

Draft Community Engagement Plan

# Proposed NSF Investment for the Construction and Operation of an Extremely Large Telescope in the Northern Hemisphere

Hawai'i Island, Hawaii

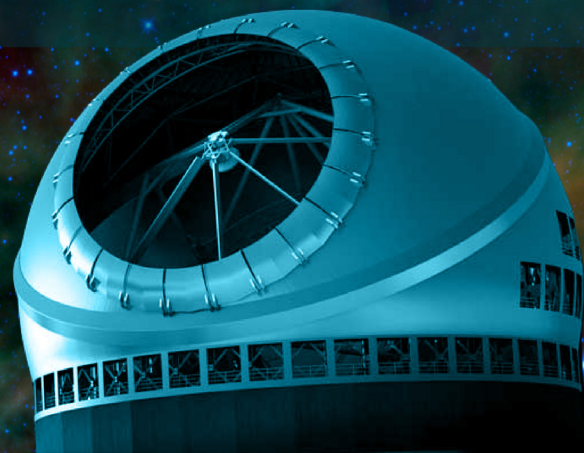
July 2022



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**ON OTHER WORLDS**



National Science Foundation



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## Draft Community Engagement Plan Hawai'i Island, Hawaii

Notice: The U.S. Board on Geographic Names maintains the Geographic Names Information System (GNIS), which is the official list of place names to be included in all federal documents. This is the reason the state is written as Hawaii, without a diacritic; however, the island is referred to as Hawai'i. In addition, we respect how organizations refer to themselves and, accordingly, we will use their spelling when referencing them.

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## Acronyms and Abbreviations

<b>Acronym</b>	<b>Definition</b>
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
CEP	Community Engagement Plan
C.F.R.	<i>Code of Federal Regulations</i>
EIS	Environmental Impact Statement
ELT	Extremely Large Telescope
GNIS	Geographic Names Information System
NASEM	National Academies of Science, Engineering and Medicine
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPS	National Park Service
NRHP	National Register of Historic Places
NSF	National Science Foundation
ROD	Record of Decision
SHPO	State Historic Preservation Officer
TMT	Thirty Meter Telescope
U.S.	United States
US-ELT	United States Extremely Large Telescope

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## 1. Introduction

The National Science Foundation (NSF) is conducting an environmental review to evaluate potential environmental (including cultural) impacts associated with a proposed NSF investment in the construction and operation of a United States (U.S.) Extremely Large Telescope (ELT), or US-ELT, to be located in the Northern Hemisphere. Because the only proposed ELT that is located in the Northern Hemisphere is the Thirty Meter Telescope (TMT)<sup>[1]</sup>, and because many people who have a connection to Maunakea, Hawaii, have strong viewpoints about whether TMT should be built there, NSF has decided to go beyond the legal requirements of the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA) (Section 106) in its environmental review and provide more opportunities for meaningful public engagement at critical junctures during NSF's processes. Therefore, NSF has developed this Draft Community Engagement Plan (CEP), which outlines the specific ways NSF seeks to promote effective and meaningful public engagement during its review. Because the preliminary Action Alternatives to be studied in this environmental review include only one location in the U.S., where the NEPA and Section 106 requirements apply, this Draft CEP has been developed specifically for that location (Maunakea, Hawai'i Island, Hawaii).

This Draft CEP begins with an overview of NSF's Informal Outreach Effort, which began in August 2020 and concluded at the end of November 2021. This informal engagement initiative with people who have a connection to Maunakea provided NSF with valuable insights into the widely diverse viewpoints about Maunakea and TMT. The information learned through this comprehensive outreach initiative helped provide a starting point for this Draft CEP.

Following the discussion of NSF's Informal Outreach Effort is a brief description of the two major components of NSF's environmental review that include legal requirements for public participation, NEPA, and Section 106. The requirements mandated by these federal statutes comprise the baseline for public engagement from which NSF will add opportunities for further public participation during its environmental review. The balance of the Draft CEP includes specific and additional opportunities for meaningful public engagement.

NSF is committed to taking all reasonable and feasible measures to provide more opportunities for effective and meaningful public engagement during its environmental review. The first such opportunity will be a public comment period on this Draft CEP held concurrently with the scoping phase of the NEPA process. After the close of this public comment period, NSF will review and consider the comments submitted and revise this Draft CEP accordingly.

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<sup>[1]</sup> *Pathways to Discovery in Astronomy and Astrophysics for the 2020s*, prepared by the National Academies of Sciences, Engineering, and Medicine (NASEM), identifies two potential sites for the TMT: Maunakea in Hawaii or Roque de los Muchachos Observatory on La Palma in the Canary Islands (NASEM, 2021).

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## 2. Overview of Informal Outreach Effort

NSF initiated its Informal Outreach Effort in August 2020 to listen to, and seek an understanding from, those who have a connection to Maunakea regarding the proposed TMT project and the future of astronomy on Maunakea. For more than 16 months, NSF received valuable input via “talk story” sessions that were conducted via videoconferencing. Some people submitted comments through email. During this time, NSF conducted sessions with more than 150 individuals and received approximately 140 written comments. NSF’s Informal Outreach Effort formally concluded in November 2021.

These discussions and the written comments submitted by participants were invaluable in achieving NSF’s goal of gaining a better understanding of the varying viewpoints regarding both TMT and the future of astronomy on Maunakea. For example, many people expressed strong views that building TMT would be essential to the health of the local economy and would offer critical opportunities for future generations so that their children would not have to move to the mainland to pursue their careers. On the opposite side of the

It became clear to NSF during its Informal Outreach Effort that any environmental review process related to TMT and Maunakea must provide additional, meaningful, and easily accessible opportunities for the widely varying viewpoints on this proposed project to be heard.

spectrum were people who conveyed their adamant position against the construction of TMT on Maunakea, stating that doing so would be an affront to their culture because they hold Maunakea as sacred and a life force; one even said that she would die for the mountain. Some phrases that came up frequently in the comments are illustrated by the “word cloud” shown on Figure 2-1; the words cited most often are shown in a larger font size. The concepts most often cited indicate an interest in local culture and community as well as engaging in two-way communication (conversation). For background purposes, a comment matrix capturing summaries of the comments received during the talk story sessions and via written comments can be found in Appendix A. This outcome and the comments that specifically addressed ways to enhance any environmental review that NSF may initiate for TMT helped guide the development of this Draft CEP, which is designed to enhance NSF’s engagement with the public during its environmental review process in significant and meaningful ways.

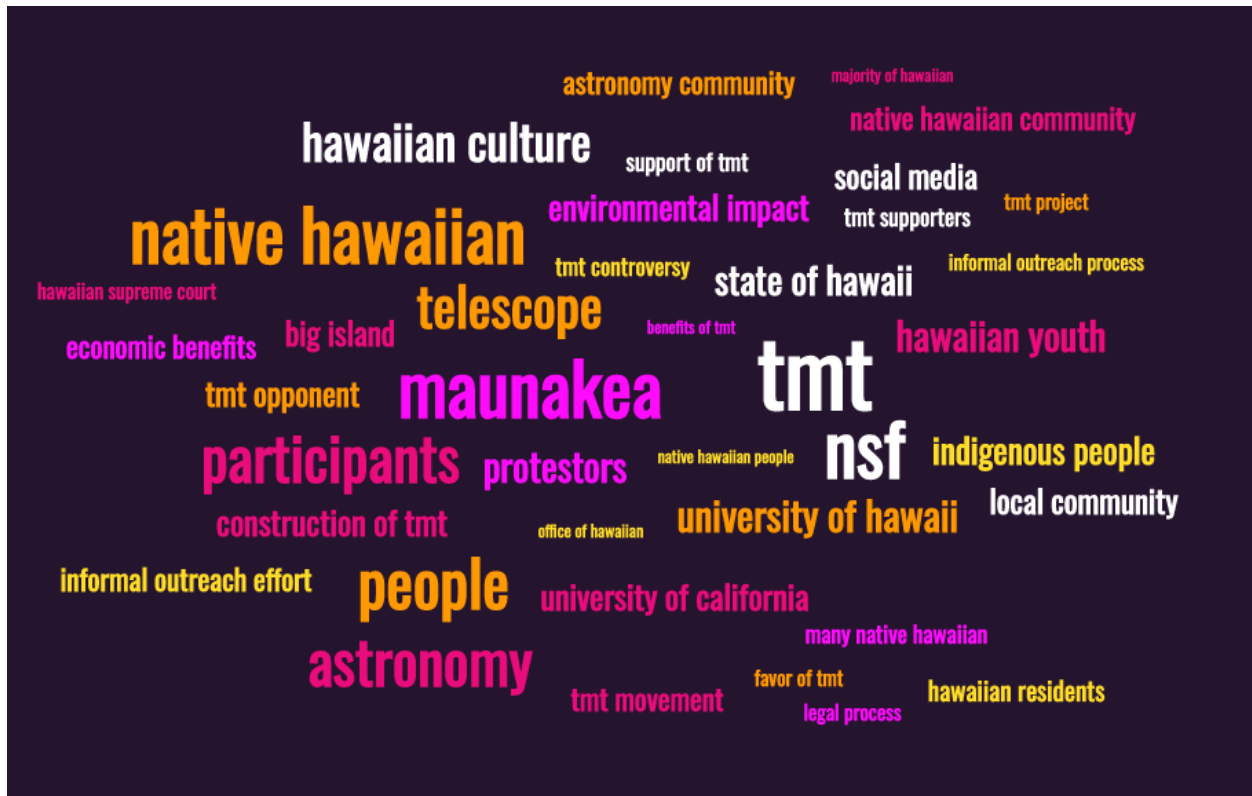


Figure 2-1. Informal Comment Process Keyword Occurrence

### 3. Public Engagement during NSF's Environmental Review

The Draft CEP for NSF's environmental review focuses on providing potentially impacted and interested members of the public with a process that goes beyond the legal requirements of NEPA and Section 106 and provides more opportunities for meaningful and effective public engagement at critical points during the environmental review. Some of the opportunities in NSF's processes are legally required and will likely be familiar to those who have previously participated in similar processes. In addition to carrying out these requirements, NSF plans to include new and unique ways for the public to engage in its processes. Figure 3-1, located at the end of this section, depicts the requirements for public engagement under NEPA and Section 106 as well as additional engagement steps. Refer to the following sections for a detailed explanation of each step.

#### 3.1 Public Engagement Required under NEPA

NEPA requires federal agencies, such as NSF, to consider the anticipated environmental impacts of proposed federal projects as part of their decision-making process and to provide for appropriate public involvement. When major impacts are anticipated from a proposed federal action, the relevant federal agency must prepare an Environmental Impact Statement (EIS). The process for preparing an EIS and allowing for public participation is governed by federal regulations implementing NEPA. The following sections describe the NEPA process steps shown in the left column of Figure 3-1.

##### 3.1.1 Publish Notice of Intent

The EIS process begins with the publication of a Notice of Intent (NOI) to Prepare an Environmental Impact Statement in the *Federal Register*. The NOI provides a description of NSF's proposed action, preliminary alternatives for carrying out that action, a summary of expected impacts, and a schedule for the decision-making process. It also describes the public scoping process, which includes a public comment period and any public scoping meeting(s) to be held (*Code of Federal Regulations* [C.F.R.] Title 40, Section 1501.9(d)).

##### 3.1.2 Conduct Scoping Meetings and Solicit Public Comments

The purpose of the scoping phase is to solicit public comments to determine relevant issues that will influence the scope of the environmental analysis, including the identification of viable alternatives and the resources and issues to be analyzed in the EIS. As part of the scoping process, NSF will hold scoping meetings (40 C.F.R. 1501.9).

For this review, NSF intends to provide a 60-day public comment period during the scoping phase. NSF is hosting four in-person public scoping meetings in four different towns, in response to feedback received during the Informal Outreach Effort. NSF will also accommodate oral and written comments in the Hawaiian language; comments submitted in the Hawaiian language will subsequently be translated into the English language so that they can be considered by NSF. Refer to Section 4 for details regarding scoping meetings.

### 3.1.3 Conduct Studies and Evaluations and Prepare Draft EIS

NSF is responsible for conducting any studies or analyses necessary to prepare the Draft EIS and will use an interdisciplinary approach to confirm the integrated use of the natural and social sciences (40 C.F.R. 1502.6). NSF may incorporate previously conducted studies or analyses by reference when appropriate (40 C.F.R. 1501.12).

Following the scoping phase, NSF is required to prepare a Draft EIS, which describes the purpose and need of the proposed action, Action Alternatives to carrying out the proposed action, a No Action Alternative, a description of the affected environment, and the environmental consequences anticipated from each alternative (40 C.F.R. 1502.9(b) and 1502.10-1502.19).

### 3.1.4 Publish Draft EIS

The Draft EIS must be published, transmitted to interested members of the public, and made available for a public comment period (typically spanning at least 45 days) (40 C.F.R. 1502.20, 1503.1, 1506.6(b)).

### 3.1.5 Conduct Public Meetings and Solicit Public Comments on Draft EIS

A public meeting, or meetings, on the Draft EIS will be held during the accompanying public comment period. All comments must be submitted during the public comment period if they are to be considered by NSF (40 C.F.R. 1503.3(b), 1506.6(c)).

For this review, NSF intends to provide a 60-day public comment period on the Draft EIS. NSF also plans to host four in-person public meetings in four different towns, in response to feedback received during the Informal Outreach Effort. In addition, NSF will accommodate oral and written comments in the Hawaiian language; comments submitted in the Hawaiian language will subsequently be translated into the English language so that they can be considered by NSF. Refer to Section 4 for details regarding public meetings.

### 3.1.6 Consider and Analyze Public Comments

After the close of the public comment period on the Draft EIS, NSF is required to consider substantive comments, prepare responses to them, conduct any additional analyses needed, and prepare a Final EIS that identifies a Preferred Alternative and incorporates any factual corrections or changes to the analyses or Action Alternatives. Any mitigation measures identified should also be finalized and reflected in the Final EIS (40 C.F.R. 1502.14, 1503.4).

### 3.1.7 Publish Final EIS

NSF must publish the Final EIS and transmit it to interested members of the public (40 C.F.R. 1502.20).

### 3.1.8 Issue Record of Decision

The EIS process concludes with NSF's issuance of a Record of Decision (ROD) at least 30 days following publication of the Final EIS. The ROD must state the decision (that is, which Alternative is being selected) and discuss all factors, including any essential considerations of national policy,



that NSF balanced in making its decision and how those factors entered into its decision. The ROD must also identify any practicable mitigation measures that NSF is committing to as a part of its decision (40 C.F.R. 1505.2). In implementing its decision, NSF must carry out those mitigation measures that are identified in the ROD, including any appropriate conditions on grants or other approvals (40 C.F.R. 1505.3).

### 3.2 Public Engagement Required under the Section 106 Process

Section 106 requires federal agencies, such as NSF, to consider the effects of their undertakings on historic properties and to give the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. Section 106 is a procedural law that provides a flexible, four-step process that relies on consultation with the relevant State Historic Preservation Officer (SHPO) and consulting parties to identify which properties are historically significant and why, and how a proposed project might affect them. The main steps of Section 106 include: the establishment of the undertaking, the identification and evaluation of historic properties, the assessment of effects; and the resolution of adverse effects on historic properties (through avoidance, minimization, and/or mitigation), if needed. For more information on the Section 106 process, *A Citizen's Guide to Section 106 Review* (ACHP n.d.) is a useful resource<sup>2</sup>.

The goal of the Section 106 process is to accommodate historic preservation concerns with the needs of federal undertakings through consultation.

The following describes the Section 106 process steps shown in the center column of Figure 3-1.

#### 3.2.1 Initiate Process and Identify Consulting Parties

Once NSF has determined that its proposed undertaking has the potential to affect historic properties, it will initiate the Section 106 process with a letter to the Hawaii SHPO. NSF then identifies consulting parties, which may include local governments, the applicant, Native Hawaiian organizations, and interested members of the public that might attach religious and cultural significance to historic properties potentially impacted by the proposed undertaking. NSF must involve the consulting parties in findings and determinations made during the Section 106 process (36 C.F.R. 800.3).

#### 3.2.2 Roles and Responsibilities of Consulting Parties

Interested members of the public that have a demonstrated interest in the project and wish to participate as consulting parties should understand that this role is participatory and requires a commitment of time and energy throughout the consultation period, which may last for many months. The role of a consulting party is most successful when the parties come to the process with an open mind, willing to listen to all points of view and engage in meaningful dialogue, weighing historic preservation and cultural issues with those of the project requirements, and open to coming up with a balanced result. Some of the responsibilities of consulting parties are to help provide information on historic properties that may be affected by the proposed project, respond to inquiries from NSF or other consulting parties, assist NSF in assessing effects on historic properties from the project, help develop approaches to avoid, minimize, and/or mitigate adverse effects to historic properties, and offer ideas for meaningful mitigation to address adverse effects. Consulting

<sup>2</sup> [https://www.achp.gov/sites/default/files/documents/2021-01/CitizenGuide2021\\_011321.pdf](https://www.achp.gov/sites/default/files/documents/2021-01/CitizenGuide2021_011321.pdf)

parties should be prepared to actively participate for the entire Section 106 process, to be flexible and seek creative solutions that meet project needs while being considerate of historic properties, and to have respectful and productive dialogue.

### 3.2.3 Define Area of Potential Effects and Identify Historic Properties

In consultation with the SHPO and consulting parties, the NSF will define the Area of Potential Effects (APE), which is the geographic area or areas within which an undertaking may affect historic properties (36 C.F.R. 800.16(d)). Once the APE is defined, NSF consults with the SHPO, consulting parties, and, if warranted, the ACHP on historic properties within the APE.

## WHAT ARE HISTORIC PROPERTIES?

Historic properties are those properties that are listed in, or determined eligible for listing in, the National Register of Historic Places (NRHP). They can be buildings, structures, objects, districts, or sites, including landscapes and traditional cultural places. To be eligible for inclusion in the NRHP, a property must meet the requirements of at least one of the following four primary NRHP criteria (NPS 1997):

- A. Associated with events that have made a significant contribution to the broad patterns of our history; or
- B. Associated with the lives of persons significant in our past; or
- C. Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. Have yielded or may be likely to yield, information important in prehistory or history.

In addition, properties must retain enough physical integrity to demonstrate their significance under the criteria. The NRHP recognizes seven aspects of integrity: setting, feeling, association, location, materials, design, and workmanship. Even if a property meets the criteria, it must retain sufficient integrity to convey that significance to be eligible for listing in the NRHP.

Generally, properties must be at least 50 years of age to be eligible for the NRHP, unless they are proven to have exceptional importance. More information on the NRHP and the types of resources that it encompasses can be found at the link:

<https://www.nps.gov/subjects/nationalregister/index.htm>.

Sometimes, a property is described as a traditional cultural place when discussing it in relation to Section 106. According to the National Park Service, a traditional cultural property “can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community’s history, and (b) are important in maintaining the continuing cultural identity of the community.” (NPS 1992). For those properties, it is important to engage with the consulting parties to understand why a traditional cultural place is significant to them, what qualities of the property are important, and how they feel a proposed project could affect those important qualities. (36 C.F.R. 800.4)

### 3.2.4 Assess Adverse Effects through Consultation

After identifying historic properties, NSF (in consultation with the SHPO), the consulting parties, and, if appropriate, the ACHP, determines whether the proposed undertaking is likely to result in an adverse effect to historic properties within the APE. An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 C.F.R. 800.5). NSF must notify the ACHP of any adverse effect finding (36 C.F.R. 800.6).

### 3.2.5 Resolve Adverse Effects through Consultation

NSF continues to consult with the SHPO and other consulting parties to develop means to avoid, minimize, and/or mitigate adverse effects on historic properties (36 C.F.R. 800.6).

### 3.2.6 Finalize Agreement Document

The Section 106 process may conclude with an agreement document, either a Programmatic Agreement or Memorandum of Agreement, that legally binds the signatories to carry out actions stipulated in the agreement document.

While the steps of the Section 106 process are established through regulation, they are neither prescriptive nor one-size-fits-all. Importantly, there is no mandated substantive outcome at the end of the process. Section 106 is not intended to stop changes from happening to historic properties, and sometimes there is no way for a project to avoid harming historic properties. It does, however, guarantee that federal agencies factor preservation values into their decisions. At the heart of Section 106 is the consultation process; therefore, the commitment of both NSF and the consulting parties throughout the process is critical to reaching a meaningful outcome.

## 3.3 Additional Engagement Steps

The CEP for NSF's environmental review includes additional opportunities for public engagement, which go beyond the requirements of NEPA and Section 106. The following sections describe these additional steps, which are shown in the right column of Figure 3-1.

### 3.3.1 Draft Community Engagement Plan

NSF prepared this Draft CEP to identify how NSF plans to engage with the public in significant and meaningful ways. NSF will hold a 60-day public comment period on this Draft CEP, concurrent with the comment period during the scoping phase. All interested members of the public are encouraged to carefully review and comment on this Draft CEP. In particular, NSF is interested in feedback on:

- Additional engagement steps identified in this section (Section 3.3)
- Methods of communication with interested members of the public as described in Section 4
- Plan for public meetings (in person) and the accommodations at meetings (allowing for comments to be submitted in Hawaiian language) described in Sections 5 and 6

### **3.3.2 Draft Study Plans**

If new studies or technical analyses are needed to prepare the EIS or to support NSF's Section 106 process, NSF will post draft study plans describing the scope of the study and the methodology to be used to determine impacts and invite feedback during a 30-day public comment period. The methods for submitting written comments on the draft study plans will be similar to those described in Sections 5 and 6 of this document.

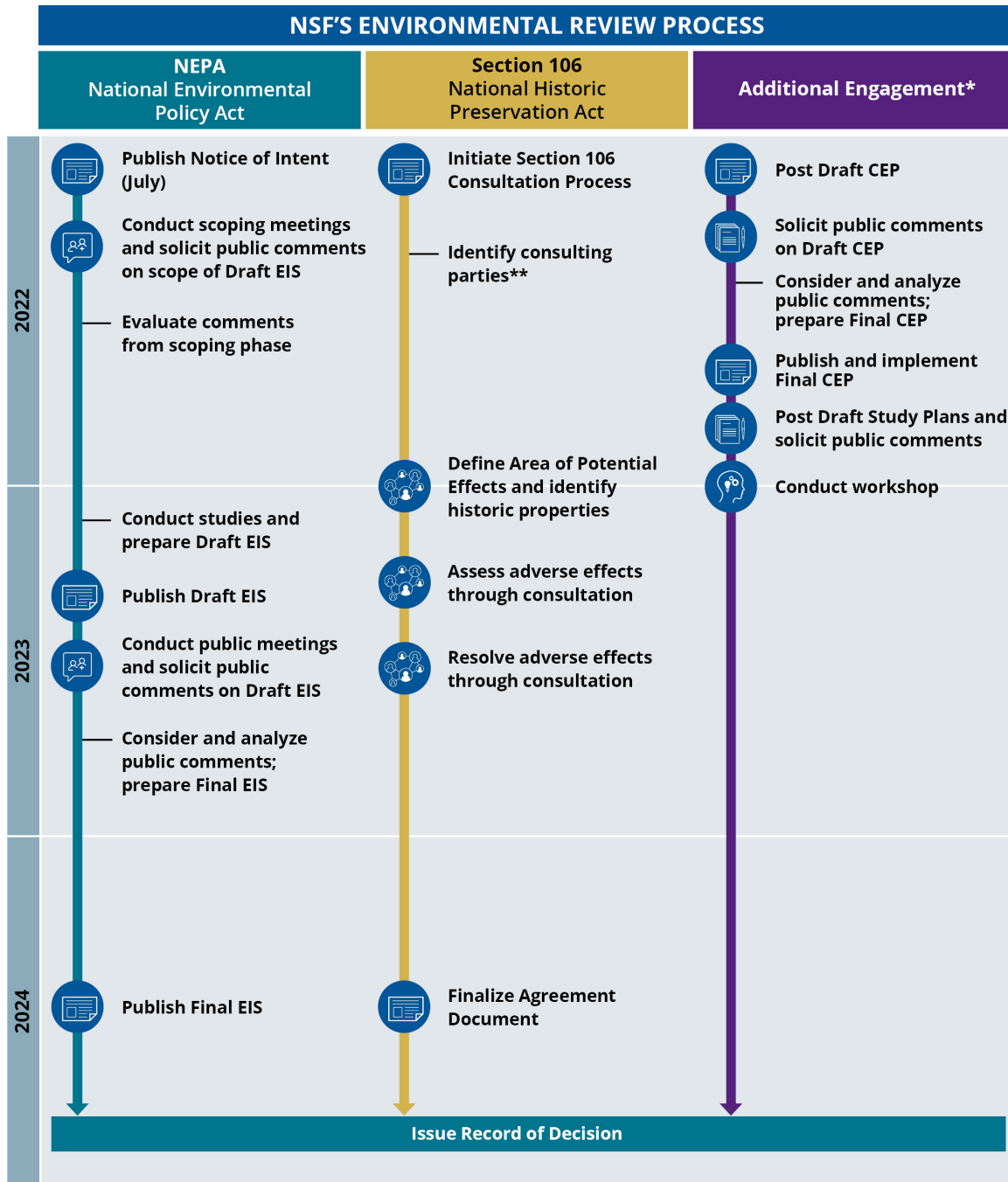
### **3.3.3 Workshop on Responsible Astronomy in Hawaii**

NSF will host a 2- to 3-day workshop to create an NSF-facilitated plan to define and practice responsible astronomy in Hawaii. This workshop will be interactive and primarily focused on fostering collaboration between the Hawaiian and astronomy communities having a mutual connection to Maunakea. Participation by the new Mauna Kea Stewardship and Oversight Authority, the Maunakea Observatories, and Hawaiian cultural practitioners would be ideal for achieving workshop goals. This workshop is described in more detail in Appendix C. While this workshop will be conducted outside the NEPA and NHPA public engagement processes, it is intended to ultimately inform NEPA's preliminary Action Alternative 2 as well as the Section 106 process. It may also help in defining any additional studies to be performed.

### **3.3.4 Implement Any Other Measures Identified in the Final CEP**

As indicated previously, NSF will finalize the Draft CEP based on feedback collected during the initial 60-day comment period. Depending on the comments received and if NSF deems it reasonable and feasible to implement new suggestions for public engagement, NSF will implement such new suggestions in accordance with the Final CEP during its environmental review process.

### 3 Public Engagement during NSF's Environmental Review



**LEGEND**

-  Public meetings and comment period
-  Written comment period
-  Workshop
-  Consulting parties meeting
-  Document
-  Internal NSF process step

**Notes**

- \* NSF's Informal Outreach Effort began in August 2020 and concluded at the end of November 2021. This informal engagement with people who have a connection to Maunakea provided NSF with invaluable insights into the widely diverse viewpoints about Maunakea and TMT, and informed preparation of the Draft CEP.
- \*\* Parties that have consultative roles in the Section 106 process per 36 *Code of Federal Regulations* 800.2.

**Acronyms**

- CEP = Community Engagement Plan
- EIS = Environmental Impact Statement

**Figure 3-1. NSF's Environmental Review Process for the Proposed NSF Investment for the Construction and Operations of an ELT in the Northern Hemisphere**





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## 4. Communication Tools

NSF recognizes that environmental review processes are vastly improved through transparency and widespread participation. As a result, in addition to creating new and unique opportunities for meaningful participation by interested members of the public, NSF developed a variety of communication tools. These tools, summarized in Table 4-1, are designed to keep the public informed of the steps in NSF's environmental review, including all of the opportunities to participate in NSF's NEPA and Section 106 processes. The list of government agencies and community organizations that will be contacted via email is provided in Appendix B.

**Table 4-1. Communication Tools**

<b>Tools</b>	<b>Point in the NSF's Environmental Review</b>	<b>Members of the Public to Be Reached</b>	<b>Timing</b>
<b>NSF's Environmental Review Website</b>	Continual	Interested Members of the Public	Continual
<b>NSF Virtual Meeting Room</b>	Draft EIS Notice of Availability	Interested Members of the Public	Continual from Availability of Draft EIS to Availability of Final EIS and Final Section 106 Agreement Document
<b>Newspaper Notices</b>	Draft CEP Review Scoping Meetings Review of Study Plans Draft EIS Meetings	Printed: Interested Members of the Public (Local) Virtual: Interested Members of the Public	Twice prior to Scoping Meetings, Prior to Review of Study Plans, and twice prior to Draft EIS Meetings
<b>Radio Notices</b>	Draft CEP Review Scoping Meetings Review of Study Plans Draft EIS Meetings	Interested Members of the Public	Twice prior to Scoping Meetings, Prior to Review of Study Plans, and twice prior to Draft EIS Meetings
<b>Social Media Notices</b>	Draft CEP Review Scoping Meetings Review of Study Plans Draft EIS Meetings	Interested Members of the Public and Social Media Groups	Prior to Scoping Meetings, Prior to Review of Study Plans, and Prior to Draft EIS Meetings
<b>Email Mailing List</b>	Draft CEP Review Scoping Meetings Review of Study Plans Draft EIS Meetings NHPA Section 106 Consulting Parties Meetings	Interested Members of the Public, Agencies, and Organizations Currently on, and Who Request to Be on, the Email Mailing List	Prior to Scoping Meetings; Prior to Draft EIS Meetings; and Prior to Section 106 Consulting Parties Meetings

## 4.1 NSF's Environmental Review Website

NSF has created a website to serve as a tool for both public outreach and engagement related to NSF's environmental review of TMT. The site, <https://beta.nsf.gov/tmt>, will include general information about TMT and NSF's environmental review; information about how to comment; where to find relevant public documents; how to participate in the workshop; and information about public meetings as well as Section 106 meetings.

The site will be a centralized information resource for learning about the proposed project, reading updates on NSF's environmental review, and downloading public meeting displays and other project materials. All materials that are distributed to interested members of the public will reference NSF's environmental review website, establishing it as the single, official source of information about NSF's environmental review processes. Visitors to the site will also be able to submit comments during public comment periods and sign-up to be on the email mailing list.

## 4.2 Virtual Meeting Room

During the Draft EIS phase, NSF's environmental review website will also include a link to NSF's Virtual Meeting Room, through which visitors can view background information, public meeting presentations and materials, updates on NSF's environmental review process, and comment forms that can be submitted through the Virtual Meeting Room. This Virtual Meeting Room may also be used for certain Section 106 consultation meetings.

## 4.3 Newspaper Notices

Another method of informing the public is through public notices in area newspapers. NSF will publish small display ads to inform the public of upcoming public comment periods and public meetings associated with NSF's environmental review. The estimated frequency of these notices is shown in Table 4-1. The notices will run in the following newspapers: *West Hawaii Today*, *Hawaii Tribune Herald*, and *Honolulu Star Advertiser*.

## 4.4 Radio Notices

During the Informal Outreach Effort, community members identified radio notices as a preferred communication method. In response, NSF will provide radio notices on stations such as the Hawai'i Public Radio station KHPR-FM and local radio stations KSSK-FM, KHVH-AM, KKEA-AM, and KAPA-FM to inform the public of upcoming public comment periods and public meetings associated with NSF's environmental review. The estimated frequency of these notices is shown in Table 4-1.

## 4.5 Social Media Notices

NSF will provide updates on its environmental review through social media platforms such as Facebook, Twitter, and Instagram. These updates will include information on upcoming public comment periods and public meetings.

## 4.6 Email Mailing List

NSF will produce and distribute email announcements to notify the public of upcoming public comment periods and public meetings. An email mailing list of interested members of the public, including interested organizations, will be maintained through the duration of NSF's environmental review. Email addresses will be collected at public meetings, through the NSF's environmental review website and Virtual Meeting Room, as well as through email requests.

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## 5. How to Comment on this Draft CEP

NSF invites the public to comment on this Draft CEP. The public is strongly encouraged to review this Draft CEP during the public comment period and provide comments on how NSF's plans for public engagement can be further improved upon.

Comments on NSF's Draft CEP may be submitted prior to, during, or after the scoping meetings through September 17, 2022. Comments may be submitted, either in writing or orally, during one of the scoping meetings scheduled for August 9 to 12, 2022, or in writing via the environmental review website, or via postal mail through September 17, 2022.

**Providing Comments at Public Scoping Meetings:** NSF will host public meetings for the scoping phase of its NEPA process, during which written or oral comments on this Draft CEP may be submitted. The following meeting venues are currently planned for the public meetings:

Evening meetings: 6:00 p.m. to 8:00 p.m.

- **Hilo:** August 9, 2022, at the Grand Naniloa Doubletree by Hilton Hotel, Crown Room, 93 Banyan Dr., Hilo, HI 96720
- **Nā'ālehu:** August 10, 2022, at the Nā'ālehu Community Center 95-5635 Hawai'i Belt Rd., Nā'ālehu, HI 96772
- **Kona:** August 11, 2022, at the Outrigger Kona Resort & Spa, Kaleiopapa Convention Center, 78-128 'Ehukai St., Kailua-Kona, HI 96740
- **Kamuela (Waimea):** August 12, 2022, at the Kahilu Town Hall 67-1182 Lindsey Rd., Kamuela, HI 96743

Comments will be accepted during the meetings in writing and verbally. Written and oral comments may be submitted in the Hawaiian language, which will be subsequently translated to English by a Hawaiian language translator to facilitate NSF's consideration of comments.

Please contact NSF at least 1 week in advance of each meeting if you would like to request special accommodations such as sign language interpretation.

**Submitting Written Comments:** Written comments related to this Draft CEP will be accepted by the following methods:

Submit comments at: <https://beta.nsf.gov/tmt>

Send comments by postal mail to: Ms. Elizabeth Pentecost, RE: ELT  
National Science Foundation  
Room W9152  
2415 Eisenhower Ave.  
Alexandria, VA 22314

For further assistance regarding how to submit comments on this Draft CEP, please contact Ms. Pentecost at (703) 292-4907 or [EIS.106.TMT@nsf.gov](mailto:EIS.106.TMT@nsf.gov).

## 5 How to Comment on this Draft CEP

Hard copies of the Draft CEP and Final CEP will also be made available at the following libraries and upon request:

- O‘ahu
  - James & Abigail Campbell Library  
University of Hawai‘i at West O‘ahu  
91-1001 Farrington Hwy.  
Kapolei, HI 96707
  - Hawaii Kai Public Library  
249 Lunalilo Home Rd.  
Honolulu, HI 96825
- Hawai‘i
  - Edwin H. Mo‘okini Library  
University of Hawai‘i at Hilo  
200 W. Kawili St.  
Hilo, HI 96720-4091
  - Thelma Parker Memorial Public and School Library  
67-1209 Māmalahoa Hwy.  
Kamuela, HI 96743
  - Hilo Public Library  
300 Waiānuenue Ave.  
Hilo, HI 96720
  - Pahala Public and School Library  
96-3150 Pūkake St.  
Pāhala, HI 96777
  - Kailua-Kona Public Library  
75-138 Hualālai Rd.  
Kailua-Kona, HI 96740
- Kaua‘i
  - Lihue Public Library  
4344 Hardy St.  
Līhu‘e, HI 96766
  - Princeville Public Library  
4343 Emmalani Dr.  
Princeville, HI 96722
- Maui
  - Kihei Public Library  
35 Waimāha‘iha‘i St.  
Kihei, HI 96753



## 6. How to Comment during the Scoping Phase and after Release of the Draft EIS

The public will have the opportunity to submit comments during the public scoping phase for the EIS and again after publication of the Draft EIS. During the scoping phase, comments on scoping issues may be submitted, either in writing or orally, during one of the scoping meetings scheduled for August 9 to 12, 2022, or in writing via NSF's environmental review website or via postal mail through September 17, 2022. To be eligible for inclusion in the Draft EIS, all scoping comments must be received prior to the close of the scoping period; for comments on the Draft EIS to be considered, they must be received during the public comment period that follows the publication of the Notice of Availability of the Draft EIS in the *Federal Register*.

**Attending and Providing Comments at Public Meetings:** NSF will host public meetings during the scoping phase and again during the Draft EIS phase of its NEPA process. The intent is to use the same venues for the public meetings during both phases, although adjustments may be made for the Draft EIS public meetings if necessary. The following venues are currently planned for the public meetings; any changes to these venues for the Draft EIS meetings will be published in the *Federal Register* and communicated to the public using the communication tools described in Table 4-1:

Evening meetings: 6:00 p.m. to 8:00 p.m.

- **Hilo:** August 9, 2022, at the Grand Naniloa Doubletree by Hilton Hotel, Crown Room, 93 Banyan Dr., Hilo, HI 96720
- **Nā'ālehu:** August 10, 2022, at the Nā'ālehu Community Center 95-5635 Hawaii Belt Rd., Nā'ālehu, HI 96772
- **Kona:** August 11, 2022, at the Outrigger Kona Resort & Spa, Kaleiopapa Convention Center, 78-128 'Ehukai St., Kailua-Kona, HI 96740
- **Kamuela (Waimea):** August 12, 2022, at the Kahilu Town Hall 67-1182 Lindsey Rd., Kamuela, HI 96743

Comments will be accepted during the meetings in writing and verbally. Written and oral comments may be submitted in the Hawaiian language. These comments will be subsequently translated to English by a Hawaiian language translator to facilitate NSF's consideration of comments.

Please contact NSF at least 1 week in advance of each meeting if you would like to request special accommodations such as sign language interpretation.

**Submitting Written Comments:** Written comments on the scoping phase and also on the Draft EIS will be accepted by the following methods:

Submit comments at: <https://beta.nsf.gov/tmt>

Postal mail to: Ms. Elizabeth Pentecost, RE: ELT  
National Science Foundation  
Room W9152  
2415 Eisenhower Ave.  
Alexandria, VA 22314

Beginning at the Draft EIS phase, the public can also visit and submit comments via NSF's Virtual Meeting Room. The link to access the Virtual Meeting Room will be posted on NSF's environmental review website when it is available.

### 6.1 Meeting Materials

A variety of materials will be developed for the public meetings previously described. These materials will include such items as PowerPoint presentations, informational boards, fact sheets, and comment forms. Following public meetings, materials will be posted to NSF's environmental review website, <https://beta.nsf.gov/tmt>.

### 6.2 Availability of the Draft and Final EISs

The Draft and Final EISs will be posted to the following website: <https://beta.nsf.gov/tmt> and an email announcement with a link to each of these documents will be sent to those on NSF's email mailing list when the documents are available. A Notice of Availability of both the Draft EIS and the Final EIS will also be published in the *Federal Register*.

Hard copies of the Draft and Final EISs will also be made available at the following libraries and upon request:

- O'ahu
  - James & Abigail Campbell Library  
University of Hawai'i at West O'ahu  
91-1001 Farrington Hwy.  
Kapolei, HI 96707
  - Hawaii Kai Public Library  
249 Lunalilo Home Rd.  
Honolulu, HI 96825
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  - Edwin H. Mo'okini Library  
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- Maui
  - Kihei Public Library  
35 Waimāhaʻihaʻi St.  
Kihei, HI 96753

For further information regarding the EIS process or the Section 106 consultation process, please contact Ms. Elizabeth Pentecost at (703) 292-4907 or [EIS.106.TMT@nsf.gov](mailto:EIS.106.TMT@nsf.gov).

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## 7. Conclusion

NSF takes seriously its commitment to provide opportunities for interested members of the public to meaningfully and effectively engage in its environmental review process. This Draft CEP is an example of that commitment. Collaboration among NSF and interested members of the public during implementation of the Final CEP will be critical to its success.

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## 8. References

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## **Appendix A**

### **Informal Outreach Effort Comment Matrix**

The comments in Appendix A constitute summaries of the information provided to the National Science Foundation (NSF) during its Informal Outreach Effort. NSF does not take a position on the veracity of the assertions made herein and provides these summary comments for background purposes only. All information referencing or describing the identity of the participant has been removed from the comments to protect the privacy of those who participated in NSF's Informal Outreach Effort.

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## Appendix A. Informal Outreach Effort Comment Matrix

The following comments constitute summaries of the information provided to the National Science Foundation (NSF) during its Informal Outreach Effort. NSF does not take a position on the veracity of the assertions made herein and provides these summary comments for background purposes only. All information referencing or describing the identity of the participant has been removed from the comments to protect the privacy of those who participated in NSF's Informal Outreach Effort.

**Table A-1. Informal Outreach Effort Comment Matrix**

Number	Comment Summary
1	Participants appreciate NSF taking the initiative to conduct early outreach efforts.
2	Although there is disappointment that the formal environmental compliance process has not begun, participants do appreciate NSF taking the initiative to conduct early outreach efforts.
3	If the project moves forward, NSF's processes may be informed by the lessons learned from prior Native Hawaiian land and resource-based issues or controversies.
4	Participants appreciate NSF taking the initiative to conduct early outreach efforts.
5	Native Hawaiians have unified to oppose Thirty Meter Telescope (TMT). On the other hand, pro-TMT communities are not as unified.
6	Participants appreciate NSF taking the initiative to conduct early outreach efforts.
7	Native Hawaiians who oppose TMT feel encouraged by the success they've experienced, and the measure of control they have gained that they do not want to lose.
8	Participants appreciate NSF taking the initiative to conduct early outreach efforts.
9	Many feel that the Hawaii State government and the University of Hawai'i have a long history of not keeping their promises to Native Hawaiians.
10	Participants will never agree to having TMT built on Maunakea.
11	Native Hawaiians feel that TMT is too big for the mountain and that it exceeds height limitations that are set forth in the County of Hawaii's building regulations.
12	Native Hawaiians view Maunakea as one of the most sacred places in Hawai'i and existing telescopes on Maunakea were previously constructed without their consent.
13	Many Native Hawaiians view their objection to TMT as personal, requiring difficult decisions between their livelihoods and their culture.
14	In light of all the past wrongs perpetrated against Native Hawaiians, the government should follow the recommendation of the kia'i, by not building TMT.
15	Discussing the future of other telescopes on Maunakea summit is difficult until TMT concerns are addressed.
16	Participants believes that all telescopes need to be removed on Maunakea.
17	Local community should have the first input into the management of Maunakea
18	Participants are not against science, but want a voice in the decisions for Maunakea.
19	The removal of five telescopes that are planned to be decommissioned is a start to restoring the balance between science and culture on Maunakea.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
20	Build a cultural center near the Maunakea access road, which could employ Native Hawaiians.
21	Monetize the use of the astronomy land (i.e., pay rent based on fair market value), observation time, and tour programs (i.e., van tours for visitors), with proceeds going to the Office of Hawaiian Affairs.
22	NSF should meet with a small group of Native Hawaiians to discuss these issues.
23	Consider the cultural landscape, of which Maunakea is a part, during Section 106 consultation.
24	Successes felt by Native Hawaiians in organizing and protesting against TMT has brought with it a newfound sense of power and agency, after long periods of feeling disenfranchised.
25	Ensure the intent of the Informal Outreach Process is clear.
26	In developing a Section 106 Programmatic Agreement, NSF should acknowledge the expertise of Native Hawaiians, commit to implementing the provisions of the Programmatic Agreement, and ensure honest relationships between the federal government and Native Hawaiians.
27	NSF should provide public notice at the end of the informal outreach process.
28	Participants are supportive of NSF's informal outreach process and offered to assist NSF in advertising the Informal Outreach Effort process.
29	NSF should act in accordance with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), by obtaining "free, prior and informed consent" from the Native Hawaiians before approving any project on Maunakea.
30	NSF should ensure the formal environmental review process is meaningful at every step.
31	NSF should engage with bodies of Native Hawaiian representation, such as the Department of Hawaiian Homelands, Office of Hawaiian Affairs, and Kamehameha Schools.
32	NSF should ensure there is adequate public notice for comment periods and meetings (i.e., more than two or three weeks).
33	NSF should hold additional public meetings outside of Hilo and Kona.
34	NSF should ensure the public meeting venues are large enough to accommodate all participants.
35	NSF should ensure chairs are available for elders during the public meetings.
36	NSF should accept written and oral comments during the formal environmental review process.
37	Activists opposing TMT are united, many in number, and will protest its construction no matter how long it takes.
38	TMT can only be built if law enforcement exercises its authority, which would increase opposition (noting that the movement has already grown in size).
39	One characterized the situation as, "science without humanity is a sin."
40	TMT is one of too many projects that desecrate the land.
41	NSF needs to listen and accept "no."
42	Native Hawaiians question prior polls taken to determine their positions on TMT.
43	NSF should act in accordance with UNDRIP, by obtaining "free, prior and informed consent" from the Native Hawaiians before approving any project on Maunakea.



# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
44	It would be helpful for NSF to provide information about the Informal Outreach Effort to participants prior to the meeting. NSF's introductory remarks should be included in the meeting request or as FAQs.
45	TMT does not impact cultural resources or practices.
46	The future of astronomy in the United States (U.S.) is at stake.
47	Astronomy students feel threatened.
48	Astronomy is blamed for many ills.
49	The University of Hawai'i should take on the role of a bridge connecting Native Hawaiian culture and western science.
50	People cannot relate to Astronomy, and more needs to be done to help people understand and develop empathy toward Astronomy interests.
51	Astronomy is viewed as being exclusive and Astronomers are considered elite.
52	The University of Hawai'i Astronomy Department should develop a working relationship with the Hawaiian Studies Department.
53	More education on both sides of the issue would be helpful.
54	TMT had all its necessary legal entitlements to allow construction of it; if permits are not upheld, the inability to rely on a valid process threatens other developments too.
55	NSF should engage with those representing Hawaiian business interests (such as the State-wide and Hawai'i Island chambers of commerce).
56	Maunakea is the Native Hawaiian's tie to their culture.
57	A geological study of the Maunakea site should be conducted.
58	A cultural center should be built.
59	Protect water (aquifer) and revegetate plants on the Maunakea site.
60	TMT should not be built because Native Hawaiian high chiefs are buried on Maunakea.
61	Engage with Native Hawaiians who can serve as a bridge between the two sides of the issue.
62	Distinguish between the terms "sacred" and "spiritual" when referring to Maunakea.
63	NSF should recognize and listen to all stakeholders.
64	Maunakea is large enough to accommodate all stakeholder's interests.
65	Community outreach efforts for TMT and Maunakea management should be united.
66	Outreach should focus efforts on engaging with people that are closer to the middle of the extremes to solicit help bringing those on the fringe closer to the middle.
67	Focus on "small asks," such as providing essential items to the community, rather than focusing on big items, such as large scholarships.
68	Let the community drive the process.
69	Look for ways to integrate the Astronomy community into the broader Hawaiian community.
70	Utilize lessons learned during the Environmental Impact Statement (EIS) process for the Green Bank Observatory into the planning process for TMT.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
71	The community engagement efforts of the Maunakea observatories could compliment any NSF formal environmental review process.
72	TMT, specifically noting science and technology, represents a benefit to the Native Hawaiian community.
73	Hawai'i's Astronomy community needs to understand Native Hawaiian culture and seek ways to meaningfully integrate into the broader Hawaiian community.
74	Look for ways to get local children and their parents interested in Astronomy.
75	Astronomers are viewed as "elite" or "above" others in the local community, and efforts need to be made by the astronomy community to interact in a more approachable manner.
76	There are Native Hawaiians who are "silent supporters" of TMT because they do not want to break ties with their family.
77	Some Native Hawaiians are subject to accusations that their opinions are not valuable because they lack sufficient "blood quantum" and, thus, are not "Hawaiian enough."
78	There is an increasing interest in restoring the Hawaiian Kingdom.
79	NSF should convey facts about the current status of TMT, to help mitigate the misunderstandings of the community.
80	There are many misconceptions about NSF's process, including what a planning and design proposal is. The Advisory Council on Historic Preservation (ACHP) has received inquiries from people regarding whether NSF should have conducted a Section 106 process in the past. The ACHP agreed with NSF's interpretation that in the past, no formal environmental review was required at that time.
81	Questions were raised about NSF's environmental compliance process, and some expressed anger/frustration towards the informal outreach approach; they thought NSF should have begun a formal process.
82	NSF should be aware that their informal outreach process could make matters worse, as the stakeholders may get fatigued or confused by all of the processes that are going on at the same time (i.e., University of Hawai'i's process for the Master Lease).
83	There is a resurgence of Native Hawaiian culture, especially among Native Hawaiian youth ("generational energy"). The younger generation has grown up during a rebirth of Hawaiian culture and they are connecting to issues that they believe support preservation of their culture.
84	NSF should coordinate with University of Hawai'i - Hilo regarding the Master Lease and Master Plan processes to reduce stakeholder fatigue if several outreach processes occur in parallel.
85	There is an organization that promotes peaceful protest in support of building TMT on Maunakea.
86	A robust astronomy community can keep people from moving to the mainland.
87	Astronomy can elevate Hawaiian culture.
88	The participant offered to provide NSF with support, including attending future environmental compliance meetings.
89	The participant indicated that a white paper was prepared that asserts that the sacredness of Maunakea is unsustainable and notes that the Kapu Aloha religion is new and not historically based.
90	The anti-TMT movement lacks rigor and has "sloppy thinking."

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
91	Issues being raise by the anti-TMT movement are a result of “anger generated from poverty-based issues such as chronic disease, homelessness, drug abuse, incarceration, and teenage pregnancies.” The leaders of the movement raise irrelevant issues and “play on guilt.”
92	To solve the TMT problem, the State of Hawaii needs to confirm its authority over the State and the County needs to be provided with tools (such as cement barriers) to carry out enforcement.
93	The historic grievances must be decoupled from TMT.
94	Some Native Hawaiians are not voicing their support for TMT because they feel threatened.
95	Native Hawaiians are angry about a lot of things, which are mostly poverty-based. The Department of Hawaiian Homelands cannot give out land because there is not available infrastructure (i.e., sewage and electricity), which is causing a lot of problems.
96	Maunakea is special, but not sacred.
97	Protestors are trying to stop an instrument of technology and, yet, they use social media platforms, like Twitter and Facebook, which are the result of technological developments.
98	There are students working on a Maunakea project on Indigenous social movements who are interested in learning more about NSF’s Informal Outreach Effort and the timing of the Section 106 process. There is also an interest in the educational initiative NSF funded as mitigation for the Daniel K Inouye Solar Telescope (DKIST).
99	NSF should be aware of Canada’s focus on the rights of Indigenous peoples.
100	If NSF funds the TMT, NSF should commit to coordinating with law enforcement entities from the State and County. NSF should be 100% committed to seeing construction through if NSF decides to contribute construction funding to TMT.
101	The University of Hawai'i has been managing Maunakea fairly well, although there is room for improvement (for example, by the University of Hawai'i focusing on education and outreach efforts).
102	Some Native Hawaiian perspectives stem from historic trauma and empty promises.
103	NSF should not characterize the TMT controversy as a dispute over science versus culture, as Hawaiian culture has strong connections to science, and the two do not need to be exclusive.
104	There is room for people with polar opposite positions on TMT to coexist.
105	If NSF begins a formal Section 106 consultation process, they should begin with the ideas generated from this Informal Outreach Effort.
106	NSF can be trusted to honor the terms of a Programmatic Agreement (i.e., the DKIST Programmatic Agreement).
107	TMT should be built because the scientific advancements of TMT will “balance” the impact to Maunakea.
108	The Thirty Meter Telescope International Observatory (TIO) has followed the legal processes required to build TMT.
109	TMT is important for astronomy and the economy.
110	Some TMT supporters are unfairly called racist for their views.
111	Astronomers are viewed as elite and out of touch with the local community.
112	There is a belief that most people support TMT.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
113	Native Hawaiians feel their opinions are not considered. They are also frustrated with the Department of Hawaiian Homelands.
114	Some Native Hawaiians believe “small voices are easier to push aside.”
115	NSF should identify the different views and the people who lead these positions.
116	The participant will not go public demonstrating support of TMT because the participant is afraid of losing long-term friendships.
117	Anti-TMT groups are viewed as a vocal minority.
118	The most important issue in the recent election is the candidate’s stance on TMT.
119	TIO is viewed as very generous and the claim that TMT would adversely impact the aquifer lacks scientific merit.
120	The attention given to protestors has provided them an identity that they lacked before, which makes it difficult for them to back down.
121	NSF should draw connections between astronomy and everyday life so people can better understand the value of TMT.
122	Stopping TMT “will not right the historical wrongs” towards Native Hawaiians.
123	If NSF funds the TMT, NSF should hold family events with food trucks, cultural events (such as Hula and Hawaiian music performances), scientific demonstrations, with the support of local businesses and families.
124	NSF should hold public meetings in towns such as Pahala and Waimea.
125	Maunakea is sacred because a “vortex” exists as it is the meeting point between the sky and ocean. Energy from above and below Maunakea provides a “life force.” Building TMT would result in an electromagnetic disturbance and “negative energy” that would interfere with these “energy lines.”
126	TMT is the tipping point of what Maunakea can tolerate, as it is “too big and one too many.”
127	There has been a resurgence in Hawaiian culture, especially among Hawaiian youth, and that a “sleeping giant has awaken[ed].”
128	Some believe the protests are unpreventable over the ten-year construction timeframe due to the power of youth.
129	If NSF funds TMT, the consequences from adverse impacts on Maunakea’s sacredness will be the responsibility of NSF.
130	Construction of TMT on Maunakea is not appropriate because Maunakea is where Gods reside.
131	The TMT would be located on the last undeveloped area on Maunakea’s summit and is too big.
132	The TMT controversy has brought Hawaiian people together like never before and they have developed strength that is supported from around the world.
133	Previous environmental studies from TIO cannot be trusted and there is a fear of a similar result to the Navy Red Hill project (citing the chemical release into water).
134	Some non-Hawaiians are asking Kapuna for input on Hawaiian culture and Maunakea, and have received advice that “if your feet touch the ground and you breathe the air, you have (responsibility),” which has resulted in their anti-TMT stance.
135	TMT is too big, goes too far into the ground, and is too close to historic shrines.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
136	The Hawaiian political leaders are controlling the dialogue on TMT.
137	The controversy is not about science, but about a place that is sacred.
138	The mitigations for TMT are too “flippant,” referring to a previous commitment for 2:1 tree replacement, resulting in adverse impacts to an endangered bird’s food source.
139	The Office of Hawaiian Affairs could provide a voice for Native Hawaiians, but TMT must not be built.
140	If NSF provides construction funding for TMT, there will be “blood on [their] hands.”
141	There is a Hawaiian identity crisis. The 1970s Hawaiian identity renaissance was a result of Hawaiian language and cultural suppression.
142	There is a strong desire for Hawaiians to learn about their language and culture. The formation of the make-shift “university” on Maunakea during the protest is related to the lack of these opportunities. During the protests, Hawaiians were being told what their culture is, encouraging them to act on their “gut feelings.”
143	There is a belief that those who speak Native Hawaiian have more credibility.
144	Many people are sharing misinformation and are being “opportunistic.” The only positive way to move forward is if Hawaiian culture with a historical basis can move forward with it.
145	TMT opponents characterize TMT as a foreign entity trying to push out the Native Hawaiians.
146	NSF should consider renaming the TMT to a Hawaiian name, so that Hawaiian history is not erased, but rather is built upon.
147	If TMT is constructed, there needs to be a commitment to Hawaiian education and communication that building a telescope is consistent with historic uses of land.
148	NSF should explain that TMT will be environmentally safe for “seven generations” (how Hawaiians determine whether a project is environmentally safe).
149	NSF should build relationships with people and make the leaders of the movement think it is their idea to tie Hawaiian culture to astronomy.
150	NSF should fund a Hawaiian culture symposium/conference.
151	Educational and career opportunities in Hawai'i is critical to keep kids from moving to the mainland.
152	Hawai'i can be a leader in astronomy.
153	Opponents make TMT supporters feel as they are “not Hawaiian enough.”
154	The protestors are hypocritical as they left trash behind and did not take care of the mountain. No one went up to the mountain before the protests and no one will go to the mountain if TMT is not built. The goals of the Hawaiian people will not be advanced by the protests.
155	NSF should support education, research, and economic benefits, framing them as pro-Hawaiian goals.
156	NSF should ensure Maunakea is an area that allows practitioners and astronomers to co-exist.
157	The use of social media can assist in turning the movement more in favor of TMT.
158	Arrests should be made by officers if people do not act in accordance with the law.
159	NSF should support Hawaiian culture and community by ensuring the construction is carried out in a safe and environmentally responsible way, which are high values to Hawaiians.



# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
160	People need to feel heard.
161	COVID-19 has taken a toll on Hawai'i's economy which shows the need for the economy to be diversified.
162	TMT needs to be built on U.S. soil to remain competitive in astronomy.
163	Building TMT can result in a win-win situation.
164	Observatories are "temples of a different age."
165	Hawaiians are being "priced out" their ability to live in Hawai'i and kids need more opportunities to remain in Hawaii.
166	Native Hawaiians who support TMT are being intimidated by some of the protesters.
167	A connection needs to be made between those that revere the past and those that want to move forward.
168	NSF should connect to Native Hawaiian values by engaging with members of the paddleboard, surfer, Hula, and Hawaiian music communities, which are all valued components of Hawaiian culture.
169	The controversy can be resolved with "great skill and diplomacy."
170	The controversy is "trendy" and that those who originally came to Hawai'i have moved forward, but those who argue that there should not be scientific progress stand still.
171	There is wide support for TMT in Hawaii.
172	TMT would support the economy and provide "clean industry" jobs.
173	TMT represents cross-cultural benefits and higher education opportunities.
174	NSF should connect with the Hawaiian Nobel Prize winner, Jennifer Doudna.
175	The ruling of the Hawaii Supreme Court should be respected because TMT "would only amount to one little dot devoted to science" on Maunakea.
176	Maunakea is not sacred.
177	People feel that their lives will be threatened if they support TMT.
178	There can be a connection formed between astronomy and Hawaiian culture.
179	There is a lot of misinformation regarding TMT that needs to be addressed.
180	More outreach is necessary to educate people on how TMT will create Hawaiian jobs "so there is a Hawaiian community."
181	NSF should integrate Hawaiian culture into everyday astronomy observations.
182	NSF should outline plans to be a "good steward" of Maunakea.
183	A Hawaiian language course through the University of Hawai'i should be re-offered to astronomers.
184	NSF should involve the Kapuna (elders) and explain what they can do, as opposed to what they are unable to do.
185	NSF should address the concern that while Native Hawaiians have trouble accessing their Hawaiian Homelands [this is a specific reference to the Department of Hawaiian Home Lands waiting list for homeland awards], TIO has found a way "to easily" gain access to land on Maunakea.
186	NSF should provide scholarships for education that guarantee post-graduation jobs.



# Draft Community Engagement Plan

## Hawai'i Island, Hawaii

Number	Comment Summary
187	NSF could be the bridge to resolve this situation since the State and the University of Hawai'i have credibility problems.
188	Native Hawaiian children need to be exposed to Science Technology Engineering and Math (STEM) opportunities. TIO and NSF should increase their presence in the community by participating in community events, educational opportunities, college preparation, contributions to scholarships, and contributions to trade school attendance (understanding that this could take time for NSF to integrate).
189	The media has inflated the situation by depicting Native Hawaiians as victims. It is possible to move forward and bring the two sides together.
190	TMT has the potential to touch the world and contribute to the advancement of science and Hawai'i should be a part of that achievement.
191	TMT is an extension of Hawaiian culture because it was curiosity that led their ancestors to discover Hawai'i and it is that same "driven curiosity" that will contribute to the advancement of science.
192	Misinformation led to the TMT controversy (i.e., claim of nuclear runoff in the aquifer).
193	People did not read the TIO EIS because it was too complicated. NSF's environmental document could be persuasive in convincing others of the "real" environmental impacts from TMT.
194	The construction of TMT will depend on the effectiveness of law enforcement.
195	Most people on the Big Island have never been to Maunakea. The role of misinformation is "huge and concerning," and that hatred has a large role in the controversy.
196	Telescopes are "temples of knowledge and science," and other than construction and traffic impacts, there are few, if any, environmental impacts from TMT.
197	Maunakea has become a symbol, but the people do not understand it.
198	In the past, the University of Hawai'i "bureaucracy" has been a huge problem, but it is improving. Although the political leaders have been ineffective.
199	People feel intimidated to show their support for TMT. The TMT issue is emotionally based, so it is difficult to use logic to counter the misinformation of the TMT opponents.
200	NSF should talk with the protest leaders.
201	NSF should address the problem of social media painting a "black and white picture" of the controversy.
202	NSF should consider whether this information is a product of Russian intervention because of Hawai'i's strategically important location.
203	NSF has high ethical standards and contributing funding to TMT would go against these standards. NSF should consider all arguments against building TMT on Maunakea.
204	The controversy ignited strong feelings about Hawaiian culture that is very personal.
205	The commenter believes that the Japanese government pulled funding from TMT because there is "bad blood" between TIO and Native Hawaiians.
206	TMT should not be built on Maunakea because "the environment is the Native Hawaiian's religion."
207	There is awareness that NSF is funding an award to the University of Maryland regarding the free, prior, and informed consent of indigenous people related to greenhouse gases.
208	TMT would bring significant and needed benefits to Hawai'i, such as educational benefits, construction jobs, and astronomy-related jobs.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
209	If NSF provides construction funding for TMT, NSF needs to conduct outreach that communicates the practical applications of TMT.
210	The astronomy community has the potential to be a better partner in the local community by emphasizing that TMT presents opportunities for technicians and engineers in addition to scientists. The astronomy community should also engage in outreach to inspire kids.
211	NSF should talk with the union leaders during the Informal Outreach Effort.
212	The protestors are viewed as hypocritical with regard to the care of the mountain (i.e., trash left by protestors).
213	There is wide-scale support for TMT, which is evident from the recent election loss by the Aloha Aina Party (pro-sovereignty and against TMT).
214	There are Hawaiian legislators that support TMT and have offered to work with the Department of Land and Natural Resources.
215	The controversy is characterized as an “issue of real culture and perceived culture.”
216	NSF should not assume to know the needs of indigenous people, should do more to “connect rather than to correct,” and focus on shared values.
217	NSF should explain the benefits of TMT in terms of “if/then” statements so that people will understand what they are at risk of losing.
218	The controversy is about the maturity of culture. People want to be heard and serve a role in the process and outcome of the project. TMT could be a catalyst or game changer for how processes are conducted if people are given more “agency” in the issue.
219	NSF needs to engage in a four-step process in order to “sell” the idea of a “cultural center above the clouds” - 1) prove that we can all work together; 2) find money for the benefit; 3) show the Hawaiian Governor where it could be located; 4) ensure that the cultural center is run by an independent organization.
220	TMT presents an opportunity to increase the number of jobs for Native Hawaiians, which would keep Hawaiian youth from moving to the mainland for opportunities (“brain drain”).
221	The protests are scaring companies away, which is causing lost opportunities.
222	The TMT controversy is not a revival of culture, but a movement that constitutes a cult against U.S. imperialism, where the goal is to wage a global war against the U.S.
223	The social media campaign against TMT was designed by individuals who are tech-savvy and adept at spreading misinformation.
224	NSF should not give into the demands of protestors. Instead, NSF should connect with local people by funding Hawaiian language and Hula schools.
225	NSF should connect with the new Mayor of Hilo and additional key people/organizations who have an interest in the TMT controversy.
226	Fighting about Hawaiian culture is Hawaiian culture.
227	The Aloha Aina Party is a part of the anti-TMT movement; however, the people who ran for local office as members of the Party were not successful.
228	TMT represents one more piece of land being taken away from the Native Hawaiian people. TMT should never be built on Maunakea; however, other future development on the mountain is possible if it is Native Hawaiian idea and the operations are carried out by Native Hawaiians.

## Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
229	There are environmental concerns about the (presumed) aquifer at the summit and potential chemical leakage.
230	NSF funding TMT is a “waste of time and money.”
231	Social media is a powerful tool for the anti-TMT movement.
232	The anti-TMT movement has resulted in a negative impact on STEM students. They are uncomfortable expressing their support of TMT. Work needs to be done to help build trust.
233	Native Hawaiians have been ignored for a long time, which is part of the reason they did not know meetings or events occurred. They learned of the events through social media and in turn expressed their voices.
234	Scientists believe Hawaiian culture is “folklore” and “myths” and not science, which is offensive.
235	Previous environmental reviews have been inadequate because they disregard impacts on water resources.
236	There is “extreme distrust” towards those leading the processes, including toward TIO. This stems from broken promises primarily from the State of Hawaii and the University of Hawai'i, who the commenter believes have “ignored” the mountain that Native Hawaiians view as a member of their family (as opposed to a property or a resource). The processes are viewed as ways to get a “yes.”
237	Some anti-TMT members advocate for non-violent protesting.
238	Native Hawaiians have differing views on TMT and believe the controversy is causing a division. TMT is not worth dividing Native Hawaiians.
239	NSF informal outreach process has been successful, and NSF is viewed as a neutral party. Based on this neutral perception by Native Hawaiians, there is an interest in NSF leading a commission/working group to determine who should be the holder of the Maunakea Master Lease.
240	The discontent over TMT is caused by the inability of the State government to address the needs of the people.
241	More conversations need to take place and protests stop these conversations.
242	Half of Native Hawaiians support TMT and significant steps need to occur to increase this support. Transparency is key.
243	The federal government should respond to a letter from the Office of Hawaiian Affairs to the State Department, which questions whether the federal government recognizes that the Kingdom of Hawaii still exists, and ignoring the issue is unacceptable.
244	The Native Hawaiians lack a recognized authority (“body with no head”). The biggest challenge is to find one person with an emotional connection so that others follow.
245	NSF should meet with the Chief of the Royal Order and the Chiefs of each chapter/district on the Big Island.
246	Observatories offer benefits to Hawaiians and there are no other comparable opportunities to TMT available.
247	The TMT Workforce Development Plan is ready to be implemented and it sets the stage for how to do things in the future.
248	It is important to tie education to Hawai'i's economy and lifestyle.
249	NSF should ask the opponents what alternative to TMT is available to take the community “to the next level.”

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
250	The Maunakea observatories are similar to the United Nations as they continually “strive for the next big thing.”
251	There is a significant challenge in identifying the baseline issue and beliefs of the opponents.
252	NSF should obtain the services of a cultural advisor who can work with Native Hawaiians.
253	A future EIS prepared by NSF should include a wider scope of analysis (presumably, the entire mountain as opposed to the immediate site). The NSF process will be critical and will force other observatories to “do better.”
254	Engaging in conversation can further opportunities. NSF should invite a Native Hawaiian elder to assist in identifying important cultural sites.
255	The State of Hawaii has done a “horrible job” of taking care of the host people and nation. If TMT moves forward, the law must be followed.
256	There have been positive responses from legislators to NSF’s potential Section 106 process.
257	The informal outreach process is important because everyone should be listened to, regardless of their views.
258	The difference between Western and Native perspective is as follows: “Show me and I will believe” – Western; “I believe and will show you” – Native Hawaiian.
259	A TMT advocate said that the federal government should not pursue organizing Native Hawaiians into a federally recognized tribe because the tribe would be a race-based group and should not exist.
260	A TMT advocate briefly discussed the presentation he gave in support of TMT at a meeting of astronomers.
261	TMT is a symbol for the strength of Native Hawaiians.
262	NSF should invest in Hawai'i and fund archaeological research as a mitigation measure.
263	NSF should engage in outreach to rural communities, providing opportunities and communicating the scope of NSF funding throughout the Hawaiian Islands “without boasting.”
264	At this point, it is questionable if it is possible to build TMT, as there can be no compromise under the current climate. However, the decommissioning of the other five telescopes, as previously promised by University of Hawai'i, is a concession worth pursuing.
265	TMT needs to be built because of the “poor [educational] performance of school-aged children” in Hawaii.
266	NSF should reach out to smaller towns, such as Ka'uo, Na'alehu, Puna, Keaau, Paho, and Hamakua, to begin to build relationships.
267	Native Hawaiians are worried about losing their culture as time goes on, so it would be very helpful for NSF to facilitate education in Hawaiian culture as part of relationship building and mitigation.
268	NSF should get assistance from someone who grew up on the Island and knows the people.
269	TMT has “torn apart” the Native Hawaiian community and has become very destructive.
270	The outreach previously conducted was unacceptable. TIO should have conducted an Informal Outreach Effort, similar to what NSF is doing. Instead, TIO listened to cultural practitioners that were not respected by many Native Hawaiians. TIO also used a “colonial” approach, which did not view people as equals and created opposing positions by pitting science against culture.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
271	TIO should have focused on how to make people more “comfortable” with the design of TMT. For example, TIO should have worked with Native Hawaiians on how TMT could fit better into the landscape.
272	The project impacts could be minimized/mitigated by painting the TMT a different color, siting it in a depression, using a floating-pier foundation to minimize impacts, and by not using a septic system (instead, waste should be removed from the mountain).
273	To establish trust, TIO should offer impromptu inspections to a select group to demonstrate environmental compliance.
274	Since the land at the site is trust land, the focus should have been on benefits to Native Hawaiians as opposed to benefits to the University of Hawai'i.
275	The telescope decommissioning efforts should be fully funded and implemented.
276	NSF should value the views of the Big Island residents over O'ahu residents, offer jobs to benefit Native Hawaiians, fund research in areas outside of Astronomy, give tour operator licenses to Native Hawaiians rather than non-Native people, and fund telecommuting centers and opportunities to help people obtain jobs in which they can telecommute.
277	There is question as to whether anything can be done at this point to help TMT be built on Maunakea, but it deserves a chance to be pursued.
278	The anti-TMT movement has gained traction because it is connected with the “anti-colonialism” movement.
279	A participant of the protests (2015 and 2019) claims that there are many people “on the ground” who are silent, but will participate in the protests if an effort to build TMT is revived.
280	NSF should engage with the leaders of the anti-TMT movement early on.
281	Native Hawaiians do not typically have a presence on the mountain outside of protests because “the need for care is triggered by the threat of desecration.”
282	NSF should consider requiring researchers at TMT to name discoveries using Hawaiian names.
283	Researchers at TMT should be given background training in Hawaiian culture.
284	If NSF funds TMT, they should have researchers go through a cultural protocol (i.e., acknowledgment or chant) in which they request permission to use Maunakea, this would show respect for the host “country” and the permission will be granted.
285	There are three groups of Native Hawaiians on which NSF should focus outreach efforts: the elders (or Kupuna), the middle-aged people, and the young students (i.e., the rising future Kapuna).
286	Name TMT after a Native Hawaiian person.
287	NSF is to be complimented on their Section 106 process for DKIST. That process laid the groundwork for Hawaiians trusting NSF more than the local government.
288	TMT should be supported.
289	It would be helpful if Congress would indicate whether it would support a TMT site outside of the U.S.
290	NSF should contact State representatives to invite their participation in NSF's Informal Outreach Effort.
291	There is wide-spread support for TMT throughout Hawai'i, including among Native Hawaiians.
292	The educational and economic benefits of astronomy on the Big Island allow the community to raise and keep their kids on the island.



# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
293	Instead of focusing on “consent” the “free, prior and informed consent” phrase should change to having “deeper conversations” because the people have felt that they are unheard, and a deeper conversation needs to take place.
294	Outreach and community engagement efforts over similar issues should be coordinated.
295	Some are concerned about the rights of Indigenous people and the notion of “extreme” colonialism regarding TMT.
296	There is appreciation that NSF is engaging in a different approach. Indigenous voices have not been listened to, and the elders’ viewpoints are the most important and need to be followed.
297	There are student groups at UC schools, including Berkeley and Santa Cruz, that completely oppose the TMT, and support the Maunakea protectors and kapuna (elders).
298	Regarding consent for the TMT, it is a “no” unless there is a clear “yes.” TMT is an example of white colonialism, and the TMT would permanently desecrate Maunakea.
299	University of California students are asking the University of California to divest from the TMT.
300	Everyone is connected to Maunakea and the Earth.
301	Commenter asked if social, cultural, and climate change impacts of building TMT are being considered.
302	TMT project has been carried out “violently” and shouldn’t be built in Hawaii.
303	There is interest in understanding information about: NSF and NSF processes, NSF knowledge of the 2019 protests, the relationship between TIO and NSF, NSF’s standards for ethical research, and examples of cultural impact thresholds under the National Environmental Policy Act (NEPA).
304	“So you fine folks at NSF want to talk? Let’s hear what you have to say.”
305	TMT will diversify Hawaii’s economy away from tourism, which has been impacted due to COVID-19.
306	A majority of Hawaiian residents believe that Hawaiian culture and science can co-exist on Maunakea.
307	Hawai'i residents are diverse with different points of view, and decisions should not be made based on the views of a single group.
308	TMT has gone through the legal process and the Hawaii Supreme Court has determined that sacred beliefs do not make development of an area an unconstitutional infringement of religion, and customary and traditional Native Hawaiian rights are appropriately protected.
309	Previous projects on Maunakea did not consider alternatives to building on sacred ground and did not respect the sovereignty of Native Hawaiians.
310	Concerned that TMT will result in permanent environmental and human rights consequences.
311	TMT has used force and not obtained the free, prior, and informed consent of Native Hawaiians, as required under the UNDRIP.
312	Many Hawaiians support science and TMT; if the project is conducted in a respectful way, it will result in benefits.
313	A participant is in support of TMT and wants to help the project.
314	TMT will provide jobs, infrastructure, education, and future opportunity for Hawaiian youth.
315	TMT will help the Hawaiian economy, which is currently experiencing hardship.
316	If TMT is not built, it will end the future of astronomy on Maunakea.



# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
317	A majority of Hawaiian residents support TMT, and the protestors are a vocal minority.
318	The TMT opponent's arguments are not based on historical facts and are based on false information posted on social media.
319	Maunakea is important to people around the world, as it is one of the few places scientists and the general public can come together to view the galaxy.
320	There are too many telescopes on Maunakea and efforts need to be made to dismantle and remove old telescopes, which could make room for future developments.
321	NSF should recognize the past injustices towards Native Hawaiians.
322	Astronomy and the telescopes on Maunakea have advanced science, academia, collaboration between nations, and are a boon to Hawaiian schools and economy.
323	There is a sense of pride in Hawai'i's contributions to astronomical research, especially with the use of Hawaiian naming protocols for astronomical discoveries.
324	Many Native Hawaiians view Maunakea as a sacred portal to the cosmos.
325	There is interest in NSF's funding and community outreach process for TMT.
326	Native Hawaiians oppose TMT due to the environmental impacts (such as adverse impacts on the aquifer) and the cultural importance of the Maunakea.
327	The viewpoints from thousands of TMT opponents, including astronomers, scientists, Indigenous groups, are not heard.
328	The participant believes that other TMT stakeholders and founders have pulled their funding from the project due to the opposition.
329	Opponents will continue to oppose TMT on Maunakea and voice their cultural and religious rights, as caretakers of the island.
330	The TMT opposition groups are effectively using social media to capture the local narrative and have turned the project into entertainment for the disenfranchised local youth.
331	The opposition's argument of Maunakea's sacredness is difficult to counteract, but an argument needs to be developed.
332	A middle ground reached by utilizing professional mediation is needed to advance TMT.
333	Maunakea can accommodate many uses, but some believe that the sacredness forbids any modern uses of the mountain.
334	TMT has potential for significant scientific, educational, and economic benefits for Hawaii.
335	TMT proponents should engage in an open and constructive dialogue with opponents to reach a compromise.
336	Steps should be taken to minimize the environmental effects of the project and maximize the benefits to local residents, such as education, employment, and other opportunities.
337	In order to gain the level of community support necessary for TMT to be constructed, a show of good faith to all stakeholders is essential.
338	TMT has all of the necessary permits for the project, but protestors are halting construction.
339	Participant is concerned that NSF's involvement will add 2 years to the process.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
340	Some believe that Native Hawaiians did not use Maunakea for religious ceremonies prior to the anti-TMT movement.
341	TMT has gone through the legal requirements and should continue to move forward.
342	The majority of Hawaiians support TMT, as long as the mountain is properly maintained.
343	If TMT is not built, Hawai'i's youth will be at a disadvantage in the future.
344	TMT opponents are using TMT as a target to rectify the past injustices to the Native Hawaiians.
345	NSF should disclose its past and present involvement in the TMT project.
346	NSF should initiate a formal environmental review process for TMT, which would support a necessary community dialogue.
347	TMT would impact the visual landscape.
348	NSF should respect the sacred Hawaiian places and should not impact them for scientific use. Noting the fact that other naturally, historically, and/or culturally significant places are protected reflects how little value many have for Hawaiian cultural and religious traditions.
349	The protests have halted construction of TMT and have caused TMT partners to reconsider their investment in Hawai'i-based astronomy.
350	TMT should move forward and Maunakea should be listed as a United Nations Educational, Scientific, and Cultural Organization World Cultural Heritage Site.
351	Participant supports TMT.
352	Constructing TMT on Maunakea is a great opportunity for science, Hawai'i, and local Hawaiian students that are interested in astronomy.
353	The timing of this informal outreach process is not appropriate since stakeholders have hardened their positions - native Hawaiians and the residents who support them are against the placement of TMT on one of their sacred mountains, and have included the issues of Hawaiian sovereignty and illegal U.S. overthrow of the Hawaiian Monarchy into the mix.
354	Participant characterizes the opposition as not so much "anti-TMT" but, rather, "No More Repression" (due to history).
355	NSF should consider options like increasing support for Hawai'i's university research options that directly affect the welfare of the people living in Hawai'i, and in particular, the Native Hawaiians.
356	Because in Hawai'i there is a deeper attachment to high schools than universities, there is an opportunity for the NSF to reach out to the high schools to develop science pipelines for students to bring them into the broader landscape of science careers.
357	I don't think the mass majority of the people in Hawai'i have a clear view of what the NSF does; NSF could offer free scientific video and lectures through venues like Public Broadcasting Service (PBS) and AARP to educate us on the important research you support and why it is important to human society, e.g., tropics oceanography, astronomy conducted on Maunakea, solar power, recycling plastics and metals including the Pacific garbage patch, drinking water for Island societies, rising tides, and technologies suitable to be cultivated to boast Hawai'i's economic diversity.
358	The participant believes that the University of Hawai'i - Hilo wants to participate in early and informal outreach process for TMT.
359	Native Hawaiians use Maunakea for ceremonies.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
360	TMT would benefit Hawaii.
361	The majority of TMT employment positions should be filled with Hawaiian residents.
362	TMT will provide a cultural benefit to the Native Hawaiian people and the State of Hawaii.
363	TMT will benefit Hawai'i and the world.
364	TMT has valid permits and should be allowed to move forward.
365	The declared 'sacredness' of Maunakea indicates a spiritual relation to the place that stems from traditional ecological knowledge.
366	Native Hawaiians do not believe that sacredness is at odds with science.
367	Historically, western science has not considered ecology from a holistic or interconnected point of view, which has resulted in the dispossession of indigenous communities.
368	Native Hawaiians possess traditional ecology knowledge regarding protection of the ecological system of the mountain, such as the wekiu bugs, mamane trees, and water bodies, that would be disturbed by TMT.
369	Although there is a range of support from Native Hawaiians, the Native Hawaiian "caretakers," such as Hawaiian culture and language educators, fishers, and farmers, are opposed to TMT. It is important to seek the input of these stakeholders through a long-term engagement process.
370	NSF needs to involve the full participation of the Native Hawaiians in accordance with the UNDRIP. Not doing so would constitute a war crime (destroying sacred sites while land is under military occupation).
371	It is disrespectful to build on culturally significant lands or unceded territory.
372	The benefits of the location on Maunakea could be achieved in many other places in the U.S., without impacting Indigenous people.
373	The benefits of the TMT on Maunakea do not outweigh the harm, and alternative locations should be considered.
374	The scientific gains of the TMT on Maunakea do not outweigh the legal, economic, environmental, and cultural risks.
375	The participant would like clarification on the differences between the NEPA and NHPA processes.
376	NSF needs to halt TMT funding in order to engage in direct discussion with the Native Hawaiian community, as their voices are being rejected.
377	The participant believes that the State of Hawaii and the University of Hawai'i have violated agreements related to the stewardship of Maunakea and cannot be trusted to fulfill their obligation to Native Hawaiians.
378	If the astronomy field encouraged more Native Hawaiians to pursue astronomy, then a compromise for TMT would have been possible.
379	The history of building telescopes on Maunakea without the consent of Native Hawaiians has solidified the positions being taken. Many in the opposition are willing to be arrested to stop TMT. There is fear of physical violence related to TMT protests at the University of Hawaii.
380	There is a vocal minority that opposes the TMT, but the vast majority of Hawaiian residents, including many Native Hawaiians support the TMT.
381	TMT would provide scientific and economic benefits to Hawai'i, the nation, and the world.

## Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
382	Environmental concerns and Hawaiian cultural practices should be completely considered prior to construction of TMT.
383	A permanent TMT local advisory group with equal representation of all stakeholders needs to be established. The group needs to have the power to change TMT practices and programs based on community needs and input.
384	Protests will continue and gain momentum if 'TMT' partners do not engage with Native Hawaiians, as Maunakea is a cultural resource and symbol for locals' opposition.
385	NSF should use TMT to be an example of best practices to incorporate community input.
386	Native Hawaiian TMT-supporter expressed interest in engagement.
387	TMT has completed the legal process and public outreach required for construction.
388	TMT provides benefits to the community, including employment and funding for internship opportunities. Hawaiians want projects that will contribute to the economy that aren't rooted in tourism.
389	The reduced number of telescopes on Maunakea is evidence of a compromise from the astronomy community.
390	TMT on Maunakea will be a leader in astronomy and assigning Hawaiian names to astronomical discoveries is meaningful to Hawaiians.
391	The participant feels that building TMT would not directly affect that person's lifestyle in Hawaii. However, losing TMT would result in a significant adverse impact to the future of Hawai'i (in terms of scientific discoveries and opportunities for Hawaiians).
392	The participant expressed an interest in engagement with NSF.
393	Native Hawaiians view TMT as a desecration of the sacred mountain, theft of land, and another injustice against them.
394	TMT was approved without Native Hawaiian approval, input, or compensation.
395	TMT would provide funding for STEM programs that provide opportunities for Hawaiian kids to get a head start on a STEM-based curriculum.
396	A public opinion researcher submitted an academic research paper in support of TMT in Hawai'i among Native Hawaiians. NSF and TMT partners should survey a representative sample of Native Hawaiians on their stance on TMT, as previous surveys have not included an adequate sample of Native Hawaiians.
397	Hawaiians are proud of the Hawai'i's involvement in both modern and ancient astronomy and if TMT is not built, it would mark the beginning of the end of astronomy in Hawaii.
398	Native Hawaiians are stakeholders of Maunakea and view the mountain as sacred because of the history, genealogy, and presence of burials.
399	The Hawaiian mountains provide local water supply.
400	There are already 13 observatories on Maunakea, which can be compared to the refuse accumulating in outer space.
401	Highly educated Hawaiian youth are moving to the mainland for jobs.
402	Despite the benefits of TMT, misinformed protesters have blocked TMT's legal access to construction even though the TMT permit was upheld by the Hawaii Supreme Court.
403	TMT will provide jobs, educational opportunities, and a sense of pride to Hawaii.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
404	The recent Hawaiian election is evidence that many Hawaiian residents support pro-TMT leaders.
405	The participant has engaged in conversations with many native Hawaiians to understand how they view Maunakea, how they view the role of astronomy in Hawai'i, and how they see themselves relative to the protesters. These conversations reflected the role of science and scientists in Hawai'i.
406	Hawaiians value and take pride in astronomy. Astronomy and the "practical" use of Maunakea's resources are consistent with the history of Hawaiian culture. The use of Maunakea for telescopes does not jeopardize any protected historical site or use of summit for spiritual practices.
407	The observatories' educational and employment opportunities for STEM are "unmatched" by other sectors on the Island.
408	The protests and anti-TMT campaign is built on misinformation regarding impacts to the environment (e.g., TMT would dump nuclear waste, pollute Hawai'i's ground water, science is "big business," and science is equivalent to genocide), and are driven by emotion.
409	The technical challenges of TMT opponents do not have legal merit. The sacredness of the mountain does not have Constitutional protection and does not have universal support within the Native Hawaiian community. Additionally, the protesters are viewed as hypocritical in how they consider the validity of the law and how they consider the mountain to be sacred (as the encampment is on conservation land without a permit and the protesters damaged the environment).
410	TMT will bring educational and economic benefits to the community.
411	There is support for peaceful protests, but unlawful conduct should not be allowed. The government needs to provide safe construction access to the TMT site.
412	Most Hawaiians agree that TMT will provide scientific, financial, educational, and cultural benefits, which are needed now more than ever. TMT has been a positive influence on the education system for years.
413	The continued delay of TMT's construction is a "shame" and an "embarrassment" for those who believe in protocol and legal proceedings; TMT should be built.
414	There are few places suitable for TMT (i.e., Maunakea and Chile). There are already 10 telescopes on the mountain and TMT "would only be one more." Additionally, the telescope is designed to minimize visual impacts from lower elevations.
415	It is necessary to weigh competing interests in policy decisions and the benefit of TMT to the entire world should be the over-riding issue.
416	Some believe the mountain is sacred, but the entire island is sacred "in one way or another." The protesters have used TMT as a rallying point to pursue their "real" agenda and objectives. Additionally, some protesters would not visit the summit without the access road built for the observatories.
417	TMT would honor the sacredness by providing benefits to all of humanity.
418	Outreach by the astronomy community to schools and the community at large on the Big Island is important for Hawaiian youth. In addition to scientific benefits, TMT would provide employment opportunities and contribute to the economy, which has been impacted from COVID-19.
419	It is appreciated that a federal agency has become involved to resolve the issue of building TMT.
420	TMT has the legal right to build an environmentally and regulatory compliant telescope that will advance knowledge of our universe for all humankind. However, a small number of protesters are blocking the construction in the name of sacredness.



# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
421	There is concern that TMT will harm the sacredness of Maunakea; however, it will also provide jobs, education, and scholarships to Hawaiian youth, and diversify the Hawaiian economy. A decision needs to be made if “we will allow what is sacred to paralyze progress or allow progress to secure a better future.”
422	Hawai'i is too dependent on tourism and needs to diversify its economy and generate new sources of quality jobs and tax revenues.
423	There would be a detriment to astronomical advancement if TMT is not built. However, it is a cultural site, and the mountain belongs to the Native Hawaiian people. We do not have the right to ignore the voices in opposition.
424	TMT should be built in Hawai'i because it will continue the U.S. dominance in astronomy. Building TMT in Spain has other issues. For example, NSF is less likely to use American taxpayer money to fund an astronomy project in another country and the lower elevation of the Spain location makes it less desirable than Hawaii.
425	TMT should find an alternative source of funding to move the project forward. There are legal challenges for both Hawai'i and Spain locations, which will only increase if NSF provides funds. TMT has already conducted a state-level review, which was upheld by the Hawaii Supreme Court. NSF funding will require a NEPA EIS and Section 106 consultation with Native Hawaiian groups, who have already said they would contest the results of the outcome of these processes.
426	The participant, who has taken part in viewing events on Maunakea, claims that there is an equally “spiritual and cultural” feeling from looking through telescopes that is similar to the Native Hawaiian’s connection to the mountain.
427	The TMT will create local opportunities and the protestors have not fully considered the impact of losing the telescope to another location.
428	Contrary to the opponents claim, TMT has been involved in dialogue with Hawaiian residents, including Native Hawaiians, has shown respect for Hawaiian culture, and followed the procedural requirements (which the protestors did not do when they camped illegally on Maunakea and blocked access to a public road).
429	The TMT listened to the community 10 years ago by selecting a location on Maunakea that is not on the summit; the site is on a lava plain where there are no Hawaiian artifacts or endemic biota.
430	Astronomy has already provided benefits to the local community, including STEM programs and scholarships, which may also provide non-astronomy STEM degree opportunities. TMT would provide construction and long-term jobs, which TMT has committed to attempt to fill with local residents. This is important for the community that has a shortage of “good paying” jobs.
431	The Hawaiian Olelo names for astronomy discoveries are a “priceless” recognition of Native Hawaiian culture.
432	There is support of the collaborative, international efforts to advance astronomical research. Hawai'i should be able to build a telescope while also paying homage to the ancient Hawaiian culture and traditions. As a modern and remote island, it is important to diversify the tourism-dependent economy.
433	Native Hawaiians should have the right to make the decision as to what happens on their sacred land. The Native Hawaiians must be consulted and engaged in the TMT process, and if they don't want TMT constructed, it should not be built.
434	The telescope will cause environmental impacts and “do violence” to Hawaiian’s cultural and religious beliefs. The mountain is “too awesome” to be the site of a huge telescope.
435	Hawaii’s business community supports astronomy, science, culture, and environmental stewardship.

# Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
436	The economic benefits of the astronomy industry are significant. The industry currently provides high paying jobs and without astronomy, many individuals would have to accept lower paying jobs or move away from Hawaii. Also, the industry indirectly creates more jobs, increases spending, encourages foreign investment, and provide careers for Hawaiian youth (too many move to the mainland because of a lack of higher paying jobs in Hawaii).
437	Although there are some in the community who are opposed to astronomy and TMT, there is hope that the community can come together and realize the benefits of the project to Hawaii.
438	A new invitation to hear opinions is not necessary. Instead, it is necessary for the State to establish leadership and honor the opinions already expressed.
439	A new state-of-the-art telescope would make America a leader in space science.
440	A new telescope would create new jobs in Hawai'i for Hawaiians.
441	The telescope is needed to learn more about space (our future) and our past.
442	Opposition to TMT is a national security issue and should be investigated for ties to foreign interests who want to halt the U.S. cyber and space technological advancement.
443	A former research scientist believes that further development on Maunakea for scientific purposes should be stopped until a solution is found.
444	Ultimately, that land is Native Hawaiian land being temporarily leased to the University of Hawai'i at Manoa but all decisions regarding permanent structures should fall under oversight of the Native Hawaiian community; it is unethical and morally wrong to continue developing on land that the Native Hawaiian community has time and time again claimed as central to their culture and people - "no means no" regardless of the reasoning behind it.
445	Scientific achievements and advancements are coming at great cost and strife to a community of indigenous peoples who are counting on us to stand by them, lift them up, and be there for them instead of continuing to take advantage of them, as people have done in the past and continue to do so to this day.
446	A participant requested more information regarding NSF's Informal Outreach Effort, including written confirmation that the informal outreach process does not constitute formal consultation and if they are informal, how information can be obtained about discussions between NSF and stakeholders.
447	NSF should not provide funding to TMT. NSF's intention to engage in early and informal outreach efforts with stakeholders, including Native Hawaiians is good. "Presumably the specific inclusion of Native Hawaiians means that this outreach will include right holders, as well as stakeholders." The informal outreach process and discussion is not considered consultation in terms of Section 106.
448	Previously, the Office of Hawaiian Affairs filed a lawsuit against the National Aeronautics and Space Administration (NASA) and the University of Hawai'i's Environmental Assessment (EA) in opposition to the construction of the Keck Observatory's Outrigger Telescope. The U.S. District Judge ruled that NASA's EA was insufficient regarding cumulative environmental impacts. NASA then prepared a federal EIS, which concluded that the project would have substantial and adverse cumulative impacts on Maunakea cultural resources. Since there have been no environmental improvements to astronomy activities over the intervening years, NSF's EIS would also result in significant impacts to cultural resources. NSF should not fund a project resulting in adverse and substantial impacts.
449	The two U.S. partners, University of California and Caltech, of the TIO are long-time users of Maunakea for astronomy activities. Parties who were implicated in Keck EIS status of "adverse and substantial" impacts should not be allowed to continue their former activities "disguised" in a now designated limited liability corporation. For this reason, NSF should not provide funds to TMT.



## Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
450	Maunakea belongs to the Hawaiian Kingdom Crown and Government through a land trust as recorded in the Bureau of Conveyances and is internationally recognized as an independent nation state. The land does not belong to the State of Hawaii, and they are not representatives of the Hawaiian Kingdom.
451	Since the State of Hawaii does not have title to the land, TMT will continue to be contested by Hawaiians. According to the University of Hawai'i lease conditions and the TMT construction timeline, TMT will be required to begin decommissioning prior to current lease expiration.
452	NSF funding of TMT would better serve science if the location changed from Maunakea to the alternate site in the Canary Islands.
453	A Native Hawaiian cultural practitioner who conducts traditional practices believes that TMT would "desecrate and destruct" Maunakea and opposes TMT.
454	The participant supports the astronomy industry on Maunakea noting significant scientific discovery, global leadership, educational outreach, workforce pipelines, jobs, and economic impact.
455	TMT is important to enhance Hawai'i's place as a "global ambassador" for technological collaboration with universities and other governmental research institutions of other nations.
456	The participant supports the coexistence of culture, science, and environmental stewardship on Maunakea and believes the Hawaiian community will find solutions to the current controversy.
457	In terms of blocking the Maunakea Access Road, the State and County of Hawai'i are expected to enforce the rule of law and provide a safe passage for construction of TMT. This position has been communicated to State and local government officials.
458	The participant is passionate about TMT because of an interest in space and astrophysics, but is concerned that those in the astrophysics field could be impacted if TMT is constructed. The participant appreciates that NSF is interested in the TMT project.
459	There is a desire for more science opportunities in Hawaii.
460	Hawai'i was founded by those who studied the stars. TMT would bring the "greatest technology" to Hawai'i and allow youth to learn about the star voyaging and their origins.
461	The TMT opponents are "loud and emotional" and create the illusion that they speak for everyone, but they do not. Many TMT supporters, including celebrities, are intimidated to speak out in favor of TMT. The "hobby" activists will "darken the skies" and the future of Hawaiian people.
462	There are sincere opinions representing a range of viewpoints on TMT, but a subset of opponents is creating a false impression of overwhelming opposition through a "spam" form website. At least two-thirds of the Island supports TMT.
463	A prior opponent of TMT now supports TMT after learning more about the facts surrounding its construction (e.g., the telescope will not impede cultural practices and the TMT site is not used for long-standing practices).
464	The Board of Land and Natural Resources findings provide a detailed account of why TMT should move forward. A number of groups participated in the Contested Case Hearing for TMT. In a compromise, the Board of Land and Natural Resources voted in favor of TMT on the position that 5 of the existing telescopes be removed.
465	The participant is in support of astronomy on Maunakea and the construction of TMT for its scientific value and educational and economic impact in the community.
466	Hawai'i, including Native Hawaiians, are "much better off" with TMT on Maunakea.

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## Hawai'i Island, Hawaii

Number	Comment Summary
467	TMT should be built because it is the only large organization that has shown respect for the local community culture, invested in STEM-based educational pipelines for youth, and have developed and implemented a long-term plan to support the community.
468	TMT would play a role in preserving the knowledge of celestial navigation of the Polynesians, which is on the verge of being lost.
469	Without TMT, Hawaiian youth will continue to seek employment outside of Hawai'i (referred to as a "brain drain").
470	The Hawaiian economy needs alternative sources outside of tourism.
471	The majority of Hawaiians support TMT, and the opponents are a "vocal few."
472	TMT will provide high-paying top-level research jobs, as well as maintenance and construction jobs.
473	Celestial navigation and observation have been a part of Hawaiian culture for a thousand years. TMT is only a part of it.
474	TMT is vital to Hawai'i and the world (science, technology, and opportunity).
475	TMT and the scientific achievements are worthy; however, the telescope should be done in conjunction with the Native Hawaiian community. This would allow for proper and respectful transition of the land and reduce the heightened tensions and court battles.
476	The diversification of the Hawaiian economy and the quest for knowledge of the universe are crucial.
477	The majority of Hawaiians support TMT, and the opponents are "noisy" and use "inaccurate information, lies, and altered history" to increase resistance. Many of the opponent's claims/lawsuits have been rejected over the last decade. Many TMT opponents do not live on the Island of Hawai'i.
478	TMT will bring jobs and STEM education funding to Hawaii.
479	TMT has worked with Native Hawaiians regarding their concerns around cultural, scientific, and environmental impacts. TMT is more inclusive and provide extra benefits than previous projects.
480	Maunakea is the best location for TMT and will be able to help science progress and contribute to the knowledge of humanity. The scientific benefits are more important than the small yet vocal opposition trying to stop the project.
481	Hawai'i is the best location for TMT because it fits into the Native Hawaiian explorer/seafarer tradition, will provide science and technology for humanity, and will provide an "uplift" for Native Hawaiians through economic diversification (referencing the impact on Hawai'i's tourism industry from COVID-19).
482	Maunakea is the best location for TMT because of the cultural connection to astronomy through wayfaring traditions and the Hawaiian youth are ready for STEM opportunities.
483	COVID-19 has made the completion of TMT an "existential question" for Hawaii. This is the only "shovel-ready" project in Hawaii. Not building the telescope due to a "campaign of lies" would fail to make the world a better place for Hawaiian youth.
484	It is important to convey to NSF that their support alone will be a huge success for TMT supporters. NSF should not be deterred by protesters who are engaged in "movement politics", where they only care about "winning" and want to be arrested. NSF should create a plan, in conjunction with State, County, and TMT, to deal with arrests (e.g., non-violent arrest training for officers; steadily increasing fines for protesters).
485	TMT should be built because Maunakea is the best site in the world, it would be beneficial to have the telescope in the U.S., the site has been approved by the Hawaii Supreme Court, there is no credible religious or cultural objection to the use of the site for astronomy, and the advances to science benefits the world.

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Number	Comment Summary
486	Most Hawaiians support TMT; however, there are a few loud protestors who make “false claims” and feel “entitled” to stop the TMT based on their race and religion.
487	NSF’s Young Scholars program has inspired Hawaiians to pursue careers in science.
488	The opposition to TMT has been fueled by misinformation, valid concerns regarding the permitting process, and management errors. Stopping the TMT is not the solution, and not building it would impact Hawai'i’s future and the youth.
489	A participant provided numerous articles which outline the environmental impacts of building TMT on Maunakea and requested a copy of NSF’s frequently asked questions.
490	TMT is a necessary addition to the astronomy community on the Big Island.
491	Even if it would make TMT visible from lower elevations, it may be prudent to decommission an existing facility at the summit and use that site for the location of TMT.
492	Hula instructors and others have the potential to be influencers for TMT.
493	Many Hawaiians who participate in hula schools (hula halau) are against TMT and will not engage in discussions, although directors of the schools advised against participation in the protests on Maunakea.
494	New economic realities can tip the balance to be in favor of TMT, referring to the economic and employment benefits, educational benefits, and minimal visitor traffic offsetting environmental impacts.
495	NSF should engage with those who have extensive connections in the local community.
496	A participant registered opposition to the project.
497	The community decided to use their resources and public trust assets to provide TMT a site on Maunakea. Project opponents were given ample opportunity and afforded due process to provide their input. However, it was decided their claims were without merit.
498	Those opposed to the TMT are claiming political authority, not a concern for cultural or environmental impacts. The State of Hawaii’s process for approving the TMT permit included a thorough review of the project’s environmental and cultural impacts, including the impact on traditional and customary practices of Native Hawaiians. Federal environmental law does not create an obligation for a federal government agency to decide local and State political issues.
499	The TMT should be built on Maunakea because it will provide a future for Hawaiian youth. The TMT will contribute to the economy and provide high-paying unionized construction jobs. Some opposed to TMT believe that only “low paying and uninspiring” jobs will be available to local kids; however, this is not true, as Hawaiian youth have already become part of astronomy careers. TMT will allow the community to participate in an enterprise of scientific discovery that belongs to all of humanity.
500	TMT supporters and scientific colleagues claim to be factual, but they use offensive and racist generalizations and unsupported opinions.
501	NSF should continue to support TMT, as it represents a huge success for the project.
502	Maunakea is an ideal location for TMT because is the best site for astronomy in the northern hemisphere and because of Native Hawaiian’s celestial wayfaring traditions.
503	Hawai'i’s economy is overly dependent on tourism and has suffered during COVID-19. Completing TMT now represents an “existential question” for the State. Not building the telescope due to a “campaign of lies” would fail to make the world a better place for Hawaiian youth. Additionally, TMT has prevailed in court on every occasion.

## Draft Community Engagement Plan Hawai'i Island, Hawaii

Number	Comment Summary
504	TMT should establish an office on the Big Island on an accelerated pace. This would help TMT establish a political campaign to address political issues raised by protesters, integrate TMT leadership into the local community to gain first-hand knowledge of the community's thoughts and to engage with community members, and hire local people from the community whose families will promote the project.
505	The participant believes TMT does and does not fit into the broader question of Indigenous rights in the U.S.
506	NSF should engage with a list of interested people provided by the participant, including one who is involved in radio and other venues for community outreach.
507	A participant expressed confusion regarding the Informal Outreach Effort.
508	A participant who has followed the project closely submitted a letter to the University of California Regents regarding TMT, regarding the protests by Native Hawaiians.
509	The reach of the anti-TMT movement is "unprecedented" in modern Hawaiian history and the commitment of "thousands of people" should not be underestimated. The ho'oponopono, a form of Hawaiian mediation, is not a valid approach.
510	The commenter cautions that any attempt to "reconcile" with the protesters will be unsuccessful, as there is a commitment that is "unshakable." Force will be required to remove people from Maunakea, which will create a "spectacle that will tarnish" the University of California system and will harden the resolve of Native Hawaiians. For Native Hawaiians, this is a profoundly religious, cultural, and political issue.
511	There is a concern of the University of California's funding commitment to a project that will "fail and cast a shadow" on the institution for a project that history will be labeled as "colonial." While TMT has formal legal victories on its side, it does not have buy-in from a community that feels threatened by it and the State that has supported it. The University of California is framed in a negative light and has the opportunity to be viewed more positively if TMT is built on the Canary Islands.
512	The administrative and legal processes that resulted in the TMT permit approval were flawed in a number of ways. Hawaiian testimony during the permitting process, was not reflected in any official findings and decisions, which has resulted in decisions based on an incomplete picture of the situation. UC should study the community perceptions and correct the "severe distortion" found in the University of California documents (e.g., the timeline does not include the protests).
513	Although the participant believes that the position asserted may be "dismissed" as that of a sympathizer, the participant shares perspectives and concerns of Native Hawaiians. The University of California is not being advised adequately on the basis of ground-level information.
514	The participant draws a connection between navigation and astronomy as a continuation of Hawai'i's stargazing heritage.
515	The participant would like to see more Indigenous people involved with science; science has societal impacts.
516	Efforts to establish TMT can be re-done, even though they started out poorly. The approach should be to explore and discover, not to colonize. Money and jobs do not establish trust.
517	Consent, under the UN Declaration on the Rights of Indigenous Peoples, means "an invitation."
518	Efforts to consider TMT should be done by parties that are present in a positive way, and not in a way that creates division between groups.
519	A participant recommends that NSF focus on community colleges, since they are connected to local communities, and also on elementary and middle school students.
520	Some parties do not have a definition of "consent."

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Number	Comment Summary
521	A participant believes that there are more Indigenous people against TMT than are for it, and evidences this by the songs that are sung about the sanctity of Maunakea, and the Kapuna and youth that were involved in the protests.
522	The participant suggests that improvements may be possible for the telescopes already up on Maunakea.
523	A trusted entity, such as the Royal Order, could connect people to each other if a new, formal process begins.
524	It will be important to conduct a respectful and meaningful process, and entities such as the Royal Order could help to accomplish this. Personal connection is very important for being able to work together.
525	The participant believes people have concerns about land title issues. The way to get consent under UNDRIP is by getting people's vote.
526	The participant recommended that an Advisory Group be created.
527	The participant recommended a number of references for NSF to review: a website, an excerpt from a book, and a cultural study.
528	The participant believes that positions held by people are based on emotion, and NSF may need to make a qualitative determination and accept that not everyone will be happy.
529	The participant recommends that NSF should focus on presenting facts and use of social media to manage responses to information (including misinformation) in real time. NSF should consider consulting a media strategist to determine how to counter soundbites.
530	One participant noted that cultural practitioners have not said they would cease practicing at Maunakea if TMT were built.
531	The opportunity to have a productive and fruitful conversation with representatives of NSF is greatly appreciated.
532	A participant expressed full support for building TMT on Maunakea and hopes that a new round of listening and negotiations will help bring overall support of the project and that many silent supporters, including prominent Hawaiians, will come forward to overwhelmingly support completion of the project.
533	A participant requested that TMT not be built on Maunakea, due to the distress experienced by people (Native Hawaiians and environmentalists) over the past 12 years.
534	The participant said to please not support the building of TMT or any other telescopes on Maunakea and clean up the environmental degradation and desecration of Mauna Kea that the consortium has already caused.
535	A Hawai'i resident supports construction of TMT.
536	Opposition to the project will not be affected by arguments in favor of science discoveries, jobs, or local community funding; opposition has morphed into something bigger and more anti-western. Consider talking their language which is culture. Consider talking to the kapuna who favor the TMT for hints on how they would resolve this issue.
537	If you want support of the project, fulfill the promises made to the Hawaiian people years ago: a park with parking and restrooms, and a spot for religious and non-religious celebrations.
538	A participant expressed sadness at how many people, not necessarily Hawaiian in lineage, have jumped on the protest wagon against this timely and important telescope. As a renowned, internationally respected science foundation please seek a way to placate these "protectors." The NSF can help to move this project forward with conviction and purpose.



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Number	Comment Summary
539	A supporter of TMT holds sacred our increasing understanding of nature and the universe around us and science as a way to achieve that; the view espoused by the “protectors” in opposing TMT runs contrary to the commenter’s beliefs, but both views are equally valid.
540	If TMT is eventually built on Maunakea, it will be important to rename the telescope after a historical Hawaiian figure or with words from the Hawaiian language. Consultation with interested parties would be necessary in selecting a new, more appropriate name.
541	A consensus building organization expressed concern with NSF’s Informal Outreach Effort and claimed that over the last 60 years Maunakea has been exploited by the State of Hawaii, the University of Hawai'i, and the astronomy community. The commenter cited different court rulings and State-initiated audits have strengthened the support for no further development on Maunakea. The organization firmly believes that Maunakea is sacred and that there should be no further development on the mauna.
542	In 2019, HB1067 Relating to Maunakea (Maunakea; Development; Moratorium) was submitted to the Hawaii State legislature. The bill emphasized the importance of no further development due to the sacredness of the mauna. It also highlighted the different species of “plants, animals, and arthropods that are rare, threatened, or endangered and are found nowhere else on the planet.” The bill will be submitted again this year [2021] with the full support of this group.
543	The University of Hawai'i along with their existing partners need to fulfill their existing lease agreements and commitments by their entirety by the date agreed upon at the time that the lease was executed.
544	Maunakea is not a commodity and despite Hawaii’s economic situation, we know that constructing the TMT on Maunakea will not solve the State’s economic problems. In 2019, the State of Hawaii spent over \$15 million dollars specifically on law enforcement in TIO’s failed attempt to begin construction.
545	The potential construction of TMT on Maunakea is more than a “sensitive issue” to the Native Hawaiian community and the world, stating that, to date, over 500,000 people including those within the astronomy community have voiced their opposition to the TMT project. When the State of Hawaii issued a “Notice of Intent To Begin Construction” on Maunakea in 2019, the State Enforcement Officers under the command of the State of Hawaii Attorney General, arrested 38 Kupuna (Elders).
546	The participant cited requirements under NHPA and noted that the Maunakea summit region is a designated Historic District and is eligible for listing on the State of Hawaii and National Historic Registers. Many Native Hawaiians attach religious and cultural significance to the lands contained in the Maunakea Historic District. There are right holders and beneficiaries of the Public Land Trust who attach religious and cultural significance to the historic properties contained within the Maunakea Historic District. Several have been involved in twenty years of litigation regarding the continued industrialized development of this culturally significant place and continue to be involved in stopping desecration. Informal meetings do not fulfill the NHPA’s requirements, and formal consultation under Section 106 of NHPA was requested.
547	The participant described Hawai'i history, the effects of cultural trauma, and stated that the construction of the TMT on Maunakea will have a devastating effect on Kānaka Maoli health, not to mention ecological health with regard to the permanent damage to the winds, climate, and water aquifers of the area.
548	The participant submitted a statement that supports the Kānaka Maoli in their efforts to protect Mauna a Wakea from further desecration and states that construction would desecrate pristine land, and would affect the wind, climate, and water aquifers on Maunakea. The movement to protect Maunakea embodies five dimensions of struggle.



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Number	Comment Summary
549	The Kānaka Maoli or Native Hawaiians are the Indigenous people of Ka Pae 'Āina—the Hawaiian Archipelago. For many Kānaka Maoli, Maunakea represents a oneness and connection to the natural and spiritual worlds-- a sacred place and the zenith of ancestral ties to creation. The upper regions, Wao Akua, are the realms of the Akua (creator) and the summit is a temple of the Supreme Being in not only Hawaiian culture but also in many histories throughout Polynesia. It is the home of Na Akua (divine deities) and Nā 'Aumākua' (divine ancestors), as well as the meeting place of Wākea, the Sky Father and Papahānaumoku, the Earth Mother---progenitors of the Hawaiian people. It is also both a burial ground and the embodiment of ancestors that include Ali'i and Kahuna (high ranking chiefs and priests).
550	Modern Native Hawaiians continue to regard Maunakea with reverence and many cultural and religious practices are still performed there. In addition to sacred importance, the summit is home to nearly a hundred archaeological sites and many traditional cultural properties that are eligible to be listed in the National Register of Historic Places.
551	The controversy around construction of TMT highlights the struggle of an Indigenous People to preserve their sacred sites from desecration and ensure their participation in current land use issues. Kānaka Maoli leaders and those who oppose TMT construction emphasize that they are not “anti-science.” Rather, they contest the fact that Kānaka Maoli were insufficiently consulted before Maunakea was chosen as the TMT site and that construction comes with serious environmental risks.
552	The participant strongly supports the construction of TMT for reasons that include the following: once built, the TMT will result in the decommissioning and removal of five existing telescopes, and the land will be remediated; the site selected ensures the smallest impact when viewed from lower elevations on the Big Island; STEM courses provided in Hawai'i's public educational system can only be enhanced with the eventual construction and commissioning of TMT; economic benefits; knowledge gained will be shared with humanity, and is pono; for 32 generations – 800 years – Hawaiians have not only embraced scientific knowledge, they were pioneers in seafaring, exploration, and navigation unknown to Westerners. TMT can serve as a beacon of sorts, demonstrating a willingness to advance science for the greater benefit of humanity, and in a place renowned for embracing differences in order to sustain each of us.
553	In the late 60s, Hawaii Governor John A. Burns and the Hilo business community foresaw the demise of manual plantation labor and specifically identified two fields that could provide high paying opportunities for local families, oceanography and astronomy. Since then, Maunakea and astronomy have been linked. The first large telescope on Maunakea was completed forty-seven years ago and it is generally recognized that Maunakea is the finest site in the world to conduct astronomy. Moreover, our local community has supported and continues to support ground-based astronomy on Maunakea by an overwhelming majority. In light of the COVID-19 pandemic, native-Hawaiians need the employment and educational opportunities provided by TMT to help balance the terrible toll caused by the loss of resort related jobs.
554	The claim that Maunakea is the sacred place of the gods and therefore offended by human activities is modern in origin and not a traditional Hawaiian belief. These claims surfaced about 12 years ago as part of the current protests. As the Hawaii Supreme Court found in Maunakea II, one cannot claim a traditional practice if it is recent in origin. Rather than prohibit human activity, pre-contact Hawaiians worked near the summit and themselves disturbed the pristine nature of the mountain. For example, the ko'i (adze) quarry was created and used by Hawaiians to mine the fine-grained basalt used for cutting tools.
555	It is particularly ironic that protests have focused upon obstructing TMT. It is our knowledge of the stars that enabled our ancestors to settle Hawaii. It is our knowledge of the phases of the moon that informed fishing and planting practices. It our recognition of the value of western technology and astronomy that caused the kahuna (priests) of the Hikiau heiau (temple) at Kealakekua to insist that Capt. James Cook set up the first western observatory adjacent to the heiau.
556	In terms of respect for Hawaiian cultural practices, the Office of Mauna Kea Management (“OMKM”) management plan provides 24/7 access to the mountain for native cultural practices and ceremonies and the TMT site was specifically chosen so as not to interfere with any cultural practices. In the end, it is a matter of values. The Hawaiian values of: Kupono: Excellence; 'Imina'auao: Knowledge; and Ka'ana: Share equally, are all consistent with TMT.

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Number	Comment Summary
557	A participant described that a poll, released May 28, 2020 (4.3% margin of error), which found that Hawaii residents, by an overwhelming margin, support TMT; the participant described the following as key findings from the poll: 92 percent of Hawaii residents agree there should be a way for science and Hawaiian culture both to exist on Mauna Kea; 83 percent of Hawaii residents agree that the protest on Maunakea is really about issues larger than TMT, such as Hawaiian homelands, overthrow of the Hawaiian Kingdom, and land management; 80 percent of Hawaii residents agree that peaceful protests are fine but have no tolerance for protests that result in laws being broken; 79 percent of Hawaii residents agree that the government is responsible for providing safe construction access to the TMT site; 76 percent agree that TMT will help create good paying jobs and economic and educational benefits for those living on Hawai'i Island.
558	Ho'oponopono requires all parties to act in good faith to achieve healing through honesty, mutual respect and accommodation.
559	TMT has a legal right to proceed, as described in Hawaii Supreme Court cases and the Contested Case Hearing Re Conservation District Use Application (CDUA) HA-3568 for the Thirty Meter Telescope at the Mauna Kea Science Reserve, Ka'ohe Mauka, Hamakua, Hawaii TMK.
560	The Advisory Council on Historic Preservation recognizes that Native Hawaiian organizations possess special expertise in assessing the eligibility of historic properties that may be of significance to them. Therefore, National Historic Preservation Act Section 106 consultations should begin with Native Hawaiians who attach cultural, historic or religious significance to the land associated with the Mauna Kea Historic District and the TMT/TIO project and undertaking.
561	There is a history of litigation regarding the W.H. Keck Outrigger Telescope proposal, which ultimately resulted in the project not being funded, permitted or constructed. The TMT project, proposed in 2008, has been the subject of two contested cases, resulting in a decade-long delay, and has drawn thousands of protectors to the mountain in defense of the sacred cultural and vulnerable natural resources.
562	Federal agencies must make "a reasonable and good faith" effort to identify each and every such Native Hawaiian organization and invite them to be consulting parties in the Section 106 review process. This includes Native Hawaiian organizations that live nearby as well as those that no longer reside in or near the project area but that, for example, may still have ancestral ties to that area. It is also possible that a Native Hawaiian organization attaches religious and cultural significance to a historic property on another island. For example, Maunakea, on the island of Hawai'i, is widely regarded as a place of religious and cultural significance to many individual Native Hawaiians and Native Hawaiian organizations throughout the state of Hawaii. Accordingly, a proposed undertaking that might affect Maunakea could necessitate consultation with Native Hawaiian organizations throughout the state.
563	Native Hawaiians are rightholders not stakeholders, meaning the lands in Hawaii are held in trust for betterment of the conditions of Native Hawaiians and the general public.
564	The proposal for the NSF to fund the Thirty Meter Telescope (TMT) presents a moral dilemma for the Foundation. To truly understand that dilemma requires a knowledge of the history of development on Maunakea that provides the context for the TMT controversy. The Gordon and Betty Moore Foundation's sponsored report, "Assessment of the Risks for Siting the Thirty Meter Telescope on Mauna Kea," dated October 26, 2007 (which is known as the Keystone Report) presents a bleak picture of those risks. Those considering the TMT funding request to the NSF would be well served to read that entire report to gain an understanding of the current standoff between the promoters of the TMT and the Kia'i (Protectors) of the Mauna (mountain). The "anger, fear, and great mistrust" predicted by the Keystone Report boiled over when thousands of people came to the Mauna to prevent construction of the TMT.
565	A participant provided a summary of the history of Hawaii and injustices inflicted on the Hawaiian people and stated that NSF cannot ignore this history. To do so would make the NSF complicit in what is a continuing violation of the spiritual, national, cultural, and economic rights of the Native Hawaiians.

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Number	Comment Summary
566	The Hawaiian language is an official language in the State of Hawaii and asked if NSF would have any speakers of the Hawaiian language involved so that NSF can invite Hawaiian speakers to participate in their own language.
567	If NFS, which is funded by taxes (including those paid by Native Hawaiians) granted the funding requested by TIO, Native Hawaiians, as United States taxpayers, would be coerced into paying part of that grant to TIO. In other words, Native Hawaiians would now be required to fund a project located on their stolen lands without their consent. This would appear to be a classic case of adding insult to injury.
568	In an analysis of public support for TMT in Hawaii in 2019, it was found that 88% of Native Hawaiians surveyed did not support building TMT on Maunakea. Existing public opinion research fails to adequately capture the policy preferences of Native Hawaiians, largely due to methodological practices. There should be increased scholarship on Native Hawaiian public opinion needs so that survey results can be more trusted to inform the policymaking process.
569	There is a series of projects in recent history that would benefit business or Hawaiian families that were stymied by protests. It is questionable whether the public should allow what is “sacred” to stop progress to secure a better future.
570	The future of astronomy on Maunakea has been compromised by TMT’s unwillingness to listen to Native Hawaiian concerns. In order for astronomy to begin to repair its relationship with Native Hawaiians and other Indigenous groups, the participant recommends the following: withdraw NSF funding and support for TMT until such time as it commits to moving to an alternate location; establish internal accountability for NSF-funded scientists and projects that engage in abusive behaviors or extractive research; NSF and other agencies must work to establish community-centered dialogue with Native Hawaiian cultural knowledge holders to discuss the future of astronomy on Maunakea.
571	The economic benefits of the astronomy industry are significant. There are hundreds of local residents currently working in the industry earning good wages and supporting their families and our community. Without astronomy, many would have had to accept lower paying jobs or worse, possibly move away from Hawaii. Many more jobs are indirectly created as a result of this industry and the spending that occurs almost exclusively on our Island. Industries such as this also encourage foreign investment directly into our State. We want our youth to know there is a future for them here in Hawaii. Too many either move to the mainland after graduating or decide to not come “home” to Hawaii after receiving their degree from a mainland university because of a lack of higher paying/level jobs here. We want to change that and the opportunities created by the TMT project and astronomy will help fill this void.
572	Given the timing of any TMT construction and the timing of the current lease expiration date, the funding that the National Science Foundation could provide for the construction and operation of the Thirty Meter Telescope would better serve science if the alternate site, the Canary Islands, is chosen.
573	Over a half-century, the astronomy sector has created innovative educational and workforce opportunities for Hawai'i Island and the State of Hawaii and identified the following economic benefits: Hawaii's astronomy sector provides needed economic diversity with a statewide impact of \$167 million; astronomy activities generate over \$52 million in earnings, over \$8 million in state taxes and 1,400 jobs statewide. Further, the following economic benefits regarding TMT have been identified: TMT will create 300 local and specialized construction jobs and once the telescope is complete, employ 140 staff; TMT's annual lease will incrementally expand from \$300,000 to \$1 million when operational, and 80% of these funds go to support stewardship of Maunakea's resources by the Office of Maunakea Management and 20% go to the Office of Hawaiian Affairs for the benefit of the Native Hawaiian population that it serves.

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Number	Comment Summary
574	Thirty Meter Telescope provides community-wide benefits to better prepare Hawai'i Island students to master STEM (Science, Technology, Engineering and Math) and to become the workforce for higher paying science and technology jobs in Hawaii's 21st century. To date, TMT has funded over \$8 million to Hawai'i Island students, teachers and programs through The Hawai'i Island New Knowledge (THINK) Fund and Hawai'i Workforce Pipeline Program. Additionally, TMT has been the cornerstone supporter of the Akamai Internship Initiative which provides college students with summer internships at Hawaii observatories and other high-tech companies. We must ensure the development of TMT and the continuation of the astronomy industry on Maunakea. Losing TMT would be more than the loss of a major Hawaii telescope, it would be the loss of opportunity for Hawaii's future generations. Additionally, the Thirty Meter Telescope project is an opportunity to enhance Hawaii's place as a global ambassador by positioning our State in the forefront of technological collaboration with universities and governmental research institutions of Canada, China, India, Japan, the United States and more.
575	Building the TMT, its instrumentation, and future use for science will contribute to our community's much needed economic sustainability during construction and beyond. The facility's construction will provide ten years of good, high paying jobs for unionized construction workers who live in our community and are raising families on our island.
576	The history of astronomy includes people from all parts of the globe over a vast sweep of time. Astronomy has and continues to lead the way for scientific discoveries. It early on allowed prediction in time and space, the seasons, and one's location on the globe. Astronomy led to the discovery of gravity and contributed to our understanding of the fundamental nature of matter. Astronomy has also taught us to be humble. Only through the perspective that astronomy has given us have we come to know the universe's reality and the planet we inhabit. We have learned that our planet and our lives and the lives of others are immensely precious. And knowing this, we are compelled to respect others' lives and preserve the environment of our shared home, planet Earth.
577	The TMT strongly contributes to our young people's education and career opportunities. Science and technology education will help our students, and in addition, Foundation financial support will flow to our Department of Education. In addition, the economy will be boosted through jobs and economic support from the science community. Financial investment will come, as Hawaii becomes the focal point for international astronomy research and education. Diversified job opportunities - other than tourist professions - will strongly benefit our State's economy.
578	TMT gives Hawaii a chance to be at the center of astronomy research and gives Hawaii a chance to lead the way in navigational research. It gives us a chance to give back to the world and contribute our enthusiasm for the study of our skies, as well as give the international community our greatest gift: the intelligent, motivated minds of our young people. Finally, we can share our culture on the international stage as leaders and torch-bearers. We will preserve not just our mauna (mountain), but the universe with our minds and our aloha.: Share equally, are all consistent with TMT.

ACHP= Advisory Council on Historic Preservation

DKIST = Daniel K. Inouye Solar Telescope

EA = environmental assessment

EIS = environmental impact statement

NASA = National Aeronautics and Space Administration

NEPA = National Environmental Policy Act

NHPA = National Historic Preservation Act

NSF = National Science Foundation

PBS = Public Broadcasting Service

STEM = science, technology, engineering, and math

TIO = Thirty Meter Telescope International Observatory

TMT = Thirty Meter Telescope

UNDRIP = United Nations Declaration on the Rights of Indigenous Peoples

U.S. = United States

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**Appendix B**  
**List of Government Agencies and Community**  
**Organizations**



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## Appendix B. List of Government Agencies and Community Organizations

- Federal Agencies
  - Advisory Council on Historic Preservation
  - U.S. Army Corps of Engineers
  - U.S. Department of Agriculture – National Resources Conservation Service
  - U.S. Department of Commerce – National Oceanic and Atmospheric Administration
  - U.S. Department of Energy
  - U.S. Department of Homeland Security
  - U.S. Department of Transportation
  - U.S. Department of Interior
    - U.S. Fish and Wildlife Service
    - National Parks Service
    - U.S. Geological Survey
  - U.S. Environmental Protection Agency
  - National Aeronautics and Space Administration – Science Mission
    - Astrophysics
    - Heliophysics Division
    - Planetary Science
- State Agencies
  - Department of Accounting and General Services
  - Department of Agriculture
  - Department of Budget & Finance
  - Department of Business, Economic Development and Tourism (DBEDT)
    - State Energy Office
    - Office of Planning and Sustainable Development
  - Department of Education
  - Department of Hawaiian Home Lands
  - Office of Hawaiian Affairs
  - Department of Health
  - Department of Land and Natural Resources
  - Department of the Attorney General
  - Department of Transportation
  - Hawaii Emergency Management Agency
- University of Hawai'i
  - Center for Hawaiian Studies
  - College of Agriculture, Forestry, and Natural Resource Management
  - College of Hawaiian Language (Hilo)
  - 'Imiloa Astronomy Center of Hawai'i
  - University of Hawai'i Institute for Astronomy
  - Maunakea Management Board

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- Maunakea Support Services
- Office of Maunakea Management
- Water Resources Research Center
- Kahu Kū Mauna
  
- County of Hawai'i
  - Big Island Visitors
  - Civil Defense Agency
  - Department of Design and Construction
  - Department of Environmental Management
  - Department of Finance
  - Department of Parks and Recreation
  - Office of Housing and Community
  - Office of the County Clerk
  - Police Department
  - Department of Planning
  - Department of Public Works
  - Department of Research and Development
  - Department of Transportation Services
  - Department of Water Supply
  - Fire Department
  - Mass Transit Agency
  - Office of the Prosecuting Attorney
  
- Elected Officials
  - U.S. Senators
  - Hawaii State Senators
  - U.S. Congresspersons
  - State Governor
  - State Senators
  - Hawaii Speaker of the House
  - Hawaii State Representative
  - Mayor, County of Hawaii
  - Hawaii County Councilpersons
  - Office of Hawaiian Affairs Trustees
  
- Community Organizations
  - 'Ahahui Ku Mauna
  - American Friends Service Committee
  - Association of Hawaiian Civic Clubs
  - Bishop Museum
  - Center for Biological Diversity
  - Conservation Council for Hawaii
  - Earthjustice
  - Edith Kanaka'ole Foundation
  - Enterprise Honolulu
  - Environment Hawai'i, Inc.
  - Environmental Defense Fund

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- EnviroWatch
- Friends of Haleakala National Park
- Hawai'i - La'ieikawai Association
- Hawai'i Institution for Human Rights
- Hawaii People's Fund
- Hawaii Audubon Society
- Hawaii Business Roundtable
- Hawai'i Conservation Alliance
- Hawaii Ecotourism Association
- Hawai'i Island Chamber of Commerce
- Hawai'i Island Economic Development Board
- Hawaiian Ecosystems at Risk
- Hawaiian Historical Society
- Hawaii's Thousand Friends
- Healthy Hawaii Coalition
- Historic Hawaii Foundation
- Imua TMT
- James Kent Association
- Ka'ū Preservation
- KAHEA
- Kanaka Council Moku O Keawe
- Kilakila 'O Haleakalā
- The Kohala Center
- Kohanaiki 'Ohana
- Kona-Kohala Chamber of Commerce
- Life of the Land
- Malama O Puna
- Maui Tomorrow Foundation, Inc.
- Mauna Kea Anaina Hou
- Nā Maka o ka 'Āina'
- Native Hawaiian Advisory Council
- Native Hawaiian Chamber of Commerce
- The Nature Conservancy of Hawaii
- Pacific Resources Partnership
- Pele Defense Fund
- Pulama Ia Kona-Heritage Preservation Council
- Royal Order of Kamehameha I
- Sierra Club
- Temple of Lono

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# Appendix C

## Workshop



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## Appendix C. Workshop

The National Science Foundation (NSF) intends to conduct a multi-day interactive workshop to inform the creation of an NSF-facilitated plan to define and practice responsible astronomy in Hawai'i developed in partnership with the Mauna Kea Stewardship and Oversight Authority, the Maunakea Observatories, and the Hawaiian community. The workshop will be held over a 2 to 3 day period, possibly over a weekend or a combination of a weekend day and a weekday (or days). It will be interactive and primarily focused on fostering collaboration between the Hawaiian and astronomy communities having a mutual connection to Maunakea. Participation by the new Mauna Kea Stewardship and Oversight Authority, the Maunakea Observatories, and Hawaiian cultural practitioners would be ideal for achieving workshop goals. While this workshop will be conducted outside the National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) public engagement processes, it is intended to ultimately inform NEPA's preliminary Action Alternative 2 as well as the Section 106 process. More details of the planned workshop follow:

Objective 1: To bring astronomers and members of the Hawaiian community together and facilitate a two-way exchange of information, or "talk story" session, about the importance of Maunakea to them. To serve as a forum to hear from the Hawaiian community about how the astronomy community can become a better partner and address local community concerns.

The format will comprise the following components:

- a. Observatory directors would provide an overview of their facilities and how their work advances society.
- b. Members of the Hawaiian community would share the importance of Maunakea to them and identify how the astronomy precinct affects their community.
- c. NSF would facilitate an interactive discussion.
- d. Participants would participate in a site visit (virtual or otherwise).

Objective 2: To identify how science needs can be addressed in the future in a way that is consistent with cultural values and the protection of the Maunakea's resources.

The format of this portion of the workshop will comprise the following components:

- a. Discussion regarding how to define and practice responsible astronomy in Hawai'i.
  - i. How should responsibility be shown? Are there steps that can and should be taken to demonstrate cultural respect?
  - ii. Are there outreach activities that the Maunakea Observatories could engage in that would offer meaningful help and bring the astronomy and Hawaiian communities closer together?
  - iii. Are there guidelines for observatories that should be followed? (Specifically, should redundancies of purpose and capabilities be avoided? Should an effective life of each observatory be established? Should facilities engage in future collaborations to share telescope time, infrastructure, etc.?)
- b. Reaction/Responses/Ideas

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After the close of the workshop, a final report to include a summary of what was heard/discussed will be prepared, and a description of any Action Alternative 2 options reached (whether reached by participants or developed by NSF as a result of the workshop) will be prepared. If a more refined Action Alternative 2 is developed, it would then be subject to continued environmental review under NEPA and evaluation under the Section 106 process.