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DCI 007

Evaluating the Impact of Changes to the Internal Publication Review Policy at NIST

Juan F. Fung
Michael Hall
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Evaluating the Impact of Changes to the Internal Publication Review Policy at NIST

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Generative Artificial Intelligence (AI) was used to generate summary text used in the survey infographics. Accuracy was validated through human review and revision.

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Abstract

This report presents the design and methodology of a survey conducted to evaluate the impact of changes to the organizational publication review policy at the National Institute for Standards and Technology (NIST). The purpose of the survey is to collect feedback from staff on their understanding and perceptions of the policy update. The survey instrument includes modules on experience with the previous policy, the purpose of the policy, high-level key changes, and specific changes to the review process. The results of this survey are intended to inform ongoing monitoring and evaluation of the policy, processes, and procedures for review and clearance of publications at NIST. Moreover, the questions presented in the current data collection instrument may be relevant to development of other data collections instruments, specifically other publication review processes and more generally program evaluation of organizational policy updates.

Keywords

Program evaluation, survey design, experimental design, publication review.

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1. Introduction

On January 21, 2025, NIST updated Order 1801.00, "Review and Clearance of Fundamental Research Communications," in a major update to the organizational policy for review of scientific publications.[1] The organization updated its internal publication review policy (PRP) to address disparities in interpretation and compliance rates due to complexity and ambiguity. The goals of the 2025 update to the PRP are to facilitate compliance across the agency through improved and clearer processes and requirements.

Historically, an Editorial Review Board (ERB) implemented and enforced NIST publication review policies and procedures, with the goal of ensuring a high level of technical and editorial quality.[2] In 2024, responsibility for enforcing the PRP and managing the associated processes was transferred to the NIST Research Protections Office (RPO). In light of the challenges with compliance, NIST RPO sought to improve the PRP and evaluate impact of the changes. Aside from questions about the review process in the context of the annual NIST Scientific Integrity report, no direct program evaluation of this policy and associated processes had been conducted prior to our study [3, 4].

This report documents the design of a survey to evaluate the short-term impacts of the policy change. The survey design is part of a long-term evaluation framework developed by the authors for NIST RPO to obtain a baseline for the PRP update and to monitor and evaluate the implementation of the PRP update over time.

To that end, we develop a logic model to articulate inputs, outputs, and outcomes, shown in Fig. 1. A logic model is a tool to visually articulate how the resources and activities relevant to the policy change are linked to expected outcomes [5]. The logic model provided clarity in scoping the survey for program evaluation in the short-term, during the transition period in which the PRP update is being rolled out and initially implemented [6]. A key challenge is that staff will not have first-hand experience with the changes to the publication process.

[1] As defined in Department of Commerce DAO 219-1 and NIST P 1800.00: *A "fundamental research communication" is a public communication that relates to the Department's programs, policies, or operations and takes place or is prepared officially and that deals with the products of basic or applied research in science or engineering, the results of which ordinarily are published and shared broadly within the scientific community, as long as the communication does not contain information that is proprietary, classified, or restricted by federal statute. If a communication also includes matters of policy, budget, or management, then it is not a Fundamental Research Communication.* To avoid using jargon, throughout this report as well as in the survey, we refer to "Fundamental Research Communications" as **scientific publications**.

[2] Per the 2016 ERB Administrative Committee Charter, DOC DAO 219-1 tasks the NIST Director with approving the release of Fundamental Research Communications and this responsibility is delegated to the ERB. Records show that the Washington ERB was the oldest committee as of 1965, when the editorial review process was revamped by then-director Allen Astin [1, p. 65-66], and that Eugene Crittenden was the chair of the editorial committee during his years of service (1909-1950) [2, p. 338], though we were unable to pin down a record of when the first editorial committee was established.

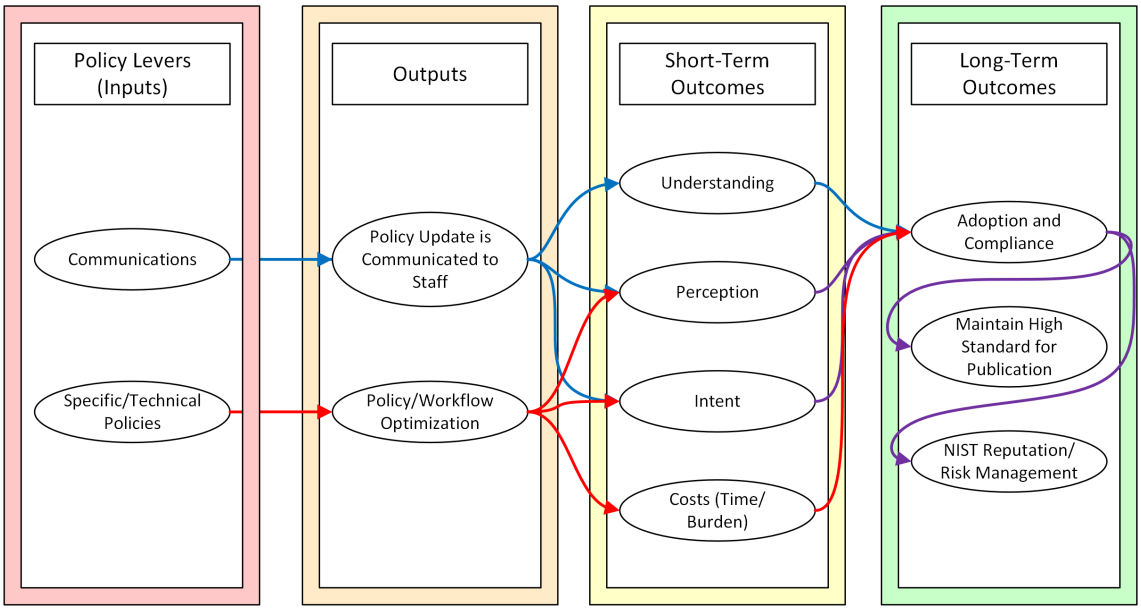


Figure 1. Logic model for short- and long-term evaluation of update to the NIST publication review policy (PRP).

In spite of this challenge, we engaged in a collection of initial feedback to obtain policy-relevant information on whether NIST is communicating the PRP changes efficiently, whether the PRP changes focus on the things staff care about, and how such perceptions are likely to affect staff compliance. In the long-term, such perceptions will provide a valuable benchmark to support ongoing monitoring of the PRP and inform the need for further updates.

The report is structured as follows. Section 2 provides a brief overview of the survey design. Section 3 walks through the data collection instrument. Section 4 concludes with next steps and future directions.

2. Data collection design

We designed the data collection to address the following purpose: [7]:

> *To evaluate whether the publication review policy update is expected to facilitate compliance through improved and clearer processes and requirements.*

In particular, the PRP update makes significant changes to the review process as we will describe in Sec. 3.

We can frame the purpose within the logic model in Fig. 1. The policy levers produce outputs that in turn drive short-term and long-term outcomes. For instance, specific

changes to the review process result in new workflows, which will drive staff perceptions, intent to comply, and costs (e.g., in terms of time or administrative burden) through direct experience with the updated policy.

In the immediate short-term, during policy implementation, staff will not have direct experience with the actual policy changes. Thus, we rely on *communications* about the policy update to evaluate expected long-term compliance through short-term understanding, perceptions, and intent to comply with the anticipated policy changes. Clarity can be thought of as another dimension of understanding, in addition to awareness, and can refer to clarity of the policy objectives or clarity of the process itself [8, 9]. In the short-term, the extent to which the updated review process represents an improvement is purely a matter of perception. Finally, while we cannot predict how staff would actually behave under the updated review process, we can evaluate their intent. Thus, the purpose can be broken down into the following set of research questions:

1. What is the relationship between the **updated review process** and **understanding**?
2. What is the relationship between the **updated review process** and **perceptions**?
3. What is the relationship between the **updated review process** and **intent to comply**?

To formalize these three research questions into testable hypotheses, we need to define what we mean by **updated review process**, **understanding**, **perception**, and **intent to comply**.

2.1. Variables of interest

The research questions suggest a set of independent variables associated with the policy intervention, the **updated review process**, and a set of dependent variables associated with our short-term outcomes: **understanding**, **perceptions**, and **intent to comply**.

The key changes to the review process are a crucial aspect of the policy intervention and include several important updates. These changes include:

1. Change in terminology: the outcome of the review process was changed from *Approved* or *Disapproved* to *Cleared* or *Returned to OU*.
2. Two-step review: Technical Review for scientific content, followed by Clearance Review for compliance with policy requirements;
3. Brief Technical Review: optional abbreviated technical review for scientific publication that will be peer reviewed by a journal or conference (subject to OU[3] discretion);
    - This is an alternative to *full technical review*, which is still available and required for all non-peer reviewed scientific publications.

[3] An Organizational Unit (OU) is defined as the third level in the NIST organization (per NIST O 1007.00).

4. Roles and responsibilities: the two-step review clarifies that the Technical Review is the OU's responsibility and the Clearance Review is NIST RPO's responsibility.[4]
5. Policy requirements: in addition to adding two new requirements,[5] the major update consists of clarifying and streamlining the existing requirements for publication clearance.

Because the list of policy requirements is extensive (covering 17 distinct requirements), it may be difficult to assess understanding or perception of the update without direct experience with the updated policy or extended time to review the policy requirements. Thus, we decided to focus on the first four of the key changes for the survey. For more details on the key changes, see the discussion in Sec. 3.

These key changes to the review process are expected to influence the outcomes of interest, including understanding, perceptions, and intent to comply.

In addition to the updated review process, we consider other independent variables that are expected to influence the outcomes. These include:

- Purpose: the purpose statement may influence the outcomes by affecting respondents' understanding and perceptions of the policy update.
- Policy experience: respondents' previous experience with the PRP (e.g., number of publications submitted or reviewed) may influence their perceptions and intent to comply.
- Respondent characteristics: similarly, a respondent's official role and tenure at NIST may influence their subjective policy experience.[6]

The set of independent variables is summarized in the table:

Table 1. Set of independent variables.

Variable	**Measure**
Policy intervention	Updated review process (Change in terminology, Two-step review, Brief technical review, Roles and responsibilities)
Communication	Purpose (Purpose statement)
Policy experience	Direct experience (Number of publications submitted, Number of publications reviewed, Roles under previous policy Indirect experience (Role at NIST, Tenure at NIST)

[4] This includes dissolving the ERB, as shown in Sec. 3.5.
[5] The new policy requirements under NIST O 1801.00 include accessible publications for Section 508 compliance and a disclaimer for Generative Artificial Intelligence (GenAI) use in research.
[6] Role refers to whether the respondent is a federal employee or a NIST associate, which includes guest researchers and contractors.

Finally, we describe how we define and intend to measure our outcomes of interest:

- Understanding: includes **awareness** of the PRP update, as well as **clarity** of the PRP update.
- Perception: includes expected **impact on work**, as well as **sentiment**, to be captured from open-ended responses.
- Intent to comply: includes **support** for the PRP overall, as well as whether the PRP update is **expected to facilitate compliance**.

2.2. Hypotheses

Now that we have defined our variables of interest, we can formalize our research questions as a set of hypotheses. Recall our main research questions are:

1. What is the relationship between the **updated review process** and **understanding**?
2. What is the relationship between the **updated review process** and **perceptions**?
3. What is the relationship between the **updated review process** and **intent to comply**?

Table 2 summarizes the set of testable hypotheses implied by our research questions.

Table 2. Set of testable hypotheses.

Hypothesis	**Effect**
The updated review process is likely to improve understanding	Positive effect
The updated review process is likely to improve perception	Positive effect
The updated review process is likely to improve intent to comply	Positive effect
A personal purpose statement is likely to improve intent to comply	Positive effect
Higher policy experience will show higher or lower intent to comply	Two-sided effect

In terms of our variables, the first hypothesis can be tested as:

- The overall key changes improve clarity
- The change in terminology improves clarity
- The two-step review process improves clarity
- The Brief Technical Review option improves clarity

Analogous logic can be applied to the other hypotheses in Table 2.

2.3. Data collection instrument design

To facilitate responding, and thus improve response rates, the data collection instrument (DCI) is designed in a logical order, from general to specific, favoring brevity over depth [7, 10, 11]. The survey is structured as a series of modules. Each module focuses on one of the key independent variables summarized in Table 1. The modules, submodules, and corresponding variables are shown in Table 3.

Table 3. Data collection instrument structure by module.

Module	Submodule	Variables
Policy experience		Direct, Indirect
Communication	Ex ante	Purpose
Policy intervention	Key Changes	Terminology, Review process, Technical review options, Roles and responsibilities
Policy intervention	Review process	Two-step review, Brief technical review
Communication	Ex post	Purpose

Policy Experience. The first module focuses on obtaining a baseline for a respondent's (direct and indirect) experience with the previous PRP. This includes asking respondents about number of publications submitted, number of publications reviewed, experience with any roles in the review process under the previous PRP, and any challenges faced.

Communication. We then communicate the **what** and the **why** of the changes through a purpose statement. The purpose statement provides a rationale for the PRP update, but whether that purpose statement resonates with a respondent is unknown *a priori*. The goal of this module is two-fold. First, to contextualize the purpose of the PRP update within their experience with the previous PRP (i.e., after explicitly having respondents reflect on their subjective experience with the previous PRP). Second, the purpose statement frames the rest of the survey. Because we do not know whether the purpose statement will resonate with respondents, we want their subjective experience to more explicitly inform their responses, rather than having it allowing it to have a latent impact that might emerge later. Moreover, we hypothesize that an organizational purpose statement may not resonate as much as a personal statement. As we discuss in Sec. 3.3, we introduce a simple experiment in which respondents are shown one of two purpose statements at random (organizational or personal). Within these two goals, we present a purpose statement and ask respondents about their level of support of the PRP.

Policy Intervention. The following module is broken up into two submodules. The goal of these submodules is to walk the respondent through the policy intervention. We first introduce the high-level key changes (which will be discussed further in Sec. 3.4) to provide the respondent with an overview. We then ask a series of questions focused on specifically

on the updated review process (for further details, see Sec. 3.5). While the PRP update includes other changes, we focus on the key changes that were communicated to staff (through an internal announcement on the PRP update) as the most likely to impact their day-to-day work. To reduce cognitive demand on participants, we use a combination of **visual** and **textual** summaries of the changes. The literature shows that while visual elements may be distracting on their own there is no evidence that they alter responses [12].

Communication (Ex post). Finally, as Table 3 shows, we revisit the communication module. Whereas the ex ante Communication module focuses on anchoring respondent's interactions with the policy intervention module, the ex post Communication module focuses on overall sentiment and support for the PRP update *after* the respondent has walked through the key changes and changes to the review process. We ask respondents to reflect on the changes and provide their level of support for the policy. Here, we are interested in the following questions:

- Does the respondent's support for the PRP change?
- If so, is it more positive or more negative than ex ante?

Closed and Open Questions. Section 3 provides a more detailed look at the resulting DCI, reviewing each module and associated questions. To reduce cognitive load and facilitate responses, we use 5-point Likert scales for most questions [12, 13]. While higher-level (e.g., 7 or 10) point Likert-scale responses can be treated as continuous variables under certain conditions, we did not have reason to model our variables (and thus responses) continuously.[7] Moreover, reliability and validity is shown to deteriorate beyond 7 levels [15]. Lower (e.g., 3- or 4-point) Likert scales do not provide respondents with enough nuance to express subjective values such as clarity and sentiment [16].

However, we included open-ended questions in order to allow respondents the opportunity to provide more nuanced feedback that would not fit neatly into a multiple-choice response [15].

2.4. Target population and sampling frame

Here, we describe our target population (the scope of the data collection) and sampling frame (the method for reaching the target population) [17]. Our target population is all (federal and associate) NIST staff involved in authoring, reviewing, or clearing scientific publications.

To select an appropriate sampling frame from this conceptual target population, we focus on federal and associate staff in the NIST Laboratory Programs. We acknowledge that

[7] Nor is this necessarily advisable even with 7 or more levels [14].

staff outside of the Laboratory Programs may engage in authoring, reviewing, or clearing scientific publications. However, in most cases, it may not be a regular activity or part of their duties (e.g., staff working on facilities or information technology). In this case, since membership in the target population is not guaranteed, it would have been difficult to ascertain who is included and who is not.

Because we are interested in perspectives from staff who have any experience with the publication review process (including author, co-author, technical reviewer, ERB sponsor,[8] group leader, division chief, etc.), we cast a wide net across the Laboratory Programs as the most likely to take on any number of these roles. The goal is to distribute the survey through the Laboratory Programs listservs.

2.5. Power analysis

To determine an appropriate sample size to test our hypotheses, we conducted a series of power analyses. Figure 2 summarizes the power analysis to detect a one-way effect (one independent variable; e.g., proportion that agree or strongly agree that adherence to policy supports NIST mission). To detect a small effect size (0.2), with a significance level of 0.05 and minimum power of 0.8, the required sample size is 155. Note that the larger the effect size, the smaller the required sample size (e.g., for a medium effect size (0.5), the required sample size is 25).

Figure 3 summarizes the power analysis to detect a two-way effect (two independent variables; e.g., proportion that agree or strongly agree that adherence to policy supports NIST mission, grouped by purpose statement). To detect a small effect size, with a significance level of 0.05 and minimum power of 0.8, the required sample size is 786 (393 per group). As before, the larger the effect size, the smaller the required sample size (e.g., $n = 63$ for a medium effect size).

Additionally, we conducted power analyses for Wilcoxon signed-rank and Wilcoxon rank-sum tests, which allow us to explicitly consider the levels of our variables (rather than aggregating responses into proportions). For brevity, results are summarized in Appendix C.

2.6. Administration

Our survey design does not require any identifiable information. The only identifiable information we collect is a respondent's role at NIST (federal employee or associate), which alone is not personally identifiable information (PII) and is publicly available online. Thus, we opt to administer the survey anonymously. A key benefit of an anonymous survey is that it facilitates responding, not only through asking minimal personal questions but also by ensuring confidentiality and improving response rates in most cases [18–20].

[8] An ERB Sponsor serves as the liaison between the lab and the ERB and provides oversight over technical, editorial, and policy review, per NIST S 1801.01.

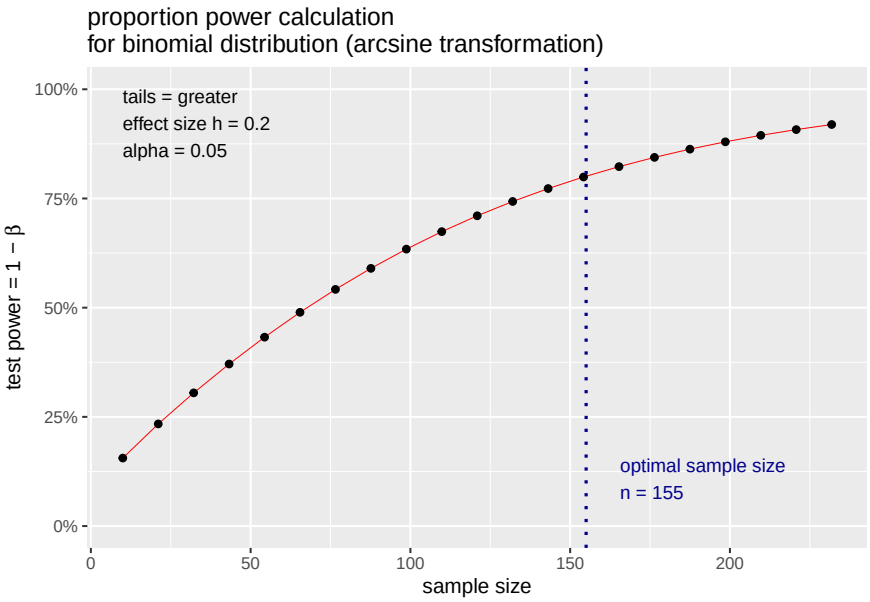


Figure 2. Power analysis for one-way effect requires $n = 155$ to detect a small effect with 80% power for $\alpha = 0.05$. The sample size on the x-axis denotes the minimum number of individual respondents needed.

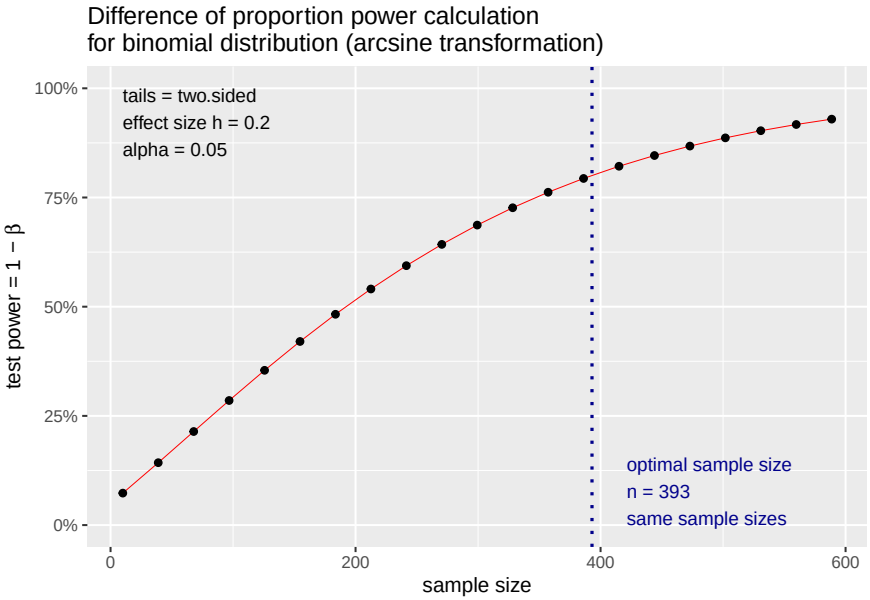


Figure 3. Power analysis for two-way effect requires $n = 393$ for each effect, so the total sample size required is $n = 786$, to detect a small effect with 80% power and $\alpha = 0.05$. The sample size on the x-axis denotes the minimum number of individual respondents needed.

Moreover, the survey is designed to be self-administered. To facilitate respondents answering the questions on their own time, we administer the survey electronically. Before administering, we received the required approvals through Institutional Review Board (IRB) review and Paperwork Reduction Act (PRA) clearance.

- IRB: EL-2024-0399: The National Institute of Standards and Technology Research Protections Office determined this project meets the criteria for "exempt human subjects research."
- PRA: Approved under OMB Control #0693-0033; Expiration Date: 09/30/2025

The complete OMB statement of burden is provided at the end of Sec. 3.

Finally, we tested and piloted the survey instrument prior to administration. In addition to cognitive review (including analysis of text features for question clarity [21]), we reached out to federal colleagues for piloting once we had IRB approval:

1. Internal (NIST) federal colleagues outside of the Laboratory Programs
2. External (other agency) federal colleagues, formerly in the NIST Laboratory Programs

Two of the individuals in the latter category had extensive experience with the previous publication review process and provided invaluable feedback that resulted in substantial changes that are reflected in the final survey instrument. Moreover, the testing and piloting allowed us to test the structure and validity of the data that resulted from the responses.

3. Data collection instrument

In this section, we walk through each of the modules in the survey instrument. Note that actual links are omitted but all material is provided in the Appendix.

3.1. Front page

The survey opens with a brief information sheet that describes the study purpose and expectations, confirms that participation is anonymous and voluntary, and provides investigator contact information. No explicit consent is required.

> We invite you to take part in a research study aimed at gathering your valuable feedback on recent changes to the NIST policy for reviewing scientific publications. This brief, **anonymous** survey will ask for your perspective on the updated review process. The survey should take about ten minutes to complete.
>
> By proceeding, you confirm your understanding of the study and voluntarily agree to participate. You may exit at any time. For the full information sheet,

> please click here: <INSERTLINK>. If you have any questions, please contact Juan F. Fung at mailto:juan.fung@nist.gov or call 202-380-7347.

The full information sheet is provided in Appendix A. The invitation email is provided in Appendix B.

3.2. Previous policy module

If the respondent clicks "Next," they enter the survey's first module. This module is intended to benchmark attitudes about the previous policy, which respondents may have first-hand experience with. The question wording and response options for clarity (Q2) and impact (Q3) are mirrored in the following modules for consistency. The latter question on impact (Q3) is framed around the policy's impact on a respondent's *day-to-day work* [22], which we do not define but leave implicit as a respondent's day-to-day is subjective based on their position and other factors.

> NIST has updated the policy that describes the process and requirements for review and clearance of a scientific publication, including the Editorial Review Board (ERB). Before examining the changes, we would like to know about your experience (as author, reviewer, or in any other role) with the **previous policy**.
>
> The previous policy is **available here** <INSERTLINK>.
>
> [Q1a] *Please indicate any roles you have held under the **previous policy** (select all that apply):*
>
> - Author (submitted to ERB) (1)
> - Author (co-author submitted to ERB) (2)
> - Technical Reviewer (3)
> - Process Monitor (4)
> - Group Leader (5)
> - Division Chief (6)
> - ERB Sponsor (7)
> - Other (8)
>   - [TEXT BOX]
>
> [Q1b] If {(Q1a) Selected = Author (submitted to ERB)}: Display This Question:
>
> *On average in a given year, about how many publications do you submit as an author?*

- 1 (1)
- 2-4 (2)
- 5-9 (3)
- 10-14 (4)
- More than 15 (5)

[Q1c] If {(Q1a) Selected = Technical Reviewer}: Display This Question:

On average in a given year, about how many publications do you review as technical reviewer?

- 1 (1)
- 2-4 (2)
- 5-9 (3)
- 10-14 (4)
- More than 15 (5)

[Q2] *How clear were the requirements for compliance under the **previous policy**?*

- Very unclear (1)
- Somewhat unclear (2)
- Neither clear nor unclear (3)
- Somewhat clear (4)
- Very clear (5)

[Q3] *How did the **previous policy** impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other similar responsibilities?*

- Very negative impact (1)
- Negative impact (2)
- Neither positive nor negative impact (3)
- Positive impact (4)
- Very positive (5)

[Q4] *Do you have experience with review processes in **other organizations**? Select all that apply.*

- Other federal agency (1)
- Private sector (2)
- Academia (3)
- Other (4)
  - [TEXT BOX]
- None (5)

[Q5] *What is your role at NIST?*

- Federal employee (1)
- Associate (2)

[Q6] *How many years have you worked at NIST?*

- [TEXT BOX]

[Q7] *Please share your thoughts on how the previous policy helped or hindered your ability to comply, including any challenges or supports you encountered.*

- [TEXT BOX]

3.3. Purpose module A/B

Once we have a baseline for the respondent's experience with the previous policy, we can begin presenting the changes and eliciting perspectives.

Before doing so, it is important to provide rationale for the policy update. In thinking about how a purpose statement might resonate with staff, we hypothesized that a purpose statement that speaks to how an individual benefits from the policy might resonate more than a standard purpose statement articulated from an organizational perspective.

In this module, we randomly present each respondent with one of two purpose statements:

- Purpose Statement A emphasizes the organizational perspective
- Purpose Statement B emphasizes the individual perspective

The purpose statement is followed by a series of questions designed to assess the respondent's support for the policy. The responses to these questions provide a baseline for support, conditional on the purpose statement and the respondent's experience with the previous policy.

In the final module (Sec. 3.6, we revisit these questions to assess support for the policy after reviewing the key changes to the policy.

These questions together provide proxies for changes in behavior, to the extent that support implies intent to comply, due to the policy changes.

Purpose Statement A

The policy update is designed to **enhance compliance**, thereby maintaining the **integrity** and **effectiveness** of our research. Compliance is crucial for achieving our **institutional goals** and upholding our **reputation for excellence**. Understanding how these changes impact your work helps us ensure that our policies effectively support **NIST's mission** of advancing innovation and technology.

Purpose Statement B

The policy update is intended to ensure that you can work more **effectively** and **efficiently**, aligning your efforts with the broader goals of NIST. Compliance is essential for creating a **supportive work environment** that facilitates **success** and **personal growth**. Understanding your perspectives helps us tailor policies to better serve **both you and the organization**.

The updated policy is **available here** <INSERTLINK>

[Q8] *Prior to this survey, were you aware of the update to the policy for reviewing scientific publications?*

- Yes (1)
- No (2)

Provide your level of agreement with the following statements:

[Q9] *My adherence to the policy for reviewing scientific publications supports my career development at NIST.*

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)
- Agree (4)
- Strongly Agree (5)

[Q10] *My adherence to the policy for reviewing scientific publications supports our shared mission at NIST.*

- Strongly Disagree (1)
- Disagree (2)
- Neither Agree nor Disagree (3)

- Agree (4)
- Strongly Agree (5)

3.4. Key changes module

After eliciting policy support, we dive into three modules summarizing the policy changes. The first module focuses on providing an overview of the key changes to: the review process; roles and responsibilities; policy requirements; and modernization.

While the key changes are not exhaustive, they represent the substantive changes that are most likely to impact a respondent's day-to-day activities. Since the summaries are not exhaustive, and in order to reduce the cognitive demand of the task, we repeatedly provide the link to the policy itself.

Each of the module summary infographics in the next three modules were created by the authors using a commercial platform for graphic design, with assistance from generative AI to distill the key elements, summary language, and layouts for the infographics.

> The following table provides an overview of the **key changes** to the NIST policy for reviewing scientific publications. *Click on the image to open in a new window.*
>
> These changes aim to enhance clarity, efficiency, and effectiveness across OUs (labs) and NIST. As you consider these changes, think about how they align with your understanding and expectations of the previous policy.

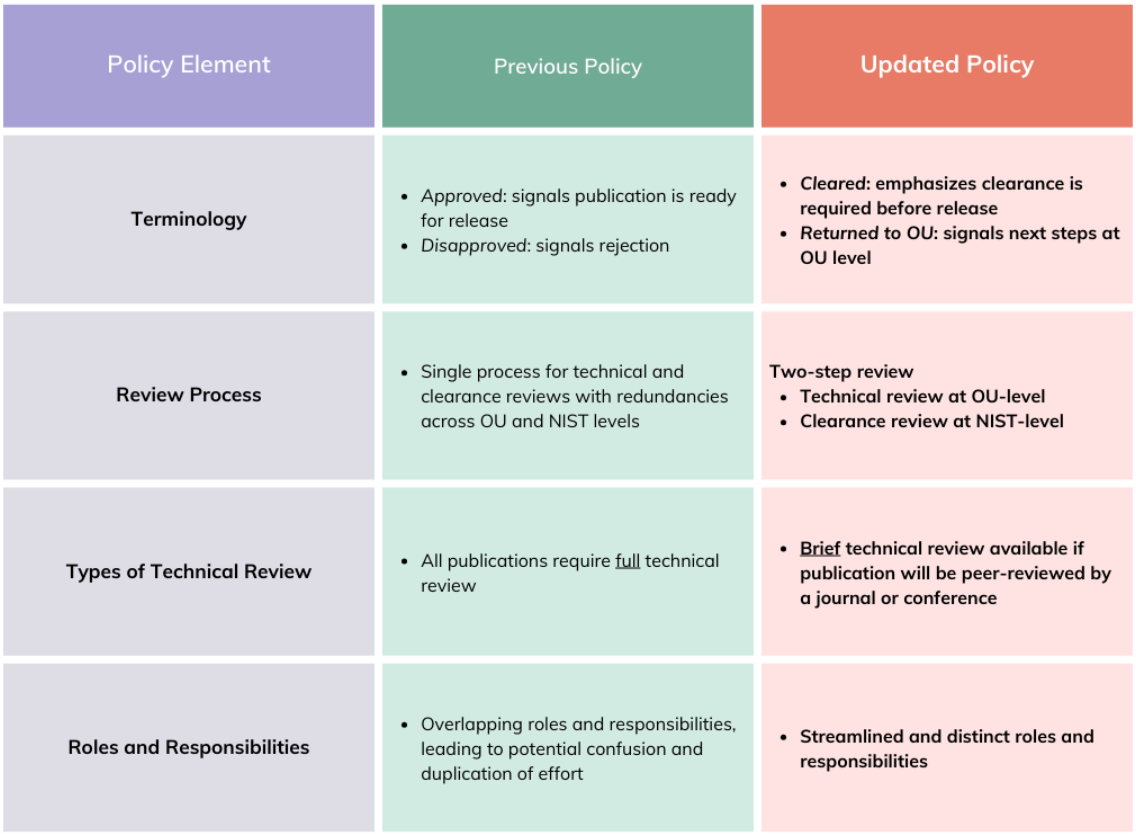


Figure 4. Infographic summarizing the key changes to the NIST policy for reviewing scientific publications.

The updated policy is **available here** <INSERTLINK>

[Q11] *How helpful are the **key changes** in clarifying how you comply with the policy?*

- Very unhelpful (1)
- Unhelpful (2)
- Neither helpful nor unhelpful (3)
- Helpful (4)
- Very helpful (5)

[Q12] *How do you expect the **key changes** to impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other responsibilities?*

- Very negative impact (1)

- Negative impact (2)
- Neither positive nor negative impact (3)
- Positive impact (4)
- Very positive impact (5)

[Q13] *How helpful is the terminology change from **Approved** to **Cleared** in clarifying how you comply with the policy?*

- Very unhelpful (1)
- Unhelpful (2)
- Neither helpful nor unhelpful (3)
- Helpful (4)
- Very helpful (5)

[Q14] *How helpful is the terminology change from **Disapproved** to **Returned to OU** in clarifying how you comply with the policy?*

- Very unhelpful (1)
- Unhelpful (2)
- Neither helpful nor unhelpful (3)
- Helpful (4)
- Very helpful (5)

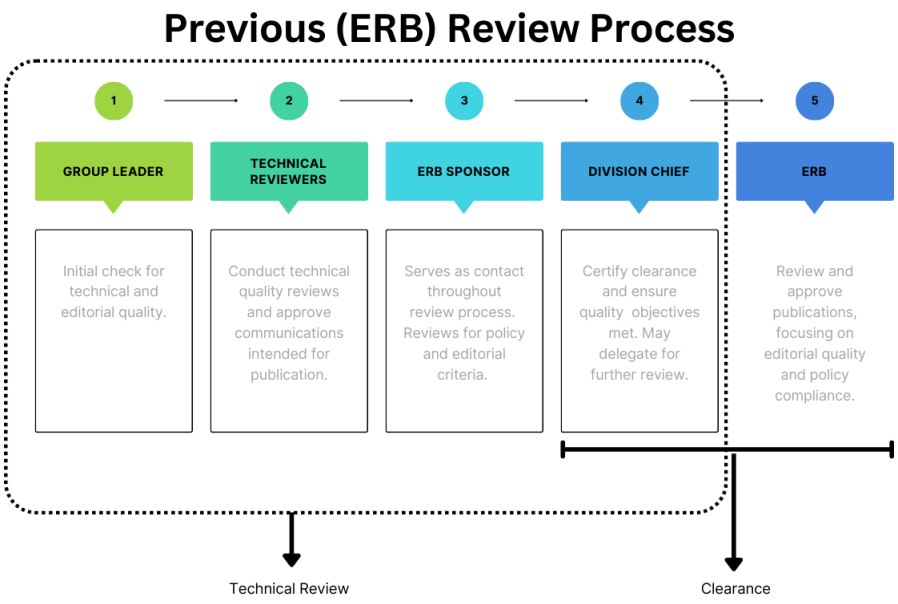
3.5. Review process module

The next module provides a breakdown of the specific changes to the review process. In summary, the review process has been decoupled into (a) technical review of scientific content and (b) clearance review of policy compliance. Previously, these stages overlapped. Moreover, roles and responsibilities were not clearly delineated, which resulted in potential duplication and redundancy of efforts. Under the update, the technical review is the Organizational Unit's (OU's) responsibility (i.e., the author's lab) while the clearance review is NIST's responsibility (specifically, the NIST Research Protections Office, or RPO).

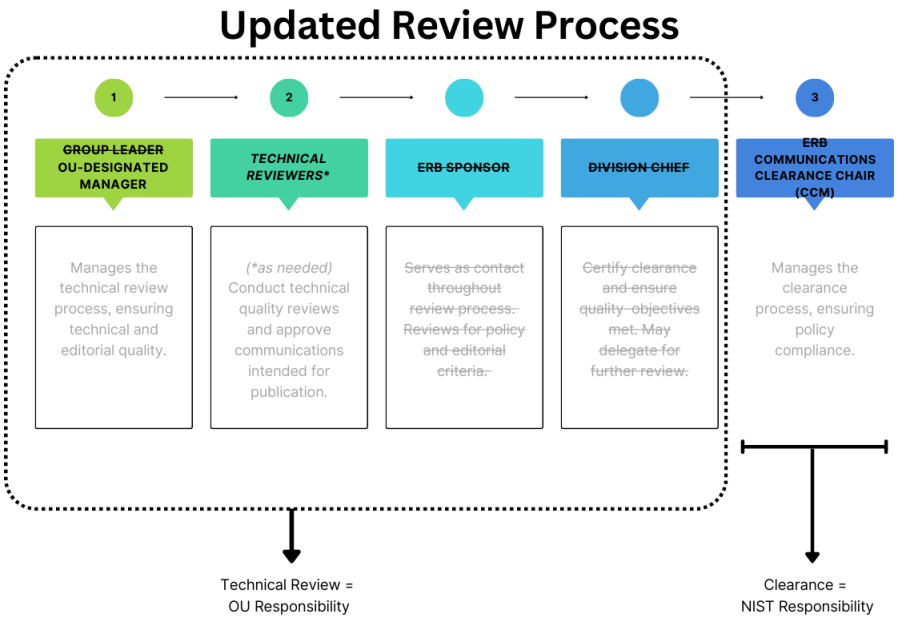
These changes are not easy to explain in a single infographic. Thus, we created an animated *GIF* (Graphics Interchange Format) file that first shows the review process under the previous policy (Fig. 5a) and under the updated policy (Fig. 5b), including brief descriptions of roles and responsibilities and the anticipated workflow. The *GIF* is available at https://tinyurl.com/erb-gif.

Now that you've reviewed the key changes, the specific changes to the **review process** are summarized in the following GIF. *Click on the GIF to open in a new window.*

These updates aim to streamline the review process by decoupling the Technical Review at the lab (OU) level and the Clearance Review at the NIST level; clarifying roles and responsibilities; and introducing process improvements such as a brief review option. Reflect on how these procedural changes might impact your workflow.



(a) Summary of review process under the previous policy.



(b) Minimum review and clearance requirements under the updated policy.

Figure 5. Infographics presented in the survey as an animated GIF.

The updated policy is **available here** <INSERTLINK>

The updated review process has two steps: first, a lab review of the scientific content (Technical Review), and second, a NIST review to ensure policy requirements are followed (Clearance Review).

[Q15] *How helpful do you think the **two-step review process** is for clarifying how comply with the policy?*

- Very unhelpful (1)
- Unhelpful (2)
- Neither helpful or unhelpful (3)
- Helpful (4)
- Very helpful (5)

[Q16] *How do you expect the **two-step review process** to impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other responsibilities?*

- Very negative impact (1)
- Negative impact (2)
- Neither positive nor negative impact (3)
- Positive impact (4)
- Very positive impact (5)

*The **Brief Technical Review** option may be available for publications that are intended for external peer review. This option allows the external peer review to satisfy the technical review requirements (at your lab's discretion).*

[Q17] *How helpful do you think the **Brief Technical Review** option will be for clarifying how you comply with the policy? policy?*

- Very unhelpful (1)
- Unhelpful (2)
- Neither helpful nor unhelpful (3)
- Helpful (4)
- Very helpful (5)

[Q18] *How do you expect the **Brief Technical Review** option to impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other responsibilities?*

- Very negative impact (1)
- Negative impact (2)
- Neither positive nor negative impact (3)
- Positive impact (4)
- Very positive impact (5)

3.6. Ex-post module

Finally, we revisit the questions to assess the respondent's support for the policy (and, implicitly, a respondent's expected intent to comply) from Sec. 3.3. The *ex post* module is designed to assess how support might be affected by the policy update, after the respondent has reviewed the summaries of the key changes.

The null hypothesis is that a respondent's expected behavior is largely unresponsive to the policy update (in particular, without first-hand experience with the new requirements and processes). In that case, we do not expect to see any (statistically significant) changes in support between Sec. 3.3 and the *ex post* responses.

> *Reflecting on your **overall understanding** of the policy update, provide your level of agreement with the following statements:*
>
> [Q19] *My adherence to the policy for reviewing scientific publications supports my career development at NIST.*
>
> - Strongly disagree (1)
> - Disagree (2)
> - Neither agree nor disagree (3)
> - Agree (4)
> - Strongly agree (5)
>
> [Q20] *My adherence to the policy for reviewing scientific publications supports our shared mission at NIST.*
>
> - Strongly disagree (1)
> - Disagree (2)
> - Neither agree nor disagree (3)
> - Agree (4)
> - Strongly agree (5)

[Q22] *Please share your thoughts on your responses or anything else that might help or hinder your compliance with the updated policy.*

- Open-ended response

3.7. Survey closing

Finally, the survey closes with a statement expressing gratitude and reiterating the importance of the respondent's feedback.

> *Thank you for taking the time to provide your feedback. Your insights are invaluable in helping us improve our policies and ensure they are effectively implemented to support both our institutional objectives and your personal work environment.*

The last clause is the OMB Public Burden statement required under the Paperwork Reduction Act (PRA).

> ***OMB Notice**: A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995 unless the information collection has a currently valid OMB Control Number. The approved OMB Control Number for this information collection is 0693-0033. Without this approval, we could not conduct this survey/information collection. Public reporting for this information collection is estimated to be approximately 10 minutes, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. All responses to this information collection are voluntary. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the National Bureau of Standards and Technology at: 100 Bureau Dr, Gaithersburg, MD 20899, Attn: Juan F. Fung, mailto:juan.fung@nist.gov.*

4. Conclusions

The survey is designed to elicit perspectives about a policy update from respondents who are not expected to have any direct experience with the policy update. We sought to administer the survey during the transition period, between the time the policy was updated and the time the OUs implemented their own technical review process, to establish a baseline for anticipated impacts and challenges with the new review process. However, the survey design can be easily adapted to capture *actual* experience with the policy update in the future. We hope to continue this work once the policy changes have been implemented

and sufficient staff have had the opportunity to engage with the new process in any role (as author, reviewer, or any other role).

The survey was administered on Friday, March 21, 2025. We anticipated closing the survey on April 30, 2025, when the OUs were set to implement their technical review processes. However, due to implementation delays, we allowed additional responses until Friday, May 15, 2025. In total, we received nearly 200 responses as of that date.

This report documents the data collection instrument, including context and design. Analysis of results is left for future work. We hope the design and results provide NIST with actionable information to facilitate continuous evaluation and improvement of our review process for scientific publications.

Additionally, we recommend the collection of complementary data for a more complete picture of impact, including but not limited to:

- Average time to clearance (from initial submission for review) per publication
  - For OUs that implement the Brief Technical Review option, it would be interesting to compare average time to clearance between the two review types
- Average number of publications cleared per unit time (e.g., quarter)
- Average number of compliance failures (e.g., publication published prior to clearance)

Such data elements can be compared with data from the previous policy. We hope the results from this initial survey provide additional insight on complementary methods for evaluating the impacts of the policy.

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Appendix A. Full information sheet

You are invited to participate in a research study. Your participation is voluntary. This document explains information about this study. You should read the information below and ask questions about anything that you do not understand. A researcher will be able and available to answer your questions.

The purpose of this study is to collect feedback on changes to the NIST policy for review and clearance of scientific publications. We are conducting an **anonymous** survey to understand staff understanding and perceptions of the policy changes.

If you decide to participate, you will be provided with summaries of the policy changes. You will then be shown questions about your understanding and perceptions of the policy changes. The survey should take no more than ten (10) minutes to complete. Personal characteristics such as role, tenure, and experience with publication policies may be asked. You may exit the survey at any time.

As an author or reviewer of scientific publications, your feedback is important and will inform ongoing monitoring and evaluation of the policy, processes, and procedures for publication review and clearance.

The members of the research team, NIST Research Protections Office (RPO) to include the Institutional Review Board (IRB), and the Office for Human Research Protections (OHRP) may access the data. The IRB reviews and monitors research studies to protect the rights and welfare of you, the research subject. The NIST RPO determined this project meets the criteria for "exempt human subjects research." Please reference IRB #: EL-2024-0399.

When the results of the research are published or discussed in conferences, no identifiable information will be used. The only identifying characteristics collected are role, tenure, and experience with publication processes. No data can be linked back to an individual. Possible risks or discomforts associated with this study are burden on cognitive load from reading and visual comprehension of policy change summaries.

If you have any questions about this study, please contact Juan F. Fung, mailto:juan.fung@nist.gov, 202-380-7347. If you have any questions about your rights as a research participant, please contact the NIST Research Protections Office and/or Institutional Review Board at 301-975-5445 or email mailto:rpoffice@nist.gov.

You should only decide to participate if the following is true for you: I understand the above description of the research and the risks and benefits associated with my participation as a research subject. I understand that by proceeding to the next page, I am choosing to take part in this survey voluntarily.

DO NOT SIGN THIS INFORMATION SHEET.
PLEASE KEEP IT FOR YOUR RECORDS.

Appendix B. Invitation email

Subject:

Have Your Say: Updates to the ERB!

Message:

Exciting changes are happening. The Editorial Review Board (ERB) policy has been updated. Discover what's new and how it impacts you!

Your opinion matters. Participate in our brief (~10min) survey to find out more about the updates and provide your feedback on the review process. Your feedback will help as we implement the changes and continuously evaluate the process going forward.

- Link to survey: <INSERTLINK>
- For more details, see the full information sheet <INSERTLINK>

Please respond by <INSERTDATE>. Thank you for helping us enhance our publication review process.

Juan F. Fung

mailto:juan.fung@nist.gov

Appendix C. Additional power analyses

We provide details on additional power analyses, including the Wilcoxon signed-rank test and the Wilcoxon rank-sum test (i.e., Mann-Whitney U-test).

As an example, consider Q12, focused on perceived impact of the policy update:

> How do you expect the **key changes** to impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other responsibilities?

Suppose we want to test whether perceived impact represents an improvement, relative to how respondents perceived impact of the previous policy, as captured in Q3:

> How did the **previous policy** impact your day-to-day work, such as meeting deadlines, maintaining collaborations, and other similar responsibilities?

The Wilcoxon signed-rank test can be used for such tests of *paired* responses: we can test whether the median response to Q11 is statistically different from the median response to Q3.

Alternatively, the Wilcoxon rank-sum test (i.e., the Mann-Whitney U test) can be used to test whether the distribution of responses is statistically different between *independent*

samples. For example, we can test whether the median response to Q11 differs between federal employees and associates, or by the purpose statement shown to the respondent.

We assume a significance level of 0.05, desired minimum power of 0.8, and a medium effect size of 0.5. Table 4 summarizes the results of the power analyses.

Table 4. Power analysis results for Wilcoxon signed-rank test and Wilcoxon rank-sum test.

Parameter	**Signed rank test**	**Rank-sum test**
Samples	Paired	Independent
Power	0.8	0.8
Effect size	0.5	0.5
α	0.05	0.05
$\mathbf{n}$	50	90

Notes: One-sided tests. α = significance level for test; $\mathbf{n}$ = the minimum total sample size required.