(18) Manufacturing USA institute

The term ''Manufacturing USA institute'' means a Manufacturing USA institute described in section 278s(d) of title 15.

(19) Minority-serving institution

The term ''minority-serving institution'' means a Hispanic-serving institution as defined in section 1101a(a) of title 20; an Alaska Native-serving institution or Native Hawaiian-serving institution as defined in section 1059d(b) of title 20; or a Predominantly Black institution, Asian American and Native American Pacific Islander-serving institution, or Native American-serving nontribal institution as defined in section 1067q(c) of title 20.

(20) National Academies

The term ''National Academies'' means the National Academies of Sciences, Engineering, and Medicine.

(21) Non-profit organization

The term ''non-profit organization'' means an organization which is described in section 501(c)(3) of title 26 and exempt from tax under section 501(a) of such title.

(22) PreK–12

The term ''PreK–12'' means pre-kindergarten through grade 12.

(23) Quantum information science

The term ''quantum information science'' has the meaning given such term in section 8801 of title 15.

(24) Recipient

The term ''recipient'' means an entity, usually a non-Federal entity, that receives a Federal award directly from a Federal research agency. The term ''recipient'' does not include entities that receive subawards or individuals that are the beneficiaries of the award.

(25) Research and development award

The term ''research and development award'' means support provided to an individual or entity by a Federal research agency to carry out research and development activities, which may include support in the form of a grant, contract, cooperative agreement, or other such transaction. The term does not include a grant, contract, agreement or other transaction for the procurement of goods or services to meet the administrative needs of a Federal research agency.

(26) Skilled technical work

The term ''skilled technical work'' means an occupation that requires a high level of knowledge in a technical domain and does not require a bachelor's degree for entry.

(27) STEM

The term ''STEM'' means science, technology, engineering, and mathematics, including computer science.

(28) STEM education

The term ''STEM education'' has the meaning given the term in section 2 of the STEM Education Act of 2015 (42 U.S.C. 6621 note).

(29) Technical standard

The term ''technical standard'' has the meaning given such term in section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note).

(30) Tribal College or University

The term ''Tribal College or University'' has the meaning given such term in section 1059c of title 20.

(Pub. L. 117–167, div. B, § 10002, Aug. 9, 2022, 136 Stat. 1405.)

Editorial Notes

REFERENCES IN TEXT

This division, referred to in introductory provisions, is div. B of Pub. L. 117–167, Aug. 9, 2022, 136 Stat. 1399, which enacted this chapter and enacted, amended, and repealed numerous other sections and notes in the Code. For complete classification of div. B to the Code, see Short Title note set out below and Tables.

Section 502 of the America COMPETES Reauthorization Act of 2010, referred to in par. (7), is section 502 of Pub. L. 111–358, which is set out as a note under section 1862p of this title.

The Railway Labor Act, referred to in par. (15)(B)(ii), is act May 20, 1926, ch. 347, 44 Stat. 577, which is classified principally to chapter 8 (§ 151 et seq.) of Title 45, Railroads. For complete classification of this Act to the Code, see section 151 of Title 45 and Tables.

Section 2 of the STEM Education Act of 2015, referred to in par. (28), is section 2 of Pub. L. 114–59, which is set out as a note under section 6621 of this title.

Section 12(d)(5) of the National Technology Transfer and Advancement Act of 1995, referred to in par. (29), is section 12(d)(5) of Pub. L. 104–113, which defines ''technical standards'' and is set out as a note under section 272 of Title 15, Commerce and Trade.

Statutory Notes and Related Subsidiaries

SHORT TITLE

Pub. L. 117–167, div. B, § 10001, Aug. 9, 2022, 136 Stat. 1405, provided that: ''This division [div. B (§§ 10001–10862) of Pub. L. 117–167, see Tables for classification] may be cited as the 'Research and Development, Competition, and Innovation Act'.''

SUBCHAPTER I—DEPARTMENT OF ENERGY SCIENCE FOR THE FUTURE

§ 18911. Basic energy sciences program

(a) to (c) Omitted

(d) Foundational nuclear science

(1) In general

The Director of the Office of Science shall support a program of research and development to bridge scientific barriers to, and expand theoretical and fundamental knowledge relevant to, understanding nuclear materials and matter for the benefit of commerce, medicine, and national security.

(2) Activities

As part of the program described in paragraph (1)—

(A) the Director of the Office of Science shall support basic research to pursue distinct lines of scientific inquiry, including—

(i) research in nuclear materials science, including the application of advanced computing practices to foundational and emerging research areas in nuclear materials science and discovery, such as—

(I) the advanced characterization of materials;

(II) materials synthesis;
(III) processing;
(IV) the innovative use of experimental and theoretical data; and
(V) mechanical behavior in unique environments, including the effects of radiation;

(ii) electrochemistry research and associated techniques for processing nuclear materials;
(iii) the development of advanced instrumentation and nuclear data collection to inform the activities described in clauses (i) and (ii); and
(iv) any other area of research, as determined by the Director of the Office of Science; and

(B) the Assistant Secretary for Nuclear Energy shall consult with the Director of the Office of Science to support the direction of translational research, development, and validation of physical concepts developed under the program.

(3) Funding

Of the funds authorized to be appropriated for basic energy sciences in a fiscal year, there is authorized to be appropriated to the Secretary of Energy to carry out activities under this subsection $50,000,000 for each of fiscal years 2023 through 2027.

(e) Carbon Materials Science Initiative

(1) Initiative

(A) In general

The Director of the Office of Science (referred to in this subsection as the ''Director'') shall establish a research initiative, to be known as the ''Carbon Materials Science Initiative'' (referred to in this subsection as the ''Initiative''), to expand the fundamental knowledge of coal, coal-wastes, and carbon ore chemistry useful for understanding the conversion of carbon to material products.

(B) Coordination

In carrying out programs and activities under the Initiative, the Director shall leverage expertise and resources from the Office of Fossil Energy and Carbon Management and the United States Geological Survey.

(C) Teams

(i) In general

In carrying out the Initiative, the Director shall establish and organize activities among multidisciplinary teams to leverage, to the maximum extent practicable, expertise from the National Laboratories, institutions of higher education, and the private sector.

(ii) Goals

The multidisciplinary teams described in clause (i) shall pursue expedient, milestone-driven research goals established by the Director.

(2) Research program

(A) In general

The Director shall carry out under the Initiative a program to support, and discover fundamental knowledge relevant to, carbon materials and carbon ore processing research.

(B) Activities

As part of the program described in subparagraph (A), the Director shall, in coordination with the Assistant Secretary of Energy for Fossil Energy and Carbon Management, as appropriate, support research to pursue distinct lines of scientific inquiry, including—

(i) methods of extraction, processing, recycling, and utilization of the materials and valuable minerals contained in raw coal and coal-waste;
(ii) methods of improving performance, cost, and availability of materials for use in carbon capture systems; and
(iii) unconventional pathways and materials for conversion of carbon dioxide molecules, minerals, and materials.

(C) Review

The Director shall periodically review activities carried out under the program described in subparagraph (A) to evaluate the achievement of scientific objectives and research milestones.

(D) Coordination with existing programs and centers

In carrying out the program described in subparagraph (A), the Director shall—

(i) ensure coordination and knowledge sharing with—
(I) the United States Geological Survey; and
(II) the programs and the Carbon Utilization Research Center established under section 16298a of this title; and

(ii) avoid duplication of efforts to the maximum extent practicable.

(3) Carbon Materials Research Centers

(A) In general

In carrying out the activities authorized under paragraph (2), the Director shall establish 1 center in each of the 2 major coal-producing regions of the United States, each of which shall—

(i) be known as a ''Carbon Materials Research Center'' (referred to in this paragraph as a ''Center''); and
(ii) focus on early stage research and development activities, including—
(I) developing and advancing methods of extracting, processing, or recycling carbon or other valuable materials or minerals from raw coal, coal-waste, or other solid carbon materials, for the development of new carbon-based materials;
(II) methods of improving the structural, physical, and chemical properties of carbon-based materials or other valuable materials from raw coal, coal-waste, or other solid carbon materials and their recyclability;
(III) overcoming the challenges and maximizing the benefits of commercially extracting, producing, or improving

coal-derived carbon and resulting products; and

(IV) identifying novel pathways and materials for carbon storage and conversion into useful products.

(B) Selection

The Director shall—

(i) select Centers under subparagraph (A) on a competitive, merit-reviewed basis; and

(ii) consider applications from the National Laboratories, institutions of higher education, multi-institutional collaborations, and other appropriate entities.

(C) Duration

A Center shall receive support for a period of not more than 5 years beginning on the date of establishment of that Center, subject to the availability of appropriations.

(D) Renewal

On the expiration of any period of support of a Center, the Director may renew support for that Center, on a merit-reviewed basis, for a period of not more than 5 years.

(E) Existing facilities

The Director shall—

(i) ensure that the research activities carried out by the Centers are not duplicative of existing efforts; and

(ii) if practicable, leverage existing user facilities and other capabilities of the Department of Energy to carry out the research objectives of the Centers.

(f) Carbon Sequestration Research and Geologic Computational Science Initiative

(1) Initiative

(A) In general

The Secretary of Energy (referred to in this subsection as the ''Secretary'') shall establish a research initiative, to be known as the ''Carbon Sequestration Research and Geologic Computational Science Initiative'' (referred to in this subsection as the ''Initiative''), to expand the fundamental knowledge, data collection, data analysis, and modeling of subsurface geology for the purpose of advancing carbon sequestration in geologic formations.

(B) Leveraging

In carrying out programs and activities under the Initiative, the Secretary shall leverage expertise and resources from the Office of Fossil Energy and Carbon Management and the United States Geological Survey.

(C) Teams

(i) In general

In carrying out the Initiative, the Secretary shall establish and organize activities among multidisciplinary teams to leverage, to the maximum extent practicable, expertise from the National Laboratories, institutions of higher education, and the private sector.

(ii) Goals

The multidisciplinary teams described in clause (i) shall pursue aggressive, milestone-driven research goals established by the Secretary.

(D) Additional activities

The Secretary may organize additional activities under this subsection through other organizational structures.

(2) Research program

(A) In general

The Secretary shall carry out under the Initiative a program to support research needed for, and discover knowledge relevant to, the sequestration of carbon in geologic formations.

(B) Activities

As part of the program described in subparagraph (A), the Director of the Office of Science shall support fundamental research to pursue distinct lines of scientific inquiry, including—

(i) gathering geologic data for pore space characterization, including improvements to geologic seismic imaging;

(ii) evaluating pore space quality, including evaluation of geologic samples, to determine appropriate sequestration zones for carbon;

(iii) testing carbon sequestration;

(iv) monitoring carbon migration in geologic formations;

(v) advancements in data analytics, including the analysis of seismic data, and computational science to improve the advanced computing, visualization, and imaging of geologic formations for the sequestration of carbon; and

(vi) predictive understanding of coupled processes in complex subsurface geologic systems for secure carbon storage.

(C) Review

The Secretary shall periodically review activities carried out under the program described in subparagraph (A) to evaluate achievement of scientific objectives and research milestones.

(3) Carbon storage research and geologic computational science centers

(A) In general

In carrying out the activities authorized under paragraph (2), the Secretary shall select and establish not more than 2 carbon storage research and geologic computational science centers (referred to in this paragraph as a ''Center'') to develop and advance improvements to data collection, analysis, and modeling of subsurface geology for the purpose of advancing carbon sequestration in geologic formations.

(B) Selection

(i) In general

The Secretary shall—

(I) select Centers under subparagraph (A) on a competitive, merit-reviewed basis; and

(II) to the maximum extent practicable, locate each Center in a geographically diverse region with estab-

lished and ongoing geologic carbon sequestration research and demonstration.

(ii) Applications

In selecting Centers under subparagraph (A), the Secretary shall consider applications from institutions of higher education, multi-institutional collaborations, and other appropriate entities.

(C) Duration

(i) New Centers

A Center established after August 9, 2022, shall receive support for a period of not more than 5 years beginning on the date of establishment of that Center, subject to the availability of appropriations.

(ii) Existing Centers

A Center already in existence on August 9, 2022, may continue to receive support for a period of not more than 5 years beginning on August 9, 2022.

(iii) Renewal

On expiration of a period of support described in clause (i) or (ii), the Secretary may renew support for the Center, on a merit-reviewed basis, for a period of not more than 5 years.

(4) Coordination with existing programs and Centers

In carrying out this subsection, the Secretary shall—

(A) ensure coordination with—

(i) the United States Geological Survey; and

(ii) the programs established under section 16293 of this title; and

(B) avoid duplication of efforts to the maximum extent practicable.

(g) Funding for Carbon Initiatives

Of the funds authorized to be appropriated for basic energy sciences in a fiscal year, there is authorized to be appropriated to the Secretary to carry out activities under subsections (e) and (f) $50,000,000 for each of fiscal years 2023 through 2027.

(Pub. L. 117–167, div. B, title I, §10102, Aug. 9, 2022, 136 Stat. 1409.)

Editorial Notes

CODIFICATION

Section is comprised of section 10102 of div. B of Pub. L. 117–167. Subsecs. (a), (b), and (c) of section 10102 of div. B of Pub. L. 117–167 amended sections 18641, 16313, and 16315 of this title, respectively.

§ 18912. Research security

(a) Definitions

In this section:

(1) Country of risk

(A) In general

The term ''country of risk'' means a foreign country determined by the Secretary, in accordance with subparagraph (B), to present a risk of theft of United States intellectual property or a threat to the national security of the United States if nationals of the country, or entities owned or controlled by the country or nationals of the country, participate in any research, development, demonstration, or deployment activity authorized under this division or division A or an amendment made by this division or division A.

(B) Determination

In making a determination under subparagraph (A), the Secretary, in coordination with the Director of the Office of Intelligence and Counterintelligence, shall take into consideration—

(i) the most recent World Wide Threat Assessment of the United States Intelligence Community, prepared by the Director of National Intelligence; and

(ii) the most recent National Counterintelligence Strategy of the United States.

(2) Covered support

The term ''covered support'' means any grant, contract, subcontract, award, loan, program, support, or other activity authorized under this division or division A, or an amendment made by this division or division A.

(3) Entity of concern

The term ''entity of concern'' means any entity, including a national, that is—

(A) identified under section 1237(b) of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (50 U.S.C. 1701 note; Public Law 105–261);

(B) identified under section 1260H of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 (10 U.S.C. 113 note; Public Law 116–283);

(C) on the Entity List maintained by the Bureau of Industry and Security of the Department of Commerce and set forth in Supplement No. 4 to part 744 of title 15, Code of Federal Regulations;

(D) included in the list required by section 9(b)(3) of the Uyghur Human Rights Policy Act of 2020 (Public Law 116–145; 134 Stat. 656); or

(E) identified by the Secretary, in coordination with the Director of the Office of Intelligence and Counterintelligence and the applicable office that would provide, or is providing, covered support, as posing an unmanageable threat—

(i) to the national security of the United States; or

(ii) of theft or loss of United States intellectual property.

(4) National

The term ''national'' has the meaning given the term in section 1101 of title 8.

(5) Secretary

The term ''Secretary'' means the Secretary of Energy.

(b) Science and technology risk assessment

(1) In general

The Secretary shall develop and maintain tools and processes to manage and mitigate research security risks, such as a science and