



**NATIONAL WORKSHOP ON
NEW RESEARCH & DEVELOPMENT DIRECTIONS FOR FUTURE CYBER-
PHYSICAL ENERGY SYSTEMS**

JUNE 3-4, 2009

**SHERATON BALTIMORE CITY CENTER HOTEL
BALTIMORE, MARYLAND**

WORKSHOP URL:

<http://www.ece.cmu.edu/~nsf-cps/>

DEADLINES:

April 20, 2009 – Position Paper Submission Deadline

May 4, 2009 – Notification of Acceptance of Position Papers

May 15, 2009 – Hotel Room Reservation Deadline

WORKSHOP CO-CHAIRS:

Marija Ilic, Carnegie Mellon University

Clas Jacobson, United Technologies Corporation

CALL FOR POSITION PAPERS:

Led by the National Science Foundation, the National Security Agency, and the National Institute for Standards and Technology, the High Confidence Software and Systems (HCSS) Coordinating Group (CG) of the Federal Networking and Information Technology R&D (NITRD) Subcommittee of the National Science and Technology Council (NSTC), with support from the National Coordination Office for NITRD, cordially invites you to submit a position paper for participation in the National Workshop on New Research Directions for Future Energy Cyber-Physical Systems (CPS). This two-day workshop will be held in Baltimore, MD on June 3-4, 2009. Professor Marija Ilic of Carnegie Mellon University and Dr. Clas Jacobson of United Technologies Corporation (UTC) are the workshop Co-Chairs.

The objective of the workshop is to identify the research directions required to support the use of cyber technologies in shaping the evolution of future energy systems with the aim of increasing the functionality, reliability, and availability of energy sources, adaptive demand, and delivery. Cyber-physical systems are those in which the cyber and physical components are tightly integrated at all scales and levels. Position papers should propose innovative concepts and ideas for integrating the “cyber” (computation, communications, and control that are discrete, logical, and switched in real time) and the “physical” (natural and human-made systems governed by the laws of physics and operating in continuous time (in this case, electric energy) into overall “systems”.

*c/o National Coordination Office for Networking and Information Technology Research and
Development*

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The workshop will address the R&D challenges and opportunities for building the next generation of high-confidence energy cyber-physical systems that are innovative, resilient, and sustainable. Discussions will focus on the strategic role of CPS R&D in:

- Spurring innovation and enabling safe and secure production of electricity from existing and emerging energy technologies including, clean coal, hydrogen, renewables, traditional nuclear and fusion technologies, and other emerging energy resources
- Secure and reliable energy services for key civilian and national security sectors (e.g., buildings, industry, transportation)
- Energy-efficient grid-tied/islanded micro-grids
- Integration of energy resources, carriers, and consumers to meet future energy and environmental needs
- Standards and protocols to enable the performance and innovation of cyber-physical systems

Of particular interest will be the views offered by experts from industry, academia, and government who will be asked to:

- Assess the current state of practice
- Identify basic technology research, transition, and adoption roadblocks
- Provide a vision for transforming existing physical energy systems into cyber-enabled physical systems that are capable of ensuring safe, reliable, and sustainable service to all, as well as differentiated reliability service at value beyond this basic service

Position papers should be no more than three pages in length. The deadline for paper submissions is Monday, April 20, 2009. Some authors of position papers will be selected to give presentations at the workshop. Other authors will be selected to participate in the workshop. You will be notified by Monday, May 4, 2009 regarding the acceptance and/or presentation of your position paper. Workshop presentations and discussion will be used to prepare a report that envisions new research needed to catalyze innovations on cyber systems design for managing future physical energy systems.