

## NW PHOTON ENERGY

# CherryWood Village Retirement Community

### Overview

**DESIGNER:** John Stimac, system designer, Renewable Energy Associates, renewableassociates.com

**LEAD INSTALLER:** Guy Anderson, project manager, NW Photon Energy, nwphotonenergy.com

**DATE COMMISSIONED:** February 2011

**INSTALLATION TIME FRAME:** 35 days

**LOCATION:** Portland, OR, 45.5°N

**AVERAGE SOLAR RESOURCE:** 3.73 kWh/m<sup>2</sup>/day

**HIGH/LOW DESIGN TEMPERATURES:** per solarabcs.org/permitting/map: 89.6°F/17.6°F

**ARRAY CAPACITY:** 92.4 kW

**AVERAGE ANNUAL AC PRODUCTION:** 88,660 kWh

### Equipment Specifications

**MODULES:** 420 Schuco MPE 220 PS 092, 220 W STC, +5%/-0%, 7.38 Imp, 29.7 Vmp, 8.12 Isc, 36.77 Voc

**INVERTERS:** 3-phase, 120/208 Vac service, 12 SMA SB7000-US, 7 kW, 600 Vdc maximum input, 250–480 Vdc max MPPT range, 208 Vac output

**ARRAY:** 12 modules per source circuit (2,640 W STC, 7.4 Imp, 356 Vmp, 8.1 Isc, 442 Voc), three circuits per inverter on 11 inverters (7,920 W STC, 22.2 Imp, 356 Vmp, 24.4 Isc, 442 Voc), two circuits on one inverter (5,280 W STC, 14.8 Imp, 356 Vmp, 16.2 Isc, 442 Voc)

**ARRAY INSTALLATION:** built-up asphalt flat roof, Schuco SolarEZ Mounting System, 211° azimuth, 7.5° tilt

**ARRAY STRING COMBINERS:** SMA inverter-integrated combiners and disconnects, 15 A fuses

**SYSTEM MONITORING:** SMA Webbox



Courtesy Renewable Energy Associates (2)

**C**herryWood Village Retirement Community is a 318-unit senior living facility located in Portland, Oregon, and owned by Generations LLC. It is the first such facility in Portland to utilize solar power. The 92.4 kW PV system, one of the largest in the metropolitan area, is expected to cut the facility's annual electric bills by 25%.

Due to the building's many architectural features and obstructions on the roof, it was necessary to create a full 3-D drawing after doing the roof shade analysis. The module layout had to be carefully

planned around the rooftop features. Upon further review by a structural engineer and the roof truss manufacturer, the preliminary design of 150 kW was reduced to 92 kW due to loading restrictions. In addition, the new Oregon Solar Installation Specialty Code and strict AHJ requirements regarding wind loading ruled out a ballasted racking system. This resulted in over 800 4-foot-on-center penetrations in the built-up asphalt roof to accommodate the racking system. A professional roofing company sealed the penetrations.

The Schuco ezRail Mounting System is paired with custom tilt-up legs to accommodate varying roof slopes. Wiley Electronics WEEB clips ground the Schuco modules. The source circuits are routed through one NEMA 3R junction box, allowing a single conduit run off the roof and into wireways connected to the inverters.

"We are excited about the end result of the CherryWood project. Since the array can be seen from some of the residences, aesthetics and array placement were important considerations. The close communication with the building owners, architect and residents helped make this a highly successful project."

—Kirk Cameron, founder,  
NW Photon Energy

