EXEMPTION NOTICE FORM

University of Hawai‘i
2444 Dole Street
Honolulu, HI 96822

TO:
1. Agency-Maintained Public Files for Chapter 343 HRS Exemption Determinations
2. Office of Planning and Sustainable Development, if publication is desired
3. Smithsonian Astrophysical Observatory (SAO)

FROM: Director of University of Hawai‘i

SUBJECT: Exemption Notice for Packaged Air Conditioning Unit Replacement at the Submillimeter Array (SMA) on Maunakea, MIP #320

DATE: 5/12/2023

AGENCY OR APPLICANT ACTION

Check applicable box

☒ This exempted action is an agency action as defined by Section 343-5(b), Hawai‘i Revised Statutes (HRS), and Section 11-200.1-8, Hawai‘i Administrative Rules (HAR),

☐ This exempted action is an applicant action as defined by Section 343-5(e), HRS, and Section 11-200.1-9, HAR

EXEMPTION TYPE:

The Exemption Notice for the action described below is based on the general types enumerated in Section 11-200.1-15(c), Hawai‘i Administrative Rules (HAR), Exemption Type **Replacement or reconstruction of existing structures and facilities**.

As applicable, the exemption for the action described below is also supported by the Exemption List for the [University of Hawai‘i], reviewed and concurred to by the Environmental Council on 3/14/2001.

- Exemption List Class **2**.
- Item Number **m**.
- Applicable language from the exemption list: Air conditioning and ventilating systems.

DESCRIPTION OF ACTION

Proposing Agency or Applicant: University of Hawai‘i

Project Name & Address/Location: SMA, Mauna Kea Science Reserve (por.), TMK 3-4-4-015:009

Anticipated Start Date: 8/1/2023

Anticipated End Date: 11/1/2023

Island and District: Hawai`i Hamakua

Tax Map Key(s) and other geolocation means: 3-4-4-015:009

All Necessary Permits and Approvals: DLNR OCCL Site Plan Approval.

NARRATIVE

Describe the action and why it qualifies for the exemption: The action involves three exterior modifications to replace or upgrade components of a nearly-25 year old air conditioning and ventilation system which support SMA's operations: (a) The main packaged AC unit will be replaced; (b) Three auxiliary condensing units will be replaced by two units; and (c) air intake ducts on the building wall will be modified. These components are near the end of their service lifetimes and require increasing maintenance and repair. The replacement units will be functionally and visually similar to the existing units. Most of the work will be confined to the hangar, except for the replacement PACU which rests on a concrete slab adjacent to the hangar. There will be no change to the developed footprint, expansion of use, or impacts to identified resources.

RECEIVING ENVIRONMENT

Describe the site, including any impacts on the receiving environment: The site is the existing SMA hangar within the SMA sublease. Impacts are anticipated to be negligible and temporary as SMA works to fulfill its sublease requirement to maintain the site in good, safe, working order.

ENVIRONMENTAL ANALYSIS

I have considered the potential effects of the proposed project and all related activities against the criteria checked below:

	Not Applicable
☒ Land Use and Zoning Conformance	☐
☒ Traffic (Vehicles, Bicycles, Pedestrian)	☐
☒ Infrastructure (Roads, Buildings, Utilities)	☐
☒ Air Quality Pollutant Emissions	☐
☒ Noise Emissions	☐
☒ Solid, Hazardous, and Liquid Waste Management	☐
☒ Social	☐
☐ Economic	☒
☒ Health and Safety	☐
☒ Recreation	☐
☐ Public Beach Access	☒
☒ Cultural Resources and Practices	☐
☒ Visual/Aesthetic	☐
☐ Environmental Justice	☒
☒ Rare, Threatened, and/or Endangered Species	☐
☒ Surface and Ground Water Resources	☐
☐ Wetlands	☒
☐ Floodplains	☒
☐ Riparian/Coastal Resources	☒
☒ Other	☐

Comments/summary of impact analysis: See Site Plan application and proposal for details.

MITIGATION

Describe all mitigation measures and best management practices planned to address impacts during the project activities and after project completion: See project proposal pages 4 and 5 for measures to protect the environment and/or mitigate impacts and approval conditions.

CONSULTATION

The following parties have been consulted about this declaration exemption (Name, affiliation, consultation date): Maunakea Management Board, March 2023; Department of Land and Natural Resources OCCL, May 2023.

EXEMPT DECLARATION

The direct, cumulative, and potential impacts of the action described above have been considered pursuant to Chapter 343, Hawai‘i Revised Statutes and Chapter 11-200.1, Hawai‘i Administrative Rules. I declare that the action described above will have minimal or no significant impact on the environment and is therefore exempt from the requirement to prepare an environmental assessment.

Ross Richards Digitally signed by Ross Richards DN: C=US, E="rossrich@hawaii.edu ", O="University of Hawai ", OU=Office of Project Delivery, CN=Ross Richards Date: 2023.05.16 06:46:15-10'00'

Signature of Director or Delegate

5/16/2023

Date

This document is to be kept on file in the agency’s records and made available for public review

☒ Please check here if this document is being submitted to the Office of Planning and Sustainable Development for voluntary publication in *The Environmental Notice*

UNIVERSITY of HAWAI'I at HILO
CENTER FOR MAUNAKEA
STEWARDSHIP

May 11, 2022

Mr. Michael Cain
Administrator
Office of Conservation and Coastal Lands
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Cain:

SUBJECT: Smithsonian Submillimeter Array (SMA) Packaged Air Conditioning Unit Replacement

I. Project Request

The Smithsonian Astrophysical Observatory (SAO) requests to implement the following three upgrades to its air conditioning systems:

(1) Replacement of main Packaged Air Conditioning Unit (PACU);
(2) Replacement and reduction of three condensing units to two units; and
(3) Modification of air intake ducts.

II. Background, Purpose and Benefits

These upgrades are necessary to provide more stable temperatures for telescope operations. In addition, all AC units have reached the end of their service lifetimes. These upgrades will support SMA's continued operations in good working order, compliant with current energy code. The work will result in exterior modifications to three areas that will be functionally and visually similar to the existing units, with no ground disturbance and no change in footprint.

The Environment Committee (EC) reviewed this project on December 8, 2022 and requested clarification on the replacement unit efficiency compared to the existing PACU. SMA reviewed with its contractor, Bowers and Kubota of Waipahu, and responded that energy requirements have become stricter since the first unit was installed. In addition, the new unit is a chilled water system, which is more efficient than the original packaged air unit. Kahu Kū Mauna (KKM) expressed no concerns during its consultation on January 26, 2023 and stated it considered this regular maintenance. The Maunakea Management Board reviewed on March 7, 2023 and unanimously agreed with designation as a Minimal Impact project and for the project to proceed to OCCL review.

200 W. Kāwili Street
Hilo Hawai'i 96720
(808) 933-0734
cmshilo@hawaii.edu

III. OCCL Action Requested

Department of Land and Natural Resources Rules

The project presumes the following land use under HAR § 13-5-22, P-8, Structures and Land Uses, Existing, (B-2) *Replacement or reconstruction of existing structures and facilities under a previously approved conservation district use permit where the new structure will be located approximately on the same site and will have substantially the same purpose, capacity, density,height, and dimensions as the structure replaced.*

The action also presumes the following exemptions:

- HAR §11-200-.1-15(a)(2) *Replacement or reconstruction of existing structures and facilities where the new structures will be located generally on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced*; and
- HAR §11-200-8(a), Exemption Class #2 *Replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height and dimensions as the structure replaced. (1.) Replacement or reconstruction of: (m) Air conditioning and ventilation systems.*

The project will submit for Office of Conservation and Coastal Lands (OCCL) Site Plan Approval and will not proceed without approval. An exemption notice will also be submitted for publication in a forthcoming issue of The Environmental Notice[1].

IV. Maunakea General Lease, Sublease and Comprehensive Management Plan Compliance

The request is consistent with the Comprehensive Management Plan (CMP), the observatory's sublease and their Operating and Site Development Agreement, and the University's General Lease (S-4191, 1968). Further, CMS' review of project requests like this complies with the following CMP Actions:

- Natural Resources
  - NR-1: Limit threats to natural resources through management of permitted activities and uses.
  - NR-10: Incorporate mitigation plans into project planning and conduct mitigation following new development.
- Education and Outreach
  - EO-2: Require orientation of users.
- Astronomical Resources
  - AR-2: Prevent light pollution, radio frequency interference (RFI) and dust.
- Permitting and Enforcement
  - P-1: Comply with all applicable federal, state, and local laws, regulations, and permit conditions related to activities in the UH Management Areas.

[1] Environmental Review Program | The Environmental Notice (hawaii.gov)

  - P-2: Strengthen CMP implementation by recommending to the BLNR that the CMP conditions be included in any Conservation District Use Permit or other permit.
  - P-4: Educate management staff and users of the mountain about all applicable rules and permit requirements.
- Infrastructure and Maintenance
  - IM-2: Reduce impacts from operations and maintenance activities by educating personnel about Maunakea's unique resources.
- Construction Guidelines
  - C-1: Require an independent construction monitor who has oversight and authority to insure that all aspects of ground based work comply with protocols and permit requirements.
  - C-2: Require use of Best Management Practices Plan for Construction Practices.
  - C-7: Education regarding historical and cultural significance.
  - C-8: Education regarding environment, ecology.
  - C-9: Inspection of construction materials.

V. CONDITIONS

If approved, CMS recommends the conditions identified in the proposal be applicable to OCCL approval.

- Best Management Practices will be employed, including the placement of silt barriers between the active construction area and adjacent land to capture any construction runoff.
- The work area will be clearly delineated to warn the public and others of any hazards.
- SMA and contractor vehicles will be parked on SMA service roads during construction work and not on the main Summit Access Road to avoid impeding traffic.
- All project participants must attend a Maunakea Orientation prior to participating in field work.
- Notify CMS in writing at least 5 days prior, and no more than 14 days prior, to beginning field work on UH managed lands (Halepōhaku, Road Corridor, Maunakea Science Reserve, or Astronomy Precinct). Email to CMS at cmshilo@hawaii.edu is acceptable.
- Use of 4-wheel drive vehicles, with 4-wheel drive engaged, when traveling above Halepōhaku is required.
- Allow Maunakea Rangers to visit and monitor activities.
- Comply with all actions and measures described in the proposal, including (community) benefits, CMP compliance list, and mitigation measures.
- Ensure that loose tools or equipment are not left unattended and are properly stored at the end of each day.
- In preparation for high wind conditions protocols must include measures to ensure debris and equipment are not blown from the job site. Projects occurring in the

summit region must verify that temporary and permanent infrastructure can sustain 120 mph winds.

- Removal and proper disposal of all waste material. All perishable items including food, food wrappers and containers, etc. shall be removed from the site at the end of each day and properly disposed.
- Use of lighting from sunset to sunrise is prohibited unless otherwise stated in the project proposal and approved.
- Employ invasive species prevention best practices, including inspections of materials by a DLNR-approved biologist, as identified in the *Maunakea Invasive Species Management Plan* prior to entering UH managed lands. Inspections shall not occur on UH managed lands on Maunakea, at State or County parks, along public roadsides, or on Department of Hawaiian Home Lands.
- Motorized equipment, when stationary, must have a drain-pan in place suitable for catching fuel or fluid leaks. To allow for expansion with reduced atmospheric pressure, fuel tanks should not be more than ¾ full prior to transport to the summit (unless used as the fuel source for transport to the summit).
- When closed to the public yet open to Observatories, vehicle access to the Maunakea Summit Access Road above Halepōhaku Mid-Level Support Facility area is limited to expressly marked Observatory, MKSS, CMS, Federal, or State of Hawai'i vehicles when operated by their approved employees or representatives on official business and possessing requisite orientation, training, safety, and self-rescue supplies.
- Large, heavy, non-4-wheel drive, or oversized loads must submit notification to the Maunakea Road Conditions listserv at least one day prior to delivery. Loads requiring an escort on public roadways must have this escort accompany them to the **final** destination. Projects choosing not to do so must obtain approval from the Maunakea Rangers before arriving at Halepōhaku. Projects failing to submit notification or arrange for escort to the summit may be denied entry to Halepōhaku or above.
- Nēnē (*Branta sandvicensis*) may be present. If a nēnē appears within 100 feet (30.5 meters) of ongoing work, all activity shall be temporarily suspended until the animal leaves the area of its own accord. Feeding of nēnē is prohibited.
- The project approval/permit may not be transferred or assigned. A copy of the approval/permit must be present on-site and available for review at all times while working on University-managed lands.
- No use of mechanized equipment is allowed unless authorized by this permit.
- Identify and comply with other permit requirements, such as County of Hawaii building permits or Department of Land & Natural Resources (see both any applicable DLNR permit and HAR §13-5-42 Standard conditions).
- Placement of permanent markers, monuments, mag nails, survey pins, etc. is not allowed without explicit prior approval from CMS (and the State if required). ALL surveyors work must be shared with CMS in digital format (i.e. CAD file as well as PDF) with coordinate info stored in and using a common, transferrable coordinate reference system such as "State Plane Coordinates (NAD83), Hawaii Zone 1".

- Use of real-time GPS during any surveying or equipment operation requires advance written approval from CMS and the Institute for Astronomy. Written approval should be requested at least four weeks prior to the proposed activity.
- Notify CMS in writing when field activity associated with the project is completed.
- The project must be completed within the time frame specified in the proposal and (when applicable) DLNR approval. Projects not completed within this timeframe are not allowed to continue (or commence) without explicit, prior, written approval from DLNR.
- State if a pre-project meeting with CMS is requested before work commences. Such a meeting is highly recommended for any project beyond activities completed by existing observatory staff. These meetings review orientation content, implications of project non-compliance, project-specific concerns regarding resource protection, health and safety, impacts to visitors, etc. They may be held in person or via other means including virtually.
- All required permits and permit requirements shall be submitted to and approved by CMS (i.e. any required Best Management Practices, Communication Plans, contract scope questions, etc.) at least 7 days in advance of project commencement. CMS shall provide a written reply ("Notice to Proceed") explicitly verifying if the project is approved to commence. No project work will commence before this time.

Thank you for your consideration of this project. Please do not hesitate to contact Joy Yoshina at 808-933-0743, or by email to **yoshina9@hawaii.edu** if you have any questions or concerns.

Sincerely,

Gregory Chun
Executive Director, CMS

Enclosures
1. Site Plan application
2. Project proposal
3. Project background and proposed equipment

c: Russell Tsuji, Lands Division

SITE PLAN APPROVAL APPLICATION (SPA)

File No:	
Acceptance Date:	30-Day Expiration Date:
Assigned Planner:	

for DLNR Use

Pursuant to Hawai'i Administrative Rules (HAR) §§13-5-22 through 24, identified land uses beginning with letter (B) require a site plan approval by the department.

PROJECT NAME: SMA Packaged Air Conditioning Unit Replacement

Conservation District Subzone: Resource

Identified Land Use: §13-5-22, P-8, Structures and Land Uses, Existing (B-2) Replacement or reonstruction of existing structures and facilities under a previously approved conservation district use permit where the new structure will be located approximately on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced. *(Identified Land Uses are found in HAR §13-5-22 through §13-5-25)*

Project Address: Smithsonian Submillimeter Array, CDUP HA 2728, 1994.

Tax Map Key(s): 4-4-015:009

Ahupua`a:Ka'ohe mauka District: Hāmākua Island: Hawai'i

Proposed Commencement Date: August 2023

Proposed Completion Date: November 2023 (12 weeks of onsite work, contingent on weather)

Estimated Project Cost: $3,600,000

Total size / area of proposed use: The existing SMA hangar and control building on Maunakea. Work will be confined to the extent of the existing building.

ATTACHMENTS

- ☐ $50 application fee *(ref §13-5-32 through 34)*
- ☒ Location map
- ☒ Site plan
- ☐ Construction, grading, site restoration, landscaping, or fire buffer plans, as applicable

Note: The application fee for State projects is waived pursuant to HAR §13-5-32.

REQUIRED SIGNATURES

Applicant
Name / Agency: University of Hawai'i at Hilo
Street Address: 200 W. Kawili Street
Hilo, Hawai'i 96720
Contact Person & Title: Greg Chun, Executive Director, Center for Maunakea Stewardship, University of Hawai'i at Hilo
Phone: 808.933.0734 Fax: 808.933.3208
Email: cmshilo@hawaii.edu
Interest in Property: Lessee; subject area encumbered by General Lease S-4191, issued by State of Hawaii, Land Division

Signature: _____ **Date:** 5/11/2023
Signed by an authorized officer if for a Corporation, Partnership, Agency or Organization

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Landowner (if different than the applicant)
Name: State of Hawai'i, managed by University of Hawai'i
Title; Agency: Greg Chun, Executive Director, Center for Maunakea Stewardship, University of Hawai'i at Hilo
Mailing Address: 640 N. A'ohoku Place
Hilo, Hawai'i 96720
Phone: 808.933.0734 Fax: 808.933.3208
Email: cmshilo@hawaii.edu

Signature: _____ **Date:** 5/11/2023
For State and public lands, the State of Hawai'i or government entity with management control over the parcel shall sign as landowner.

Agent
Agency:
Contact Person & Title:
Mailing Address:

Phone: Fax:
Email:

Signature: _____ **Date:**

For DLNR Managed Lands

State of Hawai'i
Chairperson, Board of Land and Natural Resources
State of Hawai'i
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809-0621

Signature _____ **Date:**

PROPOSED USE

Please provide a detailed description of the proposed land use. Please also include information regarding secondary improvements including, but not limited to, grading and grubbing, placement of accessory equipment, installation of utilities, roads, driveways, fences, landscaping, etc. Description of project should include dimensions and quantities of materials as applicable.

The existing air conditioning (AC) and ventilation systems support SMA's operations in the SMA building on Maunakea. These systems are approaching 25 years old, near the end of their service lifetimes, and require increasing maintenance and repair. Renovation of the AC and ventilation systems is necessary to support continued SMA operations and to maintain the facility in good working order. As a requirement of its sublease, the SAO must keep the SMA facilities and improvements in good repair. There will be three exterior modifications: The main packaged AC unit will be replaced; three auxiliary AC condensing units will be replaced by two units; and air intake ducts will be modified. The replacement units will be functionally and visually similar. Most of the work will be confined to the interior of the building, except for the replacement packaged AC unit which rests on a concrete slab adjacent to the control building. There will be no change in the footprint, expansion of use, or impacts to identified resources. Further details are offered in the project proposal and design package.

EXISTING CONDITIONS

Please describe existing conditions on the parcel (geology, ecology, cultural and recreational resources, historic resources, structures, landscaping, etc). Provide information regarding existing buildings and structures as well as infrastructure and utilities as applicable.

Geology
Maunakea is considered an active, post-shield phase volcano that rises to nearly 13,800 ft. Climate conditions above 12,500 ft elevation can fluctuate widely, from intense solar radiation to wintry, below-freezing weather. These severe weather patterns have resulted in destructive freeze-thaw cycles and degradation of natural and manmade materials. Local geology at the SMA site consists of volcanic cinder, rock and ash, and deep, well-to-excessively-drained soils formed in volcanic ash and a'a lava.

Ecology
The project site is the existing SMA building on Maunakea, located in the summit area. This landscape is identified as Alpine Stone Desert, an area of low precipitation (8"-12" per year) and no groundwater sources. Groundwater levels are assumed to be at significant depth of more than 3,000 ft below ground surface. Lake Waiau is a perched body of freshwater believed to be supplied by rainwater and other precipitation; due to the topography and distance from the SMA, it is not believed Lake Waiau will receive summit surface run-off and will not be impacted by the proposed land use. Extant flora in or near the site may include native grasses, ferns, lichens, and, less frequently, weeds. Native invertebrate arthropods including the Wekiu bug, Wolf spider and Noctuid caterpillars and moths are occasionally observed at the site. No rare, threatened, or endangered species utilize the site. UH CMS performs routine monitoring for invasive species pursuant to the 2022 Comprehensive Management Plan.

Cultural and Historic Resources
The SMA site is located within the Maunakea Summit Region Historic District, SIHP # 26869, and within view of the Kūkahau'ula Traditional Cultural Property, SIHP #212438. A comprehensive inventory of the site and the UH management area was completed in 2010 (PCSI, Archaeological Inventory Survey of the Mauna Kea Science Reserve). CMS conducts annual historic property monitoring. The nearest identified historic properties are:

- SIHP# 50-10-23-5224 and 50-10-23-5225, interpreted as religious shrines (McCoy and McEldowney, 1982). 5224 is 300-400 ft from SMA antenna Pad 22. 5225 is about 600 ft from Pad 22. Pad 22 is about 200 ft NW of the control building.

- SIHP# 50-10-23-27579 (27579), a USGS marker ~1,705 ft southwest from the parking area.

As the project activity will not extend or enlarge upon the existing footprint and will be limited to the SMA sublease area, no impacts are anticipated to any historic properties including those listed above. Ongoing archaeological monitoring to date has not identified historic properties or sites within the SMA sublease area, and no impacts to any of these resources are anticipated.

Recreational Resources
Visitors occasionally enter the area while visiting the summit and some public access may be briefly limited during the removal of the existing PACU and replacement with the new unit. However, overall impact to public activity and access is expected to be less than minimal with most of the renovation occurring within or on the footprint of the control building.

Built Infrastructure
Existing infrastructure at the site includes the SMA hangar, appurtenant structures including antenna pads and service roads. Utilities include underground power, communication conduits, underground water, and wastewater system. The project is confied to the existing SMA building. There will be no change in footprint or use. The new AC equipment will appear visually similar to existing equipment.

Landscaping

Landscaping consists of native terrain and paved areas. There will be no significant changes to the landscaping or visual aspect.

EVALUATION CRITERIA

The Department or Board will evaluate the merits of a proposed land use based upon the following eight criteria *(ref §13-5-30 (c))*:

1. The purpose of the Conservation District is to conserve, protect, and preserve the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. *(ref §13-5-1)* How is the proposed land use consistent with the purpose of the conservation district?

   Under Section 183C-1, HRS, the purpose of the Conservation District is "...to conserve, protect and preserve the important natural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare." The nearby natural resources will not be affected by the proposed request and this review process ensures the resources are conserved, protected and preserved.

   In addition, SMA is committed to the implementation of the Comprehensive Management Plan ("CMP"), as described in its proposal. The Board of Land and Natural Resources adopted the CPM and subplans as the approved management documents for land use and activities in the UH Management Areas. The CMP and subplans provide management strategies designed to preserve and protect the resources located in the UH Management Areas.

2. How is the proposed use consistent with the objectives of the subzone of the land on which the land use will occur? *(ref §13-5-11 through §13-5-15)*

   This project would occur in the Resource subzone, HAR §13-15-13(a). The stated objective of this subzone is "to develop, with proper management, areas to ensure the sustainable use of the natural resources of those areas." The proposed use anticipates no impacts to local resources (geological, ecological, cultural, historic, or recreational) and complies with these criteria of proper management and sustainable use of natural resources. Further, HAR §13-5-24, R-3 Astronomy Facilities, (D-1), enumerates that astronomy facilities under a management plan (Maunakea CMP) is a permissible use of the Resource subzone. In addition to being an identified use, both the University and the SMA are committed to managing the natural and cultural resources throughout the UH Management Areas in a way that fulfills the objective of the Resource subzone of the Conservation District.

3. Describe how the proposed land use complies with the provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management" *(see 205A objectives on p. 8).*

   The criteria does not apply to the proposed activity. The site is over 20 miles from the coast and not hydrologically connected to shoreline resources. The project will have no effect on any of the coastal resources identified in 205A, including, but not limited to, recreational opportunities, historic resources, scenic and open space, ecosystems, economic uses, beach and coastal dune protection, and/or marine and coastal resources. The proejct is also not a coastal development. Consequently, the project complies with the objectives of HRS 205A.

4. Describe how the proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.

   The proposed activity is constrained to the extent of the existing footprint. There will be no change in overall land use. The area is regularly monitored for native and non-native species, and few if any biologically sustainable flora or fauna populations are present at or near the project site. Further, SMA will comply with the terms and conditions established in the 2022 Comprehensive Management Plan, 2020 Master Plan, as well as any approval conditions.

5. Describe how the proposed land use, including buildings, structures and facilities, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.

   The proposed activity is constrained to the extent of an existing parking area and involves similar and appropriate use, and is appropriate for the scientific capabilities of the parcel. It will not directly affect the scientific, natural resource, or historic properties in the summit region. No long-term changes to the physical conditions and capabilities of the parcel will occur. The activity is wholly within and consistent with the terms and conditions as identified in the 2009 Comprehensive Management Plan

6. Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon.

   The proposed use is constrained to the extent of an existing footprint and the current visual and environmental character of the site will be unchanged

7. If applicable, describe how subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.

   Not applicable; no subdivision of land involved.

8. Describe how the proposed land use will not be materially detrimental to the public health, safety and welfare.

   The proposed activity is constrained to the existing footprint and only involves replacement of existing, aging air conditioning units and the modification of air vents on the side of the control builting. No effects on public health, safety and welfare are anticipated.

CERTIFICATION

I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application and all attachments and exhibits is complete and correct. I understand that the failure to provide any requested information or misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, or for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the Land Board.

I hereby authorize representatives of the Department of Land and Natural Resources to conduct site inspections on my property. Unless arranged otherwise, these site inspections shall take place between the hours of 8:00 a.m. and 4:30 p.m.

_____

Signature of authorized agent(s) or if no agent, signature of applicant

AUTHORIZATION OF AGENT

I hereby authorize_____to act as my representative and to bind me in all matters concerning this application.

_____

_____

Signature of applicant(s)

UH Managed lands – Project Proposal

Observatory Name

Submillimeter Array (SMA)

Smithsonian Astrophysical Observatory (SAO), Smithsonian Institution (SI)

Brief Descriptive Title of Project

Renovation of air conditioning and ventilation systems (PACU) in the SMA building on Maunakea.

Project Description

The Submillimeter Array (SMA) is a radio telescope located near the summit of Maunakea. It is operated by the Smithsonian Astrophysical Observatory (SAO), in partnership with the Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), to support fundamental scientific research. Existing air conditioning (AC) systems support signal processing and other equipment in the SMA building on Maunakea. These AC systems have reached the end of their service lifetimes. Renovation of the AC and ventilation systems is necessary to support continued SMA operations and to maintain the facility in good working order. Although most of this work will be confined to the interior the SMA building, there will be three exterior modifications: the main packaged AC unit will be replaced; three condensing units will be replaced by two units; and air intake ducts will be modified. The replacement units will be functionally and visually similar. There will be no change in the footprint.

Identified Land Use (see HAR § 13-5-22 through 13-5-25)

HAR §13-5-22, P-8, Structures and Land Uses, Existing, (B-2) *Replacement or reconstruction of existing structures and facilities under a previously approved conservation district use permit where the new structure will be located approximately on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced. Reconstruction or replacement of structures and facilities set forth in this chapter, and other requirements as applicable, including but not limited to a county building permit, shoreline setback, and shoreline certification. No enlargement of the structures and facilities is permitted under this section...*

Identify the existing CDUP this proposal alters or affects, if any

HA-2728, 1994. Submillimeter Array (SMA)

Identify **University of Hawai'i exemption** per HAR § 11-200-8(a), if any

This project entails renovation of existing air conditioning and ventilation systems. The project and not change or expand the extent of the SMA building on Maunakea. The new equipment will have similar functional and visual appearance. There will be no change in the footprint. The following exemptions apply to this project:

- HAR §11-200-.1-15(a)(2) *Replacement or reconstruction of existing structures and facilities where the new structures will be located generally on the same site and will have substantially the same purpose, capacity, density, height, and dimensions as the structure replaced.*

- HAR §11-200-8(a), Exemption Class #2 *Replacement or reconstruction of existing structures and facilities where the new structure will be located generally on the same site and will have substantially the same purpose, capacity, density, height and dimensions as the structure replaced.*
    1. *Replacement or reconstruction of:*
    m. *Air conditioning and ventilation systems.*

Tax Map Key(s)

4-4-015:009 – Mauna Kea Science Reserve (por.)

Proposed Commencement Date

March 1, 2023

Proposed Completion Date

September 30, 2024.

Note: The proposed completion date includes an allowance for the preconstruction and postconstruction activities. Onsite construction work is an estimated 12 weeks, contingent on weather.

Estimated Project Cost

$ 3,600,000

Total size / area of proposed use

The existing SMA hangar and control building on Maunakea. The work will be confined to the extent of the existing building.

Project Purpose and Need

The existing air conditioning (AC) and ventilation systems support operation of signal processing and other equipment in the SMA building on Maunakea. The existing systems are approaching 25 years old, near the end of their service lifetimes, and require increasing maintenance and repair. Renovation of the AC and ventilation systems is necessary to support continued SMA operations and to maintain the facility in good working order. As a requirement of its sublease, the SAO must keep the SMA facilities and improvements in good repair. Most of the work will be confined to the interior of the building. There will be three exterior modifications: the main packaged AC unit will be replaced; three auxiliary AC condensing units will be replaced by two units; and air intake ducts will be modified. The replacement units will be functionally and visually similar. There will be no change in the footprint. The design package provides more details (Attachment A).

Has professional peer-review occurred

Yes. The plans were prepared by a registered engineer and comply with local codes. The plans were reviewed and approved by Smithsonian's Facilities Department.

Are there any related ongoing, pending, or planned projects associated with this submission?

No.

Existing Conditions at Project Site(s)

Geology, Climate, & Hazards

Maunakea is considered an active, post-shield phase volcano (USGS) rising to nearly 13,800 ft. Climate conditions at altitudes of 12,500 ft and above are often below freezing and when combined with humidity above 100% or precipitation, on the surfaces resulting in natural cinder movement from geophysical processes. The project site is the existing SMA building on Maunakea.

Flora, Fauna, Ecology, Water Resources

None. The project site is the existing SMA building on Maunakea. UH CMS performs routine monitoring for invasive species.

Cultural Resources

The site is part of the Maunakea Summit Region Historic District, SIHP # 26869, and within view of the Kūkahau'ula Traditional Cultural Property, SIHP #212438. A comprehensive inventory of the site, "Archaeological Inventory Survey of the Mauna Kea Science Reserve," was completed in 2010. CMS conducts annual historic property monitoring. The nearest historic properties include

- USGS marker on Pu'u Poliahu, approximately 1,890 ft east of site.
- SIHP #50-10-23-5224 and 50-10-23-5225, interpreted as religious shrines (McCoy and McEldowney, 1982). 5224 is 300–400 ft from proposed SMA antenna pad 22 and 5525 is about 600 ft from proposed pad 22. Pad 22 is about 200 ft NW of the SMA building.

Recreation

Not applicable. The SMA building is not open to the public. The renovations will have no effect on public use of Maunakea.

Built Infrastructure

The project is confined to the existing the SMA building on Maunakea. There will be no change in the footprint. The new AC equipment will have similar visual appearance to the existing equipment.

Landscaping & Visual Conditions

The new AC equipment will look similar in appearance to the existing equipment. There will be no change in the footprint. There will be no significant changes to the landscaping or visual aspect.

Description of the Project

Location

The project is confined to the existing the SMA building on Maunakea.

Description of the process of completing the project

The existing AC equipment will be removed and new equipment installed in the same locations. The design is detailed in the attached design drawings (Attachment A) and specifications (Attachment B).

Sequence of Construction

- Pre-construction activities include approval of contractor's Work Plan and Schedule, and verification of compliance with UH Center for Maunakea Stewardship requirements.
- Prior to accessing the site, all equipment will be cleaned and inspected for invasive species control.
- Site protection preparation: place pedestrian safety barriers at perimeter of site; place continuous silt barriers at edge of work area.
- Transport AC and ventilation equipment to the SMA.
- Remove existing AC equipment with a crane.
- Place new AC equipment on existing foundation with a crane.
- Connect and commission new AC equipment.
- Remove remaining equipment from site.
- Clean site of any debris and remove silt barriers.

Who will do the work?

The work will be performed by an experienced, licensed, and bonded local contractor supervised by SMA staff. The estimated size of the construction crew would be 6-12 workers.

Equipment & Transportation

Proposed Equipment (photos of typical examples in Attachment C):

- Crane truck
- Tractor and trailer for equipment delivery.
- Assorted 4wd pickup trucks for transporting workers; tools; and other items required to perform the work.

Measures to protect the environment and/or mitigate impacts

Impacts

The existing AC equipment will be removed and replaced. The new equipment will have the same extent and a similar appearance as the existing equipment. There will be no long term change in impact.

During the work, safety barriers for pedestrians will be erected at the perimeter of the work site.

Members of the public, including tour operators, occasionally use the SMA parking area and service roads. Other MKOs do not use the SMA service roads. During equipment deliveries, there may be temporary impacts on traffic passing through the parking area to the SMA service roads. SMA shall minimize the duration of such traffic disruptions. A safe, unimpeded route through the parking area will be provided for cultural practitioners. SMA shall inform CMS in advance of the expected time and duration of any disruptions.

Conditions of Approval

- Best Management Practices will be employed, including the placement of silt barriers between the active construction area and adjacent land to capture any construction runoff.
- The work area will be clearly delineated to warn the public and others of any hazards.
- SMA and contractor vehicles will be parked in the SMA parking area.
- All project participants must attend a Maunakea Orientation prior to participating in field work.
- Notify CMS in writing at least 5 days prior, and no more than 14 days prior, to beginning field work on UH managed lands (Halepōhaku, Road Corridor, Maunakea Science Reserve, or Astronomy Precinct). Email to CMS at cmshilo@hawaii.edu is acceptable.
- Use of 4-wheel drive vehicles, with 4-wheel drive engaged, when traveling above Halepōhaku is required.
- Allow Maunakea Rangers to visit and monitor activities.
- Comply with all actions and measures described in the proposal, including (community) benefits, CMP compliance list, and mitigation measures.
- Ensure that loose tools or equipment are not left unattended and are properly stored at the end of each day.
- In preparation for high wind conditions protocols must include measures to ensure debris and equipment are not blown from the job site. Projects occurring in the summit region must verify that temporary and permanent infrastructure can sustain 120 mph winds.
- All improvements shall be designed and installed to withstand the severe weather conditions on the mountain.
- Removal and proper disposal of all waste material. All perishable items including food, food wrappers and containers, etc. shall be removed from the site at the end of each day and properly disposed.
- Use of lighting from sunset to sunrise is prohibited unless otherwise stated in the project proposal and approved.
- Employ invasive species prevention best practices, including inspections of materials by a DLNR-approved biologist, as identified in the *Maunakea Invasive Species Management Plan* prior to entering UH managed lands. Every inspection request submitted to CMS shall include correspondence with the observatory representative(s) identified in the initial notification. Inspections shall not occur on UH managed lands on Maunakea, at State or County parks, along public roadsides, or on Department of Hawaiian Home Lands.
- Motorized equipment, when stationary, must have a drain-pan in place suitable for catching fuel or fluid leaks. To allow for expansion with reduced atmospheric pressure, fuel tanks should not be more than ¾ full prior to transport to the summit (unless used as the fuel source for transport to the summit).
- When closed to the public yet open to Observatories, vehicle access to the Maunakea Summit Access Road above Halepōhaku Mid-Level Support Facility area is limited to expressly marked Observatory, MKSS, CMS, Federal, or State of Hawai'i vehicles when operated by their approved employees or representatives on official business and possessing requisite orientation, training, safety, and self-rescue supplies.

- Large, heavy, non-4-wheel drive, or oversized loads must submit notification to the Maunakea Road Conditions listserv at least one-day prior to delivery. Loads requiring an escort on public roadways must have this escort accompany them to the **final** destination. Projects choosing not to do so must obtain approval from the Maunakea Rangers before arriving at Halepōhaku. Projects failing to submit notification or arrange for escort to the summit may be denied entry to Halepōhaku or above.
- Nēnē (*Branta sandvicensis*) may be present. If a nēnē appears within 100 feet (30.5 meters) of ongoing work, all activity shall be temporarily suspended until the animal leaves the area of its own accord. Feeding of nēnē is prohibited.
- The project approval/permit may not be transferred or assigned. A copy of the approval/permit must be present on-site and available for review at all times while working on University-managed lands.
- No use of mechanized equipment is allowed unless authorized by this permit.
- Identify and comply with other permit requirements, such as County of Hawaii building permits or Department of Land & Natural Resources (see both any applicable DLNR permit and HAR §13-5-42 Standard conditions).
- Placement of permanent markers, monuments, mag nails, survey pins, etc. is not allowed without explicit prior approval from CMS (and the State if required) for this purpose. ALL surveyors work must be shared with CMS in digital format (i.e. CAD file as well as PDF) with coordinate info stored in and using a common, transferrable coordinate reference system such as "State Plane Coordinates (NAD83), Hawaii Zone 1".
- Use of real-time GPS during any surveying or equipment operation requires advance written approval from CMS and the Institute for Astronomy. Written approval should be requested at least four weeks prior to the proposed activity.
- Notify CMS in writing when field activity associated with the project is completed.
- The project must be completed within the time frame specified in the proposal and (when applicable) DLNR approval. Projects not completed within this timeframe are not allowed to continue (or commence) without explicit, prior, written approval from CMS.
- State if a pre-project meeting with UH CMS is requested before work commences. Such a meeting is highly recommended for any project beyond activities completed by existing observatory staff. These meetings review orientation content, implications of project non-compliance, project-specific concerns regarding resource protection, health and safety, impacts to visitors, etc. They may be held in person or via other means including virtually.
- All required permits and permit requirements shall be submitted to and approved by UH CMS (i.e. any required Best Management Practices, Communication Plans, contract scope questions, etc.) at least 7 days in advance of project commencement. UH CMS shall provide a written reply ("Notice to Proceed") explicitly verifying if the project is approved to commence. No project work will commence before this time.

Compliance with Lease, Sublease, or Comprehensive Management Plan (CMP)

As a requirement of its sublease, the SAO must keep the SMA facilities and improvements in good repair.

During the proposed work, SAO/SMA will comply with applicable UH policies and procedures.

An attached spreadsheet indicates the applicable CMP matrix items (Attachment D).

Identify other required or associated permits

None.

Five Year Outlook

Replacement of the main packaged AC unit (PACU) was originally included in the SMA Five Year Outlook for 2017-2021 and each subsequent annual Outlook.

Community Benefits

Benefits to other Maunakea entities and/or global astronomy community

Renovation of air conditioning systems is necessary for continued operation of the SMA, which is used by astronomers worldwide.

Benefits to the Hawaii Island community

Renovation of air conditioning systems will likely be done by local contractors.

Will data, publications, or other products be free and available to the public?

Not applicable to renovation of air conditioning systems.
Astronomical data obtained with the SMA are released freely after a three year proprietary period for the original investigators. Ancillary data, i. e., weather measurements, are released immediately.

Attachments:

A. Drawings:
   Extracted pages from 1883701 SAO SMA - PACU Replacement Final Dwgs
   1883701 SAO SMA - PACU Replacement Final Dwgs

B. Specifications:
   1883701 SAO SMA - PACU Replacement Final Specs

C. Proposed Equipment

D. CMP matrix (spreadsheet)

DLNR Evaluation Criteria

After approval by the Maunakea Management Board, the Department of Land & Natural Resources or Board of Land & Natural Resources will evaluate the merits and approve the project based on the following eight criteria (§13-5-30). See http://dlnr.hawaii.gov/occl/files/2013/08/13-5-2013.pdf

1. The purpose of the Conservation District is to conserve, protect, and preserve the important natural and cultural resources of the State through appropriate management and use to promote their long-term sustainability and the public health, safety, and welfare. (ref §13-5-1) How is the proposed land use consistent with the purpose of the conservation district?

The Board of Land and Natural Resources adopted the Comprehensive Management Plan and subplans (Cultural Resources Management Plan, Natural Resources Management Plan, Public Access Plan, and Decommissioning Plan) as the approved management documents for land use and activities in the UH Management Areas. The CMP and subplans provide management strategies designed to preserve and protect the resources located in the UH Management Areas, and the University is committed to their implementation using the resources that are available to it.
SMA is also committed to implementation of the CMP, as described in its proposal. The reconstruction of the existing parking area pavement will promote public safety by mitigating a hazard presented by degraded pavement in an area used by the public.

2. How is the proposed use consistent with the objectives of the Resource subzone of the land on which the land use will occur? (§13-5-13 The objective of this subzone is to ensure, with proper management, the sustainable use of the natural resources of those areas. This subzone shall encompass: lands necessary for providing future parkland and lands presently used for national, state, county, or private parks. Land suitable for outdoor recreational uses such as hunting, fishing, hiking, camping, and picnicking. [And other lands not applicable to Maunakea.])

The objective of the Resource subzone "...is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas." All of the uses that are proposed in this application are within the Conservation District Resource subzone. Astronomy facilities are an identified use in the Resource subzone (see HAR §13-5-24(c)) under an approved management plan (Maunakea CMP). In addition to being an identified use, both the University and the SMA are committed to managing the natural and cultural resources throughout the UH Management Areas in a way that fulfills the objective of the Resource subzone of the Conservation District.

3. Describe how the proposed land use complies with the provisions and guidelines contained in chapter 205A, HRS, entitled "Coastal Zone Management".

This criterion does not apply to the proposed activity. The site of proposed use more than 15 miles from the nearest coast and is not hydrologically connected to shoreline resources.

4. Describe how the proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.

The proposed activity is confined to the extent of an existing building. There will be no change in overall land use. The area is regularly monitored for native and non-native species, and few if any biologically sustainable flora or fauna populations are present at or near the project site. SMA will comply with the terms and conditions established in the 2009 Comprehensive Management Plan, as well as conditions imposed by the Kahu Kū Mauna Council and the Maunakea Management Board.

5. Describe how the proposed land use, including buildings, structures and facilities, is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.

The proposed activity is confined to the extent of an existing building. It will not directly affect the scientific, natural resource, or historic properties in the summit region. No long-term changes to the physical conditions and capabilities of the parcel will occur. The activity is wholly within and consistent with the terms and conditions as identified in the 2009 Comprehensive Management Plan.

6. Describe how the existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon.

The proposed use is confined to the extent of an existing building. The current visual and environmental character of the site will be unchanged.

7. If applicable, describe how subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.

Not applicable as no subdivision is involved.

8. Describe how the proposed land use will not be materially detrimental to the public health, safety and welfare.

The proposed activity is confined to the extent of an existing building. The renovation of the air conditioning and ventilation systems will not adversely affect the public health, safety, or welfare.

MAUNA KEA COMPREHENSIVE MANAGEMENT PLAN

COMPONENT PLAN: UNDERSTANDING AND PROTECTING MAUNA KEA'S RESOURCES

	NATIVE HAWAIIAN CULTURAL RESOURCES	Subplans	Comments
Management			
CR-1	Kahu Kū Mauna shall work with families with lineal and historical connections to Mauna Kea, cultural practitioners, and other Native Hawaiian groups, including the Mauna Kea Management Board's Hawaiian Culture Committee, toward the development of appropriate procedures and protocols regarding cultural issues.	NRMP 5.1.1 CRMP 4.2.1 PAP 2.3, 6.1, 6.3, 6.8	*Not applicable*
CR-2	Support application for designation of the summit region of Mauna Kea as a Traditional Cultural Property, per the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq. in consultation with the larger community.	CRMP 2.4.2.1	*Not applicable*
CR-3	Conduct educational efforts to generate public awareness about the importance of preserving the cultural landscape.	NRMP 4.4.2 CRMP 4.3.3 PAP 4.2, 5.2, 6.1	*Not applicable*
Cultural Practices			
CR-4	Establish a process for ongoing collection of information on traditional, contemporary, and customary cultural practices.	CRMP 4.2.1.1	*Not applicable*
CR-5	Develop and adopt guidelines for the culturally appropriate placement and removal of offerings	CRMP 4.2.1.3 PAP 6.3. 6.8	*Not applicable*
CR-6	Develop and adopt guidelines for the visitation and use of ancient shrines.	CRMP 4.2.1.5 PAP 2.7.2, 6.3	*Not applicable*
CR-7	Kahu Kū Mauna shall take the lead in determining the appropriateness of constructing new Hawaiian cultural features.	CRMP 4.2.1.6	*Not applicable*
CR-8	Develop and adopt a management policy for the UH Management Areas on the scattering of cremated human remains.	CRMP 4.2.1.7	*Not applicable*
CR-9	A management policy for the culturally appropriateness of building ahu or "stacking of rocks" will need to be developed by Kahu Kū Mauna who may consider similar policies adopted by Hawai'i Volcanoes National Park.	CRMP 4.2.1.8 PAP 6.8	*Not applicable*
	NATIVE HAWAIIAN CULTURAL RESOURCES	**Subplans**	**Comments**
Historic Properties			
CR-10	Develop and implement a historic property monitoring program to systematically monitor the condition of the historic district and all historic properties, including cultural sites and burials.	CRMP 4.3.1 PAP 5.2	*Not applicable*
CR-11	Complete an archaeological survey of the portions of the Summit Access Road corridor that are under UH management.	CRMP 4.3.7	*Not applicable*
CR-12	Consult with Kahu Kū Mauna about establishing buffers (preservation zones) around known historic sites in the Astronomy Precinct, to protect them from potential future development.	CRMP 4.2.7	*Not applicable*
CR-13	Develop and implement a burial treatment plan for the UH Management Areas in consultation with Kahu Kū Mauna Council, MKMB's Hawaiian Culture Committee, the Hawai'i Island Burial Council, recognized lineal or cultural descendants, and SHPD.	CRMP 4.3.2, 4.3.7	*Not applicable*
CR-14	Immediately report any disturbance of a shrine or burial site to the rangers, DOCARE, Kahu Kū Mauna Council, and SHPD.	CRMP 4.3.1.6 PAP 2.5.1	*Not applicable*

	NATURAL RESOURCES	Subplans	Comments
Threat Prevention and Control			
NR-1	Limit threats to natural resources through management of permitted activities and uses.	NRMP 4.2.3	*Not applicable*
NR-2	Limit damage caused by invasive species through creation of an invasive species prevention and control program.	NRMP 4.2.3.7, 4.3 PAP 2.7.1, 6.3	*SMA will comply with applicable OMKM policies and procedures.*
NR-3	Maintain native plant and animal populations and biological diversity.	NRMP 4.2.3.8	*Not applicable*
NR-4	Minimize barriers to species migration, to help maintain populations and protect ecosystem processes and development.	NRMP 4.2.3.11	*Not applicable*
NR-5	Manage ecosystems to allow for response to climate change.	NRMP 4.2.3.11	*Not applicable*
NR-6	Reduce threats to natural resources by educating stakeholders and the public about Mauna Kea's unique natural resources.	NRMP 4.4 PAP 2.7.1, 4.2 5.2, 6.1, 6.3, 6.6	*Not applicable*
Ecosystem Protection, Enhancement & Restoration			
NR-7	Delineate areas of high native diversity, unique communities, or unique geological features within the Astronomy Precinct and at Hale Pōhaku and consider protection from development.	NRMP 4.1, 4.2.3.1	*Not applicable*
NR-8	Consider fencing areas of high native biodiversity or populations of endangered species to keep out feral ungulates (applies to areas below 12,800 ft elevation).	NRMP 4.2.3.7, 4.3	*Not applicable*
NR-9	Increase native plant density and diversity through an outplanting program.	NRMP 4.3, 4.4	*Not applicable*
NR-10	Incorporate mitigation plans into project planning and conduct mitigation following new development.	NRMP 4.3	*Not applicable*
NR-11	Conduct habitat rehabilitation projects following unplanned disturbances.	NRMP 4.3	*Not applicable*
NR-12	Create restoration plans and conduct habitat restoration activities, as needed.	NRMP 4.3	*Not applicable*
Program Management			
NR-13	Increase communication, networking, and collaborative opportunities, to support management and protection of natural resources.	NRMP 4.1.3.3, 4.3, 5.1.3 PAP 4.2, 4.5	*Not applicable*
NR-14	Use the principles of adaptive management when developing programs and methodologies. Review programs annually and revise any component plans every five years, based on the results of the program review.	NRMP 5.2 PAP 5.1, 5.2, 6.4, 6.7, 7	*Not applicable*
Inventory, Monitoring and Research			
NR-15	Conduct baseline inventories of high-priority resources, as outlined in an inventory, monitoring, and research plan.	NRMP 4.1	*Not applicable*
NR-16	Conduct regular long-term monitoring, as outlined in an inventory, monitoring, and research plan.	NRMP 4.1 PAP 6.4	*Not applicable*
NR-17	Conduct research to fill knowledge gaps that cannot be addressed through inventory and monitoring.	NRMP 4.1.2.3	*Not applicable*
NR-18	Develop geo-spatial database of all known natural resources and their locations in the UH Management Areas that can serve as baseline documentation against change and provide information essential for decision-making.	NRMP 4.1, 4.5	*Not applicable*

EDUCATION AND OUTREACH		Subplans	Comments
Program Development			
EO-1	Develop and implement education and outreach program	NRMP 4.1 CRMP 4.3.3 PAP 2.7.1, 4.2, 5.2, 6.1, 6.3, 6.6	*Not applicable*
Education			
EO-2	Require orientation of users, with periodic updates and a certificate of completion, including but not limited to visitors, employees, observatory staff, contractors, and commercial and recreational users.	NRMP 4.4.2 PAP 6.1, 6.6	*SMA will comply with applicable UH policies and procedures.*
EO-3	Continue to develop, update, and distribute materials explaining important aspects of Mauna Kea.	CRMP 4.3.3 PAP 6.1	*Not applicable*
EO-4	Develop and implement a signage plan to improve signage throughout the UH Management Areas (interpretive, safety, rules and regulations).	NRMP 4.4.2 PAP 4.2, 5.2, 6.2	*Not applicable*
EO-5	Develop interpretive features such as self-guided cultural walks and volunteer-maintained native plant gardens.	NRMP 4.3, 4.4.2 CRMP 4.3.3 PAP 6.2	*Not applicable*
EO-6	Engage in outreach and partnerships with schools, by collaborating with local experts, teachers, and university researchers, and by working with the ʻImiloa Astronomy Center of Hawaiʻi.	NRMP 4.4.2 PAP 5.2, 6.1	*Not applicable*
Outreach			
EO-7	Continue and increase opportunities for community members to provide input to cultural and natural resources management activities on Mauna Kea, to ensure systematic input regarding planning, management, and operational decisions that affect natural resources, sacred materials or places, or other ethnographic resources with which they are associated.	NRMP 4.4.2 CRMP 5.3 PAP 5.2, 6.3, 6.8	*Not applicable*
EO-8	Provide opportunities for community members to participate in stewardship activities.	NRMP 4.4.2	*Not applicable*
ASTRONOMICAL RESOURCES		**Subplans**	**Comments**
Protection of Astronomical Resources			
AR-1	Operate the UH Management Areas to prohibit activities resulting in negative impacts to astronomical resources.	PAP 5.1	*SMA will comply with applicable UH policies and procedures.*
AR-2	Prevent light pollution, radio frequency interference (RFI) and dust.	NRMP 4.2.3.2	*SMA will comply with applicable UH policies and procedures.*

COMPONENT PLAN: MANAGING ACCESS, ACTIVITIES AND USES			
ACTIVITIES AND USES		**Subplans**	**Comments**
General Management			
ACT-1	Continue and update managed access policy of 1995 Management Plan.	NRMP 4.2, 4.4 PAP 2.5.2, 5.2, 7	*Not applicable*
ACT-2	Develop parking and visitor traffic plan.	NRMP 3.1.1.2 PAP 5.2, 6.4, 6.6, 6.7	*Not applicable*
ACT-3	Maintain a presence of interpretive and enforcement personnel on the mountain at all times to educate users, deter violations, and encourage adherence to restrictions.	NRMP 5.1.2 CRMP 4.1.1 PAP 4.2, 4.4, 4.5, 4.6, 5.2, 6.1, 6.2, 6.5, 6.6, 6.7	*Not applicable*
ACT-4	Develop and enforce a policy that maintains current prohibitions on off-road vehicle use in the UH Management Areas and that strengthens measures to prevent or deter vehicles from leaving established roads and designated parking areas.	NRMP 4.2.3.1 CRMP 4.1.2 PAP 2.5.1, 2.5.2, 2.6.3, 5.2, 6.3, 6.5	*SMA will comply with applicable UH policies and procedures.*
Recreational			
ACT-5	Implement policies to reduce impacts of recreational hiking	NRMP 4.2.3.1 CRMP 4.2.3.4 PAP 3.3.7, 5.2, 6.2, 6.3	*Not applicable*
ACT-6	Define and maintain areas where snow-related activities can occur and confine activities to slopes that have a protective layer of snow.	NRMP 4.2.3.1 CRMP 4.2.3.2 PAP 3.3.5, 5.2, 6.1, 6.3, 6.4	*Not applicable*
ACT-7	Confine University or other sponsored tours and star-gazing activities to previously disturbed ground surfaces and established parking areas.	NRMP 6.2.3 CRMP 4.2.3.1 PAP 2.5.3, 2.6.2, 3.3.3, 5.2	*Not applicable.*
ACT-8	Coordinate with DLNR in the development of a policy regarding hunting in the UH Management Areas.	NRMP 3.1.3.5 3.2.12 CRMP 4.2.3.3 PAP 2.5.1, 3.3.6, 5.2	*Not applicable*
Commercial			
ACT-9	Maintain commercial tour permitting process; evaluate and issue permits annually.	NRMP 3.1.4 PAP 2.5.3, 2.5.4, 3.3.3, 4.3, 5.2, 6.1, 6.7	*Not applicable*
ACT-10	Ensure OMKM input on permits for filming activities	NRMP 3.1.4.2 PAP 2.5.3, 3.3.3, 4.3, 6.1, 6.7	*Not applicable*
ACT-11	Seek statutory authority for the University to regulate commercial activities in the UH Management Areas.	NRMP 1.4.2.3	*Not applicable*
Scientific Research			
ACT-12	Ensure input by OMKM, MKMB, and Kahu Kū Mauna on all scientific research permits and establish system of reporting results of research to OMKM.	NRMP 4.2.3.1, 4.2.3.7, 4.2.3.9 CRMP 4.2.6	*Not applicable*
PERMITTING AND ENFORCEMENT		**Subplans**	**Comments**
Laws and Regulations			
P-1	Comply with all applicable federal, state, and local laws, regulations, and permit conditions related to activities in the UH Management Areas.	NRMP 1.4.3 PAP 2.4, 2.5, 2.5.1, 2.5.2, 2.5.3, 5.1	*SMA will comply with applicable UH policies and procedures.*
P-2	Strengthen CMP implementation by recommending to the BLNR that the CMP conditions be included in any Conservation District Use Permit or other permit.	NRMP 1.4.3.2	*Not applicable*

P-3	Obtain statutory rule-making authority from the legislature, authorizing the University of Hawai'i to adopt administrative rules pursuant to Chapter 91 to implement and enforce the management actions.	NRMP 1.4.3.2	*Not applicable*
P-4	Educate management staff and users of the mountain about all applicable rules and permit requirements.	NRMP 4.4 PAP 4.2, 5.2, 6.1, 6.2, 6.5	*Not applicable*
Enforcement			
P-5	Continue coordinating with other agencies on enforcement needs.	NRMP 5.1 PAP 4, 6.5	*Not applicable*
P-6	Obtain legal authority for establishing, and then establish, a law enforcement presence on the mountain that can enforce rules for the UH Management Areas on Mauna Kea.	NRMP 1.4.2.3, 3.1.3.2, 5.1 PAP 4.4, 4.5, 4.6, 5.2, 6.5, 6.6	*Not applicable*
P-7	Develop and implement protocol for oversight and compliance with Conservation District Use Permits.	NRMP 1.4.2.3	*Not applicable*
P-8	Enforce conditions contained in commercial and Special Use permits.	NRMP 3.1.4 PAP 2.5.3, 3.3.3, 4.3, 4.5, 4.6, 6.5	*Not applicable*

COMPONENT PLAN: MANAGING THE BUILT ENVIRONMENT			
INFRASTRUCTURE AND MAINTENANCE		**Subplans**	**Comments**
Routine Maintenance			
IM-1	Develop and implement an OMMP.		*Not applicable*
IM-2	Reduce impacts from operations and maintenance activities by educating personnel about Mauna Kea's unique resources.	NRMP 4.4	*SMA will comply with applicable UH policies and procedures.*
IM-3	Conduct historic preservation review for maintenance activities that will have an adverse effect on historic properties.	CRMP 4.1.3	*Not applicable*
IM-4	Evaluate need for and feasibility of a vehicle wash station near Hale Pōhaku, and requiring that vehicles be cleaned.	NRMP 4.2.3.7	*Not applicable*
IM-5	Develop and implement a Debris Removal, Monitoring and Prevention Plan.	NRMP 4.2.3.5 CRMP 4.1.4, 4.3.4	*Not applicable*
IM-6	Develop and implement an erosion inventory and assessment plan.	NRMP 3.2.4, 4.1.4.2, 4.2.3.4 PAP 2.6.3, 6.3, 6.4	*Not applicable*
IM-7	Prepare a plan, in collaboration with the Department of Defense, to remove military wreckage from a remote area of the UH Management Areas, while ensuring protection of natural and cultural resources.	CRMP 4.3.4.1	*Not applicable*
Infrastructure			
IM-8	Assess feasibility of paving the Summit Access Road.	NRMP 4.2.3	*Not applicable*
IM-9	Evaluate need for additional parking lots and vehicle pullouts and install if necessary.	NRMP 3.1.1.2.3 PAP 5.2, 5.4, 6.7	*Not applicable*
IM-10	Evaluate need for additional public restroom facilities in the summit region and at Hale Pōhaku, and install close-contained zero waste systems if necessary.	NRMP 3.1.3.1, 3.2.3, 4.2.3.3 PAP 5.2, 6.4, 6.6, 6.7, 6.8	*Not applicable*
Sustainable Technologies			
IM-11	Encourage existing facilities and new development to incorporate sustainable technologies, energy efficient technologies, and LEED standards, whenever possible, into facility design and operations.		*Not applicable*
IM-12	Conduct energy audits to identify energy use and system inefficiencies, and develop solutions to reduce energy usage.	NRMP 4.2.3.3	*Not applicable*
IM-13	Conduct feasibility assessment, in consultation with Hawaii Electric Light Company, on developing locally-based alternative energy sources.	NRMP 3.1.1.2.3	*Not applicable*
IM-14	Encourage observatories to investigate options to reduce the use of hazardous materials in telescope operations.		*Not applicable*

CONSTRUCTION GUIDELINES		Subplans	Comments
General Requirements			
C-1	Require an independent construction monitor who has oversight and authority to insure that all aspects of ground based work comply with protocols and permit requirements.	NRMP 3.2, 4.2	*SMA will comply with applicable UH policies and procedures.*
Best Management Practices			
C-2	Require use of Best Management Practices Plan for Construction Practices.	NRMP 4.2.3	*SMA will comply with applicable UH policies and procedures.*
C-3	Develop, prior to construction, a rock movement plan.	NRMP 4.2.3.1	*SMA will comply with applicable UH policies and procedures.*
C-4	Require contractors to provide information from construction activities to OMKM for input into OMKM information databases.		*SMA will comply with applicable UH policies and procedures.*
C-5	Require on-site monitors (e.g., archaeologist, cultural resources specialist, entomologist) during construction, as determined by the appropriate agency.	CRMP 4.2.7	*SMA will comply with applicable UH policies and procedures.*
C-6	Conduct required archaeological monitoring during construction projects per SHPD approved plan.	CRMP 4.2.7	*SMA will comply with applicable UH policies and procedures.*
C-7	Education regarding historical and cultural significance	NRMP 4.4	*SMA will comply with applicable UH policies and procedures.*
C-8	Education regarding environment, ecology and natural resources	NRMP 4.4	*SMA will comply with applicable UH policies and procedures.*
C-9	Inspection of construction materials	NRMP 4.2.3.7	*SMA will comply with applicable UH policies and procedures.*

SITE RECYCLING, DECOMMISSIONING, DEMOLITION AND RESTORATION		Subplans	Comments
Site Recycling, Decommissioning, Demolition, and Restoration			
SR-1	Require observatories to develop plans to recycle or demolish facilities once their useful life has ended, in accordance with their sublease requirements, identifying all proposed actions.	NRMP 4.3.3.4.1	*Not applicable*
SR-2	Require observatories to develop a restoration plan in association with decommissioning, to include an environmental cost-benefit analysis and a cultural assessment.	NRMP 4.3.3.4.1	*Not applicable*
SR-3	Require any future observatories to consider site restoration during project planning and include provisions in subleases for funding of full restoration.	NRMP 4.3.3.4.1	*Not applicable*

CONSIDERING OF FUTURE LAND USE		Subplans	Comments
Facility Planning Guidelines			
FLU-1	Follow design guidelines presented in the 2000 Master Plan.	NRMP 5.1.1	*Not applicable*
FLU-2	Develop a map with land-use zones in the Astronomy Precinct based on updated inventories of cultural and natural resources, to delineate areas where future land use will not be allowed and areas where future land use will be allowed but will require compliance with prerequisite studies or analysis prior to approval of Conservation District Use Permit.	NRMP 4.3.3.1	*Not applicable*
FLU-3	Require cataloguing of initial site conditions for use when conducting site restoration.		*Not applicable*
FLU-4	Require project specific visual rendering of both pre- and post-project settings to facilitate analysis of potential impacts to view planes.	NRMP 4.1.4.11	*Not applicable*
FLU-5	Require an airflow analysis on the design of proposed structures to assess potential impacts to aeolian ecosystems.	NRMP 4.1.4.4	*Not applicable*
FLU-6	Incorporate habitat mitigation plans into project planning process.	NRMP 4.3.3.3	*Not applicable*
FLU-7	Require use of close-contained zero-discharge waste systems for any future development in the summit region, from portable toilets to observatory restrooms, if feasible.	NRMP 3.1.1.2.6	*Not applicable*

COMPONENT PLAN: MANAGING OPERATIONS			
	OPERATIONS AND IMPLEMENTATION	**Subplans**	**Comments**
OI-1	Maintain OMKM, MKMB, and Kahu Kū Mauna in current roles, with OMKM providing local management of the UH Management Areas, and MKSS providing operational and maintenance services.		*Not applicable*
OI-2	Develop training plan for staff and volunteers.	NRMP 5.1 CRMP 5.2 PAP 5.1, 5.2, 6.1, 6.4, 6.5	*SMA will comply with applicable UH policies and procedures.*
OI-3	Maintain and expand regular interaction and dialogue with stakeholders, community members, surrounding landowners, and overseeing agencies to provide a coordinated approach to resource management.	NRMP 5.1 PAP 5.1	*Not applicable*
OI-4	Establish grievance procedures for OMKM, to address issues as they arise.	PAP 6.6	*Not applicable*
OI-5	Update and implement emergency response plan.	CRMP 4.1.6, 4.3.5 PAP 6.1, 6.4, 6.5, 6.7	*Not applicable*
	MONITORING, EVAULATION AND UPDATES	**Subplans**	
MEU-1	Establish a reporting system to ensure that the MKMB, DLNR, and the public are informed of results of management activities in a timely manner.	NRMP 4.1.3.3 PAP 6.4, 6.6, 7	*Not applicable*
MEU-2	Conduct regular updates of the CMP that reflect outcomes of the evaluation process, and that incorporate new information about resources.	NRMP 5.2 CRMP 5.5 PAP 7	*Not applicable*
MEU-3	Revise and update planning documents, including the master plan, leases, and subleases, so that they will clearly assign roles and responsibilities for managing Mauna Kea and reflect stewardship matters resolved with DLNR.	PAP 7	*Not applicable*

Submillimeter Array Replace Packaged Air Conditioning Unit (PACU)

2021 May 17

Simon Radford, SMA

Three related projects

- Replace packaged air conditioning unit (PACU)
  - Existing unit at end of life (c. 1998)
- Renovate air conditioners
  - Existing units at end of life; rationalize and replace
- Fresh air intake duct or extended exhaust stack relocation
  - Mitigate ingress of exhaust fumes from backup (emergency) generator

Design objectives

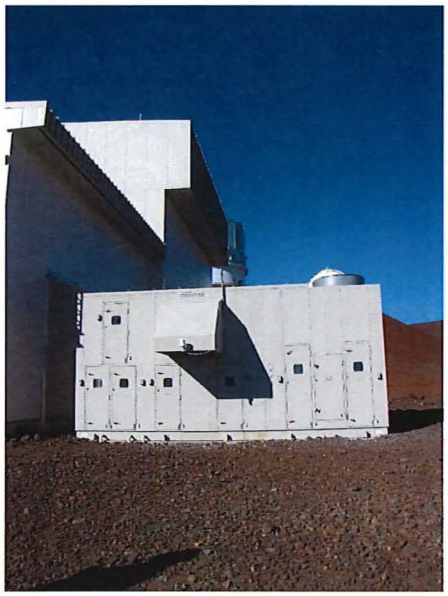
- Avoid changes to ground contact
- Avoid changes to facility appearance

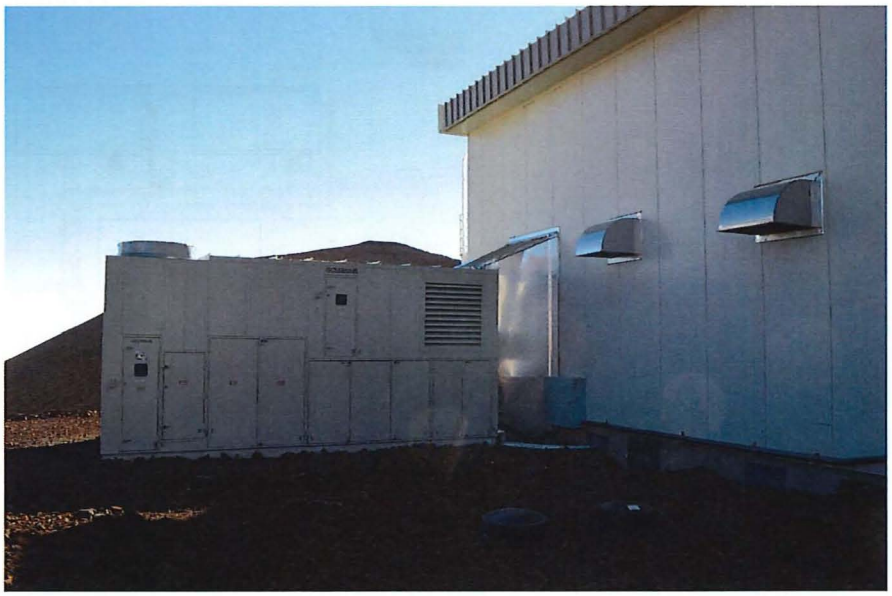
- Repurpose existing ventilation openings
- New A/C equipment similar, but not identical to old equipment
- New A/C equipment may overhang existing PACU slab
  amount TBD

Ventilation openings

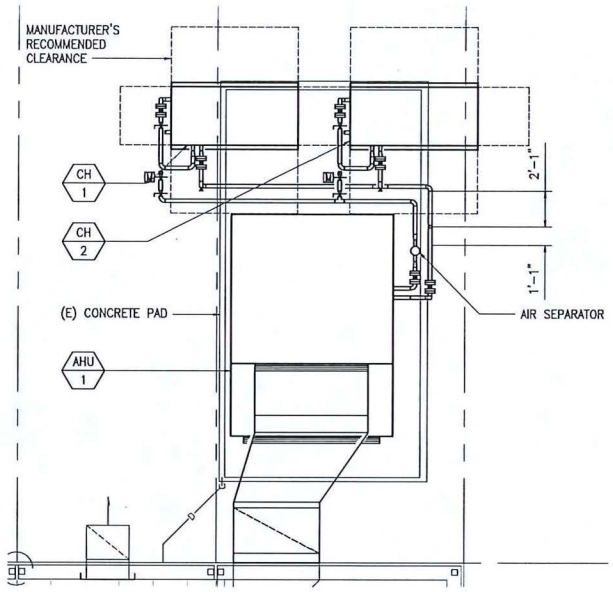
Other air conditioners

Packaged Air Conditioning Unit





PACU Replacement Concept Design



What is approval process?

- Projects included in SMA five year outlooks since 2017.
- OMKM response since 2017: "Minimal Impact or Routine activities. Recommend no further consultation."

- Here we are. What next?
- UH CMS guidance?

Attachment C- Examples of Proposed Equipment:

Tractor and Low Boy Trailer for transporting equipment

All Terrain Crane

Heavy Equipment Service Truck (for maintenance and/or repairs)

Miscellaneous 4x4 Pickup Truck for transporting workers and tools