

# Chapter 343 Final EIS Summary Sheet

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## Project Name and Location:

Name: Thirty Meter Telescope (TMT) Project

Location: TMT Observatory – Mauna Kea Science Reserve (MKSR), TMK 4-4-15:9 (por), Hāmākua, Hawai‘i

Potential TMT Mid-Level Facility – Hale Pōhaku, TMK 4-4-15:12 (por), Hāmākua, Hawai‘i

TMT Mid-Level Facility Improvements – Mauna Kea Forest Reserve, TMK 4-4-15:1 (por) and Mauna Kea Ice Age Natural Area Reserve, TMK 4-4-15:10 (por), Hāmākua, Hawai‘i

Headquarters – UH Hilo University Park, TMK 2-4-1:7 (por) or 2-4-1:122 (por), South Hilo, Hawai‘i

## Description of Project and Action:

The Project will consist of the construction, operation, and ultimate decommissioning of the TMT Observatory, with a 98-foot (30-meter) diameter optical/infrared telescope, below the summit of Maunakea, and the construction and operation of associated ancillary facilities (Access Way, potential TMT Mid-Level Facility, and Headquarters). The proposed action is the issuance of a Conservation District Use Permit (CDUP) and approval of a sublease to State land allowing construction and operation of select Project components within the State of Hawai‘i Conservation District, resource subzone.

## Project Purpose, Need, and Objectives:

The TMT will address the outstanding constraints in astronomy and astrophysics research. The 2001 Decadal Survey for Astronomy identified a TMT-like ground-based telescope as its top need and recommendation to trace the evolution of galaxies and the formation of stars and planets. The Project’s primary purposes and objectives are to:

- Provide powerful and precise scientific tool capable of exploring almost every aspect of the Universe.
- Locate the TMT in Hawai‘i to help the U.S. maintain its leadership position in astronomy by leveraging the capacity and abilities of the TMT partners’ existing astronomy facilities on Maunakea.
- Utilize the Project as an important educational tool to attract students to the science and technology fields.
- Integrate science, culture, sustainability, and education.

## Substantial Beneficial and Adverse Environmental Impacts:

The potential Project impacts are evaluated within the framework of the Project’s compliance with all applicable rules, regulations, and requirements for its action type and location. There are two broad opinions concerning the Project’s potential impact on cultural practices and beliefs: (a) that Hawaiian culture and astronomy can co-exist on Maunakea and impacts can be mitigated; and (b) any development on Maunakea would result in a significant adverse impact that could not be mitigated. Potential less than significant adverse impacts associated with the Project include:

- Disturbance of a small portion of Kūkahau‘ula State Historic Property and development within the Mauna Kea Summit Region Historic District
- Displacement of a limited area of non-sensitive lava flow habitat and not unique geologic resources
- Visual impacts associated with the TMT Observatory, primarily to the northern portion of the island
- Increase in number of trips to the summit area of Maunakea and associated production of dust and noise
- Use of energy to power the Project
- Temporary effects during construction, primarily noise and traffic

Substantial potential benefits are primarily related to the employment opportunities created by the Project, direct contributions to the local and State economies, and realizing the Project’s objectives. In addition, the lease between TMT and UH will include sublease rent, which could be used to help the Office of Mauna Kea Management (OMKM) implement the Comprehensive Management Plan (CMP), and observing time for UH.

From a cumulative perspective, the impact on cultural resources has been, and would continue to be, substantial, adverse, and significant. The cumulative impact to geological resources in the Astronomy Precinct has been substantial, adverse, and significant. The cumulative impact to the alpine shrublands and grasslands and māmane subalpine woodlands has also been substantial, adverse and significant, primarily due to grazing by hoofed animals. The magnitude of significance of cumulative impact to the alpine stone desert ecosystem is not yet fully determined.

The cumulative socioeconomic impact has been and would continue to be substantial and beneficial.

### **Mitigation Measures:**

To ensure compliance with applicable rules, regulations, and requirements, the Project will (a) design its facilities to comply and/or facilitate compliance, and (b) develop and implement a range of plans and programs outlined in this Final EIS. Design considerations will include designing the TMT Observatory to limit its visual and other potential impact and providing a zero-discharge wastewater system at the TMT Observatory. Plans and programs will include a Cultural and Natural Resources Training Program, Invasive Species Prevention and Control Program, Waste Minimization Plan, and Materials Storage/Waste Management Plan with component Spill Prevention and Response Plan.

Additional proposed mitigation measures include (a) a Community Benefit Package; (b) a Workforce Pipeline Program, (c) furnishing Project facilities with items to provide a sense of place and remind personnel of Maunakea's cultural sensitivity and spiritual quality; (d) developing exhibits in coordination with 'Imiloa regarding cultural, natural, and historic resources that could be used at the VIS; (e) a ride-sharing program; and (f) paving the portion of the Access Way through or near the SMA core to control dust.

### **Compatibility with Land Use Plans and Policies:**

The Project will comply with all applicable land use plans and policies.

The building and operation of the TMT Observatory on Maunakea will require a sublease from UH, which leases this ceded land from the DLNR. The sublease is being negotiated and will require the approval of the Board of Land and Natural Resources. The current UH lease expires in 2033 and the TMT Observatory will be required to be decommissioned and its site restored at that time, unless a new lease is obtained.

### **Alternatives Considered:**

The alternatives considered included locating the TMT Observatory at another nearby site on Maunakea, referred to as E2, and a no action alternative.

### **Unresolved Issues:**

- Selection of an Access Way Option through or near the SMA core.
- Selection of the Headquarters location within the University of Hawai'i at Hilo University Park area.
- A sublease between TMT and UH has not been completed; it will be completed after the Project receives a CDUP.
- The level of site restoration cannot be selected until the time of decommissioning approaches.

### **Permits and Approvals:**

The permits and approvals required for the TMT Observatory, Access Way, and potential TMT Mid-Level Facility will include:

- Complete the State Historic Preservation, HRS Chapter 6E Consultation process
- Complete the Office of Mauna Kea Management (OMKM) Project Review/Approval Process
- Conservation District Use Permit (CDUP)
- National Pollutant Discharge Elimination System Permit (NPDES)

A variety of State and County Permits will be required for the Headquarters, but the OMKM review and CDUP will not be.

### **Proposing Agency:**

University of Hawai'i at Hilo

### **Accepting Authority:**

Governor, State of Hawai'i