EDUCATION AND HUMAN RESOURCES (EHR) $962,570,000
+$96,570,000 / 11.2%

EHR Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Division of Research on Learning in Formal and Informal Settings (DRL)	$230.13	$221.52	$253.08	$31.56	14.2%
Division of Graduate Education (DGE)	245.58	273.41	295.64	22.23	8.1%
Division of Human Resource Development (HRD)	139.21	143.73	145.59	1.86	1.3%
Division of Undergraduate Education (DUE)	217.10	227.34	268.26	40.92	18.0%
Total, EHR	**$832.02**	**$866.00**	**$962.57**	**$96.57**	**11.2%**

Totals may not add due to rounding.

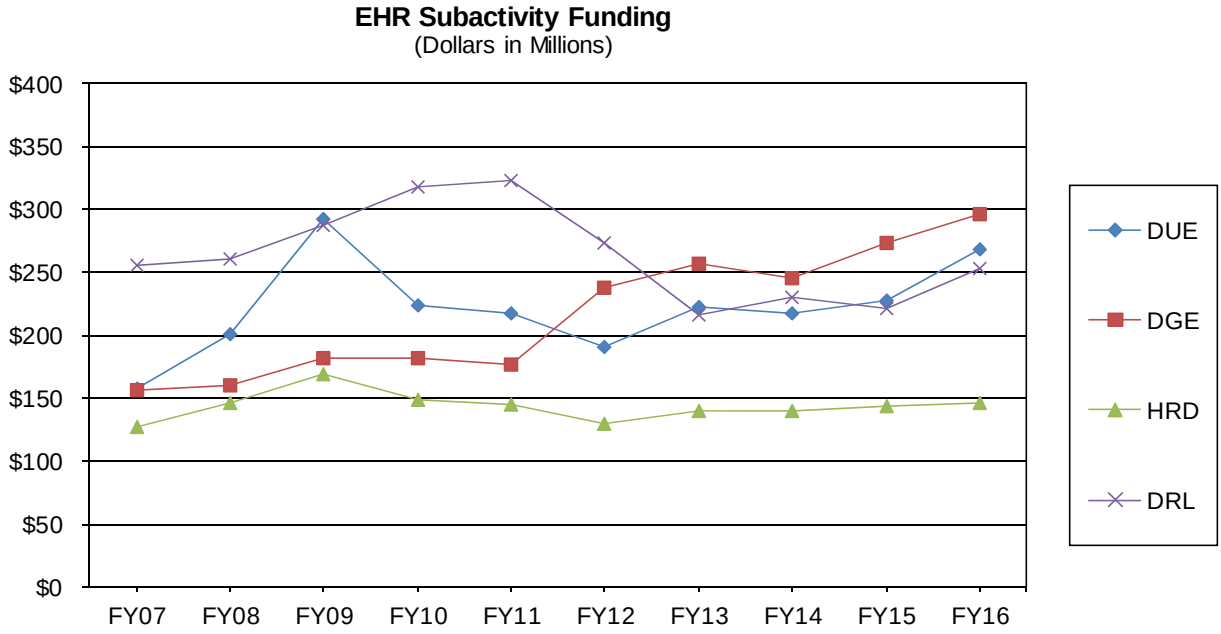
About EHR

The vision of a healthy and vital U.S. science, technology, engineering, and mathematics (STEM) enterprise inspires the investments of the National Science Foundation's (NSF) Directorate for Education and Human Resources (EHR). The directorate's mission is to provide the research foundation to develop a diverse, STEM literate public and workforce ready to advance the frontiers of science and engineering for society. For more than 60 years NSF has invested in bold programs, innovative projects, and rigorous research in STEM education. This FY 2016 budget builds on those investments with a growing emphasis on "core" STEM education research to better engage, sustain, and retain STEM learners, leading to an inclusive and competitive STEM workforce. It includes plans to catalyze exciting and important work in new modes of learning and teaching in the context of rapidly changing U.S. demographics, diverse learner populations, rapid technology growth, and unprecedented science-based educational opportunities. EHR investments provide a foundation for addressing both enduring and emerging challenges in STEM education. EHR-funded projects are leading to STEM success including breakthroughs in technology-enabled learning, learning in informal environments, and in reaching all learners at all levels, including those who have been underrepresented in STEM. NSF-funded research has: proven the benefits of active-learning approaches to retaining more undergraduates in STEM;[1] shown the critical importance of mathematics and science learning for pre-school children,[2] and demonstrated that systemic efforts to improve mathematics learning can result in collective community impact for underrepresented students.[3] EHR advances federal investments in STEM education by funding the research and development that informs strategic education investments across NSF and other agencies.

[1] Freeman S, et al. (2014) Active learning increases student performance in science, engineering, and mathematics. Proc Natl Acad Sci USA 111(23):8410–8415.

[2] National Research Council (2009) Mathematics Learning in Early Childhood: Paths Toward Excellence and Equity. Washington DC: National Academy Press.

[3] Hill, O., Serpell, Z. & Faison, M. (2012) Improving minority student mathematics performance through cognitive training. In L.A. Flowers, J. Moore, and L. O. Flowers (Eds.), The Evolution of Learning: Science, Technology, Engineering, and Mathematics Education at Historically Black Colleges and Universities, University Press of America.



FY 2009 funding reflects both the FY 2009 omnibus appropriation and funding provided through the American Recovery and Reinvestment Act of 2009 (P.L. 111-5).

Appropriations Language

For necessary expenses in carrying out science, mathematics and engineering education and human resources programs and activities pursuant to the National Science Foundation Act of 1950 (42 U.S.C. 1861 et seq.), including services as authorized by section 3109 of title 5, United States Code, authorized travel, and rental of conference rooms in the District of Columbia, ~~$866,000,000,~~*$962,570,000*, to remain available until September 30, ~~2016. *Provided*, That not less than $60,890,000 shall be available for activities authorized by section 7030 of Public Law 110-69.~~*2017*.

Education and Human Resources
FY 2016 Summary Statement
(Dollars in Millions)

	Enacted/ Request	Unobligated Balance Available Start of Year	Unobligated Balance Available End of Year	Adjustments to Prior Year Accounts	Transfers	Obligations/ Estimates
FY 2014 Appropriation	$846.50	$2.18	-$16.37	$0.77	-$1.06	$832.02
FY 2015 Estimate	866.00	16.37				882.37
FY 2016 Request	962.57					962.57
$ Change from FY 2015 Estimate						$80.20
% Change from FY 2015 Estimate						9.1%

Totals may not add due to rounding.

Explanation of Carryover

Within the **Education and Human Resources (EHR)** account, $16.37 million (including $281,000 in reimbursable funds) was carried over into FY 2015. It is estimated that these funds will be obligated during the second quarter of FY 2015.

- $12.50 million for the NSF Research Traineeship (NRT) was carried over. The solicitation for the cross-directorate program was released on March 24, 2014, with 258 proposals received by the June 24, 2014 due date. Thirteen panels were scheduled during the August 18 to September 15 timeframe. Award recommendations will be finalized during the second quarter of FY 2015.

- $2.75 million for the Excellence Awards in Science and Engineering (EASE) Program:
  - $2.36 million for the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) program was carried over into FY 2015. The FY 2013 awardees were not recognized in FY 2014 and have been scheduled to be recognized in FY 2015 along with the FY 2014 awardees.
  - $394,000 for the Presidential Awards for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM) was carried over into FY 2015. The FY 2012 and FY 2013 awardees were not recognized in FY 2014. They are scheduled to be recognized in FY 2015 along with FY 2014 awardees.

- $827,693 for the Robert Noyce program was carried over into FY 2015 for awards that were not ready for obligation.

- Within EHR, $281,000 of incoming two-year interagency funds were carried over.

FY 2016 EHR Summary

The EHR budget request is framed by the three thematic areas that have guided the directorate's investments in recent years and that have been further developed by the EHR Advisory Committee in its report, *Strategic Re-Envisioning for the Education and Human Resources Directorate*.[4] The themes are: 1) STEM learning and learning environments, 2) broadening participation and institutional capacity in STEM, and 3) the preparation of those who will pursue a wide range of STEM careers. The request reflects NSF's commitment to growing the research base that will guide and inform more rapid and meaningful change in STEM learning and STEM education.

In FY 2016, continuing and expanding investments in the EHR Core Research (ECR) program remains a top priority. EHR's research and development focus for FY 2016, through the ECR program as well as other more targeted programs, will emphasize several key areas.

- Within the **learning and learning environments** theme: early childhood STEM learning; advances in cyberlearning and the study of complex privacy issues related to learning data; translation of the science of learning into educational environments; learning issues in specific STEM disciplines, with emphasis in mathematics because of national needs; and learning opportunities within rich science contexts such as research centers, major facilities, and large instruments.

- Within the **broadening participation and institutional capacity** theme: understanding changing demographics and using diversity as an asset for science; new roles for informal learning environments to engage learners from groups traditionally underrepresented in STEM; strategic

[4] www.nsf.gov/ehr/Pubs/AC_ReEnvisioning_Report_Sept_2014_01.pdf

impact in the K-12 levels for broadening participation; and "bold visions" for strategic focus, as part of the NSF Inclusion across the Nation of Communities of Learners that have been Underrepresented for Diversity in Engineering and Science (NSF INCLUDES) priority.

- In the area of development of the **STEM professional workforce** theme: tomorrow's teachers and educators; new STEM literacies (e.g., data literacy, coding literacy, and "making" literacy); and preparing graduate students broadly for STEM careers and in emerging areas such as data science.

These themes will guide a coherent suite of NSF-wide investments in undergraduate education, coordinated through EHR. The investments collectively are designed to improve access and transition to high-quality undergraduate STEM learning opportunities for all of the Nation's students, and to transform undergraduate learning opportunities so that students are attracted to and able to succeed in STEM studies. In FY 2016, EHR will promote the study and scaling of such evidence-based practices as active learning approaches and research-based courses.

Two EHR-wide emphases in FY 2016 will be: 1) ensuring that promising practices, key findings, and accumulated knowledge are used and adapted for influence on STEM education "at scale"; and 2) on growing partnerships across the agency and externally to support education research-based strategies for preparing tomorrow's diverse communities of scientists, engineers, and other STEM career professionals to lead the world in innovation and frontier research.

EHR's commitment to collaborations across NSF in efforts to shape a highly competent STEM workforce is reflected in the alignment of the innovation component of the NSF Research Traineeship (NRT) program with the FY 2016 NSF-wide priorities Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS) and Understanding the Brain (UtB). EHR solicitations and calls for proposals for NRT will challenge the field to devise cutting-edge innovations in preparing graduate students to be researchers in these evolving areas. EHR will further participate, through other ongoing EHR programs, in the agency-wide INFEWS priority with an emphasis on learners' engagement to help understand what is needed to create a highly skilled and diverse science and engineering workforce to address the food-energy-water nexus, and to support the development of new evidence-based instructional approaches for interdisciplinary courses that address this nexus. EHR also participates in Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education (CIF21) and in Secure and Trustworthy Cyberspace (SaTC) through the CyberCorps®: Scholarship for Service (SFS) program. NSF-wide commitment is also evident in EHR's continued leadership in Improving Undergraduate STEM Education (IUSE) and in the Cyberlearning and Future Learning Technologies program, in partnership with the Directorate for Computer and Information Science and Engineering (CISE).

Broadening participation is a Foundation-wide priority, and in FY 2016 NSF plans to launch a new program, NSF INCLUDES. EHR will partner with the Office of Integrative Activities (OIA) to co-lead this effort. EHR will encourage principal investigators (PIs) from the five largest NSF focused programs in broadening participation (ADVANCE, Centers of Research Excellence in Science & Technology (CREST), Louis Stokes Alliances for Minority Participation (LSAMP), Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), and the Tribal Colleges and Universities Program (TCUP)) to be leaders and innovators in developing a focused set of "bold visions" for inclusion that will provide rallying points for the program. This will aid in the creation of two pilot activities NSF INCLUDES: Networks for STEM Excellence (led by OIA) and NSF INCLUDES: Empowering All Youth for STEM (led by EHR). For more detailed information on NSF INCLUDES, see the NSF-Wide Investments chapter.

Another major emphasis for EHR in FY 2016, through current programs, will be a focus on the translation, adaptation, and wide use/uptake of findings, models, and tools supported by EHR awards.

One key approach will be the expansion of I-Corps™ for Learning. This budget request proposes increased emphasis within EHR programs on designing for scale and on implementation science. EHR also will continue to catalyze the research community to move education from a data-poor to a data-rich endeavor through investment in data science pilots and related efforts. Finally, consistent with the advice of the EHR Advisory Committee, EHR will build mechanisms using traditional and technological approaches to synthesize and summarize the findings and results of EHR-funded research and development into forms that are useful to a variety of audiences.

EHR will continue to provide leadership to the cross-agency Federal Coordination in STEM Education (FC-STEM) Task Force in the implementation of the Federal STEM Education 5-Year Strategic Plan developed by the Committee on STEM Education (CoSTEM). EHR staff will serve as working group leaders and members and will provide leadership in developing the evidence base for effective STEM education at all levels in both formal and informal settings, with the long-term outcome to be greater impact and efficiency for the federal investment in STEM education.

FY 2016 Summary by Division

- The Division of Research on Learning in Formal and Informal Settings (DRL) invests in fundamental research on STEM learning. This includes the development and testing of innovative resources, models, and tools for STEM learning both inside and outside of school, for the public, for preK-12 students, for teachers, and for youth; research on national STEM education priorities; and evaluation studies and activities. The FY 2016 DRL investment for ECR: STEM Learning increases $23.64 million over the FY 2015 Estimate to a total of $49.27 million, allowing support for a wider range of high quality foundational studies across the STEM domains and across levels and institutional type. The Discovery Research K-12 (DRK-12) program increases $8.12 million over the FY 2015 Estimate to a total of $91.93 million to support awards that focus on research and development models and tools for preK-12 education. The Advancing Informal STEM Learning (AISL) program increases by $5.0 million to $60.0 million, allowing expanded emphasis on broadening participation through informal learning environments.

- The Division of Graduate Education (DGE) provides support to U.S. graduate students and innovative graduate programs to prepare tomorrow's leaders in STEM. DGE's role includes support for research that focuses on the general issues related to the development of the STEM professional workforce at the graduate level. In FY 2016, ECR: STEM Professional Workforce Preparation, led by DGE, will increase $4.12 million to a total of $20.09 million. DGE will increase its interactions with STEM workforce preparation programs based in other EHR divisions in areas such as teacher preparation and professional development and STEM career development at the undergraduate level. DGE provides intellectual leadership for the use and conduct of research that provides the knowledge base that informs implementation of successful approaches, practices, and models for STEM professional workforce preparation. Another focus for DGE in FY 2016 is reflected in the plan to align NRT with the NSF-wide scientific priorities INFEWS and UtB. At the same time, DGE will continue to promote innovation in graduate education through activities that provide new professional development opportunities for Graduate Research Fellowship (GRF) fellows (i.e., Graduate Research Opportunities Worldwide (GROW) and Graduate Research Internships Program (GRIP)) and through research on the implementation of innovative new program and learning opportunities.

  DGE has the administrative and intellectual responsibility for the development and implementation of the NSF Strategic Plan in Graduate Education (particularly in areas of human capital) and co-leads with the National Institutes of Health (NIH) the FC-STEM Interagency Working Group on Graduate Education to advance cooperation and collaboration of graduate education with other federal

agencies. DGE is the home and lead division for EHR's Program and Project Evaluation (PPE) program, and plays a leading role in the oversight of the EHR evaluation portfolio.

- The Division of Human Resources Development (HRD) invests in building a diverse and well-qualified STEM workforce through broadening the participation of groups underrepresented in STEM. In FY 2016, HRD continues leading efforts to improve STEM education for Hispanic students by focusing on Hispanic-serving two-year institutions in partnership with a variety of programs throughout EHR. HRD investments in HBCUs, Tribal Colleges and Universities (TCUs), and other minority-serving institutions remain critically important. These programs together with ADVANCE, CREST, and LSAMP will be instrumental in encouraging its PI community in leading the development of a set of "bold visions" for inclusions. LSAMP will work with DRL's AISL program to ensure that the pilot activities for the NSF INCLUDES: Empowering All Youth for STEM priority will support innovative and bold ideas in broadening participation. HRD also leads the ECR: Broadening Participation and Institutional Capacity in STEM activity, which increases by $1.86 million over the FY 2015 Estimate to a total of $14.74 million to allow for additional research to build the science of broadening participation.

- The Division of Undergraduate Education (DUE) provides NSF-wide leadership and expertise for transforming undergraduate STEM education to anticipate the needs of the 21st century STEM workforce. This includes an emphasis on: evidence-based and evidence-generating approaches to improve undergraduate education; discipline-focused needs in learning research and development of physical virtual tools, technologies, and other learning experiences; and focus on emerging areas of science that warrant inclusion in undergraduate programs in STEM. In FY 2016, led by DUE, ECR: STEM Learning Environments increases $3.64 million over the FY 2015 Estimate to a total of $19.74 million, supporting fundamental research in STEM education. In FY 2016, DUE continues to focus on supporting the Administration's goal of generating 100,000 new effective STEM teachers and one million more STEM graduates through the Robert Noyce Teacher Scholarship Program (NOYCE) program—in conjunction with HRD's Excellence Awards in Science and Engineering (EASE) program. The IUSE activity serves as an umbrella for agency-wide investments in undergraduate STEM education. EHR's contribution to IUSE increases $36.08 million to a total of $120.08 million to allow for increased focus on research experiences as part of the undergraduate STEM experience.

Major Investments

EHR Major Investments
(Dollars in Millions)

Area of Investment	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
CIF21	-	$2.50	$2.84	$0.34	13.6%
GRF	149.62	166.72	168.75	2.03	1.2%
I-Corps	0.35	0.35	1.55	1.20	342.9%
NSF INCLUDES	-	-	3.00	3.00	N/A
INFEWS	-	-	6.00	6.00	N/A
Improving Undergraduate STEM Education (IUSE)	74.57	84.00	120.08	36.08	43.0%
NSF Research Traineeship (NRT)[1]	13.93	28.27	35.38	7.11	25.2%
SaTC	44.87	45.00	45.00	-	-
Understanding the Brain	5.17	5.00	11.00	6.00	120.0%

Major investments may have funding overlap and thus should not be summed.

[1] Outyear commitments for Integrative Graduate Education and Research Traineeship (IGERT) are included in the NRT line and are $13.34 million in FY 2014, $4.40 million in FY 2015, and $2.85 million in FY 2016.

- Cyberinfrastructure Framework for 21st Century Science, Engineering, and Education (CIF21): In FY 2016, through the Project and Program Evaluation (PPE) program, $2.84 million will support CIF21's building community and capacity for data intensive research activity.

- Graduate Research Fellowship (GRF): GRF increases $2.03 million to a total of $168.75 million. An equivalent investment ($168.75 million) is provided through the Integrative Activities budget for a total GRF investment of $337.50 million. For more information, see the Major Investments in STEM Graduate Education narrative within the NSF-Wide Investments chapter.

- NSF Innovation Corps (I-Corps™): In FY 2016, DUE will support EHR's participation in this activity at a level of $1.55 million.

- NSF INCLUDES: In FY 2016, $3.0 million will support the pilot of a new approach to empowering youth by engaging them directly in STEM. Funding aims to catalyze innovative discipline-specific initiatives. The pilot will build, implement, and assess models that are intended to fuel the demand for STEM learning by directly engaging the youth community at the middle grades level, catalyzing innate curiosity, generating excitement, and engaging learners by making science and technology fun in order to interest them in STEM.

- Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS): $6.0 million will support emphasis on the food-energy-water nexus research area through the NRT.

- Improving Undergraduate STEM Learning (IUSE): In FY 2016, EHR will lead the NSF-wide IUSE activity with an investment of $120.08 million and coordinate the participation of the Directorates for Biological Sciences (BIO), Engineering (ENG), and Geosciences (GEO). Research and Related Activities (R&RA) account funding will be retained within individual directorates and offices and totals $14.50 million for a Foundation IUSE investment of $134.58 million. For more information, see the IUSE narrative within the NSF-Wide Investments chapter.

- NSF Research Traineeship (NRT): The investment for FY 2016 NRT activities is $35.38 million, of which $7.0 million is dedicated to supporting Innovation in Graduate Education (IGE) for model design, innovation, and research in graduate student training and professional development. For more information, see the Major Investments in STEM Graduate Education narrative within the NSF-Wide Investments chapter.

- Secure and Trustworthy Cyberspace (SaTC): Through the CyberCorps®: Scholarship for Service (SFS) program, EHR will support SaTC activities at $45.0 million.

- Understanding the Brain (UtB): Through the EHR Core Research (ECR), IUSE, and DRK-12 programs, EHR will invest in cognitive and learning sciences research efforts at the level of $11.0 million to better understand brain function during learning and problem solving in specific domains of STEM education, and to translate and apply findings from neuroscience and cognition for the improvement of education. EHR investments also will support the preparation of the next generation of neuroscientists and cognitive scientists.

Summary and Funding Profile

EHR supports investment in core research in education and STEM learning as well as STEM education development and training. In FY 2016, the number of research grant proposals is estimated at 1,970. EHR expects to award approximately 250 research grants with an average annual award size and duration of $265,000 and 3.1 years, respectively.

EHR Funding Profile

	FY 2014 Actual Estimate	FY 2015 Estimate	FY 2016 Estimate
Statistics for Competitive Awards:			
Number of Proposals	4,049	4,500	4,600
Number of New Awards	701	845	875
Funding Rate	17%	19%	19%
Statistics for Research Grants:			
Number of Research Grant Proposals		1,925	1,970
Number of Research Grants		235	250
Funding Rate		12%	13%
Median Annualized Award Size		$226,400	$226,600
Average Annualized Award Size		$265,000	$265,000
Average Award Duration, in years		3.1	3.1

FY 2015 is the first year in which Research Grant Portfolio information is displayed for EHR

Program Monitoring and Evaluation

EHR continues its strong emphasis on evidence, through projects, programs, and investment portfolios that are evidence-based, evidence-building, and evidence-improving. In FY 2016, EHR will further consolidate program-based monitoring systems, initiate use of administrative data and on-going data collections for monitoring and evaluation, and fully integrate monitoring and evaluation investments. This work aligns closely with the CoSTEM 5-Year Strategic Plan Objective 2: Build and use evidence-

based approaches.[5] Using the joint NSF and Institute of Education Sciences (IES) report, *Common Guidelines for Education Research and Development*, released in late FY 2013, EHR will ensure that promising practices, key findings, and accumulated knowledge in evaluation are used and adapted for use internally and disseminated to the larger evaluation community.

The National Research Council (NRC) report *Monitoring Progress Toward Successful K-12 STEM Education* (2013) laid the groundwork for a significant effort launched in FY 2014 to develop indicators for tracking progress in preK-12 STEM education, an essential component in developing evidence-based programs. EHR and the National Center for Science and Engineering Statistics (NCSES), in collaboration with the National Center for Education Statistics (NCES) within IES, are coordinating efforts to adapt and implement data collection on these indicators within other national efforts.

EHR-based infrastructure and processes will be developed in collaboration with the NSF Evaluation and Assessment Capability (EAC), as appropriate. EHR experts in evaluation will provide expertise as needed within NSF and to other federal agencies engaged in STEM education program evaluation as a means of sharing best practices, developing tools for portfolio and data analysis, working toward the use of common metrics and instruments, and building collaborative expertise for STEM education evaluation across agencies.

External Evaluations and Committee of Visitors (COV) Completed in FY 2014

- An external evaluation of the CyberCorps®: Scholarships for Service (SFS) program, conducted by the Office of Personnel Management.
- The Graduate Research Fellowship (GRF) program evaluation conducted by the National Opinion Research Center (NORC) was completed in FY 2014.[6]
- Evaluation for the LSAMP Bridges to the Doctorate program was completed and a presentation by the evaluator was given in February 2014. The report is awaiting final publication.
- ADVANCE completed a COV in September 2014.

External Evaluations Scheduled for Completion in FY 2015

- The NOYCE and NSF Scholarships for STEM (S-STEM) have received draft reports. Completion of these reports is expected in FY 2015.

COVs tentatively scheduled for FY 2015 and FY 2016[7]

- DRL plans to hold a division-wide COV in March 2015 to review all DRL programs—i.e., AISL, DRK-12, Innovative Technology Experiences for Students and Teachers (ITEST), Math and Science Partnership (MSP), Promoting Research and Innovation in Methodologies for Evaluation (PRIME) (a component of the PPE program), and Research on Education and Learning (REAL).
- DGE will hold COVs of the Integrative Graduate Education and Research Traineeship (IGERT) and SFS programs in FY 2015.
- HRD will hold COVs of Alliances for Graduate Education and the Professoriate (AGEP), CREST, HBCU-UP, LSAMP, and TCUP in FY 2016.
- The following programs in DUE are scheduled to be reviewed by COVs in FY 2015: ATE, NOYCE, S-STEM, STEM Talent Expansion Program (STEP), Transforming Undergraduate Education in STEM (TUES), and Widening Implementation and Demonstration of Evidence-Based Reforms (WIDER).

[5] www.whitehouse.gov/sites/default/files/microsites/ostp/stem_stratplan_2013.pdf
[6] www.norc.org/Research/Projects/Pages/evaluation-of-the-graduate-research-Fellowship-Program-.aspx
[7] Several programs listed (e.g., REAL, IGERT, STEP, TUES, and WIDER) have ended; however, the COVs are retrospective and will include them.

- An evaluation of EHR Monitoring Data Collection, Analysis, and Storage is scheduled to be completed in October 2015.

The Performance chapter provides details regarding the periodic reviews of programs and portfolios of programs by external COVs and directorate Advisory Committees. Please see the Performance chapter for additional information.

Number of People Involved in EHR Activities

	FY 2014 Actual Estimate	FY 2015 Estimate	FY 2016 Estimate
Senior Researchers	5,533	5,700	6,400
Other Professionals	5,420	5,600	6,300
Postdoctorates	244	300	300
Graduate Students	10,109	10,500	11,700
Undergraduate Students	13,330	13,900	15,400
K-12 teachers	36,134	37,600	41,800
K-12 Students	72,980	76,000	84,400
Total Number of People	**143,750**	**149,600**	**166,300**

DIVISION OF RESEARCH ON LEARNING IN FORMAL AND INFORMAL SETTINGS (DRL)

$253,080,000
+$31,560,000 / 14.2%

DRL Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Request Amount	Change Over FY 2015 Request Percent
Total, DRL	**$230.13**	**$221.52**	**$253.08**	**$31.56**	**14.2%**
Learning and Learning Environments	**25.39**	**25.63**	**49.27**	**23.64**	**92.2%**
EHR Core Research (ECR): STEM Learning [1]	25.39	25.63	49.27	23.64	92.2%
Broadening Participation & Institutional Capacity	**147.22**	**138.81**	**151.93**	**13.12**	**9.5%**
Advancing Informal STEM Learning (AISL)	54.84	55.00	60.00	5.00	9.1%
Discovery Research K-12 (DRK-12)	92.38	83.81	91.93	8.12	9.7%
STEM Professional Workforce	**57.52**	**57.08**	**51.88**	**-5.20**	**-9.1%**
INSPIRE	0.10	-	-	-	N/A
Science, Technology, Engineering, Mathematics + Computing (STEM + C) Partnerships	57.43	57.08	51.88	-5.20	-9.1%

Totals may not add due to rounding.

[1] For comparability, Research on Education and Learning (REAL) is included on the EHR Core Research (ECR) line for FY 2014 because the program was consolidated into ECR in FY 2015 and FY 2016.

The Division of Research on Learning in Formal and Informal Settings (DRL) manages investments in foundational research to advance understanding about STEM learning and teaching. The DRL portfolio also includes the design, implementation, and study of learning environments, models, and technologies intended to engage and enable STEM learning for all students, particularly those who have been underrepresented in STEM, through both formal and informal STEM activities. DRL provides direction for the EHR portfolio in techniques for measurement and assessment of learning outcomes, and for the development of indicator tools that would enable the tracking of systemic improvement. The results of DRL-funded projects are a resource for establishing renewed and new partnerships with other directorates, NSF-funded facilities, other federal agencies, and the private sector for complementary investments in discipline- and practice-based approaches to STEM education.

DRL is the administrative home and provides intellectual leadership for: EHR's Core Research (ECR) portfolio; the EHR-wide emphasis on cyberlearning; collaborations with other directorates on big data, data science, and privacy related to learning data; agency-wide participation in citizen science and maker movement investments; a partnership with the Wellcome Trust for research on informal STEM learning; an ongoing set of efforts related to indicators for K-12 STEM education; and the NSF Einstein Fellows program.

FY 2016 Summary

All funding decreases/increases represent change over the FY 2015 Estimate.

Learning and Learning Environments

- In FY 2016, the ECR program will continue to expand the portfolio of foundational STEM education research on learning, learning environments, broadening participation, and the STEM professional workforce. An area of emphasis within the learning and learning environments theme for FY 2016 will be early childhood STEM learning, which will be highlighted in ECR along with the Research in Disabilities Education (RDE) and Research on Gender in Science and Engineering (GSE) emphases,

both of which will be continued. Increased funding will enable more strategic and coordinated research investment in areas of high importance for improving STEM learning. DRL will also provide new direction for partnership with science-rich entities funded across the NSF, such as major facilities, centers, and large instruments, in order to explore the potential of these learning environments for engaging and exciting STEM learners of all ages.

Broadening Participation and Institutional Capacity in STEM

- Broadening participation investments in FY 2016 will focus on understanding changing demographics and using diversity as an asset for science while also creating "bold visions" with the field for strategic focus (as part of the NSF INCLUDES activity). AISL increases to $60.0 million to provide resources to support design, adaptation, implementation, and research on innovative modes of learning in the informal environment, including emphases on citizen science, making, and cyberlearning. In addition to drawing on the resources of the informal STEM learning community to create a "bold vision" as part of NSF INCLUDES, AISL will partner with the LSAMP program to develop a pilot for empowering middle-school aged youth in STEM. AISL will continue to encourage projects that utilize informal learning environments in novel ways to engage students from groups traditionally underrepresented in STEM and continue with Phase 2 of the Wellcome Trust Science Learning+ collaboration, which are the partnership grants supporting joint U.S. and United Kingdom initiatives.
- DRK-12 investments (+$8.12 million to a total of $91.93 million) are aimed at improving STEM achievement for all preK-12 students, particularly those that have been underserved in STEM. These investments focus on cyberlearning and STEM discipline-specific teaching and challenges. STEM professionals and researchers, including teachers, must be agile and adaptable in order to keep pace with and contribute to deeper understandings about the technologies that inform their work, evidence-based instructional materials and assessment models, building and refining of science of learning ideas, and understanding how best to prepare the Nation's diverse learners for the future. The teacher education emphasis in DRK-12 continues its focus on implementation research on policy and practice issues associated with national and state activities, and on the role of authentic STEM research experiences in teacher development and in learning environment design as a means of reaching a wide range of students. In FY 2016, DRK-12 will include emphasis on research and development for early learning and on the preparation of teachers for future learning environments.

STEM Professional Workforce

- The STEM + Computing (STEM + C) Partnerships program advances research on and development of innovative courses, curriculum, course materials, pedagogies, instructional strategies, and models that integrate computing into one or more STEM disciplines. In addition, the program builds capacity in K-12 computing education with foundational research and focused teacher preparation. The program advances a 21st century vision for STEM education in which computing is integral to all STEM disciplines and essential to STEM learning and teaching. The total FY 2016 STEM + C Partnerships investment is $64.38 million, comprising a commitment from CISE of $12.50 million and $51.88 million from EHR, a decrease of $5.20 million in order to evaluate how best to invest future funding to encourage strong proposals that achieve the program's goals .

DIVISION OF GRADUATE EDUCATION (DGE) $295,640,000
+$22,230,000 / 8.1%

DGE Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Total, DGE	**$245.58**	**$273.41**	**$295.64**	**$22.23**	**8.1%**
Learning and Learning Environments	**21.26**	**15.50**	**21.47**	**5.97**	**38.5%**
Project and Program Evaluation (PPE)	21.26	15.50	21.47	5.97	38.5%
STEM Professional Workforce	**224.31**	**257.91**	**274.17**	**16.26**	**6.3%**
EHR Core Research (ECR): STEM Professional Workforce Preparation[1]	15.89	15.97	20.09	4.12	25.8%
CyberCorps®: Scholarship for Service (SFS)	44.87	45.00	45.00	-	-
NSF INCLUDES	-	-	3.00	3.00	N/A
INSPIRE	-	1.95	1.95	-	-
Graduate Research Fellowship (GRF)	149.62	166.72	168.75	2.03	1.2%
NSF Research Traineeship (NRT)[2]	13.93	28.27	35.38	7.11	25.2%

Totals may not add due to rounding.

[1] For comparability, Research on Education and Learning (REAL) is included on the EHR Core Research (ECR) line for FY 2014 because the program was consolidated into ECR in FY 2015 and FY 2016.

[2] Outyear commitments for Integrative Graduate Education and Research Traineeship (IGERT) are included in the NRT line and are $13.34 million in FY 2014, $4.40 million in FY 2015, and $2.85 million in FY 2016.

The Division of Graduate Education (DGE) provides support to U.S. graduate students and innovative graduate programs to prepare tomorrow's leaders in STEM. In FY 2016, DGE leads the EHR focus on the STEM Professional Workforce thematic area and in addition to emphases on graduate education will include an increased interaction with other EHR divisions in such areas as teacher development and early career development of the STEM workforce. The resulting body of research expands the knowledge base that informs successful approaches, practices, and models for the preparation of a STEM professional workforce ready to advance the frontiers of science.

DGE provides the administrative leadership for two major NSF-wide graduate programs: the Graduate Research Fellowship Program (GRF) and the NSF Research Traineeship Program (NRT). DGE also co-leads the Interagency Working Group on Graduate Education for the Federal Committee on STEM Education.

FY 2016 Summary

All funding decreases/increases represent change over the FY 2015 Estimate.

Learning and Learning Environments

- PPE increases $5.97 million to a total of $21.47 million. Administrative oversight for EHR's activity in evaluation, monitoring, and related research activities will include launching long-term studies to examine the impact of NSF investment in graduate students and funding the development of instruments to assess metrics identified in the NRC report, *Monitoring Progress Toward Successful K-12 STEM Education* (2013). The Promoting Research and Innovative Methodologies for Evaluation (PRIME) activity within the PPE program will support research projects to improve STEM education evaluation, placing an emphasis on data privacy in research and evaluation and use of administrative data in evaluation.

STEM Professional Workforce

- ECR: STEM Professional Workforce Preparation increases $4.12 million to a total of $20.09 million. Investments in this area will expand the knowledge base to improve STEM professional workforce development (at all educational levels) through development of models, research, and evaluation, and will allow translation of the results of this research for adoption and/or adaptation in workforce and education programs.
- SFS funding is $45.0 million in FY 2016, equal to the FY 2015 Estimate. Funding will improve the capacity of institutions to provide the latest curricular approaches and experiences available to ensure that the students are well prepared with cybersecurity skills and knowledge, and to conduct research to build understanding of the most effective preparation for a variety of cybersecurity professions. Due to greater capacity, increased attention will be directed to community colleges, continuing an effort that was launched in FY 2015.
- The EHR portion of GRF increases $2.03 million to a total of $168.75 million. The program will support 2,000 new fellowships with a cost of education allowance of $12,000 and a stipend of $34,000. For more detailed information on this program, see the Major Investments in STEM Graduate Education narrative within the NSF-Wide Investments chapter.
- The EHR portion of NRT increases $7.11 million to a total of $35.38 million. This includes IGERT FY 2016 commitments totaling $2.85 million. IGERT commitments will be completed in FY 2016. The NRT investment supports projects in the FY 2016 NSF-wide priorities INFEWS and UtB. As part of the Innovation in Graduate Education track, NRT will challenge the field to devise cutting-edge innovations in preparing graduate students to be researchers in these evolving areas. For more detailed information on this program, see the Major Investments in STEM Graduate Education narrative within the NSF-Wide Investments chapter.

DIVISION OF HUMAN RESOURCE DEVELOPMENT (HRD) $145,590,000 +$1,860,000 / 1.3%

HRD Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Total, HRD	**$139.21**	**$143.73**	**$145.59**	**$1.86**	**1.3%**
Learning and Learning Environments	**54.92**	**55.03**	**55.03**	**-**	**-**
ADVANCE	1.51	1.53	1.53	-	-
Alliances for Graduate Education and the Professoriate (AGEP)	8.18	8.00	8.00	-	-
Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)	31.76	32.00	32.00	-	-
Tribal Colleges and Universities Program (TCUP)	13.47	13.50	13.50	-	-
Broadening Participation & Institutional Capacity	**58.33**	**58.88**	**60.74**	**1.86**	**3.2%**
EHR Core Research (ECR): Broadening Participation and Institutional Capacity in STEM[1]	12.82	12.88	14.74	1.86	14.4%
Louis Stokes Alliances for Minority Participation (LSAMP)	45.51	46.00	46.00	-	-
STEM Professional Workforce	**25.97**	**29.82**	**29.82**	**-**	**-**
Centers for Research Excellence in Science and Technology (CREST)	22.92	24.00	24.00	-	-
Excellence Awards in Science and Engineering (EASE)	3.05	5.82	5.82	-	-

Totals may not add due to rounding

[1] For comparability, Research on Education and Learning (REAL) is included on the EHR Core Research (ECR) line for FY 2014 because the program was consolidated into ECR in FY 2015 and FY 2016.

The goal of the Division of Human Resource Development (HRD) is to grow the innovative and competitive U.S. STEM workforce that is vital for sustaining and advancing the Nation's prosperity by supporting the broader participation and success of individuals currently underrepresented in STEM and the institutions that serve them. HRD supports research and development on theory-driven and evidence-based models and innovations in order to gain knowledge about the participation of diverse groups in STEM education and research.

In FY 2016, HRD will continue leading efforts to improve STEM education for Hispanic students through emphases on Hispanic-serving two-year community colleges and will work with several programs in EHR including ATE, IUSE, and LSAMP.

FY 2016 Summary

Learning and Learning Environments

- HRD supports STEM learning and learning environments through several existing programs (ADVANCE, AGEP, HBCU-UP, and TCUP). These programs will continue to build on the knowledge about successful approaches to broadening STEM participation and building institutional capacity in minority-serving institutions so they can contribute in this knowledge building. ADVANCE will continue to support work in institutional transformation and faculty development, as

well as focus on disciplinary areas that foster collaborations through developing networks and partnerships. AGEP will develop new strategies to work with the NRT and GRF programs to increase STEM career opportunities and access for graduate and postdoctoral students. Both HBCU-UP and TCUP continue to focus on institutional capacity building to provide more innovative activities for STEM learning.

- HRD programs will support learning issues in specific STEM disciplines, with an emphasis in mathematics in order to engage a more diverse group of learners.

Broadening Participation and Institutional Capacity in STEM

- HRD will provide strategic direction and guidance for the Broadening Participation and Institutional Capacity component of ECR. EHR will invest $14.74 million in foundational research to explore such topics as: approaches to using diversity as an asset for science; successful approaches that engage a diverse group of learners and audiences; the use of culturally relevant materials in engaging learners from groups traditionally underrepresented in STEM; and development and implementation of models that support persistence, retention, and success in STEM for groups underrepresented in STEM disciplines.
- New coordinated efforts will be built between the LSAMP program and the IUSE and ATE programs to enhance persistence of undergraduate students, and with the GRF program to increase the diversity of the GRF applicant pool. In addition, the LSAMP program will partner with DRL's AISL program in the development of the NSF INCLUDES: Empowering All Youth for STEM pilot program. The goal of this pilot is to build, implement, and assess models that are intended to fuel the demand for STEM learning by directly engaging the youth community at the middle grades level. Investments will focus on catalyzing innate curiosity, generating excitement, and engaging learners in relevant science and technology. Research indicates that students who developed "science identities" by the end of middle school have greater potential for their continued engagement in STEM.[8,9,10] HRD will lead EHR efforts to incorporate the principles of NSF INCLUDES across all programs in the directorate as appropriate, and will also play a key role in the development of metrics and approaches to the assessment of NSF INCLUDES and other investments in broadening participation.
- HRD will continue to represent EHR in the agency-wide NSF Broadening Participation Working Group and will contribute to the development of strategies to increase coherence across NSF's broadening participation activities. Members of the HRD executive staff have leadership roles as part of the FC-STEM Task Force. HRD staff co-lead, with NIH, the Interagency Working Group on Underrepresented Minorities. Through various discussions with HRD communities, individual PIs will be encouraged to contribute to the bold visions through proposals that support broadening participation as intellectual merit not simply as broader impact.

STEM Professional Workforce

- EASE will continue to support professional development for K-12 teachers and STEM educators and mentors, as well as the identification and recognition of educators who have particular impact on broadening participation.

[8] Archer, L., DeWitt, J., Osborne, J., Dillon, J., Willis, B. and Wong, B. (2010), "Doing" science versus "being" a scientist: Examining 10/11-year-old schoolchildren's constructions of science through the lens of identity. Sci. Ed., 94: 617–639.
[9] Barton, A. C., Kang, H., Tan, E., O'Neill, T. B., Bautista-Guerra, J., & Brecklin, C. (2012), Crafting a Future in Science Tracing Middle School Girls' Identity Work Over Time and Space. American Educational Research Journal, 83: 432-479. <http://aer.sagepub.com/content/50/1/37>.
[10] Bøe, M.V., Henriksen, E.K., Lyons, T. and Schreiner, C. (2011), Participation in science and technology: young people's achievement-related choices in late-modern societies, Studies in Science Education, 47:1, 37-72. <http://dx.doi.org/10.1080/03057267.2011.549621>.

DIVISION OF UNDERGRADUATE EDUCATION (DUE) $268,260,000 +$40,920,000 / 18.0%

DUE Funding
(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
Total, DUE	**$217.10**	**$227.34**	**$268.26**	**$40.92**	**18.0%**
Learning and Learning Environments	**90.54**	**100.10**	**139.82**	**39.72**	**39.7%**
EHR Core Research (ECR): STEM Learning Environments[1]	15.97	16.10	19.74	3.64	22.6%
Improving Undergraduate STEM Education (IUSE)	74.57	84.00	120.08	36.08	43.0%
STEM Professional Workforce	**126.55**	**127.24**	**128.44**	**1.20**	**0.9%**
Advanced Technological Education	63.61	66.00	66.00	-	-
NSF Innovation Corps (I-Corps™)	0.35	0.35	1.55	1.20	342.9%
Robert Noyce Teacher Scholarship	62.59	60.89	60.89	-	-

Totals may not add due to rounding.

[1] For comparability, Research on Education and Learning (REAL) is included on the EHR Core Research (ECR) line for FY 2014 because the program was consolidated into ECR in FY 2015 and FY 2016.

EHR's Division of Undergraduate Education (DUE) supports the design, development, and study of innovative STEM learning environments that integrate cutting-edge science and education findings to optimize learning for all undergraduates. DUE invests in "learning engineering" where disciplinary expertise and evidence from the learning sciences are infused into physical and virtual tools, technologies, and other learning experiences, and then iteratively improved through research and development to impact STEM learning. The undergraduate experience is critical for building a STEM workforce and a STEM-literate public, and DUE is the leading organization across all Federal agencies for investing in research and development to transform undergraduate STEM education.

In FY 2016, DUE activities will support STEM learning engineering by investing in the design and transformation of environments for undergraduate STEM interdisciplinary and disciplinary learning, and by catalyzing high quality "discipline-based educational research,"[11] where questions of teaching and learning are driven by specific needs and issues within the scientific disciplines. DUE will support research designed to lead to widespread, sustainable implementation of evidence-based practices for the improvement of student outcomes. Such practices include engaged student learning interventions and course-based research experiences, and NSF-supported research shows that these result in improved student outcomes, including retention and persistence.[12]

DUE will provide NSF-wide programmatic leadership for encouraging impactful innovation in the preparation of undergraduates for emerging opportunities in global, interdisciplinary, and data-intensive science. DUE will partner formally with the Division of Human Resource Development (HRD) in the coordination of investments in community college STEM education, as well as undergraduate investment in institutions that serve large numbers of students from groups traditionally underrepresented in STEM.

[11] National Research Council. *Discipline-Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering*. Washington, DC: The National Academies Press, 2012.
[12] Freeman S, et al. (2014) Active learning increases student performance in science, engineering, and mathematics. Proc Natl Acad Sci USA 111(23):8410–8415.

DUE provides administrative leadership for EHR in IUSE, the community college investment portfolio, and in the FC-STEM Interagency Working Group on Undergraduate Education. Additionally, DUE funds a center that leverages the expertise of the Advanced Technological Education grantee community to provide technical support to the Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) program awardees preparing technicians in STEM fields.

FY 2016 Summary

All funding decreases/increases represent change over the FY 2015 Estimate.

Learning and Learning Environments

- ECR: STEM Learning Environments increases $3.64 million to a total of $19.74 million. DUE has leadership for this ECR focus area. The increase will support foundational research and related development for the improvement of STEM learning environments, including cyberlearning, as well as the use of data science to understand and improve learning environments.
- IUSE increases $36.08 million to a total of $120.08 million. This increase will provide support for and build upon FY 2015 collaborations established with BIO, GEO, and ENG to integrate undergraduate education efforts for greater coherence and discipline-specific impact across all NSF directorates in FY 2016. Expert staff in DUE will provide leadership for IUSE NSF-wide. Research and development on learning environments that bring together frontier science, quality experiences with disciplinary practices, and effective instructional strategies will be a focus in IUSE across NSF. Areas of specific interest in FY 2016 include research experiences extending beyond the traditional summer apprenticeship model, interventions to address low success rates in the mathematics courses typically taught in the first two years of college, and strategies to increase widespread implementation of evidence-based teaching practices. For more information regarding IUSE and NSF's undergraduate framework, see the IUSE narrative in the NSF-Wide Investments chapter.
- As part of IUSE, DUE will take leadership for EHR in working with the OIA Evaluation and Assessment Capability in FY 2015 and FY 2016 on implementation of common metrics and outcomes for undergraduate investments NSF-wide, and for possible use in the work of CoSTEM.
- DUE will work with HRD to align IUSE and S-STEM (an H-1B Visa funded program) with the LSAMP program to leverage the strengths of all programs for enhancing persistence of students from low-income and underrepresented groups. This alignment will be informed by a HRD and DUE-funded study by the National Academies on *Barriers and Opportunities in Completing Two or Four Year STEM Degrees.*[13]

STEM Professional Workforce

- The request for ATE is $66.0 million, equal to the FY 2015 Estimate. NOYCE remains consistent with the FY 2015 Estimate level of $60.89 million. ATE and NOYCE activities will include research on effective preparation of advanced technology technicians and teachers. In addition, both programs have emphasis on the preparation of a diverse STEM workforce and will incorporate a broadening participation focus. The FY 2016 I-Corps™ contribution is $1.55 million. The increase in I-Corps™ addresses the growing readiness in the EHR PI community to scale successful research-based educational innovations.

[13] Board on Science Education. *Barriers and Opportunities in Completing Two or Four Year STEM Degrees*. http://sites.nationalacademies.org/DBASSE/BOSE/CurrentProjects/DBASSE_080405

H-1B NONIMMIGRANT PETITIONER FEES

$100,000,000
$0 / 0.0%

In FY 2016, H-1B Nonimmigrant Petitioner Fees are projected to be $100.0 million, equal to the FY 2015 estimate.

H-1B Nonimmigrant Petitioner Fees Funding

(Dollars in Millions)

	FY 2014 Actual	FY 2015 Estimate	FY 2016 Request	Change Over FY 2015 Estimate Amount	Change Over FY 2015 Estimate Percent
H-1B Nonimmigrant Petitioner Fees Funding	$129.41	$100.00	$100.00	-	-

Beginning in FY 1999, Title IV of the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277) established an H-1B Nonimmigrant Petitioner Account in the general fund of the U.S. Treasury for fees collected for each petition for alien nonimmigrant status. That law required that a prescribed percentage of funds in the account be made available to NSF for low-income scholarships; grants for mathematics, engineering, or science enrichment courses; and systemic reform activities. In FY 2005, Public Law 108-447 reauthorized H-1B funding. NSF was provided with 40 percent of the total H-1B receipts collected. Thirty percent of H-1B receipts (75 percent of the receipts that NSF receives) are to be used for a low-income scholarship program, Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM). Ten percent of receipts (25 percent of the receipts that NSF receives) are designated for support of private-public partnerships in K-12 education through Innovative Technology Experiences for Students and Teachers (ITEST).

- **Low-income Scholarship Program: S-STEM**. The S-STEM program provides institutions with funds for student scholarships to encourage and enable academically talented U.S. students demonstrating financial need to enter the STEM workforce or STEM graduate school following completion of an associate, baccalaureate, or graduate degree in fields of science, technology, engineering, or mathematics. The program emphasizes the importance of recruiting students to STEM disciplines, mentoring and supporting students through degree completion, and partnering with employers to facilitate student career placement in the STEM workforce.

  Since its inception, the low-income scholarship program has received nearly 6,500 proposals from all types of colleges and universities and has made awards for 1,354 projects. In addition to scholarships, projects include a coherent ecosystem of student support activities featuring close involvement of faculty, student mentoring, academic support, curriculum development, and recognition of the students. Such activities are important in recruiting and retaining students in high-technology fields through graduation and into employment. In FY 2016, in addition to the long-standing scholarship support, all S-STEM projects will contribute to the knowledge base of scholarly research in education by carrying out research on interventions which affect associate or baccalaureate degree attainment for academically talented U.S. students demonstrating financial need. Because S-STEM projects report much higher retention and graduation rates among their scholarship students than among other STEM majors, it is important to systematically study the reasons for this success. Approximately 85-90 awards are anticipated in FY 2016, with an emphasis on increasing involvement of community colleges, especially Hispanic-serving institutions. S-STEM activities in FY 2016 will leverage efforts in EHR's Division of Undergraduate Education's Improving Undergraduate STEM Education (IUSE) program and EHR's Division of Human Resource Development (HRD) Louis Stokes Alliances for Minority Participation (LSAMP) program to enhance

persistence of students. S-STEM programming and research emphasis will also align with the Division of Graduate Education's NSF Research Traineeship (NRT) program to understand and enhance development of effective learning environments and pathways for scholarship and traineeship students on the continuum from 2-year to 4-year to master's to doctoral degrees.

- **Private-Public Partnerships in K-12: ITEST**. The ITEST program invests in K-12 activities that address the current concern about shortages of STEM professionals and information technology workers in the U.S. and seeks solutions to help ensure the breadth and depth of the STEM workforce. ITEST funds activities for students and teachers that emphasize mathematics, science, and engineering careers, and emphasizes the importance of evaluation and research to understand the impact of such activities. The program supports the development, implementation, testing, and scale-up of models, STEM robotics projects, and research studies to improve the STEM workforce and build a student's capacity to participate in the STEM workforce. The solicitation places emphasis on capturing and establishing a reliable knowledge base about the dispositions toward and knowledge about STEM workforce skills in U.S. students.

  Since its inception, the ITEST program has received 4,387 proposals and funded 335 projects that allow students and teachers to work closely with scientists, engineers, and other STEM professionals on extended research projects ranging from biotechnology to environmental resource management to programming and problem-solving. Projects draw on a wide mix of local resources, including universities, industry, museums, science and technology centers, and school districts in order to identify the characteristics that attract a wide and diverse range of young people to STEM careers, especially those students not successful in traditional school settings. Approximately 20 awards are anticipated in FY 2016.

H-1B Financial Activities from FY 2005 - FY 2014

(Dollars in Millions)

	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
Receipts	**$83.68**	**$105.32**	**$107.36**	**$104.43**	**$88.66**	**$91.22**	**$106.11**	**$128.99**	**$120.94**	**$132.49**
Unobligated Balance start of year	**$29.10**	**$89.58**	**$98.19**	**$63.37**	**$50.83**	**$52.62**	**$50.15**	**$60.93**	**$99.31**	**$104.76**
Appropriation Previously Unavailable (Sequestered)										**$5.10**
Appropriation Currently Unavailable (Sequestered)										**-$9.54**
Obligations incurred:										
Scholarships in Science, Technology, Engineering, and Mathematics[1]	0.54	80.95	100.04	92.40	61.22	75.96	77.67	72.57	83.98	92.18
Systemic Reform Activities	2.72									
Private-Public Partnership in K-12[2]	22.69	18.45	45.90	28.72	27.86	20.85	18.62	21.59	31.51	37.23
Total Obligations	**$25.95**	**$99.40**	**$145.94**	**$121.12**	**$89.08**	**$96.81**	**$96.29**	**$94.16**	**$115.49**	**$129.41**
Unallocated Recoveries					2.20	3.12	0.96	3.55		4.95
Unobligated Balance end of year	**$86.83**	**$95.50**	**$59.61**	**$46.68**	**$52.62**	**$50.15**	**$60.93**	**$99.31**	**$104.76**	**$108.35**

Totals may not add due to rounding.

[1] In FY 2006, the Computer Science, Engineering, and Mathematics Scholarships (CSEMS) was renamed to Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM).

[2] P.L. 108-447 directs that 10 percent of the H-1B Petitioner funds go toward K-12 activities involving private-publice partnerships in a range of areas such as materials development, student externships, math and science teacher professional development, etc.

Scholarships in Science, Technology, Engineering, and Mathematics (S-STEM). The S-STEM program began in 1999 under P.L. 105-277. At this time, the program was named Computer Science, Engineering, and Mathematics Scholarships (CSEMS) and supported grants for scholarships to academically-talented, financially needy students pursuing associate, baccalaureate, or graduate degrees

in computer science, computer technology, engineering, engineering technology, or mathematics. Grantee institutions awarded scholarships of up to $2,500 per year for two years to eligible students.
The CSEMS activity continued under the American Competitiveness in the 21st Century Act (P.L. 106-313) with a prescribed percentage of H-1B receipts (22 percent) which totaled approximately 59.5 percent of the total H-1B funding for NSF. P.L. 106-313 also amended P.L. 105-277 by increasing the maximum scholarship duration to four years and the annual stipend to $3,125.

Under the Consolidated Appropriations Act, 2005 (P.L. 108-447), the prescribed percentage of H-1B receipts available for the low income scholarship program was increased to 30 percent (approximately 75 percent of the total H-1B funding for NSF). Eligibility for the scholarships was expanded from the original fields of computer science, engineering, and mathematics to include "other technology and science programs designated by the Director." The maximum annual scholarship award amount was raised from $3,125 to $10,000. Language also was added allowing NSF to use up to 50 percent of funds "for undergraduate programs for curriculum development, professional and workforce development, and to advance technological education." Because of these changes, the program was renamed in 2006 from Computer Science, Engineering, and Mathematics Scholarships (CSEMS) to S-STEM.

Systemic Reform Activities. Authorized under Title IV of the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277), these funds supplemented the rural systemic reform efforts administered under the former EHR Division of Educational System Reform (ESR).

Private-Public Partnerships in K-12. The American Competitiveness in the 21st Century Act (P.L. 106-313) amended P.L. 105-277 and changed the way petitioner fees were to be expended. P.L. 106-313 directed the remaining 40.5 percent of the total H-1B funding for NSF (15 percent of H-1B receipts) toward K-12 activities involving private-public partnerships in a range of areas such as materials development, student externships, and mathematics and science teacher professional development. The Information Technology Experiences for Students and Teachers (ITEST) program was developed as a partnership activity in K-12 to increase opportunities for students and teachers to learn about, experience, and use information technologies within the context of STEM, including information technology (IT) courses. In FY 2005, P.L. 108-447 reduced the prescribed percentage of H-1B receipts available for private-public partnerships in K-12 to 10 percent (approximately 25 percent of the total H-1B funding for NSF).

Explanation of Carryover

Within the **H-1B Nonimmigrant Petitioner** account, $108.35 million was carried over and consists of $27.09 million for Innovative Technology Experiences for Students and Teachers (ITEST) and $81.26 million for Scholarship in Science, Technology, Engineering, and Mathematics (S-STEM). Since NSF receives the largest payments of H-1B visa fees in August and September, there was insufficient time to obligate the receipts on awards before the end of the fiscal year. These resources will allow both ITEST and S-STEM to support awards through the second quarter of FY 2015.