XSEDE

Extreme Science and Engineering
Discovery Environment

XSEDE Resource Allocation Committee (XRAC)
Reviewer Manual

9 August 2019

Version 1.1

A. Table of Contents

B. Document History

Relevant Sections	Version	Date	Changes	Author
Entire Document	1.0	23 April 2018	Initial compilation	David Hart, Ken Hackworth
Code of Conduct; Review Criteria	1.1	17 April 2019	Added XSEDE Code of Conduct, reference to NSF reviewer training	David Hart

C. Welcome to the XRAC!

We have compiled this document to capture the essential policies, processes, and context related to serving on the XSEDE Resource Allocation Committee (XRAC). This manual is intended to help members of the XRAC understand their role within XSEDE and within the broader allocation process, as well as help the user community understand how the XRAC functions.

We have collected and formalized a number of long-standing policies, practices, and procedures—some dating back almost three decades—all of which help to ensure that the allocation process remains transparent, free of bias, and supportive of high-impact scientific research.

D. Charter for the XSEDE Resource Allocations Committee

D.1. Background

Among its responsibilities, XSEDE is charged with allocating a portfolio of computational resources that are funded by the National Science Foundation (NSF) on behalf of NSF. XSEDE manages the process by which these resources, operated by participating Service Providers, are allocated to the national research community. Thus, the allocations process is intended to reflect NSF policies and practices, while the focus of the XSEDE process has been tailored to review plans for using these resources in the pursuit of scientific goals.

XSEDE and the Service Providers continue to rely on a merit-review process to allocate their resources to the national user community, a practice begun at the inception of the NSF Supercomputer Centers program in the mid-1980s and continuing to the present.

D.2. Charter

The objective of the allocations process is to maximize the scientific impact of the allocated resources, supporting the effective stewardship of NSF's investment in the resources while respecting cost constraints on XSEDE and the time commitment of the reviewing community.

XSEDE formally charters the XSEDE Resource Allocations Committee (XRAC) to conduct an impartial and independent merit review of resource allocation requests. The XRAC and associated meeting processes ensure that:

- All requests for resources that exceed a threshold level defined by XSEDE allocation policies shall be merit-reviewed.
- Written reviews of the resource requests shall be completed in a timely manner and made available to the requesters.
- Recommendations to XSEDE for the allocation of resources based on the merit of the requests shall be developed and documented by informed and unbiased reviews.
- The process shall be consistent with the XRAC conflict-of-interest policy and shall maintain confidentiality of reviewers and their reviews.

D.3. Purpose and Scope of Reviews

A request for resources should state the anticipated scientific impact of the research to be conducted and the existing merit-reviewed support for the research. If the research has had independent review and has been deemed worthy of scientific support as demonstrated by current financial support from a national agency or foundation, the scientific merit will not be subject to further review by the XRAC. When a request does not have any supporting grants that have undergone independent merit-review, the reviewers will also review the scientific merit and approach of the proposed work. For ongoing computational activities, the XRAC will also consider the progress made using prior allocations, including the publication of peer-reviewed manuscripts, research products such as data or software, and other citable works contributed to the open-science literature.

The justification of all resource requests will be reviewed against three criteria, which apply across all types of resources, with the level of detail of the review rising with the size of the requested resources.

The review criteria are authoritatively defined in the [XSEDE allocation policies](#) and summarized here for convenience. (See also Section H for more details.)

1. *Appropriateness of Methodology:* The choice of applications, methods, algorithms and techniques to be employed to accomplish the stated scientific objectives should be reasonably described and motivated.

2. *Appropriateness of Research Plan:* The steps in the research plan should explain how the methodology will be applied to achieve the research objectives.

3. *Efficient Use of Resources:* The resources selected should be used as efficiently as is reasonably possible and in accordance with the recommended use guidelines of those resources. If the reviewers conclude that the request is more appropriate on XSEDE resources other than those requested, they may recommend an allocation on those other resources instead.

In considering and applying these criteria, the reviewers shall recognize that scientific productivity is the end goal.

D.4. Terms, Participation, and Succession

The XRAC may comprise approximately 40 XRAC members at any given time. XRAC members are experts in domain sciences and computational and data science. The majority are from academic institutions, but the XRAC has included and does include researchers from industry, non-profit research organizations, federal agencies, and national labs.

XRAC members are all volunteers, appointed to three-year terms that span 12 quarterly meetings. Members may be re-appointed for a second three-year term, subject to XSEDE and the member's agreement. By agreeing to serve on the XRAC, members are expected to attend at least three meetings per year.

Because the face-to-face interactions at XRAC meetings are such a crucial part of ensuring consistent outcomes and contributing to the process, if a member is unable to attend at least three meetings per year, he/she is encouraged to discuss the situation with the Allocation Coordinator to determine a suitable resolution.

Upon the end of their service, the XRAC member is asked to recommend candidates from his/her field that may make a suitable replacement.

D.5. Conflicts of Interest and Confidentiality

The XSEDE allocations review process is confidential, and XRAC members shall not disseminate or discuss allocation requests or materials outside of the allocations review process.

The XSEDE allocations process adheres to a comprehensive conflict of interest (COI) policy and procedure to ensure the fairness of the process. (See Section G.)

XRAC members are responsible for understanding this process and notifying the Allocations Coordinator of presumptive or potential COIs. XRAC members are encouraged to seek guidance on the COI policy at any time from the Allocation Coordinator.

In particular, if an XRAC member plans to submit a resource request, he/she will typically submit it to the meeting they will not attend, to comply with the COI policy. To avoid all XRAC members submitting requests to the same meeting (and the meeting having insufficient reviewers as a result), The Allocation Coordinator may work with individuals to distribute XRAC-member submissions across the four quarterly meetings. As described in the COI policy, an XRAC member may attend a meeting if his/her request falls below the threshold for requests to be discussed at the meeting.

D.6.   Travel and Participant Costs

XSEDE covers XRAC members' travel and expenses for attending meetings. The following expenses are reimbursed: airfare or any other approved transportation, hotels, meals, ground transportation, Internet access, and mileage for use of personal transportation.

All travel arrangements must be made or approved in advance by the XSEDE allocations staff to guarantee reimbursement. Reimbursement is contingent on the reviewer following all applicable procedures and guidelines.

E. XSEDE Code of Conduct

As an XRAC member, you are held to the expectations defined in XSEDE's Code of Conduct at XRAC meetings and in all interactions with other XRAC members and XSEDE staff. The current version of the Code of Conduct is always at https://www.xsede.org/codeofconduct, including current ombudspersons. The latest version as of this document update is repeated here for your convenience.

> This external code of conduct for XSEDE sponsored events represents XSEDE's commitment to providing an inclusive and harassment-free environment in all interactions regardless of gender, sexual orientation, disability, physical appearance, race, or religion. The code of conduct below extends all XSEDE-sponsored events, services, and interactions.
>
> XSEDE is committed to providing an inclusive and harassment-free environment in all interactions regardless of gender, sexual orientation, disability, physical appearance, race, or religion. This commitment extends to all XSEDE-sponsored events and services (in-person training, webinars, committee meetings, networking functions, online forums, chat rooms, and social media) and any interaction including staff-to-participant, participant-to-participant, and participant-to-staff. Participants are all individuals who are not XSEDE staff who attend and participate including but not limited to administrators, faculty, students, researchers, and research computing professionals. As a project that aims to share ideas and freedom of thought and expression, it is essential that the interaction between participants, users of XSEDE services, and XSEDE staff take place in an environment that recognizes the inherent worth of every person by being respectful of all. The XSEDE project does not tolerate harassment in any form. Harassment is any form of behavior

intended to exclude, intimidate, or cause discomfort. Harassment includes, but is not limited to, the use of abusive or degrading language, intimidation, stalking, harassing photography or recording, inappropriate physical contact, and unwelcome sexual attention. All XSEDE users, participants, and staff are governed by their organization's code of conduct or sexual harassment policies.

Anyone who experiences, observes, or has knowledge of threatening behavior are expected to immediately report the incident to a member of the event organizing committee, XSEDE staff, or one of the XSEDE Ombudspersons listed below, or by using the online form. XSEDE reserves the right to take appropriate action.

XSEDE ombudspersons:

- Linda Akli, Southeastern Universities Research Association (akli@sura.org)
- Lizanne Destefano, Georgia Tech (lizanne.destefano@ceismc.gatech.edu)
- Ken Hackworth, Pittsburgh Supercomputing Center (hackworth@psc.edu)
- Bryan Snead, Texas Advanced Computing Center (jbsnead@tacc.utexas.edu)

F. XSEDE Resource Allocations Service

The Resource Allocations Service (RAS) is the area within XSEDE that oversees, manages, and supports the allocations policies and procedures. The allocations team is led by the Allocation Coordinator (formally, the manager of the Allocation Policies and Procedures group), who serves as the primary point of contact for XRAC members.

RAS also encompasses the Allocations, Accounting and Account Management (A3M) team that operates and maintains, among other services, the software system that supports the submission, review, and handling of XSEDE allocation requests. That software system is named the XSEDE Resource Allocation Service (XRAS).[1]

For clarity and disambiguation, the XSEDE area is always referred to as RAS, and the software system is always referred to as XRAS.

G. Conflict of Interest Policy

To ensure the integrity of the allocations process, XSEDE has defined a conflict of interest policy, closely aligned with NSF's approach to managing conflicts of interest in reviewing its own proposals.

G.1.   Purpose
The XRAC procedures for evaluating resource allocation requests must be fair and equitable to all requestors and protect the integrity of the research, science, the NSF, XSEDE, and the Service Providers. Recommendations are to be based on objective judgments of merit without regard to subjective personal biases. Individuals involved with XRAC activities shall act impartially and not give preferential

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[1] XRAS actually existed first, deployed in production in August 2014. As part of proposing the second phase of the XSEDE program, which began in 2016, the new RAS area was created to align with NSF guidance.

treatment to any individual or organization and may not use their position on the XRAC or knowledge gained through XRAC activities to obtain a personal advantage either for themselves or for any other person or entity with whom or in which they have a financial or other vested interest.

A conflict of interest (COI) is a contention between an individual's concern for the public interest or the best interest of XSEDE and his or her private interests or allegiances. COIs also compromise the decision-making process by biasing its effectiveness. Both actual and perceived conflicts of interest may compromise XSEDE's integrity and standing in the research community, its sponsors, and the professional reputations of individuals. As such, actual and perceived conflicts of interest must be scrupulously managed or avoided.

The guidelines and ethical standards presented here provide a framework by which COI situations can be identified and resolved, thus minimizing the level of personal bias in the provision of cyberinfrastructure resources to the national academic community.

Conflicts of interest are common and sometimes inevitable, and thus a disqualification to review should be understood to be a positive solution and in no way a reproach. Whether particular circumstances create an appearance that the standards outlined in this document have been violated shall be determined from the perspective of a reasonable person with knowledge of the relevant facts.

XRAC participants are encouraged to seek guidance on these COI guidelines at any time from the Allocation Coordinator.

G.2.   Relevant NSF COI Policy and Practice

The XRAC COI Policy is based on and informed by NSF COI policies and practices, including the following documents. NSF COI guidance can be found at

- Panelist Conflict of Interest Training from NSF's Office of General Counsel,
- Conflict of Interest Policies from Chapter IX – Grantee Standards in the NSF Proposal & Award Policies and Procedures Guide (PAPPG),
- Exhibit II-2: Potentially Disqualifying Conflicts of Interest from the PAPPG, and
- Collaborators and Other Affiliations Information in the PAPPG, which clarifies the collaborations that may be considered COIs.

If not explicitly mentioned in Section G.3, you should also consider a COI defined by the preceding NSF practices to be a COI for review of an XSEDE allocation request.

G.3.   Presumptive COI Situations

Appointment as a XRAC member requires awareness of COI situations that may arise during the evaluation of resource requests. A COI presumptively exists for an XRAC member due to any of the following relationships:

Direct involvement in the request
- Principal Investigator (PI), Co-Principal Investigator (Co-PI), or other direct participation on the allocation request or project.
- Direct involvement on any of the funding awards supporting the request.

Affiliations with a requestor's institution
- Current employment (formal or informal) within the same institution.
- Any affiliation with the requestor institution including, but not limited to, current membership on a visiting committee or similar body at the requestor's institution, holder of any office, governing board membership, or relevant committee chairpersonship in the requestor's institution.
- Currently seeking employment with the institution.

Relationships with an Investigator or other person who has a personal, academic and/or financial interest in the resource request
- Known family or marriage relationship.
- Business or commercial partnership.
- Present association as primary thesis advisor or thesis student or past association in such a capacity over the last ten years.
- Professional collaboration involving research and publication over the past four years or as a collaborator on a separate, current resource request or allocated project.

Other relationships with the requestor or the request
The interests of the following persons are treated as if they were the panel member's own:

- Any relationship, such as close personal friendship, that might affect the member's judgments or be seen as doing so by a reasonable person familiar with the relationship.
- The resource request lists the reviewer as a person who should not review the resource request.
- Any other conflicts known to the panel member that would prevent him/her from reviewing a project in a non-biased, fair, and objective way.

Less common conflicts of interest may arise in situations including but not limited to professional and personal relationship with a requestor or requestor's department; use of inside information or access to such information; financial, investment, or other ownership interests; use of confidential information; subcontracts with employees their immediate families and their business associates; work with XSEDE contractors; involvement in legal actions against the Federal government and other sponsors; improper use of the XSEDE name or affiliation; and improper use of XSEDE facilities and resources.

The XRAS system automatically identifies some COIs (institutional, PI/co-PI), and reviewers have the opportunity to self-report COIs when they identify them. The XRAS system records all COIs, and reports are available to session chairs during the XRAC discussion.

G.4. COI Responsibilities of XRAC Members
The responsibilities of XRAC members and procedures followed with regards to COIs in XRAC activities are those of Disclosure, Avoidance, and Removal.

Disclosure. Prior to the assignment of reviewers, the XSEDE Allocation Coordinator will identify and record all known COIs between current resource requests and current XRAC members. In some instances, a COI is known only to the individual panel member. Upon receiving review assignments, each panel member is responsible for immediately declaring any COI, using the "Report COI" option in XRAS

or by bringing the matter promptly to the attention of the Allocation Coordinator. The Allocation Coordinator—as an objective, disinterested third party—determines how the matter should be handled and what additional steps, if any, to take. XRAS records all the reported COIs for each meeting.

Avoidance. Members should avoid all actual and perceived COIs. In the course of their duties with the XRAC, members should avoid situations in which they can influence or appear to influence a decision or course of action, as well as any actions that may give monetary gain or personal benefit to themselves or to those with whom they are associated professionally and personally, as covered under the relationships discussed herein.

XRAS does not allow XRAC members to view submission details or reviews for any requests with which they have reported COIs. In listing the submitted requests, XRAS does show conflicted reviewers that such requests exist and that they have a COI; this display helps each member know when they need to step outside.

Removal. When an XRAC member is a Principal Investigator (PI) or Co-Principal Investigator (Co-PI) on a resource request to be discussed at the current panel meeting, *or a PI or Co-PI on any funding award(s) supporting the resource request,* the conflicted member will not participate as a reviewer for that meeting. The conflicted panel member shall neither attend the XRAC meeting to which the resource request was submitted nor review other resource requests submitted to the same meeting.

When an XRAC member's resource request is below the threshold for requests to be discussed at the meeting, the COI is considered addressed since the request will not be discussed in-person at the meeting. The member may still attend and review requests for the meeting.

When the Allocation Coordinator has judged that another type of COI exists for a XRAC member, the conflicted panel member shall not have access to the resource request, shall not be assigned as reviewer to the request, and shall leave the room during discussion of the resource request.

While most COIs should be identified before the meeting and before review assignments are made, potential COI questions may be raised during the meeting. In such a case, if the Allocations Coordinator and the Chair judge it to be a conflict, the panelist will leave the room. Otherwise, the panelist may continue to participate in the discussions.

G.5.   Responsibilities of XSEDE Staff and SP Representatives
The XSEDE Allocation Coordinator and supporting XSEDE allocations staff members are required to ensure the smooth functioning of the XRAC meetings and are presumed to be disinterested third parties with respect to all allocation requests.

Additional XSEDE staff and SP representatives are permitted to attend and observe XRAC deliberations in a non-reviewer capacity to support those deliberations when requested by XRAC members. In general, one representative from each SP can be designated an "allocation officer," and SP allocation officers are generally exempt from COI policies, unless the individual is directly involved in a resource request. Otherwise, XSEDE and SP staff in attendance must be aware of COI situations and are subject to the same COI rules as XRAC members.

Active participation by non-reviewers in the deliberations or recommendations of the panel harms the integrity of the impartial review process and must therefore be deemed a COI. The meeting or session Chair is responsible for monitoring XSEDE and SP participation and if the XRAC Chair judges that a COI exists for a XSEDE or SP representative or that the representative is actively participating in XRAC deliberations, the conflicted representative shall be asked to leave the room during discussion of the resource request. The meeting Chair can bring conflicted XSEDE or SP staff back into the room to solicit input as needed.

H. Review Criteria, Considerations, Ratings, and Rubric

XRAC reviewers consider three primary review criteria in evaluating each assigned request. Each recommendation also considers several other factors to ensure that the requesting team has the best chance of success, and XSEDE provides a rubric to help summarize these review criteria and considerations.

All XRAC reviewers are also encouraged to view NSF's video training, "The Art and Science of Reviewing Proposals," at https://tipsforreviewers.nsf.gov/. While some content is specific to reviewing NSF proposals, many elements also apply equally well to review of allocation proposals.

H.1. Review Criteria

First and foremost, XRAC reviewers evaluate the merits of each request according to the three allocation review criteria as stated in the Allocation Policies. PIs must provide justification, suitable to the nature of the request, that addresses these criteria; reviewers apply the criteria in the context of the request.

It bears emphasizing: The goal of reviews is to judge each request on its own merits and make recommendations based on those merits. Reviewers should not be reducing requests merely to fit all requests within the amount available on each resource.

Appropriateness of Methodology: Does the request describe appropriate tools, methods, and approaches for addressing the research objectives? These methodologies may be community codes or models, data analysis methods, or algorithmic formulations expressed in user-developed scripts or tools.

Appropriateness of Research Plan: Does the request describe necessary and sufficient computational experiments to answer the research questions posed? In some cases, the research plan may be more reasonably expressed as estimates of resource use, supported by past or early experience. Serious concerns about the research plan will be documented in reviews and may lead to reduced allocation awards.

Efficient Use of Resources: Has the request identified appropriate resources for undertaking the research plan with the proposed methodology? And will those resources be used as efficiently as is reasonably possible and in accordance with the recommended use guidelines of those resources? Is the proposed work better suited or equally well suited to other resources available for allocation?

Whether a request's justification for efficient use of resources is sufficient may be judged in the context of broad resource under- or over-subscription levels. Requests for resources that are in high demand are typically subject to close scrutiny with respect to the efficient use criterion. However, requests for

under-utilized or under-requested resources may be granted greater latitude as part of the overarching end goal of scientific productivity. Reviewers are encouraged to identify meritorious requests that may be able to take advantage of potentially under-requested resources.

H.2.   Additional Considerations

In addition to assessing each request in the context of the primary review criteria, reviewers can consider other factors that may modify their recommendations.

Eligibility: While XSEDE allocations staff try to eliminate the most common cases of ineligible submissions, less obvious or less common eligibility concerns may arise during the review of requests. XSEDE has fairly liberal eligibility rules. There are three primary limitations:

- The Principal Investigator (PI) on a request must be a faculty member or full-time researcher, including a postdoctoral researcher; graduate students are not eligible PIs for Research requests.
- The PI must be affiliated with a US-based institution; substantive international collaborations are welcome, but the request PI must be from a US institution. Eligibility policies allow for submissions from industry and non-academic organizations, under certain conditions, as well as from academic institutions.
- The research must be non-proprietary and intended for general dissemination in the scholarly literature.

Eligibility questions during review can be directed to the XSEDE Allocations Coordinator, ideally before the meeting. Detailed eligibility guidelines are provided in the allocation policies.

Intellectual Merit: Reviewers also consider whether the work has any supporting grants for which the science has been merit-reviewed. If so, is the allocation request consistent with the objectives of the supporting grants as described in the submission and is the scale of resource use commensurate with the level of support? If no such grants are identified, the reviewers must assess the intellectual merit of the work. This assessment of the intellectual merit will factor into their overall recommendation.

Reviewers will also consider whether the identified support provides necessary and sufficient staff resources to complete the proposed work.

Prior results: Research requests typically require some form of prior work or progress to be considered for an allocation. For New requests, demonstrated benchmarking or test runs are typically required on the requested resource in almost all cases; in some instances (such as a request for a new resource for which Startups are not yet available), demonstrated work on an architecturally similar resource may suffice. For Renewal requests, reviewers consider the provided Progress Report as well as utilization levels of prior allocations.

In most cases, researchers will have had an XSEDE Startup allocation to perform benchmarking or other preliminary work. Such allocations will be viewable within the XRAS system. However, users may have had access to resources through other means, including Campus Champion allocations, trial allocations, or as a user on another Research allocation prior to beginning their own line of work. These other

options will not be visible in XRAS; XSEDE allocations staff can help clarify such situations for XRAC members.

Grounds for Rejection: Research requests have a small number of required elements, and failure to address these issues are grounds for rejection. The current grounds for rejection are:

- ***Failure to describe the team's access to other compute resources.*** The main request document should address other resources the team has access to or may be reasonably presumed to have access to, including campus resources or other regional or national systems. The statement should note why other available resources are insufficient or how the work is distinct from the work being done on other systems.
- ***Failure to provide appropriate code performance and scaling data.*** The additional Code Performance and Scaling Data document should include benchmark performance data on the requested resources and scaling data that justifies the size and efficiency of the planned computational runs. Traditional "scaling" data may not always be relevant for some resource requests, as in the case of single-core high-throughput computing projects or cloud provisioned resources. In such cases, reviewers will need to judge whether the performance data provided is appropriate and sufficient to justify the resource request.

H.3. Review Rubric

The following rubric is provided to reviewers after review assignments are made and is also posted for submitters in the allocations documentation:

To ensure all required and relevant aspects of each request are considered, the XRAC reviews and rates each request according to the following rubric. Submissions should address each of these elements within the required documents.

Grounds for Rejection
Failure to address either of the following two items is grounds for rejection.

- Proposal describes access to other compute resources
- Code performance and scaling data are provided

Assessment and Summary
- Research objectives described
- Intellectual Merit: Peer-reviewed supporting grant(s) - OR - Science review
- Progress report, publications, and prior usage (if applicable)
- Proposal adequately describes why other compute resources cannot or will not be used for the work described

Appropriate Methodology
- Right tools, codes, algorithms, etc., for the research objectives
- Appropriate parameterizations, model configurations, etc., for the research objectives

Appropriate Research Plan
- Necessary & sufficient experiments or work plans to answer the research objectives?
- Request totals calculated correctly
- Justification provided for number of replicates, problems sizes, duration of calculations, etc.

Efficient Use of Resources
- Appropriate resources chosen
- Resources to be efficiently used
- Code performance and scaling data are provided and appropriate

H.4. Information on Allocated Resources

Allocated resources can be quite different and reviewers should familiarize themselves with the systems to assess the degree to which a request will make efficient (and effective) use of each resource.

To assess the appropriateness of resources for a given request, reviewers should consult the information on allocated resources available from the XSEDE web site's Ecosystem section or the XSEDE User Portal's Systems Monitor. The User Guide for each resource includes key system specifications and other details.

To estimate how a requested or recommended allocation amount would be affected by moving to another resource, you may use the XSEDE SU Converter. Reviewers may use the Converter to provide recommended amounts if they are recommending that an allocation be moved to a more appropriate resource. However, the Converter is not intended to replace the need for PIs to benchmark codes on different resources.

I. Completing Your Reviews

While the preceding review criteria and rubric define the basis and scope for reviews, we provide the following guidance for how to craft the review text that will ultimately be seen by the submitters.

Due to the high volume of requests and reviews, the XSEDE allocations staff cannot edit, elaborate on, or otherwise "clean up" reviewer comments, so XRAC members should presume that what they enter will be seen by the submitters and prepare their review text accordingly.

I.1. Review Content and Objectives

In completing reviews, XRAC members should provide comments aimed at helping researchers understand the rationale for the ultimate panel recommendation, including specific reasons for reductions and changes, and providing guidance for improving future submissions. Extreme brevity and lack of detail serves neither the submitting researchers nor the XSEDE allocations process overall. Clarity and specificity also help reviewers of future submissions understand whether the requests have addressed prior comments.

The XRAS review form includes space for an overall assessment, as well as comments related to each of the three review criteria. Providing a coherent review is paramount, but reviewers are encouraged to relate specific criticisms to the corresponding criterion as appropriate.

To the extent possible and especially for new submitters, requests that are rejected or substantially reduced for a specific reason (such as failing to provide information about available resources or suitable performance/scaling data) should still be given feedback about the quality of or deficiencies throughout the overall request, so that re-submissions have the chance to address all shortcomings and succeed at the next opportunity. Resubmission of a rejected request that is again rejected for a different, previously unmentioned reason frustrates the researcher, adds to the XRAC workload, and diminishes the perceived quality of the entire allocations process.

I.2. Updating Reviews

Reviewers can update their reviews until submitters are notified of their allocation awards, but ideally any updates should be made within a day or so of the in-person meeting.

Reviews may be updated for various reasons. For example, a reviewer may realize following the meeting discussions that they misunderstood or overlooked some piece of information that renders all or part of their initial review incorrect or invalid. This may occur if the documents address one of the required elements in a nonstandard or non-obvious location in the text.

If a request receives divergent reviews—an Excellent and a Poor, for example—or if the panel discussion leads to substantial changes to the assigned reviewers' initial suggested allocations, the session chair or XSEDE allocations staff member will ask one or more of the assigned reviewers to update their reviews with a summary of the discussion and the outcome, to avoid confusion on the part of the submitter.

I.3. Rating Requests

Part of each review includes the XRAC member's rating on a subjective rating scale—Excellent, Very Good, Good, Fair, Poor, or Reject. The rating scale is similar to the ratings used for NSF proposal reviews. While qualitative, analysis has shown the rating data to be useful in demonstrating consistency of assessments across the many panel members and consistency in reductions for similarly rated requests.

Ratings also help identify divergent reviewer opinions, and such requests typically will be allotted longer discussion time during the meeting.

I.4. Absentee and External Reviews

The XSEDE Allocation Coordinator will still make assignments to an XRAC member who is unable to attend a meeting in person due to conflicting work or life schedules (not because of a COI with their own submission). In such cases, detailed review comments are especially important to the process and are used to inform the discussion and recommendation for each request. Timely submission of absentee reviews *before* the in-person meeting is critical.

When one reviewer is absent, one of the attending reviewers will summarize the absent reviewer's comments as part of the panel discussion. When no reviewers assigned to a request are present, the XSEDE Allocations Coordinator designates (usually before the start of the in-person meeting) a member in attendance from the same domain to present the summary of the absentee reviews to the panel and a consensus recommendation.

For requests from fields of science that less commonly appear in the XRAC submissions (e.g., economics), the XSEDE Allocations Coordinator may assign external reviewers to provide the necessary

expertise for review. One or more XRAC members will also be assigned to ensure consistent treatment within the review process. Reviews and external reviewers are handled in the same way as the reviews from absent XRAC members.

J. Quarterly Allocation Process Overview

This section summarizes the quarterly timeline for the XRAC and outlines the responsibilities of XRAC members. For brevity, this document summarizes the detailed information on relevant topics, most of which can be found in the relevant documentation and the formal allocation policies within the Allocations section of the XSEDE portal: https://portal.xsede.org/allocations/.

To minimize the workload on XRAC volunteers, most tasks, other than reviewing requests, are carried out by XSEDE allocations staff.

J.1. Quarterly schedule and cycle

XSEDE invites researchers to submit Research allocation requests four times each year as listed in Table 1. After each deadline, the Allocation Coordinator assigns reviewers, and the XRAC members review the requests prior to the in-person meeting. Review meetings are held around the first week of the month; the "September" meeting is often held the last week of August to avoid Labor Day weekend. XSEDE strives to notify requesters of the meeting outcomes by the 15th of the month prior to the allocation start.

Table 1. XSEDE Research request submission windows, review meetings and allocations periods.

Submission Window	Review Meeting	Allocation Period
Dec 15 – Jan 15	March	Apr 1 – Mar 31
Mar 15 – Apr 15	June	July 1 – Jun 30
Jun 15 – Jul 15	September	Oct 1 – Sept 30
Sept 15 – Oct 15	December	Jan 1 – Dec 31

J.2. Review Assignment Timeline

Within two weeks of the allocation request submission deadline, XRAC members have the opportunity to rate their interest in reviewing each of submitted requests based on their titles and fields of science. Following the rating step, the XSEDE Allocations Staff assigns reviewers to each submission, completing assignments typically four weeks prior to the XRAC panel meeting. Review assignments are based on the best available matches between the request's and the reviewers' primary and secondary fields of science, as well as balancing the number of assignments to each XRAC member and avoiding COIs.

The number of reviewers per request ranges from two to four, with more reviewers assigned to larger requests. For each meeting, the XSEDE Allocations Coordinator tries to assign no more than 10 proposals to each XRAC member, aligned to the extent possible with the individual's areas of expertise.

For each request, whether or not they are assigned to review a given request, the complete submission information—including documents, reviews, requested amounts, and prior allocations and usage—is accessible to all non-conflicted XRAC members.

In all cases, reviewers are asked to complete and submit their reviews in the XRAS system no later than the Friday before the in-person meeting. Completing reviews in a timely fashion is especially important for members who are unable to attend in person.

J.3. Meeting Process and Recommended Allocations

Each quarter, an XRAC meeting is convened to recommend allocations for each request through caucus and panel discussion sessions. To allow the XRAC members to complete discussion of requests in a timely fashion during their limited face-to-face opportunity, XSEDE divides submissions into several review categories.

J.3.1. Adaptive Reviews

Smaller requests are assigned to the computational experts from XSEDE's Extended Collaborative Support Service (ECSS) and are not discussed by XRAC members at the quarterly meeting. These so-called "Adaptive" requests typically have two ECSS staff reviewers who apply the review criteria and review rubric to suggest allocation awards. COI rules are applied in determining eligibility of reviewers. If the two reviews suggest different outcomes, the Allocation Coordinator engages both reviewers to determine the Recommended Allocation for the request. The threshold for the maximum size of Adaptive requests is determined in part by the number of requests that XRAC members can feasibly review during their meetings.

J.3.2. Caucus, Plenary, and Parallel Sessions

For all other requests, reviewers convene at the quarterly XRAC meeting to determine a Recommended Allocation for each Research request, as well as large Supplements or Appeals.

The XRAC has no standing Chair position. Session chairs are designated at the start of each meeting by the XSEDE Allocations Coordinator from members who volunteer to serve in those roles for the meeting. *All members are welcome to volunteer to chair a session any quarter after their first meeting.*

The meeting begins with a caucus session the first evening after an XSEDE-hosted dinner. At the caucus session, review teams for each proposal meet, generally for 5-10 minutes, and discuss significant disagreements in their reviews, including those from absent reviewers. Caucus discussions can also happen by email to engage absent reviewers. The end result is to come to a consensus agreement on whether or not the proposal should be fully awarded, partially awarded, or rejected. The agreement should include, if possible, a consensus Recommended Allocation for each requested resource. Reviewers can also ask clarification questions of XSEDE or SP staff during the caucus.

The full panel meets the next morning in a Plenary Session to discuss the largest requests submitted to the meeting. Following the Plenary Session, the panel divides into Parallel Sessions to discuss the remaining requests. Most recently, there have been three parallel sessions: Life Sciences, Physical Sciences, and Materials Research. This division allows most reviewers to remain in one session most of the time. When necessary, a reviewer will join another session to participate in discussion of requests they have reviewed. Requests from less common fields of science (e.g., economics) are assigned to one of the parallel sessions to balance the workload and minimize the need for reviewers to switch sessions.

Within the Plenary and Parallel sessions, the discussion proceeds in the same fashion. Each review team summarizes the requests and their reviews, and the consensus Recommended Allocation. After the initial summaries, the floor is open to discussion, and the Recommended Allocation is approved or adjusted by the XRAC. Special considerations are noted; these may include mobility of allocations from one resource to another, panel discussion decisions, special needs and reasons for any exemption from allocation Reconciliation (see Section J.4).

XRAC members are also encouraged to identify "exemplary" submissions, those that are worthy of being highlighted as models for other submitters to follow. (XSEDE allocation staff seek the submitter's consent before sharing their requests as examples.)

At the end of each Plenary or Parallel session, the chair asks the committee members to propose any further review of requests that need re-evaluation in retrospect of the general disposition of all other awards. This is called a request for "normalization" and is used to ensure consistent handling and recommendations for requests facing comparable reviewer feedback.

Representatives of the Service Providers (SP) whose resources are being allocated also attend the XRAC meetings. They provide resource updates to the panel and respond to clarification questions from the panel. Otherwise, they do not participate in the panel discussions and do not have input into the Recommendations.

J.3.3.   XRAC Recommendations and Resource Availability

In all parts of the process, reviewers are asked to consider requests only on their merits. The reviewers are not informed about the total requests on the different systems until the caucus session and only after their individual reviews have been completed. This approach is designed to ensure that reviews are based purely on the merit of the proposal. Providing the allocation request total and available units for each resource at the caucus allows them time to prepare mobility information for requests that need to be or could possibly be moved to alternate systems in an oversubscription situation.

The total of the Recommended Allocations is reported to NSF, so that NSF will be aware of the panel's statement of the actual need for resources.

J.4. After the Meeting—Reconciliation

Following the discussion of all requests, if the aggregate Recommended Allocation is less than the total Available Amount for a system, the Recommended Allocations generally become the Awarded Allocations. When the total Recommended Allocation exceeds the total Available Allocation for a given resource, XSEDE and SP staff use a procedure approved by the NSF to adjust the Recommended Allocations to arrive at the Awarded Allocations. This Reconciliation adjustment is performed by the XSEDE Allocations staff and SP representatives after the XRAC meeting ends and formulaically adjusts all Recommended Allocations to remove oversubscription.

Within two weeks of the meeting, the XSEDE allocations staff complete the Reconciliation process, summarize the panel discussions, craft administrative comments or notes to PIs as needed, and send notifications of final awards to all PIs, co-PIs and Allocation Managers of requesting projects, as well as to all affected SPs.

A survey of all allocation submitters for the prior quarter is conducted each quarter to assess user satisfaction with the allocations process, and a report of the quarterly allocations activity is provided to NSF as part of XSEDE's regular reports.

J.5. Supplements and Appeals

The XSEDE allocations policies allow for Supplements and Appeals that will happen outside of the quarterly meeting cycle just described. Reviewers may be contacted to review these submissions. Due to current high demand, XSEDE is often unable to consider additional awards from Supplements or Appeals, but they may occur on occasion.

In general, the same review criteria apply to these submission types. In both cases, reviewers are able to access the prior meeting-reviewed submission and should consider the supplement or appeal in the context of that prior submission. For brevity, submitters are encouraged to refer to those documents as appropriate.

Supplements can be submitted any time during the allocation award period to ask for additional amounts on resources currently awarded to the project, or to ask for allocations on newly available resources. Large supplements may be deferred and considered as part of the quarterly meeting review cycle.

Appeals, per policy, must be submitted within four weeks of the PI being notified of the meeting outcomes. Appeals are intended to allow a PI to clarify and correct a misinterpretation by reviewers that may have led to a reduced award. Rejected requests cannot be appealed.