

Frequently Asked Questions (FAQ)

Quantum Testbeds for Science

May 4, 2018

Q1: The call states that the Quantum Testbeds for Science (QTS) laboratories will host quantum computing hardware that is not yet ready for commercialization. Is commercialization a goal of the program?

A1: The goal of the QTS program is to provide external researchers with access to novel, early-stage quantum computing resources and help these researchers make effective use of the quantum computing resources. The report from the 2017 Quantum Testbed Stakeholder Workshop emphasized that despite the appearance of small quantum computing devices on cloud platforms, a considerable amount of pre-competitive foundational research is still required to understand how to use these devices effectively. QTS laboratories should therefore focus on enabling basic research by providing access to novel, early-stage quantum computing devices.

Q2: The call states that the QTS laboratory director must spend at least 50% of his or her time in that role. What if the person we would like to put forward as QTS laboratory director is committed to other projects for more than 50% of their time?

A2: Your options include renegotiating that person's other commitments and selecting another person to be your proposed QTS laboratory director.

Q3: Can I request salary for the QTS laboratory director in my proposal?

A3: Yes.

Q4: Some of the out-of-scope criteria seem to be specific to the circuit model approach to quantum computing. Are schemes that do not rely on sequences of gate operations on qubits such as annealing, continuous-variable quantum computing, and analog simulation allowed?

A4: Yes. The out-of-scope criteria related to the circuit model of quantum computing apply to proposals that include hardware intended for implementing the circuit model of quantum computing.

Q5: The call states that an initial set of quantum computing resources is expected to be available to external collaborators by the end of the first year of the award. Is it acceptable for this initial set of resources to be off-site (for example, accessed through the cloud), with on-site resources available only in later years of the award?

A5: Proposals to provide access only to off-site resources by the end of the first year of the award will not be considered out of scope. However, the call requires QTS laboratories to host experimental quantum computing hardware on site. Access to off-site resources is allowed, but not required. Prospective PIs should think carefully about the balance of required and optional elements in the proposed scope of work, and ensure that the proposed suite of quantum computing resources is well-suited to the needs of the research community as described in section I of the call.

Q6: The call states that proposals should explain how the proposed QTS laboratory will maintain a cutting-edge resource suite as technology evolves. How much detail is expected to be provided about the timeline and technical specifications for planned hardware upgrades?

A6: Quantum computing is a rapidly moving field in which it is difficult to make detailed predictions regarding future availability of hardware with specific characteristics. The call therefore requires proposals to include a strategy for maintaining a cutting-edge resource suite rather than a detailed plan for upgrades.

Q7: Is there a maximum acceptable dollar amount for hardware acquisition?

A7: As stated in section II.C of the call, the award floor is \$3,000,000 per year and the award ceiling is \$9,000,000 per year. The call does not place additional limits on how the budget is used to support the proposed work. However, a proposal that does not adequately balance each of the elements of the call (including, but not limited to, hardware, staffing, and community engagement) is unlikely to be competitive.

Q8: How many awards do you plan to make?

A8: Please refer to section II.C of the call.

Q9: Do you have a preference for either Office of Science or National Nuclear Security Administration labs?

A9: All DOE labs are eligible to submit proposals to this call. Review criteria and the selection process are described in section V of the call.

Q10: The call states that funded QTS laboratories will be expected to sponsor community engagement activities that support the growth of an active, integrated research community. Is providing user support adequate to meet this requirement, or do I need to do something else?

A10: Your proposal should include a community engagement plan that will result in a thriving community of collaborators ranging from beginners to experts and spanning a wide range of disciplines.

While the call does not include specific requirements for community engagement activities, it does suggest workshops and visitor programs as examples of possible activities that might be included in a community engagement plan and stipulates that the plan should include a mechanism for communication of scientific progress and lessons learned from research performed at the QTS lab. Prospective PIs are strongly encouraged to review the relevant sections of the Quantum Testbed Stakeholder Workshop report and consider the examples provided by existing scientific facilities, including those sponsored by DOE and other government agencies.

Q11: Do you expect that teams will be formed in time for pre-proposals, full proposals, or in a post-proposal process? Can I change the team presented in my preproposal if a full proposal is encouraged?

A11: The Lead Principal Investigator and Senior/Key personnel must be listed in the preproposal (section IV.B.2), and are expected to remain the same on the full proposal.

The composition of the team is allowed to change throughout the award term. Section 2.2 of the Quantum Testbeds Stakeholder Workshop report provides one example of how the team might change over time. Any planned changes in team composition should be described in the full proposal.

Q12: Will there be a companion FOA to this call in later years so university researchers can participate without the overhead cost associated with a subcontract or subaward?

A12: ASCR currently has no plans to issue a companion FOA. Proposals submitted to LAB-1902 should be self-contained, with success not contingent on possible future calls.

Q13: Are subawards to researchers outside the United States allowed?

A13: Yes. Note that you must provide a strong justification for any proposed subawards.