

Sheet2

Year n	actual Build cost	discounted Build cost	actual O&M cost	discounted O&M cost	discounted cumulative cost
\$0.00	\$1,020.00	\$1,020.00	\$37.50	\$37.50	\$1,057.50
\$1.00	0	\$0.00	\$37.50	\$35.71	\$1,093.21
\$2.00	0	\$0.00	\$37.50	\$34.01	\$1,127.23
\$3.00	0	\$0.00	\$37.50	\$32.39	\$1,159.62
\$4.00	0	\$0.00	\$37.50	\$30.85	\$1,190.47
\$5.00	0	\$0.00	\$37.50	\$29.38	\$1,219.86
\$6.00	0	\$0.00	\$37.50	\$27.98	\$1,247.84
\$7.00	0	\$0.00	\$37.50	\$26.65	\$1,274.49
\$8.00	0	\$0.00	\$37.50	\$25.38	\$1,299.87
\$9.00	0	\$0.00	\$37.50	\$24.17	\$1,324.04
\$10.00	0	\$0.00	\$37.50	\$23.02	\$1,347.07
\$11.00	0	\$0.00	\$37.50	\$21.93	\$1,368.99
\$12.00	0	\$0.00	\$37.50	\$20.88	\$1,389.87
\$13.00	0	\$0.00	\$37.50	\$19.89	\$1,409.76
\$14.00	0	\$0.00	\$37.50	\$18.94	\$1,428.70
\$15.00	235	\$113.04	\$37.50	\$18.04	\$1,559.78
\$16.00	0	\$0.00	\$37.50	\$17.18	\$1,576.96
\$17.00	0	\$0.00	\$37.50	\$16.36	\$1,593.32
\$18.00	0	\$0.00	\$37.50	\$15.58	\$1,608.90
\$19.00	0	\$0.00	\$37.50	\$14.84	\$1,623.74
\$20.00	0	\$0.00	\$37.50	\$14.13	\$1,637.87
\$21.00	0	\$0.00	\$37.50	\$13.46	\$1,651.33
\$22.00	0	\$0.00	\$37.50	\$12.82	\$1,664.15
\$23.00	0	\$0.00	\$37.50	\$12.21	\$1,676.36
\$24.00	0	\$0.00	\$37.50	\$11.63	\$1,687.99
\$25.00	0	\$0.00	\$37.50	\$11.07	\$1,699.06
\$26.00	0	\$0.00	\$37.50	\$10.55	\$1,709.61
\$27.00	0	\$0.00	\$37.50	\$10.04	\$1,719.65
\$28.00	0	\$0.00	\$37.50	\$9.57	\$1,729.22
\$29.00	0	\$0.00	\$37.50	\$9.11	\$1,738.33
\$30.00	480	\$111.06	\$37.50	\$8.68	\$1,858.07
\$31.00	0	\$0.00	\$37.50	\$8.26	\$1,866.33
\$32.00	0	\$0.00	\$37.50	\$7.87	\$1,874.20
\$33.00	0	\$0.00	\$37.50	\$7.50	\$1,881.70
\$34.00	0	\$0.00	\$37.50	\$7.14	\$1,888.83
\$35.00	0	\$0.00	\$37.50	\$6.80	\$1,895.63
\$36.00	0	\$0.00	\$37.50	\$6.47	\$1,902.11
\$37.00	0	\$0.00	\$37.50	\$6.17	\$1,908.27
\$38.00	0	\$0.00	\$37.50	\$5.87	\$1,914.15
\$39.00	0	\$0.00	\$37.50	\$5.59	\$1,919.74
\$40.00	0	\$0.00	\$37.50	\$5.33	\$1,925.07
\$41.00	0	\$0.00	\$37.50	\$5.07	\$1,930.14
\$42.00	0	\$0.00	\$37.50	\$4.83	\$1,934.97
\$43.00	0	\$0.00	\$37.50	\$4.60	\$1,939.57
\$44.00	0	\$0.00	\$37.50	\$4.38	\$1,943.95
\$45.00	235	\$26.15	\$37.50	\$4.17	\$1,974.28
\$46.00	0	\$0.00	\$37.50	\$3.97	\$1,978.26
\$47.00	0	\$0.00	\$37.50	\$3.79	\$1,982.04
\$48.00	0	\$0.00	\$37.50	\$3.61	\$1,985.65

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\$49.00	0	\$0.00	\$37.50	\$3.43	\$1,989.08
\$50.00	0	\$0.00	\$37.50	\$3.27	\$1,992.35
Decommission = 1%	\$1,970.00	\$171.79			\$2,164.14

All values are in units of \$ /kW

Energy source is Onshore wind

Assumed discount rate is 5% /yr


Levelized cost of Power = \$2,164.14 \$ /kW

Capacity Factor = 37.9%

Levelized Cost of Energy – LCOE = $\$2164.14 \div 166.002 = \$13.04 /MWh$

	Actual Build cost	Discounted Build cost	Actual O&M cost	Discounted O&M cost	Cumulative cost	Yearly energy
Year n	\$1290 /kW					average
	\$1,290	\$1,290	\$16.50	\$16.50	\$1,306.50	1.726
1	0	0	\$16.50	\$15.00	\$1,321.50	1.726
2	0	0	\$16.50	\$13.64	\$1,335.14	1.726
3	0	0	\$16.50	\$12.40	\$1,347.53	1.726
4	0	0	\$16.50	\$11.27	\$1,358.80	1.726
5	0	0	\$16.50	\$10.25	\$1,369.05	1.726
6	0	0	\$16.50	\$9.31	\$1,378.36	1.726
7	0	0	\$16.50	\$8.47	\$1,386.83	1.726
8	0	0	\$16.50	\$7.70	\$1,394.53	1.726
9	0	0	\$16.50	\$7.00	\$1,401.52	1.726
10	0	0	\$16.50	\$6.36	\$1,407.89	1.726
11	0	0	\$16.50	\$5.78	\$1,413.67	1.726
12	\$77.40	\$24.66	\$16.50	\$5.26	\$1,443.59	1.726
13	0	0	\$16.50	\$4.78	\$1,448.37	1.726
14	0	0	\$16.50	\$4.34	\$1,452.71	1.726
15	0	0	\$16.50	\$3.95	\$1,456.66	1.726
16	0	0	\$16.50	\$3.59	\$1,460.25	1.726
17	0	0	\$16.50	\$3.26	\$1,463.52	1.726
18	0	0	\$16.50	\$2.97	\$1,466.49	1.726
19	0	0	\$16.50	\$2.70	\$1,469.18	1.726
20	0	0	\$16.50	\$2.45	\$1,471.64	1.726
21	0	0	\$16.50	\$2.23	\$1,473.87	1.726
22	0	0	\$16.50	\$2.03	\$1,475.89	1.726
23	0	0	\$16.50	\$1.84	\$1,477.74	1.726
24	\$77.40	\$7.86	\$16.50	\$1.68	\$1,487.27	1.726
25	0	0	\$16.50	\$1.52	\$1,488.79	1.726
26	0	0	\$16.50	\$1.38	\$1,490.18	1.726
27	0	0	\$16.50	\$1.26	\$1,491.43	1.726
28	0	0	\$16.50	\$1.14	\$1,492.58	1.726
29	0	0	\$16.50	\$1.04	\$1,493.62	1.726
30	0	0	\$16.50	\$0.95	\$1,494.56	1.726
31	0	0	\$16.50	\$0.86	\$1,495.42	1.726
32	0	0	\$16.50	\$0.78	\$1,496.21	1.726
33	0	0	\$16.50	\$0.71	\$1,496.92	1.726
34	0	0	\$16.50	\$0.65	\$1,497.56	1.726
35	0	0	\$16.50	\$0.59	\$1,498.15	1.726
36	\$77.40	\$2.50	\$16.50	\$0.53	\$1,501.19	1.726
37	0	0	\$16.50	\$0.49	\$1,501.67	1.726
38	0	0	\$16.50	\$0.44	\$1,502.11	1.726
39	0	0	\$16.50	\$0.40	\$1,502.51	1.726
40	0	0	\$16.50	\$0.36	\$1,502.88	1.726
41	0	0	\$16.50	\$0.33	\$1,503.21	1.726
42	0	0	\$16.50	\$0.30	\$1,503.51	1.726
43	0	0	\$16.50	\$0.27	\$1,503.78	1.726
44	0	0	\$16.50	\$0.25	\$1,504.03	1.726
45	0	0	\$16.50	\$0.23	\$1,504.26	1.726
46	\$1,212.60	\$15.12	\$16.50	\$0.21	\$1,519.59	1.726

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47	0	0	\$16.50	\$0.19	\$1,519.78	1.726
48	0	0	\$16.50	\$0.17	\$1,519.95	1.726
49	0	0	\$16.50	\$0.15	\$1,520.10	1.726
50	0	0	\$16.50	\$0.14	\$1,520.24	1.726
51	0	0	\$16.50	\$0.13	\$1,520.37	1.726
52	0	0	\$16.50	\$0.12	\$1,520.49	1.726
53	0	0	\$16.50	\$0.11	\$1,520.59	1.726
54	0	0	\$16.50	\$0.10	\$1,520.69	1.726
55	0	0	\$16.50	\$0.09	\$1,520.77	1.726
56	0	0	\$16.50	\$0.08	\$1,520.85	1.726
57	0	0	\$16.50	\$0.07	\$1,520.93	1.726
58	0	0	\$16.50	\$0.07	\$1,520.99	1.726
59	0	0	\$16.50	\$0.06	\$1,521.05	1.726
60	0	0	\$16.50	\$0.05	\$1,521.11	1.726
Total BLDG cost	\$2,734.80	Replacements performed			Actual lifetime energy (MWh)	105.27
Decom = 0.75%	\$20.51					
			Levelized Cost of Power (\$/kW)		\$1,541.62	Include decom
			All the above values are in units of \$/kW			
			Levelized Cost of Energy – LCOE (\$/MWh)		\$81.45	

Sheet1

Source is Commercial Roof Solar w/ CF = 19.7%	0.197	1.726	average yearly energy (MWh)
Assumed discount rate is 10% /year			
Levelized Cost of Power in \$ /kW units	\$1,541.62	from Column F above, after year 60	
Conversion factor from Power to Actual Energy	0.009657805	for CF = 0.197	Conversion = 1 ÷ (CF x 8760 h /yr x 60)
Levelized Cost of Energy	\$81.45 /MWh	LCOE	

Discounted yearly energy	Remarks
in MWh	Commercial Roof Solar @ 10%
1.726	Construction
1.569	completed
1.426	In 1 year
1.297	
1.179	Total CAPEX = \$1290 /kW
1.072	
0.974	Columns A through F
0.886	are nominal dollars
0.805	per kilowatt
0.732	of peak generating
0.665	capacity
0.605	
0.550	Replace DC inverter 6%
0.500	
0.454	
0.413	
0.376	
0.341	
0.310	
0.282	
0.257	
0.233	
0.212	
0.193	
0.175	Replace DC inverter 6%
0.159	
0.145	
0.132	
0.120	
0.109	
0.099	
0.090	
0.082	
0.074	
0.068	
0.061	
0.056	Replace DC inverter 6%
0.051	
0.046	
0.042	
0.038	
0.035	
0.032	
0.029	
0.026	
0.024	
0.022	Replace hardware = 94%

0.020	Panel module and BOS hardware plus labor.
0.018	62% + 32% = 94%
0.016	
0.015	
0.013	
0.012	
0.011	
0.010	
0.009	
0.008	
0.008	
0.007	
0.006	
0.006	
18.93	Discounted lifetime energy (MWh)

mission from column B

Equals Levelized cost of power

