

# STUDY OF BATTERY STORAGE TO DELAY INFRASTRUCTURE UPGRADE IN THE ELECTRICAL GRID

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## ABSTRACT

As energy consumption continues to rise in the United States, there exists a need to increase energy production, through either existing methods or the development of new methods. Environmental concerns encourage the use of technologies such as wind and solar power, yet the sporadic nature of these energy sources limits practical implementation on a large scale. In this study, batteries are proposed as a means of storing electrical grid energy during periods of low demand, to be used during periods of high demand. A systematic method of determining material costs was developed for both lead acid and lithium ion batteries, which was then applied to three locations in need of energy supplementation. Battery storage was shown to not be affordable at any of the three locations, with traditional infrastructure upgrades remaining the least expensive option. While battery material costs are potentially less expensive, other costs associated with the battery systems are too high at the present time.