Talk #147, 5/7/2025

147th meeting of The Lyncean Group of San Diego

Date: Wednesday, 7 May 2025

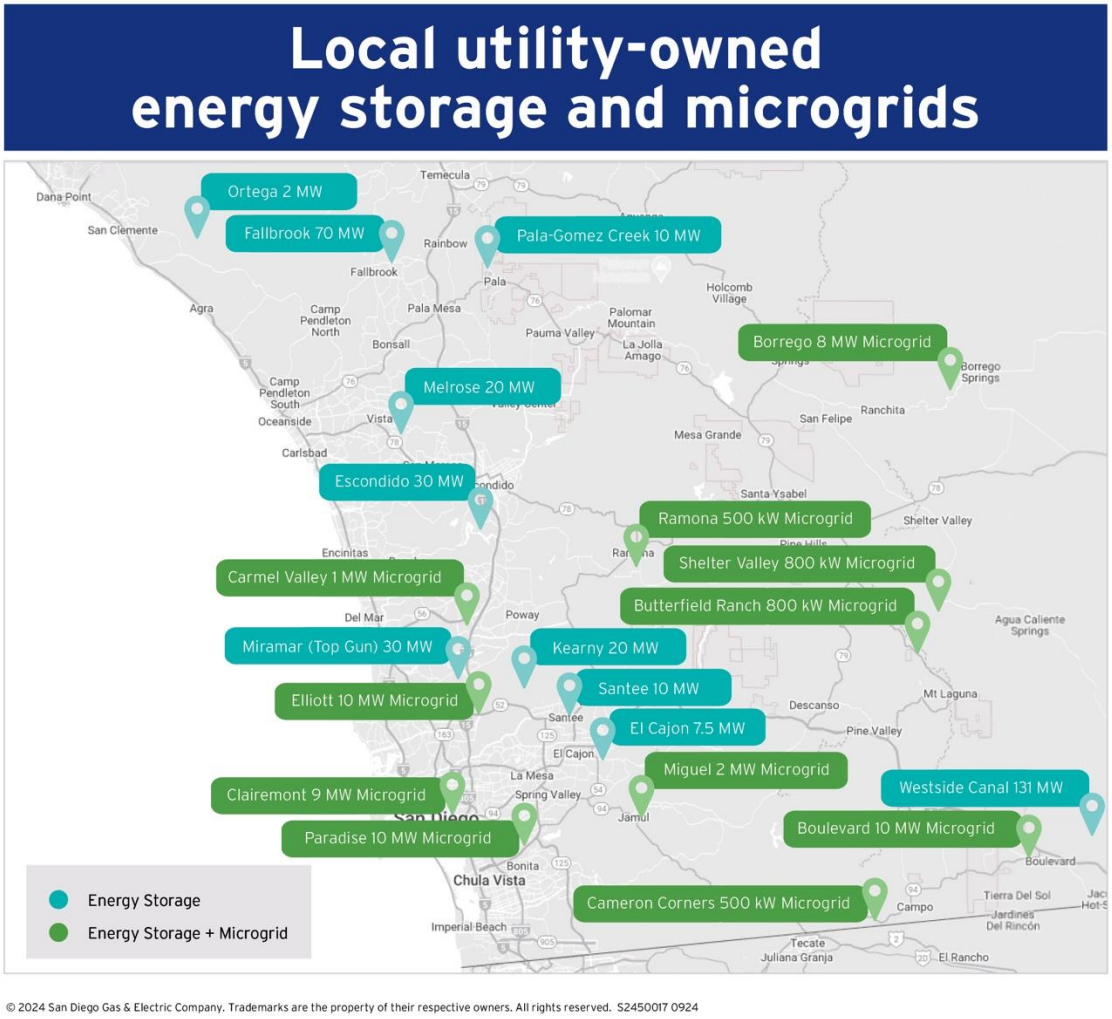
Location: Southwestern Yacht Club
2702 Qualtrough Street, San Diego, CA 92106 (Point Loma)

Speaker: Laurence N. Abcede, P.E.
Manager, Distributed Energy Resources, San Diego Gas & Electric (SDG&E)

Speaker bio: Mr. Abcede is the Manager of Distribution Technology and Asset Strategy, and he has been managing distributed energy resources and microgrid deployments for SDG&E for the last 8-years. He is responsible for the engineering, design, commissioning, and operation of energy storage systems and temporary and permanent microgrids that support grid reliability and resiliency. In his 24-years in the electric industry, he has held technical and leadership positions in various areas of power system design, construction, and operation. He is a graduate of Cal Poly, San Luis Obispo, with a Bachelor of Science degree in Electrical Engineering with an emphasis in Power Systems and Controls. Laurence is also a Registered Professional Engineer in the State of California.

Topic: Grid Scale Energy Storage Use Cases for Reliability and Resiliency

Abstract: SDG&E has been rapidly expanding its battery energy storage system (BESS) and microgrid portfolio and currently has about 21 BESS and microgrid sites. SDG&E's parent, SEMPRA, reported in March 2025 that SDG&E's utility-owned battery storage portfolio is expected to reach nearly 480 MW of power capacity and over 1.9 GWh of energy storage by the end of 2025.



Battery and microgrid projects are complex systems comprised of batteries, inverters or power conversion systems (PCS), transformers, cyber secure communications, metering, switching, energy and battery management systems, microgrid controllers (if applicable) and auxiliary equipment. Typically, batteries are installed in custom-built, above-ground enclosures, with a fire suppression and warning system to maximize safety. SDG&E's battery systems and microgrids typically are installed on SDG&E-owned property adjacent to existing substation facilities or in critical locations where grid reliability, stability and resiliency is needed most.

Microgrids are small-scale electric grids that can operate independent of or parallel to the larger regional grid and can keep critical community facilities powered during outages. Battery storage is an important part of every microgrid.

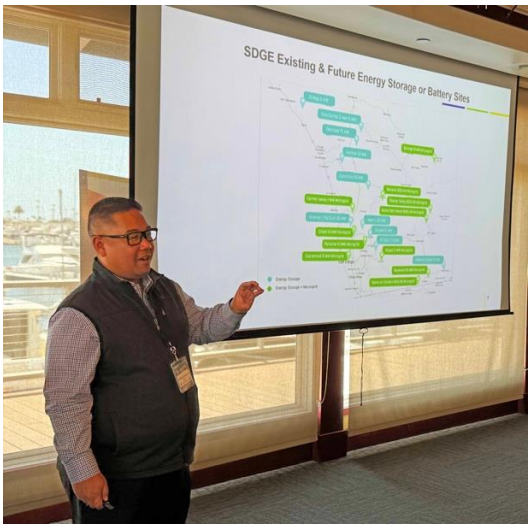
Battery storage works by absorbing electricity when it's abundant on the power grid and sending excess power back to the grid when it's most needed, such as during the evening after the sun sets and solar generators are unavailable.

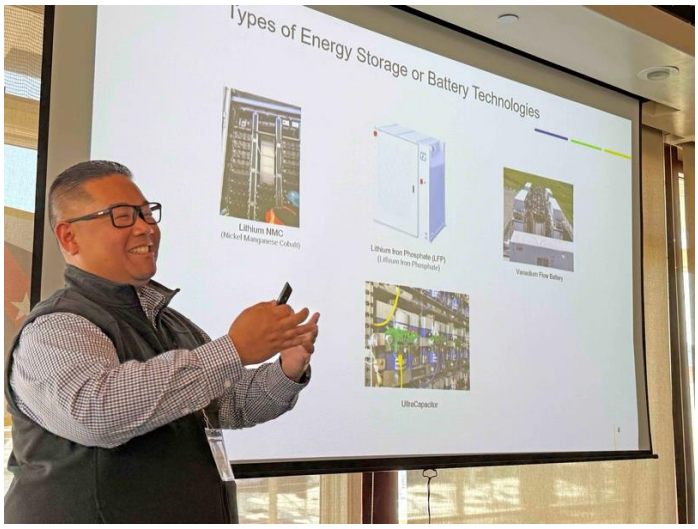
Examples of SDG&E BESS facilities using three different battery technologies are shown in the following photos.

*SDG&E's demonstration project featuring **Vanadium redox flow battery (VRFB**) technology was commissioned in 2015. The was the first flow battery in the United States to receive UL1973 certification and the first flow battery to operate on the California Independent System Operator (CAISO) grid. The project further expanded with the establishment of a microgrid to showcase VRFB technology's capabilities in enhancing grid reliability and enabling clean energy microgrids.*
Source: SDG&E

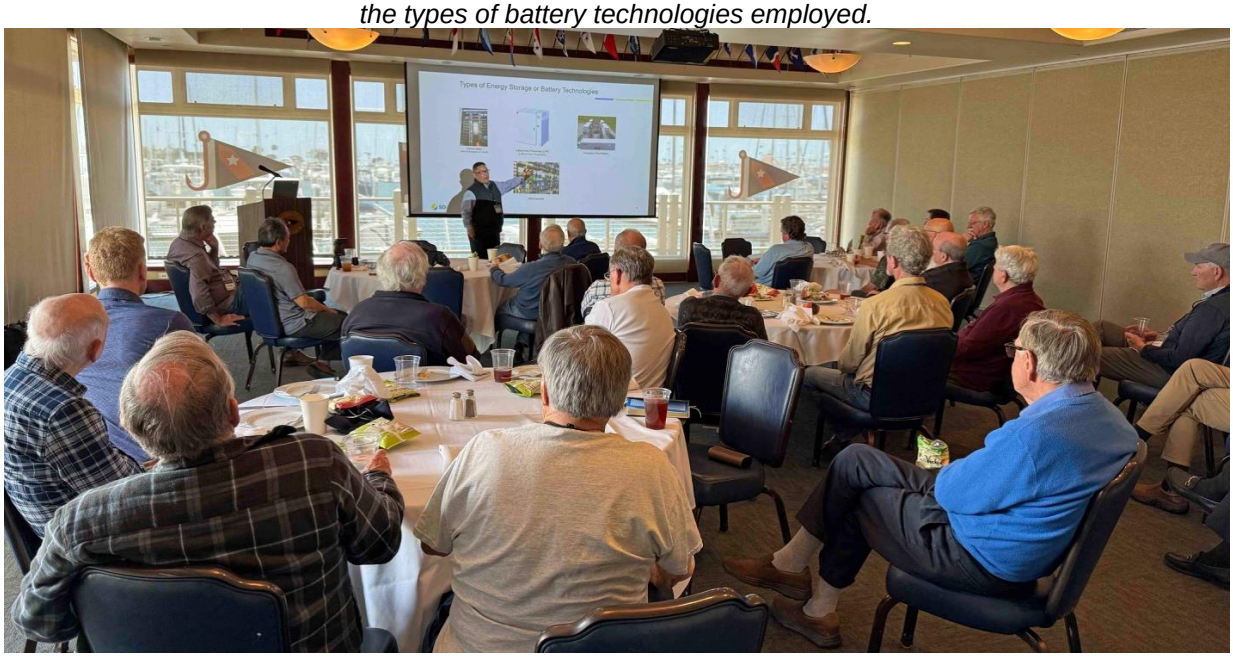
*Aerial Photo of the Westside Canal Energy Storage Project, which is a **Lithium-ion battery** energy storage system situated in the desert adjacent to an irrigation canal. At full build-out, it is expected to have a capacity of about 2,000 MW.*
Source: SDG&E

*Boulevard Microgrid and Battery Energy Storage System Project uses **Lithium iron phosphate (LFP) battery** cells that have enhanced safety and fire prevention features. Source: SDG&E*





Laurence Abcede described the extent of the SDG&E BESS deployments and the types of battery technologies employed.



Laurence described specific BESS use cases and explained how each contributed to improved electric reliability and resiliency for the area served.

Following the presentation and an extensive Q&A session, our traditional speaker's appreciation presentation took a bit of a detour. Our planned gift of a replica of the ancient "Baghdad battery" shipped from Türkiye, and now appears to be in Texas, perhaps awaiting customs clearance (it does have a suspicious silhouette) or some new tariff on replica batteries.

Presented to
Laurence Abcede, P.E.
7 May 2025
An I.O.U. for a pair of
Baghdad Battery replicas.

The Lyncean Group meeting slides are available here.