

21st Annual GIS/CAMA Technologies Conference Chattanooga Convention Center

GIS/CAMA • Chattanooga, TN



March 6-9, 2017



Solar Panels:

It's Time to Value the Sun's Power



21st Annual GIS/CAMA Technologies Conference • March 6–9, 2017 • Chattanooga, Tennessee

Headlines:

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Traffic: Stories from last 24 hours

The Salt Lake Tribune

WWW.SLTRIB.COM NOV 28, 2016

Utah lawmakers: Time to take 'training wheels' off booming solar industry, retire tax credit

By EMMA PERICO | The Salt Lake Tribune | CONTACT

First Published Nov 17 2016 05:00PM | Last Updated Nov 18 2016 10:16 am



(Staff Report) | The Salt Lake Tribune: Solar panels are installed on the roof of a Farmington home. Based on the first quarter, Utah is on track to have more rooftop solar installed in 2016 than in all previous years combined. Advocates say that's because, in the last few months, it has become possible to replace your entire power bill with solar panels, and with state and federal tax credits in place for at least the next year. It also is possible to get the government to refund you annual half the cost.

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The Salt Lake Tribune

WWW.SLTRIB.COM NOV 28, 2016

Rocky Mountain Power could charge solar households more through new rate calculation proposal

By EMMA PERICO | The Salt Lake Tribune | CONTACT

First Published Nov 09 2016 05:27PM | Last Updated Nov 11 2016 04:34 am



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<http://www.sltrib.com/news/4601505-155/utah-lawmakers-time-to-take-training>



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Do these features add value?



Do you adjust for them?



Median Home Value
\$180,000

Typical Property Feature Adjustments

Property Feature	Adjustment Amount	% of median value
Shed	\$3,750	1.97%
Central AC	\$2,500	1.32%
Fireplace	\$2,170	1.14%
Deck	\$3,000	1.58%
Patio/RV Pad	\$1,200	0.63%





Median Home Value
\$180,000



But A \$15,000 solar install is worth nothing, right?



IAAO Standards on Mass Appraisal of Real Property

3.3.1 Selection of Property Characteristics Data

- Factors that influence the market in the locale in question



Do solar panels influence value in your market?





150% increase in solar panel permits for 2016 and the year is but 2/3rds over.

But A \$15,000 solar install is worth nothing, right?





https://emp.lbl.gov/sites/all/files/lbnl-1002778_0.pdf



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Table 16: Combined Set of Paired-Sales Premiums and Contributory-Value Estimates

Paired Sale	ST	Location	Sales Price				Low	Average	High	Sale Price of Solar House	Premium
			Total PV Premium	Gross Cost	Net Cost	Income Estimate	Income Estimate	Income Estimate	as a % of Sale Price		
1	CA	Chula Vista	\$20,700	\$5.05	\$6.11	\$4.14	\$3.61	\$3.89	\$4.20	\$400,000	5.18%
2	CA	Chula Vista	\$11,000	\$3.67	\$6.37	\$4.32	\$3.62	\$3.91	\$4.23	\$836,000	1.32%
3	CA	El Cajon	\$16,800	\$3.72	\$6.11	\$4.14	\$3.61	\$3.90	\$4.22	\$575,000	2.92%
4	CA	LaJolla	\$15,000	\$3.21	\$5.63	\$3.80	\$2.17	\$2.30	\$2.43	\$1,050,000	1.43%
5	CA	San Diego	\$5,850	\$4.09	\$6.37	\$4.32	\$2.06	\$2.18	\$2.31	\$675,000	0.87%
6	CA	San Diego	\$30,850	\$6.02	\$6.37	\$4.32	\$2.95	\$3.14	\$3.36	\$499,000	6.18%
7	CA	San Diego	\$52,500	\$7.53	\$6.37	\$4.32	\$4.07	\$4.40	\$4.78	\$500,000	10.50%
8	CA	San Diego	\$16,580	\$6.09	\$6.11	\$3.77	\$3.72	\$4.02	\$4.34	\$535,000	3.10%
9	CA	Chula Vista	\$5,000	\$2.46	\$5.59	\$3.77	\$3.95	\$4.28	\$4.65	\$455,000	1.10%
10	CA	El Cajon	\$5,000	\$1.46	\$5.59	\$3.77	\$3.31	\$3.56	\$3.82	\$475,000	1.05%
11	CA	El Cajon	\$11,970	\$5.70	\$5.59	\$3.77	\$4.02	\$4.37	\$4.75	\$500,000	2.39%
12	CA	Alpine	\$14,500	\$2.80	\$5.63	\$3.80	\$4.08	\$4.42	\$4.80	\$436,500	3.32%
13	CA	Lemon Grove	\$16,900	\$4.27	\$5.59	\$3.77	\$3.14	\$3.38	\$3.64	\$379,000	4.46%
14	FL	Davenport	\$17,941	\$3.62	\$5.60	\$3.81	\$2.24	\$2.42	\$2.62	\$165,000	10.87%
15	FL	North Port	\$10,100	\$4.83	\$5.60	\$3.92	\$1.68	\$1.82	\$1.98	\$150,000	6.73%
16	FL	Palm Harbor	\$15,000	\$3.75	\$4.00	\$2.80	\$2.44	\$2.63	\$2.84	\$405,000	3.70%
17	FL	Lakewood	\$8,000	\$1.60	\$5.30	\$3.57	\$1.58	\$1.69	\$1.82	\$188,000	4.26%
18	PA	Ambler	\$15,224	\$3.55	\$4.58	\$3.21	\$2.49	\$2.70	\$2.92	\$645,124	2.36%
19	PA	Ambler	\$15,124	\$3.53	\$4.58	\$3.21	\$2.49	\$2.70	\$2.92	\$645,124	2.34%
20	PA	Flourtown	\$18,000	\$2.87	\$5.44	\$3.80	\$1.85	\$1.99	\$2.15	\$344,000	5.23%
21	PA	Macungie	\$17,575	\$4.57	\$6.10	\$4.27	\$1.60	\$1.75	\$1.91	\$290,000	6.06%
22	PA	Garnett Valley	\$19,960	\$1.66	\$5.44	\$3.80	\$1.58	\$1.70	\$1.84	\$600,000	2.66%
23	NC	Cary	\$3,400	\$1.06	\$6.60	\$3.00	\$1.39	\$1.50	\$1.63	\$250,900	1.36%
24	NC	Cary	\$15,499	\$3.23	\$5.30	\$2.41	\$1.60	\$1.75	\$1.92	\$309,999	5.00%
25	NC	Durham	\$8,400	\$1.83	\$5.30	\$2.41	\$1.54	\$1.67	\$1.82	\$289,000	2.91%
26	NC	Durham	\$6,775	\$3.07	\$5.70	\$2.59	\$1.80	\$1.97	\$2.15	\$352,117	1.92%
27	NC	Durham	\$2,431	\$1.10	\$5.70	\$2.59	\$1.81	\$1.98	\$2.17	\$344,273	0.71%
28	NC	Durham	\$4,000	\$0.96	\$7.30	\$3.32	\$1.46	\$1.58	\$1.71	\$243,000	1.65%
29	NC	Holly Springs	\$38,100	\$7.53	\$5.30	\$2.41	\$1.51	\$1.64	\$1.77	\$325,000	11.72%
30	MD	Laurel	\$3,900	\$3.90	\$4.80	\$3.80	2.34	\$2.55	\$2.79	\$411,000	0.95%
31	MD	Timonium	\$23,800	\$4.05	\$4.80	\$3.24	\$2.32	\$2.51	\$2.71	\$575,000	4.14%
32	MD	Gambrills	\$13,300	\$3.50	\$4.80	\$3.18	\$1.89	\$2.03	\$2.19	\$535,000	2.49%
33	OR	Portland	\$7,900	\$3.32	\$5.46	\$3.32	\$0.93	\$1.01	\$1.11	\$401,000	1.97%
34	OR	Portland	\$6,900	\$2.35	\$5.46	\$1.83	\$1.64	\$1.80	\$1.98	\$467,900	1.47%
35	OR	Portland	\$0	\$0.00	\$4.97	\$1.48	\$1.78	\$1.96	\$2.15	\$274,000	0.00%
36	OR	Portland	\$7,400	\$2.58	\$4.97	\$1.83	\$1.64	\$1.80	\$1.98	\$444,500	1.66%
37	OR	Portland	\$8,000	\$3.33	\$4.97	\$1.48	\$1.70	\$1.85	\$2.03	\$475,000	1.68%
38	OR	Beaverton	\$18,800	\$6.27	\$4.97	\$1.48	\$0.98	\$1.06	\$1.15	\$300,000	6.27%
39	OR	Oregon City	\$14,400	\$3.48	\$5.46	\$2.14	\$1.84	\$2.03	\$2.25	\$240,000	6.00%
40	OR	King City	\$16,100	\$6.56	\$4.97	\$1.48	\$1.44	\$1.56	\$1.70	\$290,000	5.55%
41	OR	North Plains	\$15,900	\$7.36	\$4.97	\$1.48	\$1.54	\$1.67	\$1.82	\$345,000	4.61%
42	OR	Bend	\$9,500	\$4.04	\$4.97	\$1.48	\$2.05	\$2.23	\$2.43	\$559,000	1.70%
43	OR	Bend	\$36,050	\$6.96	\$4.97	\$2.00	\$2.42	\$2.64	\$2.89	\$395,000	9.13%
Mean			\$14,329	\$3.78	\$5.48	\$3.10	\$2.27	\$2.46	\$2.67	\$431,964	3.74%
Median			\$14,500	\$3.55	\$5.46	\$3.32	\$1.87	\$2.03	\$2.25	\$405,000	2.91%



Conclusions

Paired Sale	ST	Location	Total PV Premium	Sales Price Premium (\$/Watt)	Gross Cost (\$/Watt)	Net Cost (\$/Watt)	Low Income Estimate (\$/Watt)	Average Income Estimate (\$/Watt)	High Income Estimate (\$/Watt)	Sale Price of Solar House	Premium as a % of Sale Price
Mean			\$14,329	\$3.78	\$5.48	\$3.10	\$2.27	\$2.46	\$2.67	\$431,964	3.74%
Median			\$14,500	\$3.55	\$5.46	\$3.32	\$1.87	\$2.03	\$2.25	\$405,000	2.91%





APPRAISAL PRACTICES BOARD
THE APPRAISAL FOUNDATION
America's Valuation Resource

APB Valuation Advisory #7
Voluntary Guidance on Recognized Valuation Methods and Techniques:
Valuation of Green and High-Performance Property:
One- to Four-Unit Residential

This communication is for the purpose of issuing voluntary guidance on recognized valuation methods and techniques.

Date Issued: May 3, 2016

Application: Real Property

<https://appraisalfoundation.sharefile.com/share?cmd=d&id=s1d2398b68b449c09#/view/s1d2398b68b449c09>



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STATWING

Regression

AVT Tools
Gandysoft

Mean sales price was \$302,043.

Solar Panel Values when present \$8,547.

Which is 2.82% of the median sales price.

Can I rely on this?

6 Solar Sales out of 524 total sales

***remember valuing the sun study said 2.91%



10062 S Bell Canyon Circle

	Solar	Non-Solar	Adjustment
Sales Price	\$410,000		\$385,000
Sale Date	7/1/2015	12/7/2015	
Market Adjustment			-\$5,919
Concessions	(\$3,500)	\$0	
Site Size	0.25	0.37	-\$5,000
Year Built	1975	1975	\$0
Condition	Average	Average	\$0
Construction Quality	Average	Average	\$0
Baths	3.1	2.1	\$5,000
Garage	2	2	\$0
GLA	1950	1938	\$360
Basement Size	1158	710	\$6,720
Basement Finish	1088	710	\$5,670

Paired Sale Adjusted Sales Price	\$391,831
Subject Sales Price	\$406,500
Solar Panel's Contribution to Value	\$14,669
Solar's Contribution as a % of Sales Price	3.58%

Market Adjustment	
Annual	Monthly
0.0369	0.003075





Five Paired Sales of Solar Panels in Sandy City

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5
Solar Panel's Contribution to Value	\$33,693	\$14,669	\$18,844	\$9,967	\$5,370
Solar's Contribution as a % of Sales Price	8.22%	3.58%	4.23%	2.24%	1.51%
Mean Contribution of Solar Panels' Value			16508.78		
Mean % of Sales Price of Solar Panels' Value			3.96%		
Median Contribution of Solar Panels' Value			14669.38		
Median % of Sales Price of Solar Panels' Value			3.58%		





Does it pass the sniff test?




ADJUSTMENT:

Regression Adjustment
2.82% or \$9,000

Paired Sales Analysis
3.58% or \$15,000



Cost Approach

 **Auric Solar, LLC Sales & Service Agreement**

This Customer Sales & Service Agreement (this "Agreement") is made this day of June 18, 2015, between Auric Solar, L.L.C. (the "Seller") and [REDACTED] and [REDACTED].

The Parties, for good and valuable consideration, agree to the following terms and conditions:

Customer Name (First, MI, Last) [REDACTED]

Installation Address (hereinafter referred to as the Property):
Address [REDACTED] City SLC State UT Zip 84116 Phone [REDACTED]

Billing Address (IF DIFFERENT) [REDACTED]

Services: 23 Suniva 270w panels
Sec A 6.21 kw = 23 Enphase M250 + \$1500 manual transfer switch
+ \$500 solar attic fan - no additional financing fees

Initial Price Quote (Subject to change by installer based on site planning and/or solar shading analysis)
\$31,993 Final Price Initial Date
(Customer initial and date acceptance of final price)

*this contract cancels previous contract upon financial approval.

Method of Payment (We accept cash (U.S. currency only), AMEX, MasterCard, Visa, certified checks, personal checks drawn on U.S. Banks or Customer may acquire financing.)

Deposit [initials] amount is required as a deposit. The deposit is refundable if the three day right of rescission applies and timely notice has been provided according to the provisions of BUYER'S RIGHT TO CANCEL. Final payment for the balance of the cost of the system is due 48 hours after the city or county inspection has passed.



Suniva OPT270-60-4-100 Silver Mono Solar Panel

- 40 years of Research and Development
- High efficiency ratings



Model	Part No.	Watts	Amps	Volts	Size & Weight
Suniva OPT270-60-4-100 Silver Mono Solar Panel	1524406	270W	8.68A	31.20VDC	65.08 x 38.66 x 1.57 in 39.5 lbs

Enphase M250



df

Calculating Real Cost to Buyer	
Total Cost	\$31,993
Rebates	
Federal is 30%	\$9,597.90
Utah is \$2,000	\$2,000
Total Rebate	\$11,597.90
Total Cost	\$31,993
Rebate	\$11,598
Cost After Rebate	\$20,395

36.25%



df

Calculating Price Per Watt

Cost After Rebate	\$20,395
-------------------	----------

6.21 Kw System	
----------------	--

23 Suniva Panels Producing 270 Watts	
--------------------------------------	--

23 X 270 = 6,210	6,210 Watts = 6.21 Kw
------------------	-----------------------

Cost of \$20,395 divided by 6,210 watts	
---	--

\$20,395 / 6210	Equals \$3.28 / watt
-----------------	----------------------

Subtract the \$1,500 switch and \$500 fan	
---	--

Cost of \$18,395 divided by 6,210 watts	
---	--

\$18,395 / 6210	Equals \$2.96 / watt
-----------------	----------------------



df



3.5 \$/watt



3.7 \$/watt





https://emp.lbl.gov/sites/all/files/lbnl-1002778_0.pdf

Conclusions

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Mean			\$14,329	\$3.78	\$5.48	\$3.10	\$2.27	\$2.46	\$2.67	\$431,964	3.74%
Median			\$14,500	\$3.55	\$5.46	\$3.32	\$1.87	\$2.03	\$2.25	\$405,000	2.91%





Cost:

Actual Cost = \$2.96 or \$3.28/watt

National Study = \$3.32

Industry = \$3.5 - \$3.7



Income Approach

2 Revenue Sources

- Money Saved By Producing Own Electricity
- Production Credits to Power Company





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Valuation of Green and High-Performance Property:
One- to Four-Unit Residential

This communication is for the purpose of issuing voluntary guidance on recognized valuation methods and techniques.

Date Issued: May 3, 2016

Application: Real Property

<https://appraisalfoundation.sharefile.com/share?cmd=d&id=s1d2398b68b449c09#/view/s1d2398b68b449c09>



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Voluntary Guidance on Recognized Valuation Methods and Techniques: *Valuation of Green and High-Performance Property: One- to Four-Unit Residential*


EXAMPLE OF A VALUE INDICATION USING ESTIMATED ENERGY SAVINGS

Once the details of a PV system are known, they can be entered into an online energy valuation tool at <https://www.pvvalue.com>. The user manual states that the tool: "...considers the present value of projected future energy production along with the estimated operating income and maintenance costs that are anticipated to occur during the PV module power production warranty timeframe."

The online tool indicates that a specific 4.7kW, two-year-old system may reasonably have a value indication of \$2,500. Values will vary greatly based on the location of the system, its age, and the cost of electricity.

It is beyond the scope of this Advisory to explain the details of <https://www.pvvalue.com>.



		Beta Version 0.8.1	File #:	Appraiser Indicated Value:	\$11,408.00	\$1.84 /watt
		08/31/16 6:50:48 AM	NA	Report Prepared By:	Jake Parkinson	
Subject Property Data						
Address:	810 N 1500 W					
City:	Salt Lake City	State:	UT	Zip Code:	84116	
Property Type:	Residential	PV Project Type:	Existing	PV Ownership:	Owned	
Cost Approach Method Physical Age / Life Depreciated Cost						
Source:	ESF 8-31-16 UT	Gross Replacement Cost New:		\$0.00	\$0.00	/watt
Life:	25	Straight Line Depreciation:		\$0.00	\$0.00	/watt/yr
Age:	1	Accumulated SL Depreciation:		\$0.00	\$0.00	/watt
Additional Depreciation:	None			\$	\$	/watt
Additional Depreciation:	None			\$	\$	/watt
Estimated Depreciated Value	Cost Approach:			\$0.00	\$0.00	/watt
Income Approach Method Energy Value DCF						
Solar Resource		O & M Expense		Utility Rate		
System Size Watts:	6,200	Inverter Size Watts:	6,200	NREL Utility Co:	PacifiCorp	
Module Warranty Yrs:	30	Inverter Warranty Yrs:	15	NREL Utility Rate:	10.31 ¢/kWh	
System Age Yrs:	1	Inverter Age Yrs:	1	User Provided Utility Rate:	8.89 ¢/kWh	
Remaining Yrs:	29	Inverter Replaced:	No	Utility Rate Used:	8.89 ¢/kWh	
Derate Factor:	0.77	Inverter Replacement Cycle Yrs:	15	EIA Escalation Rate:	0.65% CAGR	
Degradation Rate:	0.50%	Inverter Replacement Cost		User Provided Esc Rate:	0.76% CAGR	
Array Tilt:	22.6 °	Survey Data:	55 ¢/W	Escalation Rate Used:	0.76% CAGR	
Array Azimuth:	180 °	User Provided:	- ¢/W	Comments:		
Annual kWh Est:	8,336	Replacement Cost Used:	55 ¢/W			
		O & M Exp (future):	\$3,410.00			
		O & M Exp (discounted):	\$1,982.49			
Cost of Capital		WACC Used + Risk Premium = Discount Rate →			Estimated Energy Value / Income Approach	
Fannie Mae Date:	August 30, 2016	200 Basis Points	4.95%	\$10,034.62	\$1.62 /watt	
Fannie Mae Rate:	30 Yr 90 day 2.95%	2.95%	100 Basis Points 3.95%	\$11,391.32	\$1.84 /watt	
User Provided Interest Rate:	- %	0 Basis Points	2.95%	\$13,008.52	\$2.10 /watt	



***This does not account for production credits.



Cost of Capital		WACC Used	+ Risk Premium	= Discount Rate	Estimated Energy Value / Income Approach	
Fannie Mae Date:	August 30, 2016		200 Basis Points	4.95%	\$10,034.62	\$1.62 /watt
Fannie Mae Rate:30 Yr 90 day	2.95%		100 Basis Points	3.95%	\$11,391.32	\$1.84 /watt
User Provided Interest Rate:	- %		0 Basis Points	2.95%	\$13,008.52	\$2.10 /watt

Estimate of Accumulated Energy Production / Income Approach							
Year	Annual kWh	Low Estimated Value		Avg Estimated Value		High Estimated Value	
		Annual Value	Accumulated Value	Annual Value	Accumulated Value	Annual Value	Accumulated Value
1	8,294	0.00	0.00	0.00	0.00	0.00	0.00
2	8,253	733.66	733.66	733.66	733.66	733.66	733.66
3	8,211	700.61	1,434.27	707.55	1,441.21	714.43	1,448.09
4	8,169	669.42	2,103.89	682.36	2,123.57	695.68	2,143.77
5	8,128	639.41	2,743.30	658.04	2,781.62	677.41	2,821.17
6	8,086	610.74	3,354.04	634.58	3,416.20	659.60	3,480.77
7	8,044	583.33	3,937.37	611.93	4,028.13	642.24	4,123.01
8	8,003	557.14	4,494.51	590.08	4,618.21	625.32	4,748.33
9	7,961	532.11	5,026.62	569.00	5,187.21	608.83	5,357.15
10	7,919	508.19	5,534.82	548.65	5,735.85	592.76	5,949.91
11	7,878	485.34	6,020.15	529.01	6,264.86	577.10	6,527.01
12	7,836	463.49	6,483.65	510.06	6,774.93	561.83	7,088.84
13	7,794	442.62	6,926.27	491.78	7,266.71	546.95	7,635.79
14	7,752	422.68	7,348.95	474.14	7,740.85	532.46	8,168.25
15	7,711	403.62	7,752.57	457.12	8,197.97	518.33	8,686.58
16	7,669	385.41	8,155.49	440.70	8,656.17	504.56	9,208.65
17	7,627	368.02	8,523.51	424.85	9,081.02	491.14	9,699.79
18	7,586	351.39	8,874.90	409.56	9,480.58	478.07	10,177.86
19	7,544	335.51	9,210.41	394.81	9,865.39	465.33	10,643.18
20	7,502	320.34	9,530.75	380.58	10,235.96	452.91	11,096.10
21	7,461	305.84	9,836.58	366.85	10,592.83	440.82	11,536.91
22	7,419	291.99	10,128.57	353.61	10,936.44	429.03	11,965.94
23	7,377	278.76	10,407.33	340.83	11,267.27	417.54	12,383.48
24	7,336	266.11	10,673.44	328.51	11,585.77	406.35	12,789.83
25	7,294	254.04	10,927.48	316.62	11,892.39	395.45	13,185.28
26	7,252	242.50	11,169.98	305.15	12,187.53	384.82	13,570.11
27	7,211	231.48	11,401.46	294.08	12,471.62	374.47	13,944.58
28	7,169	220.96	11,622.42	283.41	12,744.02	364.39	14,308.97
29	7,127	210.90	11,833.32	273.11	13,005.14	354.56	14,663.53
30	7,086	201.30	12,034.62	263.18	13,254.97	344.99	15,008.52

Use of this form is subject to the PV Value® terms of use agreement | www.pvvalue.com
 ©2014 Energy Sense Finance, LLC | 3825 Henderson Blvd., Ste. 300, Tampa FL 33629 | www.energysensefinance.com

***This does not account for production credits.



Energy Costs By State

Annual Average Price per Kilowatthour by State (Lowest to Highest Rate as of 2015)

Rank	State	Average Electricity Rate for All Sectors (Cents per Kilowatthour)
1	Washington	7.41
2	Louisiana	7.64
3	Oklahoma	7.83
4	Wyoming	7.95
5	Kentucky	8.03
6*	West Virginia	8.12
6*	Idaho	8.12
7	Arkansas	8.15
8	Iowa	8.47
9	Utah	8.61
10	Texas	8.63
11	Indiana	8.79
12	Oregon	8.82
13	North Dakota	8.85
14	Montana	8.93
15	Nebraska	9.04
16	Illinois	9.28
17	Missouri	9.30
18*	South Dakota	9.31
18*	Virginia	9.31
19	Tennessee	9.35
20	North Carolina	9.36
21	Alabama	9.37

Source: *Electric Data Browser* (<http://www.eia.gov/electricity/data/browser/>) Energy Information Administration, Washington, DC. Nebraska Energy Office, Lincoln, NE.

Note: *Starting with this report, states are ranked so that equivalent prices are ranked at the same level.

This table was updated on June 28, 2016.





https://emp.lbl.gov/sites/all/files/lbnl-1002778_0.pdf

Conclusions

Paired Sale	ST	Location	Total PV Premium	Sales Price Premium (\$/Watt)	Gross Cost (\$/Watt)	Net Cost (\$/Watt)	Low Income Estimate (\$/Watt)	Average Income Estimate (\$/Watt)	High Income Estimate (\$/Watt)	Sale Price of Solar House	Premium as a % of Sale Price
Mean			\$14,329	\$3.78	\$5.48	\$3.10	\$2.27	\$2.46	\$2.67	\$431,964	3.74%
Median			\$14,500	\$3.55	\$5.46	\$3.32	\$1.87	\$2.03	\$2.25	\$405,000	2.91%



Income Approach:

Our Study = \$1.84/watt

does not account for energy credits

National Study = \$2.46/watt





Income Approach: discounted cash flow



Income Approach:

discounted cash flow

Before & After Annual Utility Cost

Was \$1,320

Now \$150

Total Savings: \$1,170

Warranty is 25 years



Income Approach:

discounted cash flow

Useful Life: 25 Years (warranty)

Annual Energy Savings \$1,170

Financing Interest Rate 4%

Net Present Value = \$20,621



Recapture Investment in 13-25 Years

this guy saved \$1,320 a
year



Conclusions

Regression: \$9,000 or 2.82% of SP

Paired Sales: \$15,000 or 3.58% of SP

Cost: \$20,394 or \$2.96-\$3.78 / watt

Income: \$9,790 or \$1.58 / watt



Conclusion (Subsidized)

Regression = 44% of Cost

Paired Sales: 74% of Cost

Cost = Cost \$20,394

Income: 48% of Cost



Conclusion (Unsubsidized)

Regression = 28% of Cost

Paired Sales: 46% of Cost

Cost = Cost \$31,993

Income: 30% of Cost



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