



GRANT GUIDE: NSF

Fundamentals of Applying for National Science Foundation grants



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GEORGIA STATE UNIVERSITY
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Table of Contents

1. Introduction: Why & How to Use this Guide	page 1
2. Resources at Georgia State University (GSU) and the Andrew Young School of Policy Studies (AYSPS):	
2.1. University Research Services Administration (URSA)	page 2
2.2. Office of Sponsored Proposals & Awards (OSPA).....	page 3
2.3. CAYUSE – Proposals submitted through grants.gov	page 4
2.4. GSU Proposal Routing	page 4
2.5. Pre-Award Support at AYSPS	page 5
2.6. Steps for ANY sponsored proposal (Figure 1).....	pages 5-6
3. NSF Application Checklist: Standard Documents	page 7
4. Applying to NSF:	
4.1 About	page 8
4.2 Structure	page 8
4.3 Mission	page 8
4.4 Website(s) and Mailing Lists	page 9
4.5 Types of Funding Programs & Announcements	page 9
4.6 Types of Proposals	page 10
4.7 Application Instructions & Forms	page 10
4.8 Submission, Review & Timelines	page 12
✚ key systems and registrations	page 12
✚ merit review	page 13
4.9 Proposal Development – General recommendations	page 14
4.10 Grant Application – Key Pieces.....	page 15
▪ PROJECT DESCRIPTION	page 16
▪ PERSONNEL and BIOSKETCHES	page 16
4.11 Grant Application – Other Important Pieces.....	page 19
▪ PROJECT SUMMARY.....	page 19
▪ BUDGET	page 19
▪ BUDGET JUSTIFICATION	page 20
▪ SINGLE COPY DOCUMENTS	page 21
▪ DATA MANAGEMENT PLAN	page 21
○ MENTORING PLAN	page 21
▪ COVER SHEET	page 22
▪ REFERENCES CITED	page 22
▪ FACILITIES, EQUIPMENT & RESOURCES	page 23
○ HUMAN SUBJECTS	page 23
○ VERTEBRATE ANIMALS, ENDANGERED SPECIES	page 24
○ LETTERS OF COLLABORATION	page 24
× LETTERS OF SUPPORT	page 25
× COVER LETTER	page 25
× APPENDICES	page 25

▪ required ○ if applicable × not permitted typically

1. Introduction: Why & How to Use this Guide?

This guide was written with two **types of applicants** in mind:

1. Junior faculty who need to get a sense of what it takes to *develop a compelling and comprehensive ('full') grant proposal*. Especially when it is their first application or they have failed to compete successfully in the past, it helps to take a step back and consider all the pieces. A grant application is not simply a collection of documents. It is a vision that must be expressed clearly and concisely every step of the way. Moreover, this vision needs to harbor something new and exciting. A competitive grant proposal takes time to crystalize.
2. Senior faculty or successful past applicants who need an *update or quick refresher*. Instructions and requirements change constantly, and this guide discusses the latest. It also includes processes specific to Georgia State University, which apply to everyone.

This guide was developed by experienced and successful grant applicants and grant reviewers. It includes tips and notes of caution ('grantsmanship') you may not be aware of or learn easily otherwise. Another helpful resource is Li & Marrongelle (2013): *Having success with NSF: A Practical Guide*. (Wiley-Blackwell), which gives a program officer's perspective.

This guide was developed in close consultation with the official NSF application instructions, but avoids repeating those instructions. The goal is to give an overview of the process and soft information to help applicants get organized.

Disclaimer: This guide does not at any time in any way replace the official NSF guidelines and policies. In case of doubt, call your local (university) grants officers or NSF program officials.

How to Use: Read the guide start to finish, chronologically, the first time. Thereafter, the table of contents can be used to work on specific, isolated questions and application pieces one-off.

Figure 1 (page 6) summarizes the *proposal submission steps everyone needs to take*.

Editorial:

- Hyperlinks to websites are shown as [blue underlined text](#), which signals an *active* link. If you notice a problem or need help, contact your local grants & contracts officer (see section [2.5](#)).
- Because the actual address of websites can be quite long, {small underlined dotted text} is used to help locate a webpage in writing. It will show the various steps to take, if any, to get to a particular page {main.page/.next.step/.subsequent.step/.target.page}.
- Cross-references to guide sections and to the official guidelines (in Chapter 4) are **high-lighted in yellow**. The latter denote the relevant Chapter and Chapter section.



This symbol denotes GSU-specific rules and recommendations throughout this guide.

2. Resources at Georgia State University (GSU) and the Andrew Young School of Policy Studies (AYSPS)

2.1 University Research Services Administration - [URSA](#):

URSA {ursa.research.gsu.edu} is GSU's resource for grants and contracts activities, compliance and safety, and research administration. In addition to offering post-award help, the office and web-site provides many good and necessary resources to get oriented, started, and submit a proposal for sponsored research. *Developing and writing a grant proposal remains the responsibility of the applicant and his/her department and school.*

The *Office of Sponsored Proposals and Awards* (OSPA, see [2.2](#)) is part of URSA.

Important URSA sites include:

- Human Subjects and Institutional Review ([IRB](#))
- Institutional Animal Care and Use Committee ([IACUC](#))
- Responsible conduct in research and associated ([CITI](#)) training
- Help with finding [funding opportunities](#) using [PIVOT](#) and other avenues.

Directly relevant to the **application process**:



- [Research Portal](#) {[URSA/Proposals & Awards](#)}: *The portal is used to request key personnel submission registrations and to electronically route proposals to OSPA. As of November 2016, all proposals are routed electronically (see [2.4](#)).*
 - 🔑 PORTAL Login requires a campus ID and password.
 - 🕒 Use to request [FastLane and eRA Commons Registrations](#) (see also [4.8](#) | KEY SYSTEMS AND REGISTRATIONS)
 - 🕒 Use to [route proposals to OSPA](#) (see also [2.2](#) and [2.4](#))
- [Conflicts of Interest \(COI\) and Significant Financial Interest \(SFI\) disclosures](#) {[URSA/Additional Resources/Conflicts of Interest](#)}: Investigators must complete training on COI and complete a Financial Disclosure form each year. Additionally, SFI is required for each individual proposal. *An investigator is anyone who is responsible for the design, conduct, and performance or reporting of a sponsored project at GSU, regardless of title or position. Make sure training and disclosures of all investigators are up-to-date early on during proposal development.* If not, a proposal cannot be submitted.

2.2. Office of Sponsored Proposals and Awards - [OSPA](#):

OSPA {URSA/Contacts/OSPA Structure and Contacts}, as part of URSA, is dedicated to proposal review and submission.

OSPA is organized according to sponsor type and has dedicated teams for various grant programs and institutions, including NIH. A [staff directory](#) is available and staff welcome questions, visits and planning meetings with anyone learning to understand the application and award process, or needing a refresher.



Applicants should be in communication with OSPA throughout the application process, especially at the beginning and end. They should notify OSPA when they consider a submission in response to a particular funding opportunity. *A short planning meeting with OSPA is strongly recommended.* A proposal can be routed to OSPA for review (see [2.4](#) – GSU PROPOSAL ROUTING) 1 – 2 weeks prior to submission deadline when a draft budget and project summary are ready, and have been reviewed and approved by the applicant department.

All sponsored project proposals are submitted by OSPA. Note that OSPA will not submit without the explicit confirmation from the Principal Investigator (PI) that the proposal is ready and final. In order to submit, *the PI must grant OSPA access to the proposal in some submission portals, such as NSF's FastLane* (see [4.8](#) – SUBMISSION, REVIEW & TIMELINES).

Important **Proposal Development** resources include:

- [Writing tips, help and resources at GSU and NIH](#) {URSA/Proposal & Awards/Get Started with Proposal/Proposal Writing Resources}. Sites do not necessarily offer new information, but may link to existing NIH. *Study the overviews regularly to see what is new and may help.*



- [Budget Development](#) {URSA/Proposal & Awards/Develop Proposal Budget}: The budget is an important part of any sponsored proposal and *OSPA strongly recommends its templates* (excel spreadsheets) *to accurately develop and calculate budget items.*
- The budget development site also provides details on **allowable / unallowable costs, direct and indirect Costs (F&A rates), fringe benefits, cost sharing** and the **budget justification** (see also [4.11](#) | BUDGET JUSTIFICATION).
- An [online training module](#) {URSA / Proposal & Awards / Develop Proposal Budget / How to Build a Proposal Budget Training} explains how to build a proposal budget.
- The [Institutional Fact Page](#) lists key information to enter, such as the organizational DUNS number, about the *applicant organization, which is Georgia State University Research Foundation (GSURF), not GSU* {URSA / Proposals & Awards/Get Started with Proposal/ Fact Page and Key Institutional Documents}.

- The [GSU Fact Book](#) {oie.gsu.edu} contains information on admissions, enrollment, degree programs, finances, faculty and staff, and physical facilities to be included in grants and reports.

2.3. [CAYUSE](#) – Proposals submitted through grants.gov:

CAYUSE {[URSA/ Proposals & Awards / Get Started with Proposal / Using CAYUSE424 for Preparing Proposals](#)} is a 'system-to-system' software application GSU and other universities use for the *creation, review, approval and submission of grant proposals submitted through Grants.gov*. Grants.gov is a federal funding site and submission portal (see also [4.8](#) | KEY SYSTEMS AND REGISTRATIONS). CAYUSE *offers a live overview of potential errors and sponsor-system warnings before submission, which is important and helpful*. It avoids last minute submission problems and potentially missed deadlines.



*Although NSF applications can be submitted through Grants.gov, OSPA strongly recommends using **FastLane**, which is NSF's own submission and award management portal* (see [4.7](#) – APPLICATION INSTRUCTIONS & FORMS). Using a pop-up menu, *FastLane* will provide a live summary of potential application errors and sponsor warnings, which is helpful and important to avoid submission delays.

2.4 [GSU Proposal Routing](#):



- As of November 2016, all sponsored proposals are routed for approval through the **Research Portal** (see [2.1](#) - URSA). Your local research administrator or pre-award support team (see [2.5](#)) will initiate the routing and develop the proper approval workflow to include all investigators and their chairs and deans.

Following department routing and approval, all sponsored proposals must be reviewed by OSPA (see [2.2](#)). *It checks the financial and administrative aspects of the proposal, not the scientific content. OSPA requests at least 5 **business days** to review proposal documentation. This does not include the departmental/college routing.* Proposals with special features such as cost sharing, numerous subcontracts or consultants, and conditions that necessitate legal review, require additional lead-time.

OSPA recommends submitting at least one day ahead of the deadline.

2.5 Pre-Award Support at AYSPS:

Grants & Contracts Officers:

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2.6 Steps for ANY Sponsored Proposal:

Please refer to Figure 1 on the next page for an overview of steps.

The first step in the grant application process is to notify your local pre-award support in the department, school or college (see 2.5). Let *them* know you are considering an application, and let them tell *you* what's new and next. Seasoned applicants should do this too as it helps the department be prepared and stay up to date as well as be a helping hand and your advocate.

The second step is to notify OSPA (see 2.2), which your local pre-award support may do for you. *A short planning meeting with OSPA is strongly recommended.*

Step three is to check and secure your registrations and disclosures (see 2.1).

Step four is to develop and write an NIH grant proposal using CAYUSE (see sections 4.7 – 4.11). *Pay close attention to the funding opportunity announcement (see 4.5), which supersedes any general proposal development requirements and instructions.*

The last step is proposal submission by OSPA.

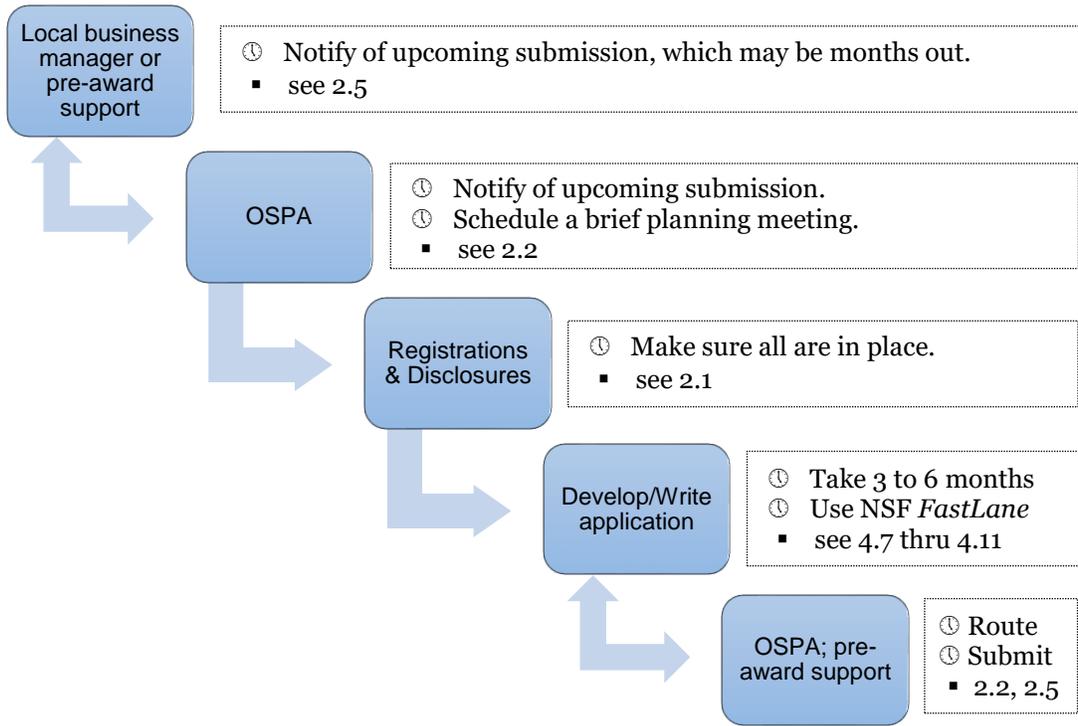


Figure 1: Sponsored proposal submission steps at GSU

3. Standard NSF Application Documents & Information (to be provided by the applicant)

Name:	Type:
<input type="checkbox"/> Cover Sheet ('SF424 R&R')	Information
<input type="checkbox"/> Project Summary	Document, limit: 1 page (4600 characters)
<input type="checkbox"/> Project Description	Document, limit: 15 pages
<input type="checkbox"/> List of References Cited	Document
<input type="checkbox"/> Biographical sketches	Document, limit: 2 pages per sketch
<input type="checkbox"/> Current & Pending Support	Document, one per key person
<input type="checkbox"/> Collaborators & Other Affiliations	Document, for PD/PI
<input type="checkbox"/> Facilities, Equipment and Other Resources	Document
<input type="checkbox"/> Budget	Information
<input type="checkbox"/> Budget Justification	Document, limit: 3 pages
<input type="checkbox"/> Data Management Plan	Document, limit: 2 pages
<input type="checkbox"/> Mentoring Plan	Document, <i>if applicable</i>
<input type="checkbox"/> NSF Cover Page	Documents (Grants.gov submissions only)
<input type="checkbox"/> Project/Performance Site Primary Location	Information
<input type="checkbox"/> Single-Copy Documents	Documents, for NSF use only
<ul style="list-style-type: none"> ○ <i>Collaborators & Other Affiliations – see above, required</i> ○ <i>List of Suggested Reviewers – optional, but recommended</i> ○ <i>Deviation Authorization – if applicable</i> ○ <i>Proprietary or Privileged information – if applicable</i> ○ <i>Disclosure of Lobbying Activities – if applicable</i> 	

Note: An application package will require additional administrative information not listed here that is derived or entered relatively easily by the applicant (e.g., project title) or the applicant organization. The checklist above contains the pieces that are specific and unique to the proposed project and the applicant will have to develop and provide.

A [Proposal Preparation Checklist](#) (**Grant Proposal Guide, Exhibit II-1**) may facilitate the review of proposal compliance with preparation guidelines. It is not a checklist of the required proposal contents and preparation guidelines, but meant to highlight certain items and stipulations.

4. Applying to NSF

4.1 About

The National Science Foundation (NSF) is an independent federal agency created in 1950 by Congress *to promote the progress of science, advance national health, and secure national defense*. It receives about 50,000 research proposals every year and in 2016, had a \$7.5 billion annual budget to fund basic research. While both NSF and NIH (National Institutes of Health) support basic scientific research and its applications, their focus is different (see below [4.3](#) – MISSION).

4.2 Structure

In addition to organizational offices, NSF has 7 disciplinary Directorates around major research areas: 1. Biological sciences; 2. Computer & Information science & Engineering; 3. Education & Human Resources; 4. Engineering; 5. Geosciences; 6. Mathematical & Physical Sciences; 7. Social, Behavioral & Economic sciences.

Each Directorate contains Divisions with Programs. *Research proposals are evaluated at the Program level, so before writing a proposal, applicants should determine which program or programs they want to apply to.*

Programs descriptions and program officers can be viewed online per Division as well as the Directorate overall. The latter has the advantage of seeing *all available programs* without selecting a particular division and potentially missing relevant funding opportunities. *Program pages may show what and who was funded recently along with project abstracts.*

4.3 Mission

NSF supports *work that elucidates the basic principles and processes underlying the physical world or an organism*.¹ It supports all fields of fundamental sciences and engineering. NIH, by contrast, has a mandate to promote public health and welfare and puts an emphasis on the medical sciences, and health-related sciences and applications. A proposal that focuses on the diagnosis and treatment of children with mental disorders would not fit NSF (but would NIH), whereas a proposal focused on children's developing mental capacity in language or mathematics would be appropriate for NSF (but not necessarily NIH).

NSF does value a project's *potential to benefit society* and the application of basic sciences in achieving societal goals is highly relevant. This is referred to as the 'Broader Impact' (see [4.8](#) | MERIT REVIEW).

¹ Li P. & Marrongelle K. (2013). *Having success with NSF: a practical guide*. Wiley-Blackwell.

NSF is very interested in *integrating science and education*, so work that has implications for, and applications in, educational settings are welcome. It is particularly interested in work that boosts STEM (science, technology, engineering, and mathematics) education.

To better understand and speak to NSF's mission, consider reading the [NSF strategic \(2014-2018\) plan](#).

4.4 Website(s) & Mailing Lists:

Information about funding and applying to NSF is available online as a menu on the main website www.nsf.gov {NSF/.Funding}. It contains information about due dates, policies and procedures, proposal preparation, and merit review. Although much will be covered in this guide, applicants should spend some time with the site(s) to orient and (re)familiarize themselves.

[NSF funding opportunities](#) can be searched online {NSF/.Funding/.Find.Funding}, including archived (expired) opportunities using the *Advanced Funding Search* feature.

Active funding opportunities are also listed as “programs” on the various directorates’ and divisions’ (see [4.2](#) - STRUCTURE) websites.

Funding updates can be received by e-mail or RSS feed by subscribing to the listserv on the Find Funding website: *Get NSF Funding Information*. [NSF Update](#), additionally, informs subscribers of new funding opportunities, but also new NSF publications, important changes in policies and procedures, and upcoming NSF conferences.

Another way to stay informed of funding opportunities in general is to subscribe to the [listserv of Grants.gov](#), which gives information on many grant programs (see also [4.7](#) – APPLICATION INSTRUCTIONS & FORMS and [4.8](#) | KEY SYSTEMS AND REGISTRATIONS). *Note that grants.gov will provide updates on funding opportunities, but not NSF policies and procedures.*

4.5 Types of Funding Programs & Announcements:

- *Regular*: Ongoing programs that are the main source of NSF funding. Each program is associated with an announcement and alphanumeric identifier (e.g., 13-543; PD 98-1320). An application to a regular program is referred to as ‘unsolicited’ or investigator-initiated application.
- *Solicitations*: temporary and occasional one-time programs announcing a new, special initiative. The announcements and identifiers (number) associated with solicitations are often updated annually.

- *Dear Colleague Letters* (DCL): a temporary mechanism of NSF funding. DCLs are often one-time opportunities and may not offer any new funds or only limited (supplemental) funds. In some cases, they are simply reminders or announcements of changes to existing programs.

Each announcement conveys key pieces of information about the funding program, its requirements and budget, among others. *Study announcements carefully before writing a proposal and check regularly during proposal development to make sure you are on target and accommodate (all) needs and interests.*

Some programs solicitations *modify the general application instructions* (see 4.7 – APPLICATION INSTRUCTIONS & FORMS). *In such cases, the solicitation instructions must be followed.*

4.6 Types of Proposals/Support:

The majority of NSF applications are *standard* or *regular research proposals*, also called investigator-initiated research projects (see 4.5) or full proposals. The remainder of this guide focuses on this type of proposal although other types of support are available (see below and the nsf website {NSF/.Funding}).

- Standard Research Proposals
- CAREER awards (not to be confused with small grants for junior faculty)
- Postdoctoral Fellowships
- Graduate Research Fellowships
- Conference & Workshop Awards
- Exploratory or Time-Sensitive Grants
- other types of support...

4.7 Application Instructions & Forms:

Unless specified otherwise in a program solicitation, NSF requires **proposals are submitted electronically via NSF *FastLane* System or Grants.gov** (see also 4.8 – SUBMISSION, REVIEW & TIMELINES). *Although the forms, form names and instructions for the two systems differ, the content is the same.* A list of standard NSF application documents is shown in Chapter 3, and all pieces are discussed in subsequent sections (4.10, 4.11).



OSPA (see 2.2) *strongly recommends NSF applicants use **FastLane***. Many faculty use it and consider it user-friendly. *FastLane* also provides a live summary of potential application errors and sponsor warnings upon request. *For completeness, both submission avenues (A. through **FastLane**; B. through Grants.gov) are discussed and outlined here.* To encourage the use of *FastLane*, Grants.gov instructions will be low-lighted from here on.

▪ **Instructions:**

- A. Proposals submitted via **FastLane** should be prepared in accordance with the general guidelines contained in the [NSF Grant Proposal Guide \(GPG\)](#).
- B. Proposals submitted via *Grants.gov* should be prepared in accordance with the [NSF Grants.gov Application Guide \(GrAG\)](#) (unofficial acronym used here). *NSF specific instructions are designated by the logo shown right. Carefully follow these instructions as they deviate from the standard Grants.gov (SF424) application instructions.*



The latter makes many cross-references to the former. Therefore, the GPG is used as the primary guide and reference manual in subsequent sections (4.10; 4.11).

Instructions are updated regularly, be sure to use the latest (25-JAN-2016). The GPG can be viewed online {[NSF/ Document Library/ All Documents: select Policies and Procedures from the drop-down menu, and scroll down](#)} or downloaded as a PDF. The GrAG is available only in printable PDF.

▪ **Forms:**

- A. [FastLane](#) {www.FastLane.nsf.gov}: *All information in FastLane is entered online either by directly typing text in the proposal preparation module or by uploading PDF documents.* Select {Proposal, Preparation, and Awards} online and after logging in, select {Proposal Functions} followed by {Proposal Preparation}. On the PI information page, select {Prepare Proposal}. A new proposal can be created {Create Blank Proposal}, or an existing proposal may be edited {Edit}.

Attachments should be submitted in Portable Document Format (PDF). NSF provides guidance on [creating acceptable PDF files for FastLane](#), which should also be used for Grants.gov submissions.

- B. [Grants.gov](#) {www.grants.gov}: An application package will contain 'Standard Form 424 (Research & Related)' also referred to as **SF424 (R&R) Forms**; **NSF specific forms**; and **NSF Grants.gov Application Guide**.

All forms can be previewed online at [Grants.gov/Forms](#). Some names are very similar, make sure you are looking at the right form by checking against GrAG instructions, which show and describe all fields.

Downloading a package allows applicants to complete it offline, and submit at a later time. However, remember that GSU wants applicants to use CAYUSE for grants.gov proposals (see 2.3).

To download the package, go to the [grants.gov/applicants/Apply for Grants](#) website and find the funding opportunity you are responding to by looking it up {*Search Grants*} or typing in the opportunity number if you have it. *Spaces are not allowed in the search*

field; add a dash (e.g., PD 98-1320 becomes PD-98-1320). Once found, click the opportunity number hyperlink. This takes you to the grant opportunity in all its detail, including a tab {Package} to select the package for download. Provide an e-mail address if you want to be notified of any changes to the package before submission, and/or select {submit}. The instructions and package now can be downloaded by clicking the button(s). The package is a large fillable PDF that is ultimately submitted through Grants.gov (see below, 4.8).

4.8 Submission, review & timelines:

- **Key systems and registrations:** Organizations and investigators need to be registered in several systems in order to apply for NSF funding using one of two submission portals (see 4.7). ***OSPA strongly recommends using FastLane for NSF submissions.*** Registrations may take 4 - 6 weeks to complete, *ascertain early they are in place or initiated.* Contact URSA/OSPA (2.1, 2.2) for the organizational registrations:
 - A. **NSF/FASTLANE:** *FastLane* is NSF's portal for proposal preparation, submission, and post-award administrative activities. An applicant organization (e.g., GSU) must be a registered organization to submit proposals. The organizational registration is OSPA's responsibility (see 2.2).



Principal Investigators (PIs) must be registered with FastLane. The registration can be requested electronically using the Research Portal (see 2.1). PIs can do this themselves or their local grant's administrator can (see 2.5). Registration yields an NSF ID and password.

🔑 *FastLane* Login requires an NSF ID and password.

NSF ID is a random, unique numerical identifier that NSF assigns as a login ID and identification verification throughout its electronic systems. Each individual user should have one, but not more, NSF ID.



In FastLane, PIs should permit OSPA access to the proposal as soon as a new application is initiated in FastLane. Access is granted in the {Proposal Preparation} module under {Prepare Proposal}. Select {Allow SPO Access}. Of the 3 options provided, the PI ultimately must select *{Allow AOR to view, edit and submit proposal}*, or the application cannot be submitted. OSPA never submits without the explicit approval and confirmation from the PI.

- B. **Grants.gov/CAYUSE:** Grants.gov is a government portal used by many federal grant-making agencies, not just NSF, and their applicants to find and apply for federal grants. The applicant organization (e.g., GSU) must have an active registration in order to submit proposals through Grants.gov. The organizational registration is OSPA's responsibility.



OSPA strongly recommends *grants.gov* submissions be prepared using CAYUSE (see 2.3). Initiating an application in CAYUSE will render it visible and accessible to OSPA. However, if the PI works with a local, departmental grants officer not affiliated with OSPA, that staff member should be given access using the CAYUSE permissions function.

🔑 CAYUSE requires a campus ID and ID password.

- **Due dates:** Many NSF programs accept proposals at any time, but others have specific submission due dates. Two types of due dates exist: *target dates* after which proposals will still be accepted, but may miss a particular panel or committee meeting; *deadline dates* after which proposals will not be accepted. Proposals must be received by 5:00 PM submitter's local time on the established deadline date.

If the deadline falls on a weekend, it is extended to the following Monday; if it falls on a Federal holiday, it is extended to the following business day.

- **Peer Review:** The first level of review is done by a panel of experts ('peers'), typically scholars with expertise in relevant scientific disciplines and current research areas. *Applicants may make suggestions whom to include, or not, as reviewers* (see 4.11 | SINGLE COPY DOCUMENTS). A proposal is assigned at least 2 reviewers, and each panelist reviews 10 to 20 proposals for a given panel meeting. Most NSF Programs include *ad hoc reviewers* in addition to panelists. Ad hoc reviewers comment on a few proposals only given their area of research. They provide written comments only and are not present at the panel meeting. After peer and programmatic review, the NSF Program Officer recommends whether a proposal should be declined or recommended for award.
- **Merit Review:** NSF reviews all proposals according to 3 review principles, 2 merit review criteria and 5 review elements (Li & Marrongelle, 2013).
 - I. *Review Principles:* These essentially state that a proposal should be of high quality; have the potential to transform knowledge and fields; should contribute to societal goals (i.e., have broader impacts); and must include appropriate, specific metrics and activities for a proper assessment and evaluation of the project.
 - II. *Merit Review Criteria:* Reviewers and program officers structure their reviews according to the following **core criteria**. Both are given full consideration during review and are necessary for a competitive proposal:
 1. **Intellectual Merit:** This generally refers to the scientific significance, rigor and creativity of the proposed project. Is the project well-conceived

and well thought-out? Is it clear *what* you want to do, *why* you want to do it, *how* you plan to do it, and *how* you know you have succeeded? Additionally, there should be a benefit, a gain to a successful project (– *what* is it?).

2. **Broader Impact:** This refers to the potential of a project to influence not only the scientific community, but also education, disadvantaged and underserved groups, and our society at large. *Applicants tend to struggle with this criterion, and are advised to develop a plan with their team early on that is clear, feasible, tangible, sound and creative.* The plan should be included in the Project Description (see 4.10 – KEY APPLICATION PIECES).

III. *Review Elements:* In the review of core criteria (above), the following 5 elements are considered:

1. potential to advance knowledge and understanding within or across fields (e.g., the *significance* of a project);
 2. extent in which the project is creative, original and potentially transformative (e.g., its *innovation*);
 3. rationale, feasibility, and clarity of the project (e.g., the *approach*);
 4. qualifications of the PI, team and institution (e.g., the *investigators*);
 5. available resources (e.g., the *environment*).
- **Timeline:** Allow up to 6 months for peer- and programmatic review. Should the program division/office make a recommendation for funding, NSF tends to make awards within 30 days. *Should the applicant or organization not meet business/financial/regulatory requirements, the proposal may be declined despite a funding recommendation.* It is imperative applicants are prepared to receive an award. A major requirement for award is IRB and/or IACUC approval (see 4.11 | HUMAN SUBJECTS; VERTEBRATE ANIMALS/ ENDANGERED SPECIES).

4.9 Developing a proposal – general recommendations:

- **Contact program officer(s) - POs:** Contacting NSF program personnel prior to proposal preparation and submission is encouraged. They can comment on your idea and its fit with the program you are considering. You can also ask questions about the composition of the review panel, common flaws in proposals submitted to this program and things to emphasize to make the proposal stand out (Li & Marrongelle, 2013).
- **Do your homework:**
 - *Read the FOA carefully:* Program solicitations may deviate from the general content requirements listed in the official application guides. If so, the FOA is to be followed. Be sure to check and read the latest announcement carefully. In case of doubt, call the program officer(s).

- **Be responsive to general and specific interests, priorities, and missions.** Read the FOA carefully, study the program and division missions, and have an understanding of NSF's strategic plan. It is updated every 4 years.
- **Follow the application instructions exactly:** The proposal preparation guides (see 4.7 – INSTRUCTIONS & FORMS) take you through the different forms and data fields in *FastLane* or grants.gov, and specify how to format documents. Format requirements include, but are not limited to:
 - ✦ **typefaces**, including text fonts (e.g., Arial), and size (10 or 11 larger depending on the font). **Small text may frustrate reviewers;**
 - ✦ **margins**: at least ONE inch in all directions;
 - ✦ **spacing**: no more than 6 lines of text in a vertical inch;
 - ✦ **page numbers and formatting**: *FastLane* does not automatically paginate proposals. Applicants should paginate each section of the proposal individually prior to uploading it.
- **Do not waste reviewers' time – Write iteratively and crisply:** Reviewers are not paid for their time, it is considered an honor and service to review. This means they review applications on top of everything else they have going, often late at night, on weekends, and during (family) trips. Make sure your application reads easily and well. Conversely, if you are sloppy in your reasoning and formatting (typos...), reviewers may quickly lose interest. They will finish the review, but not be motivated, which may lower their opinion of your work and team. Give reviewers reason to keep going, stay interested and focused. Take the time to develop and *revise the application multiple times.*
- **Give yourself plenty of time** (3 to 6 months): A good application has interesting and important goals, a strategy and plan that make sense, and a team that can do the job well. In a good, satisfactory application, everything adds up. It does not have to be perfect, but the proposal cannot have major flaws or oversights in its goals, approach or team. This takes time to crystalize and often many revisions.
- **Have someone else read and critique key parts of the application.**

4.10 Grant Application – Key, Competitive Parts:

A full proposal requires standard sections (see **GPG, Chapter II.C.2: Sections of the Proposal** | **GrAG, Chapter III.2: Components of an NSF Application**). Although the two application guides use different naming conventions and sections appear in a different order in *FastLane* vs. Grants.gov when preparing the submission, *the content is the same.*

The main, competitive piece of an NSF proposal is the Project Description. This does not mean the other pieces are not important, but the Project Description drives peer review and discussion.

If project goals and implications are not exciting or the plan is unrealistic or not solid, enthusiasm for the proposal drops.

- **PROJECT DESCRIPTION** [GPG, Chapter II.C.2.d]: This section is limited to 15 pages and must be self-contained. Do not circumvent page limits by referring to other sections or sources such as websites. Use headings to organize your work and thoughts. Explain **what** you want to do, **why**, and, **how** you plan to do it. How do you know you have succeeded, and what are the benefits of a successful project?

Provide a clear **statement of proposed work**; include project **objectives** and expected **significance**; describe the relationship of the proposed work to the **state of knowledge** in the field, as well as to work in **progress by the PI** under other support. Include **preliminary data** if you have them.

Outline the general plan of work and timeline for deliverables but spend most of the proposal on a clear description of experimental methods and procedures.

A separate section labeled “**Broader Impacts**” must be included.

Results from **Prior NSF Support** (limited to 5 pages) to any PI or co-PI within the past 5 years must be included regardless of whether the support was related to the proposed work or not.

Data management and dissemination plans should be described in the Data Management Plan (see 4.11 – OTHER IMPORTANT APPLICATION PIECES), but do include key considerations that help merit review in the project description.

 **Limited to 15 pages unless a deviation has been authorized.**

 **FastLane:** the PROJECT DESCRIPTION is uploaded as a PDF under the {Project Description} button in the Proposal Preparation module.

 **Grants.gov:** the PROJECT DESCRIPTION is uploaded as a PDF under Project Narrative, Field 8 of the Research and Related Other Project Information Form.

The next piece is not considered competitive but is crucial nonetheless:

- **PERSONNEL and BIOSKETCHES:** Once your objectives and methods are clear, the question is who does the job. The **team** is an integral part of any grant application and review.

In the PROJECT DESCRIPTION (see above), provide brief descriptions of each senior person why he/she is qualified to conduct the proposed work. It may also help to pinpoint who does what as the project unfolds. It helps reviewers develop a sense of comfort and confidence as they read the proposal. If you do this, be succinct and specific to the task, activity or procedure at hand. Use the BIOSKETCH to showcase a person’s overall skill set, experience and track record.

- *Senior Personnel* are defined as the Principal Investigator or Program Director (PI/PD) or co-PI/PD. In addition, Faculty Members ('Associates') are considered senior personnel.

For definitions of personnel, see [GPG, Chapter II, Exhibit II-7].

- *Biosketches* [GPG, II.C.2.f]: NSF requires a biographical sketch ('biosketch' or 'bio') for everyone identified as senior personnel. Biosketches provide an overview of a person's training, appointments, productivity, and synergistic activities.

Biosketch information must be presented in a certain order and format.

Follow instructions carefully, and give yourself plenty of time to prepare your own and/or request the bios of others. Even if people have one available, make sure it is up to date. If no bio is available, reserve at least a few weeks to obtain a final bio from everyone.

 **Biosketches are limited to 2 pages each.**

 **FastLane:** BIOSKETCHES are uploaded as a single PDF file for each individual senior person as entered and listed under the {Biographical Sketches} button in the Proposal Preparation module.

 **Grants.gov** [GrAG, VI.2.1; 2.2]: Beginning with the PD/PI, a profile for each senior person must be provided using the NSF Senior/Key Person Profile (Expanded) Form. The biosketch is uploaded at the bottom of each profile.

- *Current & Pending Support* [GPG, II.C.2.h]: All senior personnel should provide an overview of current and pending project support including the proposed project, from whatever source (e.g., Federal, State, local or foreign government agencies, etc.).

 **FastLane:** Each person's support must be uploaded separately as a single PDF or inserted as text for each senior person as entered and listed under {Current and Pending Support} in the Proposal Preparation module.

 **Grants.gov** [GrAG, Chapter VI.2.3]: Attach PDF to each person's profile using the NSF Senior/Key Person Profile (Expanded) form, below the biosketch.

- *Collaborators & Other Affiliations* [GPG, II.C.1.e; Exhibit II-2 for information on potential reviewer conflicts]: All senior personnel must include information about collaborators and co-editors, graduate advisors and postdoctoral sponsors, as well as thesis advisor(s) and postgraduate-scholar sponsor(s). It will be made available to NSF staff only and assist in the selection of reviewers.
 - 🔗 **FastLane:** This information is considered a ‘Single-Copy document’ for NSF use only. It is uploaded under said heading in the Proposal Preparation module under {Collaboration and Other Affiliations}.
 - 🔗 **Grants.gov** [GrAG, VI.2.4]: Attach PDF to the PD/PI’s profile using the NSF Senior/Key Person Profile (Expanded) Form, below the Bio-sketch and Current & Pending Support fields.

- *Personal Data:* For each PD/PI/co-PD/PI, NSF requests the applicant provide gender, racial, ethnic and other personal information. *Although the submission of these data is voluntary, failure to provide full information may reduce chances of receiving an award.*
 - 🔗 **FastLane:** The GPG does not provide any details on this information or where it is entered.
 - 🔗 **Grants.gov** [GrAG, V.5]: Data are entered in the Research & Related Personal Data form for each person separately.

- *Other Personnel:* For Postdoctoral associates (scholars, fellows, postdocs), other professionals, research assistants, students and others [GPG Exhibit II-7 lists the categories of personnel], *an application may include information on exceptional qualifications that strengthen the proposal. Such information should be clearly identified as “Other Personnel” biographical information and uploaded as a single PDF.*
 - 🔗 **FastLane:** The OTHER PERSONNEL biographical information, if any, is uploaded as a single PDF under the {Other Supplementary Docs} button under the Supplementary Documents heading.
 - 🔗 **Grants.gov:** *It is not clear where this PDF should be uploaded.* It may be considered an “Other Attachment” and be uploaded under Field 12 on the Research and Related Other Project Information form. Check with the program official.

4.11 Grant Application – Other Important Pieces:

- **PROJECT SUMMARY** [GPG, II.C.2.b]: Although not a competitive section, the summary is where many program officers and reviewers start. It should give a sense of what the project is about and what to expect in the Project Description. If good, reviewers will want to continue and learn more.

At NSF, *the project summary is not an abstract of the proposal*. It is a brief overview (1 paragraph) of the proposed project, its Intellectual Merit (1 paragraph) and Broader Impacts (1 paragraph, see also 4.8 | MERIT REVIEW), with corresponding headings. It should be written in third person.

 **Limited to 1 page (4,600 characters).**

 **FastLane:** The PROJECT SUMMARY is entered under the {Project Summary} button in three separate text boxes (Overview; Intellectual Merit; Broader Impacts), unless it contains special characters. In that case, it may be uploaded as a Supplementary (PDF) Document under said heading.

 **Grants.gov** [GrAG, V.4.7]: Attach PDF to Research and Related Other Project Information form, Field 7.

- **BUDGET** [GPG, II.C.2.g]: NSF proposals must include a budget for each year of support requested.

See your pre-award supports (section 2.5) to plan and kick start the budget.



Use OSPA's **budget templates** (spreadsheets) to develop and calculate the budget {URSA/Proposal & Awards/.Develop Proposal Budget/.Budget Templates and Justification}.

Main expense categories are *Personnel* (salaries/benefits, sections A, B), *Equipment* (C), *Travel* (D), *Participant/Trainee support costs* (E), *Other Direct Costs* (F1. Materials & Supplies; F2. Publication costs; F3. Consultant services; F4. ADP /Computer services; F5. Subawards; F6. Rental/User fees; F7. Alterations & Renovation; F8. Other), and *Indirect Costs* (H).

Note that the order and numbering of categories used here may differ between the two submission systems (*FastLane*; Grants.gov). The former treats fringe benefits as a separate category rather than including it in sections A, B thus adding a category (C) and moving all others a letter up.

- Personnel*: It is important to note that NSF regards research as one of the normal functions of faculty members at institutions of higher education. Compensation for time normally spent on research within the term of appointment is supposed to be included

within the faculty member's regular organizational salary. *As a general policy, NSF limits salary compensation for senior personnel to no more than two months of their regular salary in any one year.* This includes salary compensation from **all** NSF awards.

Personnel efforts can be derived once your project goals and methods are clear. If you know *Who does What for How Long When* (see 4.10 | PROJECT DESCRIPTION), it follows you know who is involved at roughly what effort (e.g., how many hours, weeks or months you need someone). Given their salaries, you can calculate the requested support. Fringe benefit rates must be included and are published on URSA/OSPA's website (see 2.1, 2.2).

C. *Equipment* is not to be confused with computers and other electronic items. It is an item over \$5,000 that is not already available. Less expensive and more common equipment items, such as computers needed for the execution of the project, are budgeted under Materials and Supplies (section F1. Other Direct Costs). Laptops or computers for personnel is typically not supported.

H. The *indirect cost* rate is known as Facilities & Administrative Costs (F&A) and in most cases established by your organization (GSU). Check rates with OSPA and use their budget sheets (see 2.2).

🔗 **FastLane:** The budget, including justification, is entered per year under {Budgets (Including Justification)} in the Proposal Preparation module.

🔗 **Grants.gov** [GrAG, V.6]: Budget information is entered directly into the Research & Related Budget form for each project period (typically one year).

- **BUDGET JUSTIFICATION:** Study each expense category in the grant application instructions carefully to see what information (not) to include. In the justification document, it generally helps reviewers when categories are listed chronologically and brief explanations are given for each. If done well, this instantly satisfies the “justification” requirement and shows the reviewer you know what you are doing (e.g., how many trips are needed, how many hours for Consultant X). However, to meet the page limitation, explanations should be succinct.

📖 **The budget justification is limited to 3 pages (1 file).**

🔗 **FastLane** [GPG, II.C.2.g]: The budget justification is uploaded with the budget under {Budgets (Including Justification)} in the Proposal Preparation module.

🔗 **Grants.gov** [GrAG, V.6.14]: Attach PDF to Research & Related Budget form, Field K.

- **SINGLE-COPY DOCUMENTS** [GPG, II.C.1]: Some information is for "NSF Use Only" and will not be provided to reviewers. They include:
 - *Collaborators and Other Affiliations* (**required**): see 4.10 | PERSONNEL (p.17);
 - *List of Suggested Reviewers* (**optional, but recommended**): suggest reviewers to (not) include;
 - *Deviation Authorization* (if applicable): authorization to deviate from NSF proposal preparation requirements;
 - *Proprietary or Privileged information* (if applicable);
 - *Disclosure of Lobbying Activities* (if applicable).
 - 🔗 **FastLane**: The first three of these documents have dedicated upload buttons under the <Single Copy Documents> heading in the Proposal Preparation module. The others are uploaded under the {Additional Single Copy Documents} button.
 - 🔗 **Grants.gov** [GrAG, VI.1.5]: Attach PDFs to [NSF Cover Page](#) form, Field 5. *NSF-specific forms are available for Deviation Authorizations and Suggested Reviewers* [GrAG, VI.3 and VI.4].

- **DATA MANAGEMENT PLAN** [GPG, II.C.2.j]: Each application must include a document on how the proposal and team conforms to NSF policy on dissemination and sharing of research results. See the [Award and Administration Guide \(AAG\), Chapter VI.D.4: Intellectual Property/Dissemination and Sharing of Research Results](#), for more information. The document may include information on the preservation, documentation, and sharing of data, samples, physical collections, curriculum materials and other related research and education products. It is an integral part of the proposal and will be reviewed accordingly.
 - 📖 **Limited to 2 pages.**
 - 🔗 **FastLane**: The Data Management Plan is considered *Special Information and Supplementary Documentation*. Upload under the <Supplementary Documents> heading in the Proposal Preparation module under {Data Management Plan} button.
 - 🔗 **Grants.gov** [GrAG, VI.1.6]: Attach PDF to [NSF Cover Page](#) Form, Field 6.

- **MENTORING PLAN** [GPG, II.C.2.j]: A proposal requesting funding for postdoctoral researchers must include a description of the mentoring that will be provided, regardless of whether or not the postdoc is at the applicant organization.

Mentoring is evaluated under the Broader Impact review criterion.

 **Limited to 1 page.**

 **FastLane:** The Mentoring Plan is considered *Special Information and Supplementary Documentation*, and is uploaded under the <Supplementary Documents> heading in the Proposal Preparation module under {Mentoring Plan}.

 **Grants.gov** [GrAG, VI.1.7]: Attach PDF to [NSF Cover Page](#), Field 7.

- **COVER SHEET** [GPG II.C.2.a]: Contains a number of boxes, some of which may be pre-populated based on information already entered. A program announcement number and NSF unit must be selected, and information such as the title and duration of the project are entered here.

[GSU Administrative information](#), such as its DUNS number and institutional representatives and contacts, can be found at {URSA/ Proposals & Awards/ Get Started with a Proposal/ Fact Page and Key Institutional Documents/ Institutional Fact Page}.

 **FastLane:** Cover Sheet information is entered under the {Cover Sheet} button in the Proposal Preparation module.

 **Grants.gov** [GrAG, V.2]: Use form [SF424 \(R & R\)](#). Note that neither this form nor the filename mention 'cover sheet'. ☹

- **PROJECT/PERFORMANCE SITES:** This indicates where work will be performed. Generally, the Primary Location is the applicant organization.

 **FastLane** [GPG, II.C.2.a]: The Project's Primary Location is listed on the COVER SHEET (see above). *It is not clear where other locations, if any, should be entered.*

 **Grants.gov** [GrAG, V.3]: Use the [Project/Performance Site Locations](#) form. Additional sites can be entered on this form.

- **REFERENCES CITED** [GPG, II.C.2.e]: Provide a bibliography of any references cited in the PROJECT DESCRIPTION (see [4.10](#) – KEY APPLICATION PIECES).

Consider using a citation manager program such as EndNote that manages citations and updates a bibliography as you write.

- 🔗 **FastLane:** References are uploaded under the {References Cited} button in the Proposal Preparation module.
- 🔗 **Grants.gov** [GrAG, V.4.9]: Attach PDF to the Research and Related Other Project Information form, Field 9.

- **FACILITIES, EQUIPMENT & OTHER RESOURCES** [GPG, II.C.2.i]: This information helps to evaluate the resources available to perform the proposed work, and satisfy the Intellectual Merit and Broader Impacts criteria.

Describe only resources that are relevant to the project. Do not include financial information.

Provide an overview of internal and external resources (physical and personnel) that the organization and its collaborators bring to the project.

Describe FACILITIES & RESOURCES vs. EQUIPMENT separately for submissions through Grants.gov.

- 🔗 **FastLane:** Upload PDF under the {Facilities, Equipment and Other Resources} button in the Proposal Preparation module.
- 🔗 **Grants.gov** [GrAG, V.4.10]: Attach one PDF to Field 10 of the Research and Related Other Project Information form, and the other PDF to Field 11.

- **PROTECTIONS OF UMAN SUBJECTS** [GPG, II.D.8]: Projects with human subjects must comply with federal policies and regulations on Human Subjects protections, and either have approval from the organization's Institutional Review Board (IRB) or IRB affirmation that the research is exempt from IRB review, along with the exemption number.



Note that Human Subjects are distinct from Research Participants. The distinction has budgetary implications. Contact OSPA for more information.

Whereas the latter typically *get* something from the investigators (e.g., training, information), the former tend to *give* something (answers, data). IRB review ensures that whatever subjects give is safe, justified, and reasonable while the process of asking them to participate is ethical, and the decision to participate, voluntary.

If IRB approval has been obtained, enter the date of approval on the COVER SHEET form. If approval has not been obtained, indicate "Pending". However, should the proposal be recommended for award, the organization must provide IRB approval or exemption documentation before an award can be made.



If “Pending” is selected, *OSPA recommends investigators start laying the groundwork for an IRB protocol and IRB review soon after submitting their proposal*, especially when multiple institutions or research sites are involved. That way the team can start project soon after an award is made.

Be sure to provide sufficient information in the PROJECT DESCRIPTION (see 4.8 – KEY APPLICATION PIECES) who is in/excluded and other details relevant to determining the quality and rigor of the proposed work.

- 🔗 **FastLane:** [GPG, II.C.2.j]: This documentation is considered *Special Information and Supplementary Documentation*, and may be uploaded under the <Supplementary Documents> heading in the Proposal Preparation module under {Other Supplementary Docs}.
- 🔗 **Grants.gov** [GrAG – not discussed]: Given that this information is considered *Supplemental*, it may be included the document as an *Other Attachments* (Field 12) on the Research and Related Other Project Information form.

- **VERTEBRATE ANIMALS, ENDANGERED SPECIES** [GPG, II.D.7]: Projects must comply with the Animal Welfare Act and regulations, and be approved by the organization’s Institutional Animal Care and Use Committee (IACUC) prior to award.

If IACUC approval has been obtained, enter the date of approval on the COVER SHEET form. If approval has not been obtained, indicate “Pending”. However, if the proposal is recommended for award, the organization must provide IACUC approval before an award can be made.

Be sure to provide sufficient information in the PROJECT DESCRIPTION (see 4.8 – KEY APPLICATION PIECES) why animals are used and other relevant details.

- 🔗 **FastLane** [GPG, II.C.2.j]: This documentation is considered *Special Information and Supplementary Documentation*, and may be uploaded under the <Supplementary Documents> heading in the Proposal Preparation module under {Other Supplementary Docs}.
- 🔗 **Grants.gov** [GrAG – not discussed]: Given that this information is considered *Supplemental*, it may be included the document as an *Other Attachments* (Field 12) on the Research and Related Other Project Information form.

- **LETTERS OF COLLABORATION** [GPG, II.C.2.j] | [GPG, II.C.2.d.iv]: These are not to be confused with Letters of Support (see above). Documentation of collaborative arrangements is permitted, but should not include endorsements or evaluations of the proposed project. A simple statement is recommended (see instructions).

A substantial collaboration with individuals not included in the budget should be documented in a letter of collaboration from each collaborator.

📖 **Limited to a simple statement.**

🔗 **FastLane:** Letters of Collaboration are considered *Special Information and Supplementary Documentation*, and are uploaded under the <Supplementary Documents> heading in the Proposal Preparation module under {Other Supplementary Docs}.

🔗 **Grants.gov** [GrAG – not discussed]: The application checklist suggests this information is appropriate to include as *Other Attachments* (Field 12) on the Research and Related Other Project Information form.

- **LETTERS OF SUPPORT** [GPG, II.C.2.j]: **Not permitted by NSF unless required by a specific program solicitation.**
- **COVER LETTER:** **Not used by NSF** [GrAG, Chapter V.2.21].
- **APPENDICES** [GPG, II.C.2.k]: May not be included unless a deviation has been authorized.

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