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A social cost benefit analysis of grid-scale electrical energy storage projects: A case study

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 paper is the Smarter Network Storage project, a 6 MW/10 MWh 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 useful 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.

Biography

Arjan S Sidhu brings a wealth of knowledge as a Developer of large-scale solar photovoltaic and energy storage infrastructure at Intersect Power. He is a Visiting Scholar to the University of Cambridge Energy Policy Research Group, conducting techno-economic analyses on electrical energy storage systems. Previously, he was a Consultant in the distributed energy resources practice at ICF International and began his career at the US Department of Energy. He holds a MS in Energy Policy & Climate at Johns Hopkins University and a BS in Business Administration and Energy & Resources Group at the University of California, Berkeley, Haas School of Business.

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