

SOLAR COST MODEL FOR A 70% wholesale 30% distributed generation program

VOTE SOLAR MISSOURI COST MODEL
Claudia Eyzaguirre claudia@votesolar.org

SOLAR REQUIREMENT MWH (% of total retail sales)	0.04%	0.04%	0.04%	0.1%	0.1%	0.1%	0.1%	0.2%	0.2%	0.2%	0.3%
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Rebates	\$10,265,875	\$225,849	\$230,818	\$16,873,554	\$602,714	\$815,974	\$629,525	\$30,531,059	\$1,315,058	\$1,343,989	\$33,277,544
Lumpsum SRECs	\$13,595,219	\$284,140	\$275,872	\$18,931,883	\$650,124	\$831,205	\$812,837	\$28,235,621	\$1,155,378	\$1,121,756	\$28,386,242
SRECs	\$4,410,477	\$4,502,856	\$4,582,152	\$10,733,851	\$10,944,780	\$11,149,532	\$11,348,345	\$20,508,370	\$20,883,180	\$21,244,866	\$29,804,827
Total	\$28,271,572	\$5,012,645	\$5,098,842	\$46,339,088	\$12,197,598	\$12,396,711	\$12,590,707	\$79,275,050	\$23,353,626	\$23,710,612	\$89,468,714

ASSUMPTIONS:

Model Market Segmentation Scenario:	30% net metered distributed generation <25kW (rebate + lumpsum SREC payment) 70% large scale, wholesale solar (SREC only)
Lumpsum SREC payment	Calculation modeled after method used in Maryland for lumpsum SREC payments NPV(80% of average SREC for wholesale for 15 years at a 8% discount rate); lumpsum declines 5% annually; assumes 0.5% degradation) \$2,649 Yr 1 lumpsum as rebate (\$/watt) \$2,077 Avg lumpsum payment
SREC values	Based on the LCOE for a utility scale solar project derived from the National Renewable Energy Lab Solar Advisor Model (SAM); assumptions: in table below value of wholesale electricity not accounted for.
Rebate	\$2/W DC for all projects >25kW
Statewide IOU Retail Electricity Sales Growth Rate:	2.2%
MWh / MW (DC) per Year -- single axis tracker	1,673
MWh/MW (DC) per Year -- fixed tilt at 10 degrees	1,228
Utility MWh data from	Source: Energy Information Administration, Form EIA-861, "Annual Electric Power Industry http://www.eia.doe.gov/cneaf/electricity/st_profiles/missouri.html

Levelized Cost of Energy* for a Utility Scale PV Project Assumptions in the Solar Advisor Model

	Year 2011	General:	Taxes/Insurance:	Financial:	System:
panels	\$2.00	30 yr analysis	35% federal	PPA/IPP	\$21/kW-yr O&M
inverter	\$0.45	2.5% inflation	8% state	15 year term	1673 kWh/kW (single axis tracking)
labor+profit +					
BOM	\$2.80	6% real discount	0% property tax	6%/yr interest	0.5% degradation in output
Total	\$5.25		7.35% sales tax	40% debt fraction	77% derate factor DC to AC
LCOE nom	\$0.307		0.5% insurance	0.6% PPA escalation	
1st yr PPA price	\$0.291			15% IRR	
				1.4 DSCR	

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*The LCOE equation evaluates the lifecycle energy cost and production of a power plant, allowing alternative technologies -- with different scales of operation, investment, or operating time periods -- to be compared.

W. Short, D. Packey, T. Holt, "A Manual for the Economic Evaluation of Energy Efficiency and Renewable Energy Technologies", National Renewable Energy Laboratory -- March 1995

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