

Executive Summary

This document contains a feasibility study that explores the necessity, collaborations, and possible methods of installing a 1-Megawatt lithium-ion battery storage facility at San Diego Gas & Electric's Century Park campus located in the Kearny Mesa neighborhood in central San Diego, California. The battery will serve the purposes of adding renewable energy to the energy mix, reducing operations costs via peak shaving, an educational component for the region, and meeting stringent State of California and California Public Utilities Commission mandates for both renewable energy and battery storage capacity.

In a hotter, scarcer, and more open world, the dramatic need for clean and renewable energy is coming ever more in to focus. If the average layperson was doubtful, the State of California has set a series of goals to meet 60% renewable energy by 2030, and 100% renewable energy by 2045 (Domonoske, 2018). Opponents to renewables ask what happens to solar at night or wind on a still day and point out that "power from these renewable generation sources is produced at different times of the day, and often does not align with the instantaneous demand for electricity" (CAISO, 2014). However, the technology to store renewables in a battery facility for use at a later time exists, such as at high demand and peak pricing, and will be essential to California's meeting renewable energy goals in a robust, resilient, and efficient manner.

Battery technology, while not yet commonplace, is quickly becoming more attainable, as the technology advances and costs continue to go down. So much so that the State of California has passed Assembly Bill 2514, and the California Public Utilities Commission (CPUC) has set battery targets for each of the investor-owned utilities (IOUs) in the State. These goals have set the IOUs on a quest to store 1,325 mW in batteries by 2024. Further, research has estimated that by 2050 California will require 22 GW of energy storage to successfully power the State (Shi, Y., Xu, B., Wang, D., & Zhang, B., 2018).

In San Diego, California, the local IOU, San Diego Gas & Electric (SDG&E), is no stranger to renewables or battery storage. The utility is currently providing 43% renewable energy every day. It also has its hands in a variety of battery projects ranging from the Borrego Springs microgrid battery and what once was the largest lithium-ion battery facility in the world in Escondido (Weaver, 2018). Building a battery-facility at SDG&E's central Century Park (CP)

On-Site Renewable Energy Storage at San Diego Gas & Electric's Century Park Campus

campus will enable the utility to gain further experience in the battery field, add to their required battery capacity, increase the amount of renewables in the energy mix, and lower operations cost of the campus by providing their own peak-shaving via stored solar energy from solar panels installed around the campus.