

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

	<b>Actual Build cost</b>	<b>Discounted Build cost</b>	<b>Actual O&amp;M cost</b>	<b>Discounted O&amp;M cost</b>	<b>Cumulative cost</b>	<b>Yearly energy</b>
<b>Year n</b>	<b>\$1,960 /kW</b>					<b>average</b>
	\$1,960	\$1,960	\$80.00	\$80.00	\$2,040.00	2.505
1	0	0	\$80.00	\$80.00	\$2,120.00	2.505
2	0	0	\$80.00	\$80.00	\$2,200.00	2.505
3	0	0	\$80.00	\$80.00	\$2,280.00	2.505
4	0	0	\$80.00	\$80.00	\$2,360.00	2.505
5	0	0	\$80.00	\$80.00	\$2,440.00	2.505
6	0	0	\$80.00	\$80.00	\$2,520.00	2.505
7	0	0	\$80.00	\$80.00	\$2,600.00	2.505
8	0	0	\$80.00	\$80.00	\$2,680.00	2.505
9	0	0	\$80.00	\$80.00	\$2,760.00	2.505
10	0	0	\$80.00	\$80.00	\$2,840.00	2.505
11	0	0	\$80.00	\$80.00	\$2,920.00	2.505
12	176.40	176.4	\$80.00	\$80.00	\$3,176.40	2.505
13	0	0	\$80.00	\$80.00	\$3,256.40	2.505
14	0	0	\$80.00	\$80.00	\$3,336.40	2.505
15	0	0	\$80.00	\$80.00	\$3,416.40	2.505
16	0	0	\$80.00	\$80.00	\$3,496.40	2.505
17	0	0	\$80.00	\$80.00	\$3,576.40	2.505
18	0	0	\$80.00	\$80.00	\$3,656.40	2.505
19	0	0	\$80.00	\$80.00	\$3,736.40	2.505
20	\$607.60	\$607.60	\$80.00	\$80.00	\$4,424.00	2.505
21	0	0	\$80.00	\$80.00	\$4,504.00	2.505
22	0	0	\$80.00	\$80.00	\$4,584.00	2.505
23	0	0	\$80.00	\$80.00	\$4,664.00	2.505
24	\$176.40	\$176.40	\$80.00	\$80.00	\$4,920.40	2.505
25	0	0	\$80.00	\$80.00	\$5,000.40	2.505
26	0	0	\$80.00	\$80.00	\$5,080.40	2.505
27	0	0	\$80.00	\$80.00	\$5,160.40	2.505
28	0	0	\$80.00	\$80.00	\$5,240.40	2.505
29	0	0	\$80.00	\$80.00	\$5,320.40	2.505
30	\$1,254.40	\$1,254.40	\$80.00	\$80.00	\$6,654.80	2.505
31	0	0	\$80.00	\$80.00	\$6,734.80	2.505
32	0	0	\$80.00	\$80.00	\$6,814.80	2.505
33	0	0	\$80.00	\$80.00	\$6,894.80	2.505
34	0	0	\$80.00	\$80.00	\$6,974.80	2.505
35	0	0	\$80.00	\$80.00	\$7,054.80	2.505
36	0	0	\$80.00	\$80.00	\$7,134.80	2.505
37	0	0	\$80.00	\$80.00	\$7,214.80	2.505
38	0	0	\$80.00	\$80.00	\$7,294.80	2.505
39	0	0	\$80.00	\$80.00	\$7,374.80	2.505
40	0	0	\$80.00	\$80.00	\$7,454.80	2.505
41	0	0	\$80.00	\$80.00	\$7,534.80	2.505
42	\$176.40	\$176.40	\$80.00	\$80.00	\$7,791.20	2.505
43	0	0	\$80.00	\$80.00	\$7,871.20	2.505
44	0	0	\$80.00	\$80.00	\$7,951.20	2.505
45	0	0	\$80.00	\$80.00	\$8,031.20	2.505
46	0	0	\$80.00	\$80.00	\$8,111.20	2.505

Sheet1

47	0	0	\$80.00	\$80.00	\$8,191.20	2.505
48	0	0	\$80.00	\$80.00	\$8,271.20	2.505
49	0	0	\$80.00	\$80.00	\$8,351.20	2.505
50	\$607.60	\$607.60	\$80.00	\$80.00	\$9,038.80	2.505
51	0	0	\$80.00	\$80.00	\$9,118.80	2.505
52	0	0	\$80.00	\$80.00	\$9,198.80	2.505
53	0	0	\$80.00	\$80.00	\$9,278.80	2.505
54	\$176.40	\$176.40	\$80.00	\$80.00	\$9,535.20	2.505
55	0	0	\$80.00	\$80.00	\$9,615.20	2.505
56	0	0	\$80.00	\$80.00	\$9,695.20	2.505
57	0	0	\$80.00	\$80.00	\$9,775.20	2.505
58	0	0	\$80.00	\$80.00	\$9,855.20	2.505
59	0	0	\$80.00	\$80.00	\$9,935.20	2.505
60	0	0	\$80.00	\$80.00	\$10,015.20	2.505
Total BLDG cost	\$5,135.20	Replacements performed	Actual lifetime energy (MWh)		152.83	
Decom = 2%	\$102.70		Levelized Cost of Power (\$/kW)		\$10,117.90	include decom
<b>All the above values are in units of \$ /kW</b>						
Levelized Cost of Energy – LCOE (\$/MWh)					<b>\$66.20</b>	← → Leve

Sheet1

			discoun
Source is Off Shore Wind w/ CF = 28.6%	0.286	2.505	average yearly energy
Assumed discount rate is 0% /year			
Levelized Cost of Power in \$ /kW units	\$10,117.90		from Column F above, after year 60
Conversion factor from Power to Actual Energy	0.006652404		for CF = 0.286 Conversion = 1 ÷ (CF x 8760 h /yr x 60
<b>Levelized Cost of Energy</b>	<b>\$66.20 /MWh</b>	<b>LCOE</b>	

Discounted yearly energy	Remarks
in MWh	<b>Off Shore Wind @0%</b>
2.505	Construction
2.505	completed
2.505	In 1 year
2.505	
2.505	Total CAPEX = \$1,960 /kW
2.505	
2.505	Columns A through F
2.505	are nominal dollars
2.505	per kilowatt
2.505	of peak generating
2.505	capacity
2.505	
2.505	Replace AC converter 9%
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	Replace blades 31%
2.505	
2.505	
2.505	
2.505	Replace AC converter 9%
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	Replace all hardware = 64%
2.505	gearbox + generator + transformer,
2.505	converter & blades
2.505	24% + 9% + 31% = 64%
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	
2.505	Replace AC converter 9%
2.505	
2.505	
2.505	
2.505	
2.505	

2.505	
2.505	
2.505	
2.505	Replace blades 31%
2.505	
2.505	
2.505	
2.505	Replace AC converter 9%
2.505	
2.505	
2.505	
2.505	
2.505	
152.83	Discounted lifetime energy (MWh)

mission from column A

lized cost of power

divided by  
ted lifetime energy

yrs /1000 kW per MW)