## Performance Audit of Mid-Scale Research Infrastructure Incurred Costs – The Ohio State University

REPORT PREPARED BY COTTON & COMPANY ASSURANCE AND ADVISORY, LLC

NATIONAL SCIENCE FOUNDATION OFFICE OF INSPECTOR GENERAL

June 23, 2023 OIG 23-1-007





## AT A GLANCE

Performance Audit of Mid-Scale Research Infrastructure Incurred Costs – The Ohio State University Report No. OIG 23-1-007 June 23, 2023

## AUDIT OBJECTIVE

The National Science Foundation Office of Inspector General engaged Cotton & Company Assurance and Advisory, LLC (C&C) to conduct a performance audit of The Ohio State University's (OSU) Midscale Research Infrastructure award. The auditors tested more than \$5.27 million of the approximately \$5.34 million of costs claimed to NSF. The audit objective was to evaluate OSU's award management and oversight capabilities as they relate to the Mid-scale program requirements on NSF Award No.

## AUDIT RESULTS

The report highlights that OSU has generally complied with federal and NSF regulations, NSF program and award terms and conditions, and OSU policies while administering its Mid-scale award. However, the report identified three findings and one area for improvement related to OSU's compliance with award requirements. The auditors questioned \$960 of unallowable expenses and identified two compliance-related findings for which no costs were questioned: Award Cash Management \$ervice (ACM\$) drawdowns exceeded award expenses and non-compliance with Mid-scale reporting policy. In addition to the findings, the report also includes one area for improvement related to NSF's Project Execution Plan development. C&C is responsible for the attached report and the conclusions expressed in it. NSF OIG does not express any opinion on the conclusions presented in C&C's audit report.

## RECOMMENDATIONS

The auditors included three findings and one area for improvement in the report with associated recommendations for NSF to resolve the questioned costs and to ensure OSU strengthens administrative and management controls.

## AUDITEE RESPONSE

OSU concurred with all of the findings in the report, agreeing to reimburse NSF for \$960 in questioned costs. OSU's response is attached in its entirety as Appendix A.

FOR FURTHER INFORMATION, CONTACT US AT OIGPUBLICAFFAIRS@NSF.GOV.



National Science Foundation • Office of Inspector General 2415 Eisenhower Avenue, Alexandria, Virginia 22314

#### MEMORANDUM

DATE:	June 23, 2023
то:	Quadira Dantro Director Division of Institution and Award Support
	Jamie French Director Division of Grants and Agreements
FROM:	Mark Bell Assistant Inspector General Office of Audits

**SUBJECT:** Audit Report No. 23-1-007, The Ohio State University

This memorandum transmits the Cotton & Company Assurance and Advisory, LLC (C&C) report for the audit of The Ohio State University's (OSU) Mid-scale Research Infrastructure award. The audit encompassed more than \$5.27 million of the approximately \$5.34 million of costs claimed to NSF during the period. The audit objective was to evaluate OSU's award management and oversight capabilities as they relate to the Mid-scale program requirements on NSF Award No. A full description of the audit's objectives, scope, and methodology is attached to the report as Appendix B.

Please coordinate with our office during the 6-month resolution period, as specified by OMB Circular A-50, to develop a mutually agreeable resolution of the audit findings. The findings should not be closed until NSF determines that all recommendations have been adequately addressed and the proposed corrective actions have been satisfactorily implemented.

#### **OIG Oversight of the Audit**

C&C is responsible for the attached auditors' report and the conclusions expressed in this report. We do not express any opinion on the conclusions presented in C&C's audit report. To fulfill our responsibilities, we:

- reviewed C&C's approach and planning of the audit;
- evaluated the qualifications and independence of the auditors;
- monitored the progress of the audit at key points;
- coordinated periodic meetings with C&C, as necessary, to discuss audit progress, findings, and recommendations;
- reviewed the audit report prepared by C&C; and
- coordinated issuance of the audit report.

We thank your staff for the assistance that was extended to the auditors during this audit. If you have any questions regarding this report, please contact Billy McCain at 703.292.7100 or <u>OIGpublicaffairs@nsf.gov</u>.

#### Attachment

cc: Stephen Willard, Dan Reed, Victor McCrary, John Veysey, Ann Bushmiller, Karen Marrongelle, Teresa Grancorvitz, Christina Sarris, Janis Coughlin-Piester, Alex Wynnyk, Rochelle Ray, Charlotte Grant-Cobb, Allison Lerner, Lisa Vonder Haar, Ken Chason, Dan Buchtel, Ken Lish, Billy McCain, Jennifer Kendrick, Louise Nelson, Karen Scott

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## **EXECUTIVE SUMMARY**

The Cotton & Company Assurance and Advisory, LLC, audit team determined that The Ohio State University (OSU) has generally complied with federal and NSF regulations, NSF program and award terms and conditions, and OSU policies while administering its Mid-scale Research Infrastructure (Mid-scale RI-1) award. However, the audit team identified three findings and one area for improvement related to OSU's compliance with Mid-scale RI-1 award requirements.

#### **AUDIT OBJECTIVES**

The National Science Foundation Office of Inspector General engaged Cotton & Company Assurance and Advisory, LLC (herein referred to as "we"), to conduct a performance audit of costs OSU incurred on NSF from the award's inception date Award No. through September 30, 2022. The audit objectives included evaluating OSU's award management and oversight capabilities as they relate to the Mid-scale RI-1 award and general grant management requirements. The audit scope also included performing testing to determine if costs claimed on the NSF award were allowable, allocable, reasonable, and in compliance with relevant federal and NSF regulations. We have attached a full description of the audit's objectives, scope, and methodology as Appendix B.

#### AUDIT CRITERIA

The audit team assessed OSU's compliance with relevant federal regulations (i.e., 2 Code of Federal Regulations [CFR] 200); NSF Proposal and Award Policies and Procedures Guides (PAPPGs) 19-1 and 20-1; NSF's Mid-scale RI-1 Program Solicitation (NSF 19-537), NSF's *Major Facilities Guide* (MFG) (NSF 19-68), NSF's *Research Infrastructure Guide* (RIG) (NSF 21-107), and OSU policies and procedures. The audit team included references to relevant criteria within each finding and defined key terms within the Glossary located in <u>Appendix E</u>.

We conducted this performance audit in accordance with *Generally Accepted Government Auditing Standards* (GAGAS) issued by the Comptroller General of the United States.

#### **AUDIT FINDINGS**

As summarized in <u>Appendix C</u>, the auditors identified and questioned \$960 in direct costs OSU inappropriately claimed during the audit period, including:

• \$960 in unallowable administrative fees

The audit report also includes two compliancerelated findings for which the auditors did not question any costs:

- Award Cash Management \$ervice (ACM\$) drawdowns exceeded award expenses
- Non-compliance with Mid-scale reporting policy

In addition to the three findings, the audit report includes one area for improvement for OSU to consider related to:

• Project Execution Plan (PEP) development

#### **Recommendations**

The audit report includes five recommendations for NSF's Director of the Division of Institution and Award Support and one consideration for NSF's Office Head of the Research Infrastructure Office related to resolving the \$960 in questioned costs and ensuring OSU strengthens its award management environment, as summarized in <u>Appendix D</u>.

#### AUDITEE RESPONSE

OSU agreed with each of the findings in the audit report and agreed to reimburse NSF for the \$960 in questioned costs. OSU's response to the audit report is attached, in its entirety, as <u>Appendix A</u>.

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#### Abbreviations

ACM\$	Award Cash Management \$ervice
CFR	Code of Federal Regulations
GAGAS	Generally Accepted Government Auditing Standards
GAO	Government Accountability Office
FDC	Facilities Design and Construction
FOD	Facilities Operations and Development
FY	Fiscal Year
MFG	Major Facilities Guide
NMR	Nuclear Magnetic Resonance
NSF	National Science Foundation
OIG	Office of Inspector General
OSU	The Ohio State University
PAPPG	Proposal and Award Policies and Procedures Guide
PEP	Project Execution Plan
PI	Principal Investigator
POP	Period of Performance
R&D	Research and Development
RI	Research Infrastructure
RIG	Research Infrastructure Guide

#### BACKGROUND

The National Science Foundation is an independent federal agency created "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes" (Pub. L. No. 81-507). NSF funds research and education in science and engineering by awarding grants and contracts to educational and research institutions throughout the United States.

In 2019 NSF began awarding grants under its new Mid-scale <u>Research Infrastructure (RI)</u> Program, which was designed to provide NSF with an agile process for funding experimental research capabilities in the Mid-scale range.<sup>1</sup> The Mid-scale RI Program provides award funding through two tracks: Mid-scale Research Infrastructure 1 (<u>Midscale RI-1</u>) and Mid-scale Research Infrastructure 2 (<u>Mid-scale RI-2</u>). Specifically, Midscale RI-1 awards support the implementation or design stage of an RI project and Midscale RI-2 awards support the implementation stage of an RI project.<sup>2</sup>

Most federal agencies have an Office of Inspector General that provides independent oversight of the agency's programs and operations. Part of NSF OIG's mission is to conduct audits and investigations to prevent and detect fraud, waste, and abuse. In support of this mission, NSF OIG may conduct independent and objective audits, investigations, and other reviews to promote the economy, efficiency, and effectiveness of NSF programs and operations, as well as to safeguard their integrity. NSF OIG may also hire a contractor to provide these audit services.

NSF OIG engaged Cotton & Company Assurance and Advisory, LLC (herein referred to as "we"), to conduct a performance audit of costs The Ohio State University (OSU) incurred on a single Mid-scale RI-1 award: NSF Award No. This \$17.6 million NSF award, titled " " was awarded in September 2019 to allow OSU to acquire, install, and operate a state-of-the-art ultrahigh field 1.2 GHz nuclear magnetic resonance (NMR) spectrometer at the National Gateway Ultrahigh Field NMR Center.

OSU is a public land-grant university located in Columbus, OH. In fiscal year (FY) 2021, OSU reported approximately \$436 million in federal expenditures within its <u>Research and</u> <u>Development (R&D) Cluster</u>, with approximately \$48.7 million received from direct and pass-through NSF awards, as illustrated in Figure 1.

<sup>&</sup>lt;sup>1</sup> Per NSF's *Major Facilities Guide* (MFG) (NSF 19-68) and *Research Infrastructure Guide* (RIG) (21-107), a midscale project means research instrumentation, <u>equipment</u>, and upgrades to major research facilities or other research infrastructure investments that exceeds the maximum funded by the Major Research Instrumentation Program and are below that of a major multi-user research facility project.

<sup>&</sup>lt;sup>2</sup> Per NSF 19-537 and NSF 19-542, the implementation track is intended to facilitate the acquisition or construction, and the design track is intended to facilitate progress toward readiness, for a mid-scale range implementation project.

#### Figure 1: OSU's FY 2021 R&D Cluster Federal Expenditures



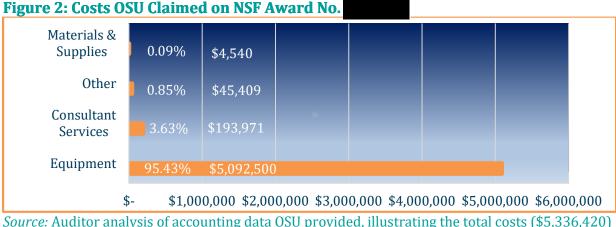
*Source*: The chart data is available on the Ohio Auditor of State website (https://ohioauditor.gov/auditsearch/Reports/2022/Ohio State University 2021-Franklin FINAL.pdf). The photo is publicly available on OSU's website (https://ngsp.osu.edu/prospective-students/ohio-state-university).

#### **AUDIT SCOPE**

This performance audit—conducted under Order No. 140D0422F0868—was designed to meet the objectives identified in the Objectives, Scope, and Methodology section of this report (<u>Appendix B</u>) and was conducted in accordance with *Generally Accepted Government Auditing Standards* (GAGAS), issued by the Comptroller General of the United States.

The objectives of this performance audit included evaluating OSU's award management and oversight capabilities as they relate to the Mid-Scale RI-1 award and determining whether OSU complied with relevant NSF RI-1 award requirements, such as developing a Project Execution Plan (PEP). This audit also involved determining if costs OSU claimed through NSF's Award Cash Management \$ervice (ACM\$) from the award's inception date through September 30, 2022, were allocable, allowable, and reasonable, and in compliance with NSF award terms and conditions, applicable federal financial assistance requirements, and organizational policies. <u>Appendix B</u> provides detailed information regarding the audit objectives, scope, and methodology used for this engagement.

As illustrated in Figure 2, OSU provided general ledger data to support the \$5.3 million in expenses it claimed on the sampled NSF award from the award's inception date through September 30, 2022.



by expense type, to support costs incurred on NSF awards during the audit period.

We judgmentally selected 15 transactions totaling \$5,271,941<sup>3</sup> (see Table 1) and evaluated supporting documentation to determine whether the costs claimed on the NSF awards were allocable, allowable, and reasonable, and whether they were in conformity with NSF award terms and conditions, organizational policies, and applicable federal financial assistance requirements.

Table 1. Summary of Selected Transactions							
Budget Category	Transaction Count	Expense Amount					
Equipment	1	\$5,092,500					
Consultant Services	12	129,932					
Other	1	45,408					
Materials and Supplies	1	4,101					
Total	<u>15</u>	<u>\$5,271,941</u>					

#### Table 1: Summary of Selected Transactions

Source: Auditor summary of selected transactions.

We also performed non-transaction-based testing to determine whether the Mid-scale RI-1 PEP OSU submitted for this award covered all required components and whether OSU appropriately estimated the full lifecycle cost for the project in a manner consistent with relevant NSF program guidance.

#### **AUDIT RESULTS**

We identified and questioned \$960 in costs OSU charged to NSF Award No. We also identified exceptions related to OSU's programmatic and financial reporting on NSF Award No. We that did not result in **<u>questioned costs</u>**, but did result in noncompliance with federal, NSF, and/or OSU policies and procedures. See Table 2 for a summary of questioned costs by finding area, <u>Appendix C</u> for a summary of questioned costs by SF award, and <u>Appendix D</u> for a summary of all recommendations.

<sup>&</sup>lt;sup>3</sup> The \$5,271,941 represents the total value of the 15 transactions selected for transaction-based testing. It does not represent the dollar base of the total costs reviewed during the audit.

#### **Table 2: Summary of Questioned Costs by Finding Area**

Finding Description	Questioned Costs
Unallowable Administrative Fees	\$960
ACM\$ Drawdowns Exceeded Award Expenses	-
Non-Compliance with Mid-Scale Reporting Policy	-
Total	<u>\$960</u>

Source: Auditor summary of findings identified.

We made five recommendations for NSF's Director of the Division of Institution and Award Support related to resolving the \$960 in questioned costs and ensuring OSU strengthens its administrative and management policies and procedures for monitoring federal funds and administering its Mid-scale RI-1 award.

We also identified two areas where OSU could consider improving its controls to ensure future compliance with RI-1 Program requirements and made one suggestion related to an **area for improvement** included for OSU's consideration.

We communicated the results of our audit and the related findings, area for improvement, recommendations, and consideration to OSU and NSF OIG. We included OSU's response to this report in its entirety in <u>Appendix A</u>.

#### FINDING 1: UNALLOWABLE ADMINISTRATIVE FEES

OSU charged NSF Award No. a total of \$960 in administrative fees that it did not support were allowable per federal regulations<sup>4</sup> or the NSF <u>Proposal and Award Policies</u> and Procedures Guide (PAPPG).<sup>5</sup>

Specifically, in December 2020 OSU's Facilities Operations and Development (FOD) Department<sup>6</sup> assessed \$960 in administrative fees on \$44,448 invoiced by a contractor that provided electrical services charged to NSF Award No. Although the FOD Department did provide *Facilities Design and Construction (FDC)*<sup>7</sup> *Project Management Fee Guidelines* to support the application of the administrative fees, it did not provide support for how the fees were developed or how it determined that the fees were reasonable and allowable on the NSF award. Further, OSU did not support that the administrative fees were applied consistent with the *FDC Project Management Fee Guidelines*.<sup>8</sup>

<sup>&</sup>lt;sup>4</sup> Per 2 Code of Federal Regulations (CFR) §200.403, *Factors affecting allowability of costs*, for a cost to be allowable under a federal award it must be necessary and reasonable for the performance of the award, be consistent with policies and procedures, and be adequately documented.

<sup>&</sup>lt;sup>5</sup> Per NSF PAPPG 20-1, Part II, Chapter X, Section A, *Basic Considerations*, expenditures under NSF cost reimbursement grants are governed by federal cost principles. Further, NSF PAPPG 20-1, Part II, Chapter X, Section E, *Fee Payments under NSF Grants*, states that payment of fees (profit) is allowable only if expressly authorized by the solicitation and the terms and conditions of the NSF award.

<sup>&</sup>lt;sup>6</sup> As OSU's FOD Department oversees campus construction, it is responsible for managing the renovation of the laboratory the NMR machine will be installed within.

<sup>&</sup>lt;sup>7</sup> The FDC is an office within the FOD Department.

<sup>&</sup>lt;sup>8</sup> The *FDC Project Management Fee Guidelines* state that a \$500 project planning fee and a 2 percent project fee will be assessed on local funded projects.

#### Conclusion

OSU's sponsored programs office did not have adequate procedures or internal controls in place to ensure that costs OSU's FOD Department charged were allowable on federal awards or charged consistently with FDC's guidelines. Further, the FOD Department did not maintain adequate documentation to provide support that it appropriately assessed administrative fees.

As OSU did not support that the administrative fees applied to the award were allowable or charged to the award consistent with its internal policies, we are questioning the \$960 in administrative fees charged to the NSF award.

NSF			Questioned Costs				
Award No.	Description	Fiscal Year(s)	Direct	Indirect	Total	OSU Agreed to Reimburse	
	Unallowable Administrative Fees	2021	\$960	\$0	\$960	\$960	
Total			<u>\$960</u>	<u>\$0</u>	<u>\$960</u>	<u>\$960</u>	

#### Table 3: Finding 1 Summary: Unallowable Administrative Fees

*Source:* Auditor summary of identified exception.

#### Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

- 1.1. Direct OSU to provide documentation supporting that it has repaid or otherwise credited the \$960 in questioned administrative costs for which it has agreed to reimburse NSF.
- 1.2. Direct OSU to no longer apply administrative fees to construction activities charged to NSF awards or update its project administration fee guidelines to support how the local administrative fee amount was determined to be reasonable and allowable on the NSF award.
- 1.3. Direct OSU to strengthen the processes and procedures it has in place to ensure its Facilities Operations and Development Department applies administrative fees in a manner consistent with its established guidelines.

**Ohio State University Response:** OSU agreed to reimburse NSF for the \$960 in questioned costs and to strengthen its controls to ensure administrative fees are appropriately charged to sponsored projects in the future.

Auditors' Additional Comments: Our position regarding this finding has not changed.

#### FINDING 2: ACM\$ DRAWDOWNS EXCEEDED AWARD EXPENSES

OSU did not limit its ACM\$ drawdowns to be as close as administratively feasible to its cash disbursements as required per federal regulations<sup>9</sup> and NSF PAPPGs.<sup>10</sup>

On January 9, 2020, OSU drew \$5,694,702 in funding for NSF Award No. **Sector** in ACM\$ before its general ledger supported incurrence of any expenses on the NSF award. As a result, OSU's cash-on-hand exceeded its cash disbursements until it corrected this error in its next ACM\$ draw in February 2020, as illustrated in Table 4:

ACM\$1	Draw Date	Cash Drawdown per ACM\$	Expenses per OSU's General Ledger	Amount that Exceeded OSU's Immediate Cash Needs
Janua	ry 9, 2020	\$5,694,702	\$0	\$5,694,702
Februa	ry 24, 2020	(602,202)	5,092,500	0

#### Table 4: January and February 2020 ACM\$ Cash Draws and OSU Expenses

*Source:* Auditor summary of OSU's total cash drawdown per NSF's ACM\$ system and the total expenses supported by OSU's general ledger data as of the ACM\$ drawdown dates.

OSU noted that this discrepancy was caused by its prior financial accounting system creating a billable expense for invoices it had placed on hold. Specifically, OSU noted that although it had placed incorrect invoices it received from a supplier on hold to prevent a payment from being made, the system inappropriately created expenses to be billed in ACM\$.

#### Conclusion

As OSU corrected this error within its February 2020 ACM\$ drawdown, we are not questioning any costs associated with this exception; however, because OSU's January 2020 drawdown was not made in a manner consistent with federal regulations or NSF policies, we are noting a compliance exception.

#### Table 5: Finding 2 Summary: ACM\$ Drawdowns Exceeded Award Expenses

NSF Award No.	Compliance Exception Identified	Fiscal Year(s)
	January 2020 Inappropriate ACM\$ Drawdown	2020

*Source:* Auditor summary of identified exception.

<sup>&</sup>lt;sup>9</sup> Per 2 CFR § 200.305, *Payment*, (b)(1) the timing and amount of advance payments must be as close as administratively feasible to the actual disbursements by the non-federal entity.

<sup>&</sup>lt;sup>10</sup> Per NSF PAPPG 19-1 Part I, Chapter VII, Section C.2.a, *Timing of Payments*, the timing and amount of advance payments must be as close as administratively feasible to the actual disbursements by the grantee for direct program or project costs and the proportionate share of any allowable indirect costs.

#### Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

2.1. Direct OSU to provide support that its new accounting system does not create expenses that will be billed to NSF for invoices that OSU has placed on hold.

**Ohio State University Response:** OSU agreed with this finding and noted that within its new financial accounting system, all supplier invoices must go through a settlement process prior to being billed to NSF.

Auditors' Additional Comments: Our position regarding this finding has not changed.

#### FINDING 3: NON-COMPLIANCE WITH MID-SCALE REPORTING POLICY

OSU did not submit its annual project reports for NSF Award No. **The second second** at least 90 days prior to the end of the budget period, as required per the NSF RI-1 Program Solicitation.<sup>11</sup> Specifically, OSU did not submit any of the three annual reports due within our audit **period of performance** (POP) by the report due dates, as illustrated in Table 6:

#### Table 6: Annual Mid-Scale RI-1 Reports Not Submitted Timely

Reporting Period	Report Due Date	Report Submission Date	Days Late
October 1, 2019 – September 30, 2020	July 2, 2020	July 25, 2020	23
October 1, 2020 – September 30, 2021	July 2, 2021	August 10, 2021	39
October 1, 2021 – September 30, 2022	July 2, 2022	September 23, 2022	83

Source: Auditor summary of identified exceptions.

OSU did not have adequate oversight or proper monitoring controls in place to verify that RI-1 programmatic reports were submitted in a manner consistent with the NSF Program Solicitation; rather, it relied on Principal Investigators (PIs) to submit annual reports by the due dates.

#### Conclusion

Because these instances of non-compliance did not directly result in OSU charging unallowable costs to the NSF award, we are not questioning any costs related to these exceptions; however, we are noting compliance exceptions for the three instances in which OSU did not submit the annual reports by the due dates required per the NSF Program Solicitation, as illustrated in Table 7.

<sup>&</sup>lt;sup>11</sup> Per the Mid-scale RI-1 Program Solicitation (NSF 19-537), Section VII.C., *Reporting Requirements*, the PI must submit an annual project report to the cognizant Program Officer no later than 90 days prior to the end of the current budget period.

NSF Award No.	Compliance Exception Identified	Fiscal Year(s)
	2019 – 2020 RI-1 Annual Report Not Submitted Timely	2021
	2020 – 2021 RI-1 Annual Report Not Submitted Timely	2022
	2021 – 2022 RI-1 Annual Report Not Submitted Timely	2023

#### Table 7: Finding 3 Summary: Non-Compliance with Mid-Scale Reporting Policy

*Source:* Auditor summary of identified exceptions.

#### Recommendations

We recommend that NSF's Director of the Division of Institution and Award Support:

3.1. Direct OSU to implement controls that ensure that Mid-scale Program annual reports are submitted on a timely basis, as required per the Research Infrastructure-1 Program Solicitation.

**Ohio State University Response:** OSU agreed with this finding and noted that it has established tasks within its new financial system that identify upcoming report due dates.

Auditors' Additional Comments: Our position regarding this finding has not changed.

#### **AREA FOR IMPROVEMENT 1: PEP COMPLIANCE**

The PEP that OSU has submitted —and updated—for NSF Award No. **Contain** does not contain all the information recommended per NSF's *Major Facilities Guide* (MFG) or its *Research Infrastructure Guide* (RIG),<sup>12</sup> which replaced the MFG in December 2021. Specifically, although both guides state that awardees' PEPs should include the 38 subtopics identified in Table 3.4.1, which represent the minimum PEP components required for Mid-scale RI-1 projects,<sup>13</sup> OSU's PEP did not include all of these elements, nor did OSU prove a justification as to why it did not include these elements.

#### **OSU's PEPs Did Not Include All Recommended Elements**

OSU's PEPs did not include 1 of the 38 recommended subtopics. Specifically:

• OSU's PEP did not include a Facility Divestment Plan [1.5]<sup>14</sup>

<sup>&</sup>lt;sup>12</sup> NSF's MFG and RIG contain NSF policy on the planning and management of major facilities and Mid-scale projects through their full lifecycle.

<sup>&</sup>lt;sup>13</sup> Per the *Guidance for Mid-Scale Research Infrastructure Projects* section of the MFG and RIG, *Programmatic Deliverables*, the following list provides the minimum required components of the PEP for a Mid-scale project: 1. Introduction; 2. Organization; 4. Construction Project Definition; 6. Risk and Opportunity Management; 8. Configuration Control; 9. Acquisitions; 10. Project Management Controls; 12. Cyber-Infrastructure; and 13. Commissioning, including Concept of Operations.

<sup>&</sup>lt;sup>14</sup> Per Table 3.4.1 in the MFG and RIG, subtopic 1.5, *Facility Divestment Plan*, the PEP should include a description of plans and estimate of divestment liabilities at the end of facility life for transfer, demolition, site remediation, decontamination, and others, where appropriate.

#### **OSU's PEPs Were Not Sufficiently Detailed**

The information that OSU included within its PEP for 4 of the 38 recommended subtopics was not consistent with the requirements outlined the MFG or RIG. Specifically:

- External Organization and Communication [2.2]. This section did not include visual or other information that could be used to identify the external project's organizational and governance structures described in this subsection's requirements.<sup>15</sup>
- **Community Relations and Outreach [2.5].** This section did not include the description of scientific and educational outreach programs described in this subsection's requirements.<sup>16</sup>
- **Cost Book, Cost Model Data Set, and Basis of Estimate [4.7].** This section did not include a formal cost book, nor did it support creation of a cost model data set to be used as input to software tools or project reports, as described in this subsection's requirements.<sup>17</sup> Further, OSU's basis of cost estimate was not developed in accordance with the best practices outlined in the Government Accountability Office (GAO) *Cost Estimating and Assessment Guide*, as recommended.<sup>18</sup>
- Schedule Contingency [4.10]. This section did not include the schedule contingency amounts, a method of calculating contingency, or a confidence level for meeting the project end date described in this subsection's requirements.<sup>19</sup>

#### Conclusion

OSU's PEP did not include all of the recommended elements or provide a justification for why OSU did not include the missing elements. Because the NSF MFG and RIG only state that awardees should include these items in their PEPs, and because NSF approved OSU's PEP, we did not note any findings related to the missing elements. However, because these

<sup>&</sup>lt;sup>15</sup> Per Table 3.4.1 in the MFG and RIG, subtopic 2.2, *External Organization and Communication*, this section of the PEP should include an External Project Organizational Structure and Governance section, showing clear lines of authority, responsibility, and communication between internal and institutional governance and oversight and advisory committees.

 <sup>&</sup>lt;sup>16</sup> Per Table 3.4.1 in the MFG and RIG, subtopic 2.5, *Community Relations and Outreach*, this section of the PEP should include community relations and outreach plans for building and maintaining effective relationships with the broader research community and a description of scientific and educational outreach programs.
 <sup>17</sup> Per Table 3.4.1 in the MFG and RIG, subtopic 4.7, *Cost Book, Cost Model Data Set and Basis of Estimate*, this section of the PEP should include: (i) a cost book, which is a comprehensive and well-documented compilation of Cost Book Sheets for the total project cost; (ii) a cost model data set used as input to software tools and/or project reports to organize and calculate different project management information; and (iii) a basis of estimate, which provides supporting documentation outlining the details used in establishing project estimates.

<sup>&</sup>lt;sup>18</sup> Per the *Guidance for Mid-Scale Research Infrastructure Projects* section of the MFG and RIG, budgets should be supported by well-documented basis of estimates developed in accordance with the best practices and 12 steps outlined in the GAO *Cost Estimating and Assessment Guide* to meet the four characteristics of a highquality estimate: well-documented, comprehensive, accurate, and credible.

<sup>&</sup>lt;sup>19</sup> Per Table 3.4.1 in the MFG and RIG, subtopic 4.10, *Schedule Contingency*, this section of the PEP should include a schedule of contingency amounts and project end date with contingency and should state the method of calculating the contingency, including a confidence level for meeting the project end date.

guides state that PEPs should either contain or reference all project-related documents and should serve as a standalone source explaining how and why the project meets all requirements, we believe OSU could improve its PEP by including all of the information recommended per the NSF MFG and RIG.

#### Consideration

We suggest that NSF's Office Head of the Research Infrastructure Office consider:

• Directing OSU to update its Project Execution Plan to include all recommended elements and/or provide justifications for any elements that OSU determines are not applicable.

COTTON & COMPANY ASSURANCE AND ADVISORY, LLC



Megan Mesko, CPA, CFE Partner **APPENDIX A: OSU'S RESPONSE** 

DocuSign Envelope ID: 0F11A4DA-E630-4ED0-BB88-CB34E09D6026



Office of Sponsored Programs 1960 Kenny Road Columbus, OH 43210 Christine Hamble Associate VP Sponsored Programs hamble 3@osu.edu 614-688-8734

May 18th, 2023

Cotton & Company 333 John Carlyle Street, Suite 500 Alexandria, Virginia 22314

Attention: Megan Mesko, CPA, CFE

#### The Ohio State University Response to the Details of Findings

The Ohio State University (Ohio State) appreciates the opportunity to work with the National Science Foundation Office of Inspector General and Cotton & Company to examine our research administration and accounting practices. The University takes seriously the obligation to administer awards in compliance with applicable laws, policies, and requirements. We appreciate the opportunity to improve and enhance our robust compliance program.

Ohio State concurred with the findings of the audit report. Specifically, Ohio State agreed to reimburse NSF for \$960 in questioned costs and is making enhancements as described below.

#### FINDING 1: UNALLOWABLE ADMINISTRATIVE FEES

OSU charged NSF Award No. **Charged a** total of \$960 in administrative fees that it did not support were allowable per federal regulations or the NSF <u>Proposal and Award</u> Policies and Procedures Guide (PAPPG).

Ohio State agrees with the finding and will reimburse this amount. In order to strengthen controls to prevent this in the future, FOD's final Administrative Fees will not be charged to the fund/grant until the end of the construction to ensure that the approved federal rate is used (currently 2% of overall project). See Attachment 1, page 6 for the Office of Sponsored Program's process document incorporating this process change.

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#### FINDING 2: ACM\$ DRAWDOWNS EXCEEDED AWARD EXPENSES

OSU did not limit its ACM\$ drawdowns to be as close as administratively feasible to its cash disbursements as required per federal regulations and NSF PAPPGs.

On January 9, 2020, OSU drew \$5,694,702 in funding for NSF Award No ACM\$ before its general ledger supported incurrence of any expenses on the NSF award. As a result, OSU's cash-on-hand exceeded its cash disbursements until it corrected this error in its next ACM\$ draw in February 2020.

OSU noted that this discrepancy was caused by its prior financial accounting system creating a billable expense for invoices it had placed on hold. Specifically, OSU noted that although it had placed incorrect invoices it received from a supplier on hold to prevent a payment from being made, the system inappropriately created expenses to be billed in ACM\$.

Ohio State agrees with this finding. As of January 2021, Ohio State transitioned financial accounting to a new system, Workday Financials. In Workday, supplier invoices on hold are not billed, as all supplier invoices must go through a settlement process prior to becoming a billable transaction, and the settlement process excludes invoices on hold. See Attachment 2, page 5.

#### FINDING 3: NON-COMPLIANCE WITH MID-SCALE REPORTING POLICY

OSU did not submit its annual project reports for NSF Award No. **Sector** at least 90 days prior to the end of the budget period, as required per the NSF RI-1 Program Solicitation. Specifically, OSU did not submit any of the three annual reports due within our audit **period of performance** (POP) by the report due dates...

OSU agrees with this finding. Principal Investigators use the 'PI Dashboard' in Workday to monitor their awards. We have added a 'My Tasks' tab to the PI Dashboard that lists all upcoming reports. See below for example (from test data).

Task Type	Assigned Workers	Task is Overdue	Task Completed	Award	Sponser	Statue	Days to Task Start	Days to Task Complete	Days Until Task Due	Task End Date	Task Due Date
Technical Report - Technical Report		1				Not Started	-2601	-2237	.229 €	03/31/2017	62/61/2017
Technical Report - Technical Report			1			Not Started	-2.079	-2115	+.217 €	07/31/2017	06/01/2017
Technical Report - Technical Report		-				Not Started	-2069	-1811	-187 2	05/31/2018	03/31/2018
Technical Report - Technical Report		1				Not Started	-1871	-1507	+-155 1	08/31/2019	02/15/2019
Technical Report - Technical Report		•				Not Started	-1810	-1445	+-150 7	05/31/2010	03/31/2010
Technical Report - Technical Report						Not Started	-1702	-1645	+-150 6	05/31/2019	04/01/2019
Final Technical Report -						Not Started	-3697	-1507	-141	08/31/2019	06/30/2019

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Sincerely, Docusigned by: Unistine Elizabeth Hamble

Associate Vice President, Sponsored Programs

**APPENDIX B: OBJECTIVES, SCOPE, AND METHODOLOGY** 

#### **OBJECTIVES**

The NSF OIG Office of Audits engaged Cotton & Company Assurance and Advisory, LLC (herein referred to as "we"), to conduct an audit of all the costs The Ohio State University (OSU) claimed on NSF Award No.

- Evaluating OSU's award management environment for the capability to adhere to award-specific terms and conditions, as well as the requirements of the *Uniform Guidance* and general award terms and conditions.
- Determining if the costs claimed on the award were allocable, allowable, reasonable, and in conformance with NSF award terms and conditions and applicable federal financial assistance requirements.
- Determining whether OSU complied with NSF's Research Infrastructure (RI) RI-1 Program Solicitation (19-537) and other NSF's Mid-scale Program requirements within NSF's *Major Facilities Guide* (MFG) (NSF 19-68) and *Research Infrastructure Guide* (RIG) (21-107), such as developing a Project Execution Plan (PEP).

#### SCOPE

The audit population included approximately \$5.3 million in expenses OSU claimed in Award Cash Management \$ervice (ACM\$) on NSF Award No. from the award's inception date through September 30, 2022.

#### METHODOLOGY

After obtaining NSF OIG's approval for our audit plan, we performed each of the approved audit steps. Generally, these steps included:

- Assessing the reliability of the general ledger data OSU provided by comparing the costs charged to NSF awards per OSU's accounting records to the reported net expenditures reflected in the ACM\$ drawdown requests.
  - Our work required us to rely on computer-processed data obtained from OSU and NSF OIG. NSF OIG provided award data that OSU reported through ACM\$ during our audit period.
    - We assessed the reliability of the general ledger data OSU provided by: (1) comparing the costs charged to NSF awards per OSU's accounting records to the reported net expenditures reflected in the ACM\$ drawdown requests OSU submitted to NSF during the audit's period of performance (POP); and (2) reviewing the parameters OSU used to extract transaction data from its accounting system. As we did not identify any discrepancies in the data provided, we found OSU's computer-processed data to be sufficiently reliable for the purposes of the audit.

- We found NSF's computer-processed data to be sufficiently reliable for the purposes of this audit. We did not review or test whether the data contained in NSF's databases or the controls over NSF's databases were accurate or reliable; however, the independent auditor's report on NSF's financial statements for fiscal year (FY) 2021 found no reportable instances in which NSF's financial management systems did not substantially comply with applicable requirements.
- OSU provided detailed transaction-level data to support the \$5,336,420 in costs it claimed in ACM\$ during the audit period. This data resulted in a total audit universe of \$5,336,420 in expenses claimed on NSF Award No.
- Obtaining and reviewing all available accounting and administrative policies and procedures, external audit reports, desk review reports, and other relevant information OSU and NSF OIG provided, as well as any other relevant information that was available online.
- Summarizing our understanding of federal, NSF, RI-1 award, and OSU-specific policies and procedures surrounding costs budgeted for or charged to NSF awards and identifying the controls in place to ensure that costs charged to the RI-1 award were reasonable, allocable, and allowable.
  - In planning and performing this audit, we considered OSU's internal controls, within the audit's scope, solely to understand the directives or policies and procedures OSU has in place to ensure that charges against NSF awards complied with relevant federal regulations, NSF award terms, RI program requirements, and OSU policies.
- Designing and executing tests that allowed our team to determine whether the Mid-scale RI-1 PEP covered all required components and whether OSU appropriately estimated the full lifecycle cost for the project consistent with NSF's *Major Facilities Guide* (MFG) (NSF 19-68), *Research Infrastructure Guide* (RIG) (21-107), and RI-1 Program Solicitation (19-537) applicable to the NSF Award No.
- Providing OSU with a list of 15 transactions that we selected based on the results of our data analytics and requesting that OSU provide documentation to support each transaction.
- Reviewing the supporting documentation OSU provided and requesting additional documentation, as necessary, to ensure we obtained sufficient, appropriate evidence

to assess the allowability of each sampled transaction under relevant federal,<sup>20</sup> NSF,<sup>21</sup> and OSU policies.<sup>22</sup>

• Holding virtual interviews and walkthroughs with OSU in November and December 2022 to discuss OSU's PEP as well as controls OSU has in place around procurement, charging direct costs to NSF awards (including consulting, equipment, materials/supplies and other direct costs), ACM\$ processing, and other general policies in place to ensure compliance with relevant NSF terms and conditions (e.g., programmatic reporting, supplemental funding requests, changes in scope, cost transfers, record retention, whistle-blower information, research misconduct, and conflict of interest policies).

At the conclusion of our fieldwork, we provided a summary of our results to NSF OIG personnel for review. We also provided the summary to OSU personnel to ensure that OSU was aware of each of our findings and that it did not have additional documentation to support the questioned costs.

We conducted this performance audit in accordance with *Generally Accepted Government Auditing Standards* (GAGAS) issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

<sup>&</sup>lt;sup>20</sup> We assessed OSU's compliance with 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards.

<sup>&</sup>lt;sup>21</sup> We assessed OSU's compliance with NSF PAPPGs 19-1 and 20-1 and with NSF award-specific terms and conditions, as appropriate.

<sup>&</sup>lt;sup>22</sup> We assessed OSU's compliance with internal OSU policies and procedures surrounding costs budgeted for or charged to NSF awards.

APPENDIX C: SUMMARY OF QUESTIONED COSTS

Finding	Description	Questioned (	Total	
Finding	Description	<u>Unsupported</u>	Unallowable	TOLAT
1	Unallowable Expense	\$0	\$960	\$960
2	ACM\$ Drawdowns Exceeded Award Expenses	-	-	-
3	Non-Compliance with Mid-scale Reporting Policy	-	-	-
Total		<u>\$0</u>	<u>\$960</u>	<u>\$960</u>

*Source:* Auditor summary of questioned costs by finding.

NSF Award No.	No. of Transaction Exceptions	Questioned Direct Costs	Questioned Indirect Costs	Questioned Total	OSU Agreed to Reimburse
	1	\$960	\$0	\$960	\$960
Total	<u>1</u>	<u>\$960</u>	<u>\$0</u>	<u>\$960</u>	<u>\$960</u>

#### **Appendix C, Table 2: Summary of Questioned Costs by NSF Award Number**

*Source:* Auditor summary of questioned costs by NSF award number.

Finding No.	NSF Award No.	Expense Description	Questioned Direct Costs	Questioned Indirect Costs	Total Questioned Costs	OSU Agreed to Reimburse
1) Unallowable Expense		Unallowable Administrative Fees	\$960	\$0	\$960	\$960
2) ACM\$ Drawdowns Exceeded Award Expenses		Inappropriate ACM\$ Drawdown	-	-	-	-
3) Non-Compliance with Mid- Scale Reporting Policy		Annual Reports Not Submitted Timely	-	-	-	-
Total			<u>\$960</u>	<u>\$0</u>	<u>\$960</u>	<u>\$960</u>

#### Appendix C, Table 3: Summary of Questioned Costs by NSF Award Number and Expense Description

*Source:* Auditor summary of identified exceptions.

**APPENDIX D: SUMMARY OF RECOMMENDATIONS AND CONSIDERATIONS** 

We recommend that NSF's Director of the Division of Institution and Award Support:

- 1.1. Direct OSU to provide documentation supporting that it has repaid or otherwise credited the \$960 in questioned administrative costs for which it has agreed to reimburse NSF.
- 1.2. Direct OSU to no longer apply administrative fees to construction activities charged to NSF awards and/or update its project administration fee guidelines to support how the local administrative fee amount was determined to be reasonable and allowable on the NSF award.
- 1.3. Direct OSU to strengthen the processes and procedures it has in place to ensure its Facilities Operations and Development Department is applying administrative fees consistent with its established guidelines.
- 2.1. Direct OSU to provide support that its new accounting system does not create expenses that will be billed to NSF for invoices that OSU has placed on hold.
- 3.1. Direct OSU to implement controls that ensure that Mid-scale Program annual reports are submitted on a timely basis, as required per the Research Infrastructure-1 Program Solicitation.

Additionally, we suggest that NSF's Office Head of the Research Infrastructure Office consider:

• Directing OSU to update its Project Execution Plans to include all recommended elements and/or justifications regarding why those elements are not applicable.

**APPENDIX E: GLOSSARY** 

**Allocable cost.** A cost is allocable to a particular federal award or other cost objective if the goods or services involved are chargeable or assignable to that federal award or cost objective in accordance with relative benefits received. This standard is met if the cost:

- (a) Is incurred specifically for the federal award.
- (b) Benefits both the federal award and other work of the non-federal entity and can be distributed in proportions that may be approximated using reasonable methods.
- (c) Is necessary to the overall operation of the non-federal entity and is assignable in part to the federal award in accordance with the principles in this subpart. (2 CFR § 200.405).

Return to the term's initial use.

**Allowable cost.** Except where otherwise authorized by statute, costs must meet the following general criteria in order to be allowable under federal awards:

- (a) Be necessary and reasonable for the performance of the federal award and be allocable thereto under these principles.
- (b) Conform to any limitations or exclusions set forth in these principles or in the federal award as to types or amount of cost items.
- (c) Be consistent with policies and procedures that apply uniformly to both federallyfinanced and other activities of the non-federal entity. (2 CFR § 200.403).
  Return to the term's initial use.

**Area for Improvement.** For the purposes of this report, an area for improvement represents a condition that does not constitute the grantee's non-compliance but warrants the attention of the grantee and NSF management. **Return to the term's initial use.** 

**Equipment.** Tangible personal property—including information technology (IT) systems—having a useful life of more than 1 year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-federal entity for financial statement purposes, or \$5,000. (2 CFR § 200.33). **Return to the term's initial use.** 

**Mid-scale RI-1.** This program supports either the design or implementation of unique and compelling RI projects. Mid-scale implementation projects may include any combination of equipment, instrumentation, cyberinfrastructure, broadly used large scale datasets and the personnel needed to successfully commission the project. The total cost of current Mid-scale RI-1 projects range from \$400,000 to \$20 million. (NSF 22-637). **Return to the term's initial use.** 

**Mid-scale RI-2.** This program emphasizes projects that have strong scientific merit, respond to an identified need of the research community, demonstrate technical and managerial readiness for implementation, include a well-developed plan for student training in the design and implementation of mid-scale research infrastructure, and involve a diverse workforce in mid-scale facility development, and/or associated data management. The total cost of current Mid-scale RI-2 projects range from \$20 million to \$100 million. (NSF 23-570).

Return to the term's initial use.

**Period of Performance (POP).** The time during which the non-federal entity may incur new obligations to carry out the work authorized under the federal award. The federal awarding agency or pass-through entity must include start and end dates of the POP in the federal award. (2 CFR § 200.77).

Return to the term's initial use.

**Proposal & Award Policies & Procedures Guide (PAPPG).** Comprises documents relating to NSF's proposal and award process for the assistance programs of NSF. The PAPPG, in conjunction with the applicable standard award conditions incorporated by reference in award, serve as the NSF's implementation of 2 CFR § 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards. If the PAPPG and the award conditions are silent on a specific area covered by 2 CFR § 200, the requirements specified in 2 CFR § 200 must be followed. (NSF PAPPG 19-1). Return to the term's initial use.

**Questioned Cost**. A cost that is questioned by the auditors because of an alleged violation of a provision of a law, regulation, contract, grant, cooperative agreement, or other agreement or document governing the expenditure of funds; a finding that, at the time of the audit, such cost is not support by adequate document; or a finding that the expenditure of funds for the intended purpose is unnecessary or unreasonable. (2 CFR 200.1). **Return to the term's initial use.** 

**Reasonable Cost.** A cost that, in its nature and amount, does not exceed that which would have been incurred by a prudent person under the circumstances prevailing at the time the decision to incur the cost was made. (2 CFR § 200.404). **Return to the term's initial use.** 

**Research and Development (R&D) Cluster.** A cluster of programs refers to a grouping of closely related programs that share compliance requirements that may be examined during a Single Audit. R&D is one type of cluster and includes all research and development activities performed by a non-federal entity. (2 CFR 200.1). <u>Return to the term's initial use.</u> **Research Infrastructure (RI).** NSF defines RI as any combination of facilities, equipment, instrumentation, or computational hardware or software, and the necessary human capital in support of the same. (NSF 19-68 and 21-107). **Return to the term's initial use.** 

**Unsupported Cost**. A cost that is questioned because the auditors found that, at the time of the audit, such cost is not supported by adequate documentation. Unsupported Cost is a subset of and included in <u>Questioned Costs</u>. (2 CFR 200.1). <u>Return to the term's initial use.</u>



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## National Defense Authorization Act (NDAA) General Notification

Pursuant to Pub. L. No. 117-263, § 5274, business entities and non-governmental organizations specifically identified in this report have 30 days from the date of report publication to review this report and submit a written response to NSF OIG *that clarifies or provides additional context* for each instance within the report in which the business entity or non-governmental organizations is specifically identified. Responses that conform to the requirements set forth in the statute will be attached to the final, published report.

If you find your business entity or non-governmental organization was specifically identified in this report and wish to submit comments under the above-referenced statute, please send your response to *OIGPL117-263@nsf.gov*, no later than July 26, 2023. We request that comments be in .pdf format, be free from any proprietary or otherwise sensitive information, and not exceed 2 pages. Please note, a response that does not satisfy the purpose set forth by the statute will not be attached to the final report.