

**[DISCUSSION DRAFT]**

AUGUST 25, 2015

114TH CONGRESS  
1ST SESSION

**H. R.** \_\_\_\_\_

To authorize appropriations to the Department of Transportation for surface transportation research, development, and deployment, and for other purposes.

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IN THE HOUSE OF REPRESENTATIVES

M. \_\_\_\_\_ introduced the following bill; which was referred to the  
Committee on \_\_\_\_\_

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**A BILL**

To authorize appropriations to the Department of Transportation for surface transportation research, development, and deployment, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “Connected Transportation Research and Innovation Act  
6 of 2015”.

1 (b) TABLE OF CONTENTS.—The table of contents for  
2 this Act is as follows:

Sec. 1. Short title; table of contents.

TITLE I—HIGHWAY TRANSPORTATION RESEARCH

- Sec. 101. Authorization of appropriations.
- Sec. 102. Research, technology, and education.
- Sec. 103. Research and technology development and deployment.
- Sec. 104. Training and education.
- Sec. 105. Transportation research and development strategic planning.
- Sec. 106. 5.9 GHz spectrum use testing.
- Sec. 107. ITs general authorities and requirements.
- Sec. 108. Researching surface transportation system funding alternatives.

TITLE II—MULTIMODAL TRANSPORTATION RESEARCH

- Sec. 201. Authorization of appropriations.
- Sec. 202. University transportation centers program.
- Sec. 203. International collaboration for innovation.
- Sec. 204. Title 49 amendments.
- Sec. 205. Advanced Transportation Research and Innovation Program.
- Sec. 206. Transit research, development, demonstration, and deployment projects.
- Sec. 207. Transit human resources and training.
- Sec. 208. Rail research, development, testing, and training.
- Sec. 209. Rail cooperative research program.
- Sec. 210. Hazardous materials research and development.
- Sec. 211. Web-based training for emergency responders.
- Sec. 212. National cooperative freight transportation research program.
- Sec. 213. Smart cities transportation planning study.

3 **TITLE I—HIGHWAY**  
4 **TRANSPORTATION RESEARCH**

5 **SEC. 101. AUTHORIZATION OF APPROPRIATIONS.**

6 (a) IN GENERAL.—The following amounts are au-  
7 thorized to be appropriated out of the Highway Trust  
8 Fund (other than the Mass Transit Account):

9 (1) HIGHWAY SAFETY RESEARCH AND DEVEL-  
10 OPMENT.—To carry out section 403 of title 23,  
11 United States Code—

12 (A) \$152,000,000 for fiscal year 2016;

- 1 (B) \$158,840,000 for fiscal year 2017;  
2 (C) \$166,146,640 for fiscal year 2018;  
3 (D) \$173,457,092 for fiscal year 2019;  
4 (E) \$181,783,033 for fiscal year 2020; and  
5 (F) \$190,145,052 for fiscal year 2021.

6 (2) HIGHWAY RESEARCH AND DEVELOPMENT  
7 PROGRAM.—To carry out section 503(b) of title 23,  
8 United States Code—

- 9 (A) \$130,000,000 for fiscal year 2016;  
10 (B) \$132,594,234 for fiscal year 2017;  
11 (C) \$135,188,470 for fiscal year 2018;  
12 (D) \$138,070,953 for fiscal year 2019;  
13 (E) \$140,832,372 for fiscal year 2020; and  
14 (F) \$143,649,100 for fiscal year 2021.

15 (3) TECHNOLOGY AND INNOVATION DEPLOY-  
16 MENT PROGRAM.—To carry out section 503(c) of  
17 title 23, United States Code—

- 18 (A) \$70,000,000 for fiscal year 2016;  
19 (B) \$71,396,896 for fiscal year 2017;  
20 (C) \$72,793,792 for fiscal year 2018;  
21 (D) \$74,345,898 for fiscal year 2019;  
22 (E) \$75,832,816 for fiscal year 2020; and  
23 (F) \$77,349,552 for fiscal year 2021.

24 (4) TRAINING AND EDUCATION.—To carry out  
25 section 504 of title 23, United States Code—

- 1 (A) \$27,000,000 for fiscal year 2016;  
2 (B) \$27,538,803 for fiscal year 2017;  
3 (C) \$28,077,605 for fiscal year 2018;  
4 (D) \$28,676,275 for fiscal year 2019;  
5 (E) \$29,249,801 for fiscal year 2020; and  
6 (F) \$29,834,876 for fiscal year 2021.

7 (5) INTELLIGENT TRANSPORTATION SYSTEMS  
8 PROGRAM.—To carry out sections 512 through 518  
9 of title 23, United States Code—

- 10 (A) \$158,000,000 for fiscal year 2016;  
11 (B) \$179,254,989 for fiscal year 2017;  
12 (C) \$173,509,978 for fiscal year 2018;  
13 (D) \$137,015,521 for fiscal year 2019;  
14 (E) \$142,415,831 for fiscal year 2020; and  
15 (F) \$144,864,148 for fiscal year 2021.

16 (b) APPLICABILITY OF TITLE 23, UNITED STATES  
17 CODE.—Funds authorized to be appropriated by sub-  
18 section (a) shall—

- 19 (1) be available for obligation in the same man-  
20 ner as if those funds were appropriated under chap-  
21 ter 1 of title 23, United States Code, except that the  
22 Federal share of the cost of a project or activity car-  
23 ried out using those funds shall be 80 percent, un-  
24 less otherwise expressly provided by this Act (includ-

1 ing the amendments by this Act) or otherwise deter-  
2 mined by the Secretary; and

3 (2) remain available until expended and not be  
4 transferable.

5 **SEC. 102. RESEARCH, TECHNOLOGY, AND EDUCATION.**

6 Section 501 of title 23, United States Code, is  
7 amended by adding at the end the following:

8 “(10) INSTITUTION OF HIGHER EDUCATION.—  
9 The term ‘institution of higher education’ has the  
10 meaning given that term in section 101(a) of the  
11 Higher Education Act of 1965 (20 U.S.C.  
12 1001(a)).”.

13 **SEC. 103. RESEARCH AND TECHNOLOGY DEVELOPMENT  
14 AND DEPLOYMENT.**

15 Section 503 of title 23, United States Code, is  
16 amended—

17 (1) in subsection (b)(6) by inserting “the Ad-  
18 vanced Transportation Research program described  
19 in section 5508 of title 49, United States Code, as  
20 it relates to highway research, and” after “shall  
21 carry out”; and

22 (2) in subsection (c)(2)—

23 (A) by redesignating subparagraph (C) as  
24 subparagraph (D); and

1 (B) by inserting after subparagraph (B)  
2 the following:

3 “(C) RESEARCH.—

4 “(i) IN GENERAL.—In carrying out  
5 the program established under paragraph  
6 (1), the Secretary shall—

7 “(I) conduct research, develop-  
8 ment, technology transfer, and deploy-  
9 ment activities at the Department’s  
10 research facilities, including the Turn-  
11 er Fairbank Highway Research Cen-  
12 ter; and

13 “(II) make grants to, and enter  
14 into cooperative agreements and con-  
15 tracts with, States, other Federal  
16 agencies, institutions of higher edu-  
17 cation, private sector entities, and  
18 nonprofit organizations for research,  
19 development, technology transfer, in-  
20 cluding proof of concept activities, and  
21 deployment activities.

22 “(ii) APPLICATIONS.—To receive a  
23 grant under this subsection, States, Fed-  
24 eral agencies, institutions of higher edu-  
25 cation, private sector entities, and non-

1 profit organizations shall submit an appli-  
2 cation to the Secretary. The application  
3 shall be in such form and contain such in-  
4 formation as the Secretary may require.  
5 The Secretary shall select and award, on a  
6 competitive basis, an application based on  
7 the ability of the project to meet the goals  
8 of the program described in paragraph  
9 (1).”.

10 **SEC. 104. TRAINING AND EDUCATION.**

11 Section 504(a) of title 23, United States Code, is  
12 amended—

13 (1) in paragraph (3)(B), after “maintenance”  
14 by inserting “green transportation infrastructure”;  
15 and

16 (2) by adding at the end the following new  
17 paragraph:

18 “(9) DEFINITIONS.—In this subsection, the  
19 term ‘green transportation infrastructure’ includes  
20 infrastructure that—

21 “(A) reserves and restores natural proc-  
22 esses, landforms (such as floodplains), natural  
23 vegetated stream side buffers, wetlands, or  
24 other topographical features that can slow, fil-  
25 ter, and naturally store stormwater runoff and

1 floodwaters for future water supply and re-  
2 charge of natural aquifers;

3 “(B) utilizes natural design techniques  
4 that infiltrate, filter, store, evaporate, and de-  
5 tain water close to its source;

6 “(C) minimizes the use of impervious sur-  
7 faces in order to slow or infiltrate precipitation;

8 “(D) minimizes lifecycle energy consump-  
9 tion, including during construction, mainte-  
10 nance, use by vehicles, and destruction and re-  
11 cycling; and

12 “(E) minimizes lifecycle air pollution.”.

13 **SEC. 105. TRANSPORTATION RESEARCH AND DEVELOP-**  
14 **MENT STRATEGIC PLANNING.**

15 Section 508(a)(1) of title 23, United States Code, is  
16 amended by inserting “, and shall be updated every 5  
17 years after its initial development” after “Department of  
18 Transportation”.

19 **SEC. 106. 5.9 GHZ SPECTRUM USE TESTING.**

20 (a) IN GENERAL.—Not later than 90 days after re-  
21 ceiving a 5.9 GHz Unlicensed National Information Infra-  
22 structure device, the Secretary of Transportation, in co-  
23 operation with the Secretary of Commerce, National Tele-  
24 communications and Information Administration, the  
25 Federal Communications Commission, other appropriate



1 Federal agencies, the automotive industry, the intelligent  
2 transportation industry, and the communications industry,  
3 shall conduct testing on the unlicensed device within the  
4 5.9 GHz band to examine the possibility of interference  
5 with safety-related vehicle-to-vehicle and vehicle-to-infra-  
6 structure applications.

7 (b) CONTENTS OF THE TEST.—In conducting the  
8 test, the Secretary of Transportation shall—

9 (1) define interference of connected vehicle safe-  
10 ty applications;

11 (2) identify the technology and operating pa-  
12 rameters that must be in place to allow vehicle safe-  
13 ty communications signals to share the 5.9 GHz  
14 band with signals from unlicensed devices without  
15 interference;

16 (3) test the unlicensed device to determine  
17 whether it interferes with dedicated short-range  
18 communications or any other communications sys-  
19 tems the Department of Commerce is testing for  
20 connected vehicle safety applications;

21 (4) identify possible challenges of allowing unli-  
22 censed devices to operate in the 5.9 GHz band con-  
23 cerning automated vehicle systems development; and

24 (5) evaluate any other information the Sec-  
25 retary determines appropriate.

1 (c) REPORT.—Not later than 18 months after receipt  
2 of such an unlicensed 5.9 GHz device, the Secretary shall  
3 submit a report of the testing of such device to the Com-  
4 mittee on Environment and Public Works of the Senate  
5 and the Committees on Science, Space, and Technology  
6 and Transportation and Infrastructure of the House of  
7 Representatives.

8 (d) AUTHORIZATION OF APPROPRIATIONS.—There  
9 are authorized to be appropriated such sums as are nec-  
10 essary for the purpose of carrying out this section.

11 **SEC. 107. ITS GENERAL AUTHORITIES AND REQUIREMENTS.**

12 Section 515(a)(1) of title 23, United States Code, is  
13 amended by inserting “, including automated vehicle sys-  
14 tems” after “intelligent transportation systems”.

15 **SEC. 108. RESEARCHING SURFACE TRANSPORTATION SYS-**  
16 **TEM FUNDING ALTERNATIVES.**

17 (a) IN GENERAL.—The Secretary of Transportation  
18 shall promote the research, development, and demonstra-  
19 tion of user-based alternative revenue mechanisms that  
20 preserve a user fee structure to maintain the long-term  
21 solvency of the Highway Trust Fund.

22 (b) OBJECTIVES.—The objectives of the research, de-  
23 velopment, and demonstration described in subsection (a)  
24 shall be—

1           (1) to study uncertainties relating to the design,  
2           acceptance, and implementation of 2 or more future  
3           user-based alternative revenue mechanisms;

4           (2) to define the functionality of those user-  
5           based alternative revenue mechanisms;

6           (3) to conduct or promote research activities to  
7           demonstrate and test those user-based alternative  
8           revenue mechanisms, including by conducting field  
9           trials, by partnering with individual States, groups  
10          of States, or other appropriate entities to conduct  
11          the research activities;

12          (4) to conduct outreach to increase public  
13          awareness regarding the need for alternative funding  
14          sources for surface transportation programs and  
15          provide information on possible approaches;

16          (5) to provide recommendations regarding  
17          adoption and implementation of those user-based al-  
18          ternative revenue mechanisms, and to assess the  
19          technical feasibility of value pricing; and

20          (6) to minimize the administrative cost of any  
21          potential user-based alternative revenue mechanisms.

22          (c) GRANTS.—The Secretary shall provide grants to  
23          individual States, groups of States, or other appropriate  
24          entities to conduct research, development, and demonstra-  
25          tion that addresses—

1           (1) the implementation, interoperability, and  
2           public acceptance of, and other potential hurdles to,  
3           the adoption of a user-based alternative revenue  
4           mechanism;

5           (2) the protection of personal privacy;

6           (3) the use of independent and private third-  
7           party vendors to collect fees and operate the user-  
8           based alternative revenue mechanism;

9           (4) equity concerns, including the impacts of  
10          the user-based alternative revenue mechanism on  
11          differing income groups, various geographic areas,  
12          and the relative burdens on rural and urban drivers;

13          (5) ease of compliance for different users of the  
14          transportation system;

15          (6) the reliability and security of technology  
16          used to implement the user-based alternative rev-  
17          enue mechanism;

18          (7) the flexibility and choices of user-based al-  
19          ternative revenue mechanisms, including the ability  
20          of users to select from various technology and pay-  
21          ment options;

22          (8) the cost of administering the user-based al-  
23          ternative revenue mechanism; and

24          (9) the ability of the administering entity to  
25          audit and enforce user compliance.

1 (d) ADVISORY COUNCIL.—

2 (1) IN GENERAL.—Not later than 1 year after  
3 the date of enactment of this Act, the Secretary of  
4 Transportation, in consultation with the Secretary of  
5 the Treasury, shall establish and lead a Surface  
6 Transportation Revenue Alternatives Advisory Coun-  
7 cil (referred to in this subsection as the “Council”)  
8 to inform the selection and evaluation of user-based  
9 alternative revenue mechanisms.

10 (2) MEMBERSHIP.—

11 (A) IN GENERAL.—The members of the  
12 Council shall—

13 (i) be appointed by the Secretary; and

14 (ii) include, at a minimum—

15 (I) representatives with experi-  
16 ence in user-based alternative revenue  
17 mechanisms, of which—

18 (aa) not fewer than 1 shall  
19 be from the Department of  
20 Transportation;

21 (bb) not fewer than 1 shall  
22 be from the Department of the  
23 Treasury; and

1 (cc) not fewer than 2 shall  
2 be from State departments of  
3 transportation;

4 (II) representatives from applica-  
5 ble users of the surface transportation  
6 system; and

7 (III) appropriate technology and  
8 public privacy experts.

9 (B) GEOGRAPHIC CONSIDERATIONS.—The  
10 Secretary shall consider geographic diversity  
11 when selecting members under this paragraph.

12 (3) FUNCTIONS.—Not later than 1 year after  
13 the date on which the Council is established, the  
14 Council shall, at a minimum—

15 (A) define the functionality of 2 or more  
16 user-based alternative revenue mechanisms;

17 (B) identify technological, administrative,  
18 institutional, privacy, and other issues that—

19 (i) are associated with the user-based  
20 alternative revenue mechanisms; and

21 (ii) may be researched through re-  
22 search, development, and demonstration  
23 activities;

24 (C) conduct public outreach to identify and  
25 assess questions and concerns about the user-

1 based alternative revenue mechanisms for fu-  
2 ture evaluation through research activities; and

3 (D) provide recommendations to the Sec-  
4 retary on the process and criteria used for se-  
5 lecting research activities under subsection (c).

6 (4) EVALUATIONS.—The Council shall conduct  
7 periodic evaluations of the research, development,  
8 and demonstration activities that have received as-  
9 sistance from the Secretary under this section.

10 (5) APPLICABILITY OF FEDERAL ADVISORY  
11 COMMITTEE ACT.—The Council shall not be subject  
12 to the Federal Advisory Committee Act (5 U.S.C.  
13 App.).

14 (e) BIENNIAL REPORTS.—Not later than 2 years  
15 after the date of enactment of this Act, and every 2 years  
16 thereafter until the completion of the research, develop-  
17 ment, and demonstration activities under this section, the  
18 Secretary of Transportation shall submit to the Secretary  
19 of the Treasury, the Committee on Finance and the Com-  
20 mittee on Environment and Public Works of the Senate,  
21 and the Committee on Ways and Means, the Committee  
22 on Transportation and Infrastructure, and the Committee  
23 on Science, Space, and Technology of the House of Rep-  
24 resentatives a report describing the progress of the re-  
25 search, development, and demonstration activities.

1 (f) FINAL REPORT.—On the completion of the re-  
2 search, development, and demonstration activities under  
3 this section, the Secretary of Transportation and the Sec-  
4 retary of the Treasury, acting jointly, shall submit to the  
5 Committee on Finance and the Committee on Environ-  
6 ment and Public Works of the Senate and the Committee  
7 on Ways and Means, the Committee on Transportation  
8 and Infrastructure, and the Committee on Science, Space,  
9 and Technology of the House of Representatives a report  
10 describing the results of the research, development, and  
11 demonstration activities and any recommendations.

12 (g) AUTHORIZATION.—There are authorized to be ap-  
13 propriated to carry out this section \$15,000,000 for fiscal  
14 year 2016 and \$20,000,000 for each of fiscal years 2017  
15 through 2021.

## 16 **TITLE II—MULTIMODAL** 17 **TRANSPORTATION RESEARCH**

### 18 **SEC. 201. AUTHORIZATION OF APPROPRIATIONS.**

19 (a) UNIVERSITY TRANSPORTATION CENTERS PRO-  
20 GRAM.—The following amounts are authorized to be ap-  
21 propriated out of the Highway Trust Fund (other than  
22 the Mass Transit Account) to carry out section 5505 of  
23 title 49, United States Code:

24 (1) \$82,000,000 for fiscal year 2016.

25 (2) \$83,636,364 for fiscal year 2017.



1 (3) \$85,272,727 for fiscal year 2018.

2 (4) \$87,090,909 for fiscal year 2019.

3 (5) \$88,832,727 for fiscal year 2020.

4 (6) \$90,609,462 for fiscal year 2021.

5 (b) BUREAU OF TRANSPORTATION STATISTICS.—The  
6 following amounts are authorized to be appropriated out  
7 of the Highway Trust Fund (other than the Mass Transit  
8 Account) to carry out chapter 63 of title 49, United States  
9 Code:

10 (1) \$29,000,000 for fiscal year 2016.

11 (2) \$29,578,714 for fiscal year 2017.

12 (3) \$30,157,428 for fiscal year 2018.

13 (4) \$30,800,444 for fiscal year 2019.

14 (5) \$31,416,453 for fiscal year 2020.

15 (6) \$32,044,862 for fiscal year 2021.

16 (c) TRANSIT RESEARCH AND DEVELOPMENT.—Sec-  
17 tion 5338(b) through (e) of title 49, United States Code,  
18 is amended to read as follows:

19 “(b) RESEARCH, DEVELOPMENT, DEMONSTRATION,  
20 AND DEPLOYMENT PROJECTS.—There are authorized to  
21 be appropriated to carry out section 5312, \$26,000,000  
22 for fiscal year 2016, \$27,000,000 for fiscal year 2017,  
23 \$29,000,000 for fiscal year 2018, \$31,000,000 for fiscal  
24 year 2019, \$32,000,000 for fiscal year 2020, and  
25 \$34,000,000 for fiscal year 2021.

1       “(c) TRANSIT COOPERATIVE RESEARCH PROGRAM.—  
2 There are authorized to be appropriated to carry out sec-  
3 tion 5313, \$7,000,000 for each of fiscal years 2016  
4 through 2021.

5       “(d) TECHNICAL ASSISTANCE AND STANDARDS DE-  
6 VELOPMENT.—There are authorized to be appropriated to  
7 carry out section 5314, \$7,000,000 for each of fiscal years  
8 2016 through 2018 and \$9,000,000 for each of fiscal  
9 years 2019 through 2021.

10       “(e) HUMAN RESOURCES AND TRAINING.—There are  
11 authorized to be appropriated to carry out section 5322,  
12 \$20,000,000 for each of fiscal years 2016 through 2021.”.

13       (d) NATIONAL COOPERATIVE RAIL RESEARCH PRO-  
14 GRAM.—There are authorized to be appropriated to carry  
15 out section 24910 of title 49, United States Code,  
16 \$5,000,000 for each of fiscal years 2016 through 2021.

17       (e) HAZARDOUS MATERIALS RESEARCH AND DEVEL-  
18 OPMENT.—There are authorized to be appropriated to  
19 carry out section 5118(c) of title 49, United States Code,  
20 \$1,000,000 from the Highway Trust Fund and  
21 \$1,000,000 from the General Fund for each of fiscal years  
22 2016 through 2021.

23       (f) ADVANCED TRANSPORTATION RESEARCH AND IN-  
24 NOVATION PROGRAM.—There are authorized to be appro-  
25 priated to carry out section 5508 of title 49, United States

1 Code, \$25,000,000 for each of fiscal years 2016 through  
2 2021, of which \$10,000,000 is authorized to be appro-  
3 priated out of the Highway Trust Fund (other than the  
4 Mass Transit Account).

5 (g) NATIONAL COOPERATIVE FREIGHT TRANSPOR-  
6 TATION RESEARCH PROGRAM.—There are authorized to  
7 be appropriated to carry out section 5509 of title 49,  
8 United States Code, \$3,000,000 for each of fiscal years  
9 2016 through 2021.

10 **SEC. 202. UNIVERSITY TRANSPORTATION CENTERS PRO-**  
11 **GRAM.**

12 Section 5505 of title 49, United States Code, is  
13 amended—

14 (1) in subsection (b)—

15 (A) in paragraph (2), by striking “or mem-  
16 ber of a consortium”;

17 (B) in paragraph (3)—

18 (i) by striking “identical” and insert-  
19 ing “sequential”; and

20 (ii) by adding at the end the fol-  
21 lowing: “The Secretary shall first conduct  
22 a competition for national transportation  
23 centers and regional transportation cen-  
24 ters, then Tier 1 university transportation  
25 centers. The Secretary shall strive to main-

1           tain four month intervals between each  
2           competition.”;

3           (C) in paragraph (4)—

4                 (i) in subparagraph (A) by adding at  
5           the end the following: “For Centers not  
6           specializing in highways, the priorities  
7           identified in section 503 can be applied to  
8           any mode, including transit and rail.”; and

9                 (ii) in subparagraph (B)—

10                         (I) by striking “and” after “Fed-  
11           eral Highway Administration” and in-  
12           serting a comma;

13                         (II) by inserting “, or other  
14           modal administrations” after “Federal  
15           Transit Administration”;

16                         (III) by redesignating clauses (ii)  
17           through (ix) as clauses (iii) though  
18           (x), respectively;

19                         (IV) by inserting after clause (i)  
20           the following:

21                                 “(ii) the demonstrated ability of the  
22           recipient to address one or more of the De-  
23           partment’s Research, Development, and  
24           Technology Strategic Plan priority areas;”;

25           and

1 (V) in clause (vi)(II), as so reded-  
2 igned by subclause (III) of this  
3 clause, by inserting “, including  
4 women and underrepresented minori-  
5 ties” after “field”; and

6 (D) by adding at the end the following new  
7 paragraph:

8 “(7) BROADENING PARTICIPATION.—In award-  
9 ing grants under this section, consideration shall be  
10 given to minority institutions, as defined by section  
11 365 of the Higher Education Act of 1965 (20  
12 U.S.C. 1067k), or consortia that include such insti-  
13 tutions that have demonstrated an ability in trans-  
14 portation-related research.”;

15 (2) by amending subsection (c) to read as fol-  
16 lows:

17 “(c) GRANTS.—

18 “(1) IN GENERAL.—Not later than June 1,  
19 2017, the Secretary, in consultation as appropriate  
20 with the Administrators of the Federal Highway Ad-  
21 ministration, the Federal Transit Administration, or  
22 other modal administrations, shall initiate a competi-  
23 tion among institutions of higher education for  
24 grants to establish and operate university transpor-  
25 tation centers. Any university transportation center

1 established prior to the competition required under  
2 this paragraph shall be eligible to compete in the  
3 competition required under this paragraph.

4 “(2) NATIONAL TRANSPORTATION CENTERS.—

5 “(A) IN GENERAL.—Subject to subpara-  
6 graph (B), the Secretary shall provide grants to  
7 5 recipients that the Secretary determines best  
8 meet the criteria described in subsection (b)(4).

9 “(B) RESTRICTIONS.—

10 “(i) IN GENERAL.—For each fiscal  
11 year, a grant made available under this  
12 paragraph shall be in the amount of  
13 \$3,200,000 per recipient.

14 “(ii) FOCUSED RESEARCH.—Grant re-  
15 cipients under this paragraph shall focus  
16 research on national transportation issues,  
17 as determined by the Secretary.

18 “(C) MATCHING REQUIREMENT.—

19 “(i) IN GENERAL.—As a condition of  
20 receiving a grant under this paragraph, a  
21 grant recipient shall match 100 percent of  
22 the amounts made available under the  
23 grant.

24 “(ii) SOURCES.—The matching  
25 amounts referred to in clause (i) may in-

1           clude amounts made available to the recipi-  
2           ent under section 504(b) or 505 of title 23  
3           and amounts made available to the recipi-  
4           ent by other Federal agencies with inter-  
5           ests in transportation.

6           “(3) REGIONAL UNIVERSITY TRANSPORTATION  
7           CENTERS.—

8           “(A) LOCATION OF REGIONAL CENTERS.—  
9           One regional university transportation center  
10          shall be located in each of the 10 Federal re-  
11          gions that comprise the Standard Federal Re-  
12          gions established by the Office of Management  
13          and Budget in the document entitled ‘Standard  
14          Federal Regions’ and dated April, 1974 (cir-  
15          cular A-105).

16          “(B) SELECTION CRITERIA.—In con-  
17          ducting a competition under this paragraph, the  
18          Secretary shall provide grants to 10 recipients  
19          on the basis of—

20                 “(i) the criteria described in sub-  
21                 section (b)(4);

22                 “(ii) the location of the center within  
23                 the Federal region to be served; and

24                 “(iii) whether the institution (or, in  
25                 the case of a consortium of institutions,

1 the lead institution) demonstrates that the  
2 institution has a well-established, nation-  
3 ally recognized program in transportation  
4 research and education, as evidenced by—

5 “(I) recent expenditures by the  
6 institution in highway or public trans-  
7 portation research;

8 “(II) a historical track record of  
9 awarding graduate degrees in profes-  
10 sional fields closely related to high-  
11 ways and public transportation; and

12 “(III) an experienced faculty who  
13 specialize in professional fields closely  
14 related to highways and public trans-  
15 portation.

16 “(C) RESTRICTIONS.—For each fiscal  
17 year, a grant made available under this para-  
18 graph shall be in the amount of \$3,000,000 for  
19 each recipient.

20 “(D) MATCHING REQUIREMENTS.—

21 “(i) IN GENERAL.—As a condition of  
22 receiving a grant under this paragraph, a  
23 grant recipient shall match 100 percent of  
24 the amounts made available under the  
25 grant.



1                   “(ii) SOURCES.—The matching  
2                   amounts referred to in the clause (i) may  
3                   include amounts made available to the re-  
4                   cipient under section 504(b) or 505 of title  
5                   23 and amounts made available to the re-  
6                   cipient by other Federal agencies with in-  
7                   terests in transportation.

8                   “(E) FOCUSED RESEARCH.—The Secretary  
9                   shall make a grant to 1 of the 10 regional uni-  
10                  versity transportation centers established under  
11                  this paragraph for the purpose of furthering the  
12                  objectives described in subsection (a)(2) in the  
13                  field of comprehensive transportation safety.

14                  “(4) TIER 1 UNIVERSITY TRANSPORTATION  
15                  CENTERS.—

16                  “(A) IN GENERAL.—The Secretary shall  
17                  provide grants of \$1,800,000 each to not more  
18                  than 20 recipients to carry out this paragraph.

19                  “(B) RESTRICTION.—A lead institution of  
20                  a consortium that receives a grant under para-  
21                  graph (2) or (3) shall not be eligible to receive  
22                  a grant under this paragraph.

23                  “(C) MATCHING REQUIREMENT.—

24                  “(i) IN GENERAL.—Subject to clause  
25                  (iii), as a condition of receiving a grant

1 under this paragraph, a grant recipient  
2 shall match 50 percent of the amounts  
3 made available under the grant.

4 “(ii) SOURCES.—The matching  
5 amounts referred to in clause (i) may in-  
6 clude amounts made available to the recipi-  
7 ent under section 504(b) or 505 of title 23  
8 and amounts made available to the recipi-  
9 ent by other Federal agencies with inter-  
10 ests in transportation.

11 “(iii) EXEMPTION.—This subpara-  
12 graph shall not apply on a demonstration  
13 of financial hardship by the applicant insti-  
14 tution. In determining whether an appli-  
15 cant demonstrates financial hardship, the  
16 Secretary may consider—

17 “(I) whether the institution, or a  
18 collaborating partner, has provided a  
19 match for any Federal research fund-  
20 ing it has received in the past 5 years;

21 “(II) whether the institution has  
22 received any research funds from its  
23 State Department of Transportation  
24 during the past 5 years;

1                   “(III) whether the institution  
2                   houses a federally funded Local Tech-  
3                   nical Assistance Program Center;

4                   “(IV) whether the size of the in-  
5                   stitution’s endowment exceeds  
6                   \$50,000,000; and

7                   “(V) any other factor that the  
8                   Secretary determines to be appro-  
9                   priate.”; and

10                   (3) in subsection (d)(3) by striking “2013 and  
11                   2014” and inserting “2016 through 2021”.

12 **SEC. 203. INTERNATIONAL COLLABORATION FOR INNOVA-**  
13 **TION.**

14                   (a) IN GENERAL.—Subchapter I of chapter 55 of title  
15 49, United States Code, is amended by adding at the end  
16 the following:

17 **“§ 5507. International collaboration for innovation**

18                   “In consultation with the American Association of  
19 State Highway and Transportation Officials, other public  
20 surface transportation associations, private sector stake-  
21 holders, and the National Academy of Sciences, the Sec-  
22 retary of Transportation shall examine opportunities to le-  
23 verage Federal and State participation and investment in  
24 international transportation research collaborations, rec-  
25 ommend to States best practices for collaborating with for-

1 eign countries and international entities on transportation  
2 research, clarify States' use of Federal funds for collabo-  
3 rating with foreign countries and international entities,  
4 and identify research topic areas suitable for international  
5 transportation research collaboration by States.”.

6 (b) CONFORMING AMENDMENT.—The table of sec-  
7 tions for such subchapter is amended by adding at the  
8 end the following:

“5507. International collaboration for innovation.”.

9 **SEC. 204. TITLE 49 AMENDMENTS.**

10 Title 49, United States Code, is amended as follows:

11 (1) Amend section 102(e)(1)—

12 (A) by striking “5” and inserting “6”;

13 (B) by striking “and” at the end of sub-  
14 paragraph (C);

15 (C) by striking the period at the end of  
16 subparagraph (D) and inserting “; and”; and

17 (D) by inserting at the end the following  
18 new subparagraph:

19 “(E) an Assistant Secretary for Research  
20 and Technology who shall be appointed by the  
21 President, by and with the advice and consent  
22 of the Senate, and shall report directly to the  
23 Secretary.”.

24 (2) Amend section 102(g)—

25 (A) in paragraph (1)—

1 (i) by striking “Department” and in-  
2 sserting “Office of the Assistant Secretary  
3 for Research and Technology”;

4 (ii) in subparagraph (A), by striking  
5 “climate change; and” and inserting the  
6 following: “climate change, including  
7 multimodal activities focused on—

8 “(i) reducing vehicle miles traveled;

9 “(ii) reducing congestion; and

10 “(iii) reducing construction and main-  
11 tenance-related carbon emissions and en-  
12 ergy consumption; and”;

13 (iii) in subparagraph (B), by striking  
14 the period and inserting the following: “,  
15 including multimodal activities focused  
16 on—

17 “(i) adaptation and systems resilience  
18 and recovery; and

19 “(ii) efforts to improve regional scale  
20 modeling of future climate change impacts  
21 on transportation infrastructure.”; and

22 (B) in paragraph (2), by adding at the end  
23 the following: “The Office shall conduct out-  
24 reach to other Federal agencies, State and local  
25 transportation agencies, and the transportation

1 industry to promote the solutions and provide  
2 best practices for implementation.”.

3 (3) Amend section 102 by adding at the end  
4 the following:

5 “(i) CHIEF SCIENTIST.—There shall be in the Office  
6 of the Secretary a Chief Scientist who shall be appointed  
7 by the Secretary and shall be the principal science and  
8 technology advisor to the Secretary and shall perform  
9 other duties as the Secretary may direct. The Chief Sci-  
10 entist shall be an individual who is, by reason of scientific  
11 education and experience, knowledgeable in the principles  
12 of engineering, computer science, physics, human factors,  
13 or other scientific disciplines important to the work of the  
14 Department.”.

15 (4) Amend section 112 to read as follows:

16 **“§ 112. Office of the Assistant Secretary for Research**  
17 **and Technology of the Department of**  
18 **Transportation**

19 “(a) DEPUTY ASSISTANT SECRETARY.—The Assist-  
20 ant Secretary for Research and Technology shall have a  
21 Deputy Assistant Secretary who shall be appointed by the  
22 Secretary of Transportation. The Deputy Assistant Sec-  
23 retary shall carry out duties and powers prescribed by the  
24 Assistant Secretary.

1           “(b) POWERS AND DUTIES OF THE ASSISTANT SEC-  
2   RETARY.—The Assistant Secretary shall carry out—

3           “(1) powers and duties prescribed by the Sec-  
4   retary for—

5           “(A) coordination, facilitation, and review  
6   of the Department’s research and development  
7   programs and activities;

8           “(B) coordination with other Federal agen-  
9   cies of research efforts that affect the national  
10   transportation system;

11          “(C) dissemination of findings that have  
12   transportation applications to stakeholder com-  
13   munities;

14          “(D) advancement, and research and devel-  
15   opment, of innovative technologies, including in-  
16   telligent transportation systems;

17          “(E) comprehensive transportation statis-  
18   tics research, analysis, and reporting;

19          “(F) education and training in transpor-  
20   tation and transportation-related fields; and

21          “(G) activities of the Volpe National  
22   Transportation Center; and

23          “(2) other powers and duties prescribed by the  
24   Secretary.

1           “(c) AUTHORITIES.—The Assistant Secretary may  
2 enter into grants and cooperative agreements with Federal  
3 agencies, State and local government agencies, other pub-  
4 lic entities, private organizations, and other persons—

5                   “(1) to conduct research into transportation  
6 service and infrastructure assurance; and

7                   “(2) to carry out other research activities of the  
8 Office of the Assistant Secretary for Research and  
9 Technology.

10           “(d) PROGRAM EVALUATION AND OVERSIGHT.—For  
11 each of fiscal years 2016 through 2021, the Assistant Sec-  
12 retary is authorized to expend not more than 1½ percent  
13 of the amounts authorized to be appropriated for nec-  
14 essary expenses for administration and operations of the  
15 Office of the Assistant Secretary for Research and Tech-  
16 nology for the coordination, evaluation, and oversight of  
17 the programs administered by the Office.

18           “(e) COLLABORATIVE RESEARCH AND DEVELOP-  
19 MENT.—

20                   “(1) IN GENERAL.—To encourage innovative  
21 solutions to multimodal transportation problems and  
22 stimulate the deployment of new technology, the As-  
23 sistant Secretary may carry out, on a cost-shared  
24 basis, collaborative research and development with—



1           “(A) non-Federal entities, including State  
2           and local governments, foreign governments, in-  
3           stitutions of higher education, corporations, in-  
4           stitutions, partnerships, sole proprietorships,  
5           and trade associations that are incorporated or  
6           established under the laws of any State;

7           “(B) Federal laboratories; and

8           “(C) other Federal agencies.

9           “(2) COOPERATION, GRANTS, CONTRACTS, AND  
10          AGREEMENTS.—Notwithstanding any other provision  
11          of law, the Assistant Secretary may directly initiate  
12          contracts, grants, cooperative research and develop-  
13          ment agreements (as defined in section 12 of the  
14          Stevenson-Wydler Technology Innovation Act of  
15          1980 (15 U.S.C. 3710a)), and other agreements to  
16          fund, and accept funds from, the Transportation Re-  
17          search Board of the National Research Council of  
18          the National Academies, State departments of trans-  
19          portation, cities, counties, institutions of higher edu-  
20          cation, associations, and the agents of those entities  
21          to carry out joint transportation research and tech-  
22          nology efforts.

23          “(3) FEDERAL SHARE.—

24                 “(A) IN GENERAL.—Subject to subpara-  
25                 graph (B), the Federal share of the cost of an

1 activity carried out under paragraph (2), shall  
2 not exceed 50 percent.

3 “(B) EXCEPTION.—If the Secretary deter-  
4 mines that the activity is of substantial public  
5 interest or benefit, the Secretary may approve  
6 a greater Federal share.

7 “(C) NON-FEDERAL SHARE.—All costs di-  
8 rectly incurred by the non-Federal partners, in-  
9 cluding personnel, travel, facility, and hardware  
10 development costs, shall be credited toward the  
11 non-Federal share of the cost of an activity de-  
12 scribed in subparagraph (A).”.

13 **SEC. 205. ADVANCED TRANSPORTATION RESEARCH AND IN-**  
14 **NOVATION PROGRAM.**

15 (a) IN GENERAL.—Subchapter I of chapter 55 of title  
16 49, United States Code is amended by adding at the end  
17 the following:

18 **“§ 5508. Advanced Transportation Research and In-**  
19 **novation Program**

20 “(a) ESTABLISHMENT.—The Secretary of Transpor-  
21 tation shall establish the Advanced Transportation Re-  
22 search and Innovation Program, to be carried out by each  
23 modal administration, as appropriate, to address the long-  
24 term barriers to development of multimodal advanced  
25 transportation technologies with the potential to meet the

1 Nation’s long-term safety, competitiveness, and transpor-  
2 tation goals by supporting long-term, high-risk research  
3 and development to accelerate transformational transpor-  
4 tation innovations.

5       “(b) INTERAGENCY COLLABORATION.—The Sec-  
6 retary shall collaborate, as appropriate, on advanced  
7 transportation research, development, and other activities  
8 with other Federal agencies, including the Office of  
9 Science and Technology Policy, the National Science  
10 Foundation, the Department of Energy, the National In-  
11 stitute of Standards and Technology, the Department of  
12 Homeland Security, the National Aeronautics and Space  
13 Administration, the National Oceanic and Atmospheric  
14 Administration, and the Department of Defense. The Sec-  
15 retary shall consult with the Office of Science and Tech-  
16 nology Policy to ensure the Department’s research invest-  
17 ments are making the best possible contribution to the Na-  
18 tion’s goals of public health and safety, economic pros-  
19 perity, national security, and environmental quality.

20       “(c) REVIEW.—The Secretary shall enter into an  
21 agreement with the National Academies to review the re-  
22 search and activities carried out under this program assess  
23 whether they are consistent with the purposes described  
24 in subsection (a). Members of the review panel shall rep-

1 resent, at a minimum, multimodal surface transportation  
2 researchers and practitioners.

3 “(d) REPORT.—Not later than one year after the  
4 date of enactment of the Connected Transportation Re-  
5 search and Innovation Act of 2015, and biennially there-  
6 after, the Secretary shall provide to the Committees on  
7 Commerce, Science, and Transportation and Environment  
8 and Public Works of the Senate and the Committees on  
9 Transportation and Infrastructure and Science, Space,  
10 and Technology of the House of Representatives a report  
11 on implementation of this program and research areas  
12 that the program will support.”.

13 (b) CONFORMING AMENDMENT.—The table of sec-  
14 tions for such subchapter is amended by adding at the  
15 end the following:

“5508. Advanced Transportation Research and Innovation Program.”.

16 **SEC. 206. TRANSIT RESEARCH, DEVELOPMENT, DEM-**  
17 **ONSTRATION, AND DEPLOYMENT PROJECTS.**

18 Section 5312 of title 49, United States Code, is  
19 amended—

20 (1) in section (a)(1), by striking “may make  
21 grants and enter into contracts, cooperative agree-  
22 ments, and other agreements for” and inserting  
23 “shall carry out”; and

24 (2) in subsection (c)(2)—

25 (A) in subparagraph (G), by striking “or”;

1 (B) by redesignating subparagraph (H) as  
2 subparagraph (I); and

3 (C) after subparagraph (G), by inserting  
4 the following new subparagraph:

5 “(H) human factors; and”.

6 **SEC. 207. TRANSIT HUMAN RESOURCES AND TRAINING.**

7 Section 5322 of title 49, United States Code, is  
8 amended—

9 (1) in subsection (a), by striking “may under-  
10 take” and inserting “shall undertake”;

11 (2) in subsection (b), by adding at the end the  
12 following:

13 “(3) PROGRAMS.—Eligible public transportation  
14 workforce development programs under this sub-  
15 section are skills training, on the job training, and  
16 work based learning, including apprenticeship pro-  
17 grams that are registered under the Act entitled ‘An  
18 Act to enable the Department of Labor to formulate  
19 and promote the furtherance of labor standards nec-  
20 essary to safeguard the welfare of apprentices and to  
21 cooperate with the States in the promotion of such  
22 standards’, enacted August 16, 1937 (29 U.S.C. 50  
23 et seq.; popularly known as the National Apprentice-  
24 ship Act), that—

1           “(A) are, to the extent possible, nationally  
2 or regionally significant in scope;

3           “(B) replicate a successful workforce devel-  
4 opment model adopted in multiple geographic  
5 locations;

6           “(C) target areas with high rates of unem-  
7 ployment;

8           “(D) are designed to address current or  
9 projected workforce shortages;

10          “(E) give priority to minorities, women, in-  
11 dividuals with disabilities, veterans, low income  
12 populations and other underserved populations;

13          “(F) are designed to provide career path-  
14 ways that support the movement of targeted  
15 populations from initial or short-term employ-  
16 ment opportunities to sustainable careers; and

17          “(G) consist of other critical activities as  
18 identified by the Secretary.

19          “(4) PROGRAM OUTCOMES.—Eligible public  
20 transportation workforce development programs  
21 under this subsection shall be outcome-based and  
22 demonstrate outcomes including—

23                 “(A) increasing diversity of training par-  
24 ticipants;

1           “(B) increasing job placement, job reten-  
2           tion, wages, and achievement of certification  
3           and credentials using performance metrics es-  
4           tablished in consultation with the Secretary of  
5           Labor and consistent with metrics used by pro-  
6           grams under the Workforce Innovation and Op-  
7           portunity Act (29 U.S.C. 3101 et seq.); and

8           “(C) to the extent practical, evidence that  
9           the program did not preclude workers that are  
10          participating in skills training, on the job train-  
11          ing, and work-based learning, including reg-  
12          istered apprenticeships from being referred to,  
13          hired on, projects funded under this chapter  
14          without regard to the length of time of their  
15          participation in such program.

16          “(5) COORDINATION.—Recipients of assistance  
17          under this subsection shall—

18                 “(A) identify the training needs to be im-  
19                 plemented at the local level in coordination with  
20                 entities such as local employers, local transit  
21                 operators, labor union organizations, Workforce  
22                 Development Boards, State workforce agencies,  
23                 State Apprenticeship Agencies (where applica-  
24                 ble), University Transportation Centers, Com-  
25                 munity Colleges, and community-based organi-

1 zations representing minority, disability, and  
2 low income populations; and

3 “(B) conduct local training programs, as  
4 appropriate, in coordination with existing local  
5 training programs supported by the Depart-  
6 ment of Transportation, the Department of  
7 Labor (including registered apprenticeship pro-  
8 grams), and the Department of Education.

9 “(6) RESEARCH AND PROGRAM EVALUATION.—  
10 The Secretary of Transportation shall conduct re-  
11 search and an impact evaluation based on measur-  
12 able outcomes of the training funded under this sub-  
13 section. In the second, fourth, and sixth year fol-  
14 lowing the enactment of this paragraph, the Sec-  
15 retary shall conduct an aggregate analysis of the na-  
16 tional impact related to workforce shortage, diver-  
17 sity, and job placement.”;

18 (3) in subsection (d)(3), by inserting “, includ-  
19 ing online curriculum,” after “under this sub-  
20 section”;

21 (4) by redesignating subsection (e) as sub-  
22 section (f);

23 (5) by inserting after subsection (d) the fol-  
24 lowing:



1           “(e) USE FOR ADMINISTRATION AND TECHNICAL AS-  
2   SISTANCE.—The Secretary may use up to 1 percent of the  
3   amounts made available to carry out this section to admin-  
4   ister, oversee, and provide technical assistance for the ac-  
5   tivities and programs developed and conducted under this  
6   section.”; and

7           (6) in subsection (f), as so redesignated by  
8   paragraph (4) of this section, by inserting “and the  
9   Committee on Science, Space, and Technology” after  
10   “Transportation and Infrastructure”.

11 **SEC. 208. RAIL RESEARCH, DEVELOPMENT, TESTING, AND**  
12 **TRAINING.**

13       Section 20108 of title 49, United States Code, is  
14   amended in subsection (a) by inserting “, including oper-  
15   ations and technology” after “safety”.

16 **SEC. 209. RAIL COOPERATIVE RESEARCH PROGRAM.**

17       Section 24910 of title 49, United States Code, is  
18   amended—

19           (1) in subsection (b)—

20               (A) by striking “and” at the end of para-  
21               graph (12);

22               (B) by striking the period at the end of  
23               paragraph (13) and inserting “; and”; and

24               (C) by inserting the following new para-  
25               graph at the end:

1           “(14) to improve the management of shared  
2           rights-of-way between passenger and freight serv-  
3           ices.”; and

4           (2) in subsection (e) by striking “2010 through  
5           2013” and inserting “2016 through 2021”.

6   **SEC. 210. HAZARDOUS MATERIALS RESEARCH AND DEVEL-**  
7                           **OPMENT.**

8           Section 5118 of title 49, United States Code, is  
9   amended—

10           (1) in section (a)—

11                   (A) in paragraph (1) by striking “may”  
12                   and inserting “shall”;

13                   (B) in paragraph (2)—

14                           (i) in subparagraph (A), by striking  
15                           “and”;

16                           (ii) in subparagraph (B), by striking  
17                           the period and inserting “; and”; and

18                           (iii) by adding at the end the fol-  
19                           lowing new subparagraph:

20                           “(C) coordinate, as appropriate, with other  
21                           Federal agencies, including the National Insti-  
22                           tute of Standards and Technology, the Depart-  
23                           ment of Homeland Security, and the Depart-  
24                           ment of Energy.”; and

1           (2) by adding at the end the following new sub-  
2           section:

3           “(c) COOPERATIVE RESEARCH PROGRAM.—

4                 “(1) IN GENERAL.—The Secretary shall estab-  
5           lish and carry out a hazardous materials transport  
6           cooperative research program.

7                 “(2) NATIONAL ACADEMY OF SCIENCES.—The  
8           Secretary shall enter into an agreement with the Na-  
9           tional Academy of Sciences to support and carry out  
10          administrative and management activities relating to  
11          the governance of the hazardous materials transport  
12          cooperative research program.

13                “(3) RESEARCH.—Research funded under this  
14          program may include activities related to—

15                   “(A) emergency planning and response, in-  
16           cluding information and programs that can be  
17           readily assessed and implemented in local juris-  
18           dictions;

19                   “(B) risk analysis and perception and data  
20           assessment;

21                   “(C) commodity flow data, including vol-  
22           untary collaboration between shippers and first  
23           responders for secure data exchange of critical  
24           information;

25                   “(D) integration of safety and security;

1 “(E) cargo packaging and handling;

2 “(F) hazmat release consequences; and

3 “(G) materials and equipment testing.

4 “(4) PROGRAM ADMINISTRATION.—In carrying  
5 out the program under this section, the National  
6 Academy of Sciences shall ensure, to the maximum  
7 extent practicable, that projects are selected on the  
8 basis of merit and open solicitation of proposals and  
9 review by panels of appropriate experts.”.

10 **SEC. 211. WEB-BASED TRAINING FOR EMERGENCY RE-**  
11 **SPONDERS.**

12 Section 5115(a) of title 49, United States Code, is  
13 amended by inserting “, including online curriculum as ap-  
14 propriate,” after “a current curriculum of courses”.

15 **SEC. 212. NATIONAL COOPERATIVE FREIGHT TRANSPOR-**  
16 **TATION RESEARCH PROGRAM.**

17 (a) IN GENERAL.—Subchapter I of chapter 55 of title  
18 49, United States Code, is amended by adding at the end  
19 the following:

20 **“§ 5509. National cooperative freight transportation**  
21 **research program**

22 “(a) ESTABLISHMENT.—The Secretary of Transpor-  
23 tation shall establish and support a multimodal national  
24 cooperative freight transportation research program.

1           “(b) AGREEMENT.—The Secretary shall enter into an  
2 agreement with the National Academy of Sciences to sup-  
3 port and carry out administrative and management activi-  
4 ties relating to the governance of the national cooperative  
5 freight transportation research program.

6           “(c) ADVISORY COMMITTEE.—The National Acad-  
7 emy of Sciences shall select an advisory committee con-  
8 sisting of a representative cross-section of freight stake-  
9 holders, including the Department of Transportation,  
10 other Federal agencies, State transportation departments,  
11 local governments, nonprofit entities, academia, and the  
12 private sector.

13           “(d) GOVERNANCE.—The national cooperative  
14 freight transportation research program established under  
15 this section shall include the following administrative and  
16 management elements:

17                   “(1) NATIONAL RESEARCH AGENDA.—The advi-  
18 sory committee, in consultation with interested par-  
19 ties, shall recommend a multi-year national research  
20 agenda for the program. At a minimum, the advi-  
21 sory committee shall consider—

22                           “(A) techniques for estimating and quanti-  
23 fying public benefits derived from transpor-  
24 tation projects;

1           “(B) methods for incorporating estimates  
2 of international trade, originating at both water  
3 and land ports, into landside transportation  
4 planning;

5           “(C) ways to synchronize infrastructure  
6 improvements with freight transportation de-  
7 mand, including impacts of e-commerce on  
8 freight demand, and strategies for better man-  
9 agement;

10          “(D) the effect of changing patterns of  
11 freight movement on transportation planning  
12 decisions relating to rest areas and implementa-  
13 tion of truck parking solutions;

14          “(E) new innovative technologies and tools  
15 for data collection, analysis, modeling, routing,  
16 and overall management of freight movement;

17          “(F) ways to advance deployment of  
18 freight intelligent transportation systems, in-  
19 cluding advanced information systems;

20          “(G) methods for developing the outreach  
21 tools and incentives to increase the workforce;

22          “(H) new methods and technologies for  
23 monitoring and enforcement, including data  
24 sharing and harmonization;

1           “(I) new methods and policies for incor-  
2           porating freight in urban transportation and  
3           land use planning; and

4           “(J) other research areas, including human  
5           factors research, to identify and address emerg-  
6           ing and future research needs related to freight  
7           transportation by all modes.

8           “(2) PROGRAM ADMINISTRATION.—In carrying  
9           out the program under this section, the National  
10          Academy of Sciences shall ensure, to the maximum  
11          extent practicable, that projects are selected on the  
12          basis of merit and open solicitation of proposals and  
13          review by panels of appropriate experts.

14          “(3) DISSEMINATION OF RESEARCH FIND-  
15          INGS.—The National Academy of Sciences shall dis-  
16          seminate research findings to researchers, practi-  
17          tioners, and decisionmakers, including through con-  
18          ferences and seminars, field demonstrations, work-  
19          shops, presentations, testimony to government offi-  
20          cials, the Internet, publications for the general pub-  
21          lic, and other appropriate means.

22          “(e) FUNDING.—

23          “(1) USE OF NON-FEDERAL FUNDS.—In addi-  
24          tion to using funds authorized for this section, the  
25          National Academy of Sciences may seek and accept

1 additional funding from non-Federal sources, includ-  
2 ing public and private entities.

3 “(2) PERIOD OF AVAILABILITY.—Amounts  
4 made available to carry out this section shall remain  
5 available until expended.”.

6 (b) CONFORMING AMENDMENT.—The table of sec-  
7 tions for such subchapter is amended by adding at the  
8 end the following:

“5509. National cooperative freight transportation research program.”.

9 **SEC. 213. SMART CITIES TRANSPORTATION PLANNING**  
10 **STUDY.**

11 (a) IN GENERAL.—The Assistant Secretary of Trans-  
12 portation for Research and Technology shall conduct a  
13 study of digital technologies and information technologies,  
14 including shared mobility, data, transportation network  
15 companies, and on-demand transportation services—

16 (1) to understand the degree to which cities are  
17 adopting these technologies;

18 (2) to assess future planning, infrastructure,  
19 and investment needs; and

20 (3) to provide best practices to plan for smart  
21 cities in which information and technology are  
22 used—

23 (A) to reduce traffic congestion;

24 (B) to improve city operations;

25 (C) to grow the local economy;



1 (D) to improve response in times of emer-  
2 gencies and natural disasters;

3 (E) to improve the lives of city residents;  
4 and

5 (F) to reduce environmental impact.

6 (b) COMPONENTS.—The study conducted under sub-  
7 section (a) shall—

8 (1) identify issues that influence the ability of  
9 the United States to plan for and invest in smart  
10 cities, including barriers to collaboration and access  
11 to scientific information; and

12 (2) review how the expanded use of digital tech-  
13 nologies, mobile devices, and information may—

14 (A) enhance the efficiency and effective-  
15 ness of existing transportation networks;

16 (B) optimize demand management serv-  
17 ices;

18 (C) impact low-income and other disadvan-  
19 taged communities;

20 (D) provide opportunities to share, collect,  
21 and use data while ensuring the privacy of indi-  
22 viduals;

23 (E) change current planning and invest-  
24 ment strategies;

1                   (F) provide opportunities for enhanced co-  
2                   ordination and planning; and

3                   (G) provide opportunities to reduce the en-  
4                   vironmental impact of transportation.

5           (c) COORDINATION.—The study conducted under  
6 subsection (a) shall include coordination with other rel-  
7 evant Federal agencies conducting research on smart cit-  
8 ies, including the National Science Foundation and the  
9 National Institute of Standards and Technology, as well  
10 as relevant State and local agencies.

11           (d) REPORTING.—Not later than 18 months after the  
12 date of enactment of this Act, the Assistant Secretary  
13 shall publish the results of the study required under sub-  
14 section (a) on a public website.