

graph (5) if the Secretary determines that the Center is underperforming.

**(7) Authorization of appropriations**

There is authorized to be appropriated to carry out this subsection \$25,000,000 for each of fiscal years 2021 through 2025.

(Pub. L. 109-58, title IX, § 962, as added Pub. L. 116-260, div. Z, title IV, § 4002(a), Dec. 27, 2020, 134 Stat. 2528; amended Pub. L. 117-58, div. D, title III, § 40303, Nov. 15, 2021, 135 Stat. 988.)

**Editorial Notes**

**PRIOR PROVISIONS**

A prior section 16292, Pub. L. 109-58, title IX, § 962, Aug. 8, 2005, 119 Stat. 890, related to coal and related technologies program, prior to repeal by Pub. L. 116-260, div. Z, title IV, § 4002(a), Dec. 27, 2020, 134 Stat. 2528.

**AMENDMENTS**

2021—Subsec. (b)(2)(D). Pub. L. 117-58, § 40303(1)(B), substituted “program for carbon capture technologies; and” for “program.”

Subsec. (b)(2)(E). Pub. L. 117-58, § 40303(1)(A), (C), added subpar. (E).

Subsec. (d)(1)(E). Pub. L. 117-58, § 40303(2), added subpar. (E).

**Statutory Notes and Related Subsidiaries**

**WAGE RATE REQUIREMENTS**

For provisions relating to rates of wages to be paid to laborers and mechanics on projects for construction, alteration, or repair work funded under div. D or an amendment by div. D of Pub. L. 117-58, including authority of Secretary of Labor, see section 18851 of this title.

**FINDINGS**

Pub. L. 117-58, div. D, title III, § 40301, Nov. 15, 2021, 135 Stat. 986, provided that: “Congress finds that—

“(1) the industrial sector is integral to the economy of the United States—

“(A) providing millions of jobs and essential products; and

“(B) demonstrating global leadership in manufacturing and innovation;

“(2) carbon capture and storage technologies are necessary for reducing hard-to-abate emissions from the industrial sector, which emits nearly 25 percent of carbon dioxide emissions in the United States;

“(3) carbon removal and storage technologies, including direct air capture, must be deployed at large-scale in the coming decades to remove carbon dioxide directly from the atmosphere;

“(4) large-scale deployment of carbon capture, removal, utilization, transport, and storage—

“(A) is critical for achieving mid-century climate goals; and

“(B) will drive regional economic development, technological innovation, and high-wage employment;

“(5) carbon capture, removal, and utilization technologies require a backbone system of shared carbon dioxide transport and storage infrastructure to enable large-scale deployment, realize economies of scale, and create an interconnected carbon management market;

“(6) carbon dioxide transport infrastructure and permanent geological storage are proven and safe technologies with existing Federal and State regulatory frameworks;

“(7) carbon dioxide transport and storage infrastructure share similar barriers to deployment previously faced by other types of critical national in-

frastructure, such as high capital costs and chicken-and-egg challenges, that require Federal and State support, in combination with private investment, to be overcome; and

“(8) each State should take into consideration, with respect to new carbon dioxide transportation infrastructure—

“(A) qualifying the infrastructure as pollution control devices under applicable laws (including regulations) of the State; and

“(B) establishing a waiver of ad valorem and property taxes for the infrastructure for a period of not less than 10 years.”

**§ 16293. Carbon storage validation and testing**

**(a) Definitions**

In this section:

**(1) Large-scale carbon sequestration**

The term “large-scale carbon sequestration” means a scale that—

(A) demonstrates the ability to inject into geologic formations and sequester carbon dioxide; and

(B) has a goal of sequestering not less than 50 million metric tons of carbon dioxide.

**(2) Program**

The term “program” means the program established under subsection (b)(1).

**(b) Carbon storage program**

**(1) In general**

The Secretary shall establish a program of research, development, demonstration, and commercialization for carbon storage.

**(2) Program activities**

Activities under the program shall include—

(A) in coordination with relevant Federal agencies, developing and maintaining mapping tools and resources that assess the capacity of geologic storage formation in the United States;

(B) developing monitoring tools, modeling of geologic formations, and analyses—

(i) to predict carbon dioxide containment; and

(ii) to account for sequestered carbon dioxide in geologic storage sites;

(C) researching—

(i) potential environmental, safety, and health impacts in the event of a leak into the atmosphere or to an aquifer; and

(ii) any corresponding mitigation actions or responses to limit harmful consequences of such a leak;

(D) evaluating the interactions of carbon dioxide with formation solids and fluids, including the propensity of injections to induce seismic activity;

(E) assessing and ensuring the safety of operations relating to geologic sequestration of carbon dioxide;

(F) determining the fate of carbon dioxide concurrent with and following injection into geologic formations;

(G) supporting cost and business model assessments to examine the economic viability of technologies and systems developed under the program;

(H) providing information to the Environmental Protection Agency, States, local

governments, Tribal governments, and other appropriate entities, to ensure the protection of human health and the environment; and

(I) evaluating the quantity, location, and timing of geologic carbon storage deployment that may be needed, and developing strategies and resources to enable the deployment.

**(3) Geologic settings**

In carrying out research activities under this subsection, the Secretary shall consider a variety of candidate onshore and offshore geologic settings, including—

- (A) operating oil and gas fields;
- (B) depleted oil and gas fields;
- (C) residual oil zones;
- (D) unconventional reservoirs and rock types;
- (E) unmineable coal seams;
- (F) saline formations in both sedimentary and basaltic geologies;
- (G) geologic systems that may be used as engineered reservoirs to extract economical quantities of brine from geothermal resources of low permeability or porosity; and
- (H) geologic systems containing in situ carbon dioxide mineralization formations.

**(c) Large-scale carbon sequestration demonstration program**

**(1) In general**

The Secretary shall establish a demonstration program under which the Secretary shall provide funding for demonstration projects to collect and validate information on the cost and feasibility of commercial deployment of large-scale carbon sequestration technologies.

**(2) Existing regional carbon sequestration partnerships**

In carrying out paragraph (1), the Secretary may provide additional funding to regional carbon sequestration partnerships that are carrying out or have completed a large-scale carbon sequestration demonstration project under this section (as in effect on the day before December 27, 2020) for additional work on that project.

**(3) Demonstration components**

Each demonstration project carried out under this subsection shall include longitudinal tests involving carbon dioxide injection and monitoring, mitigation, and verification operations.

**(4) Clearinghouse**

The National Energy Technology Laboratory shall act as a clearinghouse of shared information and resources for—

- (A) existing or completed demonstration projects receiving additional funding under paragraph (2); and
- (B) any new demonstration projects funded under this subsection.

**(5) Report**

Not later than 1 year after December 27, 2020, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Science,

Space, and Technology of the House of Representatives a report that—

(A) assesses the progress of all regional carbon sequestration partnerships carrying out a demonstration project under this subsection;

(B) identifies the remaining challenges in achieving large-scale carbon sequestration that is reliable and safe for the environment and public health; and

(C) creates a roadmap for carbon storage research and development activities of the Department through 2025, with the goal of reducing economic and policy barriers to commercial carbon sequestration.

**(d) Integrated storage**

**(1) In general**

The Secretary may transition large-scale carbon sequestration demonstration projects under subsection (c) into integrated commercial storage complexes.

**(2) Goals and objectives**

The goals and objectives of the Secretary in seeking to transition large-scale carbon sequestration demonstration projects into integrated commercial storage complexes under paragraph (1) shall be—

(A) to identify geologic storage sites that are able to accept large volumes of carbon dioxide acceptable for commercial contracts;

(B) to understand the technical and commercial viability of carbon dioxide geologic storage sites; and

(C) to carry out any other activities necessary to transition the large-scale carbon sequestration demonstration projects under subsection (c) into integrated commercial storage complexes.

**(e) Large-scale carbon storage commercialization program**

**(1) In general**

The Secretary shall establish a commercialization program under which the Secretary shall provide funding for the development of new or expanded commercial large-scale carbon sequestration projects and associated carbon dioxide transport infrastructure, including funding for the feasibility, site characterization, permitting, and construction stages of project development.

**(2) Applications; selection**

**(A) In general**

To be eligible to enter into an agreement with the Secretary for funding under paragraph (1), an entity shall submit to the Secretary an application at such time, in such manner, and containing such information as the Secretary determines to be appropriate.

**(B) Application process**

The Secretary shall establish an application process that, to the maximum extent practicable—

(i) is open to projects at any stage of development described in paragraph (1); and

(ii) facilitates expeditious development of projects described in that paragraph.

**(C) Project selection**

In selecting projects for funding under paragraph (1), the Secretary shall give priority to—

- (i) projects with substantial carbon dioxide storage capacity; or
- (ii) projects that will store carbon dioxide from multiple carbon capture facilities.

**(f) Preference in project selection from meritorious proposals**

In making competitive awards under this section, subject to the requirements of section 16353 of this title, the Secretary shall—

(1) with respect to the research, development, demonstration program components described in subsections (b) through (d) give preference to proposals from partnerships among industrial, academic, and government entities; and

(2) require recipients to provide assurances that all laborers and mechanics employed by contractors and subcontractors in the construction, repair, or alteration of new or existing facilities performed in order to carry out a demonstration or commercial application activity authorized under this section shall be paid wages at rates not less than those prevailing on similar construction in the locality, as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, and the Secretary of Labor shall, with respect to the labor standards in this paragraph, have the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 Fed. Reg. 3176; 5 U.S.C. Appendix) and section 3145 of title 40.

**(g) Cost sharing**

Activities carried out under this section shall be subject to the cost-sharing requirements of section 16352 of this title.

**(h) Authorization of appropriations**

There is authorized to be appropriated to the Secretary to carry out this section \$2,500,000,000 for the period of fiscal years 2022 through 2026.

(Pub. L. 109-58, title IX, §963, Aug. 8, 2005, 119 Stat. 891; Pub. L. 110-140, title VII, §702(a), Dec. 19, 2007, 121 Stat. 1704; Pub. L. 116-260, div. Z, title IV, §4003(a), Dec. 27, 2020, 134 Stat. 2536; Pub. L. 117-58, div. D, title III, §40305, Nov. 15, 2021, 135 Stat. 1001.)

**Editorial Notes****AMENDMENTS**

2021—Subsec. (a)(1)(B). Pub. L. 117-58, §40305(1), struck out “over a 10-year period” after “carbon dioxide”.

Subsec. (b)(1). Pub. L. 117-58, §40305(2)(A), substituted “demonstration, and commercialization” for “and demonstration”.

Subsec. (b)(2)(I). Pub. L. 117-58, §40305(2)(B), added subpar. (I).

Subsec. (e). Pub. L. 117-58, §40305(3), (4), added subsec. (e) and redesignated former subsec. (e) as (f).

Subsec. (f). Pub. L. 117-58, §40305(3), redesignated subsec. (e) as (f). Former subsec. (f) redesignated (g).

Subsec. (f)(1). Pub. L. 117-58, §40305(5), inserted “with respect to the research, development, demonstration program components described in subsections (b) through (d)” before “give preference”.

Subsec. (g). Pub. L. 117-58, §40305(3), redesignated subsec. (f) as (g). Former subsec. (g) redesignated (h).

Subsec. (h). Pub. L. 117-58, §40305(6), added subsec. (h) and struck out former subsec. (h) which authorized appropriations for fiscal years 2021 to 2025.

Pub. L. 117-58, §40305(3), redesignated subsec. (g) as (h).

2020—Pub. L. 116-260, §4003(a)(4), substituted “Carbon storage validation and testing” for “Carbon capture and sequestration research, development, and demonstration program” in section catchline.

Subsecs. (a), (b). Pub. L. 116-260, §4003(a)(4), added subsecs. (a) and (b) and struck out former subsecs. (a) and (b) which related to the establishment of a carbon capture and sequestration research, development, and demonstration program and program objectives.

Subsec. (c). Pub. L. 116-260, §4003(a)(4), added subsec. (c) and struck out pars. (1) to (3) of former subsec. (c) which related to fundamental science and engineering research and development and demonstration supporting carbon capture and sequestration technologies and carbon use activities, field validation testing activities, and large-scale carbon dioxide sequestration testing, respectively.

Subsec. (c)(4). Pub. L. 116-260, §4003(a)(2)(B), redesignated par. (4) as subsec. (e).

Subsec. (c)(5), (6). Pub. L. 116-260, §4003(a)(2)(A), struck out pars. (5) and (6) which related to cost sharing and program review and report.

Subsec. (d). Pub. L. 116-260, §4003(a)(4), added subsec. (d).

Pub. L. 116-260, §4003(a)(1), struck out subsec. (d) which authorized appropriations for fiscal years 2008 to 2012.

Subsec. (e). Pub. L. 116-260, §4003(a)(3), redesignated subpars. (A) and (B) as pars. (1) and (2), respectively, substituted “section” for “subsection” in introductory provisions and in par. (2), and realigned margins.

Pub. L. 116-260, §4003(a)(2)(B), redesignated par. (4) of subsec. (c) as (e).

Subsec. (f). Pub. L. 116-260, §4003(a)(2)(A), added subsec. (f).

Subsec. (g). Pub. L. 116-260, §4003(a)(1), added subsec. (g).

2007—Pub. L. 110-140, §702(a)(1), substituted “and sequestration research, development, and demonstration” for “research and development” in section catchline.

Subsec. (a). Pub. L. 110-140, §702(a)(2), in introductory provisions, substituted “and sequestration research, development, and demonstration” for “research and development” and “capture and sequestration technologies related to industrial sources of carbon dioxide” for “capture technologies on combustion-based systems”.

Subsec. (b)(5). Pub. L. 110-140, §702(a)(3), added par. (5).

Subsecs. (c), (d). Pub. L. 110-140, §702(a)(4), added subsecs. (c) and (d) and struck out former subsec. (c). Text of former subsec. (c) read as follows: “From amounts authorized under section 16291(b) of this title, the following sums are authorized for activities described in subsection (a)(2):

- “(1) \$25,000,000 for fiscal year 2006;
- “(2) \$30,000,000 for fiscal year 2007; and
- “(3) \$35,000,000 for fiscal year 2008.”

**Statutory Notes and Related Subsidiaries****EFFECTIVE DATE OF 2007 AMENDMENT**

Amendment by Pub. L. 110-140 effective on the date that is 1 day after Dec. 19, 2007, see section 1601 of Pub. L. 110-140, set out as an Effective Date note under section 1824 of Title 2, The Congress.

**WAGE RATE REQUIREMENTS**

For provisions relating to rates of wages to be paid to laborers and mechanics on projects for construction, alteration, or repair work funded under div. D or an

amendment by div. D of Pub. L. 117-58, including authority of Secretary of Labor, see section 18851 of this title.

**§ 16294. Research and development for coal mining technologies**

**(a) Establishment**

The Secretary shall carry out a program for research and development on coal mining technologies.

**(b) Cooperation**

In carrying out the program, the Secretary shall cooperate with appropriate Federal agencies, coal producers, trade associations, equipment manufacturers, institutions of higher education with mining engineering departments, and other relevant entities.

**(c) Program**

The research and development activities carried out under this section shall—

(1) be guided by the mining research and development priorities identified by the Mining Industry of the Future Program and in the recommendations from relevant reports of the National Academy of Sciences on mining technologies;

(2) include activities exploring minimization of contaminants in mined coal that contribute to environmental concerns including development and demonstration of electromagnetic wave imaging ahead of mining operations;

(3) develop and demonstrate coal bed electromagnetic wave imaging, spectroscopic reservoir analysis technology, and techniques for horizontal drilling in order to—

(A) identify areas of high coal gas content;  
(B) increase methane recovery efficiency;  
(C) prevent spoilage of domestic coal reserves; and

(D) minimize water disposal associated with methane extraction; and

(4) expand mining research capabilities at institutions of higher education.

(Pub. L. 109-58, title IX, § 964, Aug. 8, 2005, 119 Stat. 892.)

**§ 16295. Oil and gas research programs**

**(a) In general**

The Secretary shall conduct a program of research, development, demonstration, and commercial application of oil and gas, including—

(1) exploration and production;  
(2) gas hydrates;  
(3) reservoir life and extension;  
(4) transportation and distribution infrastructure;  
(5) ultraclean fuels;  
(6) heavy oil, oil shale, and tar sands; and  
(7) related environmental research.

**(b) Objectives**

The objectives of this program shall include advancing the science and technology available to domestic petroleum producers, particularly independent operators, to minimize the economic dislocation caused by the decline of domestic supplies of oil and natural gas resources.

**(c) Natural gas and oil deposits report**

Not later than 2 years after August 8, 2005, and every 2 years thereafter, the Secretary of the In-

terior, in consultation with other appropriate Federal agencies, shall submit to Congress a report on the latest estimates of natural gas and oil reserves, reserves growth, and undiscovered resources in Federal and State waters off the coast of Louisiana, Texas, Alabama, and Mississippi.

**(d) Integrated clean power and energy research**

**(1) Establishment of center**

The Secretary shall establish a national center or consortium of excellence in clean energy and power generation, using the resources of the Clean Power and Energy Research Consortium in existence on August 8, 2005, to address the critical dependence of the United States on energy and the need to reduce emissions.

**(2) Focus areas**

The center or consortium shall conduct a program of research, development, demonstration, and commercial application on integrating the following 6 focus areas:

(A) Efficiency and reliability of gas turbines for power generation.

(B) Reduction in emissions from power generation.

(C) Promotion of energy conservation issues.

(D) Effectively using alternative fuels and renewable energy.

(E) Development of advanced materials technology for oil and gas exploration and use in harsh environments.

(F) Education on energy and power generation issues.

(Pub. L. 109-58, title IX, § 965, Aug. 8, 2005, 119 Stat. 892.)

**§ 16296. Low-volume oil and gas reservoir research program**

**(a) Definition of GIS**

In this section, the term “GIS” means geographic information systems technology that facilitates the organization and management of data with a geographic component.

**(b) Program**

The Secretary shall establish a program of research, development, demonstration, and commercial application to maximize the productive capacity of marginal wells and reservoirs.

**(c) Data collection**

Under the program, the Secretary shall collect data on—

(1) the status and location of marginal wells and oil and gas reservoirs;

(2) the production capacity of marginal wells and oil and gas reservoirs;

(3) the location of low-pressure gathering facilities and pipelines; and

(4) the quantity of natural gas vented or flared in association with crude oil production.

**(d) Analysis**

Under the program, the Secretary shall—

(1) estimate the remaining producible reserves based on variable pipeline pressures; and