

NATIONAL CENTER FOR ATMOSPHERIC RESEARCH (NCAR)

<https://ncar.ucar.edu/>

National Center for Atmospheric Research Funding

(Dollars in Millions)

FY 2023 Base Plan	FY 2024 (TBD)	FY 2025 Request	Change over FY 2023 Base Plan	
			Amount	Percent
\$116.20	-	\$124.59	\$8.39	7.2%

Brief Description

NCAR is an NSF-sponsored Federally Funded Research and Development Center guided by the vision: “a world-class research center leading, promoting and facilitating innovation in the atmospheric and related Earth and Sun systems sciences.”¹ NCAR’s expert staff of research scientists, engineers, education and outreach specialists, and support personnel collaborates closely with colleagues in the academic community to improve understanding and prediction of the sun-Earth system, including the human dimensions. This work is crucial to improving the Nation’s ability to navigate the challenges presented by our rapidly changing climate.

NCAR’s primary locations are the Mesa Laboratory in Boulder, Colorado (CO), the Research Aviation Facility in nearby Broomfield, CO, the NCAR-Wyoming (WY) Supercomputing Center (NWSC) in Cheyenne, WY, and the Mauna Loa Solar Observatory in Hawaii (HI).

Meeting Scientific Community Needs

NCAR’s mission is to understand the behavior of the atmosphere and related Earth and geospace systems; to support, enhance, and extend the capabilities of the academic and broader scientific communities, nationally and internationally; and to foster the transfer of knowledge and technology for the betterment of life on Earth. NCAR fulfills this mission with highly integrated research and facilities organized around three overlapping primary areas of activity: cutting edge airborne and ground-based observational facilities; community weather and climate models with many thousands of users worldwide; and petascale high-performance computing. Cross-cutting programs promote education, career development, public engagement, and increased diversity for the entire geosciences community. NCAR maintains an extensive range of partnerships throughout the academic, private, and government sectors.

NCAR’s programs are guided by the 2020 – 2024 NCAR Strategic Plan, which was developed with broad community input and emphasizes three overlapping priorities: 1) enhancing and building on NCAR’s core strengths in fundamental research in the atmospheric and related sciences; 2) promoting integrated Earth system science; and 3) advancing actionable science, to help address society’s most pressing environmental challenges. A new strategic plan to address 2025-2029 is in development.

¹ <https://ncar.ucar.edu/who-we-are>

Major Facilities

Status of the Facility

NCAR is operated for NSF by the University Corporation for Atmospheric Research (UCAR), a consortium of more than 130 member universities in the U.S. and overseas.

A major upgrade to the NWSC was completed in 2023. The new system, 'Derecho', resulted in a more than threefold increase in the computing speeds available to users in the Earth system science research community, together with enhanced capabilities for supporting applications in machine learning and artificial intelligence.

NCAR's Mauna Loa Solar Observatory has been closed since November 2022, following a nearby volcanic eruption. NCAR continues to work with the National Oceanographic and Atmospheric Administration, the site's owner, on a schedule for resuming operations as conditions allow.

Governance Structure and Partnerships

NSF Governance Structure

NSF oversight is provided by program officers in GEO's Division of Atmospheric and Geospace Sciences who work cooperatively with staff from other GEO divisions, BFA's Research Infrastructure Office and Division of Acquisition and Cooperative Support, the Office of the General Counsel, and the Office of Legislative and Public Affairs. The GEO facilities team and the Chief Officer for Research Facilities also provide high-level guidance, support, and oversight.

External Governance Structure

UCAR engages NCAR's stakeholders in its governance, strategic planning, and program implementation through mechanisms such as a dedicated subcommittee of the UCAR Board of Trustees; standing external advisory committees for each NCAR laboratory, the NCAR Director and certain targeted initiatives; panels for allocating computing and observing resources; and governance bodies for the community models. Other sources of input include community workshops, *ad hoc* working groups, and studies by the National Academies of Sciences, Engineering, and Medicine.

Partnerships and Other Funding Sources

NCAR leverages its NSF funding with significant support from other sources. Other federal agencies typically provide approximately 25 percent of NCAR's total annual budget. A further 8-10 percent comes from state and local governments, universities, industry, and non-profits. This funding, which must directly support NCAR's NSF-funded program, extends NCAR's fundamental research into a wide variety of applications such as wildfire management, road and aviation safety, public health, and renewable power generation.

Funding

Total Obligations for NCAR

(Dollars in Millions)

	FY 2023 Base Plan	FY 2024 (TBD)	FY 2025 Request	ESTIMATES ¹				
				FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
Operations & Maintenance	\$116.20	-	\$124.59	\$142.58	\$146.83	\$151.25	\$151.25	\$151.25

¹ Outyear estimates are for planning purposes only. The current cooperative agreement ends in September 2028.

NSF's FY 2025 Request for NCAR provides for recurring infrastructure costs including periodic technology refreshes of the NCAR supercomputers, scheduled aircraft maintenance, and improvements to the NCAR buildings, including to increase energy efficiency and resilience. The replacement of one of the aircraft hangars is in the planning stage for initiation in FY 2025.

Reviews and Reports

NSF conducts a comprehensive review of NCAR's science programs, facilities, and management at the mid-point of each five-year award. The 2021 review comprised site visits by four teams of external experts assessing: (1) Observing Science and Facilities; (2) Computation and Data Science and Facilities; (3) Community Modeling and Data Assimilation and (4) Management. The first three visits occurred between May and June 2021, and the fourth was held in August 2021. Findings from the reviews have been incorporated into NCAR's program plans. A Business Systems Review was conducted in summer 2022.

Renewal/Recompetition/Disposition

The UCAR proposal for continued oversight and management of NCAR was approved following extensive merit review and NSF and National Science Board deliberation. The new five-year award began October 1, 2023; the award will be assessed for renewal, competition, or disposition approximately 18-24 months before it expires in FY 2028.