NWSC-3 Facility Requirements

An overview of the NWSC Facility and Support Design Preferences
NWSC Facility Design

- Efficient
  - Location – Cheyenne WY
  - High Flow, Low Pressure Mechanical Designs
  - Low PUE (Power Usage Effectiveness)
  - 480V electrical distribution

- Flexibility:
  - Modular Design
  - 10 Foot Raised Floor
  - Power Flexibility
  - Mechanical Flexibility
Efficiencies at the NWSC

- **Location**
  - Cheyenne WY – 6,063 feet above sea level
  - Reliable electrical grid
  - Dry and Cool –
    - average temp of 46.4 deg F
    - Average humidity of 42.4%

- **High Flow – Low Pressure Mechanical Systems**
  - 24” chilled water mains
  - Oversize ductwork

- **Efficient Power Systems**
Efficiencies Cont.

- 480v Distribution
  - Higher voltages/kw available closer to HPC systems
- PUE of 1.08 when multiple HPC systems are running
- UPS Variable Module Management System (VMMS)
Flexibility at the NWSC

- Modular Design
  - Allows facility to adapt to systems
  - Easily configurable to new technologies

- 10 foot raised floor
  - Allows for undisturbed conditions during construction
  - No need to “shoe horn” systems into spaces
Flexibility Cont.

- **Power Flexibility**
  - 480v distribution throughout
  - Space for cutting edge power supplies

- **Mechanical Flexibility**
  - Free Cooling
  - Re-use excess heat from HPC
  - Ability to change CHWST “on the fly”
NWSC-3 Facility Preferences

- **Water Cooled System**
  - Current 65F deg CWST – plan to raise during Cheyenne’s lifetime for efficiencies
  - Open to Warm Water Cooling

- **Electrical Distributions**
  - 480v preference for compute nodes – utility power
  - Critical log-in nodes/network devices can be segregated for UPS power
  - All mechanical systems provided by HPC vendor will be supplied via UPS power

- **Air Cooled Equipment**
  - Hot Aisle Compatible
Mechanical System Preferences

- Water cooled to chip
  - 65 deg F and higher supply temps
  - Allows support of dense HPC

- Air Cooled Equipment
  - Hot aisle compatible
  - Support 42U racks and larger
Electrical Distribution Preferences

- 277/480v three phase system for compute nodes
- 208 / 120 or 277 / 480v for storage / head-end nodes
- Highly dense racks with high KW ratings
- Networking Equip capable of having a separate power infrastructure
Questions?