

Estimated Energy Storage Required and Potential Price Necessary to Prevent Deficit on January 3-4 2018

Date Time (EDT)	Deficit MWhr	Energy Storage Systems								Total Storage Used	Storage Margin (MW)
		Total (MWhr)	9,600	60,800	61,600	1,200	2,100	800	300		
		Capacity (MW)	1,200	7,600	7,700	600	2,100	800	300		
Duration (Hr)	8	8	8	2	1	1	1				
1/3/2018 16:00	-1,160		1,200							1,200	40
1/3/2018 17:00	-8,788		1,200	7,600						8,800	12
1/3/2018 18:00	-16,452		1,200	7,600	7,700					16,500	48
1/3/2018 19:00	-16,086		1,200	7,600	7,300					16,100	14
1/3/2018 20:00	-17,035		1,200	7,600	7,700	600				17,100	65
1/3/2018 21:00	-16,607		1,200	7,600	7,700	200				16,700	93
1/3/2018 22:00	-15,354		1,200	7,600	6,700					15,500	146
1/3/2018 23:00	-12,742		1,200	7,600	4,000					12,800	58
1/4/2018 0:00	-10,809			7,600	3,300					10,900	91
1/4/2018 1:00	-9,713				7,700		2,100			9,800	87
1/4/2018 2:00	-7,090				7,100					7,100	10
1/4/2018 3:00	-2,342				1,600			800		2,400	58
1/4/2018 4:00	-1,028				800				300	1,100	72
1/4/2018 5:00	986									0	986
1/4/2018 6:00	-326					400				400	74
Total	-134,545										

NREL Energy Storage Benchmark Prices (\$millions)

\$/kWhr	\$ 339	\$ 339	\$ 339	\$ 436	\$ 563	\$ 565	\$ 570
Battery Total	\$ 3,253	\$ 20,587	\$ 20,858	\$ 523	\$ 1,182	\$ 452	\$ 171
Grand total	\$ 47,026						