

(2) supporting curriculum and workforce development in quantum information science and engineering; and

(3) fostering innovation by bringing industry perspectives to quantum research and workforce development, including by leveraging industry knowledge and resources.

**(d) Requirements**

**(1) In general**

An institution of higher education or an eligible nonprofit organization (or a consortium thereof) seeking funding under this section shall submit an application to the Director of the National Science Foundation at such time, in such manner, and containing such information as the Director may require.

**(2) Applications**

Each application under paragraph (1) shall include a description of—

(A) how the Center will work with other research institutions and industry partners to leverage expertise in quantum science, education and curriculum development, and technology transfer;

(B) how the Center will promote active collaboration among researchers in multiple disciplines involved in quantum research, including physics, engineering, mathematics, computer science, chemistry, and material science;

(C) how the Center will support long-term and short-term workforce development in the quantum field;

(D) how the Center can support an innovation ecosystem to work with industry to translate Center research into applications; and

(E) a long-term plan to become self-sustaining after the expiration of funding under this section.

**(e) Selection and duration**

**(1) In general**

Each Center established under this section is authorized to carry out activities for a period of 5 years.

**(2) Reapplication**

An awardee may reapply for additional, subsequent periods of 5 years on a competitive, merit-reviewed basis.

**(3) Termination**

Consistent with the authorities of the National Science Foundation, the Director of the National Science Foundation may terminate an underperforming Center for cause during the performance period.

**(f) Funding**

The Director of the National Science Foundation shall allocate up to \$10,000,000 for each Center established under this section for each of fiscal years 2019 through 2023, subject to the availability of appropriations. Amounts made available to carry out this section shall be derived from amounts appropriated or otherwise made available to the National Science Foundation.

(Pub. L. 115-368, title III, §302, Dec. 21, 2018, 132 Stat. 5100.)

SUBCHAPTER IV—DEPARTMENT OF ENERGY QUANTUM ACTIVITIES

**§ 8851. Quantum information science research program**

**(a) In general**

The Secretary of Energy shall carry out a basic research program on quantum information science.

**(b) Program components**

In carrying out the program under subsection (a), the Secretary of Energy shall—

(1) formulate goals for quantum information science research to be supported by the Department of Energy;

(2) leverage the collective body of knowledge from existing quantum information science research;

(3) provide research experiences and training for additional undergraduate and graduate students in quantum information science, including in the fields of—

(A) quantum information theory;

(B) quantum physics;

(C) quantum computational science;

(D) applied mathematics and algorithm development;

(E) quantum networking;

(F) quantum sensing and detection; and

(G) materials science and engineering;

(4) coordinate research efforts funded through existing programs across the Department of Energy, including—

(A) the Nanoscale Science Research Centers;

(B) the Energy Frontier Research Centers;

(C) the Energy Innovation Hubs;

(D) the National Laboratories;

(E) the Advanced Research Projects Agency; and

(F) the National Quantum Information Science Research Centers; and

(5) coordinate with other Federal departments and agencies, research communities, and potential users of information produced under this section.

(Pub. L. 115-368, title IV, §401, Dec. 21, 2018, 132 Stat. 5101.)

**§ 8852. National Quantum Information Science Research Centers**

**(a) Establishment**

**(1) In general**

The Secretary of Energy, acting through the Director of the Office of Science (referred to in this section as the “Director”), shall ensure that the Office of Science carries out a program, in consultation with other Federal departments and agencies, as appropriate, to establish and operate at least 2, but not more than 5, National Quantum Information Science Research Centers (referred to in this section as “Centers”) to conduct basic research to accelerate scientific breakthroughs in quantum information science and technology and to support research conducted under section 8851 of this title.