

Objective 1: Enhance Cyberinfrastructure Facilities

Fred L. Ogden, Craig C. Douglas

UNIVERSITY
OF WYOMING
New Thinking

In cooperation with:

BYU
BRIGHAM YOUNG
UNIVERSITY

UtahStateUniversity
COLLEGE OF ENGINEERING

THE
UNIVERSITY
OF UTAH

University of Wyoming

Objective 1: Acquire High Performance Computer Institutional Arrangements

- UW IT Dept. house, cool, power, and maintain
- UW IT Dept. hired sysadmin and two user support staff
- Created HPC external and faculty advisory committees

Hardware Acquisition

- RFP issued Dec. 2011
- Five bids received, Feb. 2012
- IBM selected as hardware supplier, April 2012
- Condo model selected with contributions by CI-WATER, UW School of Energy Resources and Research Office, three other research projects.

ARCC Hardware (March 1, 2013)

- 75 compute nodes
 - 60 Thin nodes (32 GB memory)
 - 15 Fat nodes (64 GB memory)
 - 5 GPU nodes (nVidia)
 - 1200 Xeon cores
 - Infiniband interconnect (~30 Gb/s)
 - 350 TB Storage (purchased by IT Dept.)

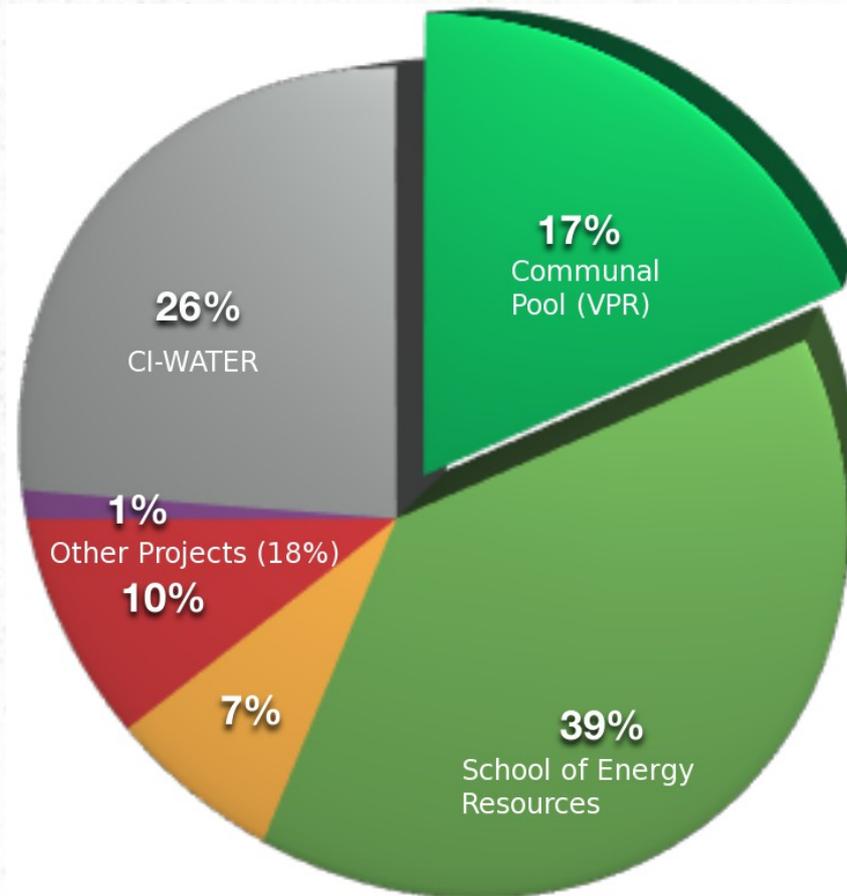
UW Advanced Research Computing Cluster- Mt. Moran



UWyo HPC Model

- Condo
 - Researchers and/or Projects pay for nodes and/or storage
 - Infrastructure (including hardware, software and staff) covered by University
 - Nodes available for general use when not used by owner.

Mt. Moran Contributions to Date



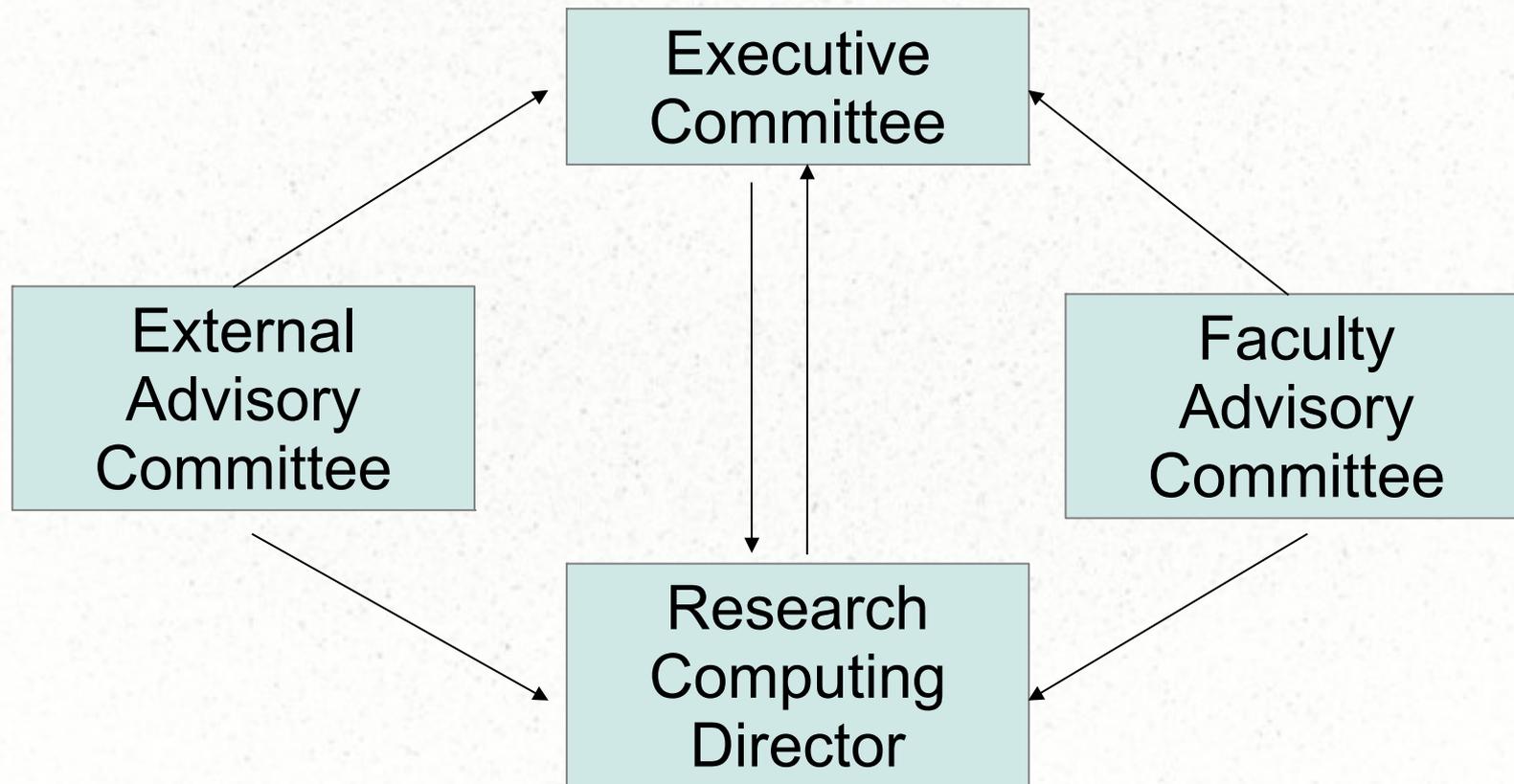
CI-WATER 1st year expenditure: \$333,333

Acquisitions CI-WATER Year 2

We plan to spend year two and three equipment funds in year two.

- \$666,667 compute nodes
- UW IT Dept. provides racks and cooling, and personnel to support

UWyo HPC Oversight



External Advisory Committee

- Current Members
 - Thomas Hauser, UC - Boulder
 - Anke Kamrath, NCAR
 - David Lifka, Cornell
- Meet twice per Year
- Will eventually have 5 members
 - 3 year appointments
 - Staggered membership

Summary of External Advisory Committee Recommendations

- Raise awareness of resource availability on campus
- Strong recommendation to move to a chargeback support model. UW model with combined state support and research contributions can be sustainable if we continue to receive ~\$2 million/year from a combination of university and researcher contributions.
- Support Satellite Clusters for nominal fee
- Recommended entire machine be pre-allocated
- Recommended reprioritizing hiring from sys. admin to consulting
- Emphasized importance of having good metrics and acknowledgement of ARCC in proposals/projects
- Improve on-campus networking

Yellowstone



- NCAR/Wyoming Supercomputer Center located in Cheyenne, Wyoming
- Yellowstone has 72,280 Xeon cores
- UWyo controls 20% of NSF allocation pool (or 75 million core hours/year)
- CI-Water project has a current allocation of 2 million core hours
- Our allocation is being shared with U. Utah for CI-Water climate simulations