

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	\$1,290.00	\$16.50	\$16.50	\$1,306.50	1.726
1	0	0	\$16.50	\$16.18	\$1,322.68	1.726
2	0	0	\$16.50	\$15.86	\$1,338.54	1.726
3	0	0	\$16.50	\$15.55	\$1,354.08	1.726
4	0	0	\$16.50	\$15.24	\$1,369.33	1.726
5	0	0	\$16.50	\$14.94	\$1,384.27	1.726
6	0	0	\$16.50	\$14.65	\$1,398.92	1.726
7	0	0	\$16.50	\$14.36	\$1,413.29	1.726
8	0	0	\$16.50	\$14.08	\$1,427.37	1.726
9	0	0	\$16.50	\$13.81	\$1,441.18	1.726
10	0	0	\$16.50	\$13.54	\$1,454.71	1.726
11	0	0	\$16.50	\$13.27	\$1,467.98	1.726
12	\$77.40	\$61.03	\$16.50	\$13.01	\$1,542.02	1.726
13	0	0	\$16.50	\$12.76	\$1,554.78	1.726
14	0	0	\$16.50	\$12.50	\$1,567.28	1.726
15	0	0	\$16.50	\$12.26	\$1,579.54	1.726
16	0	0	\$16.50	\$12.02	\$1,591.56	1.726
17	0	0	\$16.50	\$11.78	\$1,603.35	1.726
18	0	0	\$16.50	\$11.55	\$1,614.90	1.726
19	0	0	\$16.50	\$11.33	\$1,626.22	1.726
20	0	\$0	\$16.50	\$11.10	\$1,637.33	1.726
21	0	0	\$16.50	\$10.89	\$1,648.21	1.726
22	0	0	\$16.50	\$10.67	\$1,658.89	1.726
23	0	0	\$16.50	\$10.46	\$1,669.35	1.726
24	\$77.40	\$48.12	\$16.50	\$10.26	\$1,727.73	1.726
25	0	0	\$16.50	\$10.06	\$1,737.79	1.726
26	0	0	\$16.50	\$9.86	\$1,747.65	1.726
27	0	0	\$16.50	\$9.67	\$1,757.31	1.726
28	0	0	\$16.50	\$9.48	\$1,766.79	1.726
29	0	0	\$16.50	\$9.29	\$1,776.08	1.726
30	0	0	\$16.50	\$9.11	\$1,785.19	1.726
31	0	0	\$16.50	\$8.93	\$1,794.12	1.726
32	0	0	\$16.50	\$8.76	\$1,802.88	1.726
33	0	0	\$16.50	\$8.58	\$1,811.46	1.726
34	0	0	\$16.50	\$8.42	\$1,819.88	1.726
35	0	0	\$16.50	\$8.25	\$1,828.13	1.726
36	\$77.40	\$37.94	\$16.50	\$8.09	\$1,874.16	1.726
37	0	0	\$16.50	\$7.93	\$1,882.09	1.726
38	0	0	\$16.50	\$7.77	\$1,889.86	1.726
39	0	0	\$16.50	\$7.62	\$1,897.49	1.726
40	0	0	\$16.50	\$7.47	\$1,904.96	1.726
41	0	0	\$16.50	\$7.33	\$1,912.29	1.726
42	0	0	\$16.50	\$7.18	\$1,919.47	1.726
43	0	0	\$16.50	\$7.04	\$1,926.51	1.726
44	0	0	\$16.50	\$6.90	\$1,933.41	1.726
45	0	0	\$16.50	\$6.77	\$1,940.18	1.726
46	\$1,212.60	\$487.65	\$16.50	\$6.64	\$2,434.47	1.726

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47	0	0	\$16.50	\$6.51	\$2,440.97	1.726
48	0	0	\$16.50	\$6.38	\$2,447.35	1.726
49	0	0	\$16.50	\$6.25	\$2,453.60	1.726
50	0	\$0	\$16.50	\$6.13	\$2,459.73	1.726
51	0	0	\$16.50	\$6.01	\$2,465.75	1.726
52	0	0	\$16.50	\$5.89	\$2,471.64	1.726
53	0	0	\$16.50	\$5.78	\$2,477.41	1.726
54	0	\$0	\$16.50	\$5.66	\$2,483.08	1.726
55	0	0	\$16.50	\$5.55	\$2,488.63	1.726
56	0	0	\$16.50	\$5.44	\$2,494.07	1.726
57	0	0	\$16.50	\$5.34	\$2,499.41	1.726
58	0	0	\$16.50	\$5.23	\$2,504.64	1.726
59	0	0	\$16.50	\$5.13	\$2,509.77	1.726
60	0	0	\$16.50	\$5.03	\$2,514.80	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)		\$2,535.31	Include decom
			All the above values are in units of \$ /kW			
			Levelized Cost of Energy – LCOE (\$ /MWh)		\$41.08	

Sheet1

Source is Commercial Roof Solar w/ CF = 19.7%	0.197	1.726	average yearly energy (MWh)
Assumed discount rate is 2% /year			
Levelized Cost of Power in \$ /kW units	\$2,535.31	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	\$41.08 /MWh	LCOE	

Discounted yearly energy	Remarks
in MWh	Commercial Roof Solar @2%
1.726	Construction
1.692	completed
1.659	In 1 year
1.626	
1.594	Total CAPEX = \$1290 /kW
1.563	
1.532	Columns A through F
1.502	are nominal dollars
1.473	per kilowatt
1.444	of peak generating
1.416	capacity
1.388	
1.361	Replace DC inverter 6%
1.334	
1.308	
1.282	
1.257	
1.232	
1.208	
1.185	
1.161	
1.139	
1.116	
1.094	
1.073	Replace DC inverter 6%
1.052	
1.031	
1.011	
0.991	
0.972	
0.953	
0.934	
0.916	
0.898	
0.880	
0.863	
0.846	Replace DC inverter 6%
0.829	
0.813	
0.797	
0.782	
0.766	
0.751	
0.736	
0.722	
0.708	
0.694	Replace hardware = 94%

0.680	Panel module and BOS hardware plus labor.
0.667	62% + 32% = 94%
0.654	
0.641	
0.629	
0.616	
0.604	
0.592	
0.581	
0.569	
0.558	
0.547	
0.536	
0.526	
61.71	Discounted lifetime energy (MWh)

mission from column B

Equals Levelized cost of power

