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The U.S. Land-Grant University System: An Overview

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SUMMARY

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The U.S. Land-Grant University System: An Overview

With the passage of the first Morrill Act in 1862, the United States began a then-novel policy of providing federal support for postsecondary education, focused on agriculture and the mechanical arts. The national system of land-grant colleges and universities that has developed since then is recognized for its breadth, reach, and excellence in teaching, research, and extension. Land-grant institutions are located in every U.S. state and many territories. These institutions educate the next generation of farmers, ranchers, and citizens, and form the backbone of a national network of agricultural extension and experiment stations.

The land-grant university system has continued to evolve through federal legislation. The federal government provides funds, often with state matching requirements, to execute the system's three-fold mission of agricultural teaching, research, and extension. The U.S. Department of Agriculture's (USDA's) National Institute of Food and Agriculture (NIFA) distributes these funds to the states as capacity grants, on a formula basis as determined by statute, or to participating institutions on a competitive basis. The Morrill Acts of 1862 (12 Stat. 503) and 1890 (26 Stat. 417), and the Equity in Educational Land-Grant Status Act of 1994 (P.L. 103-382 §531-535), established the three institutional categories of the land-grant system, now known as the 1862, 1890, and 1994 Institutions. The 1862 Institutions are the first land-grant institutions; 1890 Institutions are historically black colleges and universities (HBCUs); and 1994 Institutions are tribal colleges and universities (TCUs). Later legislation also recognized additional institutional categories, including non-land-grant colleges of agriculture (NLGCAs) and Hispanic-serving agricultural colleges and universities (HSACUs), for specific programs.

The Hatch Act of 1887 (24 Stat. 440), Evans-Allen Act of 1977 (P.L. 95-113 §1445), and provisions of the Agricultural Research, Extension, and Education Reform Act of 1998 (AREERA, P.L. 105-185) provide the framework for funding research at land-grant institutions. State Agricultural Experiment Stations (SAESs) associated with 1862 Institutions receive federal research capacity funds with a one-to-one nonfederal matching requirement. The 1890 Institutions also receive federal research capacity funds with this matching requirement, yet USDA can waive up to 50% of their matching requirement. The 1994 Institutions can receive federal research funds through competitive grants programs. They may also use interest distributions from the Native American Institutions Endowment Fund, allocated on a formula basis, at their discretion.

The land-grant university system operates the U.S. Cooperative Extension Service (CES) in partnership with federal, state, and local governments. The CES provides nonformal education to agricultural producers and communities through its network of offices located in most of the more than 3,000 U.S. counties and territories. The Smith-Lever Act of 1914 (38 Stat. 372), National Agricultural Research, Education, and Teaching Policy Act of 1977 (NARETPA, P.L. 95-113 §1444-1445), and AREERA extension provisions guide agricultural extension funding in the land-grant university system. The 1862 and 1890 Institutions receive federal capacity funds, according to separate formulas with nonfederal matching requirements. USDA may waive up to 50% of the matching requirement for 1890 Institutions. The 1994 Institutions may receive federal extension funding through competitive grants.

Looking forward, the scheduled fall 2019 relocation of NIFA from its current location in Washington, DC; the decades-long shifting balance of public and private investment in agricultural research; disparities in state matching funds among the different classes of land-grant institutions; and the funding of TCU land-grant institutions may invite congressional engagement.

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Introduction

On July 2, 1862, with the passage of the first Morrill Act (12 Stat. 503; 7 U.S.C. 301 et seq.), the United States began a then-novel policy of providing federal support for postsecondary education, specifically for agriculture and the mechanical arts. The national system of land-grant colleges and universities that has developed since then is recognized for its breadth, reach, and excellence in teaching, research, and extension. Located in every state, Washington, DC, and many insular areas,[1] these institutions educate the next generation of farmers, ranchers, and citizens, and form the backbone of a national network of agricultural extension and experiment stations.

Later federal legislation expanded the scope and reach of the 1862 Morrill Act. Beyond providing initial resources for establishment of the land-grant institutions, the federal government contributes funds annually through a variety of capacity and competitive grants administered by the U.S. Department of Agriculture's (USDA's) National Institute of Food and Agriculture (NIFA). Capacity grants, also known as formula funds, are allocated to states based on statutory formulas. Competitive grants are awarded to specific projects selected through peer-review processes. In many cases, the states and territorial governments complement federal appropriations through matching funds. Legislation has also expanded the land-grant system to include historically black colleges and universities (HBCUs) and tribal colleges and universities (TCUs). Additional institutional categories are recognized for specific programs. These categories include non-land-grant colleges of agriculture (NLGCAs), Hispanic-serving agricultural colleges and universities (HSACUs), and cooperating forestry schools.

Looking forward, the scheduled fall 2019 relocation of NIFA from its current location in Washington, DC; the shifting balance of public and private investment in agricultural research; disparities in state matching funds among the different classes of land-grant institutions; and the funding of TCU land-grant institutions may invite congressional engagement.

While state and local governments have roles in the U.S. land-grant university system, this report focuses on federal laws, appropriations, and other matters.

Overview: History, Institutions, and Mission

History

Postsecondary education in the American colonies was available to a limited segment of society and focused on a few subject areas. Colonial colleges established in association with Christian denominations enrolled predominantly white men in classical and professional disciplines.[2] New colleges created following independence of the United States from Great Britain broadened enrollment and fields of study. However, lack of reliable funding meant that many closed.

In the early to mid-19th century, demand grew for postsecondary education in agricultural and technical disciplines, as did interest in educating the populace more broadly. Johnathan Baldwin

[1] *Insular area* is defined at 7 U.S.C. 3103(12) to include the Commonwealth of Puerto Rico; Guam; American Samoa; the Commonwealth of the Northern Mariana Islands; the Federated States of Micronesia; the Republic of the Marshall Islands; the Republic of Palau; and the Virgin Islands of the United States.

[2] For further information, see John R. Thelin, Jason R. Edwards, and Eric Moyen, et al., *Higher Education in the United States*, StateUniversity.com, Education Encyclopedia, https://education.stateuniversity.com/pages/2044/Higher-Education-in-United-States.html.

Turner, a professor at Illinois College, championed a more accessible "industrial education." His "Plan for a State University for the Industrial Classes," presented at an academic conference in 1850, contained many elements of the yet-to-be-established land-grant university system.[3]

In 1857, Representative Justin Smith Morrill of Vermont introduced a bill to establish colleges of agriculture through grants of land to the states.[4] The bill proposed giving federal land, or rights to such land, to the states for the purpose of establishing these colleges. The federal government was already giving land to states to encourage the development of railroads, for example through the Land Grant Act of 1850 (9 Stat. 466). However, granting land to states to establish institutions of higher education was a novel prospect. Congress passed Morrill's bill in 1859 by a slim margin, largely along a North-South divide, and it could not overcome a presidential veto by James Buchanan. Morrill, who had never attended college himself, presented the bill once again in 1862. The political landscape had changed by then, with the onset of the Civil War and accompanying absence of Members of Congress from the southern states. Further, the second introduction of the bill expanded proposed areas of study at the colleges to include military strategy in addition to agricultural and mechanical arts. This bill passed overwhelmingly, and President Abraham Lincoln signed it on July 2, 1862. This first Morrill Act, described in greater detail below, marked the beginning of the U.S. land-grant university system. Notably, Lincoln signed the Morrill Act just seven weeks after signing legislation to establish USDA (12 Stat. 387, enacted May 15, 1862).

Between 1872 and 1890, then-Senator Morrill introduced 12 bills focused on strengthening the early land-grant university system. Congress passed the last of those bills, and President Benjamin Harrison signed into law the Morrill Act of 1890 (26 Stat. 417). This second Morrill Act provided funding for the land-grant university system and prohibited racial discrimination in admissions policies. It led to the establishment of a group of historically black colleges and universities (HBCUs) known as the 1890 Institutions.

The land-grant university system further expanded in 1994 with the addition of a group of tribal colleges and universities (TCUs) now identified as the 1994 Institutions. Senator Jeff Bingaman of New Mexico introduced the Equity in Educational Land-Grant Status Act in 1993. This act became Sections 531-335 of the Elementary and Secondary Education Act reauthorization (P.L. 103-382), and President William J. Clinton signed it into law on October 20, 1994.

What Is a Land-Grant College or University?

Land-grant institutions are colleges and universities designated to receive benefits of the Morrill Acts of 1862 and 1890.[5] These acts promoted establishment of institutions of higher learning focused on the agricultural and mechanical arts, without excluding other scientific and classical studies. Land-grant institutions now address many academic fields in addition to those of their foundational colleges of agriculture. There is at least one land-grant institution in each U.S. state, the District of Columbia, the Federated States of Micronesia, and many U.S. territories[6] (see **Figure 1** for a map). In 2017, 1.7 million students were enrolled across 109 land-grant colleges

[3] For further information on Turner's role in development of the land-grant university concept, see Allan Nevins, "Chapter 1: Turner and the Founding of the University," in *American College and University Series: Illinois*, ed. George Phillip Krapp (New York [etc.]: Oxford University Press, 1917).

[4] For more of the political history of the bill, see John Y. Simon, "The Politics of the Morrill Act," *Agricultural History*, vol. 37, no. 2 (1963), pp. 103-111.

[5] The 1994 Institutions were established in accordance with the provisions of the Morrill Act of 1862.

[6] See footnote 1.

and universities,[7] with a portion of those enrolled in those institutions' colleges of agriculture. The federal government provides annual appropriations to U.S. states and territories, often with matching requirements, for use in the land-grant university system.

Types of Land-Grant Institutions

There are three categories of land-grant institution, named for the year in which legislation established them: 1862, 1890, and 1994. The "Foundational Legislation" section of this report discusses relevant establishment legislation for these institutions in detail. Most generally, **1862 Institutions** are the original land-grant colleges and universities established through the Morrill Act of 1862, as amended. There are fifty-seven[8] 1862 Institutions, located in each state, U.S. territory, and the District of Columbia. The **1890 Institutions** are HBCUs established as land-grant institutions as a result of the Morrill Act of 1890, as amended. There are nineteen 1890 Institutions, primarily in the southeastern states. The **1994 Institutions** are TCUs recognized through the Equity in Educational Land-Grant Status Act of 1994, as amended. Congress has defined thirty-six 1994 Institutions through statute.

The federal government recognizes additional categories of institutions that are not land-grant institutions, and yet support the mission of the land-grant university system (as discussed below). Cooperating forestry schools, HSACUs, and NLGCAs are eligible for federal funding through specific programs.

Three Pillars: Teaching, Research, and Extension

Federal legislation has given rise to the three functional pillars of land-grant institutions. First among them is the teaching function established through the Morrill Acts of 1862 and 1890. Later legislation added research and extension, establishing the roles of land-grant institutions in producing original agricultural research and in bringing that research to the nonuniversity public through agricultural extension.

[7] 1.7 million students includes full- and part-time students enrolled in all programs at all levels of postsecondary education, in all 109 land-grant colleges and universities in the fall semester of 2017. IPEDS custom report, https://nces.ed.gov/ipeds/datacenter. As of 2019, there are 112 land-grant institutions.

[8] A 58th institution, Massachusetts Institute of Technology (MIT), is an 1862 land-grant university, but is not included in this count. While USDA has confirmed that MIT, which focuses on the mechanical arts, is eligible to apply for grants that are available only to land-grant institutions, the state of Massachusetts chooses to allocate its federal capacity appropriations to the University of Massachusetts, Amherst, which focuses on the agricultural arts. See 2016 letter from USDA to MIT at https://osp.mit.edu/sites/osp/files/uploads/land-grant-institution-confirmation-of-status-2016-04-28.pdf.

Figure 1. Map of U.S. Land-Grant Institutions

Source: USDA National Institute of Food and Agriculture, https://nifa.usda.gov/resource/land-grant-colleges-and-universities-map (version March 3, 2019).

Note: See **Appendix** for a list of land-grant institutions by state.

Foundational Legislation

The U.S. land-grant university system has evolved over the past 150 years. Multiple pieces of legislation have added to its original mission, expanded its reach, and adjusted its funding structure. This section identifies enacted legislation that is among the most significant for land-grant universities (see **Table 1** for a summary of select statutes). Details regarding federal funding and state matching requirements are discussed in the section following this legislative overview ("Funding"). Funding discussed in this report is discretionary unless otherwise stated.

Teaching

The **Morrill Act of 1862** (12 Stat. 503; 7 U.S.C. 301 et seq.) was officially titled, "An Act Donating Public Lands to the Several States and Territories which may provide Colleges for the Benefit of Agriculture and the Mechanic Arts" (see legislative excerpt in the text box below). It designated that each state would receive 30,000 acres of federal land for each Member of the Senate and House of Representatives it had in Congress at the time. In cases in which insufficient public land was available, states would instead receive *land scrip*, or certificates of entitlement to such public lands. Money from the sale of this land or land scrip was to be used to support at least one college with the primary purpose of teaching agriculture and the mechanical arts, to "promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The act prohibited states from using the funds for constructing or maintaining buildings.

Excerpt from 1862 Morrill Act

SECTION 4: "And be it further enacted, That all moneys derived from the sale of the lands aforesaid by the States to which the lands are apportioned, and from the sales of land scrip hereinbefore provided for, shall be invested in stocks of the United States, or of the States, or some other safe stocks, yielding not less than five per centum upon the par value of said stocks; and that the moneys so invested shall constitute a perpetual fund, the capital of which shall remain forever undiminished, (except so far as may be provided in section fifth of this act,) and the interest of which shall be inviolably appropriated, by each State which may take and claim the benefit of this act, to the endowment, support, and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

The **Morrill Act of 1890** (26 Stat. 417; 7 U.S.C. 321 et seq.) responded to the need to finance the institutions established through the first Morrill Act. Today, the second Morrill Act is most recognized for its role in the establishment of HBCU land-grant institutions. It provided each state and territory with annual appropriations for the endowment and maintenance of the land-grant colleges.[9] This money was to be used for instruction in specific academic disciplines, and for facilities for such instruction. The second Morrill Act prohibited racial discrimination in admission policies of institutions receiving these funds (7 U.S.C. 323). However, it permitted states and territories to meet this requirement by establishing separate institutions "of like character" for white and nonwhite students. In such cases, annual appropriations would be divided "equitably" between the two institutions in a manner proposed by the state or territory

[9] Appropriations under the second Morrill Act are no longer in effect. Section 724 of the FY1995 Agriculture Appropriations Act (P.L. 103-330) ended these appropriations.

and reported to the Secretary of the Interior. This condition ultimately resulted in the establishment of 19 federally recognized 1890 Institutions,[10] primarily in the southeastern states.

Just over 100 years after the Morrill Act of 1890 facilitated the addition of HBCUs, the **Equity in Educational Land-Grant Status Act of 1994**[11] (P.L. 103-382 §531-535; 7 U.S.C. 301 note) added TCUs to the land-grant university system. This act originally designated twenty-nine 1994 Institutions, considered to be land-grant institutions established in accordance with the Morrill Act of 1862 except for the manner in which they would be funded. In lieu of land or land scrip, annual appropriations would endow and maintain them. The Native American Institutions Endowment Fund was created in the U.S. Treasury, and interest payments are distributed annually on a formula basis. Institutions may use these endowment payments at their discretion. The 1994 Institutions are eligible for some, but not all, research and extension funds that are available to 1862 Institutions established through the first Morrill Act. There are currently 36 TCUs designated as 1994 Institutions.

Research

Agricultural research in the land-grant university system impacts daily life. Among diverse areas of investigation, researchers at land-grant institutions explore best practices for livestock, fish, and plant breeding; analyze agricultural value chains; examine interactions among soil health, agricultural productivity, and water quality; and look for new and safer pesticides to protect crop production, human health, and the environment. Discoveries achieved through this research at land-grant institutions have improved the lives of producers and consumers in diverse ways.

The **Hatch Act of 1887** (24 Stat. 440; 7 U.S.C. 361a et seq.) instituted the research function of land-grant universities. It provided for establishment of "a department to be known and designated as an 'agricultural experiment station'" under the direction of each land-grant institution established under the first Morrill Act. They would aid "in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture and to promote scientific investigation and experiment respecting the principles and applications of agricultural science." The Hatch Act provided for appropriations to support original agricultural research at these stations, distributed to the states based on a formula in the law.[12] Federal funds distributed in this manner are referred to as *capacity grants* or *formula funds*. The Hatch Act ultimately led to development of State Agricultural Experiment Stations[13] (SAES) in each U.S. state, insular area,[14] and the District of Columbia. In the modern day, not all of these stations are physical places, and may be represented instead through individual or groups of researchers at 1862 Institutions, or at associated agricultural or research sites within the state.[15]

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[10] Alabama has two 1890 Institutions, Alabama Agricultural and Mechanical University and Tuskegee University. For funding purposes, relevant legislation treats the two as though they were in separate states, that is both have funding opportunities equal to those of the other 1890 Institutions.

[11] The Equity in Educational Land-Grant Status Act of 1994 is Part C of Title V of the Improving America's Schools Act of 1994 (P.L. 103-382).

[12] Later legislation strengthened the Hatch Act research mission. The Adams Act of 1906 (34 Stat. 63); Purnell Act of 1925 (43 Stat. 970); and Bankhead Jones Act of 1935 (49 Stat. 436) authorized additional appropriations for research at 1862 Institutions and related research facilities. The Purnell Act expanded research to include the social sciences, paving the way for studies of agricultural economics and sociology.

[13] *State agricultural experiment station* is defined at 7 U.S.C. 3103(17).

[14] See footnote 1 for insular area definition.

[15] For an introduction to agricultural research and the land-grant university system, see Donald A. Holt, "Agricultural Research Management in US Land-Grant Universities," in *Agricultural Research Management*, ed. G. Loebenstein and

The 1890 Institutions are not eligible for Hatch Act appropriations. In 1977, the **Evans-Allen Act** (P.L. 95-113 §1445; 7 U.S.C. 3222) gave 1890 Institutions access to agricultural research capacity grants. The Evans-Allen Act is Section 1445 in the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA)[16] (P.L. 95-113 §1440-1445; 7 U.S.C. 3222). Evans-Allen funds are appropriated and then distributed according to a statutory formula, in a manner similar to Hatch Act appropriations.

The 1994 Institutions are not eligible for research capacity grants under the Hatch or Evans-Allen Acts. However, Section 251 of the **Agricultural Research, Extension, and Education Reform Act (AREERA) of 1998** (P.L. 105-185) gave these institutions access to separate competitive agricultural research funding. AREERA amended the Equity in Educational Land-Grant Status Act of 1994 to authorize USDA to award research grants to 1994 Institutions on a competitive basis. This provision requires that the 1994 Institution applying for these funds certify that the proposed research will be conducted in partnership with the USDA Agricultural Research Service (ARS), an 1862 or 1890 Institution, or a cooperating forestry school. Congress has provided appropriations for this competitive grants program. However, lack of predictable annual research funding on a formula basis has raised concerns that 1994 Institutions cannot build their institutional agricultural research capabilities, as 1862 and 1890 Institutions have done. For more, see "Funding of 1994 Institutions."

By the mid-20th century, forestry science capacity was increasingly seen as falling behind national needs.[17] The **McIntire-Stennis Cooperative Forestry Act of 1962** (P.L. 87-788; 16 U.S.C. 582a-1 et seq.) authorized forestry research funds. This act encourages coordination of forestry research efforts among state colleges and universities and the federal government. These funds are apportioned to the states in amounts determined by the Secretary of Agriculture in consultation with an advisory council. These apportionments were originally available only to 1862 Institutions, their affiliated SAESs, or public colleges or universities offering graduate training in forestry. The 1890 Institutions were made eligible in Section 7412 of the Food, Conservation, and Energy Act of 2008, also known as the 2008 farm bill (P.L. 110-246). The 1994 Institutions were made eligible in Section 7604 of the 2018 farm bill (Agriculture Improvement Act of 2018, P.L. 115-334).[18]

Additional federal legislation has authorized a variety of competitive research grants, and is addressed in "Funding."

Extension

Agricultural extension brings agricultural research findings to the people who can put them into practice. Since passage of the Smith-Lever Act in 1914, the United States has developed an expansive Cooperative Extension System operated through the land-grant university system in partnership with federal, state, and local governments.[19] Partners include NIFA, cooperative extension services at land-grant colleges and universities, and cooperative extension service offices in nearly each of the country's approximately 3,000 counties and its territories. Extension

G. Thottappilly (Dordrecth, The Netherlands: Springer, 2007), pp. 231-258.

[16] NARETPA is itself Title XIV of the Food and Agriculture Act of 1977 (P.L. 95-113), or 1977 farm bill.

[17] For additional background on the McIntire-Stennis Act, see Steven H. Bullard, Perry J. Brown, and Catalino A. Blanche, et al., "A "Driving Force" in Developing the Nation's Forests: The McIntire-Stennis Cooperative Forestry Research Program," *Journal of Forestry*, April/May 2011, pp. 141-148.

[18] See "Cooperating Forestry Schools" for more detail on eligible institutions.

[19] See the NIFA Cooperative Extension System web page for additional information, at https://nifa.usda.gov/cooperative-extension-system.

agents based at field offices and land-grant institutions work with local agricultural producers and community members to demonstrate or put into practice knowledge gained through agricultural research. Agriculture faculty at land-grant institutions may have appointments that are fully teaching, research, or extension, or some combination of the three. The extension function adds nonformal education to the land-grant mission.

The **Smith-Lever Act of 1914** (38 Stat. 372; 7 U.S.C. 341 et seq.) responded to interest in ensuring that agricultural research findings would make their way to producers and improve agricultural practices. This act provided for capacity funds—annual appropriations, distributed to the states on a formula basis—for cooperative extension. It led to establishment of the cooperative extension service associated with 1862 Institutions. The Smith-Lever Act, as amended, also contains competitive funding provisions.

Smith-Lever capacity funds are not available to 1890 Institutions. The 1890 Institutions gained access to extension appropriations, distributed on a formula basis, in 1977 through the **Section 1444 of NARETPA** (P.L. 95-113 §1444; 7 U.S.C. 3221). Thus NARETPA provided 1890 Institutions access to appropriations for both agricultural research (via Section 1445, or the Evans-Allen Act) and extension (via Section 1444).

The 1994 Institutions gained access to federal extension funding in 1998. **Section 201 of AREERA** (7 U.S.C. 343(b)(3)) amended the Smith-Lever Act to authorize appropriations for USDA to distribute to 1994 Institutions on a competitive basis, with such funds to be administered in cooperation with an 1862 or 1890 Institution. Thus AREERA provided 1994 Institutions access to both competitive research (Section 251) and extension (Section 201) appropriations.

Table 1. Select Statutes Concerning Capacity Grants for U.S. Land-Grant Institutions

Legislation	Codification	Eligible Institution(s)	Key Elements and Results
Hatch Act of 1887 (24 Stat. 440)	7 U.S.C. 361a et seq.	1862	**Research.** Authorized annual agricultural research appropriations. Led to establishment of system of State Agricultural Experiment Stations (SAESs) associated with 1862 Institutions.
Smith-Lever Act of 1914 (38 Stat. 372)	7 U.S.C. 341	1862	**Extension.** Authorized annual cooperative extension appropriations. Led to establishment of cooperative extension services associated with 1862 Institutions.
McIntire-Stennis Cooperative Forestry Act of 1962 (P.L. 87-788)	16 U.S.C. 582a-1 et seq.	1862, 1890, 1994, cooperating forestry schools	**Research.** Authorized annual forestry research appropriations.
Evans-Allen Act of 1977 (P.L. 95-113 §1445)	7 U.S.C. 3222	1890	**Research.** Authorized annual appropriations for agricultural research at 1890 Institutions in a manner similar to Hatch Act appropriations for 1862 Institutions.

Legislation	Codification	Eligible Institution(s)	Key Elements and Results
Section 1444 of the National Agricultural Research, Extension, and Teaching Policy Act of 1977 (NARETPA) (P.L. 95-113 §1444)	7 U.S.C. 3221	1890	**Extension.** Authorized annual appropriations for agricultural extension at 1890 Institutions in a manner similar to Smith-Lever appropriations for 1862 Institutions.
Educational Equity in Land-Grant Status of 1994 (P.L. 103-382 §531-535)	7 U.S.C. 301 note	1994	**Teaching, research, or extension.** Recognized new class of 1994 land-grant institutions; created and funded endowment in the U.S. Treasury; and authorized annual payments to be used at the discretion of the recipient institution.

Source: Compiled by CRS.

Notes: The Morrill Act of 1890 originally provided funding for teaching and facilities maintenance at land-grant institutions. However, its funding provisions were discontinued beginning in FY1995.

Land-Grant Institutions in the District of Columbia and Insular Areas

In addition to expanding the mission of the land-grant system, legislation also increased its geographical expanse. Beginning in 1908, modern U.S. territories[20] began to participate in the land-grant system. Today, land-grant institutions are located in the District of Columbia and the insular areas of American Samoa, Guam, the Federated States of Micronesia, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.

Whereas at the time of the Morrill Act in 1862, the United States had vast tracts of federal lands available for sale to endow new colleges and universities, this was not the case in the 20th century. Land-grant institutions newly recognized in this time period were appropriated funds for their endowment and maintenance, in lieu of land or land scrip. Although classified as 1862 Institutions, their funding details vary according to specific legislation.

The University of Puerto Rico, Mayaguez was established as a land-grant institution in 1908 after the benefits of the first and second Morrill Acts were extended to Puerto Rico. The University of the District of Columbia, at the time known as Federal City College, received land-grant status in 1968 through amendment (P.L. 90-354) of Title I of the District of Columbia Public Education Act of 1966 (P.L. 89-791). Colleges in the U.S. Virgin Islands and Guam became land-grant institutions through Section 506 of the Educational Amendments of 1972 (P.L. 92-318). Institutions in American Samoa and what is now the Federated States of Micronesia received similar recognition through the Educational Amendments of 1980 (P.L. 96-374 §1361). A college in the Northern Mariana Islands was added in 1986 (P.L. 99-396 §9).

Designation of New Land-Grant Institutions

Section 7111 of the 2018 farm bill prohibits designation of any new land-grant institution that would be eligible to receive capacity grants for agricultural research, extension, and related programs (e.g., Hatch Act, Smith-Lever Act, and McIntire-Stennis Act). This change does not

[20] In this sense, as opposed to those early U.S. territories that later became states.

affect the eligibility of 1994 Institutions certified in the future to receive McIntire-Stennis funds. Congress made this change with the primary intention of avoiding the duplication of administrative costs that would accompany any division of an existing land-grant institution into more than one entity.[21]

Other Institutions

Certain public colleges and universities that are not 1862, 1890, or 1994 Institutions can participate in elements of the land-grant university system through specific grants programs administered by USDA.

Non-Land-Grant Colleges of Agriculture (NLGCAs)

The classification of non-land-grant college of agriculture (NLGCA) was defined in the 2008 farm bill (P.L. 110-246, §7101; 7 U.S.C. 3103(14)), and this definition was revised in Section 7102 of the 2018 farm bill. Public colleges and universities are eligible to apply to USDA for NLGCA certification if they are not 1862, 1890, or 1994 Institutions and they offer bachelors, masters, or doctoral degrees in food, agriculture, or natural resources in specified agriculturally relevant areas. As of July 2019,[22] more than 40 certified NLGCAs are located in 23 states. The NLGCAs meet eligibility requirements for the Capacity Building Grants for Non-Land-Grant Colleges of Agriculture program administered by NIFA. This competitively funded program for NLGCAs was first authorized by the Agricultural Act of 2014 (P.L. 113-79), also known as the 2014 farm bill, and was reauthorized in the 2018 farm bill. Private colleges and universities remain ineligible.

Hispanic-Serving Agricultural Colleges and Universities (HSACUs)

Section 7101 of the 2008 farm bill (7 U.S.C. 3103(10)) defined a group of Hispanic-serving agricultural colleges and universities (HSACUs) which could benefit from integrated research, education, and extension competitive grants offered through USDA. Certified HSACU institutions must demonstrate that 25% of full-time enrollment is Hispanic, that the institution offers accredited agriculture-related degree programs, and that Hispanic students received at least 15% of degrees awarded in agricultural programs over the most recent two-year period. The definition further clarifies that an HSACU cannot also be an 1862 Institution.[23] As of 2019, USDA has certified more than 150 HSACUs.[24]

Section 7129 of the 2008 farm bill called for establishment of a Hispanic-Serving Agricultural Colleges and Universities Fund in the U.S. Treasury (7 U.S.C. 3243). It authorized annual appropriations for FY2008 and each fiscal year thereafter, and distribution of appropriations and income from the fund to HSACUs on a formula basis. Congress has not appropriated funds for the HSACU Fund since its establishment in 2008, and thus distributions have not been made. Section 7129 of the 2008 farm bill also authorized appropriations for annual payments to HSACU

[21] U.S. Congress, Conference Committee, *Agricultural Improvement Act of 2018*, conference report to accompany H.R. 2, 115th Cong., 2nd sess., H.Rept. 115-1072 (Washington, DC: GPO: 2018), pp. 300-301.

[22] See NIFA website for a list of certified NLGCAs, at https://nifa.usda.gov/resource/nlgca-list.

[23] Originally, an institution could not be certified as both a HSACU and an NLGCA. Section 7102 of the 2018 farm bill removed this restriction.

[24] See NIFA website for a list of certified HSACU, at https://nifa.usda.gov/resource/official-list-hispanic-serving-agricultural-colleges-and-universities-hsacu.

institutions; competitively distributed institutional capacity-building grants; and competitive research and extension grants programs specific to HSACU. These programs have not received appropriations.

Cooperating Forestry Schools

Cooperating forestry schools[25] (defined at 7 U.S.C. 3103(5)) are those institutions that are eligible to receive funds under the McIntire-Stennis Act. These include 1862, 1890, and 1994 Institutions in addition to non-land-grant "State-supported colleges and universities offering graduate training in the sciences basic to forestry and having a forestry school." States must certify the institutions that are eligible for assistance, and determine the proportionate amounts of assistance to be extended to them if there is more than one cooperating forestry school within a state. Originally, an institution could not be certified as both a cooperating forestry school and an NLGCA. Section 7102 of the 2018 farm bill removed this restriction.

Funding

The USDA National Institute of Food and Agriculture (NIFA) administers federal capacity and competitive grants to partner institutions for research, education,[26] and extension activities (see **Table 2** for NIFA discretionary appropriation details).

- **Capacity grants** are recurring federal appropriations allocated to states based on legislative formulas. States are generally required to contribute matching funds, and specific project decisions are made locally.
- **Competitive grants** are awarded to specific projects selected through peer-review processes, without consideration of the state of the sponsoring institution. Researchers and institutions must apply for these funds.

Capacity Grants, Also Known as Formula Funds

Federal legislation, as discussed earlier, provides capacity grants to land-grant institutions for research, education, and extension (see **Table 1**). NIFA administers these grants in collaboration with states, colleges, and universities. Land-grant colleges, universities, and associated state institutions[27] use these funds to conduct research and extension in support of state agriculture, food, and forestry systems, as well as issues of socioeconomic welfare in communities and families in rural and urban areas. The Hatch Act, Smith-Lever Act, Evans-Allen Act, and McIntire-Stennis Act are the largest sources of capacity funds.

Hatch Act: Research Funding for 1862 Institutions

Funding for agricultural research under the Hatch Act of 1887 as amended is allocated to the SAES and associated agriculture colleges of the 50 states, the District of Columbia, and the insular areas. Eligible state institutions must submit a Plan of Work to NIFA for approval before these funds are distributed. The Hatch Act identifies the distribution of federal payments to states

[25] See the NIFA FY2019 Request for Applications for the McIntire-Stennis Cooperative Forestry Research Program for a list of eligible institutions that year, at https://nifa.usda.gov/sites/default/files/resources/fy-2019-ncintire-stennis.pdf.

[26] While *teaching* in the postsecondary classroom is the first pillar of the land-grant university system, as established through the first Morrill Act, *education* more broadly may include conveying knowledge through teaching, in nonformal settings, or through other activities such as research.

[27] These include SAES and cooperative extension services.

for FY1955 as a fixed base, and any sums appropriated in excess of the 1955 level are to be distributed in the following manner:

- 3% to the USDA for administration of the Hatch Act;
- 20% equally to each state;
- 26% to each state in amounts proportionate to the relative rural population of each state to the total rural population of all states;
- 26% to each state in amounts proportionate to the relative farm population of each state to the total farm population of all states; and
- 25% to the Hatch Multistate Research Fund for multidisciplinary, multi-institutional research activities to solve problems concerning more than one state.

Federal funds provided under the Hatch Act to state institutions must be matched with nonfederal funding on a dollar-for-dollar basis. Section 7213 of the 2002 farm bill (Farm Security and Rural Investment Act, P.L. 107-171) and Section 7404 of the 2008 farm bill amended the Hatch Act such that the insular areas and the District of Columbia, respectively, are required to provide matching funds of an amount equal to not less than 50% of the Hatch Act funds they receive. These amendments also provided that the Secretary of Agriculture may waive the matching requirement of an insular area or the District of Columbia for any fiscal year if the Secretary determines that its government is unlikely to meet the matching requirement for that fiscal year.

Other provisions of interest within the Hatch Act include the following:

- **Multistate research.** In accordance with provisions of AREERA, at least 25% of available Hatch Act funds[28] must be used to support multistate research.
- **Integrated activities.** States must also expend 25% or twice the level spent in FY1997 (whichever is less) on activities that integrate cooperative research and extension.[29]
- **Carryover.** Section 7(c) permits SAES to carry over unexpended funds for use during the following fiscal year. If those funds that have been carried over are not spent by the end of the second year, they are deducted from the following year's allotment.

Evans-Allen Act: Research Funding for 1890 Institutions

The Evans-Allen Act provides capacity funding for food and agricultural research at 1890 Institutions in a manner similar to the distribution of Hatch Act funds to 1862 Institutions. As with Hatch Act fund recipients, Evans-Allen recipients are required to submit a Plan of Work to NIFA for approval before the funds are distributed. Section 1445(a)(2) of NARETPA (7 U.S.C. 3222(a)(2)), as amended by Section 7122 of the 2008 farm bill, requires that Evans-Allen appropriations shall not be less than 30% of the annual Hatch Act appropriations. However, Evans-Allen appropriations have not met this threshold. They equaled approximately 22% of Hatch Act appropriations in FY2019 (see **Table 2**).

[28] That is, funds in the Multistate Research Fund, which receives 25% of the 1955 base funding plus 25% of the sums appropriated in excess of that level.

[29] A complementary provision in the Smith-Lever Act, which as discussed later funds cooperative extension work, requires that 25% of those funds also are spent on integrated research and extension activities.

Three percent of Evans-Allen funds are reserved for NIFA administrative, technical, and other services. The balance of the funds is distributed as follows:

- 20% equally to each state;[30]
- 40% in an amount proportionate to the rural population of the state in which the eligible institution is located to the total rural population of all states in which eligible institutions are located; and
- 40% in an amount proportionate to the farm population of the state in which the eligible institution is located to the total farm population of all the states in which eligible institutions are located.

Section 1449(c) of NARETPA as amended (7 U.S.C. 3222d) requires that federal funds for research and for extension at 1890 Institutions be matched by the state from nonfederal sources on a dollar-for-dollar basis.[31] The Secretary may waive the matching funds requirement above the 50% level for an eligible institution if the Secretary determines that the state will be unlikely to satisfy the matching requirement for a given fiscal year. This waiver, while allowing institutions to receive federal funding, has raised questions about overall funding equities. For additional details see "Disparity in State Matching Funds."

McIntire-Stennis Act: Forestry Research Funding

The McIntire-Stennis Cooperative Forestry Act of 1962 as amended authorizes research appropriations for certified cooperating forestry schools, including 1862 Institutions. The 1890 Institutions were made eligible for McIntire-Stennis funding through Section 7412 of the 2008 farm bill. The 1994 Institutions that offer associate or baccalaureate degrees in forestry were made eligible in Section 7604 of the 2018 farm bill.

Unlike the statutorily designated formulas under the Hatch and Smith-Lever Acts, funding apportionments under the McIntire-Stennis Act are made by the Secretary of Agriculture in consultation with a 16-member council (fulfilled through the Forestry Research Advisory Council of the USDA Forest Service), which includes representatives of relevant forestry research institutions. Three statutorily defined factors are considered in making apportionments (16 U.S.C. 582a-4):

1. total nonfederal expenditures for forestry research by state-certified institutions;
2. total state acreage in nonfederal commercial forest land; and
3. volume of timber from growing stock cut annually in the state.

The federal apportionment also requires a dollar-for-dollar match of nonfederal funds that, unlike Hatch and Evans-Allen, cannot be waived.[32]

Smith-Lever Act: Extension Funding for 1862 Institutions

The Smith-Lever Act of 1914 (38 Stat. 372) as amended authorizes the Cooperative Extension System and provides capacity grants to 1862 Institutions for their cooperative extension education activities. Capacity grants are distributed according to Smith-Lever Sections 3(b) and 3(c) (7

[30] Allotments to Tuskegee College and Alabama A&M are determined as if each institution were in a separate state.

[31] Congress amended NARETPA in 1998 through AREERA, adding Section 1449, which instituted a matching requirement. This matching requirement has increased from 30% in FY2000 to 100% from FY2007 forward.

[32] The U.S. Virgin Islands and Guam are exempted from the matching requirement.

U.S.C. 343(b) and 7 U.S.C. 343(c)). Smith-Lever capacity grants provide about 65% of total federal funding for extension activities. Competitive funding provisions within the Smith-Lever Act, including Section 3(d)[33] (7 U.S.C. 343(d)) and specific provisions within Section 3(b), are addressed in the "Competitive Smith-Lever Provisions for Extension at 1862, 1890, and 1994 Institutions" section of this report.

States can use Smith-Lever 3(b) and 3(c) capacity grants for locally determined projects as well as for high-priority regional and national concerns. Eligible state institutions must submit a Plan of Work to NIFA for approval before these funds are distributed. Smith-Lever 3(b) capacity funds are distributed based on the FY1962 distribution of cooperative extension funds. For Smith-Lever 3(c) funds, 4% are reserved for NIFA administrative, technical, and other services, and the balance is distributed to the states in the following proportions:

- 20% equally to each state;
- 40% in amounts proportionate to the relative rural population of each state to the total rural population of all states; and
- 40% in amounts proportionate to the relative farm population of each state to the total farm population of all states.

Federal funds provided under the Smith-Lever Act to state institutions must be matched with nonfederal funds on a dollar-for-dollar basis. Matching requirements for the District of Columbia and the insular areas are subject to matching requirements of at least 50% of the Smith-Lever funds they receive. Further, the Secretary of Agriculture may waive the matching requirement for the District of Columbia or an insular area for any fiscal year if the Secretary determines that it is unlikely to meet the matching requirement for that fiscal year.

Smith-Lever requires states to expend 25% of federal Smith-Lever 3(b) and 3(c) capacity grants, or twice the level spent in FY1997 (whichever is less), on cooperative extension activities in which two or more states cooperate to address issues facing more than one state. They must expend the same percentage or amount on activities that integrate cooperative research and extension.

Institutions receiving Smith-Lever capacity grants can carry over unexpended funds from one fiscal year to the next.

NARETPA Section 1444: Extension Funding for 1890 Institutions

Section 1444 of NARETPA (7 U.S.C. 321-329) provides capacity grants for extension education programs at 1890 Institutions in a manner similar to Smith-Lever Act funding for 1862 Institutions. Section 7121 of the 2008 farm bill amended Section 1444(a)(2) of NARETPA so that an amount equal to at least 20% of the total annual appropriation under the Smith-Lever Act Sections 3(b) and 3(c) shall be allocated to 1890 Institutions for their extension activities. However, 1890 Institution extension appropriations have not met this threshold. They equaled approximately 15% of Smith-Lever appropriations in FY2019 (see **Table 2**).

Funds are distributed according to the same formula used for Evans-Allen 1890 Institution research funds, except that 4%, rather than 3%, of total funds are reserved to NIFA for administrative, technical, and other services. State matching requirements for 1890 Institution extension funds are the same as described for 1890 Institution research funds (see "Evans-Allen

[33] Section 3(d) funds were originally distributed via formula. This changed through Section 7403 of the 2008 farm bill.

Act: Research Funding for 1890 Institutions" and "Disparity in State Matching Funds" for additional details).

Before the 2018 farm bill, 1890 Institutions could carry over no more than 20% of their extension appropriations from one fiscal year into the next. The 1862 Institutions have no such limitation. Section 7114 of the 2018 farm bill (7 U.S.C. 3221(a)) allows 1890 Institutions to carry over up to 100% of their extension appropriations. This change may allow 1890 Institutions greater flexibility to plan long-term projects.

Native American Institutions Endowment Fund: Capacity Funding for 1994 Institutions

Section 533(c) of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note) requires annual distributions of interest on the Native American Institutions Endowment Fund. The 1994 Institutions receive payments, based on a statutorily established formula, from the interest earned on the endowment corpus. No withdrawals are made from the corpus of the endowment. There is no matching requirement, and endowment funds do not expire. The institutional recipients may use funds at their discretion, for the support and maintenance of the colleges for the benefit of the agricultural and mechanical arts. In FY2019, the endowment fund produced about $4.6 million in interest.[34]

Four percent of the available funds are reserved to NIFA for administrative services. The balance of the interest income is distributed to the 1994 Institutions according to the following formula:

- 40% in equal shares to the 1994 Institutions and
- 60% to be distributed among the 1994 institutions based on the "Indian student count"[35] for each institution for the fiscal year.

Hispanic-Serving Agricultural Colleges and Universities Fund: Research, Education, and Extension Funding for HSACUs

Section 1455 of NARETPA as amended requires annual distributions of interest on the HSACU Fund. No interest has accrued to date, as Congress has not provided appropriations for the HSACU Fund. Four percent of available funds are to be reserved to NIFA for administrative services. The balance of the interest income is to be distributed to the HSACUs according to the following formula (7 U.S.C. 3243):

- 40% in equal shares to the HSACUs and
- 60% to be distributed among the HSACUs on a pro rata basis based on the Hispanic enrollment count of each institution.

[34] See NIFA, "Fiscal Year 2019 – Distribution of the Tribal Colleges Endowment Program Funds," at https://nifa.usda.gov/sites/default/files/program/FY-2019-Tribal-Endowment-Distribution.pdf.

[35] 25 U.S.C. 1801(a)(8) defines the "Indian student count" as "a number equal to the total number of Indian students enrolled in each tribally controlled college or university, determined in a manner consistent with subsection (b) of this section on the basis of the quotient of the sum of the credit hours of all Indian students so enrolled, divided by 12."

Competitive Grants

Many provisions in various laws authorize competitive grants for agriculture and forestry research, education, and extension. The following highlights some major provisions relevant to the land-grant university system, as well as two new programs authorized in the 2018 farm bill.

Agriculture and Food Research Initiative (AFRI)

The Agriculture and Food Research Initiative (AFRI) (7 U.S.C. 3157) is USDA's largest competitive grants program for agricultural science research. The 2008 farm bill established AFRI, and subsequent farm bills reauthorized it. AFRI is authorized to be appropriated $700 million annually, from FY2008 to FY2023. Its appropriation has grown from $202 million in FY2009 (P.L. 111-8) to $415 million for FY2019 (P.L. 116-6). See **Table 2** for appropriation levels in recent years.

AFRI funds are not reserved specifically for land-grant institutions. Eligible recipients of AFRI awards include State Agricultural Experiment Stations (SAESs); colleges and universities; university research foundations; other research institutions and organizations; federal agencies; national laboratories; private organizations or corporations; individuals; or any combination of the aforementioned entities.

AFRI grants support research, education, and extension activities in six priority areas identified in the farm bill:[36]

- plant health and production and plant products (27% of estimated AFRI funds);
- animal health and production and animal products (22%);
- food safety, nutrition, and health (15%);
- bioenergy, natural resources, and environment (12%);
- agriculture systems and technology (13%); and
- agriculture economics and rural communities (12%).

Competitive Smith-Lever Provisions for Extension at 1862, 1890, and 1994 Institutions

Section 201 of AREERA amended the Smith-Lever Act to authorize agricultural extension appropriations for 1994 Institutions, awarded on a competitive basis. This is included as a separate competitive funding provision within Smith-Lever Section 3(b) (7 U.S.C. 343(c)). A 1994 Institution may administer such funds in cooperation with an 1862 or 1890 Institution. NIFA awards these funds through the Tribal Colleges Extension Program (TCEP).[37]

In addition, Smith-Lever 3(d) funds, originally distributed via formula and reserved for 1862 Institutions, address special programs or concerns of regional or national importance. Smith-Lever 3(d) funds support the (1) Farm Safety and Youth Safety Education Program, (2) Children, Youth, and Families at Risk, (3) Federally-Recognized Tribes Extension Program, and (4) New Technology for Agricultural Extension Program. Section 7403 of the 2008 farm bill extended

[36] U.S. Department of Agriculture, "2020 USDA Budget Explanatory Notes for Committee on Appropriations – National Institute of Food and Agriculture," p. 19-53, at https://www.obpa.usda.gov/19nifa2020notes.pdf. Percentages of funding allocated to the six priority areas do not equal 100% due to rounding.

[37] See NIFA webpage for more details, at https://nifa.usda.gov/program/tribal-extension-grant-program.

eligibility for Smith-Lever 3(d) funds to 1890 Institutions and required that all 3(d) funding be awarded on a competitive basis.[38] Section 7609 of the 2018 farm bill authorized 1994 Institutions to compete for and receive funds for two of the four 3(d) programs: Children, Youth, and Families at Risk funding, and the Federally-Recognized Tribes Extension Program.

Competitive Research Grants for 1994 Institutions

In 1998 Congress, through passage of AREERA, amended the Equity in Educational Land-Grant Status Act of 1994 to authorize a competitive research grants program for 1994 Institutions, and to authorize appropriations for the program. Later farm bills amended some of the original provisions. As amended, the program allows scientists at 1994 Institutions to participate in agricultural research activities that address tribal, national, and multistate priorities. The 1994 Institutions may conduct this work in cooperation with the Agricultural Research Service, an 1862 or 1890 Institution, an NLGCA, or a cooperating forestry school. NIFA administers the Tribal Colleges Research Grants Program (TCRGP).[39]

New Competitive Grants for 1890 Institutions in the 2018 Farm Bill

Section 7117 of the 2018 farm bill authorizes grants for students enrolled in 1890 Institutions who intend to pursue careers in the food and agricultural sciences. It makes $40 million of mandatory funding from the Commodity Credit Corporation available until expended. In addition, it authorizes $10 million in annual discretionary funding.

Section 7213 calls for USDA to recognize at least three centers of excellence at 1890 Institutions. Each center of excellence should focus on research and extension activities in at least one of six specified areas: student success and workforce development; nutrition, health, wellness, and quality of life; farming systems, rural prosperity, and economic sustainability; global food security and defense; natural resources, energy, and the environment; and emerging technologies. It authorizes annual appropriations of $10 million.

Table 2. NIFA Discretionary Appropriations

(in $millions)

Program	FY2015	FY2016	FY2017	FY2018	FY2019
Research and Education					
Agriculture and Food Research Initiative (AFRI)†	325.0	350.0	375.0	400.0	415.0
Hatch Act*	243.7	243.7	243.7	243.7	259.0
Evans-Allen Act*	52.5	54.2	54.2	54.2	58.0
McIntire-Stennis Cooperative Forestry Act*	34.0	34.0	34.0	34.0	36.0
1994 Institutions Endowment Appropriations*	3.4	3.4	3.4	3.4	3.4
Research Grants for 1994 Institutions†	1.8	1.8	1.8	3.8	3.8
Other research and education	131.6	132.6	137.4	148.1	152.4
Total Research and Education	***792.0***	***819.7***	***849.5***	***887.2***	***927.6***

[38] An exception to the competitive awarding of Smith-Lever 3(d) funds is the Expanded Food and Nutrition Education Program in which funds are distributed on a formula basis.

[39] See NIFA webpage for more details, at https://nifa.usda.gov/funding-opportunity/tribal-colleges-research-grants-program-tcrgp.

Program	FY2015	FY2016	FY2017	FY2018	FY2019
Research and Education					
Extension					
Smith-Lever Section 3(b) and 3(c)*	300.0	300.0	300.0	300.0	315.0
Smith-Lever Section 3(d)†	85.5	85.5	85.5	85.6	86.6
Extension Services at 1890 Institutions*	43.9	45.6	45.6	45.6	48.6
Extension Services at 1994 Institutions†	4.4	4.4	4.4	6.4	6.4
Other extension	37.9	40.4	41.9	46.0	49.1
Total Extension	***471.7***	***475.9***	***477.4***	***483.6***	***505.7***
Other NIFA					
Total Other NIFA	***30.9***	***30.9***	***36.0***	***37.0***	***38.0***
Total NIFA Appropriations	**1,294.6**	**1,326.5**	**1,362.9**	**1,407.8**	**1,471.3**

Source: Compiled by CRS, using appropriations acts and conference reports.

Notes: Named capacity (formula) programs are marked with an asterisk (*), and competitive programs, with a cross (†).

Issues for Congress

2019 Relocation of NIFA

NIFA is USDA's extramural research agency, meaning that it funds research conducted at other institutions. It provides scientific leadership and administers federal grant programs for the land-grant university system. Since its creation in 2008, staff entirely based in Washington, DC, have carried out NIFA program coordination and planning. Its predecessor agency, the Cooperative State Research, Education, and Extension Service (CSREES), was also located entirely in Washington, DC.

In August 2018, the Secretary of Agriculture announced the intention to relocate the majority of NIFA employees out of the National Capital Region.[40] A cost-benefit analysis released on June 13, 2019, indicated that 294 of 315 NIFA positions would be required to relocate.[41] While the cost-benefit analysis references 315 NIFA positions, NIFA has 412 permanent full-time positions. Staffing of 315 at the time of the cost-benefit analysis indicates an initial vacancy rate of 24.6%, before relocation plans were developed.

[40] U.S. Department of Agriculture, "USDA to Realign ERS with Chief Economist, Relocate ERS & NIFA Outside DC," press release, August 8, 2018, at https://www.usda.gov/media/press-releases/2018/08/09/usda-realign-ers-chief-economist-relocate-ers-nifa-outside-dc. Simultaneous with the NIFA announcement, USDA announced the intent to relocate the USDA Economic Research Service (ERS). ERS conducts intramural, or in-house, economic and statistical analyses to "anticipate trends and emerging issues in agriculture, food, the environment, and rural America." ERS staff have been entirely located in Washington, DC. Staff for the majority of ERS positions required to relocate have reportedly indicated that they will decline to move.

[41] U.S. Department of Agriculture, *NIFA and ERS Relocation: Cost Benefit Analysis*, June 13, 2019, at https://www.usda.gov/sites/default/files/documents/061319-CBA.pdf.

Concurrent with the release of the cost-benefit analysis, the Secretary announced that NIFA would be moved to the Kansas City Region.[42] USDA has reported that 73 NIFA employees accepted relocation by the July 15 decision deadline.[43] These data suggest that NIFA may start its work in Kansas City with 75% or more of positions located there empty or filled by recent hires. Reduced staffing levels have the potential to affect NIFA's ability to manage the congressionally mandated programs that fund the land-grant university system. For more information, see CRS In Focus IF11166, *Proposed Relocation/Realignment of USDA's ERS and NIFA*, by Tadlock Cowan.

Shifting Balance of Public Versus Private Research Funding

Public investment in agricultural research in the United States has declined in inflation-adjusted dollars since 2008, while private funding has steadily increased. The share of food and agriculture research funded by the public sector decreased from around 50% between 1970 and 2008 to less than 25% in 2013.[44] **Figure 2** provides an overview, prepared by the USDA Economic Research Service, of agricultural research funding in 2013 from federal, state, and nongovernmental sources. Many factors have influenced this shift in funding sources. These include expansion of markets and increasing globalization of trade; laws and legal decisions since the 1970s that paved the way for intellectual property rights for biological innovations and commercial products derived from federally sponsored research;[45] technical advances in biotechnology innovation that have increased potential profitability of agricultural research;[46] and declining state investment in agricultural research since the 1990s.[47]

A 2012 report by the President's Council of Advisors on Science and Technology (PCAST)[48] states that private industry has an important role in agricultural research, and that public funding is essential to meeting agricultural research challenges. In May 2019, the Association of Public and Land-Grant Universities and the Charles Valentine Riley Memorial Foundation[49] called for

[42] U.S. Department of Agriculture, "Secretary Perdue Announces Kansas City Region as Location for ERS and NIFA," press release, June 13, 2019, at https://www.usda.gov/media/press-releases/2019/06/13/secretary-perdue-announces-kansas-city-region-location-ers-and-nifa.

[43] As reported in Liz Crampton. "USDA: Fewer than half of selected ERS, NIFA employees will relocate," Politico Pro, July 17, 2019, at https://subscriber.politicopro.com/article/2019/07/usda-fewer-than-half-of-selected-ers-nifa-employees-will-relocate-1596095.

[44] For details, see Matthew Clancy, Keith Fuglie, and Paul Heisey, "U.S. Agricultural R&D in an Era of Falling Public Funding," *Amber Waves*, November 10, 2016, available at https://www.ers.usda.gov/amber-waves/2016/november/us-agricultural-rd-in-an-era-of-falling-public-funding/. See also Keith O. Fuglie and Andrew A. Toole, "The evolving institutional structure of public and private agricultural research," *American Journal of Agricultural Economics*, vol. 96, no. 3 (2014), pp. 862-883. Also, Philip G. Pardey, Julian M. Alston, and Connie Chan-Kang, *Public Food and Agricultural Research in the United States: The Rise and Decline of Public Investments, and Policies for Renewal*, AGree, Washington, DC, 2013.

[45] Legislation includes the Plant Variety Protection Act of 1970 (P.L. 91-577); Bayh-Dole Act of 1980 (P.L. 96-517); Federal Technology Transfer Act of 1986 (P.L. 99-502); and National Technology Transfer and Advancement Act of 1995 (P.L. 104-113). Legal decisions include Diamond v. Chakrabarty (447 U.S. 303) in 1980 and J.E.M. Ag Supply, Inc v. Pioneer Hi-Bred, Inc. (534 U.S. 124) in 2001.

[46] For information on agricultural biotechnology and new gene editing technologies, see CRS Report RL32809, *Agricultural Biotechnology: Background, Regulation, and Policy Issues*, by Tadlock Cowan, and CRS Report R44824, *Advanced Gene Editing: CRISPR-Cas9*, by Marcy E. Gallo et al.

[47] See footnote 44.

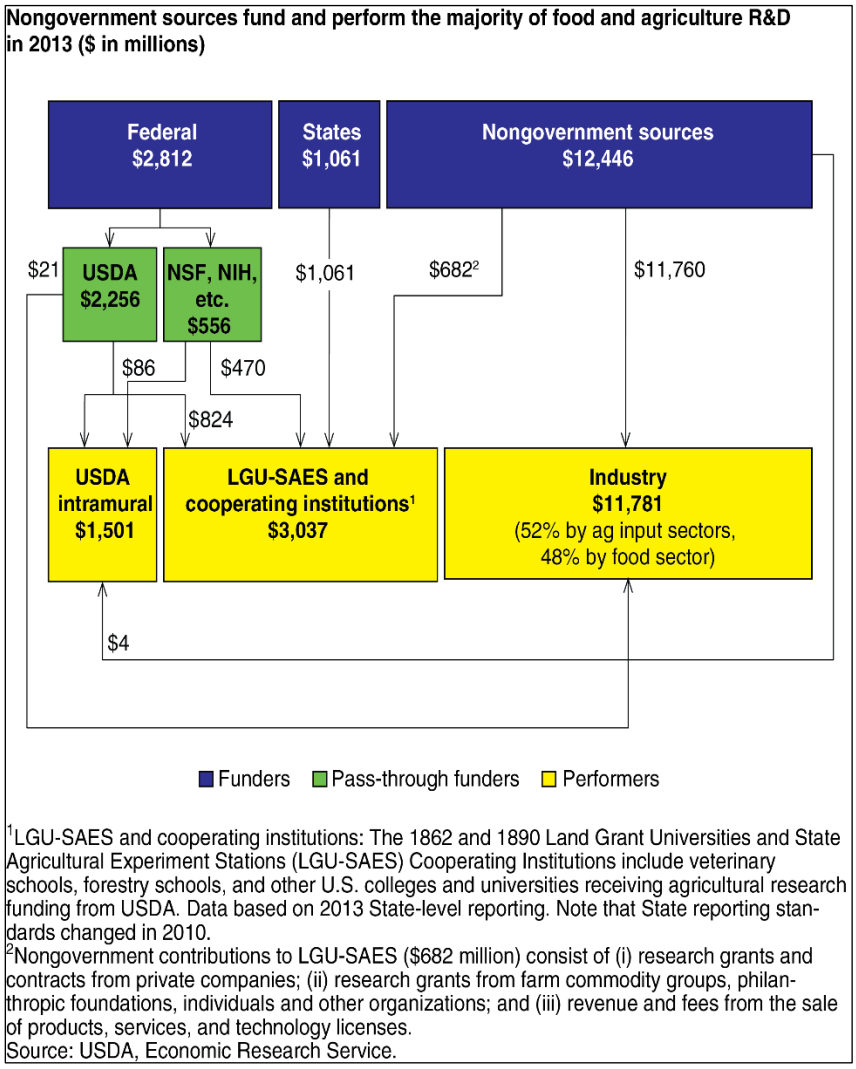
[48] President's Council of Advisors on Science and Technology, *Report to the President on Agricultural Preparedness and the Agriculture Research Enterprise*, Washington, DC, December 2012.

[49] Association of Public and Land-grant Universities and Charles Valentine Riley Foundation, *Joint Position Statement*. May 2019, at https://www.aplu.org/members/commissions/food-environment-and-renewable-resources/board-on-agriculture-assembly/baa_rmf_position_statement_may_2019.pdf.

increased public funding of agricultural research, in part to ensure that the United States remains globally competitive in agricultural technology and productivity.

Whereas public funding pursues public goods, with the exception of some private foundations, private funding is typically oriented to generating profit. Thus the shift from predominantly public funding of agricultural research to more private funding has the potential to shape agricultural research toward crops, livestock, and technologies with the greatest profit potential and away from smaller crops or technologies that may not prove to be as profitable. Increasing federal appropriations for agricultural research or requiring increases in state matching funds may bolster basic research and research on agricultural products and activities that are important to some agricultural constituencies, yet currently have limited economic incentives.

Figure 2. Agricultural Research Funding By Industry (2013)



Source: Matthew Clancy, Keith Fuglie, and Paul Heisey, "U.S. Agricultural R&D in an Era of Falling Public Funding," *Amber Waves*, November 10, 2016, at https://www.ers.usda.gov/amber-waves/2016/november/us-agricultural-rd-in-an-era-of-falling-public-funding/.

Notes: Includes research and development funding only; that is, does not include Cooperative Extension.

Disparity in State Matching Funds

Federal research and extension capacity grants to the land-grant system generally require one-to-one nonfederal matching funds. All states meet the matching requirements for their 1862 Institutions, which are predominantly white. In contrast, ten of the nineteen 1890 Institutions, which are predominantly black, received a full match from their states in FY2016. Those 1890 Institutions that do not meet the 100% matching funds requirement must apply to USDA for a waiver or forfeit their federal capacity funding.[50] While receiving a waiver allows an 1890 Institution to receive its allocation of federal funding, such a waiver reduces the total public support for the institution, from the combination of federal and state funding, compared with what it would receive if a complete match was provided. This opens a disparity between 1890 and 1862 Institutions. If states had contributed 100% matching funds, overall state contributions for research and extension at 1890 Institutions would have been $17.8 million higher in FY2015, and $18.5 million higher in FY2016 than actual matching contributions.[51]

In 1977, when Congress, through NARETPA, originally created the Evans-Allen research and NARETPA Section 1445 extension capacity funding for 1890 Institutions, it did not require state matching funds. Through AREERA in 1998, Congress instituted an initial 30% state matching requirement for FY2000 that increased to 50% by FY2002. At that time, Congress gave USDA the ability to waive the state matching requirement for FY2000, but not thereafter. The 2002 farm bill (P.L. 107-171) increased the matching requirement over time until it reached 100% in FY2007. The 2002 farm bill reintroduced the ability for USDA to issue waivers, above the 50% level, if a state was unlikely to meet the matching requirement.

Eliminating the opportunity to apply for a waiver may result in some states increasing their matching funds to ensure that their 1890 Institutions qualify for federal funding. However, this change may result in other institutions becoming ineligible to receive any federal funds if their states do not increase their matching contributions. Another option that may incentivize increased nonfederal matching is to increase the waiver threshold above 50%.

Section 7116 of the 2018 farm bill (7 U.S.C. 3221(a)) addresses concerns about disparities in state matching funds through a transparency requirement. It requires that USDA report annually "the allocations made to, and matching funds received by, 1890 Institutions and 1862 Institutions ... for each of the agricultural research, extension, education, and related programs" under the relevant statutes (Smith-Lever 3(b) and 3(c), Hatch, and Sections 1444 and 1445 of NARETPA). Supporters of the 1890 Institutions voice hope that the new transparency requirement will encourage states to provide 100% matching funding for those institutions.

Funding of 1994 Institutions

The 1994 Institutions, which are all tribal colleges and universities, make up the newest class of land-grant institution. Significant institutional differences among the 1862, 1890, and 1994 Institutions, in terms of numbers of students served, types of degrees awarded, and focal

[50] Matching funds must derive from nonfederal sources. This source is typically the state government, but may include other sources. In one example, since 2000, Lincoln University in Missouri has supplemented state matching funds with university resources in order to meet the 50% waiver requirement to receive federal funds. Alexis Allison, "Separate and unequal: how Lincoln's land-grant funding woes hurt Missouri's small farmers," April 1, 2018, at https://www.columbiamissourian.com/news/higher_education/separate-and-unequal-how-lincoln-s-land-grant-funding-woes/article_6e3d4622-1e2a-11e8-825d-6f0c857bd295.html.

[51] For further exploration of this topic, see Association of Public and Land-grant Universities, *Policy Brief: Land-Grant But Unequal*. September 2013, at https://www.aplu.org/library/land-grant-but-unequal-state-one-to-one-match-funding-for-1890-land-grant-universities/file.

missions, factor into federal funding allocations. While land-grant designation gave 1994 Institutions new access to federal funding, this access is more limited than that of 1862 and 1890 Institutions. **Table 3** illustrates differences in federal research funding among land-grant institution types. In FY2018, 1994 Institutions as a group received appropriations equal to about 1.2% of the research funds, through the Tribal College Research Grants Program, as 1862 Institutions received through Hatch Act appropriations. They received about 2% of the extension funds, through the Tribal Colleges Extension Program, as 1862 Institutions received through Smith-Lever capacity grant programs. In comparison, there were 61.5% as many 1994 Institutions as 1862 Institutions in FY2018. The American Indian Higher Education Consortium (AIHEC), a nonprofit group representing TCUs, has consistently requested increased appropriations for 1994 Institutions, characterizing the difference in funding between 1994 and 1862 Institutions as an inequity.[52] Others might argue that funding differences are appropriate to the different academic structures and institutional missions of 1994 and 1862 Institutions.

Table 3. FY2018 Select Federal Research Funding by Institution Type

Institution Type	Funding Program	Number of Institutions	Total Appropriation	Average Per Institution
1862	Hatch Act	53	$243.7 million	$4.6 million
1890	Evans-Allen Act	19	$54.2 million	$2.9 million
1994	Tribal Colleges Research Grants Program	35	$3.8 million	$0.1 million

Source: Compiled by CRS using appropriations acts and conference reports.

a. There were 35 1994 Institutions in FY2018, before the 2018 farm bill added one new institution.

Section 7120 of the 2018 farm bill included 1994 Institutions in one new avenue for competitive funding. This section, titled "New Beginning for Tribal Students," authorizes USDA to make competitive grants, with a one-to-one matching funds requirement, to land-grant institutions targeting support for tribal students. Institutions may use such funds to support tribal students through recruiting, tuition and related fees, experiential learning, and student services. No state may receive more than $500,000 per year through this program.

[52] American Indian Higher Education Consortium (AIHEC), *Tribal Colleges and Universities: Advancing Native Students - Advancing Native Nations*, 115th Congress Information Packet, Alexandria, VA, May 2018, http://www.aihec.org/what-we-do/docs/govRel/AIHEC_LegislativePrioritiesBrochure_2018.pdf.

Appendix. List of Land-Grant Institutions by State

ALABAMA
Alabama A&M University, Normal
Auburn University, Auburn
Tuskegee University, Tuskegee

ALASKA
Ilisagvik College, Barrow
University of Alaska, Fairbanks

AMERICAN SAMOA
American Samoa Community College, Pago Pago

ARIZONA
Diné College, Tsaile
University of Arizona, Tucson
Tohono O'Odham Community College, Sells

ARKANSAS
University of Arkansas, Fayetteville
University of Arkansas at Pine Bluff, Pine Bluff

CALIFORNIA
D-Q University, (Davis vicinity)
University of California System-Oakland as Headquarters, Oakland

COLORADO
Colorado State University, Fort Collins

CONNECTICUT
University of Connecticut, Storrs

DELAWARE
Delaware State University, Dover
University of Delaware, Newark

DISTRICT OF COLUMBIA
University of the District of Columbia,Washington

FLORIDA
Florida A&M University, Tallahassee
University of Florida, Gainesville

GEORGIA
Fort Valley State University, Fort Valley
University of Georgia, Athens

GUAM
University of Guam, Mangilao

HAWAII
University of Hawaii, Honolulu

IDAHO
University of Idaho, Moscow

ILLINOIS
University of Illinois, Urbana

INDIANA
Purdue University, West Lafayette

IOWA
Iowa State University, Ames

KANSAS
Haskell Indian Nations University, Lawrence
Kansas State University, Manhattan

KENTUCKY
Kentucky State University, Frankfort
University of Kentucky, Lexington

LOUISIANA
Louisiana State University, Baton Rouge
Southern University and A&M College, Baton Rouge

MAINE
University of Maine, Orono

MARYLAND
University of Maryland, College Park
University of Maryland Eastern Shore, Princess Anne

MASSACHUSETTS
University of Massachusetts, Amherst

MICHIGAN
Bay Mills Community College, Brimely
Keweenaw Bay Ojibwa Community College, Baraga
Michigan State University, East Lansing
Saginaw Chippewa Tribal College, Mount Pleasant

MICRONESIA
College of Micronesia, Kolonia, Pohnpei

MINNESOTA
Fond du Lac Tribal & Community College, Cloquet
Leech Lake Tribal College, Cass Lake
Red Lake Nation College, Red Lake
University of Minnesota, St. Paul
White Earth Tribal and Community College, Mahnomen

MISSISSIPPI
Alcorn State University, Lorman
Mississippi State University, Starkville

MISSOURI
Lincoln University, Jefferson City
University of Missouri, Columbia

MONTANA
Blackfeet Community College, Browning
Chief Dull Knife College, Lame Deer
Aaniiih Nakoda College, Harlem
Fort Peck Community College, Poplar
Little Big Horn College, Crow Agency
Montana State University, Bozeman
Salish Kootenai College, Pablo
Stone Child College, Box Elder

NEBRASKA
Little Priest Tribal College, Winnebago
Nebraska Indian Community College, Winnebago
University of Nebraska, Lincoln

NEVADA
University of Nevada, Reno

NEW HAMPSHIRE
University of New Hampshire, Durham

NEW JERSEY
Rutgers University, New Brunswick

NEW MEXICO
Navajo Technical College, Crownpoint
Institute of American Indian and Alaska Native Culture and Arts Development, Sante Fe
New Mexico State University, Las Cruces
Southwestern Indian Polytechnic Institute, Albuquerque

NEW YORK
Cornell University, Ithaca

NORTH CAROLINA
North Carolina A&T State University, Greensboro
North Carolina State University, Raleigh

NORTH DAKOTA
Fort Berthold Community College, New Town
Cankdeska Cikana Community College, Fort Totten
North Dakota State University, Fargo
Sitting Bull College, Fort Yates
Turtle Mountain Community College, Belcourt
United Tribes Technical College, Bismarck

NORTHERN MARIANAS
Northern Marianas College, Saipan, CM

OHIO
Central State University, Wilberforce
Ohio State University, Columbus

OKLAHOMA
College of the Muscogee Nation, Okmulgee
Langston University, Langston
Oklahoma State University, Stillwater

OREGON
Oregon State University, Corvallis

PENNSYLVANIA
Pennsylvania State University, University Park

PUERTO RICO
University of Puerto Rico, Mayaguez

RHODE ISLAND
University of Rhode Island, Kingston

SOUTH CAROLINA
Clemson University, Clemson
South Carolina State University, Orangeburg

SOUTH DAKOTA
Oglala Lakota College, Kyle
Sinte Gleska University, Rosebud
Sisseton Wahpeton College, Sisseton
South Dakota State University, Brookings

TENNESSEE
Tennessee State University, Nashville
University of Tennessee, Knoxville

TEXAS
Prairie View A&M University, Prairie View
Texas A&M University, College Station

UTAH
Utah State University, Logan

VERMONT
University of Vermont, Burlington

VIRGIN ISLANDS
University of the Virgin Islands, St. Croix

VIRGINIA
Virginia Tech, Blacksburg
Virginia State University, Petersburg

WASHINGTON
Northwest Indian College, Bellingham
Washington State University, Pullman

WEST VIRGINIA
West Virginia State University, Institute
West Virginia University, Morgantown

WISCONSIN
College of Menominee Nation, Keshena
Lac Courte Oreilles Ojibwa, Community College, Hayward
University of Wisconsin, Madison

WYOMING
University of Wyoming Laramie, WY

Source: USDA National Institute of Food and Agriculture, https://nifa.usda.gov/resource/land-grant-colleges-and-universities-map (version March 3, 2019).
Note: See **Figure 1** for a map of U.S. land-grant institutions.

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