



TIP Proposal Preparation Kit

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NIST

National Institute of
Standards and Technology
U.S. Department of Commerce

For a quick look to see if TIP is right for you and to answer the following questions:

- What is TIP?
- Who may apply?
- How can I receive funding?
- When do I submit my proposal?
- Where do I submit my proposal?

See Chapter 1, pages 1 through 2, in this Kit.

Telephone: **1-888-847-6478** *

Fax: **301-926-9524** or **301-590-3053**

E-mail: **tip@nist.gov**

Internet: <http://www.nist.gov/tip>

*Call this TIP toll-free hotline to hear recorded messages about the current status of TIP and workshops being held.

FOREWORD

Dear Colleagues,

One of our country's greatest strengths is its capacity for innovation. The National Institute of Standards and Technology's (NIST) Technology Innovation Program (TIP) is rapidly tapping into that strength in becoming a resource for solving the significant challenges that we face as a nation and society. I invite you to join us in this effort.



With the release of this Proposal Preparation Kit, we at TIP are building on our prior successful series of awards. I am pleased to say that each TIP competition has made it possible for small and medium businesses, universities, nonprofit research institutions, and national laboratories to initiate high-risk, high-reward research in areas that promise to address some of the nation's most pressing needs. TIP funds only advanced long-term research in areas where the government has a clear interest because of the magnitude of the problem and its importance to society. With help from you, this year's competition promises to be equally fruitful.

To learn more about the Technology Innovation Program, I encourage you to visit our website at <http://www.nist.gov/tip> where you will find detailed background materials and a calendar of many upcoming TIP meetings and events. If you would like to be added to our mailing list to receive future TIP announcements, take your browser to http://tipmailing.nist.gov/forms/mailling_list.cfm. I look forward to working with you, as together, we become the premier science and technology funding program in the federal government, investing in innovation to help make our country more competitive and secure in the 21st century.

Yours truly,

Dr. Lorel Wisniewski

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CHAPTER 1

QUESTIONS AND ANSWERS ABOUT THE TECHNOLOGY INNOVATION PROGRAM (TIP)

A. GENERAL INFORMATION

1. *What is TIP?*

TIP is a cost shared federal financial assistance program to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need. High-risk, high-reward research is research that has the potential for yielding transformational results with far-ranging or wide-ranging implications; addresses areas of critical national need which support, promote, and accelerate innovation in the United States and is within NIST's areas of technical competence; and is too novel or spans too diverse a range of disciplines to fare well in the traditional peer-review process.

The TIP statutory authority is 15 U.S.C. § 278n (see Appendix A). The TIP implementing regulations are set forth in 15 C.F.R. Part 296 (see Appendix B). Both are also available at <http://www.nist.gov/tip/helpful-resources.cfm>.

2. *How can I receive funding?*

You must submit a proposal to TIP in response to a notice published in the Federal Register announcing a competition and availability of TIP funds (solicitation/request for proposals or RFP).

Notices are also posted on the TIP Web site <http://www.nist.gov/tip> and at <http://www.grants.gov> Announcement of Federal Funding Opportunity (FFO).

In addition, you can have your name added to the TIP mailing list by completing an electronic request at http://tipmailing.nist.gov/forms/mailling_list.cfm or by calling 1-888-847-6478 to receive competition announcements delivered electronically.

3. *What are areas of critical national need?*

Areas of critical national need are areas that justify government attention because the magnitude of the problem is large, and the societal challenges that need to be overcome are not being addressed, but could be addressed through high-risk, high-reward research. The areas of critical national need to be addressed in a particular competition are described in the Federal Register notice announcing the competition. Only proposals addressing the defined competition scope in the subject Federal Register Notice will be considered for funding.

4. *Is there a deadline for submitting a TIP proposal?*

Yes. The deadline date(s) are included in the Federal Register notice announcing the competition and are also posted on the TIP and Grants.gov websites. Once a competition is announced, proposals may be submitted prior to and up to the deadline date(s) and time.

5. *What information is required in a TIP proposal?*

Information requirements are discussed in detail in Chapters 2 through 7.

6. *Does TIP accept unsolicited proposals?*

No.

7. *How are proposals submitted?*

Proposals may be submitted either electronically or in hardcopy by mail. Electronic submissions are encouraged and offer many benefits to the proposer, including no mailing or copying fees. Proposals submitted by e-mail will not be accepted under any circumstances. See Chapter 4 for format instructions and Chapter 7 for electronic submission guidance.

8. *Where do I submit proposals?*

Proposals must be submitted to either of the following locations only and will not be accepted if submitted directly to any TIP staff member:

a. Electronic submission: www.grants.gov

b. Paper copy:
Technology Innovation Program
National Institute of Standards and Technology
100 Bureau Drive, Stop 4750
Gaithersburg, MD 20899-4750

9. *Will confidential/proprietary information in my proposal be protected?*

Yes. All individuals who will have access to submitted proposals must sign nondisclosure agreements. The government will protect confidential/proprietary information about business operations and trade secrets possessed by any company or participant

to the full extent of the law. To the extent permitted by law, TIP will withhold such information from disclosure pursuant to the following statutes, which can be found at <http://www.nist.gov/tip/helpful-resources.cfm>.

- a. Freedom of Information Act (FOIA)—5 U.S.C. § 552(b).
- b. Economic Espionage Act—18 U.S.C. § 1832.
- c. Trade Secrets Act—18 U.S.C. § 1905.

In view of the above, proposers are cautioned that proposals are likely to be less competitive if significant details are omitted due to the proposer's reluctance to reveal confidential/proprietary information.

10. Does TIP hold any public meetings or conferences to assist in proposal preparation?

Yes. TIP will hold one or more proposers' conferences after a competition is announced. Proposers' conferences will provide general information regarding TIP, guidance on preparing proposals, providing detailed budgets, the opportunity for questions and answers, and general discussion regarding TIP criteria.

NIST/TIP staff will not critique or provide feedback on the quality of specific project ideas while they are being developed by a proposer. However, NIST/TIP staff will, at any time, answer questions about the TIP eligibility and cost-sharing requirements, evaluation and award criteria, selection process, competition scope, and the general characteristics of a competitive TIP proposal at the proposers' conferences and by phone and email.

Attendance at TIP proposers' conferences is not required. Information regarding dates and locations of TIP proposers' conferences is published in the Federal Register and posted at <http://www.nist.gov/tip>. The Federal Funding Opportunity may also list the date(s) and location(s) of the proposers' conference(s) which will appear at <http://www.grants.gov>.

Presentation materials from proposers' conferences will be made available on the TIP website. In addition, TIP may offer various

13. Who do I contact if I have questions?

Subject Area	Point of Contact
Administrative, budget, cost-sharing, and eligibility questions	Michael Walsh Phone: 301-975-5455 Fax: 301-975-2147 E-mail: michael.walsh@nist.gov
Human and/or animal subjects used in research	Lawrence Uhteg Human & Animal Subjects Advisor Phone: 301-975-8779, Fax: 301-548-1087 E-mail: lawrence.uhteg@nist.gov
Project selection, evaluation and award criteria, and other programmatic questions	Thomas Wiggins, Director Selection Management Office Phone: 301-975-5416, Fax: 301-975-2147 E-mail: thomas.wiggins@nist.gov

“webinars” to help proposers which will also be available on the TIP website.

11. How can I find out if my project idea is in scope?

The details of the solicitation scope are published in the Federal Funding Opportunity (FFO) notice. Consider where the key research results would be for the project and the research approach to get there to evaluate whether or not your proposal would fit into the solicitation scope. One helpful way to think about the technical scope is what new-to-the-world knowledge (i.e., the high-risk, high-reward research outcomes) is created by your research and how does that map onto the technical scope. If the outcomes you are targeting will be reached by your team solely through existing techniques and methods of research and/or engineering it is likely that even if the outcome is in scope, the technical approach may not be competitive against the TIP Award and Evaluation Criteria discussed on pages 9 and 10. Questions regarding scope can be addressed in general by TIP staff.

12. Where can I seek additional help with proposal preparation?

It is the responsibility of proposers to seek the assistance and resources they need for completing a proposal. Proposers may wish to contact the NIST Hollings Manufacturing Extension Partnership (MEP), a nationwide network of locally managed extension centers whose sole purpose is to provide small- and medium-sized manufacturers with the help they need to succeed. The centers provide guidance to high-technology companies seeking resources and teaming relationships. To contact an MEP center, call 1-800-MEP-4-MFG (1-800-637-4634) or visit MEP's website at <http://www.nist.gov/mep/>.

Proposers may wish to contact independent state, regional, or area specific resources, for example, economic development agencies or local incubators.

University research offices and technology transfer offices are also very often interested in building teaming relationships with the private sector.

Subject Area	Point of Contact
Electronic proposal submission	Christopher Hunton Phone: 301-975-5718 Fax: 301-840-5976 E-mail: christopher.hunton@nist.gov
Technical questions related to NIST-1022 and associated forms	Deborah Dubeau Phone: 301-975-3462, Fax: 301-975-2147 E-mail: deborah.dubeau@nist.gov
Foreign-owned company and foreign-owned entity participation	Kathleen McTigue Phone: 301-975-8530, Fax: 301-975-2147 E-mail: kathleen.mctigue@nist.gov
Grant and cooperative agreement rules and regulations including establishing indirect cost rates	Grants & Agreements Mgmt. Division Phone: 301-975-6328, Fax: 301-840-5976 E-mail: grants@nist.gov

B. ELIGIBILITY

1. Who is eligible to apply?

There are two types of eligible project structures for applying to TIP:

a. Single Company (a for-profit organization, including sole proprietors, partnerships, limited liability companies (LLCs), and corporations) — an eligible small- or medium-sized company doing a majority of its business in the United States and is either:

- (1) A U.S. owned company or
- (2) A U.S. subsidiary of a foreign parent company that meets the requirements listed in 6 a. and b.

The single company must also be substantially involved in the R&D, leading the project, and defining the research agenda.

b. Joint Venture—a business arrangement that includes either:

- (1) At least two separately owned eligible companies that are both
 - (a) substantially involved in the project and,
 - (b) contributing to the required cost share (see Chapter 1 Section C.2),
- (2) At least one eligible company and
 - (a) one institution of higher education or
 - (b) other organization, such as a national laboratory, governmental laboratory (not including NIST), or nonprofit research institute.

Both entities must be substantially involved in the project and contributing to the required cost share (See Chapter 1 Section C.2).

The lead entity of a joint venture (Joint Venture Administrator) can be either an eligible company or an institution of higher education. (The joint venture lead is the party specified in item 2 of the NIST-1022 form.)

TIP joint venture members must formally agree (i.e., sign a joint venture agreement as discussed in Chapter 5 Additional Documentation, 7.a. through 7.g.) to collaborate on the project. The joint venture may include additional companies, institutions of higher education, and other organizations, such as national laboratories, governmental laboratories (not including NIST), and nonprofit research institutes, which may or may not contribute nonfederal funds to the project. A large-sized company may also participate as a joint venture member and provide cost sharing; however, a large-sized company MAY NOT receive federal funds as a joint venture member. A large-sized company is defined as any business, including any parent company plus related subsidiaries, having annual revenues in excess of the amount published of the 1000th company listed in Fortune magazine's Fortune 1000 list. (Note that the revenue amount will be updated annually and will be noted in future annual announcements (FFOs) of availability of funds.)

2. What is "substantial involvement in a project" under a joint venture?

Substantial involvement by a joint venture member in a joint venture may be demonstrated in a variety of ways within a TIP proposal. Generally, joint venture members demonstrate substantial involvement through documented, planned research contributions within the proposal's technical plan and on the NIST 1022-F form in the budget allocations by task. Typically this involves research staff performing technical activities within their organization's facilities. These research contributions should be clearly tied to completion of high-risk, critical research tasks. A key scientific intellectual role in guiding the research effort is also one example demonstrating substantial involvement. It should be clear from your narrative why their technical contributions are critical to technical success and overcoming the technical barriers for this project.

A joint venture member that only provides space and equipment for other joint venture members' staff to perform technical activities will not be considered to be substantially involved in the research. In addition, a joint venture member that subcontracts out most of their high-risk research activities or all performance of their research activities will not be considered to be substantially involved.

3. *May institutions of higher education, national laboratories, governmental laboratories (not including NIST), and nonprofit research institutes participate as contractors to a single company or to a joint venture?*

Yes.

4. *May a large-sized company participate?*

Yes.

As a Contractor, a large company may participate in a project and receive funding of the contract if it is awarded in accordance with procedures established under Procurement Standards required by 15 C.F.R. Part 14. In this case, the large company may not provide cost share.

As a Joint Venture Member, a large company may be a member of a joint venture as long as it does not receive TIP funds. It may provide cost share and hold title to intellectual property arising from the project, if so specified within the joint venture agreement for the project. In this case, the NIST-1022B form is filled out identifying this joint venture member, along with the NIST-1022C form (budget narrative) for the company's budget and the company has a column in the NIST- 1022F form (multi-year budget).

As a Third Party Contributor, a large company may provide in-kind contributions to a TIP project. In this case, a NIST-1022D form is necessary to document the contributor and their contribution(s).

If the majority ownership of a company is by a large company (including a large foreign company), then the company is also considered to be a large company.

5. *May a Federal or national laboratory participate in a TIP project?*

Yes; however, Federal funds may not be used as cost share. Federal or national laboratories may not lead TIP projects. NIST laboratories are not allowed to participate.

As a Contractor, a Federal or national laboratory may receive funding if the contract is awarded in accordance with procedures established under Procurement Standards required by 15 C.F.R. Part 14 (which applies to all contracts under a TIP award).

A Federal or national laboratory may be a member of a joint venture as long as it does not provide cost share using federal funds. If nonfederal sources of funds are available, it can provide cost share with those funds. In this case, a NIST-1022B form identifying this joint venture member is filled out together with a NIST-1022C form (budget narrative) for the company's budget and the company has a column in the NIST-1022F form (multi-year budget).

6. *May a foreign-owned company participate and receive TIP funding?*

Yes, provided that certain requirements are met. A company incorporated in the United States that has a parent company incor-

porated in another country is eligible to participate and receive TIP funding if it meets the conditions set out in the TIP legislation (15 U.S.C. § 278n(l)(1)) and regulations (15 C.F.R. §296.5). Before making a final award, TIP will make a foreign-eligibility finding based on these conditions regarding the company's participation in a TIP project. The foreign-eligibility finding involves the collection of evidence to determine whether the following conditions are met:

- a. The company's participation in the TIP project would be in the economic interest of the United States, and
- b. The home country of the parent company provides all of the following:
 - (1) Comparable opportunities to those afforded to any other company for U.S.-owned companies to participate in government-funded programs similar to TIP;
 - (2) Comparable local investment opportunities to those afforded to any other company for U.S.-owned companies; and
 - (3) Adequate and effective protection of U.S.-owned companies' intellectual property rights.

TIP takes responsibility for gathering information related to the above requirements. The submitting organization must provide with the proposal a form NIST-1022G form, "Foreign-Owned Company Questionnaire" (see Exhibit 10), which relates to the role of the foreign-owned company in the project to help address foreign-eligibility requirement 6.a. above. If there is more than one such company, a separate questionnaire must be submitted for each company.

It is important that the information requested on the form NIST-1022G form, "Foreign-Owned Company Questionnaire", be provided in complete form at the time of proposal submission because it is used to assess the foreign-owned proposer's ability to bring about economic benefits to the United States. Information requested on this questionnaire relates to evidence that the company's participation is in the economic interest of the United States as stated in 6.a. above and includes the following:

- A sound justification that the involvement by the company and its role in the project is necessary to achieve the technical objectives and goals of the project;
- Evidence that the company makes investments in research, development, and manufacturing in the United States (an example might be the location and square footage of facilities and special equipment where the project will be carried out);
- Evidence that the company makes significant contributions to employment in the United States (i.e., number of employees); and
- Evidence that the company agrees to promote the manufacture within the United States of products resulting from the TIP-supported project and to procure supplies from competitive U.S. suppliers. (For instance, will the company incorporate the technology into its existing product lines

or processes, or will the company develop new products or processes related to the project's R&D in the United States?)

7. Is a foreign-eligibility finding required for foreign contractors?

No. The submitting organization, however, must justify the use of foreign-owned and foreign-located contractors or subsidiaries and explain how their participation will benefit the U.S. economy (see Exhibit 11, NIST-1022H form, "R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire") and the achievement of project goals, by completing the questionnaire. The completed questionnaire should state how and why U.S. sources were judged to be unavailable and inadequate in meeting the project goals. If there is more than one such instance, a separate questionnaire must be submitted for each instance.

8. May a foreign company or entity (e.g., university, government laboratory, or nonprofit) located outside the United States receive a TIP award?

No. Foreign-owned companies or entities located outside the United States cannot receive a TIP award (i.e., be a single applicant, project lead, or joint venture member). Only U.S.-owned companies and U.S. subsidiaries of foreign-owned companies that meet the requirements stated above are eligible to receive TIP funding. (See 15 C.F.R. 29 b (2) (ii).)

9. Can a company owned or controlled by non-U.S. citizens and without a foreign parent company receive a TIP award?

No.

10. Can a Cooperative Research and Development Agreement (CRADA) between a participating organization and a U.S. federal laboratory be part of a TIP project?

Possibly. To be acceptable to TIP, a CRADA cannot conflict with TIP requirements. For example, intellectual property provisions cannot be in conflict with TIP intellectual property provisions. A description of TIP intellectual property requirements may be found in Section F of this chapter. Any CRADA that is proposed to be part of a TIP proposal will require legal analysis by NIST, and revisions may be required for the CRADA to be in compliance with the TIP statute and regulations. A copy of the CRADA will be requested during the review by the Evaluation Panel for analysis. Therefore, parties are encouraged to carefully consider whether a CRADA is appropriate and to contact the Office of the Chief Counsel for NIST (301-975-2803) in advance of submitting a proposal that includes a CRADA.

11. Can an informal collaboration that does not impact the proposed funding or cost share requirements be used to address a critical task in the project?

Possibly. NIST may require that aspects of the informal collaboration be documented to be sure the arrangement is in compliance with the TIP statute and regulations. If the collaboration is key to accomplishing a critical task in the project, the proposer needs to address what alternatives are available if maintaining the informal collaboration fails. Therefore, parties are encouraged to carefully consider whether an informal collaboration is appropriate and to contact the Office of the Chief Counsel for NIST (301-975-2803) or the TIP Selection Management Director in advance of submitting a proposal involving an informal collaboration. A copy of any existing agreements regarding the informal collaboration will be requested during the review by the Evaluation Panel for legal analysis by the Office of the Chief Counsel for NIST.

C. FUNDING AND COST SHARING

1. How much funding can a TIP recipient receive, and is cost sharing required?

- a. Single small- or medium-sized company recipients can receive up to a total of \$3 million in TIP funding for R&D activities spanning up to 3 years. Small-sized and medium-sized companies applying as single company proposers must cost share at least 50 percent of the total yearly project costs (direct plus all of the indirect costs). TIP funds may only be used to pay direct costs. Single company recipients are responsible for funding all of their indirect/overhead costs which they can use as part of their cost share contribution. A large-sized company is not eligible to apply for TIP funding as a single applicant.
- b. Joint venture recipients can receive up to a total of \$9 million for R&D activities spanning up to 5 years. Joint ventures must cost share at least 50 percent of the total yearly project costs (direct plus all of the indirect costs). TIP funds may only be used to pay direct costs. Joint ventures are responsible for funding all of their indirect/overhead costs which they can use as part of their cost share contribution.

If an award is issued to a joint venture, each joint venture member will be responsible for meeting its committed cost share in accordance with the approved budget incorporated in the award. Joint venture members may have different cost share rates as long as the joint venture as a whole is providing at least 50% of total yearly project costs and TIP funds are not used to pay indirect costs. No joint venture member will be responsible for the cost share commitment of any other joint venture member.

Example 1 (Single)

Project Direct Costs	\$2 million
Project Indirect Costs	\$1 million
Total Project Costs	\$3 million

TIP funds must be no more than \$1.5 million of direct costs (50% of the \$3 million total cost.) Proposer responsibility would be \$1 million in indirect costs and \$0.5 million direct costs.

Example 2 (Joint Venture)

Project Direct Costs	\$ 4.5 million
Project Indirect Costs	\$ 2.0 million
Total Project Costs	\$ 6.5 million

TIP funds must not exceed \$3.25 million for direct costs which is 50% of the total costs.

Proposer responsibility would be \$2 million in indirect costs and \$1.25 million direct costs.

Example 3 (Joint Venture)

Project Direct Costs	\$ 15 million
Project Indirect Costs	\$ 7 million
Total Project Costs	\$ 22 million

TIP funds must not exceed \$9 million for direct cost.

Proposer responsibility would be \$7 million in indirect costs and \$6 million direct costs.

Note that proposed indirect cost rates are subject to approval by the cognizant Federal agency, if the proposal is selected for funding (See Question 6 in this section for additional information).

The final approval of selected proposals and award of assistance will be made by the NIST Grants Officer. The award decision of the NIST Grants Officer is final and cannot be appealed.

NIST reserves the right to negotiate the cost and scope of the proposed work with the proposers that have been selected to receive awards. This may include requesting that the proposer delete a particular task from the scope of work that is deemed by NIST to be inappropriate for support. In addition, NIST reserves the right not to fund a proposal where information exists that raises a reasonable doubt as to the responsibility of the proposer.

2. How does TIP define cost sharing?

Cost sharing is that portion of project costs not borne by the Federal government. Sources of revenue to satisfy the required cost share include cash and third party in-kind contributions. Cash may be contributed by any nonfederal source, including but not limited to recipients, state and local governments, companies, and nonprofits (except contractors working on a TIP project). Third party in-kind contributions can be made by any nonfederal third-party source (except contractors working on a TIP project), and include but are not limited to equipment, research tools, software, supplies, and/or services. Except as specified in 15 C.F.R. §296.6, the value of in-kind contributions shall be determined in accordance with 15 C.F.R. § 14.23 (Uniform Administrative Requirements for Grants and Cooperative Agreements With Institutions of Higher Education, Hospitals, Other Non-Profit, and Commercial Organizations <http://www.nist.gov/tip/helpful-resources.cfm>) and will be prorated according to the share of total use dedicated to the TIP project.

Additionally, as with the federal share, cost share must be allowable under the following applicable federal cost principles available at <http://www.nist.gov/tip/helpful-resources.cfm>:

For-profit companies: 48 C.F.R. Part 31.

Educational Institutions: 2 C.F.R. Subtitle A, Chapter II, Part 220 (formerly OMB Circular A-21).

Nonprofit organizations: 2 C.F.R. Subtitle A, Chapter II, Part 230 (formerly OMB Circular A-122).

State and Local Governments: 2 C.F.R., Subtitle A. Chapter II, Part 225 (formerly OMB Circular A-87).

Hospitals: 45 C.F.R. Part 74, Appendix E.

3. What are direct and indirect costs?

Direct costs are those that are directly related to a specific, single-cost objective. Examples include personnel, travel, equipment, contractors, and materials and supplies.

Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with activities carried out in support of a particular final objective. A cost may not be allocated to an award as an indirect cost if any other cost incurred for the same purpose in like circumstances has been assigned to an award as a direct cost. Because of diverse characteristics and accounting practices, it is not possible to specify the types of costs which may be classified as indirect costs in all situations. However, typical examples of indirect costs include general administrative expenses, such as the salaries and expenses of executive officers, office rent, personnel administration, fringe benefits, maintenance, library expenses, office supplies, general purpose office equipment (office computers, printers, copiers, etc.), and accounting costs. NIST will determine the allowability of indirect costs in accordance with applicable federal cost principles.

4. I am a small startup company and do not have any indirect costs. If funded, the TIP project would be the only project for my company. Will TIP fund a proposal that only has direct costs?

No. If a company claims to have no indirect costs, this suggests to TIP that the company is inexperienced in its fiscal affairs, the company may not be a financially viable business, or the company has no intention of carrying on any business other than performing research for the TIP project.

5. What if the project's indirect costs exceed its direct costs? Can all of the cost share funds be provided through indirect costs?

Yes, the project could provide its entire cost share through contributing indirect costs IF these exceed direct costs. NOTE: Indirect cost rates are subject to approval by a cognizant federal agency and can vary through the life of a project. If your proposal is exactly at 50% cost share over the life of the project and the majority of or all of the cost share is made up of indirect costs, assuming a maximum indirect cost rate for all project years, your cost share commitment may be at risk if your proposal is selected

for funding. Here's why, if your proposed indirect cost rate is not approved at the level desired, your cost share could go below the statutory requirement of 50% and the project would no longer be eligible for funding without additional sources of cost share. The project would be suspended to see if the situation could be resolved so that the project could continue. If the cost share requirement is not resolved, termination of the project would result. Projects proposing to meet the minimum cost share requirement are strongly encouraged to be aware of the need for alternative cost share arrangements, if availability of cost share varies at any time during the project.

6. *What if my company does not have a federally approved indirect cost rate?*

Using Generally Accepted Accounting Principle (GAAP) and the U.S. Department of Commerce general Indirect Cost Rate Program Guidelines for Grantee Organizations (available at http://oamweb.osec.doc.gov/GMD_grantsPolicy.html), determine your indirect costs as accurately as possible. If the proposal receives an award, you will submit an indirect cost rate proposal to the Department of Commerce who will work with you to establish an indirect cost rate agreement. This agreement will bind your company on all of its government work and, for future reference, will make the Department of Commerce your cognizant federal agency. An agreement can be renegotiated should the company's cost structure change.

7. *Our small startup company expects to cost share through the use of state funds, other private investors, or with the help of a cost sharing subrecipient. If those resources fall through after we receive a TIP award, will we be expected to make up the cost share gap?*

Yes. If a single-company or joint venture proposal is selected for funding, the recipient's percentage of cost sharing will be made a part of the award, and will become a requirement. Failure to satisfy your cost share requirement can result in suspension of work until funding can be found to resolve the cost share requirement. If after a reasonable time, the cost share requirement is not resolved, the project will be terminated. NIST cannot violate the TIP statutory cost-sharing requirements.

8. *Can a subrecipient participate in a TIP award?*

Yes. TIP awards allow for participation by subrecipients. A subrecipient is a legal entity to which a subaward is made, and the subrecipient is accountable to the recipient for use of the funds provided by the recipient. Subrecipients can also cost share through direct or indirect cost contributions under the same requirements that apply to an award recipient. They cannot be joint venture members, nor directly receive TIP funds.

9. *Can independent research and development (IR&D) funds be used as cost sharing?*

The expectation is that the proposer's share of the TIP project costs will be funded from nonfederal sources, such as retained

earnings or profits, not funds included as an indirect expense that is subsequently allocated for reimbursement under federally funded procurement contracts, grants, and other agreements. Recovering the proposer's cost share as part of its IR&D/General and Administrative (G&A) allocation to other federally funded projects would be contrary to the kind of financial commitment expected of proposers by the TIP statute.

Proposers MAY NOT classify the nonfederal share of the TIP project costs as an IR&D expense that is subsequently allocated, either as a separate cost or as an element of a G&A cost pool, to federally funded procurement contracts, grants, or other agreements.

Proposers MAY allocate to a TIP project IR&D or G&A costs that include IR&D as an element provided that the IR&D/G&A rate applied to the TIP project is a federally approved indirect cost rate.

D. INELIGIBLE PROJECTS AND INELIGIBLE OR UNALLOWABLE COSTS

1. *What types of projects are ineligible for TIP funding?*

- a. Straightforward improvements of existing products or product development.
- b. Projects that are Phase II, III, or IV clinical trials. TIP will rarely fund Phase I clinical trials and reserves the right not to fund a Phase I clinical trial. The portion of a Phase I trial that may be funded must be critical to meeting evaluation criterion (a)(1) addressing the scientific and technical merit of the proposal. The trial results must be essential for completion of a critical R&D task of the project. The definitions of all phases of clinical trials are provided in the TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects located at <http://www.nist.gov/tip/helpful-resources.cfm>.
- c. Pre-commercial-scale demonstration projects where the emphasis is on demonstrating that some technology works on a large scale or is economically sound rather than on R&D that advances the state of the art and is high-risk, high-reward.
- d. Projects that TIP determines would likely be completed without TIP funds in the same time frame or nearly the same time frame, or with the same scale or scope.
- e. Predominantly straightforward, routine data gathering (e.g., creation of voluntary consensus standards, data gathering/handbook/specification sheet preparation, testing of materials, or unbounded research aimed at basic discovery science), or application of standard engineering practices.
- f. Projects in which the predominant risk is market-oriented—that is, the risk is that the end product may not be embraced by the marketplace.

- g. Projects with software work that are predominantly about final product details and product development, and that have significant testing involving users outside the research team to determine if the software meets the original research objectives, are likely to be either uncompetitive or possibly ineligible for funding. However, R&D projects with limited software testing, involving users outside of the research team, or vertebrate animals, may be eligible for funding and contain eligible costs within a TIP award when the testing is critical to meeting evaluation criteria and/or award criteria and the testing results are essential for completion of a critical task in the proposed research. This type of testing in projects may also be considered to involve human subjects or vertebrate animals in research and require compliance with applicable federal regulations and NIST policies for the protection of human subjects or live vertebrate animals.

2. *How are indirect costs handled in TIP budgets?*

Indirect costs, which include overhead and general and administrative expenses, must be absorbed by the recipient. TIP funds cannot be used to pay for indirect costs. Indirect costs can be used as cost share on TIP projects and are considered to be a cash contribution.

3. *How are tuition costs handled in TIP budgets?*

Tuition costs are generally not allowed as direct costs on projects. An institution of higher education participating in a TIP project as a contractor or as a joint venture member or lead may charge TIP for tuition remission or other forms of compensation paid as, or in lieu of, wages to students performing necessary work. These are allowable, provided the requirements are met under 2 C.F.R. Subtitle A, Chapter 2, Part 220, Appendix A, 45 (formerly OMB Circular A-21, Section J.41). In such cases, tuition remission and other forms of compensation paid to students shall be treated as direct costs in accordance with the actual work being performed, and listed in the budget under "Other." Tuition remission may be charged on an average rate basis.

4. *How are fringe benefits handled in TIP budgets?*

Fringe benefits are generally considered to be indirect costs. However, if it is your organization's accounting practice to always charge fringe benefits as direct costs, fringe benefits can be included as a direct cost of the project and should be included in the "Other" budget category of the NIST 1022-C form Budget Narrative.

5. *What types of costs are ineligible or unallowable?*

The following items, regardless of whether they are allowable under federal cost principles, are ineligible or unallowable under TIP:

- a. Bid and proposal costs (e.g., payments to any organization or person retained to help prepare a proposal), unless they are incorporated into a federally approved indirect cost rate.
- b. Construction costs for new buildings or extensive renovations of existing buildings. However, costs for the construction of experimental research and development facilities to be located within a new or existing building are allowable provided the equipment or facilities are essential for carrying out the proposed project and are approved in advance by the NIST Grants Officer. These types of facility costs may need to be prorated if they will not be used exclusively for the research activities proposed.
- c. Contractor office supplies and contractor expenses for conferences/workshops.
- d. Contracts to another part of the same company or to another company with identical or nearly identical ownership. Work proposed by another part of the same company or by another company with identical or nearly identical ownership should be shown as funded through inter-organizational transfers that do not contain profit. Interorganizational transfers should be broken down in the appropriate budget categories.
- e. For research involving human and/or animal subjects, any costs used to secure Institutional Review Board or Institutional Animal Care and Use Committee approvals before or during the award.
- f. General purpose office equipment and supplies that are not used exclusively for the research: e.g., office computers, printers, copiers, paper, pens, and toner cartridges.
- g. Marketing, sales, or commercialization costs, including marketing surveys, commercialization studies, and general business planning, unless they are included in a federally approved indirect cost rate.
- h. Office furniture costs, unless they are included in a federally approved indirect cost rate.
- i. Patent costs and legal fees, unless they are included in a federally approved indirect cost rate.
- j. Preaward costs: i.e., any costs incurred prior to the award start date.
- k. Profit, management fees, interest on borrowed funds, or facilities capital cost of money. However, profit is allowable for contractors under a single company or joint venture.
- l. Project development planning (e.g. patent and literature searches) and creation of milestones. For example, proposals that plan on developing milestones only if an award is received and after literature searches are performed under the award are generally not competitive. Costs for literature searches in general are ineligible.
- m. Relocation costs, unless they are included in a federally approved indirect cost rate.

- n. Salaries: NIST limits the salaries of project personnel so to not exceed Level I of the Executive Schedule, the specific amount can be found in future annual announcements (FFOs) of availability of funds.

6. *Can a university employee establish a company and contract back to his/her university?*

Generally, no. This would present a conflict of interest. However, under certain circumstances, for example, if the university's participation is unique and essential to the project, the contracting arrangement may be considered. In such a case, the organization/individual with the conflict of interest may not benefit or profit from the contract. For more information, see the Codes of Conduct guidance in 15 C.F.R. § 14.42 (<http://www.nist.gov/tip/helpful-resources.cfm>).

7. *Is there a limit to the number of university students that can participate in a project?*

Since the mission of TIP is not primarily one for educating students, NIST reserves the right to limit the number of graduate students and post-doctoral researchers requested to participate in the research plan and budget narrative. For each graduate student proposed, you must indicate which specific research tasks in the technical plan require their participation and whether or not this position is expected to be rotated on a regular schedule to another graduate student. Describe the research activities the student will contribute to and how the project would proceed if the student contribution is not approved. Post-doctoral researchers will be considered to be key personnel and need to be named specifically in the budget narrative. In addition, their contributions need to be associated with specific research tasks in the technical plan.

TIP requires recipients to provide the names of graduate students who are working on the project. The name of each student's receiving wage compensation should appear on the NIST-1022C form under "Personnel." Enter TBD if students are not known at the time. If an award is made, the NIST-1022C form will be updated with the student's name as soon as they are known (e.g., at the start of each rotation.)

With regard to student involvement, TIP expects:

- limited involvement and rotation of students on research activities within the project;
- no undergraduate student activities charged to the project; and
- that all activities by graduate students will be technically justified in the technical plan and budget narrative.

8. *Can an individual who has a financial or other interest in a company receive a contract from that company?*

Generally, no. See the question and answer in D.6. above

9. *Will TIP fund research performed outside the United States?*

Possibly. Although TIP is not precluded from funding research performed outside the United States, proposals involving significant research outside the United States would likely be considered less competitive when evaluated against the TIP evaluation criteria related to advancing the state of the U.S. science and technology base and generating substantial benefits to the Nation. Any proposed use of a foreign contractor or foreign-located organization must be justified (see Exhibit 11, NIST-1022H, "R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire"). The completed questionnaire must include an explanation of why the work or services cannot be performed equivalently or obtained in the United States. For requirements on research involving human subjects in research activities, or research involving live vertebrate animals proposed to be performed outside of the United States, see *the TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects located at <http://www.nist.gov/tip/helpful-resources.cfm>*. Contacting the TIP Human and Animal Subjects Advisor is strongly encouraged.

E. THE SELECTION PROCESS AND CRITERIA TO SELECT PROPOSALS

1. *How are proposals selected for funding?*

Proposals are selected based on a multi-disciplinary peer-review process, as described in 15 C.F.R. §296.20 (see Appendix B). A preliminary review is conducted to determine if the proposal is in accordance with 15 C.F.R. §296.3, complies with the eligibility requirements described in 15 C.F.R. §296.5, addresses award criteria (a) through (c) of 15 C.F.R. §296.22, was submitted to a previous TIP competition and if so has been substantially revised, and is complete. Proposals that are incomplete or do not meet any one of the preliminary review requirements will normally be eliminated. All remaining proposals are then carefully reviewed based on the TIP evaluation criteria listed in 15 C.F.R. §296.21 and award criteria listed in 15 C.F.R. §296.22. An Evaluation Panel will present funding recommendations to a Selecting Official in rank order for further consideration. The Selecting Official makes the final selections for funding. The selection of proposals by the Selecting Official is final and cannot be appealed. The final approval of selected proposals and award of assistance will be made by the NIST Grants Officer. The award decision of the NIST Grants Officer is final and cannot be appealed.

NIST reserves the right to negotiate the cost and scope of the proposed work with the proposers that have been selected to receive awards. This may include requesting that the proposer delete a particular task from the scope of work that is deemed by NIST to be inappropriate for support. In addition, NIST reserves the right not to fund a proposal where information exists that raises a reasonable doubt as to the responsibility of the proposer.

2. *What criteria are used to select proposals for funding?*

Proposals are selected for funding based on the evaluation criteria listed in 15 C.F.R. §296.21 and the award criteria listed in 15 C.F.R. §296.22 as identified below. Additionally, no proposal will be funded unless TIP determines that it has scientific and techni-

cal merit and that the proposed research has strong potential for addressing a societal challenge defined within the TIP-identified areas of critical national need.

Evaluation Criteria: The two evaluation criteria and their respective weights as listed in 15 C.F.R. §296.21 are as follows:

(a)(1) The proposer(s) adequately addresses the scientific and technical merit and how the research may result in intellectual property vesting in a U.S. entity including evidence that:

- (i) The proposed research is novel;
- (ii) The proposed research is high-risk, high-reward;
- (iii) The proposer(s) demonstrates a high level of relevant scientific/technical expertise for key personnel, including contractors and/or informal collaborators, and has access to the necessary resources, for example, research facilities, equipment, materials, and data, to conduct the research as proposed;
- (iv) The research result(s) has the potential to address the technical needs associated with a major societal challenge not currently being addressed; and
- (v) The proposed research plan is scientifically sound with tasks, milestones, timeline, numerical metrics, decision points, and alternate strategies.

(2) Total weight of (a)(1)(i) through (v) is 50%.

(b)(1) The proposer(s) adequately establishes that the proposed research has strong potential for advancing the state of the art and contributing significantly to the U.S. science and technology knowledge base and to address areas of critical national need by transforming the Nation's capacity to deal with a major societal challenge(s) that is not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the proposer including an explanation in the proposal:

- (i) Of the potential magnitude of transformational results upon the Nation's capabilities in an area;
- (ii) Of how and when the ensuing transformational results will be useful to the Nation; and
- (iii) Of the capacity and commitment of each award participant to enable or advance the transformation of the proposed research results (technology).

(2) Total weight of (b)(1)(i) through (iii) is 50%.

Award Criteria: The six award criteria as listed in 15 C.F.R. §296.22 are as follows:

- (a) The proposal explains why TIP support is necessary, including evidence that the research will not be conducted within a reasonable time period in the absence of financial assistance from TIP;

(b) The proposal demonstrates that reasonable and thorough efforts have been made to secure funding from alternative funding sources and no other alternative funding sources are reasonably available to support the proposal;

(c) The proposal explains the novelty of the research (technology) and demonstrates that other entities have not already developed, commercialized, marketed, distributed, or sold similar research results (technologies);

(d) The proposal has scientific and technical merit and may result in intellectual property vesting in a U.S. entity that can commercialize the technology in a timely manner; and

(e) The proposal establishes that the research has strong potential for advancing the state of the art and contributing significantly to the U.S. science and technology knowledge base; and

(f) The proposal establishes that the proposed transformational research (technology) has strong potential to address areas of critical national need by transforming the Nation's capacity to deal with major societal challenges that are not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the proposer.

NIST must determine that a proposal successfully meets all six award criteria in order for the proposal to receive funding under the Program.

Detailed guidance on how to address the evaluation and award criteria is provided in Chapter 2.

3. *What factors could result in a proposal not being competitive?*

Examples of factors that could result in a proposal not being competitive include the following:

- a. An incomplete proposal. For example, a proposal that states a more detailed technical plan and project milestones will be developed after an award is received, and/or after a literature search is performed will not be considered to be a complete proposal.
- b. Failure to address a societal challenge(s) as described in an area of critical national need identified in the Federal Register notice announcing the competition.
- c. Failure to address in sufficient detail any evaluation or award criterion.
- d. Omissions of significant details due to the proposer's reluctance to reveal confidential/ proprietary information.
- e. Lack of clear science-based explanation of the high technical risks and their potential rewards that require TIP funding. Explanations of technical risk that are limited to the level of

cost or length of time to complete the work are considered to be insufficient, and not science based.

- f. Failure to adequately address the question, “What technical issue or issues are preventing progress in addressing the particular societal challenge within an area of critical national need?”
- g. Inadequate documentation of the novelty of the expected research/or technology results/outcomes with respect to what is currently available. Specifically, it should be clear that other entities have not developed, commercialized, marketed, distributed, or sold similar technologies.
- h. Lack of detail in the technical plan or failure to clearly describe how the research path will be accomplished, including project milestones with appropriate technical metrics. For example:
 - (1) Use of a trial-and-error approach to generate new technologies or processes based on state of the art techniques that do not result in advancing the methodology beyond trial and error.
 - (2) Technical risks in the project not described at the scientific level other than that the approach may not work as expected, or there is no clear identification of alternative mitigation strategies for overcoming various risks at each step in the R&D plan.
 - (3) Technical risks and proposed key accomplishments during the project are not adequately linked to project milestones with appropriate technical metrics.
 - (4) Straightforward scale-up based on standard engineering practices or state of the art techniques that will not advance scale-up methodology (e.g., faster, better, cheaper).
 - (5) Use of proprietary techniques that are already developed in-house to generate novel technologies or processes where there is no expectation to move the technique(s) to a next-generation advancement.
 - (6) Lack of detail as to how the research has a strong potential for advancing the state of the art and contributing significantly to the U.S. science and technology knowledge base.
 - (7) Unconvincing case of the need for TIP funding or failure to describe thorough actions taken to already secure non-TIP funding (or lack of evidence of the results of those actions).
 - (8) Failure to address the technical scope requirements specific to the societal challenge(s) for this competition as outlined in the Federal Funding Opportunity announcement.

- a. For single company award recipients, pursuant to the Bayh-Dole Act (35 U.S.C. 202 (a) and (b)) and “Memorandum to the Heads of Executive Departments and Agencies: Government Patent Policy” (February 18, 1983), the entity that invents owns the invention. However, pursuant to 35 U.S.C. 202(a)(i), when a single company or its contractor under a TIP award is not located in the United States or does not have a place of business located in the United States or is subject to the control of a foreign government, NIST will require that title to inventions made by such parties be transferred to a U.S. entity that will ensure the commercialization of the technology in a timely fashion.
- b. For joint ventures, ownership of inventions arising from a TIP-funded project may vest in any participant in a joint venture, as agreed to by the members of the joint venture (notwithstanding 35 U.S.C. 202 (a) and (b)) and specified in their joint venture agreement. (Participants include all entities that are identified as a recipient, subrecipient, or contractor on an award to a joint venture.)

Title to any such invention shall not be transferred or passed, except to a participant in the joint venture, until the expiration of the first patent obtained in connection with such invention.

Should the last existing participant in a joint venture cease to exist prior to the expiration of the first patent obtained in connection with any invention developed from assistance provided under TIP, title to such patent must be transferred or passed to a U.S. entity that can commercialize the technology in a timely fashion.

Patent reporting requirements using iEdison.gov is described within the TIP General Terms & Conditions which are available at <http://www.nist.gov/tip/helpful-resources.cfm>.

2. *Does the Federal government have any rights to patentable inventions arising from a TIP-funded project?*

Yes. The United States reserves a nonexclusive, nontransferable, irrevocable paid-up license, to practice or have practiced for or on behalf of the United States any intellectual property developed from a TIP award. The federal government shall not in the exercise of such license publicly disclose proprietary information related to the license. This does not prohibit the licensing to any company of intellectual property rights arising from a TIP-funded project. (15 C.F.R. §296.11(b)(3)). The federal government also has march-in rights in accordance with 37 C.F.R. §401.6.

3. *Can an entity other than a JV participant own any intellectual property arising from the TIP project?*

No. However, if it is desirable for the joint venture to have another entity own any IP arising from the TIP project, that entity could become a participant of the joint venture, either by becoming a member of the joint venture (if eligible) by signing the joint venture agreement, or by revising the project budget to include that entity as a contractor or subrecipient. For example, a recent

F. INTELLECTUAL PROPERTY

1. *Who retains title to patentable inventions arising from a TIP-funded project?*

TIP project added, as a joint venture member, a university's non-profit research foundation, that had been formed to hold/own intellectual property for the university.

G. HUMAN AND ANIMAL SUBJECTS

1. *Will TIP fund projects involving human subjects and/or live vertebrate animals in research activities?*

Yes, provided the research involving human subjects or live vertebrate animals is in compliance with applicable federal regulations and NIST policies for the protection of human subjects or live vertebrate animals. Human subjects research activities involve interactions with live human subjects or the use of data, images, tissue, blood and/or cells/cell lines (including those used for control purposes) from human subjects. Research involving human subjects may include activities such as testing new devices, techniques, and sensors, the use of image and/or audio recording of people, taking surveys or using survey data, using databases containing personal information, testing software with volunteers, and many tasks beyond those within traditional biomedical research.

Vertebrate animal research involves live animals that are being cared for, euthanized, or used by the project participants to accomplish research goals or for teaching or testing. The regulations do not apply to animal tissues purchased from commercial processors or tissue banks or to uses of preexisting images of animals (e.g., a wildlife documentary or pictures of animals in newscasts). The regulations do apply to any animals that are transported, cared for, euthanized, or used by a project participant for testing, research, or training, such as testing of new procedures or projects, collection of biological samples or observation data on health and behavior.

2. *Does TIP have any written guidance to help me determine what documentation is required if my project involves human subjects or live vertebrate animals in research activities?*

Yes, and it is critical that you review this guidance. TIP has prepared detailed guidance in the *TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects* to help you determine what documentation is required if your research plan contains studies using human subjects, human materials, or live vertebrate animals. This booklet is available at <http://www.nist.gov/tip/helpful-resources.cfm> or it can be mailed to you by calling 1-888-847-6478 and requesting a copy. You are also encouraged to call the TIP Human and Animal Subjects Advisor for assistance at 301-975-8779.

3. *We are not a biotech company. Could our research involve human subjects?*

Yes, it could. Manufacturing, electronic, and information technology projects may use human subjects in a way that falls within the regulations. For example, a software company may propose

to test a new approach to software development by having a group of experienced programmers try it and measure their reactions and results with the new tools. The use of human subjects is not limited to biologically based studies; there are numerous examples of nonmedical research proposals that may use human subjects or data with personal information about people. Any use of human subjects requires careful review to determine if and how the regulations apply and may require the submission of certain documents to NIST. A Human Subjects Determination Checklist is included in this Proposal Preparation Kit in Chapter 6 to assist you in determining whether your proposed research plan has human subjects involvement, which would require additional information in your proposal submission, and possibly more documentation during the Evaluation Panel's consideration of your proposal. See the *TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects* for more specific information on documentation requirements and due dates for documentation.

Examples of human subjects in research activities that may require the submission of certain documents to NIST include, but are not limited to, using human subjects to:

- a. Test software, recording (audio or visual) methods, equipment, therapeutic methods or materials;
- b. Collect data about human subjects through direct interviews, written surveys, or online interactive methods, etc.; or
- c. Observe people and their behavior in specified circumstances controlled by the research team.

CHAPTER 2

GUIDELINES FOR PREPARING A TIP PROJECT NARRATIVE

A. INTRODUCTION DECISION-MAKING TIPS

The Technology Innovation Program (TIP) supports high-risk, high-reward research that addresses societal challenges in areas of critical national need. TIP's legislation requires that all evaluation and award criteria must be met in order for TIP to award funding for a research project.

Only projects that are within the TIP mission, eligibility requirements, and the technical scope of the competition described in the Federal Funding Opportunity (FFO) notice will be considered for funding. Ineligible projects and ineligible applicants will not be considered for funding. Therefore, it is essential that the proposer thoroughly review the eligibility requirements found in Chapter 1, the project narrative requirements of this chapter, and the FFO for technical scope requirements, plus any documents referenced therein. If a potential applicant is unsure whether their proposed research or technological advancement falls within the scope of the TIP program and the competition technical scope, they should contact TIP for clarification using the points of contact identified within the FFO or those listed on p. 2 and 3 of this Kit. TIP funds only high-risk, high-reward research, and does not fund other types of projects including unbounded basic (discovery) research, product development, and commercialization efforts (see Chapter 1 p. 7 for other funding exclusions).

In preparing a TIP Project Narrative, the applicant needs to think about the best way to explain how the proposed research project will address the TIP defined societal challenge(s) as presented in the FFO. If successful, the proposed transformational technology should achieve a game-changing advance in the state of the art and in how the particular societal challenge is overcome. The proposer should seek to quantify the technological advance to be achieved over current capabilities and explain the transformational impact the proposed project's outcome would have on the societal challenge. In other words, if successful, how will the technology resulting from the TIP-funded R&D more efficiently, effectively, and competitively address the societal challenge than today's competing solutions? What will be the pathway, resource requirements, and teaming necessary for successful implementation of the research tasks and subsequent outcome? Without a credible and clear strategy, plan, and timeline for achieving the research, and potential impacts to address the societal challenge, a proposal may be considered less competitive when evaluated against the criteria discussed below.

To be competitive, TIP Project Narratives must include four key elements: impact planning (to address the national impacts you expect to achieve as a result of the proposed research), technical

planning (the project's technical plan to reach research goals), why propose to TIP (the appropriateness of TIP as a funder), and lastly, the project budget. Consideration of all four elements is necessary at all stages of a proposal's development, detailed preparation, and final submission since changes within one element can often affect other elements. The first three elements are discussed in detail here in Chapter 2. Additional guidance for developing a project budget is found in Chapter 3 and Chapter 7.

Once a metrics-based understanding of the proposed impact and technical goals you wish to accomplish are established, and the corresponding novelty of the proposed research results or outcomes and the novelty of the research approach itself are understood, proposers should be sure the envisioned project is appropriate to propose to TIP. Does it fit within the TIP mission and eligibility requirements? Does it fall within the technical scope of the competition as described in the FFO? Also, what resources are needed to fully accomplish the envisioned technical and impact goals? Resources include the team members and the project budget.

Team members include project participants and any informal collaborators needed to accomplish the research activities during the project or impact goals outside the project. Project participants are organizations involved in the R&D and are represented within the project budget. A project participant may be the recipient, a joint venture member, a contractor, or a subrecipient. Informal collaborators are those organizations or individuals that are not a part of the project's budget but have a distinct role in helping the team accomplish their technical or impact objectives.

Teaming is often critically important to successful proposals as multidisciplinary approaches are often required to advance the state of the art, or for the results of the research to be adopted by others, and to overcome the societal challenge being targeted. Like teaming, the project budget represents not only the financial resources that will be needed, but also how those resources will be allocated across cost categories, major R&D tasks, and the project participant(s) performing the major R&D tasks.

Preparing a budget that is directly linked to the technical plan and that includes cost-sharing requirements can be a very complex task. Often proposers go through multiple iterations of budget estimates, task assignments, and the like, before a well integrated plan is developed.

Indeed, it is often the case that details of the technical plan describing the work and tasks each team member will perform and the associated costs of each task are best created once an effective team and budget are developed. Therefore early planning considerations should be resolved before moving forward to create the final project narrative.

As you begin crafting your TIP Project Narrative, avoid the proposal weaknesses shown in Table 2.1 that are commonly seen in non-competitive TIP proposals.

Table 2.1: Proposal Weaknesses to Avoid

<p>Outside of the TIP mission</p> <ul style="list-style-type: none"> • Low technical-risk (e.g., product development) or unbounded (discovery) research. • Lacks demonstrated need for TIP support. • Reasonable and thorough efforts to obtain other funding have not been adequately pursued and documented.
<p>Outside of the Solicitation Scope</p> <ul style="list-style-type: none"> • Lacks clear alignment to the competition as defined in the FFO notice. • Fails to clearly and explicitly meet scope requirements.
<p>Insufficient Detail and/or Unsupported Assertion Regarding Key Requirements</p> <ul style="list-style-type: none"> • Absence of convincing case for the novelty of outcome, based on a clear analysis of the competitive landscape of relevant technologies. • Lack of adequate presentation of how the R&D is high-risk, high-reward and/or how research outcomes could be transformational. • Insufficient description of how the technical and impact objectives will be accomplished, and by whom. • Inadequate or incomplete descriptions of the R&D plan, and/or lack of associated metrics, milestones, and relevant alternate pathways; unclear relevancy of technical staff to the technical plan. • Incomplete multi-year budget and/or lack of appropriate linkage of the budget to the technical plan. • Incomplete or insufficient impact strategies; impact strategies founded solely on a “build-it-and-they-will-come” approach. • Insufficient level of detail regarding analysis of markets, competition, resource requirements, or team capabilities. • Lack of appropriate detail on partnering strategies, competitive analysis, and depth and strength of the team’s capabilities to address the area of critical national need described in the FFO.
<p>Content Issues</p> <ul style="list-style-type: none"> • Failure to adequately address all TIP Award and Evaluation criteria. • Joint venture members who do not meet eligibility and substantial involvement requirements, if appropriate. • Failure to submit all required forms, letters, and additional documentation. • Failure to generate and provide a complete budget and supporting budget narrative.

The following is a detailed discussion of the key information that needs to be a part of a TIP Project Narrative and that forms the foundation for evaluating proposals against the TIP Award and Evaluation criteria. Although the specific format below is not required, to be competitive a proposal must address all components of the evaluation and award criteria. TIP reviewers are familiar with the technology discussed in the proposal; however, reviewers are limited to using only what is provided in the proposal to evaluate the project against the TIP Award and Evaluation Criteria.

B. DEFINITIONS

In preparing a proposal it is important to keep a few key definitions in mind. (A complete list of definitions can be found in 15 C.F.R. § 296.2.)

1. Critical National Need means an area that justifies government attention because the magnitude of the problem is large and the societal challenge(s) that need to be overcome are not being addressed, but could be addressed through high-risk, high-reward research. (Note that each competition will focus on specific societal challenge(s) within one or more areas of critical national need as identified in the FFO notice announcing the competition.)
2. High-Risk, High-Reward Research means research that: (1) has the potential for yielding transformational results with far-ranging or wide-ranging implications; (2) addresses areas of critical national need that support, promote, and accelerate innovation in the United States and are within NIST’s areas of technical competence; and (3) is too novel or spans too diverse a range of disciplines to fare well in the traditional peer-review process.
3. Societal Challenge means a problem or issue confronted by society that when not addressed could negatively affect the overall function and quality of life of the Nation, and as such justifies government attention.
4. Transformational Results means potential project outcomes that enable disruptive changes over and above current methods and strategies. Transformational results have the potential to radically improve our understanding of systems and technologies, challenging the status quo of research approaches and applications.

C. EXECUTIVE SUMMARY

The proposal should begin with a brief, two-page Executive Summary that presents the major ideas in the proposal. TIP recommends that the summary be completed after the other sections have been written. The summary should be well thought out and should carefully map the salient points of the proposal to all TIP Award and Evaluation criteria. Do not create a summary by simply cutting and pasting sections from the body of your proposal. Use the summary to present a high-level storyline of the proposal against the criteria and to introduce the participants.

D. PROJECT NARRATIVE

To facilitate proposal writing and the TIP evaluation process, TIP recommends that the Project Narrative address each of the three major sections presented below. These sections include (D.1) Why Propose to TIP, (D.2) Impact Planning, and (D.3) Technical Planning, and tie them to the relevant TIP Award Criteria (15 C.F.R. § 296.22), and TIP Evaluation Criteria (15 C.F.R. § 296.21).

- Chapter 2 Sections D.1 and D.2(1) offer guidance on how proposers should address the portions of the award criteria used

during the Preliminary Review phase of proposal evaluation to determine whether the proposal is eligible for further consideration by the Evaluation Panel. Proposals that warrant further consideration will be reviewed further against the evaluation criteria, described in sections D.2 and D.3, and all award criteria, described throughout the remainder of the Chapter.

- Chapter 2 Section D.2 offers guidance on how proposers should address the evaluation criterion requiring that they adequately establish that the project will advance the state of the art and contribute significantly to the U.S. science and technology base, and describe how the results of the project have a strong potential to address the societal challenge(s), and will enable the anticipated transformational results.

Fifty percent of the Evaluation Panel's consideration of your proposal is based on how competitively your proposal addresses this evaluation criterion.

- Chapter 2 Section D.3 offers guidance on how proposers should address the evaluation criterion requiring that they adequately address the scientific and technical merit of the proposal. Fifty percent of the Evaluation Panel's consideration of your proposal is based on how competitively your proposal addresses this evaluation criterion.

The Evaluation Panel's review and recommendation is ultimately based on how well the proposal addresses all award and evaluation criteria.

Award Criteria	Essential Aspects	
A. Why TIP Support is Necessary	<ul style="list-style-type: none"> Why the project needs TIP funds The difference TIP funding will make to the research, the results and timing of those results, and the impact on the societal challenge 	
B. Efforts to Secure Alternative Funding	<ul style="list-style-type: none"> Provide a description of the reasonable and thorough efforts that the proposer(s) has made to secure other funding for the research, including: <ul style="list-style-type: none"> Internal sources External private sources Government sources Applies to all joint venture partner efforts relative to all sources, or why a source for a specific partner is inappropriate Documented evidence that alternative funding sources are absent or inadequate 	
Novelty, Part 1: C. Novelty of the Proposed Research (Technology) Results/Outcomes	<ul style="list-style-type: none"> Discuss other entities who may have similar research (technology) results available and differentiate your research How the research (technology) results are transformational Key performance metrics that differentiate the proposed research (technology) Science-based details explaining the research (technology) potential to more fully address the societal challenge 	
Award Criteria	Evaluation Criteria	Essential Aspects
D. Scientific and Technical Merit and may Result in Intellectual Property Vesting in a U.S. Entity	1) Scientific and Technical (S&T) Merit (50%)	<ul style="list-style-type: none"> Novelty, Part 2 : Novelty of the proposed research approach Potential to address technical needs associated with a major societal challenge High-risk, high-reward research Qualifications of the proposed research team A scientifically sound technical plan with tasks, milestones, timeline, decision points and alternate strategies
E. Strong Potential to Advance the State of the art and Contribute to the U.S. Science and Technology Knowledge Base	2) Potential for S&T and National Impacts (50%)	<ul style="list-style-type: none"> The research advances the state of the art whether or not it succeeds The differences the project will make to the broader research community The contribution to the U.S. science and technology knowledge base while ownership of the intellectual property is maintained How the contribution will support the transformational results
F. Strong Potential to Address Areas of Critical National Need by: <ul style="list-style-type: none"> Transforming the Nation's Capacity to Deal with Major Societal Challenges Generate Substantial Benefits to the Nation that Extend Significantly Beyond the Proposer 		<ul style="list-style-type: none"> The potential magnitude of transformational results upon the nation's capabilities How and when the ensuing transformational results will be useful to the nation The capacity and commitment of each award participant to enable or advance the transformation to the proposed research results (technology).

Table 2.2: TIP Award and Evaluation Criteria

(D.1) AWARD CRITERIA REGARDING “WHY PROPOSE TO TIP?”

In the first section of the Project Narrative, the first two TIP Award Criteria (see Chapter 1 p. 10) should be addressed:

1. Why TIP Support is Necessary
2. Efforts to Secure Alternative Funding

As plans for the impact and technical goals begin to develop among the proposing team members, it is important to tie together the concepts of why support from TIP is necessary and the efforts made by the proposer(s) to secure alternative funding to accomplish the research envisioned.

1. Why TIP Support is Necessary

In this section describe why the project needs TIP funding (Award Criterion A). A competitive proposal will minimally include the following:

- a. A discussion of why this specific project needs TIP funds. Do not merely restate the solicitation or discuss the technical area in general.
- b. A discussion of what will happen to the project with and without TIP funding, including the consequences to the research and the impact on the societal challenge(s). Include any evidence that the research will not be conducted within a reasonable time period in the absence of TIP funding.

2. Efforts to Secure Alternative Funding

The second criterion (Award Criterion B) requires that the proposer demonstrate that reasonable and thorough attempts have been made to secure funding for the proposed research from relevant alternative sources before applying for TIP funding, and that no alternative funding sources are reasonably available to support the project. Information about the efforts that have been made and the reasons for not receiving those funds are an important part of TIP's evaluation of your proposal. TIP's first two statutory Award Criteria require that proposers have reasonably and thoroughly sought alternative funds, but that such funds are not available or not available within a reasonable time period (e.g. the time period critical to a window of opportunity for realizing the impacts from the project).

In this section, each proposer, including each joint venture member if a joint venture, must address and adequately describe their efforts to obtain for their proposal:

- a. Internal funding.
- b. External private funding.
- c. External public (government) funding.

If one of these sources is unavailable to a proposer or one of the joint venture proposers, indicate that this type of funding is unavailable, and the reason(s) why it is unavailable. Without the reasons behind the unavailability of each type of funding, your rationale for why TIP support is necessary is not likely to be competitive and your proposal may not pass Preliminary Review.

Internal funding includes working capital, retained earnings, and other internal resources for companies and research funds for universities. Include a discussion of the decision-making process and priorities the organization uses for allocating internal funds for research and development. For companies, this is especially important if the proposed technology is part of the core technology of the organization. Provide the reason(s) why efforts to obtain internal funding were not successful or not appropriate for the project being proposed. Where did the proposal rank in your organization's internal review and why?

Each proposer, including each joint venture member if a joint venture, must also describe its reasonable efforts to seek funding to support the proposal from external private sources. For companies, this includes angel investors, venture capital funds, financial entities, and industry partners. For universities, this includes foundations. Discuss the reason(s) why these efforts were not successful or not available. Be sure to include a discussion of how private investors viewed the technology risk and timing associated with the proposal's approach.

Finally, describe the effort that each proposer, including each joint venture member if a joint venture, made to seek funding from other public (government) sources (federal, state, or local). Describe any past or current submissions or efforts to seek funding that have been made to other government agencies and the outcome or current status of those submissions or efforts. If there are other relevant sources of public (government) funds that have not been contacted, explain why not.

Proposals that clearly and fully address why each type of funding, internal or external private sources, and external public (federal, state, and local) sources, is unavailable may be more competitive.

For joint ventures, a table listing all the members and indicating their efforts in all three areas can be helpful for completeness. A summary table providing more descriptive text would likely be more competitive.

For all proposers, include at the end of the proposal any letters documenting efforts to secure other funding for the proposed research and why funding was not furnished. If no letter is available, then provide, as an appendix, a table with a brief paragraph for each unavailable letter or additional documentation of the effort, including: the name(s) of the person(s) who formally decided not to fund the project, their title and organizational affiliation, the reason given for the decision, the date the decision was conveyed, and to whom the decision was conveyed. Neither the letters, nor the sum-

mary table of descriptions documenting specific contacts with potential funding sources, counts against the proposal page limit. The lack of this information may seriously weaken your proposal, potentially causing it to be deemed uncompetitive or to not be considered for further review.

(D.2) AWARD AND EVALUATION CRITERIA REGARDING IMPACT PLANNING

In this section of the Project Narrative, the proposer addresses the likely impact of developing the proposed technology. TIP recommends that this impact assessment address the novelty of the proposed research (technology) outcome (Award Criterion C), the ability of the technology to advanced the state of the art (Award Criterion E), and the ability of the technology to address the societal challenged identified under the competition's area of Critical National Need (Award Criterion F). (See Table 2.2 for the breakdown of the Award and Evaluation Criteria, p15.)

The three Award Criteria as outlined below are important to the evaluation of the proposal. Uncompetitive proposals often have a credible technical plan, but fail because the Strong Potential to Advance the State of the art and Contribute to the U.S. Science and Technology Knowledge Base (Award Criterion E) and Potential for S&T and National Impact (Award Criterion F) are discussed as an afterthought. In planning the development of the proposal, it is important to consider the research outcome (Award Criterion C) in conjunction with the Evaluation Criterion 2, which expands Award Criteria E and F.

Successful proposers must adequately elaborate on all of the following elements:

Award Criterion:

Novelty of the Proposed Research (Technology) Outcomes (See Chapter 1 p. 10 – Award Criterion C)

Evaluation Criterion:

Potential for S&T and National Impact (See Chapter 1 p. 10 – Evaluation Criterion 2, which expands on Award Criteria E and F)

- Strong Potential to Advance the State of the art and Contribute to the U.S. Science and Technology Knowledge Base (See Chapter 1 p. 10 – Award Criterion E)
- Strong Potential to Address Areas of Critical National Need (See Chapter 1 p. 10 – Award Criterion F)

By asking the proposer to lead with a discussion of the proposed impact of the technology, rather than its scientific and technical merit, TIP illustrates the importance of focusing upon how the proposed technology will address the societal challenge within the selected area of Critical National Need. Indeed, during the TIP proposal evaluation process, the Scientific and

Technical Assessment (Award Criterion D which is expanded under Evaluation Criteria 1) is equally important as Impact Assessment (Award Criteria E and F which are expanded under Evaluation Criteria 2).

Therefore proposers must not treat the impact assessment lightly. Proposals that fail to adequately address the impact of the proposed technology and instead only emphasize the scientific and technical merit will not be viewed as competitive in the proposal evaluation process.

1. Novelty of the Proposed Research (Technology) Results With Respect to Competing Developments

TIP requires that proposals explain the novelty of the research (technology) and demonstrate that other entities have not already developed, commercialized, marketed, distributed, or sold similar research results (Award Criterion C).

TIP evaluates novelty from two perspectives:

- novelty of the expected research results or outcomes (addressed here as Award Criterion C), and
- novelty of the research approach itself (addressed later in this chapter as Award Criterion D).

Begin by describing the existing state of the art that is closest to the topic of your proposal. Provide technical and commercial baselines from which to measure all future transformative research results. Illustrate your point of view by discussing similar or competing research results (technologies) that other entities appear to have developed, commercialized, marketed, distributed, or sold. Identify these efforts and explain in scientifically based detail why your proposed research results (technologies) are novel and extend the state of the art. Provide specific examples within your bibliography that demonstrate the claims of novelty and reference potentially competing efforts. Specify why your potential research results or research outcomes (technologies) have the potential to more fully address the societal challenge(s), while the apparently competing technology that already exists does not, will not, or could but to a significantly lesser extent, in a manner that is clearly stated.

When discussing the novelty of your proposed research results or research outcomes (technologies) against similar or competing solutions, keep the following in mind:

- What are the key systems requirements and performance metrics for your proposed solution, and how do they differ from current technologies or potentially competing results and extend the state of the art?
- How are your research outcomes (technologies) transformational and how do they enable a disruptive change over and above current methods and strategies?

A direct comparison of requirements and metrics associated with the proposed effort against competing technologies can be criti-

cal to making a proposal competitive, and demonstrates this first aspect of novelty required by Award Criterion C.

2. *What is the potential for advancing the state of the art?*

In this section, the proposer(s) will address how the research can advance the state of the art and contribute significantly to the U.S. science and technology knowledge base (Award Criterion E and Evaluation Criterion 2). Successfully accomplishing the proposed research and surmounting the technical challenges should result in a dramatic transformational change in the future direction and state of the technology. This path change should be a major leap forward, advancing the state of the art significantly. Proposers should include three key elements in their description of the transformational change:

a. **What might advancing the state of the art look like in terms of impacts?**

Competitive proposals will thoroughly explain how the proposal advances the state of the art and elaborate on all of the following elements:

- Identification of the state of the art. Provide quantified technical and commercial baselines from which to measure all future transformative research.
- Explanation of the differences that complete success, partial success, and failure will make to the state of the art.
- Effects that knowledge of the project results will have on the broader research community, especially to a particular societal challenge in an area of critical national need outlined in the FFO. Discuss how a failure or partial success may still offer some, although clearly a lesser benefit, to other researchers in the field.

b. **What are the potential pathways for the impacts?**

Describe how research results and contributions to the U.S. technology knowledge base will be disseminated beyond the proposed participating organization(s). In addition, describe how the project participants maintain and/or protect ownership of the core knowledge needed to most effectively implement the project's technical results for reaching the proposed impacts. Describe the following:

- Preferred strategy for disseminating the research results and the commercial implication of the dissemination.
- Preferred strategy for intellectual property ownership.
- Timeline for both knowledge dissemination and commercial implementation.
- The specific role of each project participant in each element of the strategy.

- Involvement of others beyond the project team in the knowledge dissemination and commercial strategy.

The strategy above may combine diverse elements such as:

- Patenting and licensing along with a description of any intellectual property issues that might limit project participants' freedom to operate commercially.
- Partnerships with potential commercialization partners and users. Describe in detail who these partners are and their role(s) in the preferred commercialization strategy.
- Partnerships with potential knowledge dissemination partners and users. Describe in detail who these partners are and their role(s) in the preferred dissemination strategy of research outcomes.
- Demonstration projects and their critical role in validating the technology and providing access to commercial pathways.
- Publishing papers or textbooks.
- Conference presentations or seminars.
- Teaching or training.

c. **How might the impacts cross disciplines or industries?**

Be sure to consider how the dissemination strategy will reach across all the U.S. disciplines and industries that could benefit from the research results. The dissemination strategy should show how knowledge of the project will reach the U.S. research community and change the state of the art. Describe the implications on the technical, academic, and commercial sectors in the United States.

3. *Transforming the Nation's Capacity to Deal with Major Societal Challenges*

In this section, the proposer(s) must address the following issues contained in Award Criterion F:

- How the research (technology) has strong potential to address societal challenge(s) in the area of critical national need outlined in the FFO.
- How the benefits will extend significantly beyond the direct return to the participants in the research.

Competitive proposals will thoroughly elaborate on all of the following elements of this criterion:

- An analysis of the potential magnitude of the transformation or change across the nation, including any planned commercial consequences.
- An implementation plan that explains how and when results

of the proposed technology will have positive effects on the project participants and the nation more broadly.

- The capacity and commitment of all project participants to enable or advance the transformation, dissemination of research results, and any commercialization of the proposed research results (technology).

Competitive proposals will clearly define the societal challenge that the proposed technology is trying to solve in sufficient detail to enable clear links to be made between the problem to be solved, the proposed solution, the dissemination of the solution, and the potential for overall impact on the Nation.

a. Analysis of the potential magnitude of the transformation or change across then nation, including any planned commercial consequences.

Describe how the nation’s capabilities to address the societal challenge(s) in an area of critical national need will be significantly enhanced once the results of this research are put to use. Include in your discussion a quantification of the current baseline in the Nation’s commercial or research capabilities.

Competitive proposals will provide a description of the magnitude of the impact or difference that the technology will make. Describe any assumptions and document and quantify expected outcomes wherever possible. For example, benefits in health-care could be reducing a specific number of accidental deaths due to errors in surgical procedures along with expected cost savings; benefits from developing new sources of sustainable energy could reduce the Nation’s dependency on foreign energy sources. Be as specific and as quantitative as possible.

For expected improvements to research effectiveness consider cost, quality, pace, and volume of research outcomes currently being achieved compared to what improvements could be achieved if the project is successful. These improvements may not require a commercial product, but could require a plan to market research tools and/or methods to the scientific community beyond publications in the literature. Describe specific approaches to reach the quantified impacts being proposed for research tools and/or methods.

Be clear in the discussion about the difference or added value that TIP funding makes in realizing the societal benefits of the proposed project. In general, the competitiveness of a proposal may be strengthened through a clear description of the specific change expected and the potential impact in solving societal needs.

Be sure to make clear how the results could extend beyond the initial targeted societal challenge(s).

b. An implementation plan that explains how and when results of the proposed technology will have positive effects on the project participants and the nation more broadly.

Explain how the research results will be put to use to address the societal challenge(s). How will the research results (tech-

nology) move from the research team to those who will use it to address the societal challenge(s) either in future research or commercial endeavors? What strategies will be employed inside or out of the proposing team to realize the transformation? Competitive proposals will adequately discuss at least the following considerations:

- Identification of organizations that will implement the project results in usable systems or in new research approaches.
- Identification of the potential first users (early adopters/testers) of the implemented outcomes.
- Specific strategies to overcome barriers to technology adoption by research and/or commercial users.
- Timelines for reaching the first users and the broader community of potential users.

There will be limited positive impact on the nation if the research outcomes (technology) cannot or will not be implemented. Identify barriers (such as technical, regulatory, commercial, or cost related issues) that could hinder the full implementation of the proposed research outcomes (technology) if the research project is successful, and describe how and when these barriers will be overcome. Describe the timeline for implementing the research results.

If this research will result in technology that is part of a larger system, describe any other technical breakthroughs that are needed to make this research useful to the nation. How and when will the research and development needed for this technology take place? Who is likely to provide the technology? Develop strategies to include these players and the technology in the overall pathway to impacts, along with appropriate strategies to avoid any limiting intellectual property.

Competitive proposals should clearly define the societal challenge that the proposed technology is trying to solve in sufficient detail to enable clear links to be made between the problem to be solved, the proposed solution, the dissemination of the solution, and the potential for overall impact on the nation.

c. The capacity and commitment of all project participant to enable or advance the transformation, dissemination of research results, and any commercialization of the proposed research results (technology).

This section of your project narrative should address the following areas regarding **Organizational Commitment**:

For each participant, describe the organization’s effective commitment to performing the research proposed and to enable or advance the transformations if the research is successful (whether through research dissemination or commercial activities).

First, the commitment encompasses all resources to be brought to performing and completing the research within the TIP project including:

- Financial resources.
- Time commitment of key people in the organization.
- Equipment.
- Dedicated facilities.

Second, this organizational commitment encompasses the commitment of each participant to enable or advance the transformation described in this section, during the project and after the project is completed. What resources will be available to execute the strategies being proposed? Describe how the team will function to enhance the implementation of this transformative technology, including how the team will manage and plan any commercial, marketing, manufacturing, and strategic planning endeavors, if applicable. Keep in mind that costs associated with commercialization and other dissemination strategies are not allowable project costs.

Describe the relationship of this project to each organization's strategic vision or mission, including a discussion of how technological success will be incorporated into the organization's research and/or commercial goals. Provide evidence of commitment from senior management to the project and an explanation of why they are interested in the research outcomes. TIP requires a letter of commitment signed by an authorized senior executive of the lead proposer and from each joint venture member. These letters must explicitly verify the availability of the total dollar amount of cost shared funds, including cost share proposed from each subrecipient, if applicable. If there are commitments from regional, state, or local agencies or private sources of capital to contribute cost share funds, indicate the nature of those arrangements and give evidence of the commitment. NOTE: Contractors may not provide cost share. Cost share by proposed subrecipients should be addressed in the applicant's letter.

(D.3) EVALUATION AND AWARD CRITERIA REGARDING SCIENTIFIC AND TECHNICAL PLANNING

Scientific and Technical Merit and How the Research May Result in Intellectual Property Vesting in a U.S. Entity (Award Criterion D expanded under Evaluation Criteria 1).

In this section of the TIP Project Narrative, the proposer(s) addresses the scientific and technical merit of the proposed project and how the research may result in intellectual property vesting in a U.S. entity. Successful proposers will adequately elaborate on all of the following elements:

1. The novelty of the proposed research approach.
2. How the research addresses the technical needs associated with a major societal challenge not currently being addressed.
3. The high-risk, high-reward nature of the research approach and potential outcomes.

4. A scientifically sound technical plan with milestones and associated metrics, and access to adequate resources (e.g. personnel with appropriate scientific and technical expertise, equipment, and facilities).

1. The Novelty of the Proposed Research Approach

To be competitive, the proposal must convince expert reviewers that the research project itself is novel. Novel research refers to the technical approach and means the research effort is new, uncommon, unusual and not currently being sufficiently addressed. The research approach itself can be completely novel or it can be a novel integration of existing or new technologies.

However, to be competitive, the proposed research is expected to be transformational (a dramatic challenge to the status quo), not just an incremental or predictable next step in the evolution of an existing technology, and not just a combination of existing technologies in a new format that is more appropriately characterized as an incremental product improvement. Transformational research enables disruptive changes beyond current methods and strategies, with the potential to radically improve the understanding of systems and technologies.

Therefore, describe how the proposed research is particularly innovative relative to alternative approaches being pursued by domestic and foreign competitors or elsewhere within the proposing team's organization(s). Who are the competitors and how is your proposed research approach novel? Describe any known related efforts that may have been unsuccessful, and how your approach avoids or otherwise addresses the pitfalls others may have encountered. Cite relevant patents and the open literature to support this discussion. Include in the discussion a list of the key words for your patent and literature searches to illustrate the detail level of your analysis.

In order to assess how transformational a proposal is, it is necessary to describe the details of relevant competing work (closest state of the art) to the proposal's idea using quantifiable metrics to clearly characterize the baseline starting point. Ignoring state of the art knowledge and ongoing work by others and within the proposing team's organization(s) may lead reviewers to assume the proposer is not aware of existing work. Discussing existing efforts helps to ensure that the difference between the proposed work and such efforts clearly merits TIP consideration.

State-of-the-art approaches that are competing with the technology you propose are considered to be the "performance benchmark" or the "status quo" that currently can be found "out there". The state of the art needs to be well described in your proposal, including specific numerical metrics. Attaching published error bars to those metrics is beneficial, if appropriate. The state of the art performance and/or the narrowing of the attached error bars may be presently beyond your own capabilities but the expectation is that the proposed project would advance the state of the art.

Competitive proposals will thoroughly explain how the proposal advances the state of the art and will elaborate on the following elements:

- Explanation of the differences that complete success, partial success, and failure will make to the state of the art.
- Differences that knowledge of the project results will make to the broader research community, especially in this area of critical national need. Note that knowledge of failure can benefit other researchers considering a variety of possible directions as well.

2. *How the research addresses the technical needs associated with a major societal challenge not currently being addressed*

To be competitive, the proposal will provide a credible case that the research result(s) has the potential to address the technical needs/barriers associated with the major societal challenge(s). Proposers should include the following:

- Identify the expected outcome(s) of a successful research plan.
- Define measurable success criteria for the proposed research or technology efforts and provide quantifiable measures. Link these measures to the key requirements and performance metrics discussed later in Chapter 2 Section D.3 (4). These measures should be explained and contrasted with those for the state of the art and any competing approaches.
- Explain how the research will specifically address a solution to the societal challenge(s) within the area of critical national need described in the FFO. Each of the major research outcomes should have a measurable, definable end point that correlates to the solicitation's discussion of a major societal challenge.

Proposals that are predominantly basic science, or that are only a best level of effort without specific targets for results and end points that are measurable and definable, may be considered less competitive even if these proposals have potential to address a major societal challenge within an area of critical national need.

3. *The high-risk, high-reward nature of the research approach and potential outcomes*

High-risk, high-reward research is core to TIP's purpose. A competitive proposal will demonstrate that the proposed research meets this requirement.

Describe the scientific risks or technical barriers that prevent significant advances in addressing societal challenge(s) within the area of critical national need described in the FFO. The proposal must clearly describe what and where the high technical risk challenges are that must be overcome for the project to succeed. Describing high technical risk also entails articulating how the results have the potential for far- or wide-ranging implications if the risks are overcome, as well as why the proposer believes the research may be too novel or spans

too diverse a range of disciplines to fare well in a traditional peer-review process. Merely expressing how costly the research plan may be is not an appropriate measure of high-risk associated with a scientific challenge.

Successfully accomplishing the proposed research and surmounting the technical challenges should result in a dramatic transformational change in the future direction and state of the technology. This "path change" should be a major leap forward, advancing the state of the art significantly. Describe how the proposed research meets this test.

Proposals should provide sufficiently detailed scientific rationale to document the specific high technical risks embodied in the proposed research. The proposal must describe the technical challenges and assess the probability of success of the proposed approach(es). Demonstrate that the technical approach(es) for overcoming the challenges are built upon sound, feasible scientific and/or engineering principles and foundations, based on early research evidence, or sound theoretical thinking. What relevant patents, open literature, or experimental results exist to support your discussion? TIP will not fund projects that violate sound scientific and/or engineering principles, or projects that propose to conduct a literature search after award to subsequently develop a detailed research plan.

TIP funds projects that seek to overcome extremely difficult technical challenges, many of which are cross-disciplinary. TIP also recognizes that not every aspect of the technical plan will have high technical risk; however, the technical plan overall for the project must have a risk profile that is considered to be high-risk, high-reward.

Research (technical/scientific) risk may be high in the development of one or more single innovations within the project, or in the integration of disparate technologies, or both. Integration risk can be due to the complexity of the integration effort, unknown properties of the components to be integrated, or other factors. Critical to an explanation of high-risk, high-reward for integration efforts is explaining what new knowledge could result from overcoming the risks and whether the risk is in the integration approach or in the technologies to be integrated. The high cost of integration by itself does not sufficiently justify a claim of technical high-risk, high-reward. For example, would the next similar integration project be "faster, better, cheaper" based on the outcome of this project? Or would the cost, time, and effort be about the same? Think about how to describe the potential knowledge/impact benefits from the approach of the integration effort, in addition to the potential knowledge/impact benefits of the final system, device, or method.

The proposal should also describe the technical and scientific impact (leverage or high-return) that will be derived from the research proposed. Technical leverage is the possibility of using the research results or approach beyond the initial applications. Summarize the technical impact and leverage of successfully accomplishing the proposed research and overcoming the high technical risks. It is often helpful to discuss technical impact and leverage from the perspective of a fully successful, as well as a partially successful, effort.

4. *A scientifically sound technical plan with milestones and associated metrics, and access to adequate resources (e.g. personnel with appropriate scientific and technical expertise, equipment, and facilities)*

A sound, detailed technical plan that addresses all aspects of this subsection is necessary for a proposal to be competitive. The technical plan must explain how the research and technical objectives will be reached. It must address the “what, how, where, when, why, and by whom” in substantial detail. It must anticipate likely scientific or technical problems and describe how these problems will be overcome. The technical plan should therefore detail each key research activity and provide the basis for project management oversight of that activity should TIP issue an award. A proposal will not be competitive if the first task consists solely of defining the metrics of the project. This would mean that the state of the art has not been properly studied in order to develop, at a minimum, the major task level metrics to guide the research.

In the case of a joint venture, the technical plan must demonstrate the required substantial involvement of the two (or more) core joint venture members, as explained in Chapter 1 Section B.2, p. 3. One way to accomplish this is to describe why the project’s technical results would not be possible without these core joint venture members. The technical plan also must show how each of the other joint venture members contributes to the technical research and outcomes.

Many proposals have been found not to be competitive, although they may have meritorious technical goals, because the proposal provides only a vague plan on how to reach the goals. It is not adequate to merely describe the established technical barriers and provide only an overview of the research pathways. TIP requires a more detailed technical plan to evaluate how the project goals will be met, and interim measures of progress (e.g. milestones with appropriate metrics) for key research tasks.

TIP must be able to track the project from the initial work to the end of the project results. A detailed technical plan and associated Gantt chart are critical for effective project management, for development of a reasonable budget, and for good communication between the TIP Project Manager and the Principal Investigator should the proposal be funded.

The elements of the technical plan must fit together in a reasonable and logical way to instill confidence that the team can implement and conduct the proposed approach.

The following sub-elements in the technical plan are required:

- a. **Tasks and Subtasks:** Discuss how the work will be organized into tasks and subtasks. Provide clear descriptions for tasks and subtasks performed by operational units within the proposing organization(s) as well as by any contractors or subrecipients. Clearly identify these contractors or subrecipients if known at the time of proposal submission. If the contractor or subrecipient is not known, provide the qualifications needed to perform the proposed work. Explain the technical rationale for the major tasks. Indicate the level of risk of each task (e.g. high, medium, low). Clearly link tasks in the budget to the performing organization(s), specifically, each joint venture

member if a joint venture, and to contractors or subrecipients (where appropriate). Highlight major risks and innovations inherent in specific tasks and the strategies, including alternate pathways, for managing unexpected results. High-risk research needs contingency plans, including alternate or parallel technical approaches for carrying out key portions of the technical work. Discussing these alternatives is part of a competitive technical plan. Highlight the level of risk and innovation inherent in each of these approaches in the proposal and compare them to the primary approach. Proposals that contain a considerable effort dedicated to alternate or parallel efforts that significantly reduce the overall proposal’s profile of research risk, or novelty of the research innovation, may be considered less competitive. For example, a proposal may be considered less competitive if a larger portion of personnel effort and overall costs are associated with lower risk alternate or parallel efforts than are proposed for the high-risk, high-reward efforts.

- b. **Interrelationship of Tasks:** Discuss how the tasks link to one another, which tasks depend on others, which tasks are sequential, and which tasks can be done in parallel. If contingency plans are used in the event the primary approach is unsuccessful, describe how these tasks will be incorporated, and under what conditions.
- c. **Milestones:** Provide appropriate interim and final key milestones for each year of the technical plan (by project years, not calendar years) and tie these to appropriate interim and final metrics for tracking progress toward successful results as shown in Table 2.3 below. Identify the organization(s) responsible for, and those with a key contribution to, each milestone. Milestones are critical for tracking progress made in the project. Include a discussion of the strategy for validating that a critical milestone’s metrics have been met.
- d. **Metrics:** Provide clear and concrete quantifiable metrics for measuring the project’s progress toward the overall technical goals (interim and final metrics) as shown in Table 2.3 below. Define what technical success would look like: these metrics should relate to the project’s technical objectives, targets, milestones, and success criteria. Quantify the extent to which this advances the current state of the technology. Metrics used at decision points to decide on proposed next steps are critical.

As a general rule of thumb, a project will typically have no more than four to six major quantifiable metrics per year that are associated with major technical accomplishments or decision points. More than six quantifiable metrics per year could indicate that the metrics may not represent significant advances in the research, but may provide project tracking value to the Principal Investigator. If a larger number of metrics is of benefit to the Principal Investigator than what is suggested, it is useful to state that the preferred project approach includes additional metrics. Fewer than four quantifiable metrics per year may make it difficult for the Principal Investigator and TIP to effectively track technical progress should the proposal be funded.

- e. **Decision-Point Strategy:** Provide decision-points and strategies for each go/no-go and other major decisions in the project as appropriate as shown in Figure 2.1 below. High-

Table 2.3: Milestones / Metrics Examples

Milestone	Timing	Responsible organization	Metric (Absolute Number)	Minimum Value for Successful Result	Test Method	Decision Point	Risk Level (H,M,L)
Material down selection	Y1Q3	Company 1	Figure of merit for performance (range of value such as 0.1 to 0.33)	Exceeds current technology by 200% above SO a metric (state metric)	Series of evaluation methods	1. Choose optimum performance or restructure	High
Matrix to support cell attachment, spreading and cell in growth timing	Y2Q3	Contractor	Timing for cell attachment and spreading throughout the matrix (range of values)	Uniform cell attachment within five minutes of seeding and spreading within 30 minutes at all levels of modular matrix	Use of RTP covalent coupling to enhance rates of cell attachment and support spreading	3. If coupling is not even throughout matrix, move from static to perfusion coupling to ensure reagent matrix contact	Low
Demonstrate functionality of candidate sensor tips	Y1Q2	Contractor 1	Figure of merit based on performance standards (range of values)	Sensitivity, spatial resolution, and power consumption within 70% of final targets	Verified test methods	Select superior candidate tip or reevaluate technical approach	High
Integrate and demonstrate catalysis synthesis, probe reaction, miniaturized analytical methods, and inform addicts system	Y3Q4	Company 1 (JV Lead & Company 2)	Generate two new candidate lead compounds for lab scale test using process-grade raw material feedstocks	Candidate compounds must show: a) 15% improvement in reaction yield at reduced reaction temperatures, and b) 50% higher selectivity in probe reactions	High throughput synthesis and analysis techniques	Explore different region of chemical composition space if lead compounds don't meet minimum requirements for success	Medium

Note: Express timing as Y1Q3 (Project year 1, quarter 3). Metrics are numbers, not a rephrasing of the milestone or other narrative.

risk research can fail. Well-defined decision points provide a roadmap in terms of milestones and metrics showing a validated, quantifiable way that a project or line of research has succeeded or failed. For example, if a new material passes a stress test at a milestone, the decision is clearly to continue. If it fails the stress test at that milestone by a significant amount, then the project plan may recommend a designated alternate approach. If the designated alternative fails, then the project plan may define this as a no-go decision point that terminates the project. Projects that pursue more than one technical approach in parallel must discuss how the decision to select among those approaches will be made, when it will be made in the decision-point strategy, and what quantifiable metrics are associated with making the decision.

A good decision-point strategy identifies early go/no-go decision points within the first 12-18 months of a 36 month project (or earlier for a shorter project). Appropriateness of the high-risk elements of the project should fall within this time frame. Risks, milestones, metrics, and decision points must be linked in the decision-point strategy. A decision-point tree or critical-path chart may be very helpful to communicate this information. It is important that the first decision tree that leads to a go/no-go point within the first 12-18 months of the project be inserted in the narrative, after a table listing Milestones/Metrics; subsequent decision trees may be attached at the end of the proposal, after the detailed Gantt chart. The location of this first go/no-go point must be correlated with the tasks in the Gantt chart. For instance, if Task 1 leads to initiating Task 2 through the first go/no-go point, then Task 2 cannot start before the end of Task 1. If it does, the need for this must be clearly

explained. One example of a decision-point strategy is given in Figure 2.1 above, but there are many other ways to effectively portray the information.

- f. **Gantt Chart:** Include a Gantt chart or other project timeline chart that illustrates timing of major tasks and key subtasks. These charts should include the level of risk associated with each task, the responsible individual(s) and organization(s), milestones with appropriately quantitative metrics and decision points, as appropriate, and should be consistent with your project and budget narratives. The timeline chart acts as a critical "task map" of your technical plan for TIP reviewers and for the overall project if it is selected for funding. The Gantt chart should be presented at the major task level in the body of the narrative (1 page only), readable without a magnifying glass, and given subsequently in detailed format at the end of the proposal (out of the page limit). In addition to the timeline chart, the project tasks must be described in narrative form. It must be clear how the goals of the project will be achieved by those tasks. See Table 2.4 below for an example. The same numbering system used for the major task level should be used in the narrative, the Gantt chart and the budget form NIST-1022E form (single applicants) or NIST-1022F form (joint ventures) so that reviewers can easily assess how major tasks fit together in terms of timing, milestones, metrics, resources, and cost etc.
- g. **Resource Planning:** As discussed in the introduction, identification and allocation of appropriate resources to achieve the proposed result is an integral part of a TIP Proposal. Team members may be single proposers, joint ven-

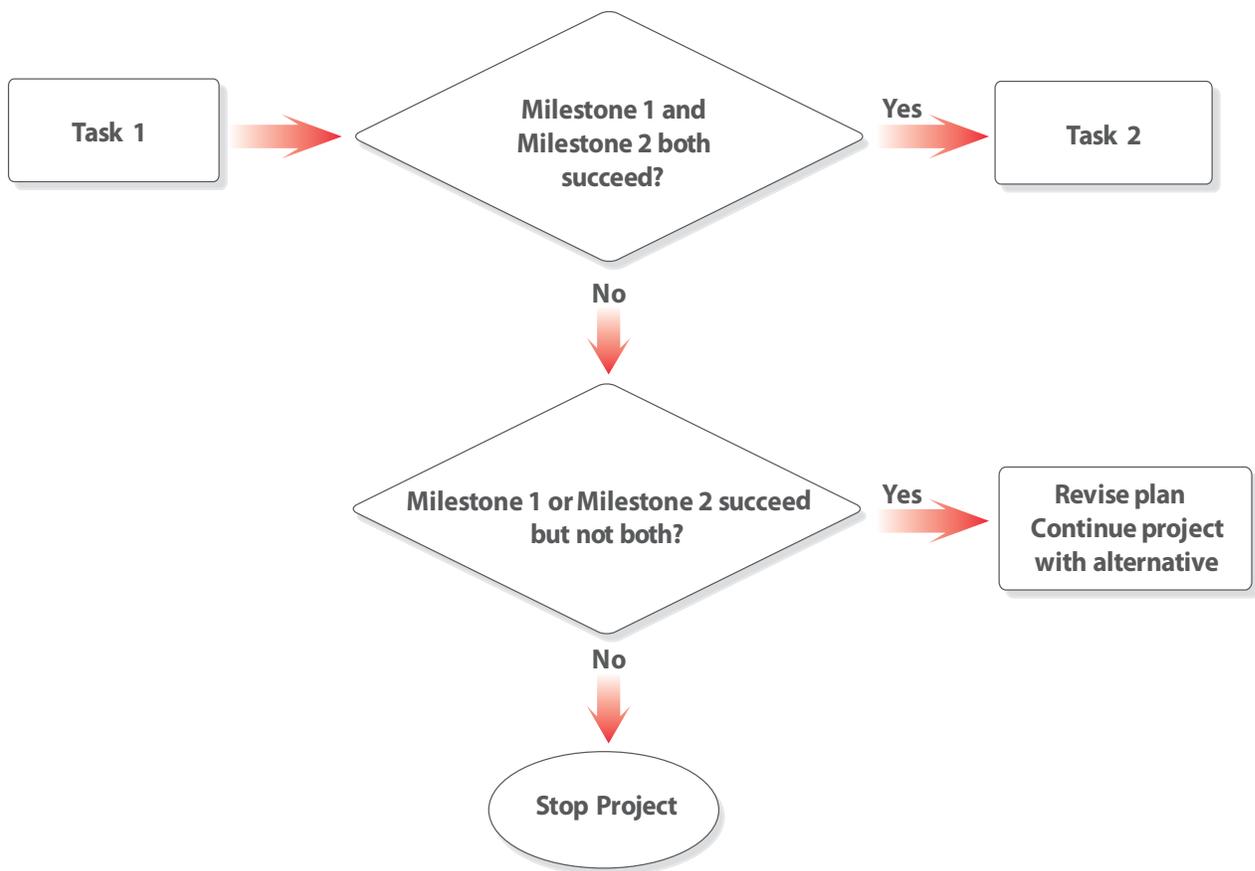


Figure 2.1: Decision-Point Strategy

ture members, contractors, subrecipients, and informal collaborators. Informal collaborators are those organizations or individuals that are not a part of the project’s budget but have a distinct role in helping the team accomplish their technical or impact objectives. Teaming is often critically important to successful proposals as multidisciplinary approaches are often required to advance the state of the art or for the results of the research to be adopted by others and to overcome the societal challenge being targeted. Some specific aspects of resource planning that need to be addressed in the proposal are outlined in the following sections.

(1) **Relevant Qualifications of Proposed Research Team:** In this section, the required information on key technical team members will be provided. Most projects require a multidisciplinary approach to overcome technical barriers. Describe the quality and appropriateness of the technical staff assigned to the project, and the amount of time each individual will allocate to the project. Briefly highlight the educational background and experience of key personnel named in the budget narrative. TIP may request two-page resumes for each key team member during the review by the Evaluation Panel. If key staff will be hired, describe the qualifications needed for key positions not yet filled and the timeline for hiring these staff. Information regarding qualifications of contractors and subrecipients should be described on the NIST-1022B form and as appropriate in the technical plan narrative for the tasks that involve contractors or subrecipients.

(2) **Adequacy of Facilities, Equipment, and Resources:** Briefly discuss the research facilities and specialized equipment required for this proposed project. Identify what facilities, equipment, and resources already exist for use; what will be obtained through contracting or through involvement of subrecipients; and what must be obtained even though sources are not yet identified. Provide the timeline for obtaining needed facilities, equipment, and resources. Major equipment purchases need to be clearly linked to the appropriate research tasks and described in the project budget narrative. Any collaboration or user fee agreements for access to facilities and/or associated staff being claimed as critical to tasks in the proposal must be clearly described. Copies of these agreements may be requested during the review by the Evaluation Panel (e.g. using a federal laboratory facility to perform research tasks in the proposal under a user agreement, CRADA, or other written agreement). Descriptions of verbal agreements between parties for facilities access are not likely to be considered as competitive as written agreements, and may not be compliant with the requirements of the Program.

(3) **Contractors and Subrecipients:** Projects may include contractors and subrecipients to obtain key expertise, access to existing facilities, or specialized goods and services. Discuss what each contractor and subrecipient brings to the project. Clearly identify what each will do and why that contractor or subrecipient was chosen. Please note that contract awards and subawards must be in accordance with the Procurement Standards found in 15 C.F.R. Part 14. Discuss the relationship

Project Tasks		Budget	Risk	JVL or SA						Project Year 1				Project Year 2					
				JV2	JV3	SUB1	SUB2	SUB3	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
Task																			
1	SPECIALTY ALLOY DESIGN			x		x	x												
1.1	Modeling	\$50,000	M			x			x										
	Milestone (M#) / Deliverable (D#):																		
	M1: predicting alloy chemistries			x	x	x													
	D1: metric (number) assoc. to alloy chemistries			x	x	x													
1.2	Trial heats	\$10,000	L	x															
1.3	Microstructure evaluation	\$10,000	L	x															
	Deliverables:																		
	M2: model validate new specialty alloy			x	x	x													
	D2: microstructure with stable grain size (number)			x	x	x													
	GO/NO GO1: Can new specialty alloy satisfy initial requirements (specify numeric target)?		H	x	x	x													

Table 2.4: Project Gantt Chart Example (Partial)

of the work to be done by the contractor or subrecipient to the technical plan. Discuss how their progress will be monitored and redirected as appropriate. Contractors may not contribute to the cost-sharing requirement. Subrecipients may contribute direct and/or indirect costs to the cost share of the recipient.

The following guidance should be considered when submitting a proposal to TIP that includes contractors or subrecipients:

- TIP expects that the proposer, or the joint venture members if a joint venture, will direct and carry out most of the key high-risk and high-innovation tasks.
- A single company structured as a virtual company that proposes to have contractors and/or subrecipients perform most of the high-risk tasks or passes a major percentage of the funds through to the contractor or subrecipient is not expected to be competitive, or may not be eligible for an award.
- A minimal joint venture structure (i.e., two joint venture members) in which one joint venture member does not have employees performing research, but outsources all their research activities to contractors and/or subrecipients, is not likely to be competitive, and the joint venture structure is potentially ineligible for an award (see Chapter 1 Section B.2).

In system or device integration projects, the proposal should make clear how the proposer(s) are involved in integrating the technologies and taking the system forward if contractors and/or subrecipients are key players in the actual integration tasks. Another way to think of this is to describe who is developing the new-to-the-world knowledge in the integration effort.

Projects with high levels of contracting or subawards need to specifically address how the proposed structure is effective

in terms of cost, organizational efficiency, and long-term impact of the research results.

- (4) **Justification for R&D Activities at non-U.S. Sites:** TIP strongly discourages use of non-U.S. sites for research and development activities. In the event that the project includes work performed at a non-U.S. site, a completed NIST-1022H form, "R&D Work Performed outside the United States by the Recipient or Contractor Questionnaire" (see Exhibit 11 at the end of Chapter 7) must be provided. This form is also required if a subrecipient is expected to perform work outside the United States for a proposer. If a portion of the project can only be carried out at a non-U.S. site because of the site's unique capabilities, the answers to the questions in NIST-1022H form should explain the technical work to be done, the relationship of this work to the overall project, the cost of this work, the unique capabilities associated with the non-U.S. site, and why equivalent work cannot be performed within the United States.

E. OTHER INFORMATION

1. Organizational Information

TIP needs to know about the capacity of applicants to perform the research proposed and their current financial/organizational status should the project be funded. Financial statements for contractors and subrecipients are not required.

For companies, provide:

- Date and state of incorporation.
- Ticker symbol if publicly traded.
- Company ownership including names of individuals and investors and percentages held.

Company/Organization Name:

Financial Information	Current Year to Date	Last Year	Two Years Ago
Income			
Contract R&D			
Product Sales			
Services Other Than Contract R&D			
Other			
Total Income			
Expenditures			
Cost of Goods Sold			
R&D			
General And Administrative			
Total Expenditures			
Gross Income Before Taxes			
Net Income After Taxes			
Balance Sheet	Current Year to Date	Last Year	Two Years Ago
Assets			
Current Assets			
Fixed Assets			
Total Assets			
Liabilities			
Current Liabilities			
Long-term Liabilities			
Stockholders' Equity			
Total Liabilities And Equity			
Employment Information	Number of Employees		
	Current Year to Date	Last Year	Two Years Ago
Full Time			
Part Time			
Full Time R&D			
Part Time R&D			

Table 2.5: Financial, Employment, and Ownership Information for Previous Three (3) Years

- Table 2.5 worksheets (see above) must be provided for each privately held company that is a proposer or joint venture member as an appendix to the proposal. The worksheet does not count toward the page limit.
- Source of cost share funding.

2. Current and Past Federal Awards

For other organizations, provide:

- Type of organization (i.e., institutions of higher education, state agency, etc.).
- Relationship to any parent organization.

Provide a list of all current and past federal R&D contracts, grants, and other awards for the previous five years and all pending federal awards in the general area of this proposal. For example, provide a list of the Small Business Innovative Research (SBIR), National Science Foundation, Department of Energy, National Institutes of Health, and other grants

Company/Organization Name:

Project Title	Award No.	Total Federal Award (\$)	Performance Period (M/Y to M/Y)	Name of Principal Investigator, Address, & Phone No.	Name of Federal Agency, Federal Program Manager, Address, & Phone No.

Table 2.6: Federal Awards Received By Company/Organization or Principal Investigator for All Technologies for Previous Five (5) Years

received in the technical area of this proposal for the previous five years. Include the name of the project, the funding agency/organization, the number of the grant/contract/award, the principal investigator, and the federal government contact’s name and phone number. For current or past awards having some relationship to the technology being proposed to TIP, briefly describe how the proposed project is distinctly different and not a duplicative effort. See Table 2.6 for the required format. This can be provided as an appendix and does not count toward the page limit.

3. Required Letters

TIP reviewers scrutinize the content of letters very carefully to understand the actual commitment of the signatory. Letters do not count as part of the page limitation of the proposal. Table 5 below summarizes which letters are required under what conditions. The remainder of this section discusses what each type of letter should contain and discuss.

a. Letters of Commitment

Letters of commitment obligate specific resources to the project if the project is funded.

- (1) **Single Company Proposer:** A letter of commitment from an authorized senior executive of the company is required to indicate the importance of the project to the company and the company’s commitment to supply key resources (e.g., the time of key personnel, cost-sharing, equipment, and facilities). The cost share dollar amounts provided in the letter must match the NIST-1022E form. Requirements regarding subrecipients that should be in the letter of commitment are explained below under (4).
- (2) **Joint Venture Proposer:** A letter of commitment from an authorized senior executive of each organization member of the joint venture is required to indicate the importance of the project to the organization and the organization’s commitment to supply key resources (e.g., the time of key personnel, cost sharing, equipment, and facilities). In addition, the NIST-1022D form “Third Party In-Kind Contributions” (see Exhibit 7 at the end of Chapter 7) must be completed, if appropriate. The cost share dollar amounts provided in

the letter must match the NIST-1022F form. Requirements regarding subrecipients that should be in the letter of commitment are explained below under (4).

- (3) **Contractors:** Letters of commitment from contractors who are key to the technical plan’s success are useful for verifying the availability of resources, but are not required.
- (4) **Subrecipients:** Letters of commitment from subrecipients who are key to the technical plan’s success are useful for verifying the availability of resources, but are not required. The entity that will manage the subaward should include information regarding any planned cost share contribution from a subrecipient in their letter of commitment. If an award is issued, the recipient is ultimately the entity that is committing to the cost share being obtained from the subrecipient. If a subrecipient fails to meet the cost share expectations, the award recipient is required to meet the shortfall. In addition, applicants planning to use subawards are responsible for evaluating the financial viability of subrecipients to meet proposed cost share levels.
- (5) **Prospective Employees:** Letters of commitment to join the proposing organization’s team are useful for verifying the availability of key personnel who are not yet employed at a proposing organization (single proposer, joint venture member, contractor, or subrecipient) to participate in the project if the project is funded. These letters are not required but they can play an important role in conveying the appropriateness of key staff members, especially for projects involving small companies or startups.
- (6) **Letter of Commitment for Third Party (External) In-Kind Contributions:** A letter of commitment from an authorized senior executive of any organization providing third party in-kind contributions that are to be used as cost share is required. This letter should clearly state the form(s) of the third party in-kind contribution, value of the in-kind contribution, and the time period over which the third party in-kind contribution is to be made. The dollar amounts provided in the letter must match the NIST-1022D form.
- (7) **Letter of Commitment for Third Party (External) Cash Contributions:** A letter of commitment from an authorized senior executive of any third-party (external) organization providing cash contributions that are to be used as cost share is

required. This letter should clearly state the amount of the cash contribution, the time period over which the third party cash contribution is made, and interim performance requirements for phased contributions, if any. The dollar amount(s) provided in the letter must match the NIST-1022E form (single applicants) or NIST-1022F form (joint ventures).

b. Letters of Support

Letters of support indicate willingness for organizations to become involved later in the project if it is funded. General letters of support for the project do not make the proposal more competitive unless the organization/person supporting the project is planning to provide funding, to participate in diffusing the technology/impacts from the project, or to become part of the project to actually help perform specific research that at the outset of the project may not be needed.

- (1) **Contingent Funding:** Sometimes a potential investor will indicate a strong interest in evaluating the results of a project for possible future uses. This type of letter can help verify that the pathway to further uses of the research in the proposal has been studied and is feasible. If this funding is critical to the financial viability, or is critical to or may be used as cost share of the organization, a letter is required.
- (2) **Strategic Partner:** Strategic partners can aid the future potential for the research to yield transformational results and in the diffusion of the technology beyond the proposer. Letters of support from strategic partners that demonstrate that the research has the potential to yield transformational results and is likely to benefit the nation are helpful in the proposal evaluation process. If letters are not available, but there has been some contact with a potential strategic partner, the proposer may document the contact in a paragraph, providing name, title, organizational affiliation of the contact, date of the contact, and extent of the contact. This paragraph can be included as an appendix, and does not count toward the page limit.
- (3) **Potential Additional Research Performer:** This might be an additional contractor to a single company award, or an additional joint venture member, or contractor to a joint venture that may become necessary if a particular alternative approach in the technical plan becomes critical. However, this entity is not currently listed in the proposed budget and budget narrative.

c. Letters of Corroboration

Letters of corroboration documenting each proposer's efforts, including each joint venture members' efforts if a joint venture, to secure other funding prior to seeking funds from TIP are required. Specifically, proposers must include letters from potential funding sources indicating why they chose not to fund the project or a very similar research effort. If such a letter is not available, proposers must document the interaction with funding sources as discussed in Chapter 2 Section C.2 entitled "Efforts that the Proposer Has Made to Secure Alternative Funding."

Information documenting such efforts should include the following:

- Name and title of the person who decided not to fund the project or very similar research effort.
- Organizational affiliation.
- The reason given for the decision, and
- The date the decision was conveyed, and to whom it was conveyed.

Proposers must provide this information in table format for each funding source that was approached and declined to fund the project. This table does not count toward the page limit.

Type of Letter	Required	As Appropriate
1. Letters of Commitment		
a. Single Company Proposer	Required—signed by authorized company official to document commitment of cost share and other key project resources. Must cover cost share that may be provided by subrecipient(s), but for which the company is held accountable.	
b. Joint Venture Proposer	Required from each joint venture member—signed by authorized organization official to document commitment of cost share and other key project resources. Must cover cost share that may be provided by subrecipient(s), but for which the joint venture member is held accountable.	
c. Contractors & Subrecipients		Optional—useful if contractor or subrecipient is critical to project
d. Prospective Employees		Optional—useful if key personnel are not yet organization employees
e. Third Party In-Kind Contributors	Required—signed by authorized organization official to commit third party in-kind contributions.	
f. Third Party Cash Contributors	Required—signed by authorized organization official to commit third party cash contributions.	
2. Letters of Support		
a. Contingent Funding	Required when funding may become part of the cost share of the project.	
b. Strategic Partners		Optional—Letters from or descriptions of contact with potential strategic partners
c. Potential Additional Research Performer	Required if the organization/person is associated with a critical alternative research approach identified in the research plan, but is not originally part of the project budget, if the project is funded.	
3. Letters of Corroboration		
Letters of corroboration, documenting efforts to secure other funding	Required—Letters from or descriptions documenting contact with funding sources and the outcome.	

Table 2.7: Summary of Types of Letters – Required or As Appropriate



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CHAPTER 3

BUDGET AND BUDGET NARRATIVE GUIDELINES

A. INTRODUCTION

In addition to the project narrative, each TIP proposal must include a budget and budget narrative using the NIST-1022 “Family of Forms.” Budgets are cost projections that must cover all project tasks and all project recipients for each year of the proposed project. Budget narratives provide detailed explanations of budgeted costs. The budget and budget narrative must include both the federal funds being requested as well as all funds and in-kind contributions that constitute the official, auditable cost share to the project.

During the evaluation process, TIP will evaluate the project budget and budget narrative of each proposal to determine if the dollar amounts requested are consistent with the accomplishment of the proposed tasks. All budgeted project costs will be evaluated and must be deemed allowable, reasonable, and allocable in accordance with applicable federal cost principles and TIP guidelines. A poorly prepared or incomplete budget or budget narrative may result in a proposal being ranked low or even noncompetitive.

TIP recognizes that unexpected events may occur during the life of a project and project budgets may need to be changed as a result. TIP will allow a certain amount of flexibility in moving funds from one line item to another or in deleting or adding new tasks provided the request is made in accordance with the terms and conditions of the award and the required prior approval and/or notification is obtained from the NIST Grants Officer. Therefore, decisions made when proposing a multi-year budget won’t necessarily lock the proposer into fixed budget category allocations.

Once a proposal is submitted the total amount of TIP funds requested in the budget cannot be increased. TIP will not reimburse companies for project overruns. Total project cost share commitments included in final awards must be honored. Significantly overestimating or underestimating project costs and cost share commitments should therefore be avoided.

A properly prepared budget is integral to how proposers describe and select project tasks, key players, project costs, and the source(s) of funding. This chapter provides guidelines to help applicants plan and prepare the project budget and budget narrative. Instructions for filling out the NIST budget forms are provided in the Exhibits included at the end of Chapter 7.

Planning a project budget and budget narrative for a multi-year project is a complex and time-consuming process. TIP recommends that all applicants draft budget details before attempting to enter final data into the NIST budget forms.

B. PROJECT TASKS

The first step in planning a project budget is to identify the tasks that must be performed in order to achieve the successful completion of the project. This step involves the creation of a project narrative that describes the scope of the project along with a detailed research plan that explains how the research tasks will be performed to reach the technical objectives. Guidelines for preparing the project narrative are found in Chapter 2.

For the most part, all project tasks are expected to be performed in the United States. For any task that can only be performed outside of the United States, a NIST-1022H form, “R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire,” must be filled out and include a compelling justification as to why the task(s) cannot be performed equivalently in the United States.

Proposals involving significant research outside the United States will likely be considered less competitive when evaluated against the TIP evaluation criteria related to advancing the state of the U.S. science and technology base and generating substantial benefits to the Nation.

Accordingly, all major project tasks included in the project Gantt chart should also appear on the NIST-1022E form (single company proposals) or the NIST-1022F form (joint venture proposals). Note that TIP does not prescribe the appropriate number of tasks but does require an accurate accounting of tasks in the project budget. Subtasks are not required on the budget forms, but describing them in the project narrative is strongly advised to improve the competitiveness of the proposal.

The numbering system used for major task levels in the Gantt chart should be the same as used in the project narrative and on the NIST-1022E form (single company proposals) or the NIST-1022F form (joint venture proposals), so that reviewers can easily assess how major tasks fit together in terms of timing, milestones, metrics, resources, costs, and other related issues.

C. KEY PLAYERS

The next step in the budget planning process is to identify who will be involved in the project and what role they will undertake. TIP projects classify key players as recipients, subrecipients, contractors, third party contributors, and informal collaborators. These players differ in terms of the work they can perform, the compensation they can receive, and the cost share they can provide.

- 1. Recipients.** A recipient is an organization that has received a TIP single company award or an organization that is a member of a joint venture that has received a TIP joint venture award.

The single company recipient is the organization that submits the proposal, leads the project, and is responsible for all budgeted items and cost share requirements. The recipient must define the project goals and be substantially involved in the project. Note that this does not preclude them from arranging to have some tasks performed by other entities, such as subrecipients or contractors. It does mean that a project in which a significant portion of critical, high-risk tasks are assigned to subrecipients or contractors while a recipient plays a lesser role in the project will not be considered as competitive in the proposal evaluation process. For example, a TIP proposal involving a virtual company that uses contractors to perform most of the critical, high-risk tasks will be considered less competitive or even noncompetitive in the evaluation process.

For a joint venture award, recipients are those eligible project members that are signatories to the project's joint venture agreement and are responsible for all budgeted items and cost share requirements. At least two eligible companies, or one eligible company and one institution of higher education or other organization in the joint venture must be substantially involved in the project (See Chapter 1, Section B.2). Substantial involvement means that at a minimum, these core recipients must be actively involved in defining and planning the research agenda and/or substantially involved in the project R&D. Joint ventures may be considered to be more competitive if it is clear that all joint venture members have been involved in planning the research tasks and goals.

As with a single company project, the requirement for Joint Venture recipients to be substantially involved do not preclude a recipient(s) from arranging to have some tasks performed by other entities, such as subrecipients or contractors. Once again, a project that assigns a significant portion of critical, high-risk tasks to nonrecipients, while recipient(s) play less than a substantial role in the project, will not be considered as competitive in the proposal evaluation process.

2. **Subrecipients.** Under the TIP statute, recipients to a TIP award are allowed to issue subawards to subrecipients. A subrecipient can receive funds to perform project related tasks and can provide funds that can be used to support a recipient's cost share requirement. Any eligible company, institute of higher education, national laboratory, governmental laboratory (excluding NIST), or nonprofit research institute can be a subrecipient. Large companies are not eligible to receive funding under the TIP statute, and therefore cannot receive funding as subrecipients.

Subrecipients must comply with all rules, regulations, terms, and conditions that apply to recipients of a TIP award. Tasks assigned to a subrecipient must be acceptable project tasks that are eligible to receive funding under a TIP single company or joint venture award. Tasks assigned to a subrecipient may include critical, high-risk technical tasks, provided that a strong technical justification is made.

Projects in which a significant portion of high-risk tasks are assigned to a subrecipient(s) and as a result leave the recipient with a less than substantial role in the project will not be considered as competitive in the TIP proposal evaluation process.

Recipients with subawards are responsible for oversight of the work performed by each subrecipient and for the provision of cost share funds pledged by subrecipients. Recipients should establish a plan to monitor the subrecipient's performance of research tasks, regulatory compliance issues, spending, budget(s) and budget narrative(s).

The following federal-wide Subaward Agreement format is suggested to those recipients with subawards and all parts are located at <http://www.nist.gov/tip/helpful-resources.cfm>. These components are from the model agreement developed and used by many federal agencies for research grants and cooperative agreements. More information regarding the model agreement can be found at http://sites.nationalacademies.org/PGA/fdp/PGA_056020. Note that the model agreement is not a required form, only an optional format for capturing Subaward requirements.

- a. Research Subaward Agreement
 - 1) Attachment 1 Certifications and Assurances
 - 2) Attachment 3A Prime Recipient Contacts
 - 3) Attachment 3B Subrecipient Contacts
 - 4) Attachment 2 Prime Award Terms and Conditions NIST
 - 5) Attachment 4 Reporting Requirements

The above format includes the flow-down of the following required terms and conditions for subawards by recipients and all requirements are located at <http://www.nist.gov/tip/helpful-resources.cfm>:

- Research Terms and Conditions: <http://www.nsf.gov/pubs/policydocs/rtc/termsidebyide.pdf>
- Research Terms and Conditions Appendix C: <http://www.nsf.gov/bfa/dias/policy/rtc/appc.pdf>
- Department of Commerce implementation of the Research Terms and Conditions: http://www.nsf.gov/pubs/policydocs/rtc/doc_1008.pdf
- Department of Commerce Financial Assistance Standard Terms and Conditions March 2008: <http://oam.ocs.doc.gov/docs/GRANTS/DOC%20STCSMAR08Rev.pdf>
- General Terms and Conditions Technology Innovation Program December 2009: <http://www.nist.gov/tip/helpful-resources.cfm>
- Special Award Conditions Technology Innovation Program December 2009: <http://www.nist.gov/tip/helpful-resources.cfm>

The NIST-1022B form is used to identify each Subrecipient. Related budget information is entered on the corresponding recipient's NIST-1022C Budget Narrative form under Section F "Other" and Section G "Indirect Costs." Note that recipients with

foreign subrecipients must also fill out the NIST-1022G form and explain why work must be done abroad.

When selecting a subrecipient it is very important that all conflicts of interest are revealed and addressed. A conflict of interest can occur, for example, when a recipient awards a subaward to another part of the same organization or to another organization with identical or nearly identical ownership. Each relationship with a conflict of interest will be reviewed to determine if it is appropriate and allowable. In all cases no profit or fee is allowable for a Subrecipient. For additional guidance regarding conflicts of interest see Codes of Conduct 15 CFR §14.44.

- 3. Contractors.** Contractors are those entities that provide supporting work, services, or materials to a project recipient for a fee. Contractors can be companies, institutes of higher education, laboratories, governmental laboratories (excluding NIST) or nonprofit research institutes. Large companies can be contracted to perform tasks for a TIP project provided that the requirements of 15 CFR Part 14 are met.

Projects in which a significant portion of high-risk tasks are assigned to a contractor(s) and as a result leave the recipient with a less than substantial role in the project will not be considered as competitive in the TIP proposal evaluation process.

Identifying information for each contractor is provided on the NIST-1022B form. Budget narrative information for each contractor is included in Section E “Contractors” of the corresponding recipient’s NIST-1022C form “Budget Narrative.” Sole source foreign contractors will receive additional scrutiny and the recipient must fill out the NIST-1022G form that explains why the work can only be done by the foreign contractor.

All contract arrangements must comply with rules governing intellectual property rights generated under an award. University faculty who contract to provide consulting services should check to be sure that there is no conflict between the requirements of the award funded and their university employment contract, and that their project contract is consistent with their university employment agreement.

Contractors should be selected on a competitive basis pursuant to the Procurement Standards in 15 C.F.R. Part 14. When selecting a contractor, it is very important that all conflicts of interest are revealed and addressed. For example, a conflict of interest can occur when any organization, including any JV member, contracts to another part of the same organization or to another organization with identical or nearly identical ownership. Each relationship with a conflict of interest will be reviewed to determine if it is appropriate and allowable. For additional guidance regarding conflicts of interest see Codes of Conduct 15 C.F.R. §14.44.

Contractors who have more than a 10% equity interest in a recipient must provide justification and assurances that the contractor does not profit from the contract. Should an award be made and the proposal involves any contractor with an equity interest in a project recipient, a Special Award Condition will be issued that restricts payments to

the contractor for costs only. In any case, no profit or fee is allowable for a contractor holding an equity interest in a project recipient.

If work is proposed by a contractor who is part of the same organization as the recipient or who is part of another organization with identical ownership, the work should be shown as being funded through an interorganizational transfer that does not contain profit. Interorganizational transfers should be broken down by budget categories in a similar manner as other non-contractor costs. Furthermore, any interorganizational transfers that are not within the United States must be clearly identified next to the budgeted item as a “Foreign Interorganizational Transfer.”

- 4. Third Party In-Kind Contributors.** A third party in-kind contributor provides essential, non-cash items to a TIP project recipient that may be considered as part of the recipient’s official auditable cost share commitment. Third party in-kind contributions can be made by any nonfederal source (except contractors working on a TIP project), and include but are not limited to equipment, research tools, software, supplies, and/or services.

In-kind contributions are provided as part of an agreement between the recipient and the contributor. If such contributions are included in the cost share commitment of a recipient then a letter of commitment from an authorized senior executive of the third party organization making the contribution is required. This letter should clearly state the form of the contribution, the estimated value, and the time period over which the contribution is being made. The value of the commitment in the letter must be consistent with the amounts entered as a direct cost in the recipient’s budget forms.

In-kind contributions are entered as a direct cost on the recipient’s NIST-1022D form and as a source of funds on the NIST-1022E form (for single company proposals) or the NIST-1022F form (for joint venture proposals). Third party in-kind contributions that will not be included in a recipient’s cost share commitment should not be entered into the recipient’s budget or source of funds. This type of participation in the project is better described under informal collaboration.

- 5. Informal Collaborators.** An informal collaborator performs work in conjunction with a TIP recipient. While not directly part of a proposed TIP project and not included in the official budget or cost share commitment, the work performed by the informal collaborator facilitates the recipient’s role in the TIP project and may contribute to intellectual property created under an award, if funded.

For example, members of a large company might agree to provide consulting services to a fledgling recipient on a proposed TIP project. Because this collaboration enhances the credibility of the recipient, the recipient mentions the collaborators’ role in the project narrative. This relationship is an informal collaboration because it does not involve specific project tasks, does not allow the large company to retain title to any intellectual property arising from the project, and does not incur any project costs.

Because all activities of an informal collaborator are off-budget, informal collaborators do not appear on a TIP budget. An award recipient is responsible for making sure that their informal collaborations do not cause a violation of the intellectual property requirements under an award. Typically, this requires that the informal collaborator be informed by the recipient of the intellectual property requirements of a TIP funded project.

D. PROJECT COSTS

Once project tasks and the role of key players are identified, the next step in preparing a project budget is to forecast the cost of each task. From an expense viewpoint, there are two classifications of project costs, direct costs and indirect costs, where

$$\text{Total Project Cost} = \text{Total Direct Project Costs} + \text{Total Indirect Project Costs}$$

All costs must be deemed allowable, reasonable, and allocable in accordance with applicable federal cost principles and TIP guidelines.

In general, direct costs include personnel, travel, equipment, materials and supplies, contracts, and other costs directly related to the development of the proposed technology or technologies. Indirect costs are those project costs incurred for common or joint objectives and generally include utilities, rent, and other administrative expenditures.

Note that because of the diverse characteristics and accounting practices of different organizations, it is not possible to specify the types of costs that may be classified as direct costs in all situations. Furthermore, a cost may not be allocated to an award as a direct cost if any other cost incurred for the same purpose in like circumstances has been assigned to an award as an indirect cost. Ultimately, NIST shall determine the allowability of all direct costs in accordance with applicable federal cost principles. Therefore, applicants are advised to review all cost principles and guidelines before preparing TIP budgets.

The NIST-1022C form is used to capture the yearly budget data for each project recipient. When this form has been filled out, the cost data will be automatically entered into the NIST-1022E form (for single company proposals) or the NIST-1022F form (for joint venture proposals) to provide a yearly summary of the project budget.

1. Direct Project Costs

- a. **Personnel Costs.** Personnel costs are those direct project costs associated with compensating project staff members who are engaged in the project's technical research. These costs are entered in the recipient's NIST-1022C form, under Section A "Personnel."

In general, compensation paid for employees should be consistent with compensation paid for similar work within

the proposer's organization and similar positions in industry or academia. Annual escalation rates should be reasonable and should also reflect industry or academia norms.

Personnel costs should not include compensation for administrative staff or other support staff if the applicant normally charges such compensation as an indirect cost. Since commercialization and product development activities are not eligible for funding in a TIP project, budgets should not include costs for marketing, sales personnel, or personnel involved in other commercialization or product development activities.

If senior executives are listed under Personnel, explain whether their project activities are exclusively technical and whether they are engaged in other, nontechnical activities. Again, only personnel involved in technical project tasks are included in this section. If it is the standard practice for the organization to charge executive salaries as a direct cost rather than as an indirect cost, then such costs should be included under the Personnel category. If normally charged as indirect costs, executive salaries should be removed from the Personnel category.

It is important to note that NIST limits the annual salaries of project personnel to no more than Level I of the U.S. Office of Personnel Management's Executive Schedule. Note that the salary amount will be annually updated in the FFO notice. If a project is selected for funding, any salary that exceeds this limit will be reset to the maximum level allowed.

Blended labor rates (i.e., rates that cover a labor category or skill set rather than a specific task) may be used in lieu of actual salaries for estimation purposes. These rates can be considered in the proposal evaluation process. If a TIP award is made, the award terms will require that the recipient ensures that only actual costs incurred will be charged to the award.

Fringe benefits are generally considered to be indirect costs. However, if the recipient's accounting practice is to charge fringe benefits as direct costs, then fringe benefits should be listed under Section F "Other" and not under Section A "Personnel."

If graduate or post graduate students are listed, NIST reserves the right to limit the number that can participate. For each graduate student or post graduate student listed, indicate the specific research tasks in the technical plan requiring their participation and whether or not this position is expected to be rotated on a regular schedule to another graduate student. Describe the research activities each student will contribute and how the project would proceed if the student contribution were not approved. If the position is expected to be rotated, provide the details of that rotation schedule and why it will not adversely impact the project task timeline. If an award is made, names of students, when identified, will be required to be listed in the personnel category of the budget narrative. Participation by undergraduate students is not allowed.

Note that tuition remission or other forms of compensation in lieu of wages paid to students working on TIP projects may be

allowed but only as provided in 2 C.F.R. 45 a. and b. (formerly OMB Circular A-21, Section J.41). In such cases, tuition remission is considered a cash contribution rather than an in-kind contribution and entered under "Other" costs.

Student compensation in the form of a salary paid to the student should be included under Section A "Personnel" for each student. Student compensation in the form of tuition remission or other forms of compensation in lieu of wages should be listed under Section F "Other" with a clear methodology for the computation that links back to the number of students.

- b. Travel Costs.** Project travel represents a coherent part of a project's communications strategy and should promote the smooth coordination of research activities among participants. Project travel costs are direct project costs and should be entered on the recipient's NIST-1022C form, under Section B "Travel."

Each planned trip must directly support project R&D activities and each trip and each traveler must be deemed essential for the successful completion of the project. Project travel that is not justified from a project perspective is not allowed.

While foreign travel is not precluded, it is discouraged and requires stronger justification than that required for domestic travel. Likewise, travel to customer or vendor sites is not allowed unless a strong justification is provided.

Conference travel is generally not considered an R&D-related expense and typically is not allowed. If attendance at a conference is deemed to be critical to the performance of accomplishing a specific research activity, approval may be given if a strong justification is provided. Note that it is not adequate to simply state that the proposed traveler will attend a specific conference to network with experts that might help the project. Also note that travel costs for conferences that the proposed traveler annually or otherwise normally attends are not allowed.

Travel costs for contractors should be combined with other contractor expenses and entered under the Contractor category rather than under the Travel category. Travel to NIST should be excluded as meetings with the TIP project management team are typically held at project participants' facilities.

When planning travel costs, note that TIP recipients are expected to adhere to all Federal Travel Regulations such as traveling in coach rather than first-class accommodations and abiding by federal per diem rates. Information regarding federal per diem rates is located here: <http://www.gsa.gov/perdiem>.

- c. Equipment Costs.** Equipment purchases include tangible, nonexpendable, personal property such as machines, tools, or other hardware items that are necessary for the successful completion of the project. In general, equipment purchases must have a useful life of at least one year or an acquisition cost of at least \$5,000 per unit. All equipment purchases should be clearly identified in the research plan and entered as direct project costs on the

recipient's NIST-1022C form, under Section C "Equipment."

For equipment that will be custom built, and that is expected to have a final constructed cost of at least \$5,000 and a useful life of at least one year, list each component that is being purchased to construct the custom equipment under Equipment, and not under Materials and Supplies.

Purchase of any piece of equipment that exceeds \$100,000 requires additional justification. If this purchase is outside of the United States, the justification must also include the reason for not purchasing it from a domestic source. If this type of equipment is typically leased, provide justification as to why it cannot be leased or a service provided in lieu of purchase. Note that large equipment purchases should be carefully timed and additional justification is required if such purchases are planned in the final months of a project.

Depreciation, maintenance, and service contract charges associated with equipment purchases are normally charged as indirect costs. If the recipient's accounting system normally identifies such costs as direct costs, however, then these costs should be entered under Section C "Equipment."

Note that TIP funds may not be used for the construction of new buildings; however, they may be used for construction of experimental R&D facilities to be located within a new or existing building provided the equipment or facilities are essential for carrying out the research.

General-purpose office equipment, e.g., office computers, printers, copiers, etc., are normally included in indirect costs and should not be budgeted as direct costs. If they are not included in indirect costs, then they may be included as a direct cost, however, they must be used exclusively for the TIP project, and a justification and explanation must be provided (e.g. computers used solely for research activities.) Note that the purchase of office furniture is not allowed.

- d. Materials and Supplies Costs.** Materials and Supplies include all items that are consumed, employed, or expended in carrying out the technical tasks of the project. All such purchases should be detailed and related costs should be entered as direct costs in the recipient's NIST-1022C form, under Section D "Materials and Supplies."
- e. Contractor Costs.** Contractor costs are considered to be direct costs and should be entered in the recipient's NIST-1022C form, under Section E "Contractors." Contractor costs therefore should not include charges for office supplies, conferences, workshop expenses, or other costs normally charged as indirect costs.

Contracting costs must reflect industry norms and current market prices. If such costs exceed industry norms, a written justification is required. Contractors with daily fees in excess of \$550 per day must provide a written justification or revise their fees accordingly. The use of foreign contractors also requires a written justification along with a completed NIST-1022H form "R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire."

- f. Other Costs.** Other direct costs that do not fall within the categories listed above should be included in the recipient's NIST-1022C form under Section F "Other Costs." These costs typically include audit costs, licensing expenses, fringe benefits, third party in-kind contributions, and sub-recipient direct costs.

Project audit costs should be included in this category unless the audit is included under indirect costs or is to be performed by a cognizant federal audit agency, for instance, the Defense Contract Audit Agency (DCAA). If it is included under indirect costs or to be performed by a cognizant federal audit agency, indicate it as such. If a joint venture, each joint venture participant should budget for its own audits individually.

Note that audits must be conducted by an independent Certified Public Accountant (CPA) or cognizant federal audit agency auditor. For projects of less than 24 months, an audit is required at the end of the project; for 2, 3, or 4-year projects, an audit is required after the first year and at the end of the project; for 5-year projects, an audit is required after the first year and the third year and at the end of the project.

The cost for the first year audit should be included in the Year 1 budget, to assure that the funds are obligated to cover the audit, even though the funds will be expended in Year 2. Similarly, the cost for the Year 3 audit should be included in the Year 3 budget. The final project audit cost should be included in the budget for the final year.

Fees, licensing expenses, and fringe benefits should be included under "Other Costs" if they are typically treated as direct costs. Otherwise, such costs should be included under "Indirect Costs."

Note that if a recipient has issued a subaward, then the "Other Costs" category should be used to capture the subrecipient's annual direct costs.

2. Indirect Project Costs

Indirect costs are those costs incurred for common or joint objectives and typically include costs for utilities, rent, and other administrative expenditures. TIP funds cannot be used to cover indirect project costs and all indirect project costs must be borne by recipients.

Note that the NIST-1022C form requires the recipient to enter the amount of annual indirect costs and the composite indirect cost rate that was used to calculate this amount. If this rate was negotiated with a cognizant federal audit agency, a copy of the approved negotiated agreement should be provided with the proposal. If this rate was not established by a cognizant federal audit agency, provide a statement to this effect. Successful applicants will be required to obtain such a rate.

If a subaward has been issued, the recipient is also required to enter the annual amount of the subrecipient's indirect costs if the subrecipient's indirect costs will be included in the recipient's cost share commitment.

It is strongly suggested that the NIST-1022 "Family of Forms" be used by recipients as the budget forms for their subrecipients. If an award is issued, each subrecipient can prepare a separate set of NIST-1022C forms to provide to the recipient to track all project costs incurred by their subrecipients. Therefore, it is suggested that the NIST-1022 "Family of Forms" be shared with proposed subrecipients to help the proposer with proposal budget estimates. **(Note that subrecipients' budget forms are for use by recipients and subrecipients only and should not be submitted with the TIP proposal.)**

Applicants should also check each proposed subrecipient's indirect cost rate to be sure that it is approved by a cognizant federal agency. If a subrecipient does not have an approved indirect cost rate, the recipient is responsible for making sure the subrecipient establishes its own, separate, federally approved indirect cost rate. For additional information refer to "Department of Commerce Financial Assistance Standard Terms and Conditions (March 2008)," Section A, paragraph .05, "Indirect Costs," <http://oamweb.osec.doc.gov/docs/GRANTS/DOC%20STCsMAR08Rev.pdf>.

Additional guidance on creating an indirect cost rate plan for the Department of Commerce as the cognizant agency, can be obtained by contacting the Department of Commerce Office of Acquisition Management, Grants Management Division at (202) 482-4248.

Applicants are cautioned that overstating estimates of indirect costs in order to meet cost share requirements in the proposal submission may cause serious cost share compliance issues, if an award is issued and the project cost share is at or near 50%. Indirect Cost Rate Proposals are required to be updated annually, based on the previous year's audited costs. Therefore, it is prudent to be aware of how your organization's indirect cost rate may vary from year to year.

Applicants do not have to claim the full value of their proposed indirect cost rate, even if the proposed rate has been approved by a cognizant agency. Applicants are encouraged to consider how sources of funds and indirect cost rates for the proposed cost share commitment may shift during the life of a project, and therefore should consider practical strategies for maintaining the proposed cost share levels being submitted, if an award is issued. This is especially true for applicants proposing a cost share commitment at or near 50%. Due to the fact that TIP projects have statutory time limits, a suspension may be requested or required to resolve severe cost share compliance issues. If the issue cannot be resolved, an award can either be terminated for cause or an award recipient can elect to end the award early for financial reasons.

E. SOURCES OF FUNDS

Project budgets must also include an accounting for all funds required to complete the TIP project. TIP project funds must come from both federal funds and nonfederal funds.

1. Federal Sources of Funds

Federal funds are funds provided under a TIP award and can only be used to cover direct project costs. TIP projects allow for the

participation of other federal agencies or governmental laboratories as joint venture members, contractors, or subrecipients. The only sources of federal funds, however, that can be used on a TIP project are those funds provided by TIP through a TIP award. Therefore, when other federal agencies or governmental laboratories contribute to cost share on a TIP project, they must provide funds that come from a source of nonfederal funds. Generally, federal funds supporting other grants and contracts cannot be used as cost share. Very rare cases exist, however, where projects under another federal program may have a specific statutory exemption from this regulatory prohibition. Applicants that are considering including Federal funds from another program as cost share under a TIP proposal are advised to contact the existing funded program for guidance regarding this issue. It is highly unlikely that the statutory requirements of the TIP program will be acceptable to the other program.

2. Nonfederal Sources of Funds

Nonfederal funds are funds provided by the recipient(s). These funds can come from a variety of sources including the recipient's internal funds (derived from working capital, retained earnings, profits, cash, etc.), cash contributions provided to the recipient (from subrecipients, joint venture members, state grants and other support, or other financial backers/investors), or in-kind contributions provided to the recipient by third party contributors. Contractors may not contribute resources to cover project costs.

3. Third Party In-Kind Contributions

Third Party In-kind contributions can be made by any nonfederal, third party source (except contractors working on a TIP project). Third party in-kind contributions can include but are not limited to equipment, research tools, software, supplies, and/or services.

The value of in-kind contributions shall be determined in accordance with 15 CFR §14.23 and must be prorated according to the share of total use dedicated to the TIP project. Note that the method of valuation must be based on the costs to be incurred during the project to specifically accomplish project activities and not upon the value of previously incurred (i.e., sunk) costs used to obtain or develop the item(s). For example, costs incurred to develop software are not allowable, but the typical license fee and costs to maintain the software during the project may be allowable. In addition, costs incurred to support a "complementary" project that is not directly required to accomplish activities in the proposed TIP project would not be allowable as cost share.

Additionally, as with the Federal share, all cost share, including third party in-kind cost share must be allowable under the following applicable Federal cost principles available at <http://www.nist.gov/tip/helpful-resources.cfm>:

- For-profit companies: 48 C.F.R. Part 31.
- Educational Institutions: 2 C.F.R Subtitle A, Chapter II, Part 220 (OMB Circular A-21).

- Nonprofit organizations: 2 C.F.R. Subtitle A, Chapter II, Part 230 (OMB Circular A-122).
- State and Local Governments: 2 C.F.R., Subtitle A, Chapter II, Part 225 (OMB Circular A-87)
- Hospitals: 45 C.F.R. Part 74, Appendix E.

Pursuant to 15 C.F.R. § 296.10 Third Party In-Kind Contribution of Research Services, NIST shall not issue a TIP award to a single recipient or joint venture whose proposed budget includes the use of third party in-kind contribution of research as cost share, and no costs shall be incurred under such a TIP project, until such time as an agreement between the recipient and the third party contributor of in-kind research has been executed by both parties and approved by NIST.

Research services in this context mean that research activities will be performed that are not typically obtained as a vendor service. For example, procuring analytical services from a laboratory is typically a vendor service and not a research activity. If the third party performer will be developing how the research outcome will be accomplished and there is significant risk that the outcome may not be possible, it is highly likely that a research service is being performed and an agreement, as described in 15 C.F.R. § 296.10 Third Party In-Kind Contribution of Research Services will be required before an award can be issued. Any applicant that is considering this option is strongly advised to call TIP for more guidance. Note that in-kind contributions provided by project participants are considered to be cash contributions.

F. FINAL BUDGET AND BUDGET NARRATIVE REVIEW

Once the budget forms have been filled out it is important to provide a final check of the budget and budget narrative before submitting the proposal. A poorly prepared budget or budget narrative may result in a proposal being considered less competitive or even noncompetitive.

Check to make sure that each section of the budget narrative is **complete** and that no relevant information is missing. Each section must be filled out and a proper accounting must be made of all budgeted items. It is particularly important that Section 2 "ALL SOURCES OF FUNDS" and Section 3 "TASKS" of the NIST-1022E (single company) or NIST-1022F (joint venture) "Estimated Multi-Year Budget" forms be filled out.

Check to make sure that all budget entries are **consistent**. An item that appears in different places in a budget should have the same value. For example, each of the sources of funds that appears in Section H of the annual NIST-1022C forms should be the same as those listed on the NIST-1022E form (single company proposals) or the NIST-1022F form (joint venture proposals.)

Check to make sure that all tasks and costs are **appropriate and in compliance** with TIP's terms and conditions. Budgeted tasks must be justified and relate to the proposed technical work. Cost estimates should not be significantly overstated or understated and



must reflect industry and market norms. Recipient cost share must be greater than or equal to 50% of the annual total project cost.

Finally, be sure then to check all arithmetic for ***accuracy***.

CHAPTER 4

PROPOSAL SUBMISSION REQUIREMENTS CHECKLIST

This checklist is here to assist you in making sure that you have prepared your proposal according to TIP requirements, and that you have included all of the appropriate documentation. It is to your benefit to use it because it will help to ensure that your proposal is not eliminated from consideration because of a mistake made on your part in the completeness of your submission (which could have been avoided if you were aware of the requirement).

NOTE: Proposals that deviate substantially from these guidelines or that omit required information may be found unresponsive and may not be considered for funding.

A. PROPOSAL FORMAT

- 1. Bindings. If submitting by paper rather than electronically, bind all but one copy (including signed original) of the proposal securely. Bindings that permit the proposal to lie flat while being read are preferred. Loose-leaf ring binders or stapled copies are not acceptable.
- 2. Double-sided copy. Print on both sides of the paper (front to back counts as two pages).
- 3. E-mail proposal submissions. **Will not be accepted.**
- 4. Facsimile (fax) proposal submissions. **Will not be accepted.**
- 5. Figures, graphs, and images. Should be of a size that is easily readable or viewable (i.e., does not require a magnifying glass to view).
- 6. Font. Times New Roman, Arial preferred, or equivalent and readable (12-point minimum, including text in charts, graphs and pictures). NOTE: Font size requirement is after figures have been placed in proposal (i.e., creating a figure with 12-point font and then reducing its size to fit in the proposal will result in the font being too small).
- 7. Line spacing. Single.
- 8. Margins. One (1) inch top, bottom, left, and right.
- 9. Number of copies if submitting by paper rather than electronically. Sixteen (16) total copies of your proposal: 1 original, bound and signed (preferably in blue ink) copy; 1 unbound and 14 bound copies. If the original proposal is in color, all copies must also be in color. If the proposal is submitted electronically, paper copies are not required.
- 10. Page limit. 30 pages for single company; 40 pages for joint venture.

Page limits exclude: SF-424 (R&R), Application for Federal Assistance; Research and Related Other Project Information; Form NIST-1022; Forms NIST-1022A through NIST-1022H; Executive Summary; list of bibliographic technical references; Table of Abbreviations; Federal Awards Received By Company/organization or Principal Investigator for All Technologies for Previous Five (5) Years; Financial, Employment, and Ownership Information for the Previous Three (3) Years; letters of commitment; letters of support; letters of corroboration; and any human subjects and/or vertebrate animal research documentation.

Orientation: Portrait must be used for all forms. Project narrative may be portrait, or landscape.

Page limits include: All text, schematics, diagrams, flowcharts, tables (except Financial, Employment, and Ownership Information for the Previous Three (3) Years), pictures, images, illustrations, and resumes. To maximize pages for relevant technical information, the following suggestions are offered:
 - a. List data only for the key people and briefly highlight their relevant education and experience. Do not include lengthy resumes for all people involved in the project.
 - b. Do not include copies of published papers as appendices.
 - c. Do not include supplemental material not specifically requested in this Proposal Preparation Kit, either separately or bound with the proposal.
 - d. Do not include company sales catalogs, financial statements, videotapes or audiotapes, presentation slides, and other marketing materials. If financial statements or annual reports are included as an appendix, they will be discarded before the proposal review process begins. If the proposal is to be considered for ranking, then the proposing single company or each joint venture member (except universities, national laboratories, and government agencies) will be asked to provide additional financial information beyond what is required in Chapter 2.
 - e. Do not include general letters of support from individuals or organizations that are not an integral

part of the project (i.e., refer to Chapter 2 Section D for a list of required letters).

- 11. Page numbering. Number pages sequentially.
- 12. Paper size. 21.6 by 27.9 centimeters (8 1/2 by 11 inches).
- 13. Proposal language. English.
- 14. Table of contents. Not required.
- 15. Typed document. All proposals, including forms, must be typed; **handwritten proposals and forms will not be accepted.**

B. PROPOSAL FORMS AND OTHER REQUIREMENTS

(Forms are included in this Proposal Preparation Kit as exhibits and are posted on the TIP website at http://www.nist.gov/tip/cur_comp/forms_instructions_home.cfm.)

1. SINGLE COMPANY ONLY

(also complete items in section B.3. below)

- a. Proposal is from a small- or medium-sized eligible company.
- b. Total project duration does not exceed 3 years.
- c. Total TIP funding requested does not exceed \$3 million.
- d. Form NIST-1022E, Estimated Multi-Year Budget – Single Company (see Exhibit 8).

2. JOINT VENTURE ONLY

(also complete items in section B.3. below)

- a. At least two separately owned, small- and/or medium-sized eligible companies OR at least one small- or medium-sized eligible company and one institution of higher education are part of the joint venture, are substantially involved in the R&D, and both are contributing to the cost share.
- b. Lead member of the joint venture submitting the proposal is the small- or medium-sized company or institution of higher education.
- c. Total project duration does not exceed 5 years.
- d. Total TIP funding requested does not exceed \$9 million.
- e. TIP funds are not requested for any large-sized company joint venture member.
- f. Form NIST-1022A, Other Joint Venture Members (see Exhibit 4).

- g. Form NIST-1022F, Estimated Multi-Year Budget – Joint Venture (see Exhibit 9).

3. BOTH SINGLE COMPANY AND JOINT VENTURE

- a. TIP funds are not requested for indirect costs.
- b. Cost sharing is at least 50 percent of total yearly project costs (direct plus all of the indirect costs).
- c. SF-424 (R&R) (2 pages), Application for Federal Assistance (see Exhibit 1). Note that there are multiple versions of the SF-424; therefore, be sure to use the SF-424 (R&R) version.
- d. Research and Related Other Project Information (see Exhibit 2).
- e. Form NIST-1022, Technology Innovation Program Proposal Information Sheet (see Exhibit 3).
- f. Form NIST-1022B, Contractors (see Exhibit 5), if contractors are proposed in budget.
- g. Form NIST-1022C, Budget Narrative (see Exhibit 6).
- h. Form NIST-1022D, Third-Party In-Kind Contributions (see Exhibit 7), if applicable.
- i. Form NIST-1022G, Foreign-Owned Company Questionnaire (see Exhibit 10), if applicable. If there is more than one such company, separate questionnaires must be submitted for each one.
- j. Form NIST-1022H, R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire (see Exhibit 11), if applicable. If more than one such instance, separate questionnaires must be submitted for each instance.
- k. Executive Summary (two page limit) (see Chapter 2 Section C).
- l. Complete Project Narrative responsive to all aspects of the criteria (see Chapter 2 Section D).
- m. List of bibliographic references supporting assertions and data including patent citations (see Chapter 2 Section C.3 and C.4a).
- n. Table of Abbreviations that define abbreviations likely to be unfamiliar to the reader. Common abbreviations, for example, U.S., TIP, DoD, and cm, need not be defined.
- o. Financial, Employment, and Ownership Information for the Previous Three (3) Years (see Chapter 2 Section E.1.a and Chapter 2 Table 2.5 for all participating members).

- p. Letters of commitment, as required (see Chapter 2 Section E.3.a) for all participating members.
- q. Letters of support, as appropriate (see Chapter 2 Section E.3.b) for all participating members and for those providing in-kind contributions.
- r. Letters of corroboration, documenting efforts to secure other funding, as required (see Chapter 2 Section E.3.c) for all participating members.
- s. Information regarding human subjects and/or live vertebrate animals in research activities for all participating members, if applicable. (See Chapter 6, Human Subjects Determination Checklist, to assist in determining whether the proposal may have human subjects involvement, which would require additional information within the proposal submission. If the required information is not included with the proposal, the proposal may be deemed unacceptable. Refer to the booklet titled TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects, which can be obtained at <http://www.nist.gov/tip/helpful-resources.cfm> or by calling 1-888-847-6478. Timelines for submission of required human subjects and live vertebrate animal documentation are included in the booklet as Appendices 5 and 6.)
- t. Amounts on the Forms NIST-1022E (Estimated Multi-Year Budget--Single Company) and NIST-1022F (Estimated Multi-Year Budget - Joint Venture) add correctly and correspond with amounts on the Form NIST-1022C (Budget Narrative).
- u. Amounts on Forms NIST-1022E (Estimated Multi-Year Budget--Single Company) and NIST-1022F (Estimated Multi-Year Budget--Joint Venture) correspond with amounts on the Form NIST-1022B (Contractors), if contractors are proposed.
- v. Does not include ineligible projects and/or ineligible/unallowable costs as identified in Chapter 1 Section D.
- e. Form NIST-1022B, Contractors (see Exhibit 5), if contractors are proposed.
- f. Form NIST-1022C, Budget Narrative (see Exhibit 6).
- g. Form NIST-1022D, Third-Party In-Kind Contributions (see Exhibit 7), if applicable.
- h. Form NIST-1022E, Estimated Multi-Year Budget--Single Company (see Exhibit 8) or Form NIST-1022F, Estimated Multi-Year Budget--Joint Venture (see Exhibit 9).
- i. Form NIST-1022G, Foreign-Owned Company Questionnaire (see Exhibit 10), if applicable.
- j. Form NIST-1022H, R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire (see Exhibit 11), if applicable.
- k. Executive Summary (two (2) page limit) (see Chapter 2 Section B).
- l. Project Narrative (see Chapter 2 Section D).
- m. List of bibliographic technical references supporting technical assertions and data including patent citations.
- n. Table of Abbreviations.
- o. Federal Awards Received By Company/Organization or Principal Investigator for All Technologies for Previous Five (5) Years.
- p. Financial, Employment, and Ownership Information for the Previous Three (3) Years (Chapter 2 Section E).
- q. Letters of commitment, as required (see Chapter 2 Section E).
- r. Letters of support, as appropriate (see Chapter 2 Section E).
- s. Letters of corroboration, documenting efforts to secure other funding, as required (see Chapter 2 Section E).
- t. Additional information regarding human subjects and/or live vertebrate animals in research activities, if applicable.

C. PROPOSAL ASSEMBLY/ PRESENTATION ORDER

- a. SF-424 (R&R), Application for Federal Assistance (see Exhibit 1).
- b. Research and Related Other Project Information (see Exhibit 2).
- c. Form NIST-1022, Technology Innovation Program (TIP) Proposal Information Sheet (see Exhibit 3).
- d. Form NIST-1022A, Other Joint Venture Members (see Exhibit 4), if a joint venture.



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CHAPTER 5

ADDITIONAL DOCUMENTATION

Below are listed the additional documents that may be requested from the proposer(s) at any time during the evaluation process. The most detailed and complicated is the Joint Venture Agreement (JVA), the requirements of which are covered in 7.a. through 7.g. Further discussion regarding the importance of the JVA, where to find the sample JVA and intellectual property plan, and issues to be considered while negotiating the JVA are covered following the list of additional forms and documents, below.

The following additional forms and documents, which are available at <http://www.nist.gov/tip/helpful-resources.cfm>, may be requested from a proposer at any time during the multi-disciplinary peer-review process:

1. SF-424B, Assurances—Non-Construction Programs.
2. Form CD-346, Applicant for Funding Assistance.
3. Form CD-511, Certifications Regarding Lobbying.
4. SF-LLL, Disclosure of Lobbying Activities, if applicable.
5. Financial information. The proposing company or each joint venture member (except for universities, national laboratories, and government agencies) will be asked to provide the following financial information: a) privately held companies—most recent financial statements; 2) nonprofits—may be asked for most recent financial statements after review of A-133 audit information; 3) publicly traded companies—most recent 10-K SEC filing or annual report.
6. Additional human and/or animal subjects documentation, if applicable.
7. For joint ventures only, a credible draft Joint Venture Agreement (JVA) that must be initialed by each joint venture member acknowledging review and preliminary concurrence. The information below is provided in advance to alert joint venture members of the minimum requirements so that the parties may begin negotiating the JVA early:
 - a. Authorization for the joint venture lead (item 2 of NIST-1022) (the legal entity, not an individual person) to serve as the Joint Venture Administrator to bind all of the other members to the terms and conditions of the NIST/TIP award and to administer the NIST/TIP award on behalf of all of the members.
 - b. Treatment of intellectual property—that is, who will own what, including provisions granting the required licenses to the government and acknowledging the TIP statutory intellectual property rights ownership requirement.
 - c. Agreement that the TIP award terms and conditions take priority over those in the JVA.
 - d. Acknowledgment by the parties of their respective cost-sharing commitment and that no party is responsible for the cost-sharing commitment of any other party.
 - e. Acknowledgment that if a party is removed unilaterally by the NIST Grants Officer, that party is also removed from the Joint Venture Agreement, which may necessitate amendment of the Joint Venture Agreement.
 - f. Provision for a party's withdrawal from the JVA, including immediate notification to the NIST Grants Officer.
 - g. Inclusion within any dispute resolution provision, the parties' acknowledgment that NIST may, at any time, suspend or terminate the NIST Cooperative Agreement.

Upon review and clearance by NIST of the draft JVA, it must be finalized, signed by all joint venture members, and approved by NIST before an award can be made. The JVA must be executed by all parties, and the document should be formatted to include all signature blocks on the same page. NIST requires an intact, fully executed, original agreement, bearing the actual, dated, handwritten ink signature of each JV member. Failure to provide an acceptable, executed JVA by the established due date will jeopardize issuance of an award. An award will not be deferred in order to give more time to finalize a JVA.

A sample JVA and Intellectual Property Plan are available on the TIP website (<http://www.nist.gov/tip/helpful-resources.cfm>). The sample JVA includes important information, however, it is not meant to be the sole JVA model. If a joint venture wants to develop its own JVA, it may do so, provided that the minimum provisions mentioned above are included, and provided that the alternative JVA does not otherwise conflict with TIP requirements. A draft JVA that has not been completed to include the required information will not be accepted. The legal name and contact information of each joint venture member must be provided; include only those organizations to be bound by the JVA.

Before investing a large effort in planning technical work for a joint venture, organizations are urged to obtain a legal review of the sample JVA by all joint venture members. If it appears likely that reaching an agreement to the provisions contained in the sample JVA and Intellectual Property Plan will be contentious, TIP urges you to carefully consider whether the joint venture is feasible. If there are questions, your legal staff may contact the Office of the Chief Counsel for NIST at 301-975-2803.

TIP strongly recommends that the person who signs the proposal submission for the lead organization be someone at a high enough level in the organization to be able to deal effectively with the kinds of legal and policy concerns that are necessary to execute a successful JVA. It is often helpful if this same individual is the authorized signer of the JVA on behalf of the lead organization if the project is selected for funding. This individual must coordinate with top management within his/her own organization and the other participating organizations about their commitment and proposed cost share contribution to the proposed project.

Some issues that are most often raised by organizations' legal counsel in negotiating the JVA include the following:

- a. Who will hold title to intellectual property?
- b. How are the revenue streams to be divided?
- c. What indemnification provisions will be acceptable to all parties?
- d. Who will be the spokesperson for the joint venture?
- e. Who authorizes licensing agreements?
- f. Who handles the billing to NIST and brings issues to NIST's attention?
- g. What will happen during the course of the project if one party drops out and/or another party wishes to join the project?
- h. Who will coordinate writing the quarterly reports to be submitted to NIST/TIP?
- i. Who will track progress against technical milestones to bring issues to the attention of the joint venture and to NIST/TIP?
- j. In what capacity is a government laboratory participating? If as a joint venture member, is the government laboratory willing to execute the JVA? (NOTE: If it is not willing to execute the JVA, the government laboratory may possibly participate as a contractor under a separate agreement (e.g., a CRADA as addressed in Chapter 1 Section B.10) with the Joint Venture Administrator.)
- k. How will disputes be handled should they arise?
- l. How will project expenses be reported by joint venture members to the Joint Venture Administrator for reporting to NIST?

CHAPTER 6

HUMAN SUBJECTS DETERMINATION CHECKLIST

This checklist should be used to determine whether human subjects are involved in the research project and whether the research is exempt under the Department of Commerce regulations (see 15 C.F.R. Part 27) for the protection of human subjects. A proposal may contain more than one research activity involving human subjects, and each activity may require a different level of review. This checklist should be used for each potential use of human subjects. NIST and the Technology Innovation Program (TIP or “the Program”) reserve the right to make an independent determination of whether your research involves human subjects. If NIST or the Program determines that your research project involves human subjects, you will be required to provide additional information for review and approval. A timeline for the submission of required documents can be found in Appendix 5 of the booklet titled TIP Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects.

A copy of this appendix may also be found at <http://www.nist.gov/tip/helpful-resources.cfm>.

1. Is there an intervention or an interaction with a living person that would not be occurring or would be occurring in some other fashion but for this research? Examples: videotaping people, observing children using software, surveying manufacturing personnel during a pilot test of new equipment, gathering tissue or cells from living human donors.
 - Yes — Human subjects are involved. Go to question 3.
 - No — Go to question 2.
2. a. Will data/information/specimens previously collected originally from people or about people be used in this research? Examples: broadcast video, Web-use logs, medical information, cells or tissues, survey questions.
 - Yes — Identifiable human subjects may be involved. Go to question 2.b.
 - No — Go to question 6. It appears that human subjects may not be involved in the project. An exemption determination may be required, however, if it is determined that human subjects are involved. Please review question 3 for additional information about research that may require either a determination of whether the activity is not considered a use of human subjects in research under the regulation or an exemption determination.
- b. Does that information contain private information in a form in which the identity of the subject is or may readily be ascertained from the information? Examples: medical records, donor name or address, sales transaction records.
 - Yes — Identifiable human subjects are involved. Go to question 3 to see if an exemption may apply. If you know that an exemption does not apply, proceed to question 5.
 - No — Go to question 3. The research may not be within the scope of 15 C.F.R. Part 27; however, it may require an exemption determination to be made due to the use of data, recordings, or specimens that could be linked to humans without appropriate safeguards.
3. Do you think the research task may either not be within the scope of 15 C.F.R. Part 27 or qualify for an exemption under 15 C.F.R. § 27.101(b)? The following questions will help you evaluate whether to request an exemption determination by NIST and the Program or to provide documentation that the research may not be within the scope of 15 C.F.R. Part 27:
 - a. Will the research task involving human subjects use only existing data, recordings (audio or visual), or specimens? Examples: patient records, a company’s customer data, Web-use logs, cells, or tissue.
 - Yes — Go to question 3.d.
 - No — Go to question 3.b.
 - b. Will the research task involve only normal educational practices such as instructional strategies or comparison of instructional techniques, curricula, or classroom management methods? Examples: observation of student-teacher or student-computer interactions, video-taping instructional approaches.
 - Yes — Go to question 3.d.
 - No — Go to question 3.c.
 - c. Will the research task involve only educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior?

Examples: broadcast video, software usage testing, recordings from security cameras.

- Yes — Go to question 3.e.
 - No — Go to question 5. This research is probably not exempt and will require Institutional Review Board (IRB) review and approval.
- d. Do any of the data, recordings, specimens, or practices involve prisoners? Examples: testing educational software with prisoners, videotaping or surveying prisoners or detainees under the authority of a law enforcement entity.
- Yes — Go to question 5. This research is probably not exempt and will require IRB review and approval.
 - No — Go to question 3.f.
- e. Do the procedures or observations of public behavior involve prisoners or children?
- Yes — Go to question 5. This research is probably not exempt and will require Institutional Review Board (IRB) review and approval.
 - No — Go to question 3.h.
- f. Are the data, recordings (audio or visual), or specimens publicly available?

NOTE: Publicly available may include items for sale, items that are freely available to the public, or items that reside in the public domain. Examples: customer data sets, catalog orders of cells or tissues, donations of pathological specimens, shareware.

- Yes — Go to question 4. This research may be exempt under 15 C.F.R. § 27.101(b).
 - No — Go to question 3.g.
- g. Will the data, recordings (audio or visual), or specimens be stripped of all identifiable information that could be linked to a human subject prior to being received by the investigator?
- Yes — Go to question 4. This research may not be within the scope of 15 C.F.R. Part 27, or this research may be exempt under 15 C.F.R. § 27.101(b).
 - No — Go to question 3.h.

h. Will information be recorded by the investigator in such a way that it can be linked to the human subject? Examples: Web-use logs tied to e-mail addresses, patient records, or specimens that include patient identifiers.

- Yes — Go to question 5. This research is probably not exempt and will need an IRB review.
- No — Go to question 4. This research may be exempt under 15 C.F.R. § 27.101(b).

4. An exemption under 15 C.F.R. § 27.101(b) may apply to the task, or the task may not be within the scope of 15 C.F.R. Part 27. In order to complete the necessary requirements for research considered exempt under 15 C.F.R. § 27.101(b), review the TIP Program Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects. A copy of that booklet can be obtained on the TIP website at <http://www.nist.gov/tip/helpful-resources.cfm> or by calling 1-888-TIP-NIST (1-888-847-6478) and requesting a copy. Complete Appendix 3 and/or Appendix 4 in the booklet as required and submit with your proposal or your request to add the research activity to an ongoing project. During the review of a proposal by the Evaluation Panel, you may be asked for additional information. Additional documentation to reach a final determination, however, may also be requested after the proposal is funded.

5. An exemption probably does not apply to the proposed research, however further documentation may still be required. Review the TIP Program Guidelines and Documentation Requirements for Research Involving Human and Animal Subjects. A copy of that booklet can be obtained on the TIP website at <http://www.nist.gov/tip/helpful-resources.cfm> or by calling 1-888-TIP-NIST (1-888-847-6478) and requesting a copy. See Appendix 5 in the booklet for the required documentation list for your proposal or to add the research activity to an ongoing project. During the review of a proposal by the Evaluation Panel you may be asked for additional information. Additional documentation to reach a final determination, however, may also be requested after the proposal is funded.

It appears that human subjects are not involved in this project. This checklist is only a tool for general guidance and does not constitute a final legal opinion from NIST on whether or not human subjects are involved, or whether or not an exemption determination under the regulations is needed. If upon NIST and Program reviews of the proposed research it is determined that additional documentation is needed to reach a preliminary determination, you will be asked to provide the additional documentation. During the review of a proposal by the Evaluation Panel, you may be asked for additional information. Additional documentation to reach a final determination, however, may also be requested after the proposal is funded.

CHAPTER 7

GENERAL INSTRUCTIONS FOR SUBMITTING TIP PROPOSALS ELECTRONICALLY VIA GRANTS.GOV

1. How to Start. Go to the <http://www.grants.gov> website and click on "Apply for Grants" under "For Applicants" in the left column and follow the instructions. The first thing you'll need to do is register.
2. Registration Process. Before using Grants.gov for the first time, each proposer must register to create an institutional profile http://www.grants.gov/applicants/get_registered.jsp. Once registered, the proposer can then apply for any federal government grant or cooperative agreement on the Grants.gov website, including TIP.

To avoid any potential processing backlogs due to last minute registrations, proposers are strongly encouraged to start their Grants.gov registration process at least four weeks prior to the proposal submission due date. New businesses [i.e., those applying to the Internal Revenue Service (IRS) for an Employer Identification Number (EIN) to complete the registration] should allow at least two additional weeks to obtain the number and register.

TIP will not make any allowances for submission delays due to incomplete Grants.gov registration. It is the proposer's responsibility to check and verify the correctness and completeness of the proposal submission

3. Software Requirements. The downloading of a Grant Application Package and Instructions is carried out from <http://www.grants.gov>. If you have not already done so, follow the instructions to test for Grants.Gov compatible version of Adobe Reader as identified on the Grants.gov website <http://www.grants.gov/applicants/AdobeVersioningTestOnly.jsp>. If your version is not compatible you will receive "an error message. "If an error message displays, the test application package was opened with an incompatible version of Adobe Reader. To download the compatible version required to complete and submit a grant application package please visit the download software page."

In order to access, fill out, and electronically submit a proposal, you must use the compatible version of this viewer for proper operation of the intelligent logic used in the application package.

4. Once you are registered, complete the following steps:
 - a) Go to the "Apply for Grants" page and click on the "Download a Grant Application Package and Instructions" link.
 - b) Enter the CFDA Number as 11.616 for TIP. Leave the Funding Opportunity Number and the Funding Opportunity Competition ID fields blank. Click on the Download Package button.
 - c) Under the heading "Instructions & Application" click on "Download."
 - d) On the next screen click on "Download Application Instructions" and print out the detailed instructions for the submission process. Read these instructions carefully before continuing.
 - e) Once you understand the instructions and have assembled your completed proposal and all appropriate documents on your computer, return to where you left off in Grants.gov and click on "Download Application Package."
 - f) Follow the instructions that you have printed out to complete your electronic submission. Remember, you will need to be completely familiar with the requirements in the TIP Proposal Preparation Kit and the Federal Funding Opportunity (FFO) notice to begin the proposal preparation process. Both of these documents are available on the TIP website at http://www.nist.gov/tip/cur_comp/index.cfm

The FFO can also be found on the Grants.gov synopsis page. Simply go to "Quick Links" on the <http://www.grants.gov> website. Then click on "Grant Search," use the "Search by CFDA Number" feature and type in 11.616. When the synopsis page appears, either click on the "Full Announcement" near the top of the screen, or click on the "Link to Full Announcement" hyperlink towards the bottom of the synopsis page.4.

5. Proposal Components. Complete proposals must include the required forms and documents and the proposal must be assembled in accordance with the guidelines in Chapter 3 of the TIP Proposal Preparation Kit. None of the prescribed forms may be altered, including adding text outside the forms' design. Structural changes to any of the prescribed forms may invalidate the proposal.

- a) The SF-424 (R&R), Application for Federal Assistance, serves as the cover sheet for the proposal. No other cover sheet or letter should be used. Note that there are multiple versions of the SF-424; therefore, be sure to use the SF-424 (R&R) version. Any other SF-424 form such as the SF-424 Core Form, is not required for submitting TIP proposals.
- b) The next important form is the Research and Related Other Project Information. This form is the mechanism used to submit the documents of your proposal electronically via Grants.gov.

The SF-424 (R&R) and the Research and Related Other Project Information forms above are available as part of the Grants.gov application package. Instructions for filling out these forms are provided in the Exhibits following this chapter.

- c) The next set of required forms includes a series of 1022 forms as described in Chapter 3 of the TIP Proposal Preparation Kit. These forms have been consolidated into one PDF file and are available on the TIP website http://www.nist.gov/tip/cur_comp/index.cfm. Instructions for filling out these forms are provided in the Exhibits following this chapter.
- d) The remaining documents, identified as documents (k) through (t) as listed in Chapter 4, Section C "Proposal Assembly/Presentation Order", must be consolidated into one Word or PDF file and attached to Item 8 (page 56) within the "Research and Related Other Project Information" form.

The proposer is responsible for ensuring that the proposal, whether submitted via Grants.gov or by hardcopy, is correct and complete and that it conforms to the requirements of the TIP Federal Funding Opportunity notice and TIP Proposal Preparation Kit. Proposals that deviate substantially from these guidelines or that omit required information may be found unresponsive and may not be considered for further review or funding. Please read, understand, and follow the Application Instructions that are available once you register and open the TIP application form on Grants.gov.

6. Contact Information. For further information or questions regarding applying electronically contact Christopher Hunton at 301-975-5718 or at christopher.hunton@nist.gov. For technical questions related to the NIST-1022 and associated forms, contact Deborah Dubeau at 301-975-3462 or at deborah.dubeau@nist.gov.

Proposers are strongly encouraged to start early and not wait until the approaching due date before logging on and reviewing the instructions for submitting a proposal through Grants.gov. Proposers should save and print the proof of submission they receive from Grants.gov. If problems occur while using Grants.gov, the proposer is advised to (a) print any error message received, and (b) call Grants.gov directly at 1-800-518-4726 for immediate assistance. Assistance from

the Grants.gov Help Desk will be available around the clock every day, with the exception of the Federal holidays. Help Desk service will resume at 7:00 a.m. Eastern Time the day after a Federal holiday. For assistance with using the Grants.gov, you may also contact support@grants.gov.

EXHIBITS

1. Instructions for Filling Out the SF-424 (R&R) Form "Application for Federal Assistance"
2. Instructions for Filling Out the Research & Related Other Project Information Form
3. Instructions for Filling Out the NIST-1022 Form, "Proposal Information Sheet"
4. Instructions for Filling Out the NIST-1022A Form, "Other Joint Venture Members"
5. Instructions for Filling Out the NIST-1022B Form, "Contractors or Subrecipients Information"
6. Instructions for Filling Out the NIST-1022C Form, "Budget Narrative"
7. Instructions for Filling Out the NIST-1022D Form, "Third Party In-Kind Contributions"
8. Instructions for Filling Out the NIST-1022E Form, "Estimated Multi-Year Budget – Single Company"
9. Instructions for Filling Out the NIST-1022F Form, "Estimated Multi-Year Budget – Joint Venture"
10. Instructions for Filling Out the NIST-1022G Form, "Foreign-Owned Company Questionnaire"
11. Instructions for Filling Out the NIST-1022H Form, "R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire"
12. Examples: Entering Multiple Sources of Funds



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**APPLICATION FOR FEDERAL ASSISTANCE
 SF 424 (R&R)**

		3. DATE RECEIVED BY STATE	State Application Identifier
		<input type="text"/>	<input type="text"/>
1. * TYPE OF SUBMISSION		4. a. Federal Identifier	
<input type="checkbox"/> Pre-application <input type="checkbox"/> Application <input type="checkbox"/> Changed/Corrected Application		<input type="text"/>	
2. DATE SUBMITTED		b. Agency Routing Number	
<input type="text"/>	Applicant Identifier	<input type="text"/>	
<input type="text"/>	<input type="text"/>		
5. APPLICANT INFORMATION			
			* Organizational DUNS:
<input type="text"/>			
* Legal Name: <input type="text"/>			
Department: <input type="text"/>		Division: <input type="text"/>	
* Street1: <input type="text"/>			
Street2: <input type="text"/>			
* City: <input type="text"/>		County / Parish: <input type="text"/>	
* State: <input type="text"/>		Province: <input type="text"/>	
* Country: <input type="text"/>		* ZIP / Postal Code: <input type="text"/>	
<input type="text"/>		<input type="text"/>	
USA: UNITED STATES			
Person to be contacted on matters involving this application			
Prefix: <input type="text"/>	* First Name: <input type="text"/>	Middle Name: <input type="text"/>	
* Last Name: <input type="text"/>	Suffix: <input type="text"/>		
* Phone Number: <input type="text"/>	Fax Number: <input type="text"/>		
Email: <input type="text"/>			
6. * EMPLOYER IDENTIFICATION (EIN) or (TIN): <input type="text"/>			
7. * TYPE OF APPLICANT: <input type="text"/>			
Please select one of the following			
Other (Specify): <input type="text"/>			
Small Business Organization Type <input type="checkbox"/> Women Owned <input type="checkbox"/> Socially and Economically Disadvantaged			
8. * TYPE OF APPLICATION:		If Revision, mark appropriate box(es).	
<input type="checkbox"/> New <input type="checkbox"/> Resubmission <input type="checkbox"/> Renewal <input type="checkbox"/> Continuation <input type="checkbox"/> Revision		<input type="checkbox"/> A. Increase Award <input type="checkbox"/> B. Decrease Award <input type="checkbox"/> C. Increase Duration <input type="checkbox"/> D. Decrease Duration <input type="checkbox"/> E. Other (specify): <input type="text"/>	
* Is this application being submitted to other agencies? Yes <input type="checkbox"/> No <input type="checkbox"/> What other Agencies? <input type="text"/>			
9. * NAME OF FEDERAL AGENCY:		10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER:	
<input type="text"/>		<input type="text"/>	
		TITLE: <input type="text"/>	
11. * DESCRIPTIVE TITLE OF APPLICANT'S PROJECT:			
<input type="text"/>			
12. PROPOSED PROJECT:		* 13. CONGRESSIONAL DISTRICT OF APPLICANT	
* Start Date	* Ending Date	<input type="text"/>	
<input type="text"/>	<input type="text"/>		
14. PROJECT DIRECTOR/PRINCIPAL INVESTIGATOR CONTACT INFORMATION			
Prefix: <input type="text"/>	* First Name: <input type="text"/>	Middle Name: <input type="text"/>	
* Last Name: <input type="text"/>	Suffix: <input type="text"/>		
Position/Title: <input type="text"/>			
* Organization Name: <input type="text"/>			
Department: <input type="text"/>		Division: <input type="text"/>	
* Street1: <input type="text"/>			
Street2: <input type="text"/>			
* City: <input type="text"/>		County / Parish: <input type="text"/>	
* State: <input type="text"/>		Province: <input type="text"/>	
* Country: <input type="text"/>		* ZIP / Postal Code: <input type="text"/>	
<input type="text"/>		<input type="text"/>	
USA: UNITED STATES			
* Phone Number: <input type="text"/>	Fax Number: <input type="text"/>		
Email: <input type="text"/>			

Exhibit 1. The SF-424 (R&R) Form.

<p>15. ESTIMATED PROJECT FUNDING</p> <p>a. Total Federal Funds Requested <input style="width: 150px;" type="text"/></p> <p>b. Total Non-Federal Funds <input style="width: 150px;" type="text"/></p> <p>c. Total Federal & Non-Federal Funds <input style="width: 150px;" type="text"/></p> <p>d. Estimated Program Income <input style="width: 150px;" type="text"/></p>	<p>16. * IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?</p> <p>a. YES <input type="checkbox"/> THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON:</p> <p>DATE: <input style="width: 100px;" type="text"/></p> <p>b. NO <input type="checkbox"/> PROGRAM IS NOT COVERED BY E.O. 12372; OR <input type="checkbox"/> PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW</p>
<p>17. By signing this application, I certify (1) to the statements contained in the list of certifications* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances * and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)</p> <p><input type="checkbox"/> * I agree</p> <p><small>* The list of certifications and assurances, or an Internet site where you may obtain this list, is contained in the announcement or agency specific instructions.</small></p>	
<p>18. SFLLL or other Explanatory Documentation</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Add Attachment Delete Attachment View Attachment </div>	
<p>19. Authorized Representative</p> <p>Prefix: <input style="width: 80px;" type="text"/> * First Name: <input style="width: 250px;" type="text"/> Middle Name: <input style="width: 180px;" type="text"/></p> <p>* Last Name: <input style="width: 450px;" type="text"/> Suffix: <input style="width: 100px;" type="text"/></p> <p>* Position/Title: <input style="width: 350px;" type="text"/></p> <p>* Organization: <input style="width: 450px;" type="text"/></p> <p>Department: <input style="width: 220px;" type="text"/> Division: <input style="width: 220px;" type="text"/></p> <p>* Street1: <input style="width: 420px;" type="text"/></p> <p>Street2: <input style="width: 420px;" type="text"/></p> <p>* City: <input style="width: 260px;" type="text"/> County / Parish: <input style="width: 220px;" type="text"/></p> <p>* State: <input style="width: 430px;" type="text"/> Province: <input style="width: 220px;" type="text"/></p> <p>* Country: <input style="width: 420px;" type="text" value="USA: UNITED STATES"/> * ZIP / Postal Code: <input style="width: 220px;" type="text"/></p> <p>* Phone Number: <input style="width: 180px;" type="text"/> Fax Number: <input style="width: 180px;" type="text"/></p> <p>* Email: <input style="width: 450px;" type="text"/></p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>* Signature of Authorized Representative</p> <div style="border: 1px solid black; padding: 2px; text-align: center;">Completed on submission to Grants.gov</div> </div> <div style="width: 45%;"> <p>* Date Signed</p> <div style="border: 1px solid black; padding: 2px; text-align: center;">Completed on submission to Grants.gov</div> </div> </div>	
<p>20. Pre-application</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Add Attachment Delete Attachment View Attachment </div>	

INSTRUCTIONS FOR FILLING OUT THE SF-424 (R&R) Form

These instructions for the SF-424 (R&R) form have been developed for use under the Technology Innovation Program (TIP) and are only applicable for proposals submitted to TIP. Some of the items are required and some are optional. Required items are identified with an asterisk on the form and are specified in the instructions below.

1. Type of Submission (Required): Select Application.
2. Date Submitted/Applicant Identifier: Enter date of proposal submission. Applicant Identifier: Not applicable; leave blank.
3. Date Received by State & State Application Identifier: Not applicable; leave blank.
4.
 - a. Federal Identifier: Enter the TIP competition number provided in the Federal Funding Opportunity notice that corresponds to the competition for which you are applying.
 - b. Agency Routing Number: Leave blank.
5. Applicant Information/Organizational DUNS (Required): Enter the organization's 9-digit Dun and Bradstreet Data Universal Numbering System (DUNS) received from Dun and Bradstreet. Information on obtaining a DUNS number is available at <http://www.nist.gov/tip/helpful-resources.cfm>. The applicants' nine-digit DUNS number must be consistent with the information on the Central Contractor Registration (CCR) (www.ccr.gov) and Automated Standard Application for Payment System (ASAP). For complex organizations with multiple DUNS numbers, the DUNS number MUST be the number for the applying entity. Entities that provide incorrect/inconsistent DUNS numbers may experience significant delays in submitting their proposals through Grants.gov and receiving funds if the proposal is selected for funding. Fill in Applicant Information as requested (i.e., name, address, etc.)
6. Employer Identification (Required): Enter the nine-digit Employer or Taxpayer Identification Number (EIN or TIN) as assigned by the Internal Revenue Service. For instructions on how to obtain an EIN, see <http://www.nist.gov/tip/helpful-resources.cfm>. The applicants nine-digit EIN or TIN must be consistent with the information on the Central Contractor Registration (CCR) (www.ccr.gov) and Automated Standard Application for Payment System (ASAP). For complex organizations with multiple EIN or TIN numbers, the EIN or TIN number MUST be the number for the applying entity. Entities that provide incorrect/inconsistent EINS or TINS may experience significant delays in submitting their proposals through Grants.gov and receiving funds if the proposal is selected for funding.
7. Type of Applicant: Click on the dropdown menu and enter the appropriate type. Large businesses are not eligible to apply.
8. Type of Application (Required): Select "New" if not previously submitted to a prior TIP competition. Select "Resubmission" if proposal was submitted to a prior TIP competition.
9. Name of Federal Agency (Required): Enter NIST.
10. Catalog of Federal Domestic Assistance Number/Title: Enter 11.616 TIP.
11. Descriptive Title of Applicant's Project (Required): Enter a brief descriptive title of the project.
12. Proposed Project Start and End Dates (Required): Self explanatory.
13. Congressional District of Applicant (Required): Self explanatory.
14. Project Director/Principal Investigator Contact Information: Self explanatory.
15. Estimated Project Funding (Required):
 - a. Total Federal Funds Requested: Enter total funds requested from TIP (i.e., for Single applicant, NIST-1022E, line H, Total; for Joint Venture, NIST-1022F, line H, Total).
 - b. Total Non-Federal Funds: (i.e., for Single applicant, NIST-1022E, lines I+J, Total; for Joint Venture, NIST-1022F, lines I+J, Total).
 - c. Total Federal & Non-Federal Funds: (i.e., for Single applicant, NIST-1022E, line K, Total; for Joint Venture, NIST-1022F, line K, Total).
 - d. Estimated Program Income: Enter 0
16. Is Application Subject to Review by State Under Executive Order 12372 Process? Select "NO. Program is not covered by E.O. 12372"
17. Self explanatory.
18. SFLLL or other Explanatory Documentation. Not applicable; leave blank.
19. Authorized Representative (Required): Self explanatory.
20. Pre-Application: Not applicable; leave blank.



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RESEARCH & RELATED Other Project Information

1. * Are Human Subjects Involved? Yes No

1.a If YES to Human Subjects

Is the Project Exempt from Federal regulations? Yes No

If yes, check appropriate exemption number. 1 2 3 4 5 6

If no, is the IRB review Pending? Yes No

IRB Approval Date:

Human Subject Assurance Number:

2. * Are Vertebrate Animals Used? Yes No

2.a. If YES to Vertebrate Animals

Is the IACUC review Pending? Yes No

IACUC Approval Date:

Animal Welfare Assurance Number

3. * Is proprietary/privileged information included in the application? Yes No

4.a. * Does this project have an actual or potential impact on the environment? Yes No

4.b. If yes, please explain:

4.c. If this project has an actual or potential impact on the environment, has an exemption been authorized or an environmental assessment (EA) or environmental impact statement (EIS) been performed? Yes No

4.d. If yes, please explain:

5. * Is the research performance site designated, or eligible to be designated, as a historic place? Yes No

5.a. If yes, please explain:

6. * Does this project involve activities outside of the United States or partnerships with international collaborators? Yes No

6.a. If yes, identify countries:

6.b. Optional Explanation:

7. * Project Summary/Abstract

8. * Project Narrative

9. Bibliography & References Cited

10. Facilities & Other Resources

11. Equipment

12. Other Attachments

INSTRUCTIONS FOR FILLING OUT THE RESEARCH & RELATED OTHER PROJECT INFORMATION FORM

The Research & Related Other Project Information form has been adapted for use by the Technology Innovation Program (TIP) for proposals submitted to TIP. For electronic submissions of proposals, this is a mandatory, predefined form that you will use to attach the various documents that make up your proposal. For hardcopy submissions of proposals, this is also a required form. Some of the items are required and some are optional. Required items are identified with an asterisk on the form and are specified in the instructions below.

1 - 5a For hardcopy and electronic submissions these items are self explanatory.

6 - 12 For hardcopy submissions, no further entries required; leave blank.

For electronic submissions these entries are used to include the required attachments that make up your proposal. Instructions for each item are as follows:

7. Project Summary/Abstract: Use this field to attach and submit your NIST-1022 form (pdf file). Click on Add Attachment that opens the "Attach File" window. Locate and highlight your completed NIST-1022 form (pdf file) that is on your computer and click on the Open button to attach this file.

NOTE: It is important that you view the file once you have attached it and verify that the information that you have entered appears and that it is not a blank document.

8. Project Narrative: Click on Add Attachment that opens the "Attach File" window. Locate and highlight your completed Project Narrative (a single file addressing Scientific and Technological

Merit, including bibliographic references and letters of commitment) file that is on your computer and click on the Open button to attach this file.

NOTE: It is important that you view the file once you have attached it and verify that the information that you have entered appears and that it is not a blank document.

9 - 12 Leave blank.

Submitting to Grants.Gov

When you have completed attaching all of your forms, click on the Close Form button and return to Grant Application Package.

Click on the Check for Errors button at the top of the screen and correct any errors if indicated.

After your application package is complete, click on the Save button at the top of the screen. This will save your application (in PDF format) on your computer. NOTE: if you do not save your application at this stage you may have to reenter your data and reattach your files.

When you are ready to submit your proposal application, click on the Submit button at the top of the screen. If the Submit button is grayed out you need to click on the Check for Errors button and the Save button. Note: if your browser has a "pop-up" blocker installed, you may have to hold the Ctrl key down while clicking on the Submit button.

The next screen that appears asks you to enter your Username and password. When you enter this the next screen will ask "Do you wish to sign and submit this application?" When you are ready to do so, click on the Sign and Submit Application button.

The next screen that appears is the confirmation page. This is evidence of your electronic submission to TIP through Grants.gov. Print this page and keep it in a safe location. Click on Close to exit Grants.gov.

NIST-1022
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

TECHNOLOGY INNOVATION PROGRAM (TIP) PROPOSAL INFORMATION SHEET

TIP Ver. 2.2

NOTE: This application/questionnaire contains collection of information requirements subject to the Paperwork Reduction Act (PRA). Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subject to penalty for failure to comply with, a collection of information subject to the requirements of the PRA. The estimated response time for this application questionnaire is 37 hours. The response time includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

1. COMPETITION #:	2. LEGAL NAME OF SUBMITTING ORGANIZATION
<input type="text"/>	<input type="text"/>

3. PROPOSAL TYPE <input type="checkbox"/> SINGLE COMPANY <input type="checkbox"/> JOINT VENTURE	4. LEAD ORGANIZATION TYPE <input type="text"/>	5. PROJECT DURATION <input type="text"/>	6. WILL CONTRACTORS OR SUBRECIPIENTS BE USED? <input type="text"/>
---	---	---	---

7. Does the single company or if a joint venture, any joint venture member, have a parent company outside the United States? (If yes, complete form NIST-1022G, Foreign Owned Company Questionnaire, for each such company.)

8. Is the single company or if a joint venture, any joint venture member, majority owned by non-U.S. citizens? (If yes, explain below.)

9. Is the single company or if a joint venture, any joint venture member, subject to control by non-U.S. citizens? (If yes, explain below.)

10. Will any R&D work be performed outside the United States? (If yes, complete form NIST-1022H, R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire.)

11. Is the company or if a joint venture, any joint venture member, delinquent on any federal debt? (If yes, explain below.)

12. Are there any third party in-kind contributions?

13. NONPROPRIETARY PROPOSAL ABSTRACT

14. In addition to the certification on item 18 of the SF-424 (R&R), I agree with the certification statements in the instructions to this item 14.

Show Next Forms

Exhibit 3. The NIST-1022 Form, "Proposal Information Sheet".

INSTRUCTIONS FOR FILLING OUT THE NIST-1022 FORM “PROPOSAL INFORMATION SHEET”

Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to, a penalty for failure to comply with a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number. The reason for collecting this information is for NIST to be able to perform the appropriate technical and impact reviews of a TIP proposal. The information obtained will assist in determining eligibility for federal financial assistance. Responses to the collection of information are required to be considered for a TIP award.

The NIST-1022 “Family of Forms” consists of the NIST-1022 form “TIP Proposal Information Sheet,” which is considered the first page, and the NIST-1022A-H forms. The NIST-1022 “Family of Forms” is available as a dynamic, interactive set of Adobe PDF forms where answers supplied on the first page of the NIST-1022 form are used to generate the specific set of additional forms needed to meet proposal submission needs. Data entered in the “Family of Forms” propagates through the entire set of forms to minimize duplicative data entry. **Due to the dynamic nature of these forms, changes in key data elements (explained below) will cause form regeneration and may result in the loss of previously entered data if the data has been entered in an ad hoc manner.** We strongly encourage you to finalize all project information before data entry to avoid potential loss of data.

This form is designed to make data submission easier and more accurate. However, there are several caveats that should be clearly understood before beginning data entry.

- a. After data is entered on the NIST-1022 form, clicking the “Show Next Forms” button at the bottom of the page locks items 3 and 5 on this form and generates the forms needed to complete your proposal. If there is a change in the proposal type (item 3) or the project duration (item 5), **ALL information/data previously entered on the NIST-1022A-H forms WILL BE LOST** since new responses to these questions will generate new forms.
- b. Deleting or adding a joint venture member after the NIST-1022C form “Budget Narrative” is generated will invalidate the information and the form will need to be started again.
- c. Once the NIST-1022C form “Budget Narrative” is generated for a joint venture proposal, the number of joint venture members cannot be changed without the regeneration of the entire NIST-1022C form. In order to change the number of joint venture members from the number initially specified, click on the “Unlock Items 3 and 5” button on the first page of the NIST-1022 form. This will reset the forms and ALL information/data previously entered on the NIST-1022A-H forms WILL BE LOST and will have to be reentered. Therefore, if there is any doubt about

the number of joint venture members, delay generating and completing the NIST-1022C form until this matter is resolved to avoid starting over.

- d. Review all the forms and plan data entry to minimize change so time and data are not lost. It is recommended that you turn off the auto complete feature in your browser if you are using it to complete Adobe forms.
- e. The single PDF file containing these forms must remain intact and the PDF format must remain unaltered. **Altering the PDF form may invalidate your proposal.**

Once complete, the PDF file containing the NIST-1022 “Family of Forms” must be submitted electronically by attaching its link to item 7 of the SF-424 “Research & Related Other Project Information” form. If paper copies are submitted, the entire NIST-1022 “Family of Forms” that are generated electronically by your answers on the NIST-1022 form are to be submitted. **Failure to submit a complete and accurate set of forms may result in disqualification.**

Instructions for each item on the NIST-1022 form follow:

1. Enter the TIP competition number provided in the Federal Funding Opportunity notice that corresponds to the competition for which you are applying.
2. Enter the legal name of the organization submitting the proposal. You cannot get past the NIST-1022 form to see the other NIST-1022 “Family of Forms” without entering a legal name in item 2. The legal name entered in this item must be the same as the legal name shown on item 5 of the SF-424 (R&R). If this is a joint venture proposal the lead company name must appear in item 2 of the NIST-1022 form. The joint venture members should be identified on the NIST-1022A form “Other Joint Venture Members.”
3. Select Proposal type by clicking the box next to Single Company or Joint Venture. Once the appropriate proposal type is clicked, the applicable Budget Narrative and Multi-Year Budget forms will be generated corresponding to the answer given, as well as the NIST-1022A form, which must be completed if Joint Venture is clicked.
4. Select lead organization type from the drop down box.
5. Enter the number of years and months for the duration of this project. The answer to this question will impact the Budget Narrative and Multi-Year Budget forms generated.
6. Select “Yes” or “No” from the drop down box as appropriate. Selecting “Yes” will generate the NIST-1022B form, which

must be completed if contractors and/or subrecipients are used on the project.

7. Select "Yes" or "No" from the drop down box as appropriate. Selecting "Yes" will generate the NIST-1022G form, which must be completed.
8. Select "Yes" or "No" as appropriate. Selecting "Yes" requires an explanation in the text box that will pop up.
9. Select "Yes" or "No" as appropriate. Selecting "Yes" requires an explanation in the text box that will pop up.
10. Select "Yes" or "No" from the drop down box as appropriate. Selecting "Yes" will generate the NIST-1022H form, which must be completed.
11. Select "Yes" or "No" as appropriate. Selecting "Yes" requires an explanation in the text box. If the company is delinquent on any federal debt, including the Internal Revenue Service (IRS), provide the amount of the debt, the name of the federal agency to which the debt is owed, how old the debt is, the circumstances surrounding the establishment of the debt, and why the debt has not been paid.
12. Select "Yes" or "No" as appropriate. Note that in-kind contributions can only come from third parties. Selecting "Yes" requires an explanation in the text box. Selecting "Yes" will generate the NIST-1022D form, which must be completed.
13. Enter a nonproprietary proposal abstract of the proposed work in the text box provided. As part of the abstract, include a statement of the technical problem addressed in the proposal. The text box is limited to the visible space in the box.
14. The authorized company representative who certifies the form must have delegated fiduciary authority. By checking this box the company representative agrees to the certification on item 17 of the SF-424 (R&R) form, certifies the commitment of cost sharing, and attests to the accuracy of the proposal. The certification also signifies that the company representative has coordinated with top management within their own company and if a joint venture, with all companies/organizations identified as joint venture members about their commitment and cost sharing to the proposed project.

IMPORTANT REMINDER: When the Show Next Forms button at the bottom of this form is clicked, items 3 and 5 are "locked" and the required applicable forms are generated for completion. They can be unlocked but this will cause the loss of forms previously generated and data entered. For example, when item 3 Proposal Type is clicked as a "Single Company," the applicable NIST-1022C form and NIST-1022E form are automatically generated. If "Joint Venture" is clicked, the NIST-1022A form, the applicable NIST-1022C form, and the NIST-1022F form are automatically generated.



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NIST-1022A
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
OTHER JOINT VENTURE MEMBERS**

Show Budget Narrative

Add Joint Venture Member

1. LEGAL NAME, ADDRESS, CONTACT INFORMATION & CONGRESSIONAL DISTRICT OF MEMBER #1 Remove
NAME OF CONTACT

ORG:	<input type="text"/>	PREFIX:	<input type="text"/>
STREET 1:	<input type="text"/>	FIRST NAME:	<input type="text"/>
STREET 2:	<input type="text"/>	LAST NAME:	<input type="text"/>
CITY:	<input type="text"/>	MIDDLE NAME:	<input type="text"/>
COUNTY:	<input type="text"/>	SUFFIX:	<input type="text"/>
STATE:	<input type="text"/>	POSITION/TITLE:	<input type="text"/>
ZIP:	<input type="text"/>	DEPARTMENT:	<input type="text"/>
COUNTRY:	UNITED STATES <input type="text"/>	DIVISION:	<input type="text"/>
PHONE:	<input type="text"/>	CONGRESSIONAL DISTRICT:	<input type="text"/>
FAX:	<input type="text"/>		
EMAIL:	<input type="text"/>		

2. ORGANIZATION TYPE

(Pick one)

(Check if applicable)

- SMALL-SIZED BUSINESS NONPROFIT RESEARCH INSTITUTE FOREIGN-OWNED, U.S.-LOCATED COMPANY
- MEDIUM-SIZED BUSINESS INSTITUTION OF HIGHER EDUCATION
- LARGE-SIZED BUSINESS NATIONAL LABORATORY
- GOVERNMENTAL LABORATORY (not including NIST)
- STATE OR LOCAL GOVERNMENT

3. EMPLOYER IDENTIFICATION NUMBER: 4. DUN AND BRADSTREET NUMBER:

INSTRUCTIONS FOR FILLING OUT THE NIST-1022A FORM “OTHER JOINT VENTURE MEMBERS”

This form must be submitted with each joint venture proposal to identify specific information on each joint venture member (excluding the organization submitting the proposal since that information is provided on the NIST-1022 form “TIP Proposal Information Sheet.”)

Once item 3, Proposal Type, of the NIST-1022 form, is clicked as a Joint Venture, the NIST-1022A form “TIP Joint Venture Members” is automatically generated. You must then enter data for each joint venture member. To generate additional pages of the NIST-1022A form, click the “Add Joint Venture Member” button after data is entered for a joint venture member.

IMPORTANT: After completing data for all joint venture members, you **MUST** then click the “Show Budget Narrative” button in order to generate NIST-1022C form(s).

Reminder: Once you click on the “Show Budget Narrative” button, you cannot add or delete Joint Venture members until you purge all data by clicking on the “Unlock Items 3 and 5” button found on the NIST-1022 form. This will reset the forms and ALL information/data previously entered on the NIST-1022A through NIST-1022H forms WILL BE LOST and will have to be reentered. Therefore, if there is any doubt about the number of joint venture members, delay generating and completing the NIST-1022C form “Budget Narrative” until this matter is resolved to avoid starting over.

Review all the forms and plan data entry to minimize change so time and data are not lost. It is recommended that you turn off the auto complete feature in your browser if you are using it to complete Adobe forms.

Categories of joint venture members are not adequate identification. For example, do not list a “manufacturing company,” a “university,” or a “hospital.” You must provide the legal name and contact information of each joint venture member. Include only those organizations to be bound by the Joint Venture Agreement. Do not list contractors on this form, as information about proposed contractors should be provided on the NIST-1022B form. Additionally, do not list informal collaborators.

1. Enter the organization’s legal name, address, contact information (individual in the organization to be contacted regarding technical portion of the proposal), and Congressional District (home office). **DO NOT USE A POST OFFICE BOX.**
2. Self-explanatory.
3. Enter the joint venture member’s employer identification number (EIN). For instructions on how to obtain an EIN, see <http://www.nist.gov/tip/helpful-resources.cfm>.
4. Enter the joint venture member’s Dun and Bradstreet (D&B) number. For instructions on how to obtain a D&B number, see <http://www.nist.gov/tip/helpful-resources.cfm>.

NIST-1022B
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
CONTRACTORS OR SUBRECIPIENTS**

Add Contractor or Subrecipient

1. CONTRACTOR SUBRECIPIENT Remove

2. LEGAL NAME, ADDRESS, CONTACT INFORMATION & CONGRESSIONAL DISTRICT

<p>NAME: <input type="text"/></p> <p>STREET 1: <input type="text"/></p> <p>STREET 2: <input type="text"/></p> <p>CITY: <input type="text"/></p> <p>COUNTY: <input type="text"/></p> <p>STATE: <input type="text"/> <input type="text"/></p> <p>COUNTRY: UNITED STATES <input type="text"/></p> <p>PHONE: <input type="text"/></p>	<p>NAME OF CONTACT</p> <p>PREFIX: <input type="text"/></p> <p>FIRST NAME: <input type="text"/></p> <p>LAST NAME: <input type="text"/></p> <p>MIDDLE NAME: <input type="text"/></p> <p>SUFFIX: <input type="text"/></p> <p>POSITION/TITLE: <input type="text"/></p> <p>DEPARTMENT: <input type="text"/></p> <p>DIVISION: <input type="text"/></p>
---	--

RECIPIENT OR JV MEMBER:

3. ORGANIZATION TYPE

(Pick one) (Check if applicable)

<input type="checkbox"/> SMALL-SIZED BUSINESS	<input type="checkbox"/> NONPROFIT RESEARCH INSTITUTE	<input type="checkbox"/> FOREIGN-OWNED, U.S.-LOCATED COMPANY
<input type="checkbox"/> MEDIUM-SIZED BUSINESS	<input type="checkbox"/> INSTITUTION OF HIGHER EDUCATION	<input type="checkbox"/> FOREIGN-LOCATED ENTITY
<input type="checkbox"/> LARGE-SIZED BUSINESS	<input type="checkbox"/> NATIONAL LABORATORY	
<input type="checkbox"/> GOVERNMENTAL LABORATORY (not including NIST)		
<input type="checkbox"/> STATE OR LOCAL GOVERNMENT		

4. ESTIMATED TOTAL AMOUNT OF CONTRACT FOR CONTRACTOR OR SUBRECIPIENT:

5. ESTIMATED AMOUNT OF COST SHARE PROVIDED BY SUBRECIPIENT
(Contractors may not provide cost share)

DIRECT:

INDIRECT:

6. DESCRIBE SCOPE OF WORK AND IDENTIFY WHICH TASK OR TASKS IN R&D PLAN REQUIRE CONTRACTOR'S OR SUBRECIPIENT'S INVOLVEMENT.

7. IS THIS A SOLE SOURCE CONTRACT OR SUBRECIPIENT?

NO YES (If yes, explain; e.g., is this the only contractor or subrecipient that can perform the work, what is the nature of its unique capabilities/experience, etc.)

8. DOES THE CONTRACTOR OR SUBRECIPIENT HAVE ANY FINANCIAL OR OTHER INTEREST IN THE SUBMITTING ORGANIZATION?

NO YES (If yes, briefly explain what type and how much.)

9. DOES THE SUBMITTING ORGANIZATION HAVE ANY FINANCIAL OR OTHER INTEREST IN THE CONTRACTOR OR SUBRECIPIENT?

NO YES (If yes, briefly explain what type and how much.)

Exhibit 5. The NIST-1022B Form, "Contractors or Subrecipient Information".

INSTRUCTIONS FOR FILLING OUT THE NIST-1022B FORM “CONTRACTORS OR SUBRECIPIENTS”

1. A NIST-1022B form is needed for each contractor and/or each subrecipient involved in the project. Select the type of arrangement involved and fill out the required information. To generate another NIST-1022B form for another entity, click on the Add Contractor or Subrecipient button.
2. Self explanatory. If a contractor’s or subrecipient’s identity is undetermined, enter “Undetermined” in the NAME box. For a contractor, enter the name of the recipient or JV member that will engage the contractor. For a subrecipient, enter the name of the recipient or joint venture member that will issue the subaward to the “subrecipient.”
3. Click the appropriate box to identify the contractor’s or subrecipient’s type of organization. Also click the appropriate box if foreign-owned or foreign-located.
4. Enter the total amount of the contract or subaward. This is the amount of funds that the contractor or subrecipient will receive over the life of the TIP award.
5. If the subrecipient will be providing funds that go towards the recipient’s cost- share requirement, enter the total amount of cost- share funds to be provided over the life of the TIP award that go towards covering the recipient’s direct and/or indirect costs.
6. Briefly describe the scope of work and identify which task(s) in the R&D plan will be performed by the contractor or subrecipient.
7. Click the appropriate box to identify if the contractor or subrecipient will be selected on a sole source basis. Contractors or subrecipients should be selected on a competitive basis pursuant to the Procurement Standards in 15 CFR Part 14.

If the contractor or subrecipient is to be selected on a sole source basis, provide a brief justification for selection on a noncompetitive basis. In writing a sole source justification, be sure to refer to the Procurement Standards in 15 CFR Part 14 and address basis for selecting noncompetitively.

8. If the contractor or subrecipient has any financial or other interest in the submitting organization or if a joint venture, in any joint venture member, briefly explain what type and how much.
9. If the submitting organization or if a joint venture, any joint venture member, has any financial or other interest in the contractor or subrecipient, briefly explain what type and how much.

NIST-1022C
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U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
BUDGET NARRATIVE**

Organization Name: Year:

A. Personnel			Add Line	Remove Line
Employee Name	Position Title	Annual Salary	Percentage of Time	Cost
				\$0
TOTAL:				\$0

B. Travel		Add Line	Remove Line
Purpose of Travel	Destination	Computation	Cost
TOTAL:			\$0

Justification for foreign travel and/or foreign conference(s) [include an explanation of how the foreign travel and/or foreign conference (s) are specifically related to the R&D activities of the TIP project (i.e., how will the information gathered contribute to funded tasks), why the information cannot be obtained in the United States, and summarize conference agenda or topics for meeting with key experts (name and expertise) at the conference, etc.]:

Justification for domestic conference(s) [include an explanation of how the conference(s) specifically relates to the R&D activities of the TIP project (i.e., how will the information gathered contribute to funded task(s), summarize conference agenda or topics for meeting with key experts (name and expertise) at the conference, etc.]:

C. Equipment	Add Line	Remove Line
Item	Computation	Cost
TOTAL:		\$0

Justification for each equipment item exceeding \$100,000, to be purchased outside the United States, and/or any construction costs:

D. Materials/Supplies	Add Line	Remove Line
Item	Computation	Cost
TOTAL:		\$0

E. Contractors		Add Line	Remove Line
Name of Contractor	Service Provided	Computation	Cost
SUBTOTAL:			\$0

If contractor's fees are in excess of \$550 per day, justify here:

Exhibit 6. The NIST-1022C Form, "Budget Narrative"

Contractor Expenses		Add Line	Remove Line
Name of Contractor	Expense	Computation	Cost
SUBTOTAL:			\$0
TOTAL:			\$0

F. Other		
Description	Computation	Cost
AUDIT		
<input type="checkbox"/> Check here if audit is part of indirect costs. (If checked, enter 0 for AUDIT costs above.) <input type="checkbox"/> Check here if cognizant federal audit agency will perform audits and provide names of agency:		
<input type="text"/>		

	Add Line	Remove Line	
Description - Other Additional Costs	Computation	Cost	
	Add Line	Remove Line	
Subrecipient Direct Cost	Service Provided	Computation	Cost
TOTAL:			\$0
TOTAL PROJECT DIRECT COST:			\$0

G. Indirect Costs

Percentage Rate: Recipient Organization Only

Check here if the indirect cost rate has been negotiated and approved by a cognizant federal agency and a copy of the agreement is included in proposal.

Check here if the indirect cost rate has not been negotiated and approved by a cognizant federal agency.

RECIPIENT INDIRECT COST:

SUBRECIPIENT(S) INDIRECT COST:

TOTAL PROJECT INDIRECT COST:

TOTAL PROJECT COST (total project direct + total project indirect):

H. Source of Funds

FEDERAL FUNDS (direct costs only):

NONFEDERAL FUNDS (direct costs only):

NONFEDERAL FUNDS (indirect costs only, which must be the same amount in section G.):

TOTAL PROJECT FUNDS (federal direct + nonfederal direct + nonfederal indirect): \$0

INSTRUCTIONS FOR FILLING OUT THE NIST-1022C FORM

“BUDGET NARRATIVE”

The Budget Narrative is used to determine reasonableness and allowability of costs in a TIP proposal. Proposed costs must be reasonable, allocable, and allowable in accordance with applicable federal cost principles and TIP guidelines. All figures must be rounded to the nearest dollar.

A Budget Narrative is required for each year of the project and for each joint venture participant, if a joint venture. Note that the data entered in the NIST-1022C form is populated automatically into the Section 1 of the NIST-1022E form “Estimated Multi-Year Budget – Single Company” or the NIST-1022F form “Estimated Multi-Year Budget – Joint Venture.”

As previously mentioned, the program automatically generates the appropriate number of NIST-1022C forms for each organization and each year of the project specified. For each NIST-1022C form generated, enter the following budget and source of funds data for the organization and year indicated at the top of the form.

A. Personnel. List each employee’s name, if available, position title, annual salary, and percentage of time (up to a 3 digit whole number, e.g., “100” for 100%, “75” for 75%, or “5” for 5%) to be devoted to the project. The total personnel cost will be calculated automatically. Compensation paid for employees must be consistent with that paid for similar work within the proposer’s organization and similar positions in related markets. Escalation rates for the out-years should be reasonable.

If unable to identify all of the personnel to be assigned to the project, state “To be determined” or “TBD” for each such employee under “Employee Name.” Use generic position titles such as “senior chemical engineer.” Nonemployees of the organization such as consultants and temps should NOT be included in this category; they should be included in Section E “Contractors.” Employees who are considered indirect labor should not be included as direct personnel costs.

B. Travel. Provide best estimates of essential travel under project. For each trip, provide purpose of travel, destination, computation and cost. Computation must include airfare, lodging, M&IE, and number of people per trip. For example your computation might look like this:

[air\$1000 + (hotel\$175 + M&IE\$64) x 2 days] x 2 people + car\$150

C. Equipment. Identify each item of equipment, computation (i.e., cost per item multiplied by number of items), and cost. In addition, be sure the need for the equipment is clearly stated in the technical plan. Any equipment item exceeding \$100,000, purchases outside the U.S., and/or any construction costs must be clearly identified and requires a strong justification.

D. Materials/Supplies. Provide a breakdown of each item/type of expendable materials/ supplies, computation (i.e., item multiplied by number of items), and cost. Office supplies, e.g., paper, pens, toner cartridges, etc., are normally included in indirect costs and should not be budgeted as direct costs. If they are not included in indirect costs, they must be used exclusively for the TIP project, and a justification and explanation must be provided.

E. Contractors. For each contractor identified on the NIST-1022B form, enter the name, if known, service to be provided, the fee computation (i.e., hourly or daily fee [8-hour day] multiplied by estimated time on the project) and cost. If contractor fees are in excess of \$550 per day, provide a justification. Enter any additional contractor expenses (e.g., travel, licensing, etc.), computation and cost.

F. Other. Describe in detail any other direct costs that do not fall within the direct cost categories above, computation (i.e., cost per item multiplied by number of items), and cost. Project audit costs should be included in this category unless it is part of the indirect costs or to be performed by a cognizant federal audit agency, e.g., DCAA. If it is part of indirect costs or to be performed by a cognizant federal audit agency, indicate it as such. Other costs might include fees, licensing expenses, fringe benefits, third party in-kind contributions and subrecipient direct costs.

For third party in-kind contributions, list each contribution, the method of valuation (under computation) and cost as it appears in the related NIST-1022D form “Third Party In-Kind Contributions.”

For subrecipient direct costs, enter the name of each subrecipient, the direct cost service to be provided, computation (e.g., hourly or daily fee [8-hour day] multiplied by estimated time on the project) and the subrecipient’s annual direct cost charged to the project.

Once direct costs are entered, the program will automatically calculate the Total Project Direct Cost for this organization and this year.

G. Indirect Costs. Specify the recipient’s current indirect cost rate(s) and annual indirect cost. Also indicate if a copy of a negotiated indirect cost rate agreement by a cognizant federal agency is included in your proposal. If an indirect cost rate has not been established by a cognizant federal agency, check the appropriate box.

If a subaward is issued, enter the subrecipient’s annual indirect cost charged to the project.

Once indirect costs are entered, the program will automatically calculate the Total Project Indirect Cost for this organization and this year.

The program will then automatically calculate the Total Project Cost (Total Project Direct Cost + Total Project Indirect Cost) for this organization and this year.

H. Source of Funds. Identify the source of project cost share funds associated with this organization and this year.

Enter the total annual amount of **FEDERAL** funds requested from TIP to cover direct costs only. Note that **FEDERAL** funds cannot be used to cover indirect costs.

Enter the total annual amount of **NONFEDERAL** funds provided by the proposer to cover direct costs. Note that any third party in-kind contributions should be included as part of **NONFEDERAL** funds (direct cost only).

Enter the annual amount of **NONFEDERAL** funds provided by the proposer to cover indirect costs.

The total annual project funds will then be calculated as the sum of **FEDERAL** funds for direct costs, **NONFEDERAL** funds for direct costs (if any), and **NONFEDERAL** funds for indirect costs.

Note that proposals that fail to identify both **Federal** and **Nonfederal** funds for each year of the proposed project will be considered unresponsive and incomplete, and may not be considered for funding.

For complex projects with multiple sources of cost sharing, please refer to the examples provided in the Exhibits following this chapter.

Once budgeted costs and sources of funds are entered, the program checks to see if Total Project Cost is equal to Total Project Funds for this organization and this year. If this is not so, a warning flag appears. Adjust cost data and/or source of funds data to equate Total Project Cost to Total Project Funds.

IMPORTANT: Once all budget and source of funds data are entered click on the "Generate Estimated Multi-Year Budget" button at the bottom of the page in order to generate the multi-year NIST-1022E form for Single Company proposals or the multi-year NIST-1022F form for Joint Venture proposals.

NIST-1022D
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
THIRD PARTY IN-KIND CONTRIBUTIONS**

[Add Another Form](#)
[Remove This Form](#)

A. Name of organization to receive in-kind contributions:

B. In-kind contributions will consist of the following as noted: Project Year:

[Add Line](#) [Remove Line](#)

Type of Personnel Service	Employee Name & Position Title	Percentage of Time	Method of Valuation	Cost

[Add Line](#) [Remove Line](#)

Equipment	Percentage of Use	Method of Valuation	Cost

[Add Line](#) [Remove Line](#)

Research Tools	Percentage of Use	Method of Valuation	Cost

[Add Line](#) [Remove Line](#)

Software	Percentage of Use	Method of Valuation	Cost

[Add Line](#) [Remove Line](#)

Materials/Supplies	Percentage of Use	Method of Valuation	Cost

[Add Line](#) [Remove Line](#)

Other	Percentage of Use	Method of Valuation	Cost

C. Total value of third-party in-kind contributions:

By submitting this form, the donor of the in-kind contributions certifies that it is authorized to legally commit the in-kind contributions listed above for the proposed Technology Innovation Program proposal, if funded, entitled:

Print Name and Title:

Name of Organization Donating In-Kind Contributions:

INSTRUCTIONS FOR FILLING OUT THE NIST-1022D FORM “THIRD PARTY IN-KIND CONTRIBUTIONS”

Third party in-kind contributions include but are not limited to equipment, research tools, software, supplies, and/or services. The value of in-kind contributions shall be determined in accordance with 15 CFR §14.23 and will be prorated according to the share of total use dedicated to the TIP project. Note that in-kind contributions provided by project participants are considered to be cash contributions. Pursuant to §296.10 “Third Party In-Kind Contribution of Research Services”, NIST shall not issue a TIP award to a single recipient or joint venture whose proposed budget includes the use of third party in-kind contribution of research as cost share, and no costs shall be incurred under such a TIP project, until such time as an agreement between the recipient and the third party contributor of in-kind research has been executed by both parties and approved by NIST.

- A. Name of organization to receive in-kind contributions. The entity identified in the TIP proposal that will be receiving the third party contributions should be identified here; not the entity that is donating the third party in-kind contributions.
- B. In-Kind Contributions. The appropriate type(s) of in-kind contributions, i.e., personnel service, equipment, research tools, software, materials/supplies, or other, must be provided in the appropriate section with the requested information in each column entered. Enter the project year during which these contributions will be received. Fill out one form for each applicable Project Year for each donating organization if there is more than one.
- C. Total value of third party in-kind contributions. Enter the sum of the last column (Cost) of each type of third party in-kind contribution.

By submitting this form, the donor of the in-kind contributions certifies that it is authorized to legally commit the in-kind contributions listed on the NIST-1022D form if the project is funded. The title of the TIP proposal, name and title of authorized donor organization official, name of organization donating in-kind contributions must be provided in the spaces indicated.

NIST-1022E
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**TECHNOLOGY INNOVATION PROGRAM (TIP)
ESTIMATED MULTI-YEAR BUDGET - SINGLE COMPANY**

	YEAR 1	YEAR 2	YEAR 3	TOTAL
1. COST CATEGORY				
A. Personnel salaries/wages				\$0
B. Travel				\$0
C. Equipment				\$0
D. Materials/supplies				\$0
E. Contractors				\$0
F. Other				\$0
G. Total direct costs (lines A thru F)	\$0	\$0	\$0	\$0
H. Total direct costs requested from TIP				\$0
I. Total direct costs shared by proposer (if any)				\$0
J. Total indirect costs absorbed by proposer				\$0
K. Total costs (lines G + J)	\$0	\$0	\$0	\$0
2. ALL SOURCES OF FUNDS (applicant, subrecipients, third party, state, etc.)				
			Remove Source Line	Add Source Line
A. FEDERAL (same as H)				\$0
B1				\$0
C. Total of all sources of funds (same as line K)	\$0	\$0	\$0	\$0
3. TASKS				
			Remove Task Line	Add Task Line
A1				\$0
B. Total of all tasks (same as line K)	\$0	\$0	\$0	\$0

INSTRUCTIONS FOR FILLING OUT THE NIST-1022E FORM “ESTIMATED MULTI-YEAR BUDGET – SINGLE COMPANY”

- 1. COST CATEGORY.** The data for Section 1 is populated automatically from previously entered data on the NIST-1022C form “Budget Narrative.” Therefore, no data entry is required for Section 1.
- 2. ALL SOURCES OF FUNDS.** The data for Section 2 must be entered manually and is not populated automatically. List in the leftmost column the names of all sources of funds individually. Line 2.A. is the TIP source of funding that is automatically populated from Section 1.H. of this form, therefore, no data entry is required. Click on the “Add Source Line” button and B.1. will automatically appear below 2.A. Enter the name of the of each nonfederal source of funds, e.g., submitting organization, third party in-kind contributions, state/local government, etc., followed by the source amounts under each column for the appropriate years. Click the “Add Source Line” after each source data is entered until all sources are listed. For example, if there are four nonfederal sources of funds, each source will be identified below line 2.A. as B.1, B.2., B.3., and B.4. The form will allow you to type past the end of the box in the left-most column, but only the visible data will be displayed and printed. Enter short references to sources in the visible part of this form. **The last line 2.C. of each column will be computed automatically and must match the total sources in line 1.K.**

Note that the examples provided at the end of this chapter provide additional information on how to enter sources of funds data for complex projects with multiple sources. Both single company and joint venture examples are included.

- 3. TASKS.** List in the left-most column, beginning with A1, all of the proposed tasks by name, and enter the associated costs in the appropriate rows and columns. (Click the “Add Task Line” button as needed to generate new lines.) Tasks should be a high-level aggregation of subtasks that have costs that can be easily updated as a group on an annual basis. TIP does not prescribe the appropriate number of tasks. Task names and amounts must correspond with those in the Gantt chart in the R&D plan discussion in the proposal.

If Section 2 “ALL SOURCES OF FUNDS” and Section 3 “TASKS” are lengthy and result in the total lines being shifted to a second page, be sure to **review all totals in Lines 2.C. and 3.B. to ensure that they match the totals on line 1.K.**

If changes are made to the NIST-1022C, Budget Narrative, they will not appear on the NIST-1022E form until the data is saved. **To insure accurate data, manually save the file before printing or submitting to be sure the changes are reflected on the NIST-1022E form.** Check the totals of lines 2.C. and 3.B. to be sure they still match totals in 1.K. after the changes apply.

Data does not update on this form automatically.

NIST-1022F
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
ESTIMATED MULTI-YEAR BUDGET - JOINT VENTURE**

YEAR:				YEAR TOTAL ALL JV MEMBERS
1. COST CATEGORY				
A. Personnel salaries/wages				\$0
B. Travel				\$0
C. Equipment				\$0
D. Materials/supplies				\$0
E. Contractors				\$0
F. Other				\$0
G. Total direct costs (lines A thru F)				\$0
H. Total direct costs requested from TIP				\$0
I. Total direct costs shared by proposer (if any)				\$0
J. Total indirect costs absorbed by proposer				\$0
K. Total costs (lines G + J)				\$0
2. ALL SOURCES OF FUNDS (jv members, subrecipients, third party, state, etc.)				
			Remove Source Line	Add Source Line
A. FEDERAL (same as H)				\$0
B1				\$0
C. Total of all sources of funds (same as line K)				\$0
3. TASKS				
			Remove Task Line	Add Task Line
A1				\$0
B. Total of all tasks (same as line K)				\$0

NIST-1022F
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U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

**TECHNOLOGY INNOVATION PROGRAM (TIP)
ESTIMATED MULTI-YEAR BUDGET - JOINT VENTURE**

Update Budget Summary

YEAR: ALL				YEAR TOTAL ALL JV MEMBERS
1. COST CATEGORY				
A. Personnel salaries/wages	\$0	\$0		\$0
B. Travel	\$0	\$0		\$0
C. Equipment	\$0	\$0		\$0
D. Materials/supplies	\$0	\$0		\$0
E. Contractors	\$0	\$0		\$0
F. Other	\$0	\$0		\$0
G. Total direct costs (lines A thru F)				\$0
H. Total direct costs requested from TIP	\$0	\$0		\$0
I. Total direct costs shared by proposer (if any)	\$0	\$0		\$0
J. Total indirect costs absorbed by proposer	\$0	\$0		\$0
K. Total costs (lines G + J)				\$0
2. ALL SOURCES OF FUNDS (jv members, subrecipients, third party, state, etc.)				
A. FEDERAL (same as H)	\$0	\$0		\$0
B1	\$0	\$0		\$0
C. Total sources of funds (same as line K)				\$0
3. TASKS				
A1	\$0	\$0		\$0
B. Total of all tasks (same as line K)				\$0

INSTRUCTIONS FOR FILLING OUT THE NIST-1022F FORM “ESTIMATED MULTI-YEAR BUDGET – JOINT VENTURE”

Year. A sufficient number of forms will be generated reflecting the information entered on the forms NIST-1022, NIST-1022A, and NIST-1022C. The year will be shown at the top of each form; the first column will be for the submitting organization and the remaining column headings for each year will be populated automatically with the names of each joint venture member beginning with the submitting organization followed in order with the other joint venture members as they appear on the NIST-1022A form “Other Joint Venture Members.”

- 1. COST CATEGORY.** The data for Section 1 is populated automatically from previously entered data on the NIST-1022C form “Budget Narrative.” Therefore, no data entry is required for Section 1.
- 2. ALL SOURCES OF FUNDS.** List in the left-most column the names of all sources of funds individually. Line 2.A. is the TIP source of funding that is automatically populated from Section 1.H. of this form, therefore, no data entry is required. Click on the “Add Source Line” button and B.1. will automatically appear below 2.A. Enter the name of each nonfederal source of funds, e.g., submitting organization, joint venture member, third party in-kind contributions, state/local government, etc., followed by the source amounts under each column for the appropriate joint venture member. Click the “Add Source Line” after each source data is entered until all sources are listed. For example, if there are four nonfederal sources of funds, each source will be identified below line 2.A. as B.1, B.2., B.3., and B.4. The form will allow you to type past the end of the box in the left-most column, but only the visible data will be displayed and printed. Enter short references to sources in the visible part of this form. The last line 2.C. of each column will be computed automatically and must match the total sources in line 1.K.

Note that the examples provided of the end this chapter provide additional information on how to enter sources of funds data for applicants with multiple sources. Both single company and joint venture examples are included.

- 3. TASKS.** List in the left-most column, beginning with A1, all of the proposed tasks by name, and enter the associated costs in the appropriate rows and columns. (Click the “Add Task Line” button as needed to generate new lines.) Tasks should be a high-level aggregation of subtasks that have costs that can be easily updated as a group on an annual basis. TIP does not prescribe the appropriate number of tasks. Task names and amounts must correspond with those in the Gantt chart in the R&D plan discussion in the proposal.

Once all data for each year is entered, a cumulative total page will automatically be generated. The last page(s) of this form will show “ALL” in the Year box and provide a consolidated budget by joint venture member for all years.

IMPORTANT: At the top right side of this form is an “Update Budget Summary” button, which must be pressed to update the consolidated view if changes are made to the NIST-1022C form “Budget Narrative” or the NIST-1022F form “Multi-Year Budget—Joint Venture” after the last save.

If Section 2 “ALL SOURCES OF FUNDS” and Section 2 “TASKS” are lengthy and result in the total lines being shifted to second page, be sure to **review all totals in Lines 2.C. and 3.B. to ensure that they match the totals on line 1.K.**

If changes are made to the NIST-1022C form, they will not appear on the NIST-1022E form until the data is saved. To insure accurate data, manually save the file before printing or submitting to be sure the changes are reflected on the NIST-1022E form. Check the totals of lines 2.C. and 3.B. to be sure they still match totals in 1.K. after the changes apply.

Data does not update on this form automatically.



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**TECHNOLOGY INNOVATION PROGRAM (TIP)
FOREIGN OWNED COMPANY QUESTIONNAIRE**

Add Questionnaire
Remove Questionnaire

Complete answers to all questions must be provided for each foreign-owned company participating in the proposed TIP project. Submit additional documentation if necessary. [See Chapter 1, section 4 in the TIP Proposal Preparation Kit for explanation.]

Title of Proposal:

Submitting Organization:

1. Is the foreign-owned company incorporated in the United States, or is the LLC, partnership, or sole proprietorship with foreign ownership organized in the United States? (NOTE: A company, LLC, partnership, or sole proprietorship is considered foreign owned if it is majority owned or controlled by a non-U.S. entity, or its ultimate parent, if any, is incorporated outside the United States.)

- No. You are ineligible to continue.
- Yes. Please continue.

2. Name of foreign-owned company and U.S. address where research for the project will be conducted.

3. Name of ultimate foreign parent, address, and country of incorporation. Also provide percentage of ownership.

4. What is the type of participation of the foreign-owned company?

- Single Company
- Joint Venture Lead
- Joint Venture Participant

5. What is the role of the foreign-owned company? (Check all that apply.)

- Key contributor to the high-risk tasks of the project.
- Minor contributor to the high-risk tasks of the project.
- Supplier of materials, equipment, or software services.
- Manufacturer.
- Other. Please explain.

6. What skills, capabilities, and resources does the foreign-owned company bring to the project? How will the company's role affect project milestones and plans, if any, for commercialization?

7. Provide a brief description of:
- a. Facility or facilities where project activities will be carried out;
 - b. Location, including address;
 - c. Square footage; and
 - d. Special equipment.

8. How many employees will be dedicated to the project?

9. Provide the names, titles, and main responsibilities of key project staff.

10. Will there be any activities performed outside the United States?

No.

Yes. If yes, a completed NIST-1022H TIP R&D Work Performed Outside the United States by the Recipient or Contractor Questionnaire must be submitted.

11. Does the foreign-owned company expect to develop any new products or apply any new processes to its product lines incorporating the TIP supported technology?

No.

Yes. If yes, provide the following:

- a. For each new product or process, when will it first occur?
- b. Where?
- c. If in the United States, which facility?
- d. Which U.S. product line?
- e. Other? Please explain.

12. a. Provide investments that the foreign-owned company has made in research, development, manufacturing, distribution, sales, and marketing in the United States in the past 3 years.

- b. State approximate dollar value.

13. Describe the relationship between the foreign-owned company and its ultimate foreign parent. Include financial arrangements, intercompany research agreements, and intellectual property arrangements.

NIST-1022H
DAO 203-26

U.S. DEPARTMENT OF COMMERCE
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

Add Questionnaire
Remove Questionnaire

**TECHNOLOGY INNOVATION PROGRAM (TIP)
R&D WORK PERFORMED OUTSIDE THE UNITED STATES BY THE
RECIPIENT OR CONTRACTOR QUESTIONNAIRE**

Title of Proposal:

Submitting Organization:

Name of Company To Perform R&D Work Outside the United States:

Country Where Work Will Be Performed:

1. Is the work to be performed outside the United States less technically challenging and lower risk relative to the work carried out in the United States?

- Yes.
- No. If no, explain.

2. Describe the impact on U.S. economic interests with and without the R&D being performed outside the United States.

3. What is the percentage of the total TIP project for R&D performed outside the United States?

4. What are the total dollars by organization for R&D performed outside the United States?

5. a. Explain how your organization made a good faith effort to identify alternatives to have this particular work performed outside the United States.

b. Explain why those alternatives were not considered adequate to meet the R&D plan needs (e.g., cost, schedule, insufficient interest, or commitment).

6. Would the project be less likely to generate substantial benefits to the United States if the work outside the United States were not carried out at all, or if TIP insisted that the work be performed in the United States?

- Yes.
- No.

Explain why:

7. Does the facility proposing to carry out the work outside the United States bring to the project special expertise, extra resources, or other factors that would represent a substantial loss to the project were they not present?

Yes.

No.

Explain why:

8. a. Is the entity proposing to do work outside the United States U.S. owned?

Yes.

No.

b. Does the entity also have R&D and manufacturing facilities in the United States that would benefit from the project?

Yes. If yes, describe the facilities and benefits:

No.

c. Who else would benefit?

EXAMPLES: ENTERING MULTIPLE SOURCES OF FUNDS

While the NIST-1022 “Family of Forms” were developed to help applicants prepare budgets and budget narratives, they may be confusing to an applicant with multiple sources of funds. Therefore, to help illustrate how the sources of funds should be entered, we propose the following examples that include a simple worksheet for each year of the proposed project and each recipient. In this worksheet (Exhibit A) the sources of funds used to meet project expenses are listed in rows and how the funds are used (i.e., as either direct or indirect costs) are listed in columns. Note that the worksheet in Exhibit A is intended for illustrative purposes only and should not be submitted with the proposal.

Single Company Example

In our example, we assume that a company, Acme, Inc. is preparing a budget for a single company TIP proposal. The proposal requests \$3 million from TIP over a three year period. In the first year Acme, Inc. plans to receive \$1 million from TIP. These funds are used to cover the project’s direct cost and so the amount is entered on line 1 of our worksheet (Exhibit A) under Direct Cost Contributions.

Single Company Award Worksheet Annual Source of Funds Provided				FOR ILLUSTRATIVE PURPOSES ONLY! DO NOT SUBMIT WITH THE PROPOSAL!
Year 1	Direct Cost Contributions	Indirect Cost Contributions	Total Contributions	
Federal Funds Provided				
1. TIP Award	\$ 1 000 000	X	\$ 1 000 000	
Total Federal Funds Provided	\$ 1 000 000	X	\$ 1 000 000	
Nonfederal Funds Provided				
2. (Acme, Inc.)	\$ 225 000	\$ 400 000	\$ 625 000	
3. Baker International (Informal Collaborator)	\$ 200 000	\$ 0	\$ 200 000	
4. Contributores, Inc. (Third Party Contributor)	\$ 200 000	X	\$ 200 000	
Total Nonfederal Funds Provided	\$ 625 000	\$ 400 000	\$ 1 025 000	
Total Federal and Nonfederal Funds Provided	\$ 1 625 000	\$ 400 000	\$ 2 025 000	

Exhibit A: Worksheet Example for Acme, Inc. in Year 1

Acme, Inc. provides \$225,000 a year from internal sources to cover direct costs and \$400,000 a year from internal sources to cover indirect costs. These amounts are entered on line 2 as shown. Acme, Inc. will also be working with an informal collaborator, Baker International, who agrees to provide \$200,000 per year to cover direct costs. This amount is contributed to the project through Acme, Inc. and so it is entered on line 3 under Direct Cost Contributions. Another company, Contributores, Inc., is a third party contributor who agrees to provide a piece of essential machinery to Acme, Inc. This piece of machinery has an annual market value of \$200,000 and is entirely dedicated for use on the TIP project. The amount of this contribution is entered on line 4 under Direct Cost Contributions.

With this information we can now fill out Section H “SOURCE OF FUNDS” on Acme, Inc.’s NIST-1022C form for Year 1 as shown in Exhibit B. From our worksheet, “Total Federal Funds Provided” in the first year amounts to \$1 million. “Total Nonfederal Funds” used for direct costs only for the first year amounts to \$625,000 (\$225,000+\$200,000+\$200,000). “Total Nonfederal Funds” used for indirect costs only for the first year amount to \$400,000. The “Total Federal and Nonfederal Funds Provided” is therefore \$2,025,000. Note that this amount must also equal the total annual project costs of this project in year 1 which will also appear in Section J of this form.

H. Source of Funds	
Federal direct costs only:	\$ 1 000 000
Nonfederal direct costs only:	\$ 625 000
Nonfederal indirect costs only, which must be the same amount in section G:	\$ 500 000
TOTAL PROJECT COST (FED DIRECT COST + NONFED DIRECT COST + NONFED INDIRECT COST):	\$ 2 125 000

Exhibit B: Section H. Source of Funds from Acme, Inc.'s Year 1, NIST-1022C form.

Once the NIST-1022C form is filled out, a set of NIST-1022F "Multi-Year Budget" forms are generated and automatically populated with the expense data from each of the annual NIST-1022C forms. **However, the source of funds data is not automatically entered and must be done so manually.**

Using data from the year 1 worksheet, \$1 million is entered on Line A for Year 1 on the NIST-1022E form as shown in Exhibit C. Again this is the amount provided by TIP. The name of the recipient, Acme, Inc. is then entered on line B1 along with their Year 1 contribution which is \$625,000 (\$225,000 direct + \$400,000 indirect). The name of the informal collaborator, Baker International is entered on line B2 and \$200,000 is entered as their Year 1 contribution. Finally the name of the third party in-kind contributor, Contributores, Inc. is entered on line B3 and \$200,000 is entered for their Year 1 contribution. The total amount of Year 1 contributions is \$2,025,000 which again equals the total project cost for year 1.

	Year 1	Year 2	Year 3	Total
2. ALL SOURCES OF FUNDS (applicant, subrecipients, third party, state, etc.)				
A. Federal (same as H)	\$ 1 000 000			
B1. Acme Incorporated	\$ 625 000			
B2. Baker Internation	\$ 200 000			
B3. Contributores, Inc. (In-Kind)	\$ 200 000			
C. Total of all sources of funds (same as line K)	\$ 2 025 000			

Exhibit C: Section 2. Source of Funds from Acme, Inc.'s NIST-1022E form.

After the first year's project narrative is prepared, the process is repeated for the remaining two years of this single company proposal. In our example, the completed "ALL SOURCES OF FUNDS" table in Acme, Inc.'s NIST-1022E form appears as follows (Exhibit D):

	Year 1	Year 2	Year 3	Total
2. ALL SOURCES OF FUNDS (applicant, subrecipients, third party, state, etc.)				
A. Federal (same as H)	\$ 1 000 000	\$ 1 000 000	\$ 1 000 000	\$ 3 000 000
B1. Acme Incorporated	\$ 625 000	\$ 625 000	\$ 625 000	\$ 1 875 000
B2. Baker Internation	\$ 200 000	\$ 200 000	\$ 200 000	\$ 600 000
B3. Contributores, Inc. (In-Kind)	\$ 200 000	\$ 200 000	\$ 200 000	\$ 600 000
C. Total of all sources of funds (same as line K)	\$ 2 025 000	\$ 2 025 000	\$ 2 025 000	\$ 6 075 000

Exhibit D: Section 2. Source of Funds from Acme, Inc.'s NIST-1022E form.

With the budget and budget narrative complete, the recipient's cost share can now be calculated. For any point in time, the recipient's share of the project is calculated by dividing the total amount of nonfederal funds received to date by the total amount of funds from all sources received to date and then multiplied by 100. In our example, the recipient's share for the entire project is

$$\text{Recipient Cost Share (\%)} = \frac{\text{NonFederal Funds}}{\text{Federal} + \text{Nonfederal Funds}} \times 100 = \frac{\$3,075,000}{\$6,075,000} \times 100 = 50.62\%$$

The proposed project budget in this example is therefore in compliance with TIP's cost share requirement because single company award recipients must cost share at least 50% of the yearly total project costs (direct plus indirect costs.) The proposer should note that

if the budget is accepted and an award made, the proposer will be responsible for maintaining the project’s annual cost share ratios throughout the life of the award.

Joint Venture Example

Entering the source of funds for a joint venture proposal can also be simplified using the same worksheet for each member of the joint venture in each year of the proposal. In our joint venture example, we assume that two eligible companies, Xample, Inc. and DeltaEx, LLC have agreed to submit a joint venture proposal that requests \$6.5 million from TIP over a five year period.

In the first year Xample, Inc. plans on receiving \$600,000 from TIP. These funds are used to cover a portion of their annual direct cost and so they are entered on line 1 of our worksheet under Direct Cost Contributions. Xample, Inc. will provide \$300,000 per year to cover direct project costs and \$125,000 per year to cover indirect project costs. These amounts are entered on line 2.

Single Company Award Worksheet				FOR ILLUSTRATIVE PURPOSES ONLY! DO NOT SUBMIT WITH THE PROPOSAL!
Year 1 Source of Funds Provided by Xample, Inc.				
Year 1	Direct Cost Contributions	Indirect Cost Contributions	Total Contributions	
Federal Funds Provided				
1. TIP Award	\$ 600 000	X	\$ 600 000	
Total Federal Funds Provided	\$ 600 000	X	\$ 600 000	
Nonfederal Funds Provided				
2. Xample, Inc.	\$ 300 000	\$ 125 000	\$ 425 000	
3. DeltaEX, LLC (contribution by a JV member)	\$ 100 000	\$ 40 000	\$ 140 000	
4. iDNK, Inc. (Subrecipient)	\$ 50 000	\$ 0	\$ 50 000	
Total Nonfederal Funds Provided	\$ 450 000	\$ 165 000	\$ 615 000	
Total Federal and Nonfederal Funds Provided	\$ 1 050 000	\$ 165 000	\$ 1 215 000	

Exhibit E: Worksheet Example for Xample, Inc. in Year 1

To meet their cost share requirement, Xample, Inc. has sought additional funds from two other nonfederal sources. The first source is their JV partner, DeltaEx, LLC. DeltaX, LLC agrees to provide Xample, Inc. an additional \$100,000 per year to cover Xample, Inc.’s direct costs and \$40,000 per year to help cover Xample, Inc.’s indirect costs. The second source of funds is from iDNK, Inc. who is a subrecipient of a subaward issued by Xample, Inc. In addition to being paid for the work they perform on the subaward, the company iDNK, Inc. agrees to provide an annual contribution of \$50,000 to help Xample, Inc. cover their cost share. This annual contribution to Xample, Inc.’s cost share is then entered on line 3.

From our worksheet we see that the total amount of federal funds provided by TIP to Xample, Inc. in Year 1 is \$600,000 and the total amount of nonfederal funds is \$615,000 (\$450,000 for direct costs and \$165,000 for indirect costs.) This information can now be entered into Xample, Inc.’s NIST-1022C form as show in Exhibit F.

H. Source of Funds	
Federal direct costs only:	\$ 600 000
Nonfederal direct costs only:	\$ 450 000
Nonfederal indirect costs only, which must be the same amount in section G:	\$ 165 000
TOTAL PROJECT COST (FED DIRECT COST + NONFED DIRECT COST + NONFED INDIRECT COST):	\$ 1 215 000

Exhibit F: Section H. Source of Funds from Xample, Inc.’s Year 1 NIST-1022C form.

Once a NIST-1022C form is filled out for each of the joint venture members and for each year of the project, a set of NIST-1022F “Multi-year budget” forms are generated. These forms show the annual budget data for each member of the joint venture.

Note that when these forms are generated, expense data from the NIST-1022C form is automatically entered on the NIST-1022F form. **However, the source of funds data must be entered by manually.**

To do this we take data from Xample, Inc.'s worksheet and enter it in Section 2 "ALL SOURCES OF FUNDS" under the column for Xample, Inc. As show in Exhibit F, on line A enter \$600,000 to identify the funds that come from TIP. On line B1 enter the name "Xample, Inc." and the amount \$425,000 (\$300,000 direct plus \$125,000 indirect.) On line B2 enter the name "DeltaEx, LLC" and their total contribution to Xample, Inc. of \$140,000 (\$100,000 direct plus \$40,000 indirect.) On line B3 enter the name "iDNK, Inc. (Subrecipient)" and their contribution of \$50,000.

To simplify matters, we will assume that similar worksheets are prepared for DeltaEX, LLC and that in Year 1 the total amount of federal funds provided by TIP to DeltaEX, LLC is \$700,000 and the total amount of nonfederal funds provided by DeltaEx, LLC is \$750,000. These amounts are then entered on line A and line B2 under the column for DeltaEx, Inc.

	Year 1	Year 2	Year 3	Total
2. ALL SOURCES OF FUNDS (applicant, subrecipients, third party, state, etc.)				
A. Federal (same as H)	\$ 600 000	\$ 700 000		\$ 1 300 000
B1. Xample, Inc.	\$ 425 000			\$ 425 000
B2. DeltaEx, LLC	\$ 140 000	\$ 750 000		\$ 890 000
B3. iDNK, Inc. (Subrecipient)	\$ 50 000			\$ 50 000
C. Total of all sources of funds (same as line K)	\$ 2 025 000	\$ 1 450 000		\$ 2 665 000

Exhibit C: Section 2. Source of Funds from Acme, Inc.'s NIST-1022E form.

After the first year's project narrative is prepared, the process is repeated for the remaining years of this five year joint venture proposal. In our example, the completed "ALL SOURCES OF FUNDS" table in the NIST-1022E form appears as follows (Exhibit G):

	Year 1	Year 2	Year 3	Year 3	Year 3	Total
2. ALL SOURCES OF FUNDS (applicant, subrecipients, third party, state, etc.)						
A. Federal (same as H)	\$ 1 300 000	\$ 1 300 000	\$ 1 300 000	\$ 1 300 000	\$ 1 300 000	\$ 6 500 000
B1. Xample, Inc.	\$ 425 000	\$ 425 000	\$ 425 000	\$ 425 000	\$ 425 000	\$ 2 125 000
B2. DeltaEx, LLC	\$ 890 000	\$ 890 000	\$ 890 000	\$ 890 000	\$ 890 000	\$ 4 450 000
B3. JDoe (3rd party cash)	\$ 50 000	\$ 50 000	\$ 50 000	\$ 50 000	\$ 50 000	\$ 250 000
B4. JDoe (3rd party, In-Kind Contribution)						
C. Total of all sources of funds (same as line K)	\$ 2 665 000	\$ 2 665 000	\$ 2 665 000	\$ 2 665 000	\$ 2 665 000	\$ 13 325 000

Exhibit D: Section 2. Source of Funds from Acme, Inc.'s NIST-1022E form.

With the budget and budget narrative complete the recipient's cost share can be calculated. For any point in time, the recipient's share of the project is calculated by dividing the total amount of nonfederal funds received to date by the total amount of funds from all sources received to date and then multiplying by 100. In our example, the recipient's share for the entire project is

$$\text{Recipient's Cost Share (\%)} = \frac{\text{Nonfederal Funds}}{\text{Federal} + \text{Nonfederal Funds}} \times 100 = \frac{\$6,825,000}{\$13,325,000} \times 100 = 51.22\%$$

The proposed project budget in this example is therefore in compliance with TIP's cost share requirement because joint venture award recipients must cost share at least 50% of the yearly total project costs (direct plus indirect costs.) The proposers should note that if the budget is accepted and an award made, the proposers will be responsible for maintaining the project's annual cost share ratios throughout the life of the award.

APPENDIX A

TIP STATUTE

NOTE: The TIP statute originated in the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Sciences (COMPETES) Act of 2007 (Pub. L. 110-69).

Sec. 3012. Technology Innovation Program

- (a) **Repeal of Advanced Technology Program.** Section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n) is repealed.
- (b) **Establishment of Technology Innovation Program.** The National Institute of Standards and Technology Act (15 U.S.C. 271 et seq.) is amended by inserting after section 27 the following:

Sec. 28. TECHNOLOGY INNOVATION PROGRAM

- (a) **Establishment.** There is established within the Institute a program linked to the purpose and functions of the Institute, to be known as the “Technology Innovation Program” for the purpose of assisting United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutions, to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need.
- (b) **External Funding.**
 - (1) In general. The Director shall award competitive, merit-reviewed grants, cooperative agreements, or contracts to -
 - (A) eligible companies that are small-sized businesses or medium-sized businesses; or
 - (B) joint ventures.
 - (2) Single company awards. No award given to a single company shall exceed \$3,000,000 over 3 years.
 - (3) Joint venture awards. No award given to a joint venture shall exceed \$9,000,000 over 5 years.
 - (4) Federal cost share. The Federal share of a project funded by an award under the program shall not be more than 50 percent of total project costs.
 - (5) Prohibitions. Federal funds awarded under this program may be used only for direct costs and not for indirect costs, profits, or management fees of a contractor. Any business that is not a small-sized or medium-sized business may not receive any funding under this program.

- (c) **Award Criteria.** The Director shall only provide assistance under this section to an entity:
 - (1) whose proposal has scientific and technical merit and may result in intellectual property vesting in a United States entity that can commercialize the technology in a timely manner;
 - (2) whose application establishes that the proposed technology has strong potential to address critical national needs through transforming the Nation’s capacity to deal with major societal challenges that are not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the applicant;
 - (3) whose application establishes that the research has strong potential for advancing the state-of-the-art and contributing significantly to the United States science and technology knowledge base;
 - (4) whose proposal explains why Technology Innovation Program support is necessary, including evidence that the research will not be conducted within a reasonable time period in the absence of financial assistance under this section;
 - (5) whose application demonstrates that reasonable efforts have been made to secure funding from alternative funding sources and no other alternative funding sources are reasonably available to support the proposal; and
 - (6) whose application explains the novelty of the technology and demonstrates that other entities have not already developed, commercialized, marketed, distributed, or sold similar technologies.
- (d) **Competitions.** The Director shall solicit proposals at least annually to address areas of critical national need for high-risk, high-reward projects.
- (e) **Intellectual Property Rights Ownership.**
 - (1) In general. Title to any intellectual property developed by a joint venture from assistance provided under this section may vest in any participant in the joint venture, as agreed by the members of the joint venture, notwithstanding section 202 (a) and (b) of title 35, United States Code. The United States may reserve a nonexclusive, nontransferable, irrevocable paid-up license, to have practice for or on behalf of the United States in connection with any such intellectual property, but shall not in the exercise of such license publicly disclose proprietary

- information related to the license. Title to any such intellectual property shall not be transferred or passed, except to a participant in the joint venture, until the expiration of the first patent obtained in connection with such intellectual property.
- (2) **Licensing.** Nothing in this subsection shall be construed to prohibit the licensing to any company of intellectual property rights arising from assistance provided under this section.
- (3) **Definition.** For purposes of this subsection, the term “intellectual property” means an invention patentable under title 35, United States Code, or any patent on such an invention, or any work for which copyright protection is available under title 17, United States Code.
- (f) **Program Operation.** Not later than 9 months after the date of the enactment of this section, the Director shall promulgate regulations --
- (1) establishing criteria for the selection of recipients of assistance under this section;
 - (2) establishing procedures regarding financial reporting and auditing to ensure that awards are used for the purposes specified in this section, are in accordance with sound accounting practices, and are not funding existing or planned research programs that would be conducted within a reasonable time period in the absence of financial assistance under this section; and
 - (3) providing for appropriate dissemination of Technology Innovation Program research results.
- (g) **Annual Report.** The Director shall submit annually to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Technology of the House of Representatives a report describing the Technology Innovation Program’s activities, including a description of the metrics upon which award funding decisions were made in the previous fiscal year, any proposed changes to those metrics, metrics for evaluating the success of ongoing and completed awards, and an evaluation of ongoing and completed awards. The first annual report shall include best practices for management of programs to stimulate high-risk, high-reward research.
- (h) **Continuation of ATP Grants.** The Director shall, through the Technology Innovation Program, continue to provide support originally awarded under the Advanced Technology Program, in accordance with the terms of the original award and consistent with the goals of the Technology Innovation Program.
- (i) **Coordination With Other State and Federal Technology Programs.** In carrying out this section, the Director shall, as appropriate, coordinate with other senior State and Federal officials to ensure cooperation and coordination in State and Federal technology programs and to avoid unnecessary duplication of efforts.
- (j) **Acceptance of Funds From Other Federal Agencies.** In addition to amounts appropriated to carry out this section, the Secretary and the Director may accept funds from other Federal agencies to support awards under the Technology Innovation Program. Any award under this section which is supported with funds from other Federal agencies shall be selected and carried out according to the provisions of this section. Funds accepted from other Federal agencies shall be included as part of the Federal cost share of any project funded under this section.
- (k) **TIP Advisory Board.**
- (1) **Establishment.** There is established within the Institute a TIP Advisory Board.
 - (2) **Membership.**
 - (A) In general. The TIP Advisory Board shall consist of 10 members appointed by the Director, at least 7 of whom shall be from United States industry, chosen to reflect the wide diversity of technical disciplines and industrial sectors represented in Technology Innovation Program projects. No member shall be an employee of the Federal Government.
 - (B) Term. Except as provided in subparagraph (C) or (D), the term of office of each member of the TIP Advisory Board shall be 3 years.
 - (C) Classes. The original members of the TIP Advisory Board shall be appointed to 3 classes. One class of 3 members shall have an initial term of 1 year, one class of 3 members shall have an initial term of 2 years, and one class of 4 members shall have an initial term of 3 years.
 - (D) Vacancies. Any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term.
 - (E) Serving consecutive terms. Any person who has completed 2 consecutive full terms of service on the TIP Advisory Board shall thereafter be ineligible for appointment during the 1-year period following the expiration of the second such term.
 - (3) **Purpose.** The TIP Advisory Board shall meet not less than 2 times annually, and provide the Director --
 - (A) advice on programs, plans, and policies of the Technology Innovation Program;
 - (B) reviews of the Technology Innovation Program’s efforts to accelerate the research and development of challenging, high-risk, high-reward technologies in areas of critical national need;
 - (C) reports on the general health of the program and its effectiveness in achieving its legislatively mandated mission; and

- (D) guidance on investment areas that are appropriate for Technology Innovation Program funding;
 - (4) Advisory capacity. In discharging its duties under this subsection, the TIP Advisory Board shall function solely in an advisory capacity, in accordance with the Federal Advisory Committee Act.
 - (5) Annual report. The TIP Advisory Board shall transmit an annual report to the Secretary for transmittal to the Congress not later than 30 days after the submission to Congress of the President's annual budget request in each year. Such report shall address the status of the Technology Innovation Program and comment on the relevant sections of the programmatic planning document and updates thereto transmitted to Congress by the Director under subsections (c) and (d) of section 23.
- (l) **Definitions.** In this section --
- (1) the term "eligible company" means a small-sized or medium-sized business that is incorporated in the United States and does a majority of its business in the United States, and that either --
 - (A) is majority owned by citizens of the United States; or
 - (B) is owned by a parent company incorporated in another country and the Director finds that --
 - (i) the company's participation in the Technology Innovation Program would be in the economic interest of the United States, as evidenced by --
 - (I) investments in the United States in research and manufacturing;
 - (II) significant contributions to employment in the United States; and
 - (III) agreement with respect to any technology arising from assistance provided under this section to promote the manufacture within the United States of products resulting from that technology; and
 - (ii) the company is incorporated in a country which --
 - (I) affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those receiving funding under this section;
 - (II) affords to United States-owned companies local investment opportunities comparable to those afforded any other company; and
 - (III) affords adequate and effective protection for intellectual property rights of United States-owned companies;
 - (2) the term "high-risk, high-reward research" means research that --
 - (A) has the potential for yielding transformational results with far-ranging or wide-ranging implications;
 - (B) addresses critical national needs within the National Institute of Standards and Technology's areas of technical competence; and
 - (C) is too novel or spans too diverse a range of disciplines to fare well in the traditional peer-review process;
 - (3) the term "institution of higher education" has the meaning given that term in section 101 of the Higher Education Act of 1965 (20 U.S.C. 1001);
 - (4) the term "joint venture" means a joint venture that --
 - (A) includes either --
 - (i) at least 2 separately owned for-profit companies that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being one of those companies that is a small-sized or medium-sized business; or
 - (ii) at least 1 small-sized or medium-sized business and 1 institution of higher education or other organization, such as a national laboratory or nonprofit research institute, that are both substantially involved in the project and both of which are contributing to the cost-sharing required under this section, with the lead entity of the joint venture being either that small-sized or medium-sized business or that institution of higher education; and
 - (B) may include additional for-profit companies, institutions of higher education, and other organizations, such as national laboratories and nonprofit research institutes, that may or may not contribute non-Federal funds to the project; and
 - (5) the term "TIP Advisory Board" means the advisory board established under subsection (k).
- (c) **Transition.** Notwithstanding the repeal made by subsection (a), the Director shall carry out section 28 of the National Institute of Standards and Technology Act (15 U.S.C. 278n) as such section was in effect on the day before the date of the enactment of this Act, with respect to applications for grants under such section submitted before such date, until the earlier of --
- (1) the date that the Director promulgates the regulations required under section 28(f) of the National Institute of Standards and Technology Act, as added by subsection (b); or
 - (2) December 31, 2007.



APPENDIX B

TIP RULE – 15. C. F.R. PART 296

Subpart A – General

- § 296.1 Purpose.
- § 296.2 Definitions.
- § 296.3 Types of assistance available.
- § 296.4 Limitations on assistance.
- § 296.5 Eligibility requirements for companies and joint ventures.
- § 296.6 Valuation of transfers.
- § 296.7 Joint venture registration.
- § 296.8 Joint venture agreement.
- § 296.9 Activities not permitted for joint ventures.
- § 296.10 Third party in-kind contribution of research services.
- § 296.11 Intellectual property rights and procedures.
- § 296.12 Reporting and auditing requirements.

Subpart B – The Competition Process

- § 296.20 The selection process.
- § 296.21 Evaluation criteria.
- § 296.22 Award criteria.

Subpart C – Dissemination of Program Results

- § 296.30 Monitoring and evaluation.
- § 296.31 Dissemination of results.
- § 296.32 Technical and educational services.
- § 296.33 Annual report.

Authority: 15 U.S.C. 278n (Pub. L.110-69 section 3012)

SUBPART A – GENERAL

§ 296.1 Purpose.

- (a) The purpose of the Technology Innovation Program (TIP) is to assist United States businesses and institutions of higher education or other organizations, such as national laboratories and nonprofit research institutes, to support, promote, and accelerate innovation in the United States through high-risk, high-reward research in areas of critical national need within NIST's areas of technical competence.
- (b) The rules in this part prescribe policies and procedures for the award and administration of financial assistance (grants and/or cooperative agreements) under the TIP. While the TIP is authorized to enter into grants, cooperative agreements, and contracts to carry out the TIP mission, the rules in this part address only the award of grants and/or cooperative agreements.

§ 296.2 Definitions.

Award means Federal financial assistance made under a grant or cooperative agreement.

Business or company means a for-profit organization, including sole proprietors, partnerships, limited liability companies (LLCs), and corporations.

Contract means a procurement contract under an award or subaward, and a procurement subcontract under a recipient's or subrecipient's contract.

Contractor means the legal entity to which a contract is made and which is accountable to the recipient, subrecipient, or contractor making the contract for the use of the funds provided.

Cooperative agreement refers to a Federal assistance instrument used whenever the principal purpose of the relationship between the Federal government and the recipient is to transfer something of value, such as money, property, or services to the recipient to accomplish a public purpose of support or stimulation authorized by Federal statute instead of acquiring (by purchase, lease, or barter) property or services for the direct benefit or use of the Federal government; and substantial involvement is anticipated between the Federal government and the recipient during performance of the contemplated activity.

Critical national need means an area that justifies government attention because the magnitude of the problem is

large and the societal challenges that need to be overcome are not being addressed, but could be addressed through high-risk, high-reward research.

Direct costs means costs that can be identified readily with activities carried out in support of a particular final objective. A cost may not be allocated to an award as a direct cost if any other cost incurred for the same purpose in like circumstances has been assigned to an award as an indirect cost. Because of the diverse characteristics and accounting practices of different organizations, it is not possible to specify the types of costs which may be classified as direct costs in all situations. However, typical direct costs could include salaries of personnel working on the TIP project, travel, equipment, materials and supplies, subcontracts, and other costs not categorized in the preceding examples. NIST shall determine the allowability of direct costs in accordance with applicable Federal cost principles.

Director means the Director of the National Institute of Standards and Technology (NIST).

Eligible company means a small-sized or medium-sized business or company that satisfies the ownership and other requirements stated in this part.

Grant means a Federal assistance instrument used whenever the principal purpose of the relationship between the Federal government and the recipient is to transfer something of value, such as money, property, or services to the recipient to accomplish a public purpose of support or stimulation authorized by Federal statute instead of acquiring (by purchase, lease, or barter) property or services for the direct benefit or use of the Federal government; and no substantial involvement is anticipated between the Federal government and the recipient during performance of the contemplated activity.

High-risk, high-reward research means research that:

- (1) has the potential for yielding transformational results with far-ranging or wide-ranging implications;
- (2) addresses areas of critical national need that support, promote, and accelerate innovation in the United States and is within NIST's areas of technical competence; and
- (3) is too novel or spans too diverse a range of disciplines to fare well in the traditional peer-review process.

Indirect costs means those costs incurred for common or joint objectives that cannot be readily identified with activities carried out in support of a particular final objective. A cost may not be allocated to an award as an indirect cost if any other cost incurred for the same purpose in like circumstances has been assigned to an award as a direct cost. Because of diverse characteristics and accounting practices it is not possible to specify the types of costs which may be classified as indirect costs in all situations. However, typical examples of indirect costs include general administration expenses, such as the salaries and expenses of executive officers, personnel administration, maintenance, library expenses, and account-

ing. NIST shall determine the allowability of indirect costs in accordance with applicable Federal cost principles.

Institution of higher education means an educational institution in any State that—

- (1) Admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such a certificate;
- (2) Is legally authorized within such State to provide a program of education beyond secondary education;
- (3) Provides an educational program for which the institution awards a bachelor's degree or provides not less than a 2-year program that is acceptable for full credit toward such a degree;
- (4) Is a public or other nonprofit institution; and
- (5) Is accredited by a nationally recognized accrediting agency or association, or if not so accredited, is an institution that has been granted preaccreditation status by such an agency or association that has been recognized by the Secretary of Education for the granting of preaccreditation status, and the Secretary of Education has determined that there is satisfactory assurance that the institution will meet the accreditation standards of such an agency or association within a reasonable time (20 U.S.C. 1001). For the purpose of this paragraph (l) only, the term State includes, in addition to the several States of the United States, the Commonwealth of Puerto Rico, the District of Columbia, Guam, American Samoa, the United States Virgin Islands, the Commonwealth of the Northern Mariana Islands, and the Freely Associated States. The term Freely Associated States means the Republic of the Marshall Islands, the Federated States of Micronesia, and the Republic of Palau.

Intellectual property means an invention patentable under title 35, United States Code, or any patent on such an invention, or any work for which copyright protection is available under title 17, United States Code.

Joint venture means a business arrangement that:

- (1) Includes either:
 - (i) At least two separately owned companies that are both substantially involved in the project and both of which are contributing to the cost-sharing required under the TIP statute, with the lead company of the joint venture being an eligible company; or
 - (ii) At least one eligible company and one institution of higher education or other organization, such as a national laboratory, governmental laboratory (not including NIST), or nonprofit research institute, that are both substantially involved in the project and both of which are contributing to the cost-sharing required under the TIP statute, with the lead entity of the joint venture being either the eligible company or the institution of higher education; and

- (2) May include additional for-profit companies, institutions of higher education, and other organizations, such as national laboratories and nonprofit research institutes, that may or may not contribute non-Federal funds to the project.

Large-sized business means any business, including any parent company plus related subsidiaries, having annual revenues in excess of the amount published by the Program in the relevant Federal Register notice of availability of funds in accordance with §296.20. In establishing this amount, the Program may consider the dollar value of the total revenues of the 1000th company in Fortune magazine's Fortune 1000 listing.

Matching funds or **cost sharing** means that portion of project costs not borne by the Federal government. Sources of revenue to satisfy the required cost share include cash and third party in-kind contributions. Cash may be contributed by any non-Federal source, including but not limited to recipients, state and local governments, companies, and nonprofits (except contractors working on a TIP project). Third party in-kind contributions include but are not limited to equipment, research tools, software, supplies, and/or services. The value of in-kind contributions shall be determined in accordance with §14.23 of this title and will be prorated according to the share of total use dedicated to the TIP project. NIST shall determine the allowability of matching share costs in accordance with applicable Federal cost principles.

Medium-sized business means any business that does not qualify as a **small-sized business** or a **large-sized business** under the definitions in this section.

Member means any entity that is identified as a joint venture member in the award and is a signatory on the joint venture agreement required by §296.8.

Nonprofit research institute means a nonprofit research and development entity or association organized under the laws of any state for the purpose of carrying out research and development.

Participant means any entity that is identified as a recipient, sub-recipient, or contractor on an award to a joint venture under the Program.

Person will be deemed to include corporations and associations existing under or authorized by the laws of the United States, the laws of any of the Territories, the laws of any State, or the laws of any foreign country.

Program or TIP means the Technology Innovation Program.

Recipient means an organization receiving an award directly from NIST under the Program.

Small-sized business means a business that is independently owned and operated, is organized for profit, has fewer than 500 employees, and meets the other requirements found in 13 CFR part 121.

Societal challenge means a problem or issue confronted by society that when not addressed could negatively affect the overall function and quality of life of the Nation, and as such justifies government attention.

State, except for the limited purpose described in paragraph (l) of this section, means any of the several States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, and any territory or possession of the United States, or any agency or instrumentality of a State exclusive of local governments. The term does not include any public and Indian housing agency under the United States Housing Act of 1937.

Subaward means an award of financial assistance made under an award by a recipient to an eligible subrecipient or by a sub-recipient to a lower tier subrecipient. The term includes financial assistance when provided by any legal agreement, even if the legal agreement is called a contract, but does not include procurement of goods and services.

Subrecipient means the legal entity to which a subaward is made and which is accountable to the recipient for the use of the funds provided.

Transformational results means potential project outcomes that enable disruptive changes over and above current methods and strategies. Transformational results have the potential to radically improve our understanding of systems and technologies, challenging the status quo of research approaches and applications.

United States owned company means a for-profit organization, including sole proprietors, partnerships, limited liability companies (LLCs), and corporations, that has a majority ownership by individuals who are citizens of the United States.

§ 296.3 Types of Assistance Available.

Subject to the limitations of this section and §296.4, assistance under this part is available to eligible companies or joint ventures that request either of the following:

- (a) Single Company Awards: No award given to a single company shall exceed a total of \$3,000,000 over a total of 3 years.
- (b) Joint Venture Awards: No award given to a joint venture shall exceed a total of \$9,000,000 over a total of 5 years.

§ 296.4 Limitations on Assistance.

- (a) The Federal share of a project funded under the Program shall not be more than 50 percent of total project costs.
- (b) Federal funds awarded under this Program may be used only for direct costs and not for indirect costs, profits, or management fees.
- (c) No large-sized business may receive funding as a recipient or subrecipient of an award under the Program. When procured in accordance with procedures established under the Procurement Standards required by part 14 of Subtitle A of this title, recipients may procure supplies and other expendable property, equipment, real property and other services from any party, including large-sized businesses.

(d) If a project ends before the completion of the period for which an award has been made, after all allowable costs have been paid and appropriate audits conducted, the unspent balance of the Federal funds shall be returned by the recipient to the Program.

§ 296.5 Eligibility Requirements for Companies and Joint Ventures.

Companies and joint ventures must be eligible in order to receive funding under the Program and must remain eligible throughout the life of their awards.

(a) A company shall be eligible to receive an award from the Program only if:

(1) The company is a small-sized or medium-sized business that is incorporated in the United States and does a majority of its business in the United States; and

(2) Either

(i) The company is a United States owned company; or

(ii) The company is owned by a parent company incorporated in another country and the Program finds that:

(A) The company's participation in TIP would be in the economic interest of the United States, as evidenced by investments in the United States in research, development, and manufacturing (including, for example, the manufacture of major components or subassemblies in the United States); significant contributions to employment in the United States; and agreement with respect to any technology arising from assistance provided by the Program to promote the manufacture within the United States of products resulting from that technology, and to procure parts and materials from competitive United States suppliers; and

(B) That the parent company is incorporated in a country which affords to United States-owned companies opportunities, comparable to those afforded to any other company, to participate in any joint venture similar to those authorized to receive funding under the Program; affords to United States-owned companies local investment opportunities comparable to those afforded to any other company; and affords adequate and effective protection for the intellectual property rights of United States-owned companies.

(b) NIST may suspend a company or joint venture from continued assistance if it determines that the company, the country of incorporation of the company or a parent company, or any member of the joint venture has failed to satisfy any of the criteria contained in paragraph (a) of this section, and that it is in the national interest of the United States to do so.

(c) Members of joint ventures that are companies must be incorporated in the United States and do a majority of their business in the United States and must comply with the requirements of paragraph (a)(2) of this section. For a joint venture to be eligible for assistance, it must be comprised as defined in §296.2.

§ 296.6 Valuation of Transfers.

(a) This section applies to transfers of goods, including computer software, and services provided by the transferor related to the maintenance of those goods, when those goods or services are transferred from one joint venture member to another separately-owned joint venture member.

(b) The greater amount of the actual cost of the transferred goods and services as determined in accordance with applicable Federal cost principles, or 75 percent of the best customer price of the transferred goods and services, shall be deemed to be allowable costs. Best customer price means the GSA schedule price, or if such price is unavailable, the lowest price at which a sale was made during the last twelve months prior to the transfer of the particular good or service.

§ 296.7 Joint Venture Registration.

Joint ventures selected for assistance under the Program must notify the Department of Justice and the Federal Trade Commission under section 6 of the National Cooperative Research Act of 1984, as amended (15 U.S.C. 4305). No funds will be released prior to receipt by the Program of copies of such notification.

§ 296.8 Joint Venture Agreement.

NIST shall not issue a TIP award to a joint venture and no costs shall be incurred under a TIP project by the joint venture members until such time as a joint venture agreement has been executed by all of the joint venture members and approved by NIST.

§ 296.9 Activities Not Permitted for Joint Ventures.

The following activities are not permissible for TIP-funded joint ventures:

(a) Exchanging information among competitors relating to costs, sales, profitability, prices, marketing, or distribution of any product, process, or service that is not reasonably required to conduct the research and development that is the purpose of such venture;

(b) Entering into any agreement or engaging in any other conduct restricting, requiring, or otherwise involving the marketing, distribution, or provision by any person who is a party to such joint venture of any product, process, or service, other than the distribution among the parties to such

venture, in accordance with such venture, of a product, process, or service produced by such venture, the marketing of proprietary information, such as patents and trade secrets, developed through such venture, or the licensing, conveying, or transferring of intellectual property, such as patents and trade secrets, developed through such venture; and

- (c) Entering into any agreement or engaging in any other conduct:
 - (1) To restrict or require the sale, licensing, or sharing of inventions or developments not developed through such venture; or
 - (2) To restrict or require participation by such party in other research and development activities, that is not reasonably required to prevent misappropriation of proprietary information contributed by any person who is a party to such venture or of the results of such venture.

§ 296.10 Third Party In-Kind Contribution of Research Services.

NIST shall not issue a TIP award to a single recipient or joint venture whose proposed budget includes the use of third party in-kind contribution of research as cost share, and no costs shall be incurred under such a TIP project, until such time as an agreement between the recipient and the third party contributor of in-kind research has been executed by both parties and approved by NIST.

§ 296.11 Intellectual Property Rights and Procedures.

(a) Rights in Data. Except as otherwise specifically provided for in an award, authors may copyright any work that is subject to copyright and was developed under an award. When claim is made to copyright, the applicable copyright notice of 17 U.S.C. 401 or 402 and acknowledgment of Federal government sponsorship shall be affixed to the work when and if the work is delivered to the Federal government, is published, or is deposited for registration as a published work in the U.S. Copyright Office. The copyright owner shall grant to the Federal government, and others acting on its behalf, a paid up, nonexclusive, irrevocable, worldwide license for all such works to reproduce, publish, or otherwise use the work for Federal purposes.

- (b) Invention Rights.
 - (1) Ownership of inventions developed from assistance provided by the Program under

§296.3(a) shall be governed by the requirements of chapter 18 of title 35 of the United States Code.
 - (2) Ownership of inventions developed from assistance provided by the Program under

§296.3(b) may vest in any participant in the joint venture, as agreed by the members of the joint venture,

notwithstanding section 202 (a) and (b) of title 35, United States Code. Title to any such invention shall not be transferred or passed, except to a participant in the joint venture, until the expiration of the first patent obtained in connection with such invention. In accordance with

§296.8, joint ventures will provide to NIST a copy of their written agreement that defines the disposition of ownership rights among the participants of the joint venture, including the principles governing the disposition of intellectual property developed by contractors and subcontractors, as appropriate, and that complies with these regulations.

- (3) The United States reserves a nonexclusive, nontransferable, irrevocable paid-up license, to practice or have practiced for or on behalf of the United States any inventions developed using assistance under this section, but shall not in the exercise of such license publicly disclose proprietary information related to the license. Nothing in this subsection shall be construed to prohibit the licensing to any company of intellectual property rights arising from assistance provided under this section.
- (4) Should the last existing participant in a joint venture cease to exist prior to the expiration of the first patent obtained in connection with any invention developed from assistance provided under the Program, title to such patent must be transferred or passed to a United States entity that can commercialize the technology in a timely fashion.

- (c) Patent Procedures. Each award by the Program will include provisions assuring the retention of a governmental use license in each disclosed invention, and the government's retention of march-in rights. In addition, each award by the Program will contain procedures regarding reporting of subject inventions by the recipient through the Interagency Edison extramural invention reporting system (iEdison), including the subject inventions of recipients, including members of the joint venture (if applicable), subrecipients, and contractors of the recipient or joint venture members.

§ 296.12 Reporting and Auditing Requirements.

Each award by the Program shall contain procedures regarding technical, business, and financial reporting and auditing requirements to ensure that awards are being used in accordance with the Program's objectives and applicable Federal cost principles. The purpose of the technical reporting is to monitor "best effort" progress toward overall project goals. The purpose of the business reporting is to monitor project performance against the Program's mission as required by the Government Performance and Results Act (GPRA) mandate for program evaluation. The purpose of the financial reporting is to monitor the status of project funds. The audit standards to be applied to TIP awards are the "Government Auditing Standards" (GAS) issued by the Comptroller General of the United States and any Program-specific audit guidelines or requirements prescribed in the award terms and conditions.

To implement paragraph (f) of §14.25 of this title, audit standards and award terms may stipulate that “total Federal and non-Federal funds authorized by the Grants Officer” means the total Federal and non-Federal funds authorized by the Grants Officer annually.

SUBPART B – THE COMPETITION PROCESS

§ 296.20 The selection process.

- (a) To begin a competition, the Program will solicit proposals through an announcement in the Federal Register, which will contain information regarding that competition, including the areas of critical national need that proposals must address. An Evaluation Panel(s) will be established to evaluate proposals and ensure that all proposals receive careful consideration.
- (b) (1) A preliminary review will be conducted to determine whether the proposal:
 - (i) Is in accordance with §296.3;
 - (ii) Complies with either paragraph (a) or paragraph (c) of §296.5;
 - (iii) Addresses the award criteria of paragraphs (a) through (c) of §296.22;
 - (iv) Was submitted to a previous TIP competition and if so, has been substantially revised; and
 - (v) Is complete.
- (2) Complete proposals that meet the preliminary review requirements described in paragraphs (b)(1)(i) through (v) of this section will be considered further. Proposals that are incomplete or do not meet any one of these preliminary review requirements will normally be eliminated.
- (c) The Evaluation Panel(s) will then conduct a multi-disciplinary peer review of the remaining proposals based on the evaluation criteria listed in §296.21 and the award criteria listed in §296.22. In some cases NIST may conduct oral reviews and/or site visits. The Evaluation Panel(s) will present funding recommendations to the Selecting Official in rank order for further consideration. The Evaluation Panel(s) will not recommend for further consideration any proposal determined not to meet all of the eligibility and award requirements of this part and the Federal Register notice announcing the availability of funds.
- (d) In making final selections, the Selecting Official will select funding recipients based upon the Evaluation Panel’s rank order of the proposals and the following selection factors: assuring an appropriate distribution of funds among technologies and their applications, availability of funds, and/or

Program priorities. The selection of proposals by the Selecting Official is final.

- (e) NIST reserves the right to negotiate the cost and scope of the proposed work with the proposers that have been selected to receive awards. This may include requesting that the proposer delete from the scope of work a particular task that is deemed by NIST to be inappropriate for support against the evaluation criteria. NIST also reserves the right to reject a proposal where information is uncovered that raises a reasonable doubt as to the responsibility of the proposer. The final approval of selected proposals and award of assistance will be made by the NIST Grants Officer as described in the Federal Register notice announcing the competition. The award decision of the NIST Grants Officer is final.

§ 296.21 Evaluation Criteria.

A proposal must be determined to be competitive against the Evaluation Criteria set forth in this section to receive funding under the Program. Additionally, no proposal will be funded unless the Program determines that it has scientific and technical merit and that the proposed research has strong potential for meeting identified areas of critical national need.

- (a) (1) The proposer(s) adequately addresses the scientific and technical merit and how the research may result in intellectual property vesting in a United States entity including evidence that:
 - (i) The proposed research is novel;
 - (ii) The proposed research is high-risk, high-reward;
 - (iii) The proposer(s) demonstrates a high level of relevant scientific/technical expertise for key personnel, including contractors and/or informal collaborators, and have access to the necessary resources, for example research facilities, equipment, materials, and data, to conduct the research as proposed;
 - (iv) The research result(s) has the potential to address the technical needs associated with a major societal challenge not currently being addressed; and
 - (v) The proposed research plan is scientifically sound with tasks, milestones, timeline, decision points and alternate strategies.
- (2) Total weight of (a)(1)(i) through (v) is 50%.
- (b)(1) The proposer(s) adequately establishes that the proposed research has strong potential for advancing the state-of-the-art and contributing significantly to the United States science and technology knowledge base and to address areas of critical national need through transforming the Nation’s capacity to deal with a major societal challenge(s) that is not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the proposer including an explanation in the proposal:

- (i) Of the potential magnitude of transformational results upon the Nation's capabilities in an area;
 - (ii) Of how and when the ensuing transformational results will be useful to the Nation; and
 - (iii) Of the capacity and commitment of each award participant to enable or advance the transformation to the proposed research results (technology).
- (2) Total weight of (b)(1)(i) through (iii) is 50%.

§ 296.22 Award Criteria.

NIST must determine that a proposal successfully meets all of the Award Criteria set forth in this section for the proposal to receive funding under the Program. The Award Criteria are:

- (a) The proposal explains why TIP support is necessary, including evidence that the research will not be conducted within a reasonable time period in the absence of financial assistance from TIP;
- (b) The proposal demonstrates that reasonable and thorough efforts have been made to secure funding from alternative funding sources and no other alternative funding sources are reasonably available to support the proposal;
- (c) The proposal explains the novelty of the research (technology) and demonstrates that other entities have not already developed, commercialized, marketed, distributed, or sold similar research results (technologies);
- (d) The proposal has scientific and technical merit and may result in intellectual property vesting in a United States entity that can commercialize the technology in a timely manner;
- (e) The proposal establishes that the research has strong potential for advancing the state-of-the-art and contributing significantly to the United States science and technology knowledge base; and
- (f) The proposal establishes that the proposed transformational research (technology) has strong potential to address areas of critical national need through transforming the Nation's capacity to deal with major societal challenges that are not currently being addressed, and generate substantial benefits to the Nation that extend significantly beyond the direct return to the proposer.

SUBPART C – DISSEMINATION OF PROGRAM RESULTS

§ 296.30 Monitoring and Evaluation.

The Program will provide monitoring and evaluation of areas of critical national need and its investments through periodic analyses. It will develop methods and metrics for assessing

impact at all stages. These analyses will contribute to the establishment and adoption of best practices.

§ 296.31 Dissemination of Results.

Results stemming from the analyses required by §296.30 will be disseminated in periodic working papers, fact sheets, and meetings, which will address the progress that the Program has made from both a project and a portfolio perspective. Such disseminated results will serve to educate both external constituencies as well as internal audiences on research results, best practices, and recommended changes to existing operations based on solid analysis.

§ 296.32 Technical and Educational Services.

- (a) Under the Federal Technology Transfer Act of 1986, NIST has the authority to enter into cooperative research and development agreements with non-Federal parties to provide personnel, services, facilities, equipment, or other resources except funds toward the conduct of specified research or development efforts which are consistent with the missions of the laboratory. In turn, NIST has the authority to accept funds, personnel, services, facilities, equipment and other resources from the non-Federal party or parties for the joint research effort. Cooperative research and development agreements do not include procurement contracts or cooperative agreements as those terms are used in sections 6303, 6304, and 6305 of title 31, United States Code.
- (b) In no event will NIST enter into a cooperative research and development agreement with a recipient of an award under the Program which provides for the payment of Program funds from the award recipient to NIST.
- (c) From time to time, TIP may conduct public workshops and undertake other educational activities to foster the collaboration of funding Recipients with other funding resources for purposes of further development and diffusion of TIP-related technologies. In no event will TIP provide recommendations, endorsements, or approvals of any TIP funding Recipients to any outside party.

296.33 Annual Report.

The Director shall submit annually to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Technology of the House of Representatives a report describing the Technology Innovation Program's activities, including a description of the metrics upon which award funding decisions were made in the previous fiscal year, any proposed changes to those metrics, metrics for evaluating the success of ongoing and completed awards, and an evaluation of ongoing and completed awards. The first annual report shall include best practices for management of programs to stimulate high-risk, high-reward research.

U.S. Department of Commerce

Gary Locke, Secretary

National Institute of Standards and Technology

Dr. Patrick D. Gallagher, Director

Technology Innovation Program

Dr. Lorel E. Wisniewski, Deputy Director



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