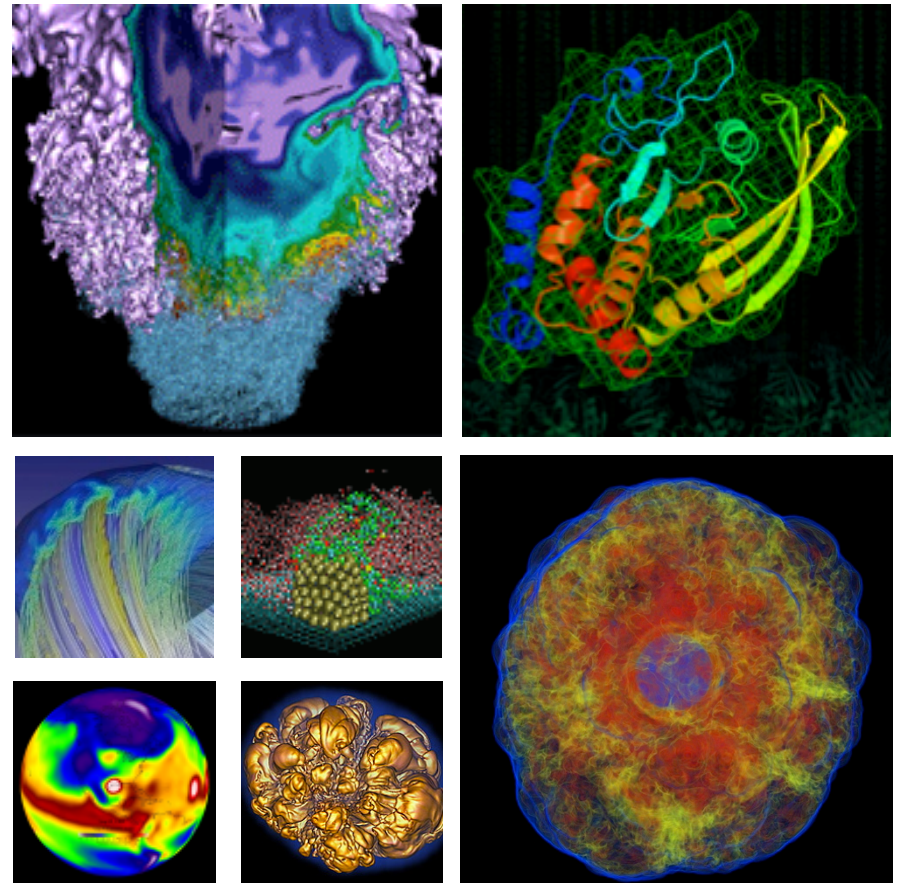


Computational Research and Theory Facility (CRT)



Brent Draney
Networking and Security

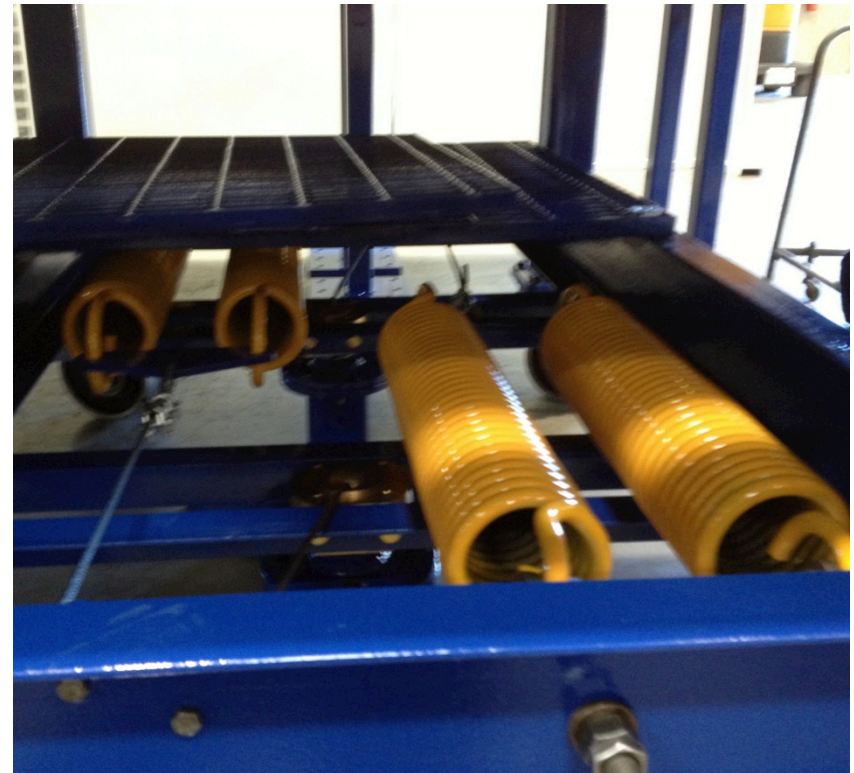
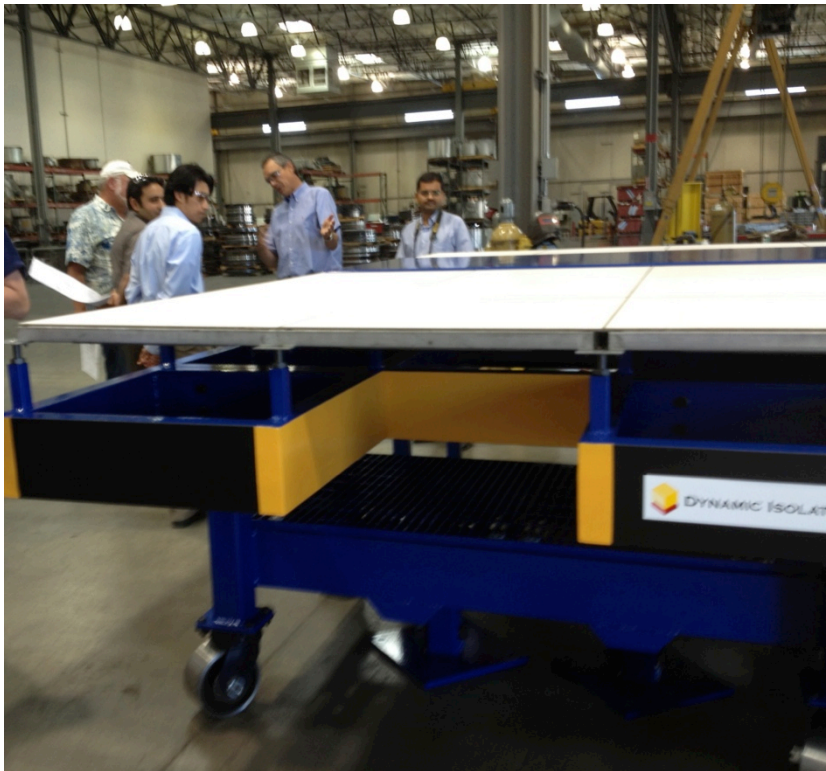
February 11, 2013

- **Four story, 135,000 GSF facility for scientific computing including:**
 - 20,000+9,870 ASF High Performance Computing Floor
 - 41,000 ASF office and conference area; 300 offices
- **\$125M UC Sponsored Building**
 - No long term commitment or decommissioning costs
 - No major capitalization or appropriations costs
- **\$19.8M DOE Funded Data Center**
 - Power and cooling expansion for NERSC systems
- **Status and schedule:**
 - Construction started in December, 2011
 - Occupancy is planned for early January, 2015

Foundation is underway



Seismically isolated floor



Current CRT Timeline (Calendar Year)



1Q2012 Site preparation Begins

3Q2012 Substructure work

2Q2013 Super Structure

4Q2013 Mechanical Electrical

1Q2014 Interior

1Q2015 Beneficial Occupancy

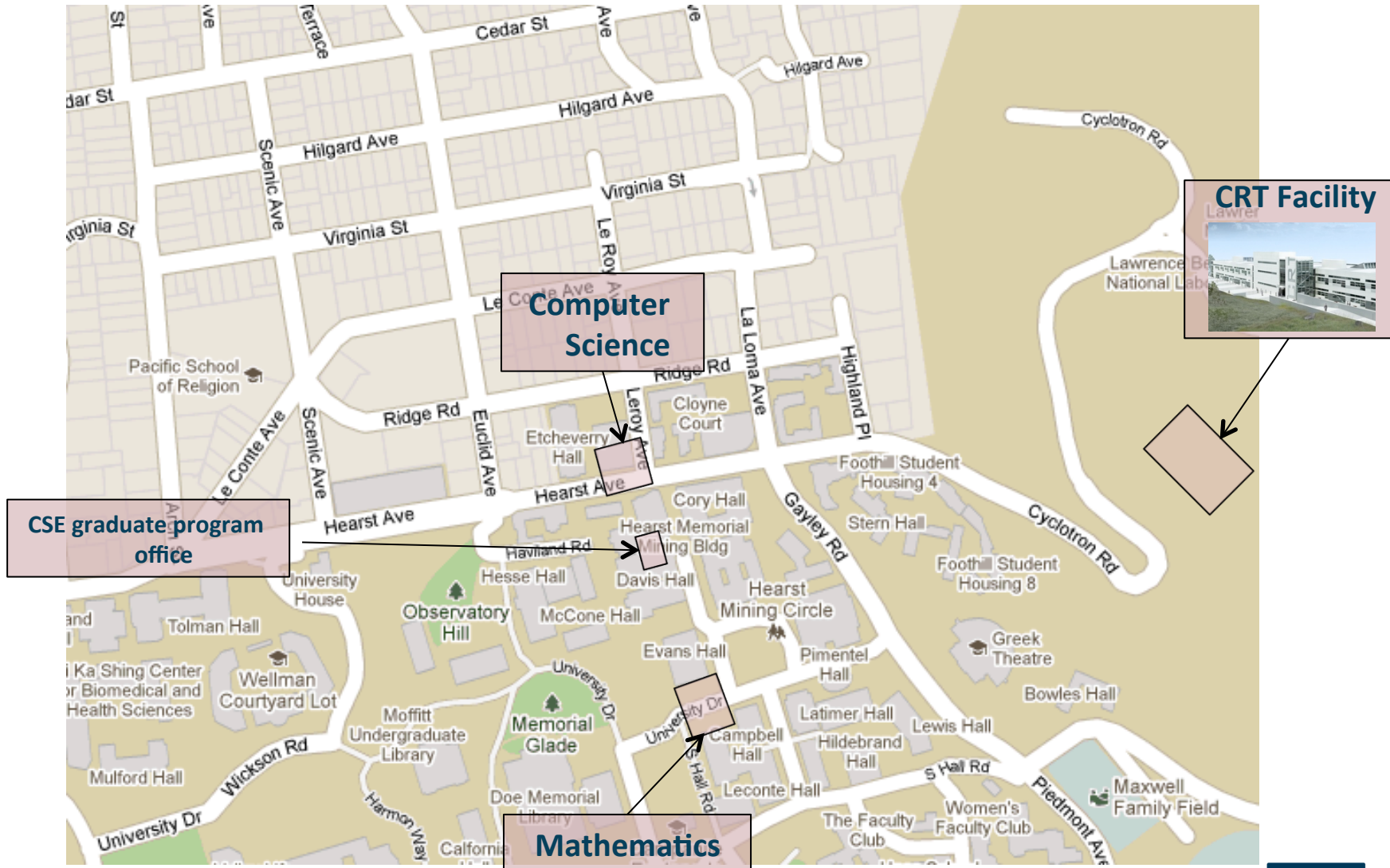
2Q2015 System Migration

Now



National Energy Research Scientific Computing Center

Facility to Support Collaborative Computational Science with UCB



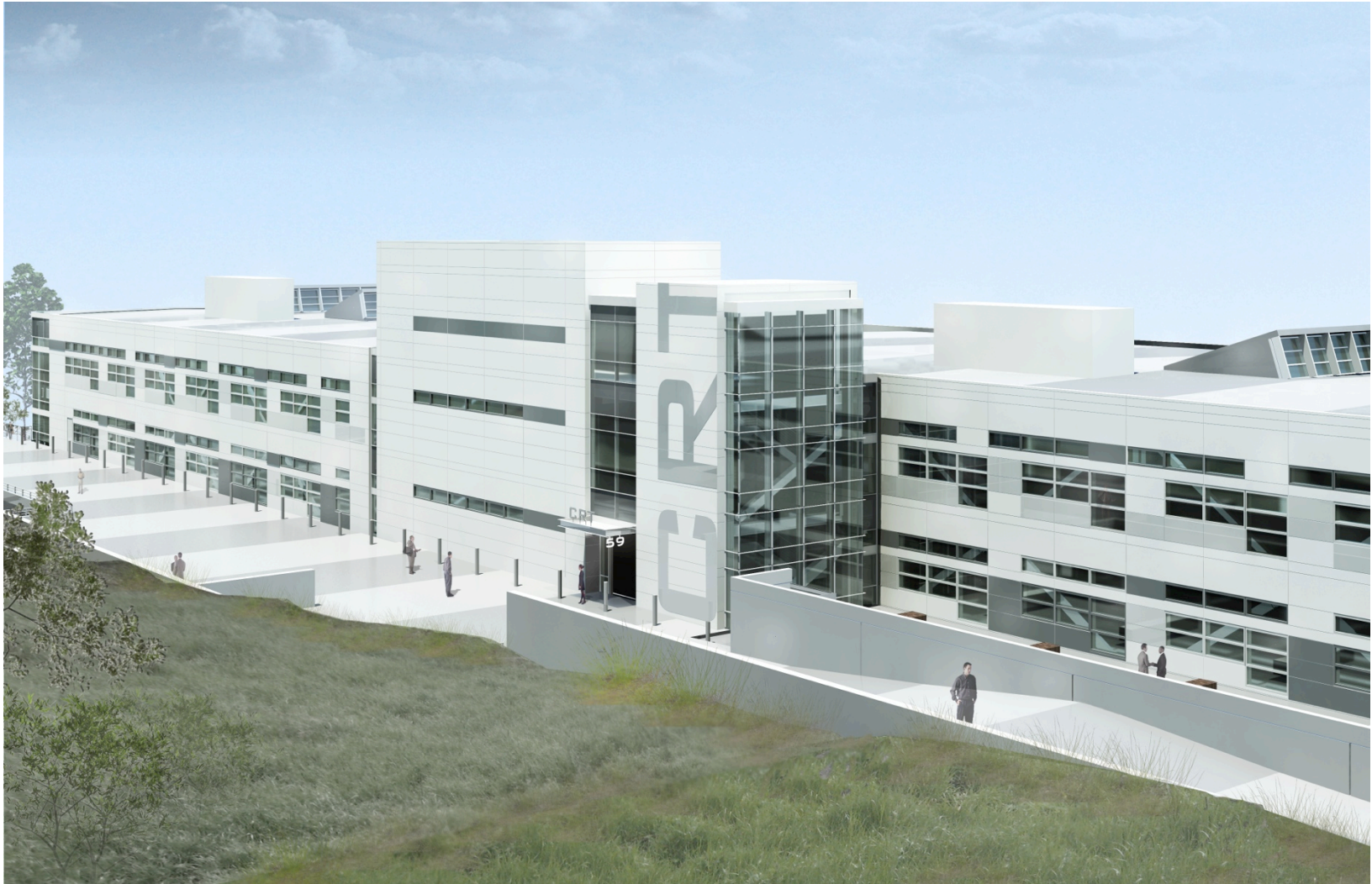
CRT Located at LBNL Main Gate



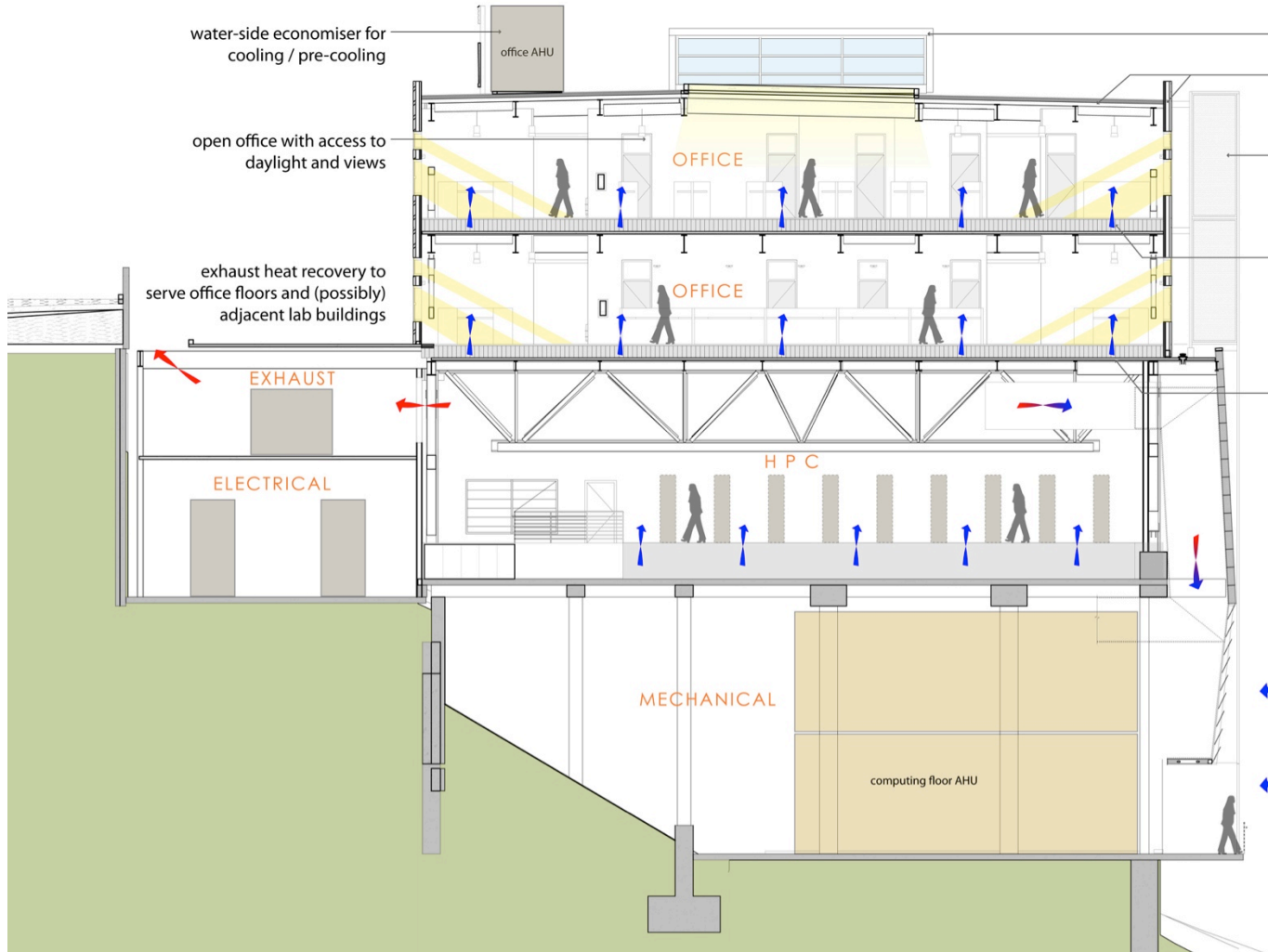
View south from above Chu Road



View from Building 50



Building Cross Section



Power and Cooling Capacity



	Move-in	Design Capability
Power feeders	27MW redundant 42MW non-redundant	Same
Power Substations	5 substations @ 2.5 MW	11 = 27.5 MW
UPS	1.0+0.5 MW	2.0+1.0 MW
Generator	1 @ 1.25 MW	2 = 2.5 MW
AHUs	3+1 redundant @ 60K CFM / 0.5MW = 1.5 MW	30 = 15 MW
Cooling Towers	3+1 @ 3.375MW = 10.25 MW	6+1 = 20.25 MW
Chillers	None	2 x 550 ton

Free cooling provides exceptional energy efficiency



- **LBL's location and the CRT design enables**
 - Power Usage Effectiveness (PUE): 1.1
 - Data Center infrastructure Efficiency (DCiE): 0.91
- **Air cooling**
 - 75°F air year round without chillers
- **Liquid cooling**
 - 74°F water year round without chillers
- **Computer room exhaust heat used to heat office floors**
- **Save ~50% per year on power costs**
 - Free cooling + WAPA power