LSST PROJECT SUMMARY

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Digital Version

The Large Synoptic Survey Telescope (LSST), currently under construction in Chile, is an integrated system designed to conduct an unprecedented decade-long survey of the optical sky. Featuring an 8-meter class wide-field ground-based telescope, a 3.2 Gpix camera, and an automated data processing system, LSST seeks to enable science in four main areas: the nature of Dark Matter and understanding Dark Energy, cataloging the Solar System, exploring the changing sky, and Milky Way structure and formation.

LSST will operate on an automated cadence, capturing an area the size of 40 full moons with each pair of 15-second exposures, and returning to the same area of sky approximately every three nights. Over ten years of operations, hundreds of deep exposures will be acquired for every part of the visible sky. Dedicated computer facilities will process LSST data in real time, issuing worldwide alerts within 60 seconds of detected changes in the sky. Prompt and data release products will be available to all U.S. and Chilean astronomers, and to LSST's International Contributors. LSST's massive data archive will offer vastly increased sample sizes and opportunities for scientists to "observe" the sky by mining the data and carrying out multiple independent research programs simultaneously. LSST is a new kind of telescope requiring new research methods and skills for working with Big Data.

A subset of data will be widely available through LSST's Education and Public Outreach (EPO) dynamic website portal, offering tools and activities for formal educators, citizen scientists, informal science centers, and the general public to engage, explore, and discover.

Project Cost

With Major Research Equipment and Facility Construction (MREFC) funding at a not-to-exceed cost of $473M, and under cooperative agreement with AURA, the National Science Foundation supports construction of the Telescope & Site facility, Data Management system and Education and Public Outreach components of LSST as well as the Project Management and System Engineering efforts.

The Department of Energy (DOE) supports fabrication of the LSST Camera as a Major Item of Equipment (MIE), through the Office of High Energy Physics in the Office of Science, with a total projected cost of $168M and SLAC National Accelerator Laboratory as the lead DOE lab.

As of September 30, 2017, the DOE-funded camera was 72% complete, and the NSF-funded elements of LSST were 47% complete. LSST will achieve engineering first light in 2019 and is scheduled to begin science operations in 2022.

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