

ANTARCTIC FACILITIES AND OPERATIONS (AFO)

\$216,020,000
+\$8,720,000 / 4.2%

Antarctic Facilities and Operations Funding

(Dollars in Millions)

FY 2020 Actual	FY 2021 Estimate	FY 2022 Request	Change over FY 2021 Estimate	
			Amount	Percent
\$208.02	\$207.30	\$216.02	\$8.72	4.2%

Brief Description

AFO supports the infrastructure, logistics, and science operations underlying the United States Antarctic Program (USAP). In direct support of the Nation's goals under the Antarctic Treaty System, the program strives to maintain an active and influential presence in the region through fostering the conduct of world-class science and mutually beneficial international cooperation when and where appropriate. At the same time, the program strives to optimize funding efficiency while ensuring safe, environmentally sound, and effective operations.

Scientific Purpose

By Presidential directive, NSF is the single-point manager of all U.S. activities in Antarctica and is required to, among other things, occupy the geographic South Pole and operate two coastal stations, McMurdo Station on Ross Island and Palmer Station on Anvers Island near the Antarctic peninsula. Presently the Antarctic Infrastructure and Logistics Section (AIL) of NSF's Office of Polar Programs (OPP), through its contractor Leidos, supports about 150 NSF-funded science projects each season as well as long-term observing facilities, such as the Long-Term Ecological Research sites in the Dry Valleys and in the Antarctic Peninsula marine environment, the IceCube neutrino detector, and the South Pole Telescope for sub-mm and microwave signal detection of the universe. NSF also supports several projects funded by other agencies including NASA and NOAA. For example, the Long Duration Balloon program launches major observing payloads into the upper atmosphere from a dedicated facility on the Ross Ice Shelf.



Helicopters provide support to field science on Ross Island's Mt. Erebus and other remote camps in Antarctica. *Credit: Air Center Helicopters Incorporated*

Status of the Facility

The U.S. presence in Antarctica is maintained in accordance with U.S. policy, and supports Antarctic Treaty administration under State Department leadership. AFO comprises the infrastructure and logistics needed to support U.S. research conducted in Antarctica, including research funded by other U.S. agencies, for year-round work at the U.S. stations, on two research ships, and at a variety of remote field camps. All support for these activities is provided, including transportation, facilities, communications, utilities (water and power), health and safety infrastructure, and environmental stewardship.

The COVID-19 pandemic had a major impact on AFO. The inherently close quarters of remote facilities

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and the limited medical capacities of Antarctic stations made it essential for all national Antarctic Programs to avoid the introduction of COVID-19 to Antarctica. NSF greatly reduced the presence of personnel on the continent during the 2020-21 austral summer season and did not support new science investigations, in order to manage COVID-19 risks and to work within the constraint of international travel restrictions. The minimal number of logistical support staff was deployed to undertake critical maintenance and support functions. Construction on-ice was halted mid-season in FY 2020, throughout 2021, and will likely remain deferred to a large extent through FY 2022. International travel restrictions are anticipated to persist into at least the initial months of FY 2022, so the 2021-22 austral summer research season will also be affected. As in FY 2020, environmental conditions prevented building an ice pier at McMurdo in FY 2021. Resupply of McMurdo was conducted by aircraft only; of South Pole Station by tractor traverse and small aircraft; and of Palmer Station via vessel.

Meeting Intellectual Community Needs

The Science and Technology Policy Institute conducts an annual survey of deployed researchers on behalf of AIL. The results are used to inform capital planning decisions and improvements to operations. The research community participates actively in decisions regarding scientific platform and logistics requirements through the annual science planning process managed jointly by AIL and the Antarctic Science Section (ANT) of OPP.

The Antarctic Infrastructure Recapitalization (AIR) program is initiated in FY 2022 in response to a 2012 Blue Ribbon Panel report which recommended that NSF create a capital plan to renew the USAP's aging physical plant. This program will subsume the Antarctic Infrastructure Modernization for Science (AIMS) project, which is in the construction phase. The AIMS project will provide a reduction in the annual cost to maintain and operate McMurdo Station. The longer-term recapitalization of McMurdo Station and other Antarctic infrastructure under the AIR program is expected to produce further efficiencies. The need for this program was also informed by a 2011 NRC report and a 2015 NASEM report.¹²

Governance Structure and Partnerships

NSF Governance Structure

In addition to the OPP Advisory committee's biannual meetings, its sponsored Committee of Visitors (COV) reviews whether AIL's provision of infrastructure, logistics and science support is appropriately integrated with science needs every four years. The last COV review was in the fall of 2020.

OPP also receives contract oversight and management support from NSF's Division of Acquisition and Cooperative Support (DACS) as well assisted acquisition services from the Department of Interior's Interior Business Center.

External Governance Structure

The USAP undergoes higher level review at approximately 10 to 15-year intervals. The most recent culminated in the 2012 Blue Ribbon Report which is discussed further below.³ The USAP is also subject to the Antarctic Conservation Act as well as provisions within the Antarctic Treaty, under Department of State leadership. USAP stations in Antarctica are subject to inspection by Treaty member nations on short term notification.

¹ www.nap.edu/catalog/13169/future-science-opportunities-in-antarctica-and-the-southern-ocean

² www.nap.edu/catalog/21741/a-strategic-vision-for-nsf-investments-in-antarctic-and-southern-ocean-research

³ www.nsf.gov/geo/opp/usap_special_review/usap_brp/rpt/index.jsp

Partnerships and Other Funding Sources

NSF has arrangements for cooperative sharing of logistics and science capabilities with international treaty partners operating in the general vicinity of USAP stations and remote field sites. These arrangements depend on in-kind contributions and generally do not involve transfers of cash. NSF supports field work sponsored by other agencies from which it recovers certain incremental costs.

NSF entered into an agreement with NOAA to co-fund the design and construction of an expanded weather and communications satellite downlink/transmission station on Ross Island (Ross Island Earth Station) to replace aging facilities currently located across McMurdo Sound on Black Island. The facility is under construction and is expected to be completed in 2022.

Funding

Total Obligations for AFO

(Dollars in Millions)

	FY 2020 Actual	FY 2021 Estimate	FY 2022 Request	ESTIMATES ¹				
				FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Operations & Maintenance	\$208.02	\$207.30	\$216.02	\$216.02	\$216.02	\$216.02	\$216.02	\$216.02

¹ Outyear estimates are for planning purposes only. The current contract ends in 2025.

In FY 2022, Antarctic Facilities and Operations funding is increased by \$8.72 million to \$216.02 million. This increase will cover higher deployment costs and accommodate continued operation of the stations, as well as support for priority science activities including the International Thwaites Glacier Collaboration. COVID-19 has led to significantly higher per person deployment costs for getting grantees and contract personnel to Antarctica, and this effect will persist into the FY 2022 season and increase the overall operating cost even though the tempo will still be lower than pre-COVID-19 pandemic levels. Beyond FY 2022, the lower per person cost will be offset by a higher deployment tempo, which will be needed to clear the backlog of field science projects that were deferred during the COVID-19 pandemic.

Reviews

OPP evaluates the performance of the Antarctic support contractor annually via an Award Fee Plan, which involves multiple tiers of review, including a Performance Evaluation Board (PEB) comprising knowledgeable NSF staff in OPP and BFA. In addition, OPP programs are reviewed externally by Committees of Visitors and the OPP Advisory Committee. The USAP Blue Ribbon Panel (BRP) released a report on its review of the program in July 2012. The initial NSF response to the USAP BRP report was released in March 2013 and progress to address recommendations is ongoing.⁴ The AIR program is a significant step towards addressing the report recommendations and is covered in detail in the Major Research Equipment and Facilities Construction chapter.

Renewal/Recompetition/Termination

- Lockheed Martin Corporation was awarded a 13.5-year Antarctic support contract in December 2011. The award consists of a five-year base period and four option periods exercised on the basis of performance and totaling an additional 8.5 years. In FY 2017, Lockheed-Martin Corporation novated the Antarctic support contract (ASC) to Leidos Corporation. Transition from Lockheed Martin management to Leidos management of the ASC was successfully completed in August 2017. The third

⁴ www.nsf.gov/geo/opp/usap_special_review/usap_brp/rpt/nsf_brp_response.pdf

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two-year option with Leidos was exercised in September 2020.

- In anticipation of the need to re compete the prime contract, NSF conducted a Virtual Industry Day for Operations and Science Support to the United States Antarctic Program on February 16, 2021.
- A contract for helicopter support was awarded to Air Center Helicopters in April 2019. It is a one-year contract that in FY 2022 will be in the second of four option years.
- A fixed-wing small aircraft support contract was awarded in August 2018 to the incumbent, Kenn Borek Air. It is a one-year contract that in FY 2022 will be in the third of four option years.
- Currently there are no plans for divestment of this facility.