

**Addressing the scale and complexity of the global energy challenge.**



## **USING RENEWABLE HYBRID POWER SYSTEMS TO MEET OFF-GRID COMMUNITY AND COMMERCIAL ENERGY NEEDS**

Electrical, Computer, and Energy Engineering (ECEE) Department Seminar

Steve Drouilhet, President, Sustainable Power Systems

Tuesday, January 31, 2012

3:30 p.m., ECCR 265, Engineering Center

Light refreshments will be served

**Summary:** Diesel generators are the traditional means by which people generate electricity in remote locations. Throughout the world, there are many thousands of off-grid communities, industrial sites, and government facilities relying entirely on diesel generated electricity. At \$4/gallon, the fuel component alone of diesel-generated electricity is high, about \$0.30/kWh. Some remote locations pay over \$8/gallon or \$0.60/kWh. With diesel fuel prices projected to rise even higher in the long term and increased pressure to be more environmentally sustainable, remote communities and industrial operators are seeking ways to reduce both their energy costs and their dependence on fossil fuels.

This seminar will discuss the issues and challenges of combining wind and solar power with diesel generators, energy storage, and controllable loads to create stable and reliable power systems for off-grid applications. In particular, we will discuss two projects that Sustainable Power Systems is currently involved in, one a wind-diesel hybrid system powering a remote Alaskan village, the other a dedicated 100 kW wind powered water pumping system for commercial agriculture on the big island of Hawaii.

### **Steve Drouilhet**

Steve Drouilhet is president and founder of Sustainable Power Systems, which specializes in renewable energy systems integration and control. He holds engineering degrees from Brown University, University of California at Berkeley, and the Von Karman Institute for Fluid Dynamics. Steve's professional experience in the wind energy industry spans nearly 30 years, having begun his career in 1982 working for U.S. Windpower Inc. as a field test engineer on one of the first California wind farms. From 1994 to 2002, he was a senior engineer at the National Wind Technology Center at the National Renewable Energy Laboratory (NREL), where he led wind-diesel hybrid system research and development. He was the principal designer of the high penetration wind-diesel power system implemented in the arctic village of Wales, Alaska.

Campus Map for Engineering Center: <http://www.colorado.edu/campusmap/map.html?bldg=EC>

Recommended Parking: Euclid Avenue AutoPark