COMMERCE-JUSTICE-SCIENCE

National Science Foundation

Background

Vanderbilt strongly supports keeping the National Science Foundation (NSF), which has seen stagnant budgets for the past several years, on a sustained path of real growth, consistent with *Innovation: An American Imperative*, which calls for a renewed federal commitment to scientific discovery and investments in scientific research. Signed by more than 500 leading organizations and CEO’s and Chairmen of several major U.S. corporations, the Imperative calls for four percent real annual growth in basic research. *Consistent with that, we support a funding level of $8.45 billion for NSF in FY 19 and urge Congress to continue the tradition of funding all scientific disciplines at NSF*. This is based on the above-mentioned four percent real growth over the FY 18 request of $8 billion.

As the only federal agency charged with the promotion of scientific progress across all scientific and engineering disciplines, NSF is the cornerstone of America’s basic research enterprise. NSF is committed to the fundamental, interdisciplinary, high-risk, and transformative research and education needed to ensure that the U.S. remains competitive in the decades ahead. NSF competitively awards grants to support research and education, scientific equipment and infrastructure, and graduate students and early career faculty.

The National Science Board recently released the 2018 *Science and Engineering Indicators Report*, which clearly shows that competitor nations, particularly China, are rapidly improving their global position in science and technology while the United States is resting on its laurels of past investments. The report indicates that China is poised to become the global leader in S&T in the next few years. Simply put, the United States must ramp-up its investments in scientific research supported by NSF if we intend to remain competitive and at the forefront of science, technology and innovation.

NSF at Vanderbilt

Vanderbilt University received over $28 million from NSF in FY 17. Examples of NSF funding at Vanderbilt include:

- **Supporting early career faculty and graduate students:** Vanderbilt faculty held 15 active CAREER awards in FY 17, which support promising junior faculty who are committed to the integration of research and education. In 2017, 14 students were awarded NSF Graduate Research Fellowships, which play a vital role in training STEM leaders. Vanderbilt has 68 active Fellows.

- **Increasing Ph.D.’s to minority students:** Vanderbilt participates in several NSF-supported programs that aim to increase the number of minority students who earn Ph.D.’s in STEM fields. These include the Tennessee Louis Stokes Alliance for Minority Participation and the Fisk-Vanderbilt Masters-to-Ph.D. program, both of which involve partnerships with Tennessee HBCUs. The latter has made Vanderbilt the leading producer of underrepresented minority Ph.D.’s in astronomy, materials science, and physics in the United States.

- **Advancing data science:** In line with NSF’s big idea “Harnessing Data for 21st Century Science and Engineering” Vanderbilt is strategically working to advance data science research and education. With a BIGDATA EAGER award, Vanderbilt is developing data analytics tools for Open-Ended Learning Environments. In 2017, Vanderbilt won multiple large NSF grants, including $1.25 million to study learning experiences that foster computational thinking and $1.35 million to study the how the brain develops to process symbolic numbers. Further, Vanderbilt’s Data Science Visions Working
Group and debut Data Science Master’s Degree program will prepare researchers and the future workforce to capitalize on the big data revolution.

- **Supporting the human-technology workforce:** The increasing use of technology leads to new challenges and opportunities in the world of work. In 2017, Vanderbilt, with collaborators from other universities, won a $4 million NSF PIRE grant to investigate the intersection of societal scale technologies, such as self-driving cars, and social norms and policies. By developing policy aware systems, technologies can adapt to societal changes, allowing workers to seamlessly and safety transfer control to and from autonomous systems. Moreover, earlier this year Vanderbilt faculty submitted a proposal train engineers and scientists to design innovations that support individuals with autism in the workforce. A new generation of researchers will create technologies to enable the employment and workplace success of adults with autism.

- **Organizing cyber-physical systems research:** Vanderbilt University researchers are leaders in cyber-physical systems (CPS) research, extending the use of the internet to create a deeply connected world where humans, their machines, and the physical environment interact seamlessly, continuously, and without mistakes and breakdowns that could lead to safety issues. Designing these systems requires the ability to keep track of interactions between computers and machines while ensuring the safety, security, and stability of those connections. Vanderbilt is managing the Cyber-Physical Systems Virtual Organization for NSF, linking together all of the organizations working on the topic, archiving and disseminating documents produced by research, and offering collaboration and experimental platforms for thousands of CPS researchers. In 2015, Vanderbilt, with collaborators from other institutions, won a $3.2 million grant from NSF to support the project, with a commitment of an additional $2.4 million over the next two years.

- **Expanded nanoscale research capabilities:** With a $600,000 grant from NSF’s Major Instrumentation Program, Vanderbilt’s nanotechnology core facility purchased an atomic layer deposition system that allows researchers to deposit uniform, ultrathin films for microelectronics, energy conversion devices, and biomaterials. The technology not only advances Vanderbilt’s nanoscale capabilities but also provides a much-needed resource for researchers across Middle Tennessee. It will provide the ability to create electrical gates for optoelectronic devices, coatings for steerable surgical needles, and exotic materials for use in batteries and fuel cells.

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**NASA**

**Background**

Vanderbilt believes NASA’s Office of Education and, in particular, the Space Grant College and Fellowship Program are important priorities. We urge Congress to appropriate $48 million for the Space Grant Program and to reject the Administration’s proposal to eliminate the Office of Education. NASA’s Education and Public Outreach Mission Directorate seeks to attract students to STEM, strengthen the nation’s workforce, and engage the public in NASA’s mission.

**NASA at Vanderbilt**

Last year, Vanderbilt received $3.7 million in research funding from NASA. Examples of NASA-funded programs at Vanderbilt include:

2
• **Space Grant:** Vanderbilt is the lead institution for the Tennessee Space Grant Consortium. NASA’s Space Grant program is a national network of colleges and universities that are working to expand opportunities for Americans to understand and participate in NASA’s aeronautics and space projects by supporting and enhancing science and engineering education, research, and public outreach efforts. Space Grant funding supports both undergraduate and graduate education at Vanderbilt and at 14 affiliated institutions across the state.

• **VU astronomer heads U.S. space study:** A Vanderbilt professor has been appointed by NASA’s Astrophysics Directorate to chair the U.S. Laser Interferometer Space Antenna (LISA) Study Team, a group of 18 scientists who will advise NASA on science issues related to the $1 billion-plus space observatory project that is tentatively scheduled for a launch in 2030. LISA, designed to take the fledgling field of gravitational wave astronomy to the next level, is an international scientific effort led by the European Space Agency in collaboration with NASA.

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### DEFENSE

#### Department of Defense Research

**Background**

Vanderbilt is appreciative of the increases in FY 18 for Defense Science & Technology and DARPA. We urge Congress to provide $2.43 billion in funding for Defense basic research (6.1) and $15.46 billion for Defense Science & Technology (S&T) in FY 19. Additionally, we urge Congress to fund the Defense Advanced Research Projects Agency (DARPA) at $3.43 billion in FY 19. These funding requests are consistent with the federal research investment recommendation in the *Innovation: An American Imperative* call-to-action, which over 500 business leaders, national organizations, universities, and scientific societies have endorsed and which calls for four percent annual growth. Defense S&T comprises 6.1 basic research, 6.2 applied research, and 6.3 advanced technology development programs.

Within Defense 6.1 basic research, Vanderbilt also particularly supports the Navy’s Defense University Research Instrumentation Program which is part of the University Research Initiatives (PE 601103N). This program supports university research infrastructure essential to high-quality relevant research. The administration’s budget proposes to cut Navy University Research Initiatives by $2.28 million as compared to the FY 17 enacted level. We support a funding level of $149.89 million in FY 19 for Navy University Research Initiatives.

Within the Defense 6.1 basic research program, Vanderbilt also urges Congress to sustain funding for the National Defense Education Program (NDEP) and the National Defense Science and Engineering Graduate Fellowships program which support vital STEM activities and scholarships for undergraduates and graduates who will become the next-generation of scientists and engineers supporting the world’s most advanced and innovative workforce. NDEP includes funding for the Manufacturing Engineering Education Program as well as other activities that are vital to ensuring we have a robust science and engineering workforce. Vanderbilt also supports the DOD-sponsored Manufacturing USA Institutes which are funded through the Defense-Wide Manufacturing Science and Technology Program. The
institutes support the industrial base by bridging the so-called commercialization “valley of death”, supporting workforce development, and providing small businesses and start-ups with access to software, hardware, and expertise to which they would not otherwise have access.

Finally, Vanderbilt supports DOD medical research which seeks cures to diseases and medical innovations. In order to maintain a strong military, the U.S. must have healthy families and soldiers. Defense medical research programs help ensure the U.S. has the medical technologies necessary to enable military readiness and serve those wounded on the battlefield.

As our nation’s battlefronts and enemy capabilities continue to evolve for 21st century conflicts, new disruptive technologies which enable our military to preserve a leading edge and avoid strategic surprise are essential. Defense basic research, while at times conducted with no specific end goals, has led to the development of many tools used today by warfighters. Night vision, missile defense capabilities, unmanned vehicles, global positioning systems, and precision munitions all trace their roots to basic defense research and have helped ensure our national security. If we are to ensure that the U.S. military maintains technical superiority in the future, we must continue to support the basic scientific research conducted at entities such as the Army Research Laboratory/Army Research Office, Air Force Office of Scientific Research, Office of Naval Research, and the Office of the Secretary of Defense. In addition, DARPA has invested in high-risk, high-reward research that has led to extraordinary, “game-changing” technological advances, such as the Internet and GPS.

**DOD at Vanderbilt**

The University received nearly $23 million from the Department of Defense last year. Examples of Defense-funded research at Vanderbilt include:

- **Protocols for the Internet of Things**: Vanderbilt’s Institute for Software Integrated Systems is a key national player in an effort to design the software-integrated systems that have become an essential part of human lives today – in consumer appliances, vehicles, planes, hospitals, schools, design shops, factories, space systems, and energy. Major DOD sponsors of the institute include DARPA, the Air Force, Army, and Navy. The institute has received over $200 million in funding since 1998, approximately three-quarters of which is from DOD. Most recently, the institute was awarded a $7.2 million contract from DARPA to develop design technology for Cyber-Physical Systems (CPS) that deeply integrates AI-based learning Enabled Components. The institute is well positioned to remain in the forefront of the upcoming new technology wave merging CPS and AI for creating safe and secure societal-scale systems.

- **Advanced Robotics for Manufacturing Institute**: Vanderbilt is one of 40 academic partners in a new advanced robotics manufacturing institute (ARM) in Pittsburgh that is funded with $80 million from DOD and $173 million in matching funds from more than 200 participating partners. ARM’s mission is to create and deploy robotic technology by integrating industry practices and institutional knowledge across many disciplines including sensor technologies, software and artificial intelligence, materials science, human and machine behavior modeling, and quality assurance. Having the interdisciplinary expertise and specialized facilities, Vanderbilt’s team of engineering professors alongside key partners (including Bridgestone Americas, Inc.) is addressing the critical barriers for designing and deploying next generation breakthroughs in robotic manufacturing.

- **Mitigating the Effects of Radiation on Defense Systems**: Vanderbilt’s Institute for Space and Defense Electronics is leading an international team of researchers investigating how radiation affects 3D electronics and systems under a three-year $3 million federal project. The basic research grant from DTRA, an arm of DOD, is $1 million a year for three years with a two-year renewable option and could total $5 million. This project includes world-leading research and development
groups in 3D integrated circuit technologies in both industry and academia. As industry looks to enhance the performance and capabilities by building up - producing stacked, three-dimensional electronics - the work has significant implications beyond classic national defense research.

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**ENERGY-WATER**

**Department of Energy Research**

**Background**

Vanderbilt is extremely grateful for the strong, bipartisan support for DOE Office of Science and ARPA-E in FY 18. A 16 percent increase over the FY 17 enacted level demonstrates a clear commitment to enhancing our energy security and national security, strengthening the U.S. economy, and improving America’s global competitiveness. To continue to support groundbreaking scientific discoveries and the construction of world-leading scientific facilities, ESC urges Congress to appropriate $6.6 billion in FY 19 for the DOE Office of Science, an increase of 4 percent real growth above FY 18. Vanderbilt also supports $375 million in FY 19 for the Advanced Research Projects Agency-Energy (ARPA-E). These levels of funding are consistent with the federal research investment recommendation in *Innovation: An American Imperative*, which calls for four percent real annual growth. Stable and sustainable funding for ARPA-E is essential for the advancement of high-risk, high-reward energy research that is unlikely to be supported by industry. *Vanderbilt also supports $5 million for the Consortium for Risk Evaluation with Stakeholder Participation within the Department’s Defense Environmental Management.*

The DOE Office of Science is critical to advancing U.S. science and energy frontiers and is the primary source of federal investment in basic physical scientific research, providing nearly 47 percent of total federal support in this area. In addition to the physical sciences, the DOE Office of Science plays a central role in ensuring continued U.S. leadership in other fields of scientific research, including the biological sciences, advanced scientific computing, and engineering. Strong and predictable funding for the Office of Science is critical to maintaining U.S. leadership in the physical and biological sciences, computing, energy and other important long-term areas of scientific research in which U.S. industry will not invest.

By providing DOE Office of Science $6.6 billion in FY 19, Congress would show a continued commitment to prioritizing funding for early stage research and send a signal to the rest of the world that the U.S. is
primed to remain a global leader in science and technology. By continuing to prioritize funding for DOE scientific research, facilities and training programs, Congress can help preserve our capacity to innovate, reduce our dependence on foreign sources of energy, enhance our competitive edge in the global economy, improve our quality of life, educate the next generation of scientists and engineers, ensure our national security, and create good American jobs.

DOE at Vanderbilt

Vanderbilt received approximately $13 million from DOE last year. Examples of DOE funding at Vanderbilt include:

- **Consortium for Risk Evaluation with Stakeholder Participation**: Vanderbilt is leading this multi-university consortium of engineers and scientists who have learned during the last twenty years how to handle nuclear waste. With the support of DOE Defense Environmental Management, these nuclear waste experts leverage their knowledge to help the U.S. find safe ways to effectively manage nuclear waste from both civilian and defense nuclear power sources. Although CRESP focuses on the remediation of sites where nuclear waste is stored, its work requires engineers and scientists to understand the complete life cycle of nuclear power generation, weapons production, and environmental impacts from nuclear weapons tests. CRESP provides vital independent review, analysis, research, and training in support of the Dept. of Energy’s cleanup of former defense nuclear materials production sites.

- **Developing Software to Manage the Smart Grid**: Researchers from Vanderbilt charged with reinventing and protecting America’s power grid have planned to build an underlying, open-source software platform to support decentralized applications that boost the power grid’s resilience and protect it from dangers ranging from terrorists to tree branches. The work is funded by a $3.5 million award from ARPA-E’s OPEN 2015 program.

- **Shaping the Future of American Manufacturing**: A cutting-edge Vanderbilt lab that studies how materials and machines operate under real-world conditions is playing a key part in the multistate, $259-million Institute for Advanced Composites Manufacturing Innovation that is led by the University of Tennessee–Knoxville. The institute is developing cost- and energy-efficient composite materials and technologies for high-production industries, such as automotive manufacturing. The institute is funded by DOE’s Advanced Manufacturing Office, part of the Office of Energy Efficiency and Renewable Energy.

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**INTERIOR**

**National Endowment for the Humanities**

**Background**
Vanderbilt supports $155 million in funding for the National Endowment for the Humanities (NEH) in FY 19. The requested funding level would allow the agency to continue to re-build its capacity to support peer-reviewed humanities research and education programs, and to meet unmet demand. We are particularly committed to restoring funding to the competitive grant programs.

Our country’s long-term success in meeting economic, global and national security challenges depends on understanding not only of technological and scientific complexities but broader social and international issues as well. Programs funded by the Endowment are vital to ensuring that America can compete successfully in a global economy and advance sound public policy to address the challenges of the 21\textsuperscript{st} century. NEH programs stimulate the creativity and innovation that have helped our nation provide global leadership and underlie the cultural intelligence that buttresses successful diplomacy. NEH supports the creation and digitization of tools for teaching and scholarship to democratize learning and research, eliminating some of the physical barriers to allow resources to be shared and used across great distances. NEH support also helps to preserve historical papers, documents and artifacts, so that they can be appreciated and studied for decades to come.

NEH at Vanderbilt
NEH is a vital source of funds for humanities scholars and researchers at Vanderbilt who work to better understand and address the social, economic, and political challenges facing the world today. Over the last five years, Vanderbilt received nearly $800,000 from the NEH; the state of Tennessee received over $6 million from the NEH over the same period of time. Examples of NEH funding at Vanderbilt include:

- **Creating Our Humanities Center:** Our Robert Penn Warren Center for the Humanities began over 25 years ago with a Challenge Grant from the NEH; a $480,000 grant leveraged $1.9 million, which has enabled the Center to become a vital part of the university for the past two decades.

- **Geospatial Tools to Study Colonial Peru:** A Vanderbilt professor received an NEH Digital Humanities grant to prototype two new resources for collecting and analyzing geospatial data related to the Spanish colonization of Peru. With this grant, the researchers are developing two new geospatial aids: 1) a crowd-sourced, linked open online gazetteer—a geographical atlas—and 2) a geospatial database and interface for producing thematic and analytical maps. These tools are being used to produce the most comprehensive settlement map of colonial Peru to date, and serve as an open source model for spatially integrating fragmentary historical information in other world regions.

- **Preserving Endangered Cultures:** NEH funding supports the collection and preservation of essential historical information about the Syriac minorities of the Middle East. Syriac is a dialect of Aramaic, which was once a primary language of trade and culture in the Middle East and is still used by minority communities in the region. Historical documents surviving in Syriac are vital for understanding the history of Judaism, Christianity, Islam, and other religions.

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**LABOR-HHS-EDUCATION**

**Health & Human Services**

**National Institutes of Health**

**Background**
To continue to advance public health, improve quality of life and foster innovation and economic growth, Vanderbilt urges Congress to continue its bipartisan support of the NIH by providing $39.3 billion in FY 19, including funds provided to the agency through the 21st Century Cures Act for targeted initiatives. This funding level would continue a trajectory of at least $2 billion increases for the NIH each year – allowing for meaningful growth above inflation in the base budget that would expand NIH’s capacity to support promising science in all disciplines – and would ensure that the Innovation Account supplements the agency’s base budget, as intended, through dedicated funding for specific programs. Securing a reliable, robust budget trajectory for NIH is key in positioning the agency – and the patients who rely on it – to capitalize on the full range of research in the biomedical, behavioral, social, and population-based sciences.

Biomedical research funded by the NIH is essential to the maintenance of U.S. leadership in the life sciences and helps reduce health care costs by advancing medical knowledge in the treatment and prevention of disease. Our nation’s biomedical research enterprise is not only the world’s biggest and best, but it is also an economic powerhouse. It supports more than 400,000 jobs and nearly $69 billion in economic activity across the United States, making the NIH a research and economic powerhouse. In FY 17, over $511 million in NIH funding flowed to Tennessee, supporting over 8,000 jobs and generating over $1.3 billion in economic activity, according to a recent report by United for Medical Research.

NIH at Vanderbilt

NIH is the largest source of federal funding for Vanderbilt University, totaling nearly $120 million in FY 17. Highlights of NIH-supported research and training at Vanderbilt include:

- **New drug for Alzheimer's developed:** A NIH Cooperative Drug Discovery/Development grant funded the early basic science and discovery of an investigational drug for Alzheimer’s disease that is now undergoing clinical trials at Vanderbilt. It is relatively uncharted territory for an academic drug discovery group to take a molecule from the laboratory setting to the clinical trials stage. Vanderbilt Center for Neuroscience Drug Discovery (VCNDD) researchers believe the investigational new drug has the potential to improve cognitive functions with fewer side effects, which could someday be an important advance for the treatment of cognitive deficits in psychiatric disorders and Alzheimer’s.

- **Vanderbilt signs licensing agreement to develop new schizophrenia drug:** Vanderbilt has signed separate licensing and research collaboration agreements with Lundbeck, a global pharmaceutical company based in Denmark, to develop a novel approach for treating schizophrenia. Under the terms of the licensing agreement, Lundbeck has exclusively licensed rights to compounds developed by VCNDD, that were developed with the support of the National Institute of Mental Health and act on a receptor in the brain that has been implicated in schizophrenia. VCNDD incorporates the highest level of drug discovery into academic research, and is able to advance the most exciting scientific breakthroughs beyond the lab and toward the development of patentable and marketable drugs suited for clinical studies. It is staffed by dozens of scientists, most of who bring industry experience to this collaborative, academic setting.

- **Steerable robotic needle for biopsies:** Collaboration between a mechanical engineer at Vanderbilt University and a pulmonologist at Vanderbilt University Medical Center has resulted in a NIH R01 grant to develop a steerable robotic needle to safely biopsy hard-to-reach lung nodules. Together the team has designed a system that 1) helps pulmonologists more accurately reach sites in the peripheral lung to biopsy them, and 2) reaches suspicious nodules by deploying a steerable needle from a bronchoscope’s tip. The new system harnesses the capabilities of a new class of steerable needles to extend the range of bronchoscopes and reliably and safely access nodules throughout the lung, including in the peripheral zone.
• **Link between math and reading comprehension:** With a $2.5 million grant from NIH’s Eunice Kennedy Shriver National Institute of Child Health and Human Development, a research project at Vanderbilt’s Peabody College of education and human development is working to identify the role language comprehension plays in math problem-solving and reading comprehension. The research represents one of four Learning Disabilities Innovation Hubs established by NIH in 2012 to address the causes, symptoms, and treatments of learning disabilities affecting reading, writing, and mathematics. The team is working to identify what connects math problem-solving to reading comprehension, with a focus on the needs of non-native English speakers through structuring an innovative approach that embeds language comprehension into math problem-solving and reading comprehension instruction.

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**Title VIII**

**Background**

Vanderbilt appreciates the increase provided in FY 18 and supports nursing workforce development Title VIII program funding of $266 million in FY 19. Over the last 50 years, Title VIII of the Public Health Service Act programs have helped build the supply of highly educated nurses. These workforce development programs strengthen nursing education, including growing our capacity of nursing faculty who are needed to teach future nurses. Title VIII directly impacts the nursing profession’s ability to serve communities most in need and increase workforce diversity.

**Title VIII at Vanderbilt**

VUSN has received a total of $29 million in federal Title VIII funding since 1999. With the projected coming shortfall in skilled nursing practitioners and the increase in seniors needing additional health care, these programs are more critical than ever to building our national health care workforce. In addition to the Nurse Faculty Loan Program (NFLP), VUSN has also secured funding support from Title VIII’s Nurse Education, Practice, Quality and Retention program in recent years. Highlights of **Title VIII** funding at Vanderbilt include:

- **Healthcare for the most vulnerable:** In Nashville’s arguably most economically depressed area, VUSN and nonprofit housing organization Urban Housing Solutions provide consistent and accessible health care through a community health clinic called the Clinic at Mercury Courts. Now in its fifth year and launched with a Title VIII grant, the nurse-managed health clinic uses a comprehensive and collaborative interprofessional team-based model integrating nursing, pharmacy, social work and medicine.

- **Building future nursing faculty:** In FY 17, Vanderbilt University School of Nursing (VUSN) received $1.2 million in support from the Title VIII NFLP, bringing to a total of $8.1 million in NFLP grants since 2008. Health care experts nationwide have warned that with the growing and aging needs of our population, the demand for nurses will only intensify. Vanderbilt responded to the need for increased numbers of doctorally trained nurses who can serve as faculty by growing its Ph.D. in nursing science program and launching its doctor of nursing practice (DNP)
program. VUSN has produced 312 DNP graduates and 32 Ph.D. graduates since program started in 2010, with 271 graduates participating in the Nurse Faculty Loan Program.

- **Growing advanced practice nursing programs:** Other Title VIII grants helped VUSN launch its NurseMidwifery specialty in 2000. That program has been ranked as the No. 1 Nurse-Midwifery education program in the U.S.

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**Department of Education**

**Student Aid Programs**

**Background**

Vanderbilt recognizes the critical role that federal student aid programs play in making college affordable and appreciate the increases Congress provided to these programs in FY 18. We encourage Congress to support a maximum Pell Grant award of $6,230 and to protect the future of Pell by ensuring that any of the carryover funding remains in the program, benefiting students. We also urge Congress to build on increases provided in FY 18 to the campus-based aid programs that provide grants and work-study to low- and middle-income students, including $896 million for Supplemental Educational Opportunity Grants (SEOG) and $1.21 billion for Campus-Based Work-Study. This represents a five percent real growth over the FY 18 funding levels. Vanderbilt also encourages Congress to provide $41 million in FY 19 for the Graduate Assistance in Areas of National Need (GAANN) program, which would restore the program to its historic FY 10 level and provide support for additional students in disciplines critical to our nation’s continuing security and prosperity.

Continued support of the Pell Grant program, the foundation of the Title IV federal student aid program, ensures a reliable source of grant aid for the neediest students, thereby increasing access to and the affordability of higher education. Building on this base, by law, universities match one-to-three the campus-based aid programs, SEOG and Federal Work-Study, multiplying the federal investment in low-income students. SEOG helps us to plug the holes for financially needy students by providing up to $4,000 in need-based grant aid to the neediest Pell Grant students while the work-study program helps students work part-time on campus to help pay their college costs. Studies have shown that students who work on campus have higher graduation rates. Increasing funding for SEOG and Work-Study would restore these programs to their FY 05 and FY 02 levels, respectively, and support thousands more students than last year.

The GAANN program, targeted at graduate students, helps ensure a strong pipeline of diverse and talented experts and educators who will help to meet the demands of our 21st century workforce. We support including the arts, humanities, and social disciplines as eligible fields for grant competition in FY 19. In the longer-term we want to work on building support for graduate students in the humanities.

We share the goal of making college more affordable for students and look forward to continuing discussions with the Administration and Congress to ensure that efforts to do so do not inadvertently
harm quality or jeopardize potential funding for low-income students and graduate students. In general, we are concerned about the erosion of benefits in the federal student loan programs, particularly for graduate and professional students. We appreciate the interest in streamlining these federal aid programs and want to work with Congress and the Administration on a long-term strategy to ensure both undergraduate and graduate students have federal support to access higher education.

**Student Financial Aid at Vanderbilt**

Vanderbilt University is fortunate to be able to offer prospective undergraduate students a need-blind admissions process while meeting 100 percent of all eligible undergraduate students’ demonstrated financial need without loans (see [here](#) for more). Our expanded aid initiative means that all of an eligible undergraduate student’s demonstrated need is met by grants and scholarships (gift assistance) in addition to an expected work component – no need-based loans are included as part of a students’ aid package. In 2016-17, 69 percent of our first-year undergraduates received some type of financial assistance and the average need-based financial aid award received by Vanderbilt undergraduates was $46,938. Vanderbilt’s net price in 2015-16 for first time freshmen (the average price paid by families when all aid is subtracted) was $23,150. For families with incomes below $30,000, first time freshmen students received an average of $63,486 in gift aid from the university, federal, and state sources.

We achieve this through a sizeable commitment of institutional funds dedicated to student aid complemented by federal and state student aid programs. During the 2016-17 year, we have dedicated over $154 million in institutional funds in all categories and programs of financial aid for undergraduate aid. Thanks to our debt reduction initiative, our graduates are leaving Vanderbilt with a lower debt burden. The graduating class of 2016 had an average indebtedness of $24,122, approximately $2,859 less than the state average. Our students also find themselves in a position to repay these debts; our three-year default rate from 2012-2014 was 0.5 percent.

Vanderbilt provided our undergraduate, graduate and professional students with the following amounts of federal aid during the 2016-17 award year:

- Nearly $4.0 million in Pell Grants to nearly 940 students;
- Nearly $728,000 in Federal Supplemental Educational Opportunity Grants to 187 students (excluding the required institutional matching funds);
- $1.1 million in Federal Work-Study to over 740 students (excluding the required institutional matching funds); and
- $1.6 million in GAANN funding in recent years, supporting 33 graduate students in Physics and Chemistry; these also involve partnerships with Tennessee HBCUs.

### Request

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Institute of Education Sciences

Background

The Department of Education’s Institute of Education Sciences (IES) is the primary federal agency supporting high-quality education research that provides the evidence on which to ground education practice and policy. *Vanderbilt supports $670 million for the IES in FY 19 to advance rigorous education research and $58.26 million for the National Center for Special Education Research (NCSER).* This is consistent with the federal research investment recommendation in *Innovation: An American Imperative*, which calls for four percent real growth. Vanderbilt also urges Congress to ensure that these resources are focused on competitively awarded and investigator-initiated rigorous research projects.

IES at Vanderbilt

Vanderbilt is one of the major recipients of IES funding nationally and the top recipient of funding from NCSER, receiving $16.4 million from the Department of Education for research last year. Vanderbilt’s Peabody College of Education and Human Development is deeply engaged in high-quality research into areas of great interest to both Congress and the Administration including identifying “what works” in the classroom and identifying methods to assess teachers and school leaders. We believe that basing education policy on research and rigorous evaluations will improve education for all students – if sufficient funding is provided so that theory and research findings can be translated into practice.

Examples of IES-funded research at Vanderbilt include:

- **Reading Interventions for Students with Learning Disabilities:** The Accelerated Academic Achievement Research Center, a $10 million national research center, develops and evaluates intensive, supplemental reading interventions for students with learning disabilities in grades three through five. The research helps pinpoint what content, intensity, and length of instruction are optimal for students who continue to show limited or no progress in reading despite receiving intensive instruction.

- **Assessing efficacy of special education interventions:** NCSER funding has supported numerous Peabody researchers who are evaluating the efficacy of programs aimed at improving reading outcomes for students with disabilities; behavior support approaches; and early social communication and language intervention for toddlers with autism spectrum disorders.

- **Using Teacher Evaluation Data to Drive Improvement:** Supported by a $5 million grant from IES, education researchers at Peabody College, in collaboration with the Tennessee Department of Education and other partners, are studying how state school systems can best use teacher evaluation data to drive instructional improvement.

### Request

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### International Education programs

Background
Vanderbilt urges Congress to provide $76 million for the Department of Education’s International Education and Foreign Language programs in FY 19. We want to work with the Administration and Congress to restore funding for these critical national investments. The Title VI National Resource Centers (NRCs) and Fulbright-Hays programs play a critical role in supporting our nation’s long-term national security, global leadership and economic competitiveness. In particular, re-building investment in the NRCs, which have played a vital role in U.S. diplomacy, is critical in maintaining a high level of global engagement in the future. The nation needs a steady supply of graduates with expertise in less commonly taught languages, world areas and transnational trends.

International Education programs at Vanderbilt
Vanderbilt’s Center for Latin American Studies (CLAS) was designated as a Title VI National Resource Center in 2006. The designation was renewed in 2010 and again in 2014, with an award of $1.8 million over four years in NRC and Foreign Language Area Studies (FLAS) funds.

For sixty years CLAS has distinguished itself in teaching, research, and outreach in Latin American Studies, maintaining one of the strongest concentrations of Brazilianists of any university in the U.S. In addition to being an NRC, CLAS is one of the select graduate programs approved by the Department of Defense for its Foreign Area Officer training. CLAS provides educational seminars, advice, and counsel on Latin America to the U.S. State Department, the U.S. Southern Command, and local and state governments, including the Tennessee State International Development Office. The Center offers academic year and summer federally funded FLAS fellowships for the study of Portuguese and Mayan languages. CLAS also advises Tennessee-based businesses seeking to expand to Latin America on the local political and economic conditions.

Vanderbilt has also received Title VI Fulbright-Hays scholarships that allow our students to not only conduct important research, but also to learn from and influence other cultures.

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