



## FACT SHEET

**DESCRIPTION:** The Thirty Meter Telescope (TMT) is a non-profit collaboration among the University of California, the California Institute of Technology, the National Astronomical Observatories of the Chinese Academy of Sciences, National Institutes of Natural Sciences (NINS) in Japan and the countries of Canada and India. Once built, TMT will be the world's most advanced optical-infrared telescopes.

TMT will look more deeply and precisely into the night sky than ever before in order to help answer some of humanity's biggest questions about the universe. With its 30m diameter primary mirror, TMT will provide an unparalleled resolution, with images more than 12 times sharper than those from the Hubble Space Telescope.

**LOCATION:** Maunakea on Hawaii Island is the preferred site for TMT.

**CULTURE:** TMT's goal is to become a model observatory that demonstrates deep respect for the cultural and historical significance of Maunakea. Among the cultural considerations:

- Located 500 feet below the summit of Maunakea, TMT will not be visible from culturally sensitive locations, such as the summit of Kukahauula, Lake Waiau, and Puu Lilinoe. It is also located a considerable distance from recognized customary and traditional cultural practice areas.
- Once built, TMT will not interfere with views of the sunrise, sunset, or shadow of Maunakea nor prevent traditional and customary native Hawaiian practices.
- All TMT employees, contractors and sub-contractors will participate in a Cultural and Natural Resources Training Program annually, to gain an understanding and respect for cultural and religious practices.

**ENVIRONMENT:** TMT is committed to a model of sustainable astronomy that will minimize its impact on this special place. Among the environmental measures in place:

- Comprehensive research by expert, independent hydrologists confirms that TMT will have no adverse impact on the water resources and hydrology of Maunakea. It is a total closed wastewater system, meaning all waste will be collected and transported down the mountain for treatment and/or disposal at a proper facility elsewhere.
- TMT will not use mercury project-wide.
- The observatory's fuel storage area and piping will be double-walled and equipped with leak monitors.
- The telescope was redesigned with a shorter height and focal ratio to allow for the smallest dome possible. The dome is designed to fit very tightly around the telescope, with just enough space to fit a person for maintenance.

- TMT is sited on a lava plain 500 feet below the summit, and specifically chosen to minimize its environmental impact. It is only visible from 14% of Hawaii Island. A special aluminum-like coating reflects the sky and reduces the visibility of the structure.
- The project's facilities will incorporate solar hot water systems, solar panels, energy-saving power and communication devices and will conduct an annual audit designed to further reduce energy use.

**SCIENCE:** Today's cutting-edge telescopes are making startling discoveries about new planets, the building blocks of today's massive galaxies in ancient time, and the incredibly powerful death throes of supermassive stars at the edge of the observable Universe. To maintain this exciting pace of discovery, astronomers and engineers are pushing the boundaries of today's technology while simultaneously creating the innovations that will make TMT the most advanced and capable telescope on Earth. Astronomers will be able to see further into our universe and reach back toward the very beginning of time. In the nearby universe, they will be able to discover and characterize, in detail, planets orbiting stars other than the Sun. There is the potential to examine these planets for signs of life beyond the Earth: this would be one of the most important discoveries of all time.

**COMMUNITY OUTREACH:** TMT is currently engaged in meaningful dialogue with Native Hawaiians and other communities to address evolving community needs.

Past community outreach efforts have included pandemic relief and a focus on education. TMT launched The Hawaii Island New Knowledge (THINK) Fund in 2014 to better prepare Hawaii Island students for careers in STEM. To date, TMT has funded more than \$5.5 million for Hawaii Island students, their families and teachers. TMT also initiated a Workforce Pipeline Program, funding summer internships, STEM camps, Robotics, community events and other programs to help Hawaii Island students achieve success at becoming lifelong learners.

**LEASE RENT:** Based on its agreement with the University of Hawaii, TIO began making payments on its sublease rent in 2014. Once operational, TMT will pay \$1 million in annual lease rent; 80 percent will go to the Office of Maunakea Management for stewardship of the mountain and 20 percent will go to the Office of Hawaiian Affairs.

**PARTNERS:** California Institute of Technology  
National Astronomical Observatories of the Chinese Academy of Sciences  
Department of Science and Technology of India  
National Institutes of Natural Sciences of Japan  
National Research Council (Canada)  
University of California

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**INFO:** <http://tmt.org/>  
[www.MaunakeaAndTMT.org](http://www.MaunakeaAndTMT.org)