

DG Energy Partners

Solar Project Pricing Index

April 2013



Advisory



Brokerage



Research

DGEP Project Pricing Index

DGEP has developed the first **Project Pricing Index (PPI)** for solar projects in the United States. The **PPI** is the industry standard for turnkey pricing expectations in markets across the country.

The **PPI** represents the respective turnkey costs (\$/Watt) to develop PV projects in various regions across the United States.

This **DGEP** offering is intended to provide guidance on current project pricing. It is based on both internal financial modeling as well as actual market data.

The **PPI** should be used as a preliminary guide to assist in establishing expectations for baseline turnkey prices for a given region or incentive.

Each state places a different level of importance on the implementation of renewable energy sources. The result is a contrast in the amount and breadth of PV solar incentives at the state and local level.

Updates & Additions

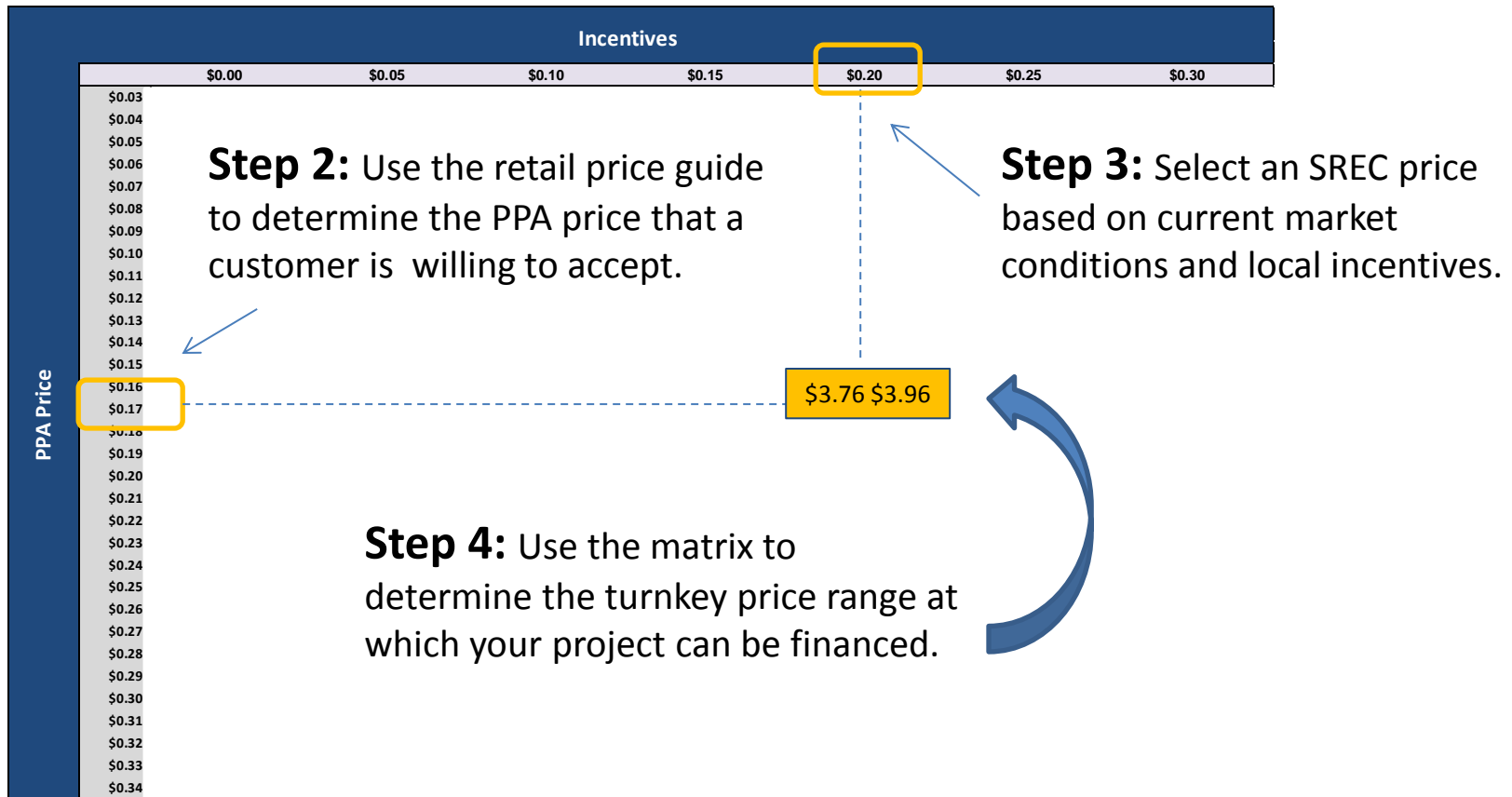
Program Updates:

- HI: Only Tier II remains open.
- NYSERDA:
 - PON 2156 and 2484 are both closed.
 - PON 2156 awards have been exhausted in the marketplace however, 2484 remains available in large quantities.
 - PON 2589 rejection notices issued
- Xcel Solar Gardens: Auction prices between \$.09/kWh - \$.13/kWh (based on installed capacity)
- Xcel CO RECs: Currently at Step 3 (\$.08/kWh - 7MW of 8.2MW still available)
- NJ SREC: 2013 – 2015: \$.118/kWh. Down from \$.125 in March.
- MD SREC: 2013 – 2015: \$.135/kWh. Up slightly from \$.13 in March.
- MA SREC: 2013 – 2015: \$.195/kWh. Up slightly from \$.19 in March. ***Developers successfully building in Massachusetts are assuming long term SREC risk. The PPI does not consider any un-contracted pricing.**

EPC Pricing Grid

How to Use this Tool

Step 1: Choose a matrix based on State where project is located.



Assumptions and Inputs

Primary Assumptions

System Size, kW	1,000.00
PPA Price, \$/kWh	Varies
PPA Term, Years	20
Escalation	-
SREC Price, \$/kWh	-
SREC Term, Years	3
FIT Price, \$/kWh	Varies
FIT Term, Years	Varies
Degradation	0.5%
kWh/kW	Varies
Initial Year Output, kWh	Varies

Tax Assumptions

Income Tax Rate:	35.0%
Depreciation Method:	Bonus MACRS
\$/Tax Credit	\$1.20

Annual Operating Expenses

Property Taxes	N/A
O&M	\$15/kW
O&M Escalator	2.0%
Other (Accounting, Ins)	\$15/kW
Other Escalator	-
Land Lease	N/A
Land Lease Escalator	N/A

*Pricing assumes no term debt.

Key Dates

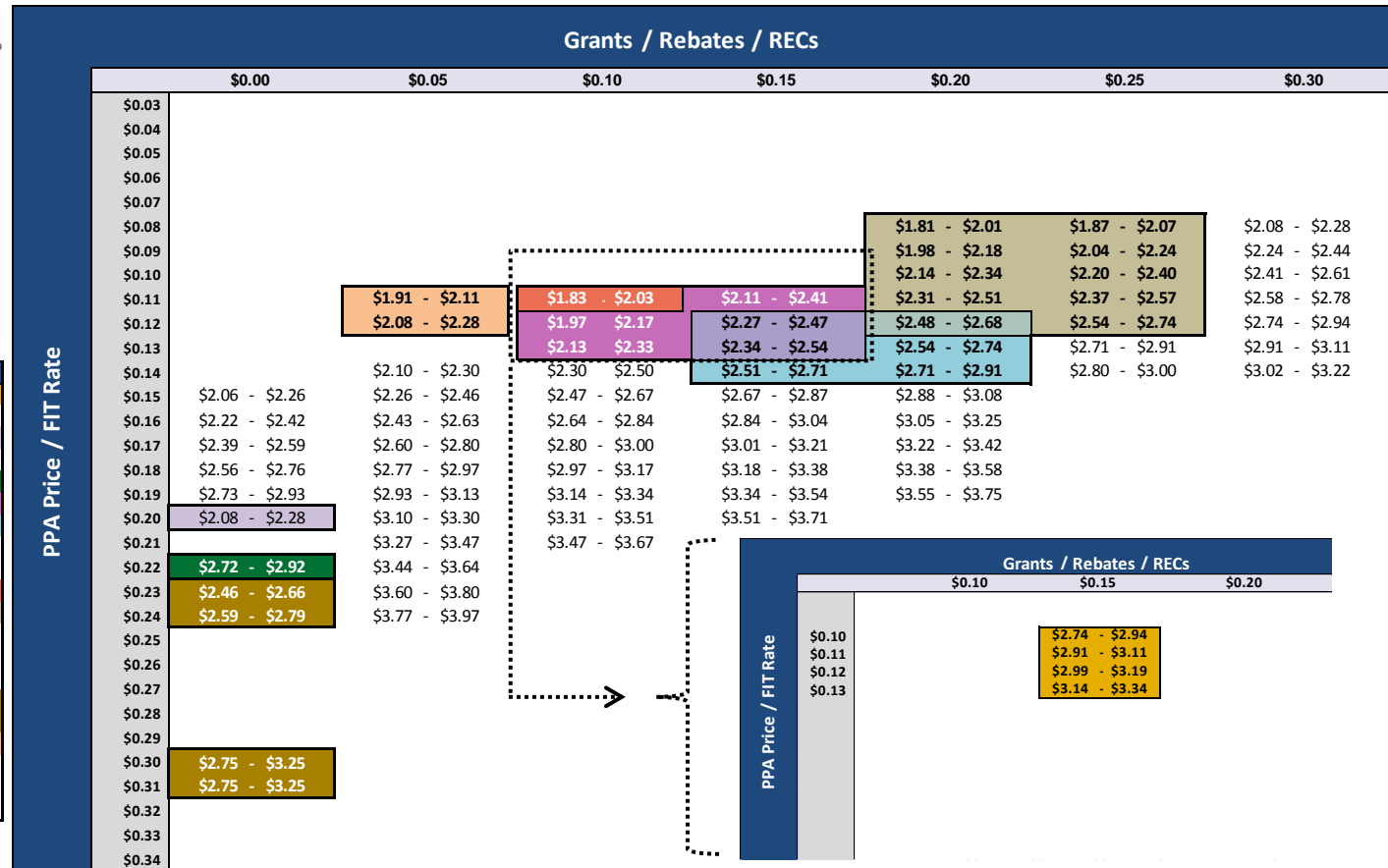
	<u>Start</u>	<u>End</u>
Construction	5/1/2013	8/1/2013
Operations	8/1/2013	8/1/2033

EPC Pricing Grid

Solar Radiation: Low



State	kWh/kW	Incentive	Price	Unit
Connecticut	1176	ZREC	\$0.14 - \$0.16 ⁽¹⁾	kWh
Delaware	1240	-	-	-
Indiana	1189	FIT	\$0.20 ⁽²⁾	kWh
Kentucky	1190	-	-	-
LIPA	1154	FIT	\$0.22 ⁽³⁾	kWh
Maryland	1228	SREC	\$0.135	kWh
Massachusetts	1233	SREC	\$0.195	kWh
Michigan	1130	-	-	-
New Hampshire	1236	-	-	-
New Jersey	1217	SREC	\$0.118	kWh
NYISERDA	1154	Rebate/REC ⁽⁴⁾	***	-
Ohio	1127	-	-	-
Oregon	1131	-	-	-
Pennsylvania	1132	-	-	-
Rhode Island	1248	FIT (500+ kW)	\$0.237 ⁽⁵⁾	kWh
Rhode Island	1248	FIT (<500 kW)	\$0.316 ⁽⁵⁾	kWh
Vermont	1167	PBI	\$0.06 ⁽⁶⁾	kWh
Washington	1045	-	-	-
West Virginia	1130	-	-	-
Wisconsin	1214	-	-	-



**Assumptions: IN: 15 yr FIT, no escalation – RI: 20 yr FIT, no escalation – CT: 20 yr PPA, 2.5% escalator and 15 yr ZREC, no escalation – LIPA: 20 yr FIT - VT, 10 yr PBI, no escalation

EPC Pricing Grid

Solar Radiation: Medium



State	kWh/kW	Incentive ⁽⁷⁾	Price	Unit
Alabama	1278	TVA	Ret + \$0.12	kWh
Arkansas	1314	-	-	-
Georgia	1314	PPA ⁽⁸⁾	Ret + \$0.12	kWh
Illinois	1227	-	-	-
Iowa	1296	-	-	-
Louisiana	1285	-	-	-
Maine	1235	-	-	-
Minnesota	1250	-	-	-
Mississippi	1282	TVA	Ret + \$0.12	kWh
Missouri	1295	-	-	-
Montana	1317	-	-	-
North Carolina	1303	State Tax Credit ⁽⁹⁾	-	-
North Dakota	1316	-	-	-
South Carolina	1321	-	-	-
Tennessee	1242	TVA	Ret + \$0.12	kWh
Virginia	1278	TVA	Ret + \$0.12	kWh

PPA Price / FIT Rate	Grants / Rebates / RECs						
	\$0.00	\$0.05	\$0.10	\$0.15	\$0.20	\$0.25	\$0.30
\$0.03							
\$0.04							
\$0.05							
\$0.06							\$1.97 - \$2.17
\$0.07							\$2.16 - \$2.36
\$0.08	\$2.15 - \$2.35				\$1.89 - \$2.09	\$1.93 - \$2.13	\$2.34 - \$2.54
\$0.09				\$1.85 - \$2.05	\$2.08 - \$2.28	\$2.12 - \$2.32	\$2.52 - \$2.72
\$0.10				\$2.03 - \$2.23	\$2.26 - \$2.46	\$2.30 - \$2.50	\$2.70 - \$2.90
\$0.11				\$2.21 - \$2.41	\$2.44 - \$2.64	\$2.48 - \$2.68	\$2.88 - \$3.08
\$0.12		\$1.95 - \$2.15	\$2.18 - \$2.38	\$2.40 - \$2.60	\$2.62 - \$2.82	\$2.84 - \$3.04	\$3.07 - \$3.27
\$0.13	\$1.55 - \$1.75	\$2.12 - \$2.32	\$2.36 - \$2.56	\$2.58 - \$2.78	\$2.80 - \$3.00	\$3.02 - \$3.22	\$3.25 - \$3.45
\$0.14		\$2.31 - \$2.51	\$2.54 - \$2.74	\$2.76 - \$2.96	\$2.98 - \$3.18	\$3.21 - \$3.41	\$3.43 - \$3.63
\$0.15	\$1.86 - \$2.06	\$2.49 - \$2.69	\$2.72 - \$2.92	\$2.94 - \$3.14	\$3.17 - \$3.37	\$3.39 - \$3.59	
\$0.16	\$1.98 - \$2.18	\$2.67 - \$2.87	\$2.90 - \$3.10	\$3.12 - \$3.32	\$3.35 - \$3.55		
\$0.17	\$2.11 - \$2.31	\$2.85 - \$3.05	\$3.09 - \$3.29	\$3.30 - \$3.50			
\$0.18	\$2.25 - \$2.45	\$3.04 - \$3.24	\$3.27 - \$3.47				
\$0.19	\$2.28 - \$2.48	\$3.21 - \$3.41					
\$0.20	\$2.28 - \$2.48	\$3.40 - \$3.60					
\$0.21	\$2.28 - \$2.48	\$3.58 - \$3.78					
\$0.22	\$2.28 - \$2.48						
\$0.23	\$2.28 - \$2.48						
\$0.24							
\$0.25							
\$0.26							
\$0.27							
\$0.28							
\$0.29							
\$0.30							
\$0.31							
\$0.32							
\$0.33							
\$0.34							

**Assumptions: NC: 15 yr PPA, no escalation - NC State Tax Credit pricing reflects \$.083/kWh flat for 15 years and a 30% discount applied to the credit price, resulting in a total investment of 24.5%.

EPC Pricing Grid

Solar Radiation: High



State	kWh/kW	Incentive	Price	Unit
Florida	1331	FIT	\$0.18 ⁽¹⁰⁾	kWh
Hawaii	1377	FIT	\$.189 ⁽¹¹⁾	kWh
Idaho	1353	-		
Kansas	1438	-		
Nebraska	1397	-		
Oklahoma	1383	-		
South Dakota	1363	-		
Utah	1485	-		

PPA Price / FIT Rate	Grants / Rebates / RECs						
	\$0.00	\$0.05	\$0.10	\$0.15	\$0.20	\$0.25	\$0.30
\$0.03							
\$0.04							
\$0.05							
\$0.06						\$1.92 - \$2.12	\$1.97 - \$2.17
\$0.07					\$1.88 - \$2.08	\$2.12 - \$2.32	\$2.16 - \$2.36
\$0.08				\$1.83 - \$2.03	\$2.07 - \$2.27	\$2.31 - \$2.51	\$2.36 - \$2.56
\$0.09				\$2.03 - \$2.23	\$2.27 - \$2.47	\$2.51 - \$2.71	\$2.55 - \$2.75
\$0.10			\$1.98 - \$2.18	\$2.22 - \$2.42	\$2.46 - \$2.66	\$2.70 - \$2.90	\$2.75 - \$2.95
\$0.11		\$1.93 - \$2.13	\$2.18 - \$2.38	\$2.42 - \$2.62	\$2.66 - \$2.86	\$2.90 - \$3.10	\$2.94 - \$3.14
\$0.12		\$2.13 - \$2.33	\$2.37 - \$2.57	\$2.60 - \$2.80	\$2.85 - \$3.05	\$3.09 - \$3.29	\$3.14 - \$3.34
\$0.13		\$2.32 - \$2.52	\$2.56 - \$2.76	\$2.81 - \$3.01	\$3.04 - \$3.24	\$3.28 - \$3.48	\$3.33 - \$3.53
\$0.14	\$1.98 - \$2.18	\$2.52 - \$2.72	\$2.76 - \$2.96	\$3.00 - \$3.20	\$3.24 - \$3.44	\$3.48 - \$3.68	\$3.53 - \$3.73
\$0.15	\$2.17 - \$2.37	\$2.71 - \$2.91	\$2.95 - \$3.15	\$3.20 - \$3.40	\$3.44 - \$3.64		
\$0.16	\$2.37 - \$2.57	\$2.91 - \$3.11	\$3.15 - \$3.35	\$3.39 - \$3.59			
\$0.17	\$2.57 - \$2.77	\$3.11 - \$3.31	\$3.35 - \$3.55	\$3.59 - \$3.79			
\$0.18	\$2.76 - \$2.96	\$3.30 - \$3.50	\$3.54 - \$3.74				
\$0.19	\$2.95 - \$3.15	\$3.50 - \$3.70					
\$0.20	\$2.95 - \$3.15						
\$0.21							
\$0.22							
\$0.23							
\$0.24							
\$0.25							
\$0.26							
\$0.27							
\$0.28							
\$0.29							
\$0.30							
\$0.31							
\$0.32							
\$0.33							
\$0.34							

**Assumptions: 20 yr FIT of \$.189/kWh (Tier 2: 21kW – 500kW)

EPC Pricing Grid

Solar Radiation: Very High



State	kWh/kW	Incentive	Price	Unit
California	1500	FIT ⁽¹²⁾	\$0.17	kWh
California	1500	PBI ⁽¹²⁾	\$0.04	kWh
Colorado	1500	Xcel SREC ⁽¹³⁾	\$0.08	kWh
Colorado	1500	Solar Gardens ⁽¹³⁾	\$0.09 - \$0.13	kWh
Texas	1463	-	-	-
Wyoming	1449	-	-	-
Arizona	1637	-	-	-
Nevada	1545	-	-	-
New Mexico	1631	-	-	-

PPA Price / FIT Rate	Grants / Rebates / RECs						
	\$0.00	\$0.05	\$0.10	\$0.15	\$0.20	\$0.25	\$0.30
\$0.03							\$2.01 - \$2.21
\$0.04							\$2.22 - \$2.42
\$0.05							\$2.44 - \$2.64
\$0.06				\$2.17 - \$2.37 \$2.41 - \$2.61		\$2.18 - \$2.38	\$2.66 - \$2.86
\$0.07					\$2.13 - \$2.33	\$2.39 - \$2.59	\$2.87 - \$3.07
\$0.08					\$2.08 - \$2.28	\$2.56 - \$2.76	\$3.09 - \$3.29
\$0.09					\$2.29 - \$2.49	\$2.78 - \$2.98	\$3.30 - \$3.50
\$0.10	\$1.71 - \$1.91	\$1.91 - \$2.11	\$2.24 - \$2.44	\$2.51 - \$2.71	\$2.78 - \$2.98	\$3.04 - \$3.24	\$3.30 - \$3.50
\$0.11	\$1.93 - \$2.13	\$2.12 - \$2.32	\$2.46 - \$2.66	\$2.72 - \$2.92	\$2.99 - \$3.19	\$3.26 - \$3.46	
\$0.12	\$2.14 - \$2.34	\$2.41 - \$2.61	\$2.67 - \$2.87	\$2.94 - \$3.14	\$3.21 - \$3.41		
\$0.13	\$2.35 - \$2.55	\$2.62 - \$2.82	\$2.89 - \$3.09	\$3.15 - \$3.35	\$3.42 - \$3.62		
\$0.14	\$2.57 - \$2.77	\$2.84 - \$3.04	\$3.10 - \$3.30	\$3.37 - \$3.57			
\$0.15	\$2.57 - \$2.77	\$3.06 - \$3.26	\$3.32 - \$3.52				
\$0.16	\$2.79 - \$2.99	\$3.27 - \$3.47					
\$0.17	\$2.79 - \$2.99						
\$0.18	\$2.79 - \$2.99						
\$0.19							
\$0.20							
\$0.21							
\$0.22							
\$0.23							
\$0.24							
\$0.25							
\$0.26							
\$0.27							
\$0.28							
\$0.29							
\$0.30							
\$0.31							
\$0.32							
\$0.33							
\$0.34							

PPA Price / FIT Rate	Grants / Rebates / RECs	
	\$0.10	\$0.13
\$0.06	\$2.35 - \$2.55	\$3.10 - \$3.30
\$0.07	\$2.57 - \$2.77	\$3.31 - \$3.51

**Assumptions: CO: 20 yr SREC, (Xcel pricing assumes \$0.08/kWh, Solar Gardens pricing assumes \$0.09-\$0.13/kWh) - CA: 5 yr PBI

Appendix and Notes

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Disclaimer

- The provision of a report by DG Energy Partners (DGEP) does not obviate the need for potential investors to make further appropriate inquiries as to the accuracy of the information included there in, or to undertake an analysis of its own,
- This report is not intended to be a complete and exhaustive analysis of the subject issues and therefore will not consider some factors that are important to a potential investor's decision making, and
- DGEP and its employees cannot accept liability for loss suffered in consequence of reliance on the report. Nothing in DGEP's report should be taken as a promise or guarantee as to the occurrence of any future events.

Solar Radiation Levels

Solar Radiation levels impact system output and the economic viability of the project. To reflect this, states have been grouped into 4 matrices according to solar radiation levels.

1. Solar Radiation: Low

Output: 1200 kWh/kW Installed



2. Solar Radiation: Medium

Output: 1300 kWh/kW Installed



3. Solar Radiation: High

Output: 1400 kWh/kW Installed



4. Solar Radiation: Very High

Output: 1500 kWh/kW Installed



Retail Power Prices

SOLAR RADIATION: LOW		SOLAR RADIATION: MEDIUM		SOLAR RADIATION: HIGH		SOLAR RADIATION: VERY HIGH	
State	Retail Power Price	State	Retail Power Price	State	Retail Power Price	State	Retail Power Price
Connecticut*	\$0.16	Alabama	\$0.10	Florida	\$0.10	California*	\$0.14
Delaware	\$0.11	Arkansas	\$0.07	Hawaii*	\$0.26	Colorado	\$0.09
Indiana*	\$0.08	Georgia	\$0.09	Idaho	\$0.07	Texas	\$0.09
Kentucky	\$0.08	Illinois	\$0.09	Kansas	\$0.08	Wyoming	\$0.07
Maryland	\$0.12	Iowa	\$0.08	Nebraska	\$0.08	Arizona	\$0.09
Massachusetts	\$0.15	Louisiana	\$0.08	Oklahoma	\$0.07	Nevada	\$0.10
Michigan	\$0.10	Maine	\$0.12	South Dakota	\$0.08	New Mexico	\$0.09
New Hampshire	\$0.14	Minnesota	\$0.08	Utah	\$0.07		
New Jersey	\$0.14	Mississippi	\$0.09				
New York	\$0.16	Missouri	\$0.07				
Ohio	\$0.10	Montana	\$0.09				
Oregon	\$0.08	North Carolina	\$0.08				
Pennsylvania	\$0.10	North Dakota	\$0.07				
Rhode Island*	\$0.13	South Carolina	\$0.09				
Vermont	\$0.13	Tennessee	\$0.10				
Washington	\$0.07	Virginia	\$0.08				
West Virginia	\$0.08						
Wisconsin	\$0.10						

*Represents states with Feed-in Tariffs, which are not based on local retail power prices.

Footnotes (page 1 of 2)

State	Incentive	Description
⁽¹⁾ Connecticut	ZREC & LREC:	<p>United Illuminating (UI) and Connecticut Light and Power (CL&P) offer 15-year REC contracts.</p> <p>ZREC: Large Tier (250kW - 1MW), Medium Tier (100kW - 250kW), Small Tier (<100kW)</p> <p>Past auction results for Medium ZRECs: \$.149/kWh for UI & \$.164/kWh for CL&P</p> <p>DGEP Pricing Index assumes a 15-year flat REC, in addition to a 20-year escalating PPA.</p>
⁽²⁾ Indiana	Feed-in Tariff:	<p>Indianapolis P&L offers the following 15-year FIT program:</p> <p>Capacity of 101-10,000 kW, DC: \$0.20 / kWh</p> <p>DGEP Pricing Index assumes a 15-year flat FIT, and a PPA of \$0.10 / kWh for years 16-20, and a land lease expense of \$.02-\$.04 / kWh.</p>
⁽³⁾ New York (LIPA)	Feed-in Tariff:	LIPA offers a 20-year feed-in tariff of \$0.22. (30MW pilot program closed.)
⁽⁴⁾ New York (NYSERDA)	PBI:	<p>NYSERDA PON 2156 & 2484: As of 2012, both programs are closed. Incentive monies are still available in the market.</p> <p>15% upfront, paid when equipment procured/transported to project site</p> <p>15% upfront, paid when project is interconnected to grid and can provide performance data</p> <p>70% of bid price paid based on performance of system</p>
⁽⁵⁾ Rhode Island	Feed-in Tariff:	<p>National Grid FIT:</p> <p>Capacity of 10-150 kW, DC: \$0.3335 / kWh</p> <p>Capacity of 151-500 kW, DC: \$0.316 / kWh</p> <p>Capacity of 501-5000 kW, DC: \$0.237 / kWh based on award</p>
⁽⁶⁾ Vermont	PBI:	<p>Green Mountain Power to pay \$.06 / kWh for 10 years on systems < 500kW.</p> <p>Total kWh (PPA + GMP incentive) not to exceed \$.18/kWh.</p>

Footnotes (page 2 of 2)

State	Incentive	Description
⁽⁷⁾ Various	Tennessee Valley Authority Generation Partners Program:	TVA pays \$0.12/kWh above the retail base power rate for first 10 years of project The maximum system capacity allowed in this program is 50 kW, DC. DGEP Pricing Index assumes TVA purchase program for years 1-10, and a \$.119 (escalating) PPA for years 11-20
⁽⁸⁾ Georgia	PPA:	Georgia Power offers a 20-year PPA at a <u>flat rate</u> of \$0.13 / kWh. Our pricing does not reflect any potential interconnection costs that may be associated with these projects.
⁽⁹⁾ North Carolina	State Tax Credit:	35% state tax credit (received over 5 years) is currently valued between 65%-75% of face value per credit, resulting in a total investment of 23%-26% of total project cost.
⁽¹⁰⁾ Florida	Feed-in Tariff:	The Gainesville Regional Utilities offers an \$0.18 / kWh FIT for projects that range in size from 25kW to 300kW.
⁽¹¹⁾ Hawaii	Feed-in Tariff:	HECO, MECO, HELCO FIT: Capacity of <20 kW, DC: \$0.218 / kWh (Tier 1); Closed/At Capacity Capacity of 21-500 kW, DC: \$0.189 / kWh (Tier 2) Capacity of 501-5000 kW, DC: \$0.197 / kWh (Tier 3); Closed/At Capacity
⁽¹²⁾ California	PBI:	CPUC offers upfront rebates based on expected performance. Currently, the PBI payments are \$0.044 / kWh, and will ultimately drop to \$0.025 / kWh. The LA DWP offers a Feed-in Tariff with a base rate of \$0.17/kWh. This base rate is multiplied by a pre-determined factor (ranging from 0.50 to 2.25), given the Time of Delivery of the power. The weighted average of the FIT price is in the \$0.14-\$0.15/kWh range.
⁽¹³⁾ Colorado	SREC:	Xcel is offering its Step 3, 20-year REC price of \$.08, that will step down to \$.07 once the 8.2MW capacity is met. The Step 4 REC price of \$.07/kWh will last until an additional 8.2MW of capacity is met. Xcel Solar Garden auction prices are expected to be between \$.09/kWh and \$.13/kWh. The anticipated PPA pricing is in the \$.06/kWh-\$.08/kWh range.

DG Energy Partners

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DGEP is a solar industry focused financial advisory firm.

We specialize in deal structuring, capital sourcing and the development and operation of project finance capabilities within client organizations.



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