**NREL Facilities**

The National Renewable Energy Laboratory (NREL), located in Golden, CO is the nation’s primary laboratory for renewable energy and energy efficiency research and development (R&D). NREL’s Computational Science Center (CSC) performs basic and applied research to advance renewable energy and energy efficiency technologies to enable the U.S. transition to future energy systems that are carbon-neutral, sustainable, and consistent with national security and economic vitality interests. Research and development at NREL spans the full spectrum of basic research to commercial implementation in areas including: photobiology, photovoltaics, hydrogen fuel cells, energy efficient buildings, biofuels, wind energy, and integration of renewables with smarter grids.

HPC capabilities at NREL include the current flagship system, RedMesa, which has over 15,000 cores, a peak performance of 180 TF, a dedicated luster filesystem with 1 PB of storage and a QDR Infiniband interconnect arranged in a 3D Torus topology. In addition to RedMesa, in mid-2013 NREL will install a new 1 Petaflop system. This new system will be composed of the latest Intel X86 Ivy Bridge processors and Intel Xeon Phi Coprocessors (a.k.a. MIC). It will be installed in NREL’s new Energy System Integration Facility (ESIF), a 175,000 square foot facility housing a mixture of office space (for 220 staff), lab space, and an HPC data center. The facility is designed as a showcase, LEEDS platinum research facility. The data center itself will be the world’s most energy efficient with a PUE of 1.06. The ESIF building also hosts extensive visualization capabilities including a high resolution (14 megapixel) large image display and a collaboration room where the main workspace is a stereoscopic immersive virtual environment. Six projectors in this space illuminate two surfaces -- a wall and the floor. The projected space can be used in conjunction with an optical tracker and the visualizations respond in relation to the movement of the user. This allows users to physically explore and interact with their data.