NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Postdoctoral Researcher – Residential Energy Management

Requisition # 2449BR

The National Renewable Energy Laboratory (NREL), located in Golden, Colorado, is the nation's primary laboratory for research, development, and deployment of renewable energy and energy efficiency technologies. NREL, located in beautiful Golden, CO, is a leader in the U.S. Department of Energy's effort to secure an energy future for the nation that is environmentally and economically sustainable. Our mission is to develop renewable energy and energy efficiency technologies and practices, advance related science and engineering and transfer knowledge and innovations to address the nation's energy and environmental goals.

Position Summary

NREL's Electricity, Resources, and Building Systems Integration Center has an immediate opening for a full-time Postdoctoral Researcher in the Residential Buildings Research Group.

The initial appointment is for one year, with possible renewal for up to a maximum of three years. The successful candidate will join team members on a multi-year cutting-edge laboratory, analytical, and field project to research, develop, evaluate and integrate Automated Home Energy Management (AHEM) devices, systems, and algorithms for cost-effective energy savings in residential buildings and neighborhoods.

Job Duties

Under the general direction of senior staff, the successful candidate will:

- engage in laboratory, analytical and field evaluations of AHEM systems to develop standardized approaches for integrating AHEM functions within home area networks (HANs), utility demand-response and variable pricing programs, security systems, advanced metering infrastructure (AMI) systems, and Smart Grids;
- develop cost-effective combinations of AHEM control strategies to reduce whole-house energy consumption; and
- collaborate with the analysis team to quantify net, aggregate energy savings provided by AHEM systems in both existing and new homes.

Laboratory work will be conducted in the Automated Home Energy Management (AHEM) laboratory at the Thermal Test Facility (TTF), located on NREL's main campus. The AHEM lab features a complete "smart home" test bed that includes simulated occupancy, smart meters, demand-response enabled appliances, circuit-level monitoring, on-site renewables and EV-charging.

Required Education, Knowledge, Skills

Must be a recent PhD graduate within the last three years.

Strong academic record and relevant education in electrical engineering, computer science, or relevant dissertation research in other engineering or science field.

Strong interpersonal communication skills (oral and written).

Demonstrated experience in:

- design, execution, and analysis of laboratory or field experiments;
- building science, energy engineering or systems engineering; and
- practical electronics knowledge and interest or expertise in network protocols and wireless network systems.

Preferred Qualifications

Practical experience in miscellaneous electric loads, low-power wireless/wired communication (PLC, ZigBee SEP/HAP, 802.11x, or similar), mesh networking, COTS electronics, and/or systems automation is strongly preferred.

Background in applied mathematics (applied statistical methods, design of experiments, multi-objective optimization, autonomous/multi-agent systems, machine learning, cloud computing, data mining, and/or data cleansing or similar) is strongly preferred.

Experience in building simulation, residential construction/ retrofit, and/or building monitoring and control systems is preferred.

Experience in smart grid systems, behavioral analytics, or thermal science is a plus.

Experience with Hardware-in-the-Loop (HIL) systems, including application of Matlab/Simulink and Grid Simulators is a plus.

For more information and to submit your CV, search our Job Openings for Requisition 2449BR at: http://www.nrel.gov/employment/

EEO Policy / E-Verify

NREL's policy is to provide equal employment opportunities to all qualified persons without regard to race, age, color, sex, religion, national origin, marital or veteran status, or any other legally protected status.

NREL validates right to work using E-Verify. NREL will provide the Social Security Administration (SSA) and, if necessary, the Department of Homeland Security (DHS), with information from each new employee's Form I-9 to confirm work authorization. For additional information, please go to http://www.nrel.gov/employment/eeo.html.