

**Program Name**

**Climate and Societal Interactions (CSI)  
Climate and Fisheries Adaptation Program (CAFA)**

**Program Mission**

The [Climate and Fisheries Adaptation Program \(CAFA\)](#) is a partnership between the NOAA Oceanic and Atmospheric Research (NOAA Research) [Climate Program Office \(CPO\)](#) and the National Marine Fisheries Service (NOAA Fisheries) [Office of Science and Technology \(OST\)](#) that supports targeted research to promote the adaptation and resilience of the nation's valuable fisheries and fishing communities<sup>1</sup> in a changing climate. By bringing together scientists and practitioners from NOAA, academia and other entities, the CAFA Program addresses priority needs for information and tools identified in the [NOAA Fisheries Climate Science Strategy](#), [Regional Action Plans](#), and the draft NOAA Strategic Plan.

The CAFA Program is part of CPO's [Climate and Societal Interactions \(CSI\)](#) Division which supports high-impact science and catalyzes U.S. government investments in regionally scaled, societally relevant, interdisciplinary climate research and engagement focused on reducing vulnerability and risk through the use of climate knowledge and information. CSI works with partners to enhance community and national resilience in the face of climatic changes through human-centered research and engagement activities. This research is designed to connect innovative science directly to complex and dynamic preparedness, adaptation, and resilience challenges.

The CAFA Program advances understanding and response to climate change impacts on marine resources and fishing communities identified in the DOC, NOAA, NOAA Fisheries and [NOAA Research Strategic Plans](#). The CAFA Program collaborates with partners and stakeholders to deliver world-class science and prioritizes mission-relevant research in order to contribute to fulfilling NOAA's mission and vision of resilient ecosystems, communities, and economies.

The CAFA Program addresses priorities identified in the [NOAA Fisheries Climate Science Strategy \(Strategy\)](#). The Strategy identifies seven objectives to meet the climate-related information requirements needed to fulfill NOAA Fisheries mandates in a changing climate.

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<sup>1</sup> A fishing community is defined as "a community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community," pursuant to the Magnuson-Stevens Fishery Conservation and Management Act <https://media.fisheries.noaa.gov/dam-migration/msa-amended-2007.pdf>

NOAA Fisheries is working in collaboration with partners and stakeholders to implement the Strategy in each region through [Regional Action Plans](#). Projects supported by this funding opportunity will focus on priorities identified in the Strategy, Regional Action Plans, and other NOAA and DOC drivers.

The CAFA Program also addresses NOAA and Department of Commerce (DOC) priorities including the [DOC 2021 Climate Adaptation and Resilience Plan](#) environmental stewardship mission, which highlights “the increased demand for information, tools, and actions that promote adaptation of marine resources and the industries/communities that depend on them.”

The CAFA Program supports equity and environmental justice priorities identified in the draft [NOAA Fisheries Equity and Environmental Justice Strategy](#), including objectives related to research and monitoring. It also advances priorities identified in the DOC’s [Equity Action Plan](#). The CAFA Program seeks to invest in projects that reflect and leverage the talent and diversity of its stakeholders and ensure sustainability of people, communities, and the environment in the face of climate impacts.

**Focus for FY23**

**Increase understanding of climate change impacts and management strategies to promote resilience and adaptation of U.S. marine fisheries and fishing communities**

**Funding for FY23**

This solicitation includes two types of proposals. Pending availability of funds in FY2023:

Type A proposals should be for projects up to 3 years duration with a budget of up to \$400,000 per year.

Type B proposals should be for projects up to 3 years duration with a budget of up to \$200,000 per year

Funding for projects is expected to come from NOAA Research Climate Program Office and NOAA Fisheries Office of Science and Technology.

**Competition Information**

## Overview

Changing climate and oceans are affecting the Nation's valuable living marine resources (LMRs) and the people, businesses and communities that depend on them<sup>2</sup>. Warming oceans, rising seas, drought and ocean acidification all contribute to changes in species abundance, productivity, distribution, and habitats. These impacts are expected to intensify with continued changes in the planet's climate system putting much at risk. In the U.S., ocean-related commercial and recreational fishing (and the seafood industry) annually contribute approximately \$255 billion in sales, \$117 billion to the gross domestic product (GDP), and support over 1.8 million full- and part-time jobs across the broader economy<sup>3</sup>. Marine resources are also an important source of food and cultural heritage for many communities and Indigenous peoples. Climate-related information is needed to fulfill NOAA Fisheries mandates and provide decision-makers with the information they need to understand changing conditions, assess risks and identify best adaptation strategies for living marine resources and the people, communities, and economies that depend on them<sup>4</sup>.

There is an urgent need to better understand, prepare for and respond to the impacts of climate variability and change on fish stocks, fisheries, fishing communities and marine ecosystems in the United States<sup>2</sup>. Fishing communities tend to be less economically resilient and as such may be more vulnerable to climate change effects and less able to adapt to those effects<sup>5</sup>. Climate variability and change influence many parameters (e.g., extreme events, winds, ocean temperatures, stratification, currents, coastal precipitation, inundation, etc.) that affect marine ecosystem conditions including the abundance, distribution, and productivity of fish stocks that support economically-important fisheries. Sustainable fisheries management and fishing community adaptation in a changing climate requires an improved understanding of what's changing, what's at risk, and how best to respond to expected future conditions.

## Type A Proposals

For FY23, the CAFA Program is soliciting proposals for multidisciplinary projects to better

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<sup>2</sup> Pershing, A.J., R.B. Griffis, E.B. Jewett, C.T. Armstrong, J.F. Bruno, D.S. Busch, A.C. Haynie, S.A. Siedlecki, and D. Tommasi, 2018: Oceans and Marine Resources. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, pp. 353–390. doi: 10.7930/NCA4.2018.CH9 <https://nca2018.globalchange.gov/chapter/9/>

<sup>3</sup> National Marine Fisheries Service. 2022. Fisheries Economics of the United States, 2019. U.S. Dept. of Commerce, NOAA Tech Memo. NMFS-F/SPO-229, 236 p. <https://www.fisheries.noaa.gov/resource/document/fisheries-economics-united-states-report-2019>

<sup>4</sup> NOAA Fisheries Climate Science Strategy <https://www.fisheries.noaa.gov/national/climate/noaa-fisheries-climate-science-strategy>

<sup>5</sup> NOAA Fisheries Social Indicators for Coastal Communities. <https://www.fisheries.noaa.gov/national/socioeconomics/social-indicators-coastal-communities>

understand the impacts of climate variability and change on marine ecosystems and evaluate strategies and tools to promote resilience and adaptation of fish stocks, fisheries, and the communities and economies that depend on them.

Proposals should be interdisciplinary efforts that integrate climate, ecological, and socio-economic research and modeling to evaluate the performance of fisheries management strategies under different climate and ocean scenarios. The goal of these efforts is to develop and test integrated systems that can inform climate-ready fisheries management and adaptation pathways of fisheries and fishing communities. Proposals should address the following specific research requirements in one or more of the following regions: Northeast U.S. Continental Shelf, Southeast U.S. Continental Shelf, Caribbean (U.S.), Gulf of Mexico, Insular Pacific-Hawaiian, California Current, Gulf of Alaska, Bering Sea, and the Arctic (including Chukchi and Beaufort Seas).

Proposed projects should:

- Build on existing efforts/capabilities to develop regional research and modeling systems that integrate climate, ecological, and socio-economic information to evaluate the performance of fisheries management strategies, inform climate-resilient fisheries management, and inform adaptation pathways of fishing communities.
- Provide climate-related data and information on timescales relevant to fisheries management considerations (e.g stock assessments, habitat assessments, ecosystem assessments, and/or management plans/practices), including the use/evaluation of new predictions and projections of future ocean conditions from the NOAA Earth System Models (e.g., Modular Ocean Model 6).
- Improve understanding of how climate variability and change, fishing pressure, and other stressors interact to affect ecological and socio-economic systems, fishing communities, and the performance of fishery management strategies under current and future conditions.
- Collaborate with and/or leverage relevant NOAA programs (e.g., NOAA Laboratories, Fisheries Science Centers, Sea Grant and Cooperative Institutes) and other entities such as academia, non-governmental organizations, other federal agencies, tribal, state or local governments, and non-U.S. government agencies (e.g., Fisheries and Oceans Canada).

## **Type B Proposals**

For FY23, the CAFA Program is soliciting proposals to support participatory research that advances understanding of climate adaptation and resilience of frontline fishing communities (i.e., communities dependent upon fishing economically, socially, and culturally).

Research proposals should enhance the effectiveness of locally-determined adaptation planning in frontline fishing communities.

Specifically, the program is seeking proposals for interdisciplinary and/or social science research on the nexus of the individual and collective experiences of fishers (e.g. economic, institutional, and environmental factors), changes in individual and community well-being (e.g. health, economic variability), and capacity for incorporating and responding to compound social and environmental change over time.

Proposals should consider impacts to cultural resources and knowledge, and identify options that advance sustainable and equitable adaptation pathways responsive to community needs.

Proposals should address the following specific research requirements in one or more of the following regions: Northeast U.S. Continental Shelf, Southeast U.S. Continental Shelf, Caribbean (U.S.), Gulf of Mexico, Insular Pacific-Hawaiian, California Current, Gulf of Alaska, Bering Sea, and the Arctic (including Chukchi and Beaufort Seas).

Proposed projects should:

- Improve the understanding of how climate impacts on marine ecosystems interact with socio-economic systems of fishing communities to inform adaptation strategies aimed at human community health and well-being.
- Develop and incorporate protocols and processes to include cultural data/resources and local, indigenous traditional ecological knowledge (ITEK) and other non-western scientific knowledge to enhance western science data
- Utilize quantitative and/or qualitative social science methods and tools to analyze existing or generate new socio-economic data to do one or more of the following:
  - Develop a regionally focused analysis of fishing community diversity and environmental, social, and/or cultural vulnerability to complex, climate-driven stressors including compound, concurrent, and/or cascading risks.
  - Identify and analyze the challenges and opportunities for incorporating local and Indigenous ecological knowledge into fishing community adaptation efforts including assessing the impact of fishery management strategies to inform adaptive management. This can include assessments of best practices and implications for future adaptation planning.
  - Identify and analyze the barriers, opportunities and best practices for fishing community adaptation to changing climate and ocean conditions, such as cost, benefits, and cultural implications of fishery management practices, in order to identify ways to advance adaptation strategies and investments with possible co-benefits.
  - Improve the understanding of climate change impacts on fisheries-based food systems, including the benefits, costs and cultural implications to fishing community well-being and economic viability, and barriers and opportunities to advance adaptation.
  - Conduct research to assess and enhance the effectiveness of locally determined adaptation planning in frontline fishing communities.

### **Additional Information**

*Specifics about the Proposal - Where indicated below, proposals should include a statement or plan on how they will address or incorporate the following*

### *Transfer of Knowledge*

Proposals should discuss how information and products developed during the project will be used to inform decision making and/or be incorporated into the decision-making process for resource management and community adaptation.

### *Diversity, Equity, Inclusion and Accessibility*

The CAFA program upholds the principles of Diversity, Equity, Inclusion and Accessibility (DEIA) as defined in the [White House Strategic Plan to Advance Diversity, Equity, Inclusion and Accessibility](#). Diversity here is defined as the practice of including the many communities, identities, races, ethnicities, backgrounds, abilities, cultures, and beliefs of the American people, including underserved communities. Ensuring equity means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment. An inclusive culture is one that recognizes, appreciates, and uses the talents and skills of employees of all backgrounds, and connects each person to the larger organizing structure. Accessibility here is defined as the design, construction, development, and maintenance of facilities, information and communication technology, programs, and services so that all people, including people with disabilities, can fully and independently use them. Accessibility includes the provision of accommodations and modifications to ensure equal access to employment and participation in activities for people with disabilities, the reduction or elimination of physical and attitudinal barriers to equitable opportunities, a commitment to ensuring that people with disabilities can independently access every outward-facing and internal activity or electronic space, and the pursuit of best practices such as universal design. Promoting diversity, equity, inclusion and accessibility improves the productivity and vitality of the communities in which the CAFA program engages.

Each proposal should:

- Include a statement on integration of DEIA that describes how the project will incorporate the DEIA principles to help broaden the participation of underrepresented groups and remove barriers to action. The statement should also summarize where and how the project will integrate DEIA considerations into team composition, team management, leadership and decision making, focus areas, partnerships and approaches employed in the proposed work. Where possible it should also include goals and metrics for assessing and adjusting DEIA efforts.
- Develop and incorporate protocols and processes to include cultural data/resources and local, indigenous traditional ecological knowledge (ITEK) and other non-western scientific knowledge to enhance western science data where appropriate.

### *Investigator Teams*

Multidisciplinary teams of investigators are often best suited for addressing the complex issues related to climate, society and enhanced adaptation. The proposal must identify the investigators, include an explanation of the investigator roles, and explain how the team will interact and integrate across the multiple components. Investigators who will not be requesting funds for salaries must also be listed, along with their estimated time of commitment. Proposals are strongly encouraged to include diverse representatives from a variety of sciences required to fulfill the goals and objectives of the research

(including ITEK). This may include involving relevant sectors of the community such as tribal or Indigenous groups, social scientists, fisheries or natural resource managers, fisher organizations, stakeholder engagement or communications specialists, or others that would contribute to and benefit from the creation and development of such project activities. When addressing team composition, applicants should consider team contributions to a diverse, next-generation workforce through training, mentorship, education, and by engaging with students and early career professionals.

### *Leveraging and Partnerships*

We encourage partnerships and collaborations with and between relevant experts at state, tribal, and local governments; private sector organizations; NGOs; NOAA Laboratories, Fisheries Science Centers, and Cooperative Institutes; Sea Grant; other federal agencies (e.g., Department of the Interior, National Aeronautics and Space Administration); and non-U.S. government agencies (e.g., Fisheries and Oceans Canada). Letters of support or commitment from partners are encouraged, though not required, to accompany the proposals. *Matching Funds and cost-sharing is not required.* However, leveraging and in-kind sharing of resources should be reported within the proposal.

### *Outreach With Relevant Stakeholder Communities*

The proposal should include a stakeholder/community engagement plan that incorporates how relevant stakeholders will be engaged from the beginning through to the completion of the project, as well as outline the development of relevant stakeholder engagements and a stakeholder report and/or engagement at the end of the project to share relevant findings.

### *Interaction with NOAA*

Applicants whose proposals are chosen for funding will be expected to undertake an ongoing dialogue with the NOAA Climate Program Office, NMFS Office of Science and Technology, and relevant NOAA partners. Project teams will be expected to submit annual and final reports and respond to periodic data and information requests, including updates on relevant DEIA activities.

### *Connecting Research Projects*

Principal investigators (PIs) of proposals selected via the CAFA Program's FY 2023 competition will participate in a PI Community of Practice for the duration of their projects. This will include a series of coordination and communication activities to share research methods and results, support collaboration and information exchange across proposals, share lessons learned and optimize the outcomes of their projects. Project teams will be convened at the end of the project (in FY26) to provide a summary of findings in a series of Community of Practice meetings.

## *References*

### *Websites:*

- Climate and Fisheries Adaptation Program <http://cpo.noaa.gov/cafa>
- NOAA Oceanic and Atmospheric Research (OAR) <https://research.noaa.gov/>

- National Marine Fisheries Service - <http://www.fisheries.noaa.gov/>
- OAR Climate Program Office <https://cpo.noaa.gov/>
- National Marine Fisheries Service – Office of Science and Technology <http://www.fisheries.noaa.gov/about/office-science-and-technology>
- National Marine Fisheries Service - Climate <http://www.fisheries.noaa.gov/topic/climate-change> National Marine Fisheries Service Economics Program: <https://www.fisheries.noaa.gov/topic/socioeconomics#overview>
- [Social Indicators for Coastal Communities](#)
- NOAA Next Generation Strategic Plan - <https://www.performance.noaa.gov/ngsp/>
- Department of Commerce 2021 [Climate Action Plan for Adaptation and Resilience](#)
- OAR DEIA [Strategic Plan](#)
- NMFS DEIA [Strategic Plan](#)
- OAR [Strategic Plan](#)

#### Reports and Papers:

- Barclay, K. et.al. (2017, Feb) [The Importance of qualitative social research for effective fisheries management](#). Fisheries Research
- Nelson, L. et.al. (2022, Jan) [Perspectives on managing fisheries for community well-being in the face of climate change](#). Maritime Studies
- Lawrence, J. et. al.(2020, April) [Cascading climate change impacts and implications. Climate Risk Management](#)
- Pirotta, E. et. al (2022, May) [Understanding the combined effects of multiple stressors: A new perspective on a longstanding challenge](#). Science of the Total Environment
- Ojea, E. et. al. (2020, June) [Adaptation of Fishing Communities to Climate-Driven Shifts in Target Species](#). One Earth
- [Weaving Indigenous Knowledge into the scientific method](#)
- [Indicators of Climate Change and Social Vulnerability](#)
- [Nart Udall Report](#)
- [White House Memorandum on ITEK \(November 15,2021\)](#)
- [EO on Diversity, Equity and Inclusion and Accessibility in the Federal Workforce](#)
- [Executive Order 14008 Section 216C Tackling the Climate Crisis at Home and Abroad, Section 216c: Recommendations on How to Make Fisheries and Protected Resources, Including Aquaculture, More Resilient to Climate Change](#)
- [Synthesis of Public Comments to NOAA on Executive Order 14008 Section 216C](#)
- Link, J.R.; Griffis, R; Busch, S. (editors). 2015. NOAA Fisheries Climate Science Strategy. U.S. Department of Commerce, NOAA Technical Memorandum NMFSF/SPC-155,70p. <http://www.st.nmfs.noaa.gov/ecosystems/climate/nationalclimatestrategy>
- Griffis, R and Howard, J (editors.) 2013. Oceans and Marine Resources in a Changing Climate: A Technical Input to the 2013 National Climate Assessment. Island Press.
- National Marine Fisheries Service. 2018. Fisheries Economics of the United States, 2016. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-187, 243.
- Pershing, A.J., R.B. Griffis, E.B. Jewett, C.T. Armstrong, J.F. Bruno, D.S. Busch, A.C. Haynie, S.A. Siedlecki, and D. Tommasi, 2018: Oceans and Marine Resources. In Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)].



U.S. Global Change Research Program, Washington, DC, USA, pp. 353–390.  
doi: 10.7930/NCA4.2018.CH9.

- Sherman, K; Celon, P; and Adams, S 2004. NOAA Fisheries Service's Large Marine Ecosystems Program: Status Report. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NE-183, 21p.

## Data Archiving and Computational Resources

### *Responsible NOAA Official*

For questions regarding this guidance and for verifying accessibility of data produced by funding recipients, contact the competition manager: Jennifer Dopkowski (Jennifer.Dopkowski@noaa.gov).

### Data Accessibility

NOAA requires public access to grant-produced data. The use of open-standard formats and methods for data sharing is encouraged. Applicants must describe their approach in the Data/Information Sharing Plan section of their application (see the CPO Federal Funding Opportunity for more information on this requirement). Below are examples of methods to enable public access to grant-produced data:

- Data is submitted to the NOAA National Centers for Environmental Information (NCEI), which will provide public access and permanent archiving.
- Data are to be submitted to one of the following relevant International Science Council (ISC) World Data System facilities:  
<https://www.icsu-wds.org/community/membership/regular-members>
- Data is submitted to another NOAA facility (other than NCEI), which will operate a publicly accessible online data server for this data.
- An existing publicly accessible online data server at the funded institution is to be used to host this data.
- Data is to be submitted to a public data repository appropriate to this scientific domain. ● Funding recipients will establish their own data hosting capability.
- Proposals may request permission not to make data publicly accessible. The application should include a rationale for lack of public access, and if funded, approval will need to be obtained from the Responsible NOAA Official listed above.

### *Resources*

Proposals should include the costs of data sharing or archiving in their budgets.

## Contact Information and Submission Information

For questions related to the competition, please contact the Competition Manager Jennifer.Dopkowski@noaa.gov

### Letters of Intent (LOIs)

- Please email your LOI submissions to [Jennifer.Dopkowski@noaa.gov](mailto:Jennifer.Dopkowski@noaa.gov)
- Principal investigators submitting a proposal in response to this CAFA competition announcement are required to follow the Letters of Intent (LOI) and Proposal preparation and submission guidelines described in the Climate Program Office FY 2023 Notice of Federal Funding Opportunity announcement.
- Investigators are strongly encouraged to submit an LOI prior to developing and submitting a full proposal. LOIs can be submitted to Jennifer Dopkowski ([Jennifer.Dopkowski@noaa.gov](mailto:Jennifer.Dopkowski@noaa.gov)). Investigators will be notified by the CAFA Program Competition Manager as to whether a full proposal is encouraged based on the LOI within four weeks of the LOI due date. LOIs are not required.

### General Information

- Administrative questions regarding the Notice of Federal Funding Opportunity (e.g. proposal formatting or submission guidelines) should be directed to Diane Brown ([diane.brown@noaa.gov](mailto:diane.brown@noaa.gov)), please cc: [Jennifer.Dopkowski@noaa.gov](mailto:Jennifer.Dopkowski@noaa.gov)
- **Federal investigators *only*** should submit proposals directly to the Competition manager [Jennifer.Dopkowski@noaa.gov](mailto:Jennifer.Dopkowski@noaa.gov). Federal investigators, please contact the program manager to discuss submission guidelines.
- Each PI and Co-I on the same project, but from separate institutions, should submit separate proposal applications through [grants.gov](https://grants.gov).