

This guide is for potential applicants to the U.S. National Science Foundation (NSF) Small Business Innovation Research (SBIR) program. The document identifies unique aspects of the NSF SBIR program, describes the nature of its topics, and links readers to additional agency resources. When used in conjunction with MTIP's [Profile of a Good Candidate](#), this guide will help prospective applicants determine quickly whether to pursue funding under the NSF SBIR program and how best to approach a proposal.

THE SBIR/STTR PROGRAMS

The federal SBIR program is a source of early-stage R&D seed capital exclusively for small, tech-based U.S. companies engaged in serious R&D and commercialization of technologies of interest both to the government and to the company. Applicants submit proposals in response to specific topics released by each of the 11 participating agencies. Within each agency, the rules and requirements frequently change from one solicitation to the next. Prospective applicants must monitor closely each targeted agency's solicitations.

SBIR funding is provided as either grants or contracts, and does not have to be matched or repaid by the small business. The award monies can be used to fund most costs associated with the R&D project and up to a 7% profit margin. The company maintains ownership of any new intellectual property, and the government retains certain rights to use the technology.

SBIR is a three phase program starting with Phase I to establish the technical feasibility of the proposed technology. Phase I awards vary, but can be as high as \$225,000 for periods ranging from 6 to 12 months. Phase II is to perform more in-depth R&D on the technology, ideally moving toward prototyping and demonstration. Phase II awards range as high as \$1.5 million, generally for a period of up to two years. The objective of Phase III is commercialization of the technology. This phase is non-funded though some agencies offer extra assistance in the form of commercialization support programs.

In SBIR Phase I, up to 33% of the total budget may go to outside services, including consultants and subcontractors. In Phase II, this figure rises to 50%. In addition, for both Phase I and II, the Principal Investigator (PI) must be employed by the company for greater than 50% of ordinary work hours for the duration of the project.

Overall, agencies report that the chance of winning a Phase I award ranges from ~7% to ~15%. Well-qualified Montana applicants can substantially improve these odds by working closely with the no-cost services offered by the Montana Technology Innovation Partnership (MTIP). If not currently enrolled for MTIP services, see the information box at the end of this guide.

NSF SBIR PROGRAM

NSF is an independent federal agency responsible for the overall health of science and engineering across all disciplines. Its SBIR program information can be viewed at: <http://www.nsf.gov/eng/iip/sbir/>. NSF's SBIR budget is presently about \$170M, with 400 small businesses awarded each year. About 86% of Phase I awardees have 10 or fewer employees, clearly making this a suitable program for Montana small companies.

The NSF SBIR mission is to support small business R&D that offers transformational technology to yield significant societal or commercial impact. The agency solicitation seeks responsiveness to societal needs, with promise to increase the competitive capability of industry and maintain sensitivity to solving "real" problems driven by critical market requirements. Operating differently from non-commercially focused NSF academic research opportunities, the NSF SBIR program assists early-stage companies that require additional R&D funding to advance their products to market. These are highly important criteria to bear in mind when crafting an NSF SBIR proposal.

Proposals are submitted through the NSF grants FastLane system in response to topics detailed in bi-annual solicitations. As of autumn 2015 the agency funds SBIR (and STTR) Phase I awards up to \$225,000 for a 6-to-12-month work plan. Another change is NSF's streamlined Budget and Budget Justification. Applicants initially request

a flat \$225,000 and then use the budget justification to describe the general use of the funds. If the application is considered for award then NSF will request a full budget and justification. Phase II awards are typically capped at \$750,000 for a 2-year work plan. The typical deadlines for NSF's two solicitations are in June and December.

Phase IB and IIB options can be requested by an awardee for supplemental funds to bridge the interim period between Phase I and Phase II, or to extend an active Phase II grant. These opportunities require matching funds to be obtained from a third party. NSF also offers Small Business Technology Transfer (STTR) opportunities concurrently with the SBIR solicitations. You can read more about the STTR program in the MTIP guide entitled "[SBIR VS. STTR – Similar but Different Funding Programs](#)" and view NSF's online video, "[NSF SBIR versus STTR](#)."

IDENTIFYING AN APPROPRIATE TOPIC

NSF identifies 10 topic areas which can vary from one solicitation to the next. Unique to NSF, is the opportunity to submit a proposal outside the reach of their published topics. Early interaction with program personnel can help direct an applicant to the NSF technology topic area that best matches the proposed research.

The ten NSF technology topic areas currently are:

- Educational Technologies and Applications (EA)
- Information Technologies (IT)
- Semiconductors (S) and Photonic (PH) Devices and Materials
- Electronic Hardware, Robotics and Wireless Technologies (EW)
- Advanced Manufacturing and Nanotechnology (MN)
- Advanced Materials and Instrumentation (MI)
- Chemical and Environmental Technologies (CT)
- Biological Technologies (BT)
- Smart Health (SH) and Biomedical (BM) Technologies

CONTACTING THE AGENCY

Before completing an NSF SBIR application, participants are strongly encouraged to communicate with an NSF program officer to gauge if a project is in alignment with the program technology thrust and commercial impact criteria.

Though not required, it is strongly recommended applicants submit a 1-2 page Executive Summary for pre-submission feedback. The Executive Summary instructions and officer contact information can be found in the solicitation. Responsiveness of NSF personnel is limited as the submission deadline is approached. An MTIP counselor can assist with summary development and review before contacting NSF.

PREPARING/SUBMITTING THE PROPOSAL

The purpose of the proposal is to provide sufficient information to persuade reviewers that the proposed research offers a unique and sound approach to addressing the need expressed in the NSF announcement. The proposal should be written at a level of quality suitable for publication. Following are general recommendations for ways in which applicants can enhance their chances for success:

- **Start early.** Reviewing previous NSF solicitations will permit valuable insights for advance planning and preparations. Proposal submission requires multiple electronic registration efforts that can require 6 to 8 weeks for completion. These include 1) a one-time registration to obtain a DUNS number which requires a valid Employers' Identification Number (EIN or tax ID number), 2) a government contractor registration on the System for Awards Management (SAM), 3) a one-time registration with the SBA Company Registry (SBIR.gov), or an update of the Registry for the new application, and 4) registration with NSF's FastLane Electronic Submission System. Instructions for all required registrations can be found at <http://www.nsf.gov/eng/iip/sbir/registration.jsp>.

- **Dive into planning.** Applicants can discuss their project and proposal approaches with an MTIP counselor. The project must be vetted in terms of the agency's review criteria and past awards. Give careful thought to any outside consultants or subcontractors, with the understanding that these individuals should strengthen the team's credentials. Identify necessary letters of support and set a plan for securing them. Many aspects of the proposal can be planned and even drafted well before NSF releases its announcement. Valuable insights can be gained from reviewing past award abstracts and the websites of the successful applicants. NSF awards can be searched at: <http://www.nsf.gov/awardsearch/advancedSearch.jsp>.
- **Read the entire solicitation.** All SBIR agencies have specific requirements for font size and style, page limits, marking of confidential information, and other aspects of the proposal. Agencies routinely reject proposals that don't comply with these instructions. One person on the proposal team must be responsible for reading the instructions thoroughly, noting all requirements. Initiate a properly-formatted proposal template that puts key guidance for each section into comment boxes for easy reference while writing. Use the agency website to find instructional webinars or other guidance specific to its process.
- **Develop a project plan that envisions both the Phase I and the Phase II R&D activities.** Start the writing effort by developing well-defined Project Description. Follow the instructions carefully in writing this piece that is the backbone of the technical proposal. Outline a work plan for achieving the objectives, giving consideration to what must be performed in Phase I to create a good foundation for Phase II. For NSF, the work plan must include a means (e.g. testing) to examine how the proposed product will lead to the proposed technical outcomes. Review these pieces to determine whether the project matches well with the topic and agency guidelines. Conduct a team meeting to get full buy-in on the proposed work plan AND on the proposal-writing efforts. Develop a schedule and assign responsibilities for completion of the proposal. Immediately start the process of collecting team Curriculum Vitae and letters of support.
- **Obtain an outside, third-party review.** Regardless of the applicant's experience with SBIR, secure an MTIP or other third party review of the draft proposal. Even the most experienced applicants have a tendency to get "off point" when working through the details of so many sections. Invariably, good outside reviews help ensure the proposal is responsive to the instructions and identify meaningful ways in which to enhance both the content and the presentation of the proposal. Provide the proposal to a reviewer not less than one week before submission so that suggested changes can be implemented.
- **Submit early.** Applicants should plan to submit their proposals at least two days prior to the final due date. Early submission avoids the possibility of server overload, and gives applicants ample time to resolve any problems that arise during the electronic submission process.

READY FOR THE NEXT STEP?

This agency-specific SBIR guide has been prepared by the Montana Technology Innovation Partnership (MTIP) and does not imply endorsement from the National Science Foundation. A program of the Montana Department of Commerce, MTIP provides free coaching to Montana technology-based companies seeking help in applying to federal and state R&D and commercialization funding programs. For more information, contact the MTIP Program Manager at DOCMTIP@mt.gov or visit MTIP's website at www.mtip.mt.gov.

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