PROGRAM ACCOUNTS: RESEARCH AND RELATED ACTIVITIES (R&RA) AND EDUCATION AND HUMAN RESOURCES (EHR) **$156,360,000 +$11,490,000 / 7.9%**

Funding from program accounts R&RA and EHR covers approximately 30 percent of the total Organizational Excellence portfolio. Three activities comprise program-funded Organizational Excellence: Intergovernmental Personnel Act costs, Program Related Administration, and Other Organizational Excellence Activities.

R&RA, EHR, and MREFC Organizational Excellence Funding Summary
(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
IPA Costs	**$47.76**	**-**	**$56.34**	**$8.58**	**18.0%**
IPA Compensation	41.75	-	48.40	6.65	15.9%
IPA Per Diem	3.67	-	4.39	0.72	19.7%
IPA Travel	2.35	-	3.55	1.20	51.3%
Program Related Administration	**$88.49**	**-**	**$91.17**	**$2.68**	**3.0%**
Program Related Technology	84.84	-	87.72	2.89	3.4%
Other Program Related Administration	3.66	-	3.45	-0.21	-5.6%
Other Organizational Excellence Activities	**$8.62**	**-**	**$8.85**	**$0.23**	**2.6%**
Major Facilities Admin Reviews and Audits	0.98	-	0.22	-0.76	-77.5%
Evaluation & Assessment Capability (EAC)	3.00	-	3.00	-	-
Public Access Initiative	0.91	-	1.63	0.72	78.9%
Planning & Policy Support	3.73	-	4.00	0.27	7.1%
Total	**$144.88**	**-**	**$156.36**	**$11.49**	**7.9%**

Intergovernmental Personnel Act Costs

A portion of NSF's workforce consists of temporary staff hired through the Intergovernmental Personnel Act (IPA) authority. IPAs remain employees of their home institution while serving at NSF during their temporary appointments. They are not paid directly by NSF and are not subject to federal pay, benefits, or other limitations. NSF reimburses their home institution without overhead. IPAs are eligible to receive relocation expenses or a per diem allowance in lieu of relocation. Per policy released October 2016, NSF is continuing its pilot to require 10 percent cost sharing by the IPA's home institution of the IPA's academic-year salary and fringe benefits.

The agency uses IPA science and engineering staff to help ensure that the Foundation's funding decisions are based on the best input from the field and reflect fresh ideas and creativity. The expertise provided by these IPAs is essential to help shape the NSF research portfolio and support transformational advances across the frontiers of all fields of science, engineering, and education.

IPA Costs by Appropriation
(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
IPA FTE Allocation[1]	198	-	205	7	3.5%
IPA FTE Usage (Actual/Projected)[1]	166	-	205	39	23.6%
Research and Related Activities (R&RA)					
IPA Compensation	$36.49	-	$43.58	$7.09	19.4%
IPA Per Diem	3.11	-	3.93	0.82	26.2%
Travel	2.10	-	3.28	1.18	56.0%
Subtotal, R&RA Costs	**$41.71**	**-**	**$50.79**	**$9.08**	**21.8%**
Education and Human Resources (EHR)					
IPA Compensation	5.26	-	4.82	-0.44	-8.4%
IPA Per Diem	0.55	-	0.46	-0.09	-16.7%
Travel	0.24	-	0.27	0.03	10.6%
Subtotal, EHR Costs	**$6.06**	**-**	**$5.55**	**-$0.51**	**-8.4%**
Total[1]	**$47.76**	**-**	**$56.34**	**$8.58**	**18.0%**

[1] Approximately three IPA FTE in FY 2021 are included in the IPA FTE Allocation and Usage lines of the table above but the costs are budgeted within Other Program Administration and included in the General Planning and Evaluation (P&E) activities section of this narrative.

The FY 2021 funding for IPA costs is $56.34 million representing an IPA usage level of 205 full-time equivalent (FTE) IPAs. R&RA funding for IPAs is $50.79 million supporting 172 IPA FTE. EHR funding for IPAs is $5.55 million supporting 30 IPA FTE. For both R&RA and EHR, per IPA FTE costs are estimated at a level commensurate with the FY 2019 Actual.

The FY 2021 total IPA compensation is $48.40 million, per diem is $4.39 million, and travel is $3.55 million. Funding for these three categories is associated with full use of NSF's increased IPA FTE allocation and projected IPA costs for FY 2021. Cost increases are estimated based on projected IPA FTE utilization, current IPA funding, and the need to provide competitive salaries in order to recruit the best researchers in the STEM fields.

Program Related Administration

Program Related Administration Investments
(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
Program Related Technology	$84.84	-	$87.72	$2.89	3.4%
Other Program Related Administration	3.66	-	3.45	-0.21	-5.6%
Total	**$88.49**	**-**	**$91.17**	**$2.68**	**3.0%**

The FY 2021 Request for Program Related Administration (PRA) is $91.17 million. PRA includes two categories of activities that support NSF Strategic Goal 3: Enhance NSF's performance of its mission,[1] and that are directly funded from NSF's program accounts:

- Program Related Technology (PRT); and
- Other Program Related Administration (Other PRA)

Program Related Technology ($87.72 million)

Information technology (IT) investments funded through the R&RA and EHR accounts support NSF's mission activities and is approximately 79 percent of NSF's total IT investment portfolio. These programmatic investments are called Program Related Technology. NSF's remaining $22.98 million IT investment is funded through the AOAM account and is discussed in the AOAM chapter.

Program Related Technology Investments

(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
Mission-Related Applications & Services	$55.98	-	$55.93	-$0.05	-0.1%
Mission-Related IT Operations & Infrastructure	21.64	-	25.00	3.36	15.5%
Mission-Related Security & Privacy Services	4.98	-	4.75	-0.23	-4.6%
Mission-Related IT Management	2.24	-	2.04	-0.20	-8.8%
Total	**$84.84**	**-**	**$87.72**	**$2.88**	**3.4%**

NSF accomplishes its mission by providing federal financial assistance to individuals and institutions whose proposals have been judged the most promising by a rigorous and objective review process. Each stage in NSF's proposal and award management process is supported electronically. The IT services and systems that support the proposal and review process are funded through the PRT investment, an essential element in our Nation's support for science, engineering, and education research.

NSF's FY 2021 information technology priorities for PRT are strategically aligned with the President's Management Agenda (PMA). The PRT investment will allow NSF to:

- Support the Agency's commitment to "Renewing NSF" with a continued focus on implementing and scaling solutions that will further PMA priorities. This investment allows NSF to:
  - Continue necessary technology transformations geared toward improving the user experience both internally and for citizen-facing websites and digital services. (Cross-Agency Priority (CAP) Goal 4: Improving customer experience with federal services)
  - Continue development and implementation of advanced technologies such as artificial intelligence (AI) and blockchain to support NSF's mission. (CAP Goal 1: Modernize IT to increase productivity and security)
  - Employ innovative and advanced technology capabilities in support of agency priorities, such as to transform the agency's workforce and provide platforms for development and testing of new technology tools and capabilities. (CAP Goal 3: Developing a workforce for the 21st century)
- Maintain the security of NSF's infrastructure to protect and defend agency assets and respond to the ever-evolving threat landscape, prioritizing continued efforts to manage, modernize, and secure agency information systems. (CAP Goal 1: Modernize IT to increase productivity and security)
- Support the continued operation of iTRAK, the Foundation's financial management system, to ensure continued interoperability with NSF's core financial functions. (CAP Goal 2: Leveraging data as a strategic asset)

[1] NSF (2018). Building the Future: Investing in Discovery and Innovation – NSF Strategic Plan for Fiscal Years (FY) 2018-2022. Retrieved from: www.nsf.gov/about/performance/strategic_plan.jsp

- Support the Financial Services Support investment, distinct from the iTRAK investment which supports core financials, to modernize NSF's financial management functions, and increase transparency and accuracy of reporting between NSF's core financial system (iTRAK) and other mission systems. (CAP Goal 2: Leveraging data as a strategic asset)
- Support continued use and refinement of the Technology Business Management (TBM) framework for managing IT as a business. (CAP Goal 10: Improving outcomes through federal IT spending transparency)

Mission-Related Applications and Services ($55.93 million)
Investments in this category fund the applications and services that support the merit review process, including pre-proposal planning; receipt of proposals; processing proposals; reviewing proposals; award decisions, documentation, and notification; funding awards; post-award oversight; dissemination of award results; and award close-out. These investments can be classified as:

- Mission Support Systems, a total of $42.59 million, which supports the following activities:
  - $22.29 million funds the operations and maintenance of NSF's mission support systems, which provide a suite of functionality supporting each stage in the NSF proposal and award management process. Work in this area incorporates ongoing needs for new functionality as it is incrementally deployed for production use
  - $20.30 million for continuous modernization of systems and services that support the merit review process. FY 2021 efforts will continue to prioritize modernization of public-facing digital services, improving experiences for agency customers. Specific investments include:
    - Proposal Management Efficiencies, $10.0 million: This investment prioritizes the continuous modernization of citizen-facing services, introducing new and enhanced functionality while retiring legacy technologies. (CAP Goals 1 and 4)
    - Public Access, $1.26 million: Supports continued use of the NSF Public Access Repository (NSF-PAR) as a controlled platform for integration with third-party services, leveraging application programming interfaces that support machine-to-machine communication to enhance use and discovery and reduce burden on the research community. (CAP Goals 1, 2, and 4)
    - Innovation Management (formerly known as "Make IT Work for Us"), $900,000: Furthers adoption of advanced tools and technologies to support the renewed merit review process. Specifically, NSF will continue efforts to consolidate, integrate, and streamline services through the application of advanced technology such as AI and machine learning, reducing administrative burden on the user. (CAP Goals 3 and 4)
    - Intelligent Automation of Grants Management Systems, $5.44 million: A new initiative in FY 2021, this investment provides for enhancements to IT systems/applications that support the grants management lifecycle, including those related to the Proposal Management Efficiencies investment. Efforts aligned to this initiative include modernization and enhancement releases that will require a significantly larger investment than those typically funded via the operations and maintenance component of Mission Support Systems.
    - Interactive Panel Systems Replacement, $2.70 million: A new modernization effort for FY 2021 to replace the current interactive panel system, which provides reviewers an application for collaborating with fellow panelists to review and rank proposals and recommend those proposals deemed most meritorious.
- NSF's Data Management and Delivery investment, $5.60 million: This activity centralizes and streamlines access to NSF data for agency staff and provides analytical and visualization capabilities key to data-based decision making. This investment will continue to enable NSF to prioritize efforts that support the Leveraging Data as a Strategic Asset (CAP Goal 2).
- Operations and maintenance of NSF's core financial system, iTRAK: The total FY 2021 investment for iTRAK is $6.57 million. Seventy percent of this request, $4.60 million, is funded by PRT and 30

percent is funded by AOAM. (CAP Goal 2)

- Financial services support, $2.24 million: Enables continued progress on account code structure modernization, largely impacting business mission-systems interfacing with iTRAK. (CAP Goal 2)
- Human Resource System Modernization, $900,000: This is a new investment for FY 2021. This activity will upgrade and enhance the existing agency systems for strategic management of human capital and administrative resource management as well as implement the upcoming payroll mandate, NewPay.

Mission-Related IT Operations and Infrastructure ($25.0 million)

The FY 2021 level maintains basic capabilities for the provision of agency services related to network, infrastructure, data center, customer support, and database administration. Investments in this area, supporting CAP Goals 1 and 10, include:

- Network ($7.38 million) – includes NSF's single network, with wired and Wi-Fi connectivity and virtual meeting support for NSF staff and visitors.
- Data Center and Cloud ($4.06 million) – includes the resources necessary to support and monitor access to applications that enable execution of NSF's mission.
- End User ($6.49 million) – funds NSF's help desk services for internal users (NSF staff) and external users (the research community including institutions, principal investigators, reviewers, and NSF visitors), which are available 13 hours per day, five days per week. The FY 2021 funding level also includes the costs necessary to refresh audio-visual equipment used to support virtual collaboration and implement improved services and tools to the agency's customers.
- Platform ($7.07 million) – reflecting NSF's use, management, and acquisition of hyper-converged hardware, software, and services.

Mission-Related Security and Privacy Services ($4.75 million)

Investments in this category support the portion of NSF's IT security program, which provides security and compliance oversight related to NSF's mission support systems. Specifically, this investment covers the mission-related portion of NSF's security operations, including network security, application security, security control testing and tools, automated vulnerability assessment tools, and remediation and intrusion detection services. (CAP Goal 1) At the FY 2021 Request, NSF will continue operations and monitoring support including offerings from the Continuous Diagnostics and Monitoring (CDM) program, as well as automated configuration management tools that manage security patches and provide proactive protection from viruses, spyware, and other threats.

Mission Related IT Management ($2.04 million)

IT Management includes support for the Chief Information Officer and senior IT leadership in the areas of IT strategy and planning, enterprise architecture, capital planning, vendor management, IT budget/finance, and IT strategic communications. In FY 2021, investments in this category will support NSF's continued use and refinement of the TBM framework, further enhancing the agency's ability to manage IT as a business. (CAP Goal 10)

<u>Other Program Related Administration ($3.45 million)</u>

In FY 2021, $3.45 million for NSF's Other PRA includes funding for two Foundation-wide activities:

- NSF support for federal E-Government initiatives that are mission-related.
- General planning and evaluation activities that are Foundation-wide.

Other Program Related Administration

(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
E-Government Initiatives	$1.50	-	$1.37	-$0.13	-8.6%
General Planning & Evaluation Activities	2.16	-	2.08	-0.08	-3.5%
Total	**$3.66**	**-**	**$3.45**	**-$0.21**	**-5.6%**

E-Government Initiatives ($1.37 million)

The FY 2021 Request for NSF program-supported and mission-related E-Government (E-Gov) initiatives is consistent with the FY 2021 funding amounts provided by the initiatives' respective managing partners. The FY 2021 funding level reflects changes for the following initiatives:

- Budget Formulation/Execution line of Business increases nine percent based upon the expected funding level provided by the managing partner.
- Grants.gov decreases approximately one percent based upon the funding algorithm used to determine agency contributions.

General Planning and Evaluation Activities ($2.08 million)

FY 2021 funding for general planning and evaluation activities supports investments on broad programmatic and policy matters of NSF-wide scope and benefit. This includes activities such as the verification and validation of performance information; approximately three IPA FTE in the office of Budget, Finance, and Award Management and the Office of the Director; and certain costs associated with the American Association for the Advancement of Science fellowships program. Also included is $104,020 for interagency management councils that support cross-agency management reforms and efficiencies and $91,782 for Cross-agency Priority (CAP) Goals. The FY 2021 funding level is based on the level of general planning and evaluation activities and projects that occurred in FY 2019 and anticipated activities for FY 2021.

Other Organizational Excellence Activities

Other Organizational Excellence Activities

(Dollars in Millions)

	FY 2019 Actual	FY 2020 (TBD)	FY 2021 Request	Change over FY 2019 Actual Amount	Change over FY 2019 Actual Percent
Major Facilities Admin Reviews & Audits	$0.98	-	$0.22	-$0.76	-77.5%
Evaluation & Assessment Capability (EAC)	3.00	-	3.00	-	-
Public Access Initiative	0.91	-	1.63	0.72	78.9%
Planning & Policy Support	3.73	-	4.00	0.27	7.1%
Total	**$8.62**	**-**	**$8.85**	**$0.23**	**2.6%**

Major Facilities Administrative Reviews and Audits

In FY 2021, NSF currently anticipates an administrative review/audit for the National Ecological Observatory Network facility to include funding from BIO in the R&RA account. The estimate is based on the Annual Major Facilities Portfolio Risk Assessment conducted by BFA staff in close coordination with the cognizant program. Besides risk, this annual assessment also considers event-driven oversight activities per NSF policy, which are based on the American Innovation and Competitiveness Act (AICA). The current estimate is subject to revision based on the FY 2020 Portfolio Risk Assessment.

Evaluation and Assessment Capability (EAC) ($3.0 million)
EAC is an integral part of NSF's operations. It supports, coordinates, and conducts NSF-wide program evaluations and evidence generation and utilization to catalyze learning and improvement through collaboration with NSF's directorates and offices. EAC is an organizational unit managed by the Office of Integrative Activities (OIA) and funded via the IA budget in the R&RA account. More detailed information on EAC can be found within the IA narrative in the R&RA chapter.

Public Access Initiative ($1.63 million)
The goal of the NSF Public Access Initiative is to make the results of NSF-funded research available to the greatest extent possible, pursuant to the memorandum on Increasing Access to the Results of Federally Funded Scientific Research, released by the Office of Science and Technology Policy (OSTP) on February 22, 2013, and consistent with NSF's mission and long-standing policies supporting data sharing. It enables greater transparency and more access by more people to the results of NSF-funded research, and provides secure, predictable, and integrated management of publications, data, and other research products resulting from NSF funding. The Public Access Initiative is managed and funded through CISE in the R&RA account.

Planning and Policy Support ($4.0 million)
Planning and Policy Support is a foundation-wide activity in the IA budget of the R&RA account that supports select NSF-wide policy and planning activities. More detailed information on Planning and Policy Support can be found within the IA narrative in the R&RA chapter.