

MID-SCALE RESEARCH INFRASTRUCTURE (MID-SCALE RI)

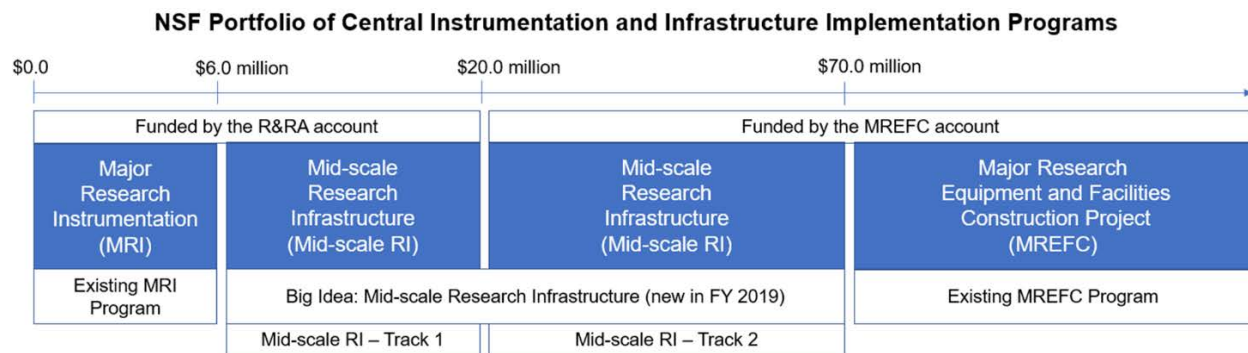
Mid-scale RI Funding (Dollars in Millions)			
	FY 2018	FY 2019	FY 2020
	Actual	(TBD)	Request
MREFC	-	-	\$45.00
R&RA (IA)	-	-	30.00
Total	-	-	\$75.00

Overview

Mid-scale Research Infrastructure (Mid-scale RI) is an NSF-wide effort to meet the research community’s needs for modern research infrastructure to support exciting science and engineering research. Mid-scale RI is an “enabling” Big Idea to implement agile mechanisms for funding experimental research capabilities costing between \$6.0 million and \$70.0 million. The objective is to transform individual scientific and engineering research fields with new infrastructure, while simultaneously training early-career researchers in the development, design, construction, and use of cutting-edge infrastructure.

The scientific importance of mid-scale research infrastructure is reflected in the 2017 American Innovation and Competitiveness Act (AICA), which directed NSF to “evaluate the existing and future needs, across all disciplines supported by the Foundation, for mid-scale projects.” Responding to Congress, the National Science Board report, “Bridging the Gap: Building a Sustained Approach to Mid-scale Research Infrastructure and Cyberinfrastructure at NSF”,¹ highlights that:

“The research community has identified mid-scale research infrastructure as a key enabler of scientific advances on shorter timescales than required for the larger projects funded within the MREFC account. ... Infrastructure investments at the required mid-level can also help maintain the United States’ standing among global partners and competitors.”



This graphic shows NSF-wide instrumentation and infrastructure programs. Information presented here focuses on the programs, Mid-scale RI - Track 1 (Mid-scale RI-1) and Mid-scale RI - Track 2 (Mid-scale RI-2) that constitute the Mid-scale RI Big Idea. Information on the complementary Major Research Instrumentation (MRI) program may be found in the Integrative Activities (IA) narrative, while information on the MREFC program may be found in the MREFC chapter. Combined, Mid-scale RI-1 and Mid-scale RI-2 support the implementation of research infrastructure at scales that are above what is possible through the MRI program and below what has been funded through the MREFC account. Mid-scale RI-2 awards

¹ www.nsf.gov/nsb/publications/2018/NSB-2018-40-Midscale-Research-Infrastructure-Report-to-Congress-Oct2018.pdf

are distinguished from Mid-scale RI-1 awards by the scale, risks and consequent oversight mechanisms associated with the projects.

These two tracks are programs that have a strong scientific heritage within NSF and the community. The Mid-scale RI-1 program builds on the knowledge gained through NSF's stewardship of the MRI program. The new Mid-scale RI-2 program, funded through MREFC, builds on NSF's expertise in working with the research community to develop and implement large-scale, complex research infrastructure projects. Both programs will use lessons learned from past and existing infrastructure programs in individual directorates such as Next Generation Networks for Neuroscience in BIO, the Mid-Scale Innovations Program in MPS' Division of Astronomical Sciences, and Materials Innovation Platforms in MPS' Division of Materials Research.

Goals

1. Provide access to cutting-edge mid-scale research infrastructure, including instrumentation.
2. Enable agile development and implementation of frontier scientific and engineering research infrastructure with a high potential to significantly advance the Nation's research capabilities.
3. Train early-career scientists and engineers in the development and use of advanced research infrastructure that will enable them to make substantive scientific contributions and to envision and realize the larger-scale infrastructure that will transform entire disciplines.

FY 2020 Investments

The FY 2020 Request for Mid-scale RI is \$75.0 million, which is to be split between two separate programs, Mid-scale RI-1 (\$30.0 million) and Mid-scale RI-2 (\$45.0 million). Mid-scale RI-1 will be funded through the R&RA account, and Mid-scale RI-2 will be funded through the MREFC account. Both programs address all three goals listed above.

In fall 2018, NSF issued two Mid-scale RI funding opportunities. One solicitation (Mid-scale RI-1, NSF-19-537)² includes an opportunity to propose Mid-scale RI projects with a total NSF project cost between \$6.0 million and \$20.0 million, while a second (Mid-scale RI-2, NSF-19-542)³ includes an opportunity to propose projects with a total NSF cost between \$20.0 million and \$70.0 million. The resulting awards will be made in FY 2019 and FY 2020. Over the course of the two years, the anticipated number of awards is three to ten for Mid-scale RI-1 and four to six for Mid-scale RI-2.

² www.nsf.gov/pubs/2019/nsf19537/nsf19537.htm

³ www.nsf.gov/pubs/2019/nsf19542/nsf19542.htm