

PROJECTS

System Profiles

RA Power & Light Aethercomm



Courtesy RA Power & Light (4)

Overview

DESIGNER: Jeff Bernardino, general manager, RA Power & Light, rapowerandlight.com

LEAD INSTALLER: Chuck Tapia, site foreman, Integrated Power & Lighting, integratedpowerandlighting.com

DATE COMMISSIONED: October 1, 2015

INSTALLATION TIME FRAME: 26 days

LOCATION: Carlsbad, CA, 33.1°N

SOLAR RESOURCE: 5.7 kWh/m²/day

ASHRAE DESIGN TEMPS: 77°F 2% average high, 39°F extreme minimum

ARRAY CAPACITY: 270.84 kWdc

ANNUAL AC PRODUCTION: 415,459 kWh

Aethercomm is a leading advanced technology supplier to the US Department of Defense. Aethercomm's recently commissioned PV system will generate a projected 415,459 kWh annually, reduce the contractor's operations cost considerably, and free up capital, which it can redirect to R&D that will enable it to deliver technology solutions to US military personnel faster and at lower cost.

Aethercomm completed the construction of its 50,000-square-foot Carlsbad, California, headquarters in 2010. RA Power & Light conducted a detailed structural evaluation and load analysis to verify that the 888-module Canadian Solar array and ballasted SunLink Precision-Modular Roof Mount System (RMS) addition would meet all of the facility's structural engineering and building code requirements.

The City of Carlsbad has a reputation as a solar-friendly municipality, well versed in proper commercial PV project design and installation. RA Power & Light has constructed several commercial systems in the city and is fluent in local requirements for PV installations. In addition, early-stage project collaboration with the fire department streamlined project planning and development. The end result was zero corrections to the Aethercomm plan set and permit package.

The 270.84 kWdc turnkey commercial rooftop system comprises 888 Canadian Solar 72-cell modules integrated with SunLink's Precision-Modular RMS. The system has a Class A fire rating and integrated conductor management. Its ability to withstand a 3-second burst of 90 mph wind meets the City of Carlsbad's building



and safety requirements for PV systems on commercial buildings.

The project's decentralized power conditioning systems include nine roof-mounted 3-phase Fronius Symo string inverters, each with its own disconnect at the inverter location. The installation team located a master disconnect at ground level with the system's switchgear and point of interconnection with San Diego Gas & Electric.

RA Power & Light installed Fronius weather sensors that provide real-time meteorological data, augmenting the system's inverter-level performance optimization and monitoring. The sensors upload data to a Fronius Solar online platform that enables project stakeholders to access revenue-grade production data and system status details. RA Power & Light provides clients such as

Aethercomm a "Commercial PV System Users Guide," including a complete structural and single-line plan set; system specifications; warranty information; system operation, monitoring and O&M protocols; and emergency shutdown procedures.

"We are proud of the results of Aethercomm's commercial solar project. The installation is an example of how proper design, the right suppliers and experienced crews can deliver predictable outcomes for complicated projects. RA Power & Light completed this 12-week project in 9 weeks—a testament to the experience and safety awareness of our teams, combined with the benefit of working with knowledgeable staff at local municipalities and fire departments."

—*Michael Campbell, CEO,*
RA Power & Light

Equipment Specifications

MODULES: 888 Canadian Solar CS6X-305P, 305 W STC, +5/-0 W, 8.41 Imp, 36.3 Vmp, 8.97 Isc, 44.8 Voc

INVERTERS: 3-phase, 277/480 Vac service; nine Fronius Symo 24.0-3 480, 23,995 W rated output, 1,000 Vdc maximum input, 500–800 Vdc MPPT range, 200–1,000 Vdc operating range

ARRAY 1: 18 modules per source circuit (5,490 W, 8.41 Imp, 653.4 Vmp, 8.97 Isc, 806.4 Voc), six source circuits per inverter (32.94 kW, 50.46 Imp, 653.4 Vmp, 53.82 Isc, 806.4 Voc)

ARRAY 2: 18 modules per source circuit (5,490 W, 8.41 Imp, 653.4 Vmp, 8.97 Isc, 806.4 Voc), five source circuits per inverter (27.45 kW, 42.05 Imp, 653.4 Vmp, 44.85 Isc, 806.4 Voc)

ARRAYS 3 & 4: 19 modules per source circuit (5,795 W, 8.41 Imp, 689.7 Vmp, 8.97 Isc, 851.2 Voc), five source circuits per inverter (28.98 kW, 42.04 Imp, 689.7 Vmp, 44.85 Isc, 851.2 Voc)

ARRAYS 5–9: 20 modules per series string (6,100 W, 8.41 Imp, 726 Vmp, 8.97 Isc, 896 Voc), five source circuits per inverter (30.5 kW, 42.04 Imp, 726 Vmp, 44.85 Isc, 896 Voc)

ARRAY INSTALLATION: Ballasted roof mount, modified bitumen roofing, SunLink Precision-Modular RMS racking, 180° azimuth, 10° tilt

SYSTEM MONITORING: Fronius inverter-integrated dataloggers, environmental monitoring, Fronius Solar.web online platform