

A Social Cost Benefit Analysis of Grid-Scale Electrical Energy Storage Projects: *Evaluating the Smarter Network Storage Project*

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Abstract This study explores and quantifies the social costs and benefits of grid-scale electrical energy storage (EES) projects in Great Britain. The case study for this report is the Smarter Network Storage project, a 6 MW/10MWh lithium battery placed at the Leighton Buzzard Primary substation to meet growing local peak demand requirements. This study analyses both the locational and system-wide benefits to grid-scale EES, determines the realistic combination of those social benefits, and juxtaposes them against the social costs across the lifecycle of the battery to determine the techno-economic performance. Risk and uncertainty from the benefit streams, cost elements, battery lifespan, and discount rate are incorporated into a Monte Carlo simulation. Using this framework, society can be guided to cost-effectively invest in EES as a grid modernization asset to facilitate the transition to a reliable, affordable, and clean power system.

Keywords electrical energy storage, battery, social cost benefit analysis

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