Title: Smart Grid: the Information Backbone for a Sustainable Electric Power System

Speaker: Rob Pratt, Staff Scientist
Pacific Northwest National Laboratory

Location: Room 125, EE building, UW campus
Time: 4:30 pm - 5:20 pm, Wednesday, December 5, 2007

Abstract: Rob Pratt, Staff Scientist at Pacific Northwest National Laboratory, will speak on smart grid technology and its role as the information backbone for a sustainable electric power system, providing an overview and some illustrative examples. The smart electric power grid of the future will integrate the traditional elements of supply and demand, transmission and distribution with new technologies such as customer demand response, distributed generation, and energy storage, using information to make them function as a “society” of devices in a complex, integrated system. The vision for transforming the nation’s electric system—from central generation down to customer appliances and equipment—into a collaborative network filled with information and a myriad of market-based opportunities—is being put forward by leading thinkers in the U.S Department of Energy, national laboratories, and industry as a major scientific and engineering challenge for the nation and as an important economic value proposition for ratepayers and the electric industry.

Ongoing federal and state policy discussions indicate that carbon management for the grid will be increasingly likely and widespread (cap-and-trade, renewable portfolio standards, etc). Now utilities and policy makers are challenging the smart grid to help provide carbon savings in several ways. Demand response programs and controls can be leveraged to obtain efficiency, in addition to peak load and reliability benefits. It can also provide inexpensive regulation to mitigate the inherent intermittency from vast increases in wind generation. Automated metering systems will reward photovoltaic solar systems for the coincidence of their output with peak demand. Together these capabilities will be used to measure and verify avoided carbon emissions from both active and passive measures with high temporal and end-use resolution. They can also be used to manage the charging plug-in hybrid vehicles to provide large reductions in foreign oil imports and carbon emission reductions.

Note: Pacific Northwest National Laboratory (PNNL) has openings for research engineers and scientists with advanced engineering or science degrees in the areas of power engineering, building energy simulation (especially Energy Plus), utility economics, and information and controls systems for buildings and power grids. PNNL is operated by Battelle Memorial Institute for the U.S. Department of Energy, and has a wide range of multi-disciplinary programs ranging from transmission system reliability, SCADA security, renewable and distribution systems integration, wholesale and retail power markets, fuel cells, carbon capture and sequestration, building energy standards, and automated building commissioning and diagnostics. Summer internships are also available. Please contact Rob after the seminar if you are interested.

Bio: Rob Pratt leads Pacific Northwest National Laboratory’s (PNNL’s) GridWise™ initiative that has spawned a new DOE program and an industry alliance that share a vision of an information-rich future for the power grid. He leads a team with a focus on communications architecture, advanced control technology, and simulation and analysis of the combined engineering and economic aspects of the future grid.
Mr. Pratt also leads a PNNL initiative that recently commissioned the new Electricity Infrastructure Operations Center, a fully-equipped grid control center capable of serving as a back-up center, with live phasor data resources from around the U.S. and state-of-the-art analysis tools. It serves as a unique technology development, valuation, training, and technology transfer platform. The initiative is currently developing advanced grid control and situational awareness technologies and watershed/hydro system management capabilities.

Rob received his B.S. in Ocean Engineering from Florida Atlantic University and an M.S. in Mechanical Engineering from Colorado State University. He has been a scientist at Pacific Northwest National Laboratory since 1985.