

Energy Efficient High Performance Computing Working Group  
**September 21, 2010 Meeting Report**

## **INTRODUCTION**

The EE HPC WG held a meeting on September 21, 2010. This WG is composed of members representing major Federal departments and independent agencies, private sector representatives, and members of the academic community. More information can be found at the working group's website, <http://eehpcwg.lbl.gov>. Documents from the group can be found at <https://docs.google.com/leaf?id=0BzyTVVVRdMKpNwVjNTI5YTEtMTIIZi00YTA5LTlkMTYtZmY3ZDIyZjJjZmMy&hl=en>.

**NEXT MEETING: October 13th, 9:00-10:00 a.m. Pacific Time**

### **Agenda**

- Introductions, Outreach and Communication
- Infrastructure Sub-Group Update
- Conferences Sub-Group Update
- Computing Sub-Group Update
- Closure

## **EE HPC WG MEETING REPORT**

### ***Communications & Outreach Update***

**Dale Sartor, LBNL**

Since the last HPC meeting, we have approximately ten new members, bringing our total to about 100. We had planned a webinar for yesterday, September 20, but due to technical issues and oversubscription, we will reschedule for early October. The webinar will deal with HPC vendor plans, especially related to cooling and power.

### ***Infrastructure Sub-Group Update***

**Bill Tschudi, LBNL**

**Otto VanGeet, NREL**

The infrastructure sub-group has submitted their waste heat reuse paper to GreenGrid, and it is complete as far as Otto and Dale are concerned. The paper should be voted through GreenGrid and publically available soon.

There are a few demonstration projects in the works, including the University of California, San Diego, DC power demonstration. Vendors supplied the DC power supplies, rectifiers and necessary connectors. Data will be made available online as soon as it is available.

Another demonstration is planned using wireless sensors to control the HVAC system. Here an array of wireless temperature and pressure sensors will be deployed throughout an operating data center. These sensors will be used to monitor conditions and control the computer room air conditioners directly. This project will start in about two months.

The infrastructure sub-group will continue to discuss its plans for the upcoming year. Possible plans include:

- General specs for HPC equipment temperature set-point
- Using cooling tower water in HPC
- Standard RFP template for HPC
- The issue of internal vs. external fans and power supplies
- Consistent monitoring plan
- Waste heat reuse implementation case study

### ***Conferences Sub-Group Update*** ***Anna Maria Bailey/Marriann Silveira***

At SC10 there will be a workshop, "Running a Lean and Productive Data Center", from 9:00 to 12:30 on Sunday November 15, and a Birds-of-a-Feather (BOF) group at 2:15 on Tuesday. The Green 500 and the Top 500 also have BOF sessions that will include discussion on energy efficient HPC.

EE HPC WG members Paul Brenner and Steve Straus attended the International Green Computing Conference and presented on carbon measurement regulations and measurements.

The GovEnergy workshop went smoothly and was well attended. Geoffrey Bell organized the data centers track at Labs21, but the data center workshop was cancelled due to low sign up.

IEEE has a high performance power aware computing workshop (HPPAC) on May 11, 2011.

### ***Computing System Sub-Group Update*** ***Natalie Bates for John Schalf/Erich Strohmaier***

The computing systems metrics group has defined terms for metric, methodology and workload. They are examining the metrics that currently exist for measuring workload and deciding if they are appropriate metrics. There was an analysis done three years ago which investigated using HPL as a workload for measuring energy efficiency. The

analysis suggested that HPL would be an appropriate workload, however, the level of accuracy was +/- 10 percent. This group can reanalyze and see if there are other metrics with greater accuracy.

### ***PARTICIPANTS***

<b>Name</b>	<b>Organization</b>
Bill Reidy	DOD
Marianne Silvera	LLNL
Bill Tschudi	LBNL
Natalie Bates	EE HPC WG
Ralph Wescott	PNNL
Bill Kosik	HP
Otto VanGeet	NREL
Steven Corbato	University of Utah
Dale Sartor	LBNL
Jim Crow	NERSC
Rick Rivera	LANL
Allison Young	Energetics