed price. The cost per KWH in the 15th year would be $.1749, the 20th year $.203 and $.2274 in the 25th year. This proposal should be eliminated because their overall pricing is not competative.
2. Solomon Energy/VNM Proposal: This proposal included as Attachment "B" would use off site generation to supply an electricity credit with no system installed on the school. The cost per KWH is the second highest at $.10 per KWH the first year escalating overtime to $.12 the 15th year and $.13 in the 20th year. Because there are much more attractive pricing proposals to follow, the BOE is not interested in this proposal.
3. Solomon Energy (468 KWAC): This proposal, included as Attachment "C", had a first year KWH cost of $.10 for a 15 year contract; $.088 for a 20 year contract and $.0828 for a 25 year contract. The final cost for each contract per KWH was as follows- $.098 for the 15 year contract, $087 for the 20 year contract and $.0816 for the 25 year contract. While better than the preceding offers, better offers follow.
4. Greenskies (472 KWAC): This proposal included as Attachment "D", had a fixed price of $.082 per KWH every year of the 15, 20 or 25 year contract offerings. This fixed pricing is

the most attractive to this point. While lower unit costs will follow, this proposal is competitive because its total production is higher than the following systems and produces more KWH over time at a fixed price. When we explore the possible impact of bidding a ZREC at $65 instead of the nominal $55 per KW, the unit pricing for all three contract terms drops to $.072 per KWH.

5. Direct Energy (532.8 KWAC): This proposal included as Attachment "E", had a fixed price of $083 per KWH for a 15 year contract, $.074 for a 20 year contract and $.069 for the 25 year contract. If we should bid $65 for a ZREC, the pricing changes to $.069 for the 15 year contract, $.062 for the 20 year contract and $.058 for the 25 year contract. If we restrict our analysis to a 15 year contract at the nominal ZREC bid of $55, then the Greenskies proposal above is slightly more advantageous. In every other scenario (longer contract, high ZREC bid), this proposal offers a lower unit cost. What still remains is the question of higher production of one system over the other which may produce larger overall savings albeit at a higher unit cost.
6. Solar City (432 KWAC): This proposal included as Attachment "F" had variable pricing which includes a $.021 credit for no roof project. The pricing ranged from $.07 the first year to $.084 for the last year of a 15 year contract for an average unit cost of $.077 per KWH. The 20 year contract would start at $.062 per KWH, end at $.079 and average $.073 per KWH. The 25 year contract would start at $.062, end at $.066 and average $.069 per KWH over the life of the contract. If we go for a $65 ZREC the pricing is as follows - $.067 average per KWH for a 15 year contract; $.062 for a 20 year contract and $.061 average per KWH for a 25 year contract.

Analysis: For a standard 15/20/25 year contracts with a $55 ZREC and no roof projects the results were as follows on a unit cost basis:

	15 Years	20 Years	25 Years
Greenskies:	$.082	$.82	$.082
Direct:	$.083	$.074	$.069
Solar:	$.077	$.073	$.069

With a $65 ZREC, the unit pricing for each of the contract terms would be as follows:

Greenskies:	$.072	$.072	$.072
Direct:	$.069	$.062	$.058
Solar:	$.067	$.062	$.061

Attachment A

Executive Proposal Summary
Power Purchase Agreement for 600 kW PV System: Reed 5-6 School
Newtown, Connecticut

Name of Firm: SunLight General Capital
Address: 205 East 42nd Street, 20th Floor, New York, New York 10017

Principal Contact Person: William C. Zachary
212-286-1801 x3 (o)
917-733-3038 (c)
bzachary@sunlightgeneral.com

Alternate Contact Person: Stephen Schneider
732-674-2373
sschneider@sunlightgeneral.com

Nominal System Size: 609 kW

Nominal Generation Capacity: 532.8 kW

Panel Model: Canadian Solar CS6X-310

Efficiency of Panel Generation: at start up: 16.16%
Year 1-5: 15.92%
Year 6-10: 15.33%
Year 11-15: 14.76%
Year 16-20: 14.22%
Year 21-25: 13.69%
Year 26+: <13.39%

Inverter Model: SolarEdge SE33.3KUS

Inverter Efficiency: 98.5%

Average Annual KWH Production:
Year 1-5: 732,572.6
Year 6-10: 714,440.5
Year 11-15: 696,757.2
Year 16-20: 679,511.6
Year 21-25: 662,692.8

Pricing Assumption: $55 ZREC, $100,000 cash payment to Newtown to Defray Roof Costs NOW

	20-Year Contract (Cents per kWh)	25-Year Contract (Cents per kWh)
Year 1	13.2000	12.8000
2	13.5630	13.1520
3	13.9360	13.5137
4	14.3192	13.8853
5	14.7130	14.2672
6	15.1176	14.6595
7	15.5333	15.0626
8	15.9605	15.4769
9	16.3994	15.9025
10	16.8504	16.3398
11	17.3138	16.7891
12	17.7899	17.2508
13	18.2791	17.7252
14	18.7818	18.2127
15	19.2983	18.7135
16	19.8290	19.2281
17	20.3743	19.7569
18	20.9346	20.3002
19	21.5103	20.8585
20	22.1019	21.4321
21		22.0215
22		22.6271
23		23.2493
24		23.8887
25		24.5456

	20 Year	25 year
Pricing Variable if ZREC is $10 Higher:	-0.7 cents	-0.6 cents
Pricing Variable if ZREC is $10 Lower:	0.7 cents	0.6 cents
Available credit if reroofing removed:	1.8 cents	1.8 cents

Savings: N/A (New roof is in place, so not comparable)

ALLCO

Attachment B

SolomonEnergy

EXHIBIT A

OPTION 1 PPA PRICING TABLE

Project: Windham Solar Project
Initial PPA Price: $0.10 kWh
Escalation Factor: 1.5 %/annum

Year	Expected Production (kWh)	PPA Rate ($/kWh)	Expected Payment ($)
1	1,300,000	$0.10	$130,000.00
2	1,299,350	$0.10	$131,884.03
3	1,298,700	$0.10	$133,766.13
4	1,298,051	$0.10	$135,776.13
5	1,297,402	$0.11	$137,654.35
6	1,296,753	$0.11	$139,660.32
7	1,296,105	$0.11	$141,664.26
8	1,295,457	$0.11	$143,795.71
9	1,294,809	$0.11	$145,795.50
10	1,294,162	$0.11	$147,922.68
11	1,293,515	$0.12	$150,177.05
12	1,292,868	$0.12	$152,299.83
13	1,292,221	$0.12	$154,549.68
14	1,291,575	$0.12	$156,797.24
15	1,290,930	$0.12	$159,042.52
16	1,290,284	$0.13	$161,285.51
17	1,289,639	$0.13	$163,655.18
18	1,288,994	$0.13	$166,022.44
19	1,288,350	$0.13	$168,387.29
20	1,287,705	$0.13	$170,878.51

*Please note that the prices set forth above shall include all applicable sales, use, electricity and property taxes that are presently payable, or could become payable, during the term of the PPA, all of which are the sole responsibility of the Proposer.

Attachment C

Executive Proposal Summary

Power Purchase Agreement for 600 kW PV System: Reed 5-6 School

Newtown, Connecticut

Name of Firm: Solomon Energy, Inc. and All Electric Construction LLC.

Address:

Solomon Energy, Inc.	**All Electric Const & Comm. LLC**
P.O. Box 32	80 Farwell Street
Westport, CT 06881-0032	West Haven, CT 06516

Principal Contact Person: James Patenaude Office: (203) 202-9788 Cell: (203) 818-1526
Email: jpatenaude@solomonenergy.com
Alternate Contact Person: Pat Lewis Office: (203) 535-1244 Cell: (203) 996-1575
Email: pat@allelectricct.com

Nominal System Size: 572 kWDC
Nominal Generation Capacity: 468 kWAC
Panel Model: JA Solar JAP6, 72 Cell, 310 Watt, Multicrystalline Silicon Modules, or equivalent, approved, Tier 1 modules.

Efficiency of Panel Generation:

Year 1-5	99%
Year 6-10	96%
Year 11-15	94%
Year 16-20	91.5%
Year 21-25	84%
Year 26+	75-84%

Inverter Model: Solectria Solar Yaskawa PVI 36TL
Inverter Efficiency: 98.4%

Average Annual kWh Production: *(Please note that these production numbers are estimates and could change)*

Year 1-5	650,809 kWh
Year 6-10	634,375 kWh
Year 11-15	617,940 kWh
Year 16-20	601,505 kWh
Year 21-25	585,071 kWh
Year 26+	493,037 kWh

All Electric Construction & Communication, LLC

SolomonEnergy

Pricing Assumption/Annual Estimated Spend on Solar PPA: *$55 ZREC, Re-roofing prior to solar installation, does not include cost of uninstall and reinstall of system for roof repair.* *(PPA Rate multiplied by estimated production)*

Year	Initial 15 Year Contract	20 Year Contract	25 Year Contract
1	$65,081 .100	$57,850 .088	$53,905 .0808
2	$64,756	$57,560	$53,636
3	$64,432	$57,273	$53,368
4	$64,110	$56,986	$53,101
5	$63,789	$56,701	$52,835
6	$63,470	$56,418	$52,571
7	$63,153	$56,136	$52,308
8	$62,837	$55,855	$52,047
9	$62,523	$55,576	$51,787
10	$62,210	$55,298	$51,528
11	$61,899	$55,021	$51,270
12	$61,590	$54,746	$51,014
13	$61,282	$54,473	$50,759
14	$60,975	$54,200	$50,505
15	$60,670 .098	$53,929	$50,252
16	N/A	$53,660	$50,001
17	N/A	$53,391	$49,751
18	N/A	$53,124	$49,502
19	N/A	$52,859	$49,255
20	N/A	$52,594 .087	$49,008
21	N/A	N/A	$48,763
22	N/A	N/A	$48,520
23	N/A	N/A	$48,277
24	N/A	N/A	$48,036
25	N/A	N/A	$47,795 .0816

*These numbers are estimates and will change depending on the production of the system.

Adjustments:

	15 Year Contract	20 Year Contract	25 Year Contract
Pricing Variable if ZREC is $10 Higher	-$.004 / kWh	-$.004 / kWh	-$.003 / kWh
Pricing Variable if ZREC is $10 Lower	+$.004 / kWh	+$.003 / kWh	+$.003 / kWh
Pricing Unit included for Re-Roofing	N/A	N/A	N/A
In base, available credit if re-roofing is removed	N/A	N/A	N/A

Savings Assumptions (cumulative): (These numbers are estimates and will change depending on the production of the system.)

	15 Year Contract	20 Year Contract	25 Year Contract
Total Years 1-5	$124,099	$159,895	$179,421
Total Years 6-10	$173,434	$208,344	$227,386
Total Years 11-15	$226,404	$260,451	$279,021
Total Years 16-20	N/A	$316,575	$334,686
Total Years 21-25	N/A	N/A	$394,771

Attachment D

Executive Proposal Summary

Power Purchase Agreement for 600 KW PV System: Reed 5-6 School

Newtown, CT

Name of Firm: Greenskies Renewable Energy, LLC
Address: 10 Main Street, Suite E, Middletown, CT 06457

Principle Contact Person: Meagan Occhiogrosso
Cell: (860)912-8050
Email: MeaganO@greenskies.com

Alternate Contact Person: James Desantos
Cell: (860) 690-0821
Email: JDesantos@greenskies.com

Nominal System Size: 618.88 KWDC
Nominal Generation Capacity: 472.00 KWAC
Panel Model: JAP6-72-320W
Efficiency of Panel Generation: 16.51% (Nominal)

Year 1-5	16.10 – 15.52%
Year 6-10	15.41 – 14.94%
Year 11-15	14.83 – 14.36%
Year 16-20	14.25 – 13.79%
Year 21-25	13.67 – 13.21%
Year 26+	< or = 13.09%

Inverter Model: Solectria 23TL, 28TL, 36TL, and 60TL
Inverter Efficiency: 98%

Average Annual KWH Production:

Year 1-5	714,170 – 696,316 KWH
Year 6-10	692,745 – 678,462 KWH
Year 11-15	674,891 – 660,607 KWH
Year 16-20	657,036 – 642,753 KWH
Year 21-25	639,182 – 624,899 KWH
Year 26+	< or = 621,328 KWH

Pricing Assumption: $55 ZREC; Re-roofing in the 5-10 Year Window and periodic Snow Removal*

	Initial 15 Year Contract	20 Year Contract	25 Year Contract
Year 1	$0.082	$0.082	$0.082
Year 2	$0.082	$0.082	$0.082
Year 3	$0.082	$0.082	$0.082
Year 4	$0.082	$0.082	$0.082
Year 5	$0.082	$0.082	$0.082
Year 6	$0.082	$0.082	$0.082
Year 7	$0.082	$0.082	$0.082
Year 8	$0.082	$0.082	$0.082
Year 9	$0.082	$0.082	$0.082
Year 10	$0.082	$0.082	$0.082
Year 11	$0.082	$0.082	$0.082
Year 12	$0.082	$0.082	$0.082
Year 13	$0.082	$0.082	$0.082
Year 14	$0.082	$0.082	$0.082
Year 15	$0.082	$0.082	$0.082
Year 16		$0.082	$0.082
Year 17		$0.082	$0.082
Year 18		$0.082	$0.082
Year 19		$0.082	$0.082
Year 20		$0.082	$0.082
Year 21			$0.082
Year 22			$0.082
Year 23			$0.082
Year 24			$0.082
Year 25			$0.082

Adjustments:	15 Year Contract	20 Year Contract	25 Year Contract
Pricing Variable if ZREC is $10 Higher:	$0.072	$0.072	$0.072
Pricing Variable if ZREC is $10 Lower:	$0.092	$0.092	$0.092
Pricing Unit included for Re-roofing In base, available credit if Re-roofing removed: N/A		N/A	N/A

System removal and reinstall: $434,903.99 (*not included in rates above as the cost to remove and replace the array would not be covered by bank financing)

Savings Assumptions ($0.082/kWh PPA rate vs. $0.12/kWh avoided utility rate w/3% inflation):

Total Years 1-5	$160,438	$160,438	$160,438
Total Years 6-10	$226,418	$226,418	$226,418
Total Years 11-15	$299,900	$299,900	$299,900
Total Years 16-20	N/A	$381,889	$381,889
Total Years 21-25	N/A	N/A	$473,525

Direct Energy Solar
YOUR SUN. YOUR POWER. YOUR WAY.

Attachment E

Executive Proposal Summary
PPA for 600 kW PV System: Reed 5-6 School
Newtown, CT

Name of Firm:	Direct Energy Solar, 54 Tuttle Place, Middletown, CT 06457
Principal Contact:	David Stout, 860-391-7324, David.stout@directenergysolar.com
System Size:	606.2 kW DC
Generation Capacity:	532.8 kW AC, 1st Year kWh production 703,300
Panel Model:	LG Electronics, Module LG285 1C-G4
Efficiency of Panel:	2% initial year 1 degradation, 0.05% after first year
Inverter Model:	Solar Edge SE33.3 with P700 Power Optimizers
Efficiency of Inverter:	Inverter 98.8% efficient, with added optimizer 99.5% efficiency
Average Annual kWh	Year 1-5 – 680,717.2 kWh Year 6-10 – 654,077.6 kWh Year 11-15 – 631,503.3 kWh Year 16-20 – 609,769.8 kWh Year 21-25 – 588,664.8 kWh

PPA fixed rate using Connecticut Green Bank CPACE Municipal PPA:

REC - $45			
EPC Price	15 Year	20 Year	25 Year
$ 2.19	$ 0.097	$ 0.086	$ 0.081
REC - $55			
EPC Price	15 Year	20 Year	25 Year
$ 2.19	$ 0.083	$ 0.074	$ 0.069
REC - $65			
EPC Price	15 Year	20 Year	25 Year
$ 2.19	$ 0.069	$ 0.062	$ 0.058

Included are cost avoidance and savings tables with a 3% annual escalator for utility unit costs, as well as cost avoidance and savings tables with a 1% annual escalator for utility unit costs.

1. Executive Summary

We are pleased to offer Town of Newton our proposal for a 567.1 kWdc roof-mounted system to at the Reed 5/6 school on Wasserman Way, in Newton, Connecticut. Please see below for a summary of our proposal in the format requested by the RFP.

Name of Firm:	SolarCity Corporation			
Address:	3055 Clearview Way, CA 94402 (headquarters) 200 Cascade Boulevard Unit B, Milford, CT 06460 (local)			
Principal Contact Person:	Sarah Hill		**Office:** 860.918.3222	**Cell:** 860.918.3222
Email:	shill@solarcity.com			
Nominal System Size:	567.1	kWdc		
Nominal Generation Capacity:	432.0	kWac		
Panel Model:	Hanwha Q Cells QPRO 265W			
Efficiency of Panel Generation:				
Year 1-5 (average)	15.663	%		
Year 6-10	15.275	%		
Year 11-15	14.897	%		
Year 16-20	14.529	%		
Year 21-25	14.169	%		
Year 26+	13.957	%		
Inverter Model:	Fronius SYMO- 24-480			
Inverter Efficiency:	97.5	%		
Average Annual kWh Production:				
Year 1-5	652,244.67	kWh		
Year 6-10	635,773.85	kWh		
Year 11-15	619,303.02	kWh		
Year 16-20	602,832.20	kWh		
Year 21-25	586,361.37	kWh		
Year 26+	576,478.88	kWh		

SolarCity

Pricing Assumption: $55 ZREC, Re-roofing in the 5-10 Year Window

	Initial 15-Year Contract @ 65		20-Year Contract @65		25-Year Contract @65	
Year 1	$0.091	.070 .060	$0.083	.062 .054	$0.083	.062 .054
Year 2	$0.092	.071	$0.084		$0.084	
Year 3	$0.093	.072	$0.085		$0.085	
Year 4	$0.094	.073	$0.086		$0.086	
Year 5	$0.095	.074	$0.086		$0.086	
Year 6	$0.096	.075	$0.087		$0.087	
Year 7	$0.097	.076	$0.088		$0.088	
Year 8	$0.098	.077	$0.089		$0.089	
Year 9	$0.099	.078	$0.090		$0.090	
Year 10	$0.100	.079	$0.091		$0.091	
Year 11	$0.101	.080	$0.092		$0.092	
Year 12	$0.102	.081	$0.093		$0.093	
Year 13	$0.103	.082	$0.094		$0.094	
Year 14	$0.104	.083	$0.094		$0.094	
Year 15	$0.105	.084 .074	$0.095		$0.095	
Year 16	$0.106		$0.096		$0.096	
Year 17	$0.107		$0.097		$0.097	
Year 18	$0.108		$0.098		$0.098	
Year 19	$0.109		$0.099		$0.099	
Year 20	$0.110		$0.100	.079 .071	$0.100	
Year 21	$0.092		$0.084		$0.084	
Year 22	$0.093		$0.085		$0.085	
Year 23	$0.094		$0.086		$0.086	
Year 24	$0.095		$0.086		$0.086	
Year 25	$0.096		$0.087		$0.087	.066 .058

	15-Year Contract	20-Year Contract	25-Year Contract
Adjustments:			
Pricing Variable if ZREC is $10 Higher:	$0.081	$0.075	$0.075
Pricing Variable if ZREC is $10 Lower:	$0.100	$0.092	$0.092
In base, available credit if re-roofing removed:	$0.021	$0.021	$0.021
Savings Assumptions:			
Total Years 1-5	$27,876	$54,497	$54,497
Total Years 6-10	$63,488	$90,775	$90,775
Total Years 11-15	$104,550	$132,519	$132,519
Total Years 16-20	N/A	$180,461	$180,461
Total Years 21-25	N/A	N/A	$235,429
Total of All Contract Years	$391,829	$458,251	$693,681

Please see the Appendix for detailed PPA savings cash flow summaries.

Sarah Hill | Sr. Project Development Manager| (860) 918-3222 | shill@solarcity.com
SolarCity Corporation | 200 Cascade Boulevard Unit B, Milford, CT 06460| HIC 0632778 | www.solarcity.com