

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

Sheet2

\$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	\$1,020 /kW					average
	\$1,020	\$1,020	\$37.50	\$37.50	\$1,057.50	3.320
1	0	0	\$37.50	\$35.38	\$1,092.88	3.320
2	0	0	\$37.50	\$33.37	\$1,126.25	3.320
3	0	0	\$37.50	\$31.49	\$1,157.74	3.320
4	0	0	\$37.50	\$29.70	\$1,187.44	3.320
5	0	0	\$37.50	\$28.02	\$1,215.46	3.320
6	0	0	\$37.50	\$26.44	\$1,241.90	3.320
7	0	0	\$37.50	\$24.94	\$1,266.84	3.320
8	0	0	\$37.50	\$23.53	\$1,290.37	3.320
9	0	0	\$37.50	\$22.20	\$1,312.56	3.320
10	0	0	\$37.50	\$20.94	\$1,333.50	3.320
11	0	0	\$37.50	\$19.75	\$1,353.26	3.320
12	\$91.80	\$45.62	\$37.50	\$18.64	\$1,417.52	3.320
13	\$0.00	\$0.00	\$37.50	\$17.58	\$1,435.10	3.320
14	0	0	\$37.50	\$16.59	\$1,451.68	3.320
15	0	0	\$37.50	\$15.65	\$1,467.33	3.320
16	0	0	\$37.50	\$14.76	\$1,482.09	3.320
17	0	0	\$37.50	\$13.93	\$1,496.02	3.320
18	0	0	\$37.50	\$13.14	\$1,509.16	3.320
19	0	0	\$37.50	\$12.39	\$1,521.55	3.320
20	0	0	\$37.50	\$11.69	\$1,533.24	3.320
21	0	0	\$37.50	\$11.03	\$1,544.27	3.320
22	0	0	\$37.50	\$10.41	\$1,554.68	3.320
23	0	0	\$37.50	\$9.82	\$1,564.50	3.320
24	\$91.80	\$22.67	\$37.50	\$9.26	\$1,596.43	3.320
25	0	0	\$37.50	\$8.74	\$1,605.17	3.320
26	0	0	\$37.50	\$8.24	\$1,613.41	3.320
27	0	0	\$37.50	\$7.78	\$1,621.19	3.320
28	0	0	\$37.50	\$7.34	\$1,628.53	3.320
29	0	0	\$37.50	\$6.92	\$1,635.45	3.320
30	\$652.80	\$113.66	\$37.50	\$6.53	\$1,755.63	3.320
31	0	0	\$37.50	\$6.16	\$1,761.79	3.320
32	0	0	\$37.50	\$5.81	\$1,767.61	3.320
33	0	0	\$37.50	\$5.48	\$1,773.09	3.320
34	0	0	\$37.50	\$5.17	\$1,778.26	3.320
35	0	0	\$37.50	\$4.88	\$1,783.14	3.320
36	0	0	\$37.50	\$4.60	\$1,787.74	3.320
37	0	0	\$37.50	\$4.34	\$1,792.08	3.320
38	0	0	\$37.50	\$4.10	\$1,796.18	3.320
39	0	0	\$37.50	\$3.86	\$1,800.04	3.320
40	0	0	\$37.50	\$3.65	\$1,803.69	3.320
41	0	0	\$37.50	\$3.44	\$1,807.13	3.320
42	\$91.80	\$7.94	\$37.50	\$3.24	\$1,818.32	3.320
43	0	0	\$37.50	\$3.06	\$1,821.38	3.320
44	0	0	\$37.50	\$2.89	\$1,824.27	3.320
45	0	0	\$37.50	\$2.72	\$1,826.99	3.320
46	0	0	\$37.50	\$2.57	\$1,829.56	3.320

Sheet1

47	0	0	\$37.50	\$2.42	\$1,831.99	3.320
48	0	0	\$37.50	\$2.29	\$1,834.27	3.320
49	0	0	\$37.50	\$2.16	\$1,836.43	3.320
50	\$316.20	\$17.17	\$37.50	\$2.04	\$1,855.63	3.320
51	0	0	\$37.50	\$1.92	\$1,857.55	3.320
52	0	0	\$37.50	\$1.81	\$1,859.36	3.320
53	0	0	\$37.50	\$1.71	\$1,861.07	3.320
54	\$91.80	\$3.95	\$37.50	\$1.61	\$1,866.63	3.320
55	0	0	\$37.50	\$1.52	\$1,868.16	3.320
56	0	0	\$37.50	\$1.44	\$1,869.59	3.320
57	0	0	\$37.50	\$1.35	\$1,870.94	3.320
58	0	0	\$37.50	\$1.28	\$1,872.22	3.320
59	0	0	\$37.50	\$1.20	\$1,873.43	3.320
60	0	0	\$37.50	\$1.14	\$1,874.56	3.320
Total BLDG cost	\$2,356.20	Replacements performed			Actual lifetime energy (MWh)	202.52
Decom = 1.25%	\$29.45					
			Levelized Cost of Power (\$/kW)		\$1,904.02	include decom
			All the above values are in units of \$ /kW			
			Levelized Cost of Energy – LCOE (\$/MWh)		\$33.42	← → Leve

Sheet1

			discount
Source is On Shore Wind w/ CF = 37.9%	0.379	3.320	average yearly energy (MWh)
Assumed discount rate is 6% /year			
Levelized Cost of Power in \$ /kW units	\$1,904.02		from Column F above, after year 60
Conversion factor from Power to Actual Energy	0.00502002		for CF = 0.379 Conversion = 1 ÷ (CF x 8760 h /yr x 60)
Levelized Cost of Energy	\$33.42 /MWh	LCOE	

Discounted yearly energy	Remarks
in MWh	On Shore Wind @ 6%
3.320	Construction completed
3.132	In 1 year
2.955	Total CAPEX = \$1,020 /kW
2.788	Columns A through F are nominal dollars per kilowatt of peak generating capacity
2.630	Replace AC converter 9%
2.481	
2.340	
2.208	
2.083	
1.965	
1.854	
1.749	
1.650	Replace blades 31%
1.557	
1.468	
1.385	
1.307	
1.233	
1.163	
1.097	
1.035	Replace AC converter 9%
0.977	
0.921	
0.869	
0.820	Replace all hardware = 64%
0.774	Gearbox, generator, transformer, converter & blades 24% + 9% + 31% = 64%
0.730	
0.688	
0.649	
0.613	
0.578	
0.545	
0.514	
0.485	
0.458	
0.432	
0.408	
0.384	
0.363	
0.342	
0.323	
0.305	
0.287	Replace AC converter 9%
0.271	
0.256	
0.241	
0.228	

0.215	
0.203	
0.191	
0.180	Replace blades 31%
0.170	
0.160	
0.151	
0.143	Replace AC converter 9%
0.135	
0.127	
0.120	
0.113	
0.107	
0.101	
56.98	Discounted lifetime energy (MWh)

mission from column A

lized cost of power

divided by
ted lifetime energy

yrs /1000 kW per MW)