

Modeling Price Sensitivity and Future Cost of Private Scale Solar Energy Installations due to Projected Prices of Critical Materials

Pranav Kadiyala and Jackson P. Hardin

Supporting Information

5 kW array installed on roof of residential building (private) - Typical or existing Pricing						
SubSystem	Component	Range	Unit Price	Units / 5 kW	Total Price	Sources
Mounting	Rooftop Mount	0.1 / w, or 520 / 4kw	0.115	5000	575	1, 2
Panel	Cell	0.60 / 5.25wp, 0.48/5w	0.10514	5000	525.7	10, 13
Panel	Glass (tempered)	10 to 55/ sq foot, 7/sqft	7.07	37	261.59	3, 9
Panel	Backing Material	1.31-1.44/ sq meter	1.375	37	50.875	19, 26
Electrical	Battery	1000 to 1300/kwh, 9200-11500 / 13.5kv	958.3325	12	11499.99	5,6, 14
Electrical	Inverter	0.10 to 0.30/ watt	0.2	5000	1000	4, 27
Electrical	Wiring	82 - 96.75 for 4.5m of 12mm d wiring	19.8611	4.5	89.37495	8, 16, 17, 29, 30
Electrical	Load Balancer	Inquiring from supplier				15

S 2 : Spreadsheet containing Market Research and Sources

Solar Cell (PERC): 158 x 158mm cell size					
SubSystem	Component	Unit Price	Units / W	Sources	
Wafer	Silicon Wafer	0.3 / wafer		25	
	Silver	3.82 - 4.39/ gm	70mg/5W	23, 24	
	Passivity Layer (Al2O3)	\$ / cell			
	Aluminum	7.5-8.5/ kg		28	
Solar Cell (MonoCrystalline)					
SubSystem	Component	Unit Price	Units / W	Sources	
Wafer	Silicon Wafer		2 500	12	
Raw	Copper				
	Silver		70mg/5W		
	Aluminum	7.5-8.5		28	
Battery - Lithium Ion 12kwh					
SubSystem	Component	Unit Price	Units / 5 kW	Sources	
Cathode	Lithium Nickel Manganese Cobalt Oxide	27.6	23		
		280-294/500g		35, 36	
	Cobalt	160g/ kwh	5		
	Lithium	160g/ kwh	5	32	
Electrolyte	LiPF6	20	19.32		
Anode	Graphite	2.4	22.08	37	
Copper Wiring - 4.5m of 12mm diameter wire					
SubSystem	Component	Unit Price	Units / 5 kW	Total Price	Sources
				0	
Copper	Raw Copper	0.0089	4557.7728	40.56417792	
other	sheathing	25	1	25	
	manufacturing / overhead	25	1	25	
				0	
			Total System Price	90.56417792	

S 3 : Spreadsheet containing Cost breakdown for subcomponents

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