Quantum Leap Challenge Institutes (QLCI) Program Webinar
2:00 – 3:00 PM
Tuesday December 3, 2024

The webinar will begin shortly.

Please email questions to: QLCI@nsf.gov

Solicitation NSF 24-599: https://new.nsf.gov/funding/opportunities/qlci-quantum-leap-challenge-institutes/nsf24-599/solicitation

Quantum Leap Challenge Institutes (QLCI) Program Webinar

QLCI Management Team

National Science Foundation

December 3, 2024

Solicitation NSF 24-599: https://new.nsf.gov/funding/opportunities/qlci-quantum-leap-challenge-institutes/nsf24-599/solicitation

Please submit questions to: QLCI@nsf.gov

What are Quantum Leap Challenge Institutes (QLCI) ?

❖ See Solicitation NSF 24-599 Sections I & II

- The QLCI program supports timely, bold research agendas aimed at making breakthroughs on clearly identified, compelling challenges in quantum information science, engineering, and technology within a 6-year period.
- **Large-scale interdisciplinary projects** driven by a ***challenge research theme***. QLCI projects span the focus areas of quantum computation, quantum networking, quantum simulation, and/or quantum sensing. QLCI projects also support workforce development and coordination with the larger R&D community.
- Five Challenge Institutes were established under Solicitation NSF 19-559 in 2020 and 2021. A new Solicitation, NSF 24-599, was announced in August 2024.
- The QLCI program is an NSF-wide crosscutting activity managed by NSF program directors from multiple divisions and directorates.

Please submit questions to: QLCI@nsf.gov

QLCI and the National Quantum Initiative

Quantum Leap Challenge Institutes are a key part of the National Quantum Initiative. Major challenges at the frontiers of quantum information science and engineering (QISE) must be overcome before the full potential of quantum technology can be realized for science and society. This is the motivation for Quantum Leap Challenge Institutes. QLCI projects enable timely, bold efforts that should continue to propel the Nation forward as a leading developer of quantum technology.

QIS research will advance fundamental understanding of uniquely quantum phenomena that can be harnessed for information processing, transmission, and measurement in ways that classical approaches do less efficiently, or not at all. Current and future applications of QIS differ from prior applications of quantum mechanics, such as lasers, transistors, and magnetic resonance imaging, by using distinct properties of quantum superposition and entanglement that do not have classical counterparts. The development of new applications for QIS is anticipated lay the groundwork for one of the major technological revolutions of the 21st century.

Related Documents: **National Quantum Initiative Act**
National Strategic Overview for QIS
QLCI Solicitation NSF 24-599

Estimated Number and Size of QLCI Awards

❖ See Solicitation NSF 24-599 Section III

- The QLCI program can support awards to **continue** Challenge Institutes or to **establish** and operate new Challenge Institutes. In either case, proposers should follow the same guidance for proposal preparation, found in Solicitation NSF 24-599.
- **Estimated Number of Awards:** 5 to 10
  - An estimated 5 to 10 Challenge Institutes will be funded, likely starting in 2026
- **Anticipated Funding Amount:** $200,000,000 to $300,000,000 over 6 years.
  - Challenge Institutes can be funded at a level between $2,000,000/year and $7,500,000/year, for up to 6 years.
  - Each proposed Challenge Institute budget is expected to be commensurate with the associated research, education, and coordination activities. A variety of Challenge Institute awards with a range of budget sizes and scopes will be considered.

Please submit questions to: QLCI@nsf.gov

Who can submit proposals?

❖ See Solicitation NSF 24-599 Section IV

- **Eligible Institutions**:
  - Institutions of Higher Education (IHEs): Two- and four-year IHEs (including community colleges) accredited in, and having a campus located in the US.
- **Limit on the number of proposals from an institution**: 2
  - Limits on the number of QLCI proposals per organization do not apply to the Letters of Intent.
  - Lead organizations are limited to submit no more than two (2) QLCI Preliminary Proposals. Lead organizations are limited to submit no more than two (2) invited QLCI Full Proposals.
  - Multi-institutional Challenge Institute proposals must be submitted as a single proposal by a single lead organization. Separately submitted collaborative proposals are not permitted.
- **Limit on the number of proposals per PI or co-PI**: 2
  - Limits on the number of QLCI Proposals per PI do not apply to Letters of Intent, nor Preliminary Proposals.
  - The lead PI and up to four additional co-PIs who are named on the Cover Sheet of a Challenge Institute Full Proposal must only participate in one Challenge Institute Full Proposal.
  - Senior/Key Personnel who are not named on the cover sheet of a Challenge Institute Full Proposal may participate in no more than two (2) Challenge Institute Full Proposals.

Please submit questions to: QLCI@nsf.gov

Important Deadlines

❖ See Solicitation NSF 24-599 Section V

- Letters of Intent and Preliminary Proposals are required, via Research.gov.
- After review of Preliminary Proposals, invitations will be issued for selected projects for Full Proposals. Full Proposals may only be submitted in response to an invitation.

Challenge Institute (CI) Proposals	Due Date
Letters of Intent for CI Preliminary Proposals	7-February-2025
CI Preliminary Proposals	7-March-2025
CI Full Proposals (by invitation)	17-September-2025

Please submit questions to: QLCI@nsf.gov

What Are Major Activities for QLCI Institutes?

❖ See Solicitation NSF 24-599 Section II

- **Research:** Each Institute must have a unifying research theme that is clearly articulated as a major challenge at the frontiers of QIS. The proposed research should identify compelling goals, milestones, and impacts, including sufficient detail on key approaches to enable innovation on physical platforms, theory, devices, and systems. Institutes may organize their research around a few **Research Challenge (RC)** topics that are united by the overall research theme.
- **Education and Workforce Development:** Each Institute should develop creative approaches for training a quantum-smart workforce. Institutes should develop curricula and programs that span multiple disciplines.
- **Coordination:** Institutes are expected to galvanize the community, facilitate partnerships, and enhance infrastructure in ways that provide added value from the institute approach.

Please submit questions to: QLCI@nsf.gov

What are Challenge Institute (CI) Awards ?

- **Funding for up to 6 years** to establish and/or continue operating Quantum Leap Challenge Institutes

- **Cooperative Agreements**
  - funding increments subject to agreed-upon milestones, annual project reviews, periodic site visits, and availability of funds.

- **Preliminary Proposals are required**
  - Required contents for CI Preliminary Proposals are described in the Solicitation NSF 24-599.
  - CI Preliminary Proposals will undergo a merit review.

- **Invitations are required before submitting a CI Full Proposal**
  - Only invited CI Full Proposals will be considered.
  - Required contents for CI Full Proposals are described in the Solicitation NSF 24-599.
  - CI Full Proposals will undergo a merit review.

Please submit questions to: QLCI@nsf.gov

What goes into a CI Preliminary Proposal ?

❖ See Solicitation NSF 24-599 Sections V

- ***Cover Sheet***
- ***Preliminary Proposal Project Summary***
- ***Preliminary Proposal Project Description (15 pages maximum)***
  - Items (a) - (j). See next page
- ***Preliminary Proposal References Cited***
- ***Budget and Budget Justification***
  - Including table with budget breakdown by research, education, and coordination
- ***Facilities, Equipment and Other Resources***
- ***Senior/Key Personnel Documents***
  - Biographical Sketches
  - Current and Pending Support
  - Collaborators and Other Affiliations
  - Synergistic Activities
- ***Data Management and Sharing Plan***
- ***Mentoring plan***
- ***Preliminary Proposal Supplementary Documents:***
  - Synopsis of Institutional Support.
  - Management and Integration Plan.
  - Letters of Collaboration.

What goes into a CI Preliminary Proposal ?

❖ See Solicitation NSF 24-599 Sections V

- ***Preliminary Proposal Project Description (15 pages maximum)***
  a. A description of the cross-disciplinary and multi-institution research team
  b. A brief overview of the proposed Challenge Institute
  c. Context and motivation
  d. Intellectual Merit: A description of proposed major activities in the Research Challenge areas
  e. Broader Impacts: Including a description of education and workforce development activities
  f. Institute coordination and community engagement mechanisms and activities
  g. Partnerships and infrastructure development activities.
  h. Milestones and evaluation mechanisms
  i. Achievements under prior NSF support from the PI and the co-PIs.
  j. A summary of key activities undertaken by the team in preparation for collaborating

Please submit questions to: QLCI@nsf.gov

What more goes into a CI Full Proposal ?

❖ See Solicitation NSF 24-599 Sections V

The Project Description for invited CI Full Proposals must not exceed 35 pages.

Each Challenge Institute team is expected to develop a ***Strategic Plan*** that will guide the establishment, operation, and evolution of the Institute. The Strategic Plan must include, but is not limited to, the following elements:

- Challenge Research Theme, Focus Research Areas, and Research Community
- Institute Management and Sustainability
- Education, Training, and Workforce Development
- Partnerships and Infrastructure Development
- Cross-Disciplinary Research Coordination and Growth

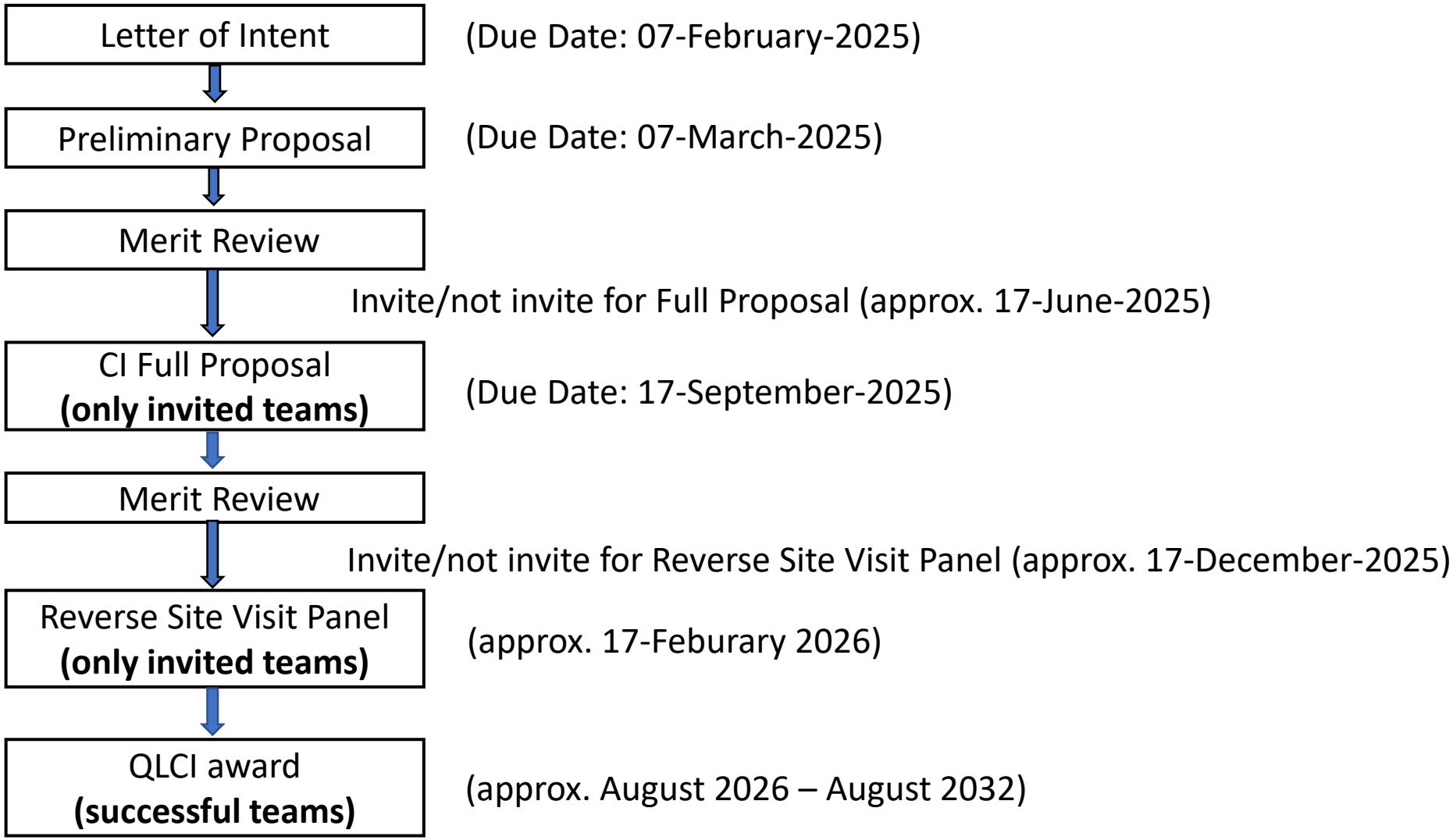
The Strategic Plan should be included in the Project Description.

Full Proposal Supplementary Documents should also include:

- **Statement on Challenge Institute Roles**
  - up to ½ page for each PI, co-PI, and Senior Personnel describing roles and responsibilities
- **Institute Ramp-Up Plan**
  - Proposals for new institutes must include a description of implementation activities necessary to establish the institute and to have it fully operational within six months of the start of the project

Please submit questions to: QLCI@nsf.gov

What is the QLCI proposal review schedule?



What Are The Review Criteria?

❖ Solicitation NSF 24-599 Section VI

Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge; and

Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

The following elements should be considered in the review for both criteria:

1. What is the potential for the proposed activity to
   - Advance knowledge and understanding within its own field or across different fields (IM); and
   - Benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Additional Solicitation-Specific Review Criteria. See next page

Additional Solicitation Specific Review Criteria

Reviewers will be asked to assess each of these points (See Solicitation NSF 24-599 Section VI):

- **Vision:** To what extent does the proposal present a compelling long-term vision to address a major challenge at the frontiers of QIST, and explain why an Institute is needed to address the challenge?
- **Research:** To what extent are the major research activities critical for addressing the challenge theme, supported by specific research goals that can advance the state-of-the-art of quantum information science and engineering in one or more frontiers within a 6-year period, and associated with corresponding evaluation mechanisms that are well-defined and actionable for measuring progress?
- **Education and Workforce Development:** To what extent are the proposed activities in education and workforce development meaningful, compelling, well-integrated with the Challenge Institute theme, and associated with corresponding evaluation mechanisms that are well-defined and actionable for measuring progress?
- **Coordination:** To what extent does the proposal present a convincing and meaningful plan to coordinate activities, both within the institute and the larger QIST community, to demonstrate value-added from an institute?
- **Team:** To what extent does the team make a compelling case for its readiness to operate a Challenge Institute, with cross-disciplinary expertise needed to lead all the proposed activities?
- **Strategic Plan:** To what extent does the plan provide a convincing road map for the operation of the Challenge Institute in pursuit of its vision? To what extent does the plan describe roles and responsibilities for Senior/Key personnel, strategies for course correction, and options for sustainability beyond the QLCI funding?

Quantum Leap Challenge Institutes (QLCI)

Questions and Answers

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: GENERAL QUESTIONS

Q1: Does NSF intend to fund any new Centers during this competition?

A1: Yes, this is an open competition.

The Solicitation NSF 24-599 states, "*The QLCI program can support awards to continue existing Quantum Leap Challenge Institutes or to establish and operate new Quantum Leap Challenge Institutes.*"

Solicitation NSF 24-599 also states that the estimated number of QLCI awards from the upcoming competition will be 5 to 10.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: GENERAL QUESTIONS

Q2: What are the main differences between the new QLCI Solicitation (NSF 24-599) and the older one (NSF 19-559)?

A2: The required major activities are streamlined to emphasize (1) research, (2) education and workforce development, and (3) coordination. Other criteria such as partnerships and infrastructure can be identified as supporting items (1) – (3).

The Solicitation-specific review criteria are similarly streamlined to emphasize: vision; research; education and workforce development; coordination; the team; and the strategic plan.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: GENERAL QUESTIONS

Q3: If our Preliminary Proposal team is Not Invited to submit a Full Proposal, or if our Full Proposal is Declined, may we submit our concept again in future competitions?

A3: There will only be a single competition under the QLCI Solicitation NSF 24-599. You may submit proposals to other NSF programs or solicitations, if eligible.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: GENERAL QUESTIONS

Q4: How is the QLCI program different from other NSF programs supporting large-scale QISE research projects?

A4: Quantum Leap Challenge Institutes are to:

- Enable large, ambitious research efforts to overcome specific scientific/technological challenges at the frontiers of QISE, where expertise from various disciplines, institutions, and industry can be leveraged as needed; and
- Foster cross-disciplinary approaches for education and workforce development; and
- Galvanize the community and promote a sustainable innovation ecosystem through coordination, by facilitating partnerships, and enhancing infrastructure in ways that provide value-added from the institute approach.

QLCI Questions and Answers: GENERAL QUESTIONS

Q5: Is my plan competitive enough?

A5: Proposals will be reviewed according to the information in Section VI.A. "Merit Review Principles and Criteria" of the QLCI program solicitation NSF 24-599.

The NSF program directors are not able to provide feedback on project ideas prior to submission of proposals.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: ELIGIBILITY

Q6: Are senior personnel who participated in an award made under the previous QLCI Solicitation NSF 19-559 restricted from participating in an NSF 24-599 proposal?

A6: No. These are separate competitions. It is allowable to re-compete for a new QLCI award.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: ELIGIBILITY

Q7: Who is eligible to submit a proposal under NSF 24-599?

A7: As stated in QLCI Solicitation NSF 24-599, "*Proposals may only be submitted by Institutions of Higher Education … having a campus located in the U.S.*"

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: ELIGIBILITY

Q8: Which technical topical areas and what technology readiness levels should QLCI projects submitted focus on?

A8: The QLCI Solicitation NSF 24-599 states, "*Institutes are expected to catalyze breakthroughs on important problems underpinning QIST, for example in the focus areas of quantum computation, quantum communication, quantum simulation and/or quantum sensing. Successful institutes will coordinate a variety of approaches to specific scientific, technological, and educational goals in these fields, including multiple institutions and building upon multiple disciplines, as motivated by the science and engineering challenges.*“

The QLCI program welcomes projects on a wide range of topics related to quantum information science and engineering. This could include work on advancing fundamental science and engineering underpinning QIST, or developing and pioneering new applications for quantum technologies across numerous fields.

QLCI Questions and Answers: ELIGIBILITY

Q9: If a Sponsored Projects Office (SPO) serves multiple institutions or campuses, is the submission limit of two a restriction at the SPO or institution/campus level?

A9: Each distinct institution (or campus) can submit up to two Preliminary Proposals. However, we would like to emphasize that, as indicated in the solicitation, QLCI projects can support large, multidisciplinary teams that typically coordinate efforts from multiple institutions.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: LETTERS OF INTENT

Q10: What is the purpose of a Letter of Intent? Should I expect a response to my Letter of Intent?

A10: Letters of Intent will not be subject to review and are used only to help NSF staff anticipate potential conflicts of interest of potential reviewers for the (subsequent) proposals. NSF will not provide feedback to Letters of Intent, and proposers should not expect a response.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: LETTERS OF INTENT

Q11: Is the number of senior project personnel limited for a QLCI project? Is the number of participating organizations limited?

A11: There is no limit on the number of senior project personnel or participating organizations in a Quantum Leap Challenge Institute proposal (or Letter of Intent).

The NSF Letter of Intent system has a software limitation on number of entries for Other Senior Project Personnel and Participating Organizations, but this is not intended to limit the number of subawards or senior personnel or participating organizations in a QLCI project.

For letters of intent, please simply ensure that all participating organizations (subawardee or not), senior personnel, and senior collaborators (unfunded) are listed somewhere in the Letter of Intent. If there is not enough room among the available slots for Other Senior Project Personnel and Participating Organizations, please list the additional senior personnel, collaborators, and organizations in the text boxes of the Letter of Intent.

QLCI Questions and Answers: LETTERS OF INTENT

Q12: Should multiple Letters of Intent be submitted for a collaborative project?

A12: No. A single Letter of Intent should be submitted for an entire project; submission of multiple Letters of Intent for the same project is not permitted.

Looking ahead to the proposal stage, as described in the QLCI Solicitation NSF 24-599, multi-institutional Challenge Institute proposals must be submitted as a single proposal by a single lead organization; separately submitted collaborative proposals are not permitted.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: LETTERS OF INTENT

Q13: How are the potential industrial and national laboratory collaborators identified in the Letter of Intent? Are they listed as senior personnel, Co-PIs, or simply as collaborators?

A13: Letters of Intent will not be subject to review and are used only to help NSF staff anticipate potential conflicts of interest from potential reviewers for the (subsequent) proposal merit review process. For Letters of Intent, please simply ensure that all senior project personnel and senior collaborators are listed somewhere in the Letter of Intent. If there is not enough room among the available slots for Other Senior Project Personnel and Participating Organizations, please list the additional senior personnel, senior collaborators, and organizations in the text boxes of the Letter of Intent.

QLCI Questions and Answers: LETTERS OF INTENT

Q14: Is it permissible for the project team in a proposal to have a different composition (changed project roles or changed personnel) from the team specified in the Letter of Intent?

A14: Yes, it is permissible for the roles of personnel in a proposal to be different from those in the Letter of Intent. It is also permissible to add or remove personnel when preparing the proposal. However, such modifications should be kept to a minimum. In particular, a proposal that involved personnel whose institutional affiliations had not been mentioned in the Letter of Intent would cause difficulties for NSF staff in identifying potential conflicts of interest between project team members and potential proposal merit review panelists.

QLCI Questions and Answers: LETTERS OF INTENT

Q15: Who decides which projects at an institution should submit Letters of Intent or Preliminary Proposals?

A15: Institutions should decide on which Challenge Institute Proposals they will submit.

For the QLCI Solicitation NSF 24-599, limitations on the number of proposals per organization do not apply to the Letters of Intent. However, lead organizations are limited to submit no more than two (2) Challenge Institute Preliminary Proposals. In addition, Lead organizations are limited to submit no more than two (2) invited Challenge Institute Full Proposals.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q16: What occurs if a single institution submits more than two Preliminary Proposals?

A16: If an institution submits more than two Preliminary Proposals, then the NSF QLCI program will only review the first two eligible Preliminary Proposals that are received from that institution.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q17: Can an institution submit a QLCI proposal while a similar proposal is under review in another program or agency?

A17: An institution may submit a Preliminary Proposal to the QLCI program even while a proposal with some similarity is under review by another NSF program, such as the Physics Frontiers Center program, or Engineering Research Center program, or programs at other U.S. agencies.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q18: For a project that is collaborative across multiple institutions or organizations, who is responsible for the submission?

A18: For submissions involving multiple institutions or organizations, the proposal should be submitted from only one (Lead) institution, with funding for participating organizations (non-leads) requested through subawards. Proposals should not be submitted as separately submitted collaborative proposals.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q19: Is there a limit on the number of PI/co-PIs in a proposal?

A19: There is no limit on the number of senior personnel in a QLCI project. However, the proposal Cover Sheet allows a single PI and at most 4 co-PIs. There is no limit on the number of Other Senior Personnel who may be included in the proposal.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q20: Can an individual be listed on the Cover Sheet (PI, co-PI) of a Full Proposal and participate on another Full Proposal?

A20: The QLCI Solicitation NSF 24-599 states, "*The lead PI and up to four additional co-PIs who are named on the Cover Sheet of a Challenge Institute Full Proposal must only participate in one Challenge Institute Full Proposal. Senior/Key Personnel who are not named on the cover sheet of a Challenge Institute Full Proposal may participate in no more than two (2) Challenge Institute Full Proposals.*"

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q21: Is it permissible for the project team in a Full Proposal to have a different composition (changed project roles or changed personnel) from the team specified in the Preliminary Proposal?

A21: The lead PI and submitting institution may not change between the Preliminary Proposal and Full Proposal stages. It is permissible for the roles of other personnel in a Full Proposal to be different from those in the Preliminary Proposal. It is also permissible to add or remove personnel (excluding the lead PI) when preparing the Full Proposal. However, such modifications should be kept to a minimum. In particular, a Full Proposal that involved personnel whose institutional affiliations had not been mentioned in the Preliminary Proposal would cause difficulties for NSF staff in identifying potential conflicts of interest between project team members and potential proposal merit review panelists.

QLCI Questions and Answers: PROPOSAL SUBMISSION

Q22: Can Challenge Institute award funds be used to develop new infrastructure? If so, are there limitations on the type of infrastructure or the budget for this?

A22: The QLCI solicitation does not constrain the categories of budget items that can be proposed. However, Challenge Institutes are expected to integrate where possible with other research, infrastructure, and workforce development activities. Therefore, Challenge Institute teams are expected to coordinate with their constituent organizations and partners to identify existing infrastructure, develop a concrete and workable plan for leveraging existing and new infrastructure resources.

If major new infrastructure investments are needed to address the proposed research challenges, then other sources of funding such as the NSF Major Research Instrumentation program and the NSF Mid-scale Research Infrastructure-1, and Mid-scale Research Infrastructure-2 programs might be more appropriate. Information about NSF-supported major and mid-scale facilities is available at the NSF Research Infrastructure Office website.

QLCI Questions and Answers: INDUSTRY PARTICIPATION

Q23: Can companies receive NSF funds?

A23: The top priority of the QLCI program is to support the US academic community in advancing the frontiers of quantum information science and engineering. The program can provide support for collaborations of U.S. university-based faculty, postdoctoral researchers, and graduate students as appropriate with non-academic partners, including travel expenses, consultant fees, facility charges, usage fees, etc. Projects with an interest in such activities should include these expenses as part of proposals to the QLCI program.

QLCI Questions and Answers: INDUSTRY PARTICIPATION

Q23: Can companies receive NSF funds?

A23 Continued: In general, industrial research partners are not permitted to use or receive NSF funds. Only under the exceptional circumstances that research or education activities at non-academic US organizations can make unique contributions, not available elsewhere, to the proposed project would such activities be considered for NSF support. Small businesses (per the Small Business Administration definition, which includes an upper limit of 500 employees) may be able to leverage relevant programs from the NSF SBIR program (https://seedfund.nsf.gov/).

Section II.B.3 of the QLCI Solicitation NSF 24-599 describes the general nature of partnerships between Quantum Leap Challenge Institutes and industrial partners. All partnerships with QLCI projects should be aligned with the research goals and objectives of the Institute.

QLCI Questions and Answers: INDUSTRY PARTICIPATION

Q24: How can companies benefit from becoming part of a QLCI proposal?

A24: Potential benefits to industrial partners from participating in a QLCI project include:

a) Opportunity to collaborate (on a pre-competitive basis) with QLCIs to further the objectives of both the QLCIs and the industrial partners

b) Opportunity to provide technical input to the research directions of QLCIs

c) Opportunity to provide input regarding use-cases, thereby helping technology transition for commercial and societal outcomes

d) Access to QLCI intellectual property under agreed-upon conditions

e) Interactions with other partners, which may bring multiple benefits, for example:
   - Networking and collaboration – e.g., to develop solutions for targeted use-cases and insight into the state of play in quantum R&D to enable better planning for the adoption of quantum technologies
   - Access to the next-generation quantum information science and engineering workforce

QLCI Questions and Answers: FFRDC PARTICIPATION

Q25: Is a Federally Funded Research and Development Center (FFRDC) eligible to participate as a sub-awardee to a university?

A25: The top priority of the QLCI program is to support the US academic community in advancing the frontiers of quantum information science and engineering. The program will provide support for collaborations of US-university-based faculty, postdoctoral researchers, and graduate students as appropriate with non-academic partners, including travel expenses, consultant fees, facility charges, usage fees, etc. Projects with an interest in such activities should include these expenses as part of proposals to the QLCI program.

NSF does not normally support research or education activities by scientists, engineers, or educators employed by Federal agencies or FFRDCs. Under exceptional circumstances, research or education projects at FFRDCs that can make unique contributions to the needs of a QLCI project, if not available elsewhere, may receive NSF support.

QLCI Questions and Answers: INTERNATIONAL PARTICIPATION

Q26: Do all participating investigators need to be based in the U.S.?

A26: No. It is anticipated that the Challenge Institute teams will develop synergistic partnerships with industry, U.S. national laboratories, and international partners as appropriate.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: INTERNATIONAL PARTICIPATION

Q27: Is it encouraged or discouraged to have funded co-PIs from institutions outside the U.S.?

A27: Encouraged. While the top priority of the QLCI program is to support the US academic community in advancing the frontiers of QISE, The QLCI program does encourage collaborative arrangements and development of shared infrastructure with international partners, as appropriate for the project. The QLCI program can provide support for collaborations of US-university faculty, postdoctoral researchers, and graduate students as appropriate with non-US partners, including travel expenses, consultant fees, etc. Projects with an interest in such activities should include these expenses as part of proposals to the QLCI program.

The QLCI program will not normally support the salary of collaborators at non-US institutions. In cases where the proposer considers a foreign organization's involvement to be essential to the project (e.g., through subawards or consultant arrangements), the proposer must justify the benefit to U.S. research and education. Further guidance on support of foreign organizations can be found in the NSF Proposal and Award Policies and Procedures Guide (PAPPG).

QLCI Questions and Answers: INTERNATIONAL PARTICIPATION

Q28: Are there limitations on how expenditures can be allocated for non-U.S. universities?

A28: Yes. Support for participating institutions is to be arranged through subawards managed by the submitting institution. It is the responsibility of the Sponsored Projects Office (SPO) of the submitting institution to determine the allowability of subaward expenses, subject to the NSF terms and conditions that apply to awardees.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: INTERNATIONAL PARTICIPATION

Q29: If a U.S.-based institution has an international campus, is the international campus allowed to receive QLCI funds?

A29: As stated in the QLCI Solicitation NSF 24-599, “If the proposal includes funding to be provided to an international branch campus of a U.S. institution of higher education (including through use of sub-awards and consultant arrangements), the proposer must explain the benefit(s) to the project of performance at the international branch campus and justify why the project activities cannot be performed at the U.S. campus.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: RESEARCH SECURITY

Q30: How will research security be considered in the QLCI proposal review process?

A30: As stated in the QLCI Solicitation NSF 24-599, “projects…are subject to research security policies as outlined by the NSF Office of the Chief of Research Security Strategy and Policy (OCRSSP) regarding the Trusted Research Using Safeguards and Transparency (TRUST) framework. The evaluation under the TRUST framework will be separate from the merit review process. If necessary, NSF may contact the proposer for additional information to inform the risk evaluation and identify mitigation measures to address potential risks.”

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: RESEARCH SECURITY

Q31: How should a QLCI proposal or project handle proprietary information?

A31: The QLCI Solicitation NSF 24-599 states, "… in alignment with the National Science and Technology Council report on "Guidance for Implementing National Security Presidential Memorandum 33 (NSPM-33)" and the National Security Memorandum 10 (NSM-10), QLCI proposals should also include in the Data Management and Sharing Plan a description of how any proprietary information or intellectual property will be managed. This description may include a discussion of how data will be shared with project partners and affiliates, how access to the data will be managed, and how the sensitivity of various data sets will be assessed. Research security concerns are relevant for QLCI projects because quantum technologies have the potential to impact U.S. economic and national security interests.

QLCI Questions and Answers: RESEARCH SECURITY

Q32: In light of NSM-10, "National Security Memorandum on Promoting United States Leadership in Quantum Computing While Mitigating Risks to Vulnerable Cryptographic Systems," and recent export controls on quantum technology, can a QLCI project focus on challenges of scaling up quantum computers, or advancing the art of quantum error correction?

A32: NSF will continue funding cutting-edge science and engineering in a wide range of fields including quantum information science. After all, NSF's mission is to advance the progress of science. We do not anticipate any major changes in the NSF merit review process.

Please submit questions to: QLCI@nsf.gov

QLCI Questions and Answers: RESEARCH SECURITY

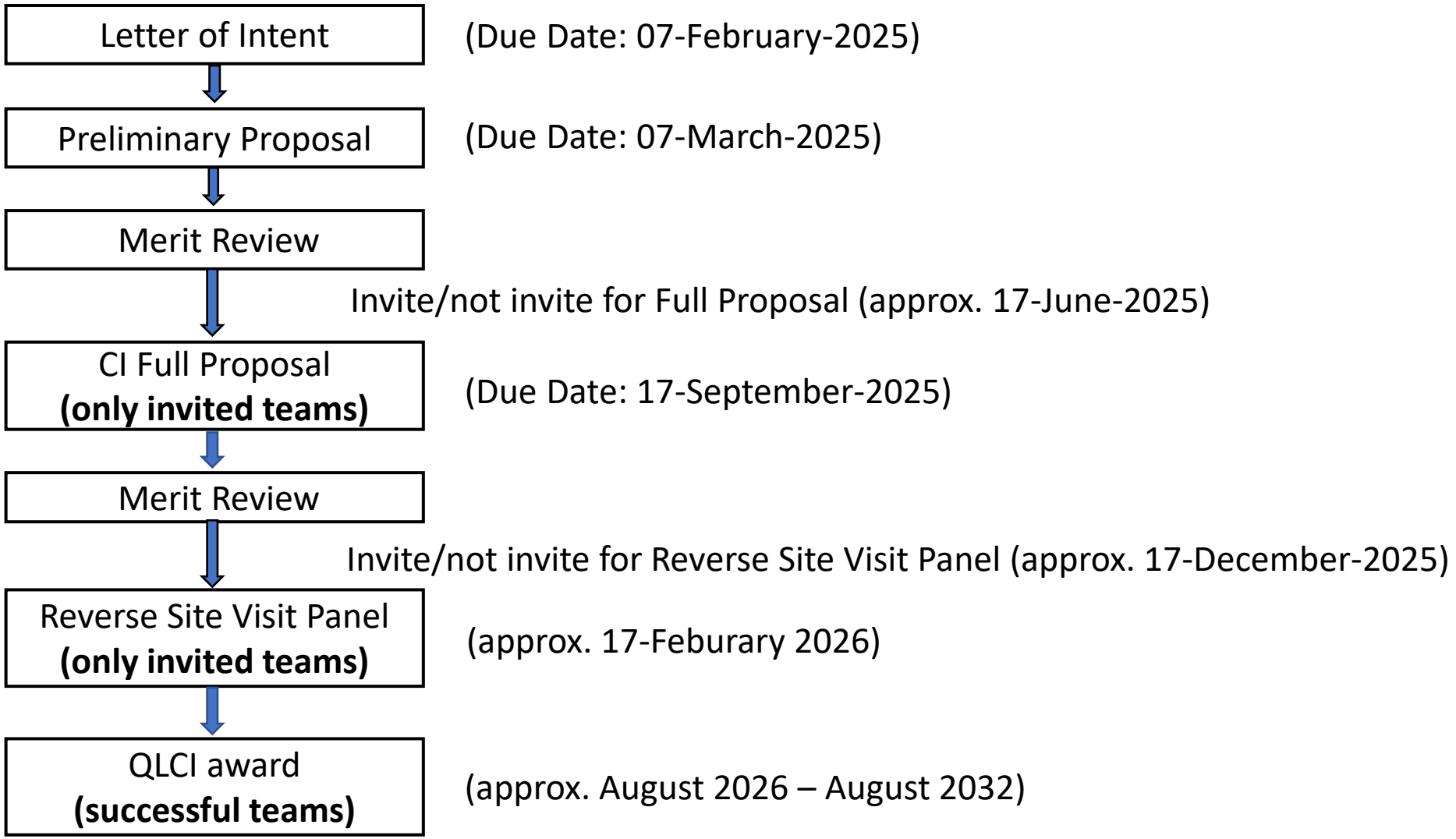
Q32 Continued: Can a QLCI project focus on challenges of scaling up quantum computers, or advancing the art of quantum error correction?

A32 Continued: If it is cutting-edge science and engineering, then NSF is in it for the long haul. NSF also coordinates with other government agencies in the National Quantum Initiative to ensure a whole-of-government approach to research leadership and understanding of QIS technologies. In that context, we are aware of an increasing interest in the national and economic security opportunities associated with quantum tech. We also realize that there are major science and engineering challenges for which NSF-funded academic research approaches are vital for discovery and innovation. While NSPM-33 and NSM-10 speak to some research security issues, for which we coordinate with the NSF office of research security strategy and policy, we also look to the National Strategic Overview for QIS on www.quantum.gov as a strong endorsement of our aim to promote a culture of discovery and champion a science-first approach to QIS policy.

QLCI Questions and Answers:

Q33: What's Next?

A33:



Quantum Leap Challenge Institutes (QLCI) Program Webinar

Thanks for your interest!

Please see all the information in the QLCI program solicitation NSF 24-599

available at

https://new.nsf.gov/funding/opportunities/qlci-quantum-leap-challenge-institutes/nsf24-599/solicitation

For additional questions, send e-mail to

QLCI@nsf.gov

End