

Agenda

- **Introduction**

- Natalie Bates, Energy Efficient HPC Working Group

- **Goals and Motivation**

- Marriann Silveira, LLNL

- **Case Studies**

- Thomas Durbin, NCSA
- David Martinez, SNL
- Greg Rottman and Charles Rush, ERDC
- Torsten Wilde, LRZ

- **Next Steps and Closing Statements**

- David Grant, ORNL

System Integrator Webinar: Liquid Cooling Controls

Thank you for presenting!

HP, Cray, IBM, Lenovo and RSC

Presentations and audio recording posted on EE HPC WG website <https://eehpcwg.llnl.gov/pages/webinar.htm>

System Integrator Webinar: Liquid Cooling Controls

■ Today's Roadmap

- CDUs manage delivery of liquid to the HPC system.
- Most CDUs are constant flow-rate and temperature.
- Some customers re-set these points on a seasonal basis and could re-set them as dew point changes.
- There are CDUs deployed at different levels of the system with the lowest level being the rack, but not the node level.
- CDUs range in their intelligence, with some claims for integrated controls.

■ Tomorrow's Possibilities

- Tomorrow's products could allow for inlet flow-rate and temperature to vary based on actual, not maximum specified heat removal.
- There would have to be more and finer grained telemetry and controls.