

Understanding CAISO Dispatch of Battery Storage – Case Study May 19, 2024

Ali Miremadi Infrastructure and Operations Planning Nov, 2024

Total CAISO IBR Installation

Year	Solar	Wind	Stand Alone and Co Located BESS	Hybrid BESS
	(MW)	(MW)	(MW)	(MW)
1983-2008	0	742	0	0
2009	22	157	0	0
2010	58	402	0	0
2011	105	582	0	0
2012	227	1,253	0	0
2013	2,737	591	0	0
2014	2,529	321	0	0
2015	1,045	384	0	0
2016	2,878	50	40	0
2017	697	707	40	0
2018	728	348	42	0
2019	1,520	338	0	0
2020	1,371	415	351	0
2021	1,128	1,063	1,703	214
2022	933	367	2,032	890
2023	2,482	171	2,928	694
2024	1,204	260	3,091	603
Sub Total	19,664	8,151	10,226	2,401
Total IBR				39,700



Data for 2024 is for period 1/1/2024 - 10/24/2024



Battery Storage and Solar Have a Symbiotic Relationship





Produce as Capable Solar and Wind Central to CAISO Market Dispatch of Other Fuel Types and Import/Export



California ISO

CAISO ACE is Within Acceptable Range of +/- 200 MW During May 19th Sustained Low Frequency Event





Regional Forward Market Allows for Significant Export During Negative Price Hours That Naturally Follow Solar Ramp





Deviations from Market Dispatch Can Cause Low CPS1 Scores





CAISO Deploys Multi Variable Prediction Algorithm for Forward Market Regulation Procurement - May 19, 2024



Page 8

CAISO Regulation Speed was Adequate for Managing Deviations from Market Dispatch – May 19, 2024





Increased Installed Capacity of Battery Storage Has Improved CAISO Real-Time Control Performance



2024 Data: 1/1/2024 - 10/1/2024



CAISO Batteries Provided Primary Frequency Response During Sustained Low Interconnection Frequency

CAISO - Ali Miremadi Battery Unit (on AGC) PFR Performance During May 19th 2024 Sustained Low Interconnection Frequency



