



## PROPOSAL DEVELOPMENT GUIDELINES<sup>1</sup>

All proposals must address the items noted in the list below. On the following pages, templates for the Project Summary and the Project Description show a logical sequence of topics, based on the ATE solicitation, and explain what information should be included for each topic. **NOTE:** Other than Results of Prior Support, NSF ATE does not dictate the order of presentation of required information in the Project Description. The suggested order represents a logical presentation of information and aligns with sections as presented in the current ATE solicitation, however, sections may be shifted to tell a coherent story or to accommodate tables and graphics within the 15-page limit for the proposal.

### **As you develop the proposal, ensure that it:**

- Follows the guidelines and proposal preparation instructions in the current ATE solicitation and complies with the instructions in the most current NSF Policies and Proposal & Award Policies & Procedures Guide (PAPPG)
- Is well-organized, structured logically (tip: use the headings listed in the proposal preparation instructions), and easily readable (using spacing, graphics, and allowable fonts effectively)
- Is based on a sound rationale that includes workforce need in the institution's service area
- Explains the qualifications of the team and the institution to conduct the project
- Ensures that the resources necessary to carry out the project are/will be available
- Addresses Intellectual Merit and Broader Impacts in the Project Summary and includes Broader Impacts in a specially labeled section of the Project Description.
- Documents strong collaboration with industry
- Collaborates with other educational institutions (recommended for New-to-ATE proposals and expected for all other ATE proposals)
- Draws on the work of other ATE projects and Centers, or funded by other NSF programs, adapting/adopting as appropriate
- Indicates how previous ATE or other NSF projects have informed and guided the development of the proposed project, e.g., what strategies, materials, or lessons learned from previous work will be used, how they will be used, and why they were chosen for your project
- Demonstrates knowledge of relevant research and applies it as appropriate (expected for all proposals and should be more extensive for ATE Project proposals)
- Includes a project-specific evaluation plan that adheres to the ATE Solicitation and includes mechanisms for measuring success
- Includes dissemination plans with examples of specific events/activities
- Explains sustainability of at least some major portions of the project work after the grant expires
- Has an appropriate budget and budget justification (see the Budget Tutorial on the Mentor-Connect.org website)
- Includes all required forms (see the Forms Tutorial on the Mentor-Connect website)
- Addresses the reviewer recommendations, if it is a resubmission of a declined proposal

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## ATE PROJECT SUMMARY TEMPLATE

To create the project summary, create three paragraphs: Overview, Intellectual Merit, and Broader Impacts. “The overview includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed. The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.

The Project Summary should be informative to other persons working in the same or related fields, and, insofar as possible, understandable to a broad audience within the scientific domain. It should not be an abstract of the proposal.<sup>1</sup>”

NOTE: Label the Intellectual Merit and Broader Impact paragraphs with these titles on a single line with no additional text.

### OVERVIEW

Describe the overarching problem or workforce need your project will address and what you plan to do (including the outcomes you plan to achieve). Briefly state what you will do and with what outcome. A sample might be, “Local industries in our area including XXX and YYY have recently implemented XXX changes in their businesses in accordance with emerging international standards. In order to provide a skilled technician workforce that is adept with these technology changes, Best Community College will upgrade equipment, work with industry partners to modify the corresponding curriculum and laboratory exercises, and provide professional development for faculty who will implement these changes.” Be specific if you plan to address recruitment, retention, numbers of completers, and/or diversity. Include anticipated numbers of faculty to be trained and students who will benefit, stating outcomes in terms of numbers with percentages for enrollment, retention, and graduation/credentials earned.

### INTELLECTUAL MERIT

In about 4-5 sentences describe the problem (or need) in the local/regional context with local/regional data. It is important to address workforce needs in your institution’s service area, where most students will be seeking employment. Avoid using only national data. Explain how this project will make a positive impact on the problem (or need); and why the college is well-suited to meet the need or address the challenge. See the NSF and ATE criteria for Intellectual Merit in the PAPPG and the ATE program solicitation and describe how your project addresses criteria that apply.

### BROADER IMPACTS

Here is where you should describe the benefits. In a specifically-labeled section, include a sentence or two about the benefits to students, a sentence or two about the benefits to educators and/or the college, a sentence or two about the benefits to industry, and a sentence or two about benefits to the community (if this applies). See the NSF and ATE criteria for Broader Impacts in the PAPPG and the ATE program solicitation and describe how your project addresses criteria that apply. NOTE: You should not try to address ALL broader impacts listed in the program solicitation and/or PAPPG, but you **MUST** address the broader impact of your project.

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<sup>2</sup> PAPPG 23-1, Chapter II, Project Summary

## PROJECT DESCRIPTION TEMPLATE

NOTE: The Project Description, once completed, can be uploaded as a pdf file, and this is recommended.

### ***PRIOR NSF SUPPORT***

For colleges that have not received prior NSF funding: “XXX College has received no prior NSF ATE grant funding and is participating in the NSF-funded Mentor-Connect project.” For faculty new to ATE, “While XXX college has received prior NSF ATE grant funding, the faculty leading this project are new to ATE and have not previously been Principal Investigators.”

For colleges that have received prior NSF funding: Explain the achievements of the funded project(s), following the guidelines in the PAPPG that specify what is must be included and from what time frame. You may mention other relevant work if directly related to the proposed project. You may mention that the college is participating in the Mentor-Connect project.

### ***INTRODUCTION***

In this section, write a concise paragraph or two about what you plan to do.

### ***MOTIVATING RATIONALE Current Situation***

In this subsection, you want to make a case for the need for this project. Explain the current status of the “issue,” the status at your college, and how this project will address the problem. Typical **issues** include new technology being used by industry, new industries with different needs moving to the area, too few graduates for available jobs, lack of diversity, or economic changes creating greater demand for technicians. Describe the **status at your college** including information/data such as current enrollments in relevant programs, adequacy of available equipment or instrumentation, teaching/learning environments/strategies that need to be transformed or improved, faculty lacking updated skills and knowledge, pathways for high school students into college technician education programs, or a lack of student diversity in a program. **Mention the gap** between the currently situation and what is needed that your project will address. Focus on the workforce need for the project.

### ***Local Industry Context (including your collaborations with local industry/technician employers)***

In this subsection, you want to describe your previous and current work with local, regional and other industries so the readers understand how the college and industry are ready to work together to address the situation. Outline the ways industry will support your project.

### ***The Problem Being Addressed***

This subsection discusses how you will address the problem you have described and how you will close/minimize the gap that you described in the motivating rationale. State actions as what you will do, not what you will try to do, anticipate doing, or plan to do.

### ***GOALS, OBJECTIVES, AND EXPECTED OUTCOMES***

A strong way to depict your project plan, as well as a great tool for developing your project, is a Logic Model. Logic Models are not required in ATE proposals, but reviewers and Program Officers find a succinct graphical representation of your project very helpful in seeing the “big picture” of what a project is designed to accomplish. A **logic model** is a graphic depiction (road map) that presents the shared relationships among the resources, activities, outputs, outcomes, and impact for your program. Develop a logic model from right to left, starting with desired impacts and outcomes of your project and “backing into” the activities and resources needed to achieve these desired results. Developing a logic model is an exercise that leads to a stronger proposal overall and it can also guide project evaluation.

Placing a logic model graphic in your proposal sets the stage for a detailed description of your goals, objectives, and expected outcomes.

Start with your goal or goals in a short paragraph or as bullets. One option is to use a table (see below) to connect the goal, objectives, and expected outcomes. You can use either tables or bullet-type formats. Either the Objectives and/or the Outcomes should be represented in measurable terms. (Accompany any percentages with actual numbers.) Outcomes can be reported for each year and then summarized as a total for the entire project. The Project Data Form (one of several forms that you will be complete) asks for the number of participants (students and also faculty, if you provide professional development) directly impacted by the project, and the outcomes can easily provide that number.

<i>The goal (or the first goal, if you have more than one) of the proposed project is to increase..... This goal has five (or whatever number works for your project) objectives and associated expected outcomes.</i>	
<b>Objectives (Include Metrics)</b>	<b>Outcomes (Include Metrics if not stated in Objective)</b>
<i>Objective #1:</i>	
<i>Objective #2:</i>	
<i>Objective #3:</i>	
<i>Objective #4:</i>	
<i>Objective #5:</i>	

For the objectives and/or outcomes, state the things you expect to happen to your students or program (note that activities help achieve objectives but are not objectives). If you can write objectives/outcomes in measurable terms, this will really help when you or an evaluator writes the evaluation plan. A sample approach follows. Objectives should focus on your students and programs rather than on everything you will be doing. More information can be provided when you discuss the activities.

*Objective #1:* *The XXXX program will see a 20% per year increase in completion success for enrolled students.*

*Expected Outcome for Objective #1:* *Year One – 25 students will complete the XXXX program; Year Two – 30 students will complete the XXXX program; Year Three – 35 students will complete the XXXX program. Ninety college students will be directly impacted by the XXXX program during its three years.*

### **DELIVERABLES**

Write this section only if you are going to produce documents, activities, handbooks, curricula or other tangibles. It is acceptable to exclude this section if it doesn't fit. Also, some writers include the Deliverables in the previous section with the Goals, Objectives, Expected Outcomes, and Deliverables. Either way works! Also, a more comprehensive table may be used that also indicates the timeline for accomplishments.

### **TARGET AUDIENCE AND RECRUITMENT**

#### **Target Audience**

This is where you describe exactly how many students will be participants and where they come from. This might be a short subsection. Your target audience might include attendees for training (faculty or high school personnel).

## **Recruitment**

A description of how you will get students to sign up for the program goes here. Be sure to explain specific strategies for recruiting under-represented students (minorities, women, veterans /military). The recruitment strategies should give the reader a clear picture of pro-active strategies you will use to publicize your program and attract the participants listed in the Target Audience Subsection. NOTE: If recruitment is an important element of your project, it is important to also consider and include activities that address how students will be retained once recruited.

## **ACTIVITIES**

This is a lengthy section where you describe what you will do and how you will get the work done. For a project with multiple goals, aligning activities by Goal and associated objectives is helpful. Listing planned activities and then describing each one helps the reader keep things straight. An example for a small project might read as follows:

*During the XXXX project, four activities will be developed and implemented to reach our goals and objectives. They are: (1) Curriculum Development; (2) Professional Development; (3) XXXX; and (4) XXXX.*

### **Curriculum Development**

*A description of this activity goes here.*

### **Professional Development**

*A description of this activity goes here. And so on....*

For a larger, multi-goal project, including the Goal and objectives associated with each activity may provide the clarity needed. Arranging a more complex project plan this way will also help with project management and evaluation during implementation.

## **PROJECT TIMELINE**

Many proposal writers use a table here to show what will take place and when. The faculty who will be implementing the project should guide timeline development since they will be the ones doing the work when the proposal is funded, and they understand how work actually gets done in their program/department. Reviewers pay attention to timelines as a thoughtfully-prepared timeline is an indication of a well thought-out plan. The timeline may be incorporated with the description of activities.

The practicality of work/activity sequencing can build or shake a reviewer's confidence that the project will be successful. Avoid vague shaded blocks and small font sizes or abbreviations that reviewers may struggle to read and interpret. Keep in mind that peer reviewers will have knowledge and experience about how long it takes to get academic approvals, equipment ordered, curricula developed, faculty trained, and new courses or methodologies implemented. Consider developing and rolling out your plan in stages that reflect the reality of the difficulty of the work and provide for a feedback loop to drive continuous improvements throughout the project.

Don't make the table too big or lengthy. A half-page may suffice for a small, new to ATE project, but use more space if needed. Use time blocks that make sense, e.g., semesters may be better than calendar months. Developing a realistic timeline for your project is another excellent tool that can help you adjust the scope of work for a project. A detailed timeline (developed initially in even greater detail than you will be able to include in the proposal) can help you determine what can actually be accomplished in a 3-year time frame. The more detailed timeline can later be used to guide your work once the proposal

is funded. The timeline for the proposal should include all of the most important activities and milestones for project success.

### **EVALUATION PLAN**

The evaluation plan should be a substantial part of the proposal since NSF likes to make sure that projects are properly evaluated and that there is a feedback loop in place that will guide the PI and help improve project outcomes. It's wise to select an external evaluator (person or company) that has experience evaluating NSF projects. One with ATE Program experience is even better. ATE grantees often recommend evaluators they have used, and ATECentral.net (under "Community" tab) provides evaluator information. Mentor-Connect Mentors and project staff may also be able to provide suggestions. Previous ATE grantees may have recommendations, too. The Evalu-ATE.org website <https://www.evaluated-ate.org/resources/finding-an-evaluator/> provides general information about what to look for and how to contract with an evaluator. Once the project goals and objectives are clear, it is a good time to contact an external evaluator (if you haven't already done so). Request help in crafting the evaluation plan with all the required components and language. Many evaluators will do this work at no cost, knowing that you do not yet have funds to pay for their services but that you will contract with them for evaluation services if your proposal is funded. The ATE Solicitation has clear instructions regarding what must be included in the evaluation plan for your project.

### **DISSEMINATION PLAN**

There are several ways to write this section. One effective strategy is to include subheadings to show reviewers that you have thought about how you will share this project with others.

#### ***Dissemination to a Local Audience***

Describe sharing project work within the college and local partners or educators.

#### ***Dissemination to a Regional Audience***

Describe sharing project work with a bit wider audience such as a state-wide association or a regional meeting of a national organization in the discipline.

#### ***Dissemination to a National Audience***

Share your work at the annual ATE PI conferences. Products that can be useful to other institutions can be made widely available through ATE Central. You can also share your work through ATE-funded National Centers in your discipline. Presentations, exhibits, and poster sessions at relevant national conferences (like the High Impact Technology Exchange Conference (HI-TEC) and professional association conferences) will also help your work reach a national audience. Published papers (e.g., Journal of Advanced Technological Education, <https://micronanoeducation.org/journal-of-advanced-technological-education/>) and paper presentations may make it possible to publish information about your work in the conference proceedings.

### **CAPACITY OF THE COLLEGE AND MANAGEMENT PLAN**

This is the section where you will describe the college and the resources, personnel, and support that will be applied to successfully implement this project. However, most details in this regard should be included in the Facilities, Equipment, and Other Resources form. The management plan is usually a paragraph or so describing the roles of those who will oversee this project. Individual accountability should be clear in the plan. A table that includes personnel names, positions, and duties related to the grant can be effective.

### **PROJECT TEAM: EXPERTISE, ROLES AND RESPONSIBILITIES**

Reviewers will want to know a bit about each of the senior personnel working on this project. If there are not too many people involved, paragraph form can effectively communicate this information by

listing a person's name, brief credentials that are relevant to the project, and what they will personally be responsible for and contribute to the project. Here is an example:

*Judy Kasabian is a professor of mathematics at El Camino College and serves as a mentor for the Mentor-Connect Project. For the proposed project, she is responsible for: (1) XXXX; (2) XXXX and so on....*

**NOTE:** It is best to assign a single person to a scope of work and/or specific responsibility, even if a team or committee will assist. Do not state or imply that an organization (e.g., the college) or organizational unit (e.g., a department) will be responsible for making something happen. Individual assignment of responsibility to qualified personnel for a project is of great importance to reviewers and NSF.

#### **SUSTAINABILITY PLAN**

This is where you will indicate what components of your project will be institutionalized or financially supported by another source by the time the grant ends. What will continue following NSF funding? If industry leaders are willing to support a component or components of this project when the grant ends, this will impress reviewers (e.g., paid internships for students, on-going service on a program's Business and Industry Leadership Team). Whatever the institution and industry commit to doing post-funding, be sure that this information is included in their letters of collaboration (commitment). These letters will be uploaded as supplementary documents.

#### **NEXT STEPS**

This section is optional. If you can easily see where this project may go after the 3 years, a short description will be valuable. First grants are often the first step toward a larger vision. How will you use this project to continue advancing technician education at your college?

#### **INTELLECTUAL MERIT**

Much of your Project Description actually addresses the Intellectual Merit of your proposal. Effective June 1, 2020 (as noted in the PPPG 20-1), a separately-labeled Intellectual Merit statement is no longer required in the Project Description. However, it is prudent to include a succinct description of the quality of the project that explains how it will strengthen your program and improve its ability to meet workforce needs, and how it will contribute to the larger educational community. Reference the NSF and ATE criteria for Intellectual Merit in the PAPPG and the ATE program solicitation and describe which items your project addresses. Take the opportunity in the Project Description to expand on the Intellectual Merit statement from your Project Summary. **NOTE:** those who review your proposal are required to state the strengths and weaknesses observed in your proposal in terms of the proposal's Intellectual Merit and Broader Impacts.

#### **BROADER IMPACTS**

Stating the Broader Impacts of your proposal in a separately-labeled statement in the Project Description is required in addition to providing a Broader Impacts statement in the Project Summary. Broader Impacts are the benefits likely to accrue to students, educators, college(s), other disciplines, communities, local industries, and others. Again, rely on NSF and ATE-specific criteria to guide you in selecting the information to include in Broader Impacts. You may repeat the text in your Project Summary, but ATE prefers that you expand on or restate Broader Impacts in the Project Description. **NOTE:** those who review your proposal are required to state the strengths and weaknesses observed in your proposal in terms of the proposal's Intellectual Merit and Broader Impacts.

Make sure the Broader Impacts and Intellectual Merit statements in the Project Summary and Project Description align. Too often, people make changes in one and forget to change the other!