



NATIONAL SCIENCE FOUNDATION  
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**NSF 23-025**

## Frequently Asked Questions (FAQs) regarding the Quantum Sensing Challenges for Transformational Advances in Quantum Systems (QuSeC-TAQS) Solicitation [NSF 22-630](#)

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30. Should a proposal target a specific technique that translates into a targeted application

space, or is it appropriate to propose to pursue several techniques under a theme that have different application spaces?

31. Is there preferred or required technology readiness level (TRL) for projects?

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## GENERAL

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1. **Is there a recording of the webinar that was held on October 7, 2022 regarding the QuSeC-TAQS program?**

No. The webcast was not recorded. However, the relevant questions from the Webinar are answered in these FAQs.

2. **When and how will invitations for full proposals be sent?**

By March 2023, the lead PI on each preliminary proposal should expect to receive a message from the QuSeC-TAQS program, indicating whether or not a full proposal is invited for the project. Such an invitation is required for submission of a full proposal; full proposals submitted without an invitation will be returned without review.

3. **Will the preliminary proposal be reviewed with feedback?**

Yes. Preliminary proposals will be reviewed by external experts, and their reviews will be made available to the submitting investigators.

4. **Can the team composition be changed between the preliminary proposal and full proposal stage?**

Yes. As a courtesy, PIs should alert NSF using the email alias [qusec@nsf.gov](mailto:qusec@nsf.gov) regarding any changes in the team composition to help the advance planning of the review panels.

5. **Are there Additional Solicitation Specific Review Criteria?**

Yes. In addition to the two NSF review criteria (Intellectual Merit and Broader Impacts), the additional solicitation specific review criteria described in the solicitation will be used in the review of both QuSeC-TAQS preliminary and full proposals. These criteria are: Relevance to Quantum Sensing; Interdisciplinary; Experimental Demonstration; and Educational Potential. Please see Section VI.A of the solicitation ([NSF 22-630](#)) for details.

## ELIGIBILITY

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**6. Is preliminary proposal submission limited to 2 per institution?**

Yes.

**7. Is there an upper limit on the number of Senior Personnel?**

No. There is no upper limit to the number of Senior Personnel that may be identified on a QuSeC-TAQS proposal. NSF policy allows proposers to identify one Principal Investigator (PI) and up to four co-PIs on a proposal but does not limit the number of individuals that can be designated as other Senior Personnel. As specified in the solicitation, no individual may appear as Senior Personnel (Principal Investigator, Co-PI, and Faculty Associate or equivalent) on more than two QuSeC-TAQS preliminary proposals. The same limit applies to invited full proposals. In the event that any individual exceeds this limit, any proposal submitted to this solicitation with this individual listed as PI, co-PI, or Senior Personnel after the first two proposals are received at NSF will be returned without review. No exceptions will be made.

**8. Do all participating investigators need to be faculty members employed by a U.S.-based Institution of Higher Education (IHE)?**

No. As specified in the solicitation, only the lead PI must be a faculty member employed by the IHE that submits the proposal. However, the co-PIs and other senior personnel can be from the submitting organization or from partner/collaborating organizations.

**9. Can a current PI on an existing Transformational Advances in Quantum Systems (TAQS) award serve as the lead PI on a QuSeC-TAQS proposal?**

Yes. This is a different solicitation.

**10. Regarding the limit of 2 proposals from any one institution, does my participation as a co-PI with a proposed subaward from another institution count as one of the submissions?**

No. Up to two (2) preliminary proposals and up to two (2) invited full proposals may be submitted per lead institution contingent to the requirement that the proposed projects are in substantially different research areas. Proposed subawards do not count towards this limit for an institution.

## **PARTNERSHIPS**

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**11. Can the program provide support for co-PIs or senior personnel from institutions outside the U.S.?**

For NSF policy on funding foreign organizations, see Chapter I.E of the *NSF Proposal &*

*Award Policies & Procedures Guide (PAPPG)*. The program encourages collaborative arrangements with international partners. The program can provide support for collaborations of U.S.-IHE-based faculty, postdoctoral researchers, and graduate students as appropriate with non-U.S. partners, including travel expenses, consultant fees, facility charges, usage fees, etc.

**12. Is a Federally Funded Research and Development Center (FFRDC) eligible to participate as a subawardee to an IHE?**

For NSF policy on funding other Federal agencies, see PAPPG Chapter I.E. The program encourages collaborations and partnerships with national labs and other Federal departments or agencies.

**13. Will collaboration with industry be encouraged?**

Collaboration with industry is encouraged. For NSF policy on funding for-profit organizations, see PAPPG Chapter I.E.

**14. If the proposal involves an industry partner, do we have to submit the proposal as a Grant Opportunities for Academic Liaison with Industry (GOALI) proposal? Can the industry partner be international for a GOALI project?**

Yes. If a collaborator from industry is serving as a co-PI, then the proposal should utilize the GOALI mechanism. Preliminary proposals can simply indicate plans for a QuSeC-TAQS GOALI proposal. Then, if invited, full proposals to the QuSeC-TAQS program that have an industry partner as one of the co-PIs should use the GOALI type of proposal described in Chapter II.F of the PAPPG. The industry partner could be an international company as part of a GOALI project.

**15. Can companies receive NSF funds under this program?**

For NSF policy on funding for-profit organizations, see PAPPG Chapter I.E. Staff in an industry can serve as a co-PI and collaborate on a project, as outlined by the GOALI mechanism in the NSF [PAPPG](#). However, the industrial research partners are generally not permitted to receive NSF funds. Only under the exceptional circumstance that research or education activities at non-academic U.S. organizations can make unique contributions, not available elsewhere, to the proposed project would such activities be considered for NSF support.

## PROPOSAL PREPARATION

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**16. Can a QuSeC-TAQS project be submitted as a collaborative proposal arranged as separate submissions from multiple organizations?**

No. If there are multiple organizations involved, submit a single proposal with subawards. This holds true for both preliminary and full proposals.

**17. Do preliminary proposals require a Budget section and list of current pending support?**

No. Preliminary proposals do not require submission of a budget or Current and Pending Support document(s).

**18. For the preliminary proposal, what sort of documentation is needed to demonstrate cooperative arrangements with other institutions that are involved in the proposal as subawardees?**

No special documentation is required.

**19. Is a \$500,000 equipment acquisition reasonable for a \$2.5 million proposal?**

A \$500,000 equipment budget is a significant investment in a \$2.5 million project and would need to be fully justified.

**20. Is there a maximum budget amount?**

Yes. Each project team may request support of up to a total of \$2.5 million over the project duration of up to 4 years.

**21. Can the Preliminary Proposals be submitted via Grants.gov?**

No. The Preliminary Proposals must be submitted via Research.gov, even if the team plans to submit full proposals via Grants.gov.

## **PROJECT FORMULATION**

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**22. My project does not explicitly utilize entanglement. Is it still eligible?**

Yes. That could be acceptable. QuSeC-TAQS proposals must focus on quantum functionality. However, NSF leaves it up to each team to articulate how such functionality is manifest in the proposed project. This may include use of wave-particle duality, or quantum control of individual particles, spins, and photons, or ensembles of the above, even if there is not demonstrable squeezing or entanglement.

**23. Would this program support proposals for developing non-quantum sensors with comparable sensitivity to quantum sensors?**

No. The QuSeC-TAQS program is intended to support research on the development and application of quantum sensors. Other NSF programs may support research on a wider variety of sensors.

**24. Will there be any preference for or against multidisciplinary teams from the same university?**

There is no preference for or against multidisciplinary teams from the same university.

**25. Can a team consist of three PIs, all from the same department?**

Such a proposal will be compliant. However, competitive proposals must articulate how the proposed project is interdisciplinary and the synergistic expertise among the collaborating PIs. It may be noted that the review process will be managed by the QuSeC-TAQS management team, with participation from six NSF Directorates listed in the solicitation.

**26. Is it acceptable for the proposal to focus on advancement of fundamental physics, such as search for dark matter?**

Yes, as long as the approach is interdisciplinary, addresses quantum sensing, and includes an experimental demonstration.

**27. Are quantum imaging projects considered viable as a quantum sensing technology?**

Yes.

**28. Is the experimental demonstration of the proposed concept an essential requirement?**

Yes. The proposals must include a plan for experimental demonstration, which is an additional solicitation specific review criteria.

**29. Is the requested funding amount a consideration in making funding decisions?**

The budget must be commensurate with the scope of the project and thoroughly justified in the proposal. Merits of the proposed research are the main factors in making funding decisions.

**30. Should a proposal target a specific technique that translates into a targeted application space, or is it appropriate to propose to pursue several techniques under a theme that have different application spaces?**

Competitive proposals usually have a unifying research theme, and the subtasks are well described and complementary.

**31. Is there preferred or required technology readiness level (TRL) for projects?**

NSF expects to support basic research, use-inspired basic research, or research that helps translate ideas into reality under this program. There is no specified technology readiness level (TRL) for projects. If a proposed project will advance the TRL of a quantum sensing system, or enable a new application to be demonstrated, that would be helpful to articulate in the proposal.