

Calculation of battery storage costs

	Annual GWh	GWh per day	Select		GWh required
			No. Backup days	% of backup	
	1,184,000	3,244	5	30	4,866
Year	2,023	2,024	2,025	2,026	2,027
Installation costs	83,760,469,667	82,085,260,274	80,443,555,068	78,834,683,967	77,257,990,288
Battery replacements					
Total for year	83,760,469,667	82,085,260,274	80,443,555,068	78,834,683,967	77,257,990,288
Cumulative total		83,760,469,667	165,845,729,941	246,289,285,010	325,123,968,977
Total installed GWh	174	348	521	695	869

Assumptions:

1. Refer Table 8 for GWh calculations
2. Equal amount of battery installation each year until 2050
3. Lithium ion batteries have a life of 3,000 cycles and need replacing at 10 years
4. At year 10, batteries installed in year 1 need to be replaced, year 2 are replaced at year 11, and so on

Notes:

1. Select the number days backup required
2. Select the percentage of backup for the selected number of days
3. Annual installation costs = GWh per year x cost/GWh
4. Battery costs reduced by 2% each year
5. These costs do not include finance costs
6. When fully operational, the battery system and windfarms must provide around 490 MWh t cater for solar shutdown each night.

Total Cost \$
3,037,561,465,892

GWh/annum	Cost/Gwh
174	482,000,000

2,028	2,029	2,030	2,031	2,032
75,712,830,482	74,198,573,872	72,714,602,395	71,260,310,347	69,835,104,140
75,712,830,482	74,198,573,872	72,714,602,395	71,260,310,347	83,760,469,667
402,381,959,265	478,094,789,747	552,293,363,619	625,007,966,014	696,268,276,361
1,043	1,216	1,390	1,564	1,738

Year 1 batteriees replaced at year :

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to []

	2,033	2,034	2,035	2,036	2,037	2,038
	68,438,402,057	67,069,634,016	65,728,241,336	64,413,676,509	63,125,402,979	61,862,894,919
	82,085,260,274	80,443,555,068	78,834,683,967	77,257,990,288	75,712,830,482	74,198,573,872
	150,523,662,331	147,513,189,085	144,562,925,303	141,671,666,797	138,838,233,461	136,061,468,792
	849,863,850,168	1,000,387,512,500	1,147,900,701,584	1,292,463,626,887	1,434,135,293,684	1,572,973,527,145
	1,912	2,085	2,259	2,433	2,607	2,780

2,039	2,040	2,041	2,042	2,043	2,044
60,625,637,021	59,413,124,281	58,224,861,795	57,060,364,559	55,919,157,268	54,800,774,122
72,714,602,395	71,260,310,347	69,835,104,140	68,438,402,057	67,069,634,016	65,728,241,336
133,340,239,416	130,673,434,628	128,059,965,935	125,498,766,616	122,988,791,284	120,529,015,458
1,709,034,995,937	1,842,375,235,353	1,973,048,669,980	2,101,108,635,915	2,226,607,402,532	2,349,596,193,816
2,954	3,128	3,302	3,476	3,649	3,823

2,045	2,046	2,047	2,048	2,049	2,050
53,704,758,640	52,630,663,467	51,578,050,198	50,546,489,194	49,535,559,410	48,544,848,222
64,413,676,509	63,125,402,979	61,862,894,919	60,625,637,021	59,413,124,281	58,224,861,795
118,118,435,149	115,756,066,446	113,440,945,117	111,172,126,215	108,948,683,691	106,769,710,017
2,470,125,209,274	2,588,243,644,423	2,703,999,710,869	2,817,440,655,987	2,928,612,782,202	3,037,561,465,892
3,997	4,171	4,344	4,518	4,692	4,866