

Assured Solar Energy: Maine Beer Company

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By:

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Project Profiles



The Maine Beer Company PV System installed by Assured Solar Energy.

The Maine Beer Company (MBC) is an award-winning brewery located in Freeport, Maine. MBC approached Assured Solar Energy (ASE) in late 2014 with the goal of producing as much renewable power as possible at its Beer Barn facility. ASE determined that by fully utilizing the southwest-facing roof of the building and locating two AllEarth Solar Trackers on the lawn next to the facility, MBC could offset approximately half of its power consumption with on-site PV generation.

MBC is located on a heavily traveled section of US Route 1, and MBC co-founder David Kleban wanted the system to pop visually. He selected polycrystalline REC Peak Energy modules to match the blue MBC sign and wanted the trackers to be visible from the road. Since installation, the MBC tasting room has seen a noticeable increase in traffic, and the system has become a local landmark.

The rooftop array experiences intermittent shading from grain silos adjacent to the building, so the project team chose SolarEdge 3-phase 480 Vac inverters and optimizers for the entire system. The installers connected modules in pairs to P600 optimizers, providing individual MPPT for every pair while mitigating the effects of partial shading. Using 480 Vac inverters and a step-down transformer allowed the project to employ half the number of inverters and double the string length compared to a 208 Vac 3-phase inverter system.

Site drainage needs dictated the steep and uneven slope of the lawn. To accommodate the trackers' precast concrete foundations, which installers had to bury to a depth of 6 feet, they terraced the lawn with a stone retaining wall. Assured Solar purchased the foundations from AllEarth Renewables and had them shipped directly to Scott Dugas Trucking and Excavating. Installers built the tracker frames on a jig and an excavator lifted them onto the masts. Granite blocks protect the trackers from the adjoining parking lot and driveway. The trackers allow MBC to make efficient use of a space that would otherwise have been unsuitable for solar, to optimize production and to make a visible statement about its solar commitment to its customers and community.

Installers located the system's three SolarEdge inverters in the basement utility room, and aggregated the inverter output circuits in a new 480 Vac panel. To interface the 480 Vac 4-wire wye output of the inverters with the 208 Vac 3-wire service, the electrical engineer, Tim Matthews of Swiftcurrent Engineering in Yarmouth, Maine, located a 112.5 kVA dry-type transformer between the new panel and a newly installed 400 A main service breaker. The 480 Vac panel also allowed MBC to install a high-power centrifuge in its brewing room.

"It was great to work with the entire crew at Maine Beer. The project provided local employment for our team and our subcontractors, and was an opportunity to deploy cutting-edge equipment, including American-made AllEarth solar trackers, in a high-profile installation. It is a highly visible example of MBC's values and increases solar awareness among the millions of tourists entering Freeport each year."

—Rob Taisey, Assured Solar Energy

Overview

DESIGNER AND LEAD INSTALLER: Rob Taisey, president, Assured Solar Energy, assuredsolar.com

DATE COMMISSIONED: June 2015

INSTALLATION TIME FRAME: 60 days

LOCATION: Freeport, ME, 43.8°N

SOLAR RESOURCE: 3.76 kWh/m²/day

ASHRAE DESIGN TEMPERATURES: 86°F 2% avg. high, -10°F extreme min.

ARRAY CAPACITY: 55.12 kWdc

ANNUAL AC PRODUCTION: 69,500 kWh

Equipment Specifications

MODULES: 212 REC Peak Energy Series REC260PE, 260 W STC, +5/-0 W, 8.50 Imp, 30.7 Vmp, 9.01 Isc, 37.8 Voc

INVERTERS: 3-phase, 208 Vac service; two SolarEdge SE20KUS, 20 kW; one SolarEdge SE10KUS, 10 kW; 850 Vdc nominal input voltage, 980 Vdc maximum input voltage, 3-phase 277/480 Vac inverter output; 106 SolarEdge P600 Power Optimizers, 600 W, 96 Vdc maximum input voltage, 12.5–80 Vdc MPPT range, two series-connected modules per optimizer

ROOFTOP ARRAY: 164 modules total, 40 or 42 modules per source circuit (10.4 kW or 10.9 kW), two source circuits (82 modules) per inverter (21.3 kW); 42.6 kW array total; integrated with two SolarEdge SE20KUS inverters

TRACKERS: Two AllEarth Solar Trackers, Series 24, dual-axis GPS-based array tracking, 24 modules per tracker, one 48-module source circuit (12.5 kW); integrated with one SolarEdge SE10KUS inverter

ROOFTOP ARRAY INSTALLATION: Composition roofing, SnapNRack Series 100 racking, 215° azimuth, 34° tilt, SolaDeck pass-through box

SYSTEM MONITORING: SolarEdge module-level monitoring