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The remainder of this work is organized as follows. Section II provides a brief introduction of UC San Diego"s microgrid for the context of the collected data. Section III discusses the database. Section IV provides guidelines for filling missing and replacing erroneous data points. Section V concludes the paper with merits of published data.

UC San Diego also operates the 184,025 ft2 logistics warehouse at 7835 Trade Street, San Diego, California 92121, which acts as the shipping & receiving hub and storage location for the university. It is equipped with a 233 kW solar PV system.

Selected data pertaining to different generators, loads, storage, and grid imports are released in this paper. While there are more metered data available than what is included in this data release--since not all buildings are metered--we believe that a comprehensive dataset would provide relatively little additional value. Most microgrids consist only of a few buildings, and they can be represented with the data released here.

All data sources are presented in Table 1 and Appendix A, and their physical locations are mapped in Figs. 2 and 3 and Appendix B. These data are broadly classified into seven groups.

Robinson Hall, Pepper Canyon Hall, Student Services Center, Galbraith Hall, Geisel Library, Center Hall, Social Science Research, Otterson Hall, East Campus Office Building, Economics, Music, and Mandeville Center.

A sample building load timeseries is illustrated in Fig. 1. The upper subplot shows the entire real power consumption data for Pepper Canyon Hall with missing data and a potential error marked (see Sec. IV B). The lower subplot shows repetitive daily and weekly power consumption trends.

Real power consumption time series data for the Pepper Canyon Hall campus building for (top) the complete dataset and (bottom) ten days during the academic year.

The real net load data for Trade Street Warehouse is from the utility meter, which reports the building load minus the (behind the meter) solar power generation. The Trade Street Warehouse microgrid also includes a 200 kW/400 kWh BESS and a 10 kW V2G EV charging station, both behind the meter. The solar power generated and BEES datasets are also compiled and reported.

Since all solar inverters operate at the unity power factor following the 2003 IEEE 1547 standard, only real AC power generation data for 26 on-campus PV plants are provided. Some PV systems such as in Leichtag Biomedical Research experienced temporary decreases in power due to unknown hardware issues.

The microgrid operates a natural gas fired combined heat & power plant that provides district heating and cooling to most buildings on the campus. The plant consists of two 13.5 MW natural gas turbines, a steam generator, electric chillers, and a chilled water tank for thermal energy storage. Since the building electric load data only include fan ventilation power, but not cooling (or heating) load, we include campus-wide chiller plant electricity consumption, chilled water flow, cooling tons, and the chilled water tank capacity.

UC San Diego owns a 2.5 MW, 5 MWh BESS, which has primarily been used for demand charge management. Starting July 1, 2020, the BESS also occasionally participates in the California Independent System Operator (CAISO) demand response auction market. The load power consumed while charging the battery is represented in positive kW, and the generated power during discharging operation is represented in negative kW.