

[§ 409. Renumbered § 407]**[§§ 410, 411. Repealed. Pub. L. 112-141, div. C, title I, § 31109(e), (f), July 6, 2012, 126 Stat. 757]**

Section 410, added Pub. L. 100-690, title IX, §9002(a), Nov. 18, 1988, 102 Stat. 4521; amended Pub. L. 101-516, title III, §336, Nov. 5, 1990, 104 Stat. 2186; Pub. L. 102-240, title II, §2004(a), Dec. 18, 1991, 105 Stat. 2073; Pub. L. 102-388, title VI, §§601-606, Oct. 6, 1992, 106 Stat. 1569, 1570; Pub. L. 104-59, title III, §324, Nov. 28, 1995, 109 Stat. 591; Pub. L. 105-18, title II, §8003, June 12, 1997, 111 Stat. 195; Pub. L. 105-130, §6(b), Dec. 1, 1997, 111 Stat. 2558; Pub. L. 105-178, title II, §2004(a), June 9, 1998, 112 Stat. 328; Pub. L. 108-88, §6(e)(1), Sept. 30, 2003, 117 Stat. 1120; Pub. L. 108-310, §6(e)(1), Sept. 30, 2004, 118 Stat. 1152; Pub. L. 109-59, title II, §2007(a), (b), Aug. 10, 2005, 119 Stat. 1529; Pub. L. 110-244, title III, §303(c)(2), (3), June 6, 2008, 122 Stat. 1619; Pub. L. 111-147, title IV, §421(f)(1), Mar. 18, 2010, 124 Stat. 85; Pub. L. 112-30, title I, §121(f)(1), Sept. 16, 2011, 125 Stat. 347, related to alcohol-impaired driving countermeasures.

Section 411, added Pub. L. 105-178, title II, §2005(a), June 9, 1998, 112 Stat. 332; amended Pub. L. 110-244, title III, §303(c)(4), June 6, 2008, 122 Stat. 1619, related to State highway safety data improvements.

Statutory Notes and Related Subsidiaries**EFFECTIVE DATE OF REPEAL**

Repeal effective Oct. 1, 2012, see section 3(a) of Pub. L. 112-141, set out as an Effective and Termination Dates of 2012 Amendment note under section 101 of this title.

REPEAL OF PROGRAMS

Pub. L. 112-141, div. C, title I, §31109(a), July 6, 2012, 126 Stat. 756, provided that: "A repeal made by this section [repealing sections 406 to 408, 410, and 411 of this title and repealing provisions set out as notes under sections 402, 403, and 405 of this title] shall not affect amounts apportioned or allocated before the effective date of such repeal [Oct. 1, 2012, see section 3(a) of Pub. L. 112-141, set out as an Effective and Termination Dates of 2012 Amendment note under section 101 of this title], provided that such apportioned or allocated funds continue to be subject to the requirements to which such funds were subject under the repealed section as in effect on the day before the date of the repeal."

[§ 412. Renumbered § 408]**CHAPTER 5—RESEARCH, TECHNOLOGY, AND EDUCATION**

Sec.	
501.	Definitions.
502.	Surface transportation research, development, and technology.
503.	Research and technology development and deployment.
504.	Training and education.
505.	State planning and research.
[506 to 509.	Repealed.]
510.	Future strategic highway research program.
511.	Multistate corridor operations and management.
512.	National ITS program plan.
513.	Use of funds for ITS activities.
514.	Goals and purposes.
515.	General authorities and requirements.
516.	Research and development.
517.	National architecture and standards.
518.	Vehicle-to-vehicle and vehicle-to-infrastructure communications systems deployment.
519.	Infrastructure development.
520.	Transportation Resilience and Adaptation Centers of Excellence.

Sec.

Editorial Notes**PRIOR PROVISIONS**

A prior chapter 5, added Pub. L. 90-495, §30, Aug. 23, 1968, 82 Stat. 830, consisting of sections 501 to 512, related to highway relocation assistance, prior to repeal by Pub. L. 91-646, title II, §220(a)(10), Jan. 2, 1971, 84 Stat. 1903. See section 4601 et seq. of Title 42, The Public Health and Welfare. For Effective Date of Repeal and Savings Provisions, see sections 221 and 220(b) of Pub. L. 91-646, set out as notes under sections 4601 and 4621, respectively, of Title 42.

AMENDMENTS

2021—Pub. L. 117-58, div. A, title III, §13009(b), Nov. 15, 2021, 135 Stat. 644, added item 520.

2015—Pub. L. 114-94, div. A, title VI, §§6010(b), 6019(d)(1)(B), Dec. 4, 2015, 129 Stat. 1568, 1581, struck out item 508 "Transportation research and development strategic planning", substituted "National ITS program plan" for "National ITS Program Plan" in item 512, and added item 519.

2012—Pub. L. 112-141, div. E, title II, §§52002(b), 52003(b), 52006(b), 52007(b), 52008(b), title III, §§53002(b), 53003(b), 53004(b), 53005(b), 53006(b), July 6, 2012, 126 Stat. 872, 880, 882, 899, 901-903, 905, substituted "Surface transportation research, development, and technology" for "Surface transportation research" in item 502 and "Research and technology development and deployment" for "Technology deployment program" in item 503, struck out items 506 "International highway transportation outreach program", 507 "Surface transportation environment and planning cooperative research program", and 509 "National cooperative freight transportation research program", and added items 514 to 518.

2008—Pub. L. 110-244, title I, §111(b)(2)(B), June 6, 2008, 122 Stat. 1605, amended Pub. L. 109-59, §5210. See 2005 Amendment note below.

2005—Pub. L. 109-59, title V, §5210(c), formerly §5210(d), Aug. 10, 2005, 119 Stat. 1804, as renumbered by Pub. L. 110-244, title I, §111(b)(2)(B), June 6, 2008, 122 Stat. 1605, added item 510.

Pub. L. 109-59, title V, §§5201(a)(2), 5207(c), 5208(b), 5209(c), 5211(c), 5301(b), 5302(b), Aug. 10, 2005, 119 Stat. 1781, 1798, 1799, 1801, 1804, 1805, substituted "RESEARCH, TECHNOLOGY, AND EDUCATION" for "RESEARCH AND TECHNOLOGY" in chapter heading, "Surface transportation environment and planning cooperative research program" for "Surface transportation-environment cooperative research program" in item 507, "Transportation research and development strategic planning" for "Surface transportation research strategic planning" in item 508, and added items 509 and 511 to 513.

§ 501. Definitions

In this chapter, the following definitions apply:

(1) **FEDERAL LABORATORY.**—The term "Federal laboratory" includes a Government-owned, Government-operated laboratory and a Government-owned, contractor-operated laboratory.

(2) **INCIDENT.**—The term "incident" means a crash, natural disaster, workzone activity, special event, or other emergency road user occurrence that adversely affects or impedes the normal flow of traffic.

(3) **INNOVATION LIFECYCLE.**—The term "innovation lifecycle" means the process of innovating through—

- (A) the identification of a need;
- (B) the establishment of the scope of research to address that need;
- (C) setting an agenda;

(D) carrying out research, development, deployment, and testing of the resulting technology or innovation; and

(E) carrying out an evaluation of the costs and benefits of the resulting technology or innovation.

(4) INTELLIGENT TRANSPORTATION INFRASTRUCTURE.—The term “intelligent transportation infrastructure” means fully integrated public sector intelligent transportation system components, as defined by the Secretary.

(5) INTELLIGENT TRANSPORTATION SYSTEM.—The terms “intelligent transportation system” and “ITS” mean electronics, photonics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

(6) NATIONAL ARCHITECTURE.—For purposes of this chapter, the term “national architecture” means the common framework for interoperability that defines—

(A) the functions associated with intelligent transportation system user services;

(B) the physical entities or subsystems within which the functions reside;

(C) the data interfaces and information flows between physical subsystems; and

(D) the communications requirements associated with the information flows.

(7) PROJECT.—The term “project” means an undertaking to research, develop, or operationally test intelligent transportation systems or any other undertaking eligible for assistance under this chapter.

(8) SAFETY.—The term “safety” includes highway and traffic safety systems, research, and development relating to vehicle, highway, driver, passenger, bicyclist, and pedestrian characteristics, accident investigations, communications, emergency medical care, and transportation of the injured.

(9) STANDARD.—The term “standard” means a document that—

(A) contains technical specifications or other precise criteria for intelligent transportation systems that are to be used consistently as rules, guidelines, or definitions of characteristics so as to ensure that materials, products, processes, and services are fit for the intended purposes of the materials, products, processes, and services; and

(B) may support the national architecture and promote—

(i) the widespread use and adoption of intelligent transportation system technology as a component of the surface transportation systems of the United States; and

(ii) interoperability among intelligent transportation system technologies implemented throughout the States.

(Added Pub. L. 105-178, title V, § 5101(2), June 9, 1998, 112 Stat. 422; amended Pub. L. 112-141, div. E, title II, § 52001, July 6, 2012, 126 Stat. 865.)

PRIOR PROVISIONS

A prior section 501, added Pub. L. 90-495, § 30, Aug. 23, 1968, 82 Stat. 830, related to declaration of policy as to highway relocation assistance, prior to repeal by Pub. L. 91-646, title II, § 220(a)(10), Jan. 2, 1971, 84 Stat. 1903.

Editorial Notes

AMENDMENTS

2012—Pars. (2) to (9). Pub. L. 112-141 added pars. (2) to (7), redesignated former par. (2) as (8), and added par. (9).

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2012 AMENDMENT

Amendment by Pub. L. 112-141 effective Oct. 1, 2012, see section 3(a) of Pub. L. 112-141, set out as an Effective and Termination Dates of 2012 Amendment note under section 101 of this title.

AUTHORIZATION OF APPROPRIATIONS

Pub. L. 114-94, div. A, title VI, § 6002, Dec. 4, 2015, 129 Stat. 1561, provided that:

“(a) IN GENERAL.—The following amounts are authorized to be appropriated out of the Highway Trust Fund (other than the Mass Transit Account):

“(1) HIGHWAY RESEARCH AND DEVELOPMENT PROGRAM.—To carry out section 503(b) of title 23, United States Code, \$125,000,000 for each of fiscal years 2016 through 2020.

“(2) TECHNOLOGY AND INNOVATION DEPLOYMENT PROGRAM.—To carry out section 503(c) of title 23, United States Code—

“(A) \$67,000,000 for fiscal year 2016;

“(B) \$67,500,000 for fiscal year 2017;

“(C) \$67,500,000 for fiscal year 2018;

“(D) \$67,500,000 for fiscal year 2019; and

“(E) \$67,500,000 for fiscal year 2020.

“(3) TRAINING AND EDUCATION.—To carry out section 504 of title 23, United States Code, \$24,000,000 for each of fiscal years 2016 through 2020.

“(4) INTELLIGENT TRANSPORTATION SYSTEMS PROGRAM.—To carry out sections 512 through 518 of title 23, United States Code, \$100,000,000 for each of fiscal years 2016 through 2020.

“(5) UNIVERSITY TRANSPORTATION CENTERS PROGRAM.—To carry out section 5505 of title 49, United States Code—

“(A) \$72,500,000 for fiscal year 2016;

“(B) \$75,000,000 for fiscal year 2017;

“(C) \$75,000,000 for fiscal year 2018;

“(D) \$77,500,000 for fiscal year 2019; and

“(E) \$77,500,000 for fiscal year 2020.

“(6) BUREAU OF TRANSPORTATION STATISTICS.—To carry out chapter 63 of title 49, United States Code, \$26,000,000 for each of fiscal years 2016 through 2020.

“(b) ADMINISTRATION.—The Federal Highway Administration shall—

“(1) administer the programs described in paragraphs (1), (2), and (3) of subsection (a); and

“(2) in consultation with relevant modal administrations, administer the programs described in subsection (a)(4).

“(c) APPLICABILITY OF TITLE 23, UNITED STATES CODE.—Funds authorized to be appropriated by subsection (a) shall—

“(1) be available for obligation in the same manner as if those funds were apportioned under chapter 1 of title 23, United States Code, except that the Federal share of the cost of a project or activity carried out using those funds shall be 80 percent, unless otherwise expressly provided by this Act [div. A of Pub. L. 114-94, see Tables for classification] (including the amendments by this Act) or otherwise determined by the Secretary [of Transportation]; and

“(2) remain available until expended and not be transferable, except as otherwise provided in this Act.”

§ 502. Surface transportation research, development, and technology

(a) BASIC PRINCIPLES GOVERNING RESEARCH AND TECHNOLOGY INVESTMENTS.—