

**U.S. Department of Energy  
 FEDERAL ASSISTANCE REPORTING CHECKLIST  
 AND INSTRUCTIONS**

1. Identification Number:		2. Program/Project Title:																					
3. Recipient:																							
4. Reporting Requirements:		Frequency	Addressees																				
<p><b>A. MANAGEMENT REPORTING</b></p> <input type="checkbox"/> Research Performance Progress Report (RPPR) (RD&D Projects) — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <input type="checkbox"/> Progress Report (Non-RD&D Projects) — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <input type="checkbox"/> Special Status Report — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <p><b>B. SCIENTIFIC/TECHNICAL REPORTING</b>                  (Reports/Products must be submitted with appropriate DOE F 241 forms available at <a href="https://www.osti.gov/elink/index.jsp">https://www.osti.gov/elink/index.jsp</a> )</p> <table border="0"> <thead> <tr> <th align="center">Report/Product</th> <th align="center">Form</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td><input type="checkbox"/> Final Scientific/Technical Report</td> <td>DOE F 241.3</td> <td align="center">—</td> <td><a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a></td> </tr> <tr> <td><input type="checkbox"/> Conference papers/proceedings</td> <td>DOE F 241.3</td> <td align="center">—</td> <td><a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a></td> </tr> <tr> <td><input type="checkbox"/> Software/Manual</td> <td>DOE F 241.4</td> <td align="center">—</td> <td><a href="http://www.osti.gov/estsc/241-4pre.jsp">http://www.osti.gov/estsc/241-4pre.jsp</a></td> </tr> <tr> <td><input type="checkbox"/> Other (see special instructions)</td> <td>DOE F 241.3</td> <td align="center">—</td> <td><a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a></td> </tr> </tbody> </table> <p><b>C. FINANCIAL REPORTING</b></p> <input type="checkbox"/> SF-425 Federal Financial Report — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <p><b>D. CLOSEOUT REPORTING</b></p> <input type="checkbox"/> Patent Certification — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <input type="checkbox"/> SF-428 & 428B Final Property Report — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <input type="checkbox"/> Other (see special instructions) — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <p><b>E. OTHER REPORTING</b></p> <input type="checkbox"/> Annual Indirect Cost Proposal — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> (or Cognizant Federal Agency) <input type="checkbox"/> Audit of For-Profit Recipients — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> & send to CFO at : <a href="mailto:DOE-Audit-Submission@hq.doe.gov">DOE-Audit-Submission@hq.doe.gov</a> <input type="checkbox"/> SF-428 Tangible Personal Property Report Forms Family — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a> <input type="checkbox"/> Other(see special instructions) — <a href="https://www.eere-pmc.energy.gov/SubmitReports.aspx">https://www.eere-pmc.energy.gov/SubmitReports.aspx</a>		Report/Product	Form			<input type="checkbox"/> Final Scientific/Technical Report	DOE F 241.3	—	<a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a>	<input type="checkbox"/> Conference papers/proceedings	DOE F 241.3	—	<a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a>	<input type="checkbox"/> Software/Manual	DOE F 241.4	—	<a href="http://www.osti.gov/estsc/241-4pre.jsp">http://www.osti.gov/estsc/241-4pre.jsp</a>	<input type="checkbox"/> Other (see special instructions)	DOE F 241.3	—	<a href="http://www.osti.gov/elink-2413">http://www.osti.gov/elink-2413</a>		
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5. Special Instructions:																							

## Federal Assistance Reporting Instructions (03/2013)

### A. MANAGEMENT REPORTING

For awards involving RD&D a Research Performance Progress Report is required to be submitted. For all other awards a Progress Report is required to be submitted.

***Either the Research Performance Progress Report (RPPR) or the Progress Report must be checked, but not both.***

#### **Research Performance Progress Report (RPPR) (RD&D Projects)**

See the attachment entitled "Research Performance Progress Report" for instructions on what the Recipient is to include in the RPPR.

#### **Progress Report (Non-RD&D Projects)**

The Recipient must provide a concise narrative assessment of the status of work and include the following information and any other information identified under Special Instructions on the Federal Assistance Reporting Checklist:

1. The DOE award and report information:
  - a. The DOE Award Number (as it appears on the award face page)
  - b. Recipient Name (as it appears on the award face page)
  - c. Project Title
  - d. PD/PI Name, Title and Contact Information (e-mail address and phone number)
  - e. Name of Submitting Official, Title, and Contact Information (e-mail address and phone number), if other than PD/PI
  - f. Project Period (Start Date, End Date)
  - g. Report Submission Date
  - h. Reporting Period Start and End Date
2. A written comparison of the actual project accomplishments with the project goals and objectives established for the reporting period; if goals and/or objectives for the reporting period were not met, a detailed description of the variance shall be provided..
3. A discussion of what was accomplished under these goals and objectives established for this reporting period, including major activities, significant results, major findings or conclusions, key outcomes or other achievements. This section should not contain any proprietary data or other information not subject to public release. If such information is important to reporting progress, do not include the information, but include a note in the report advising the reader to contact the Principal Investigator or the Project Director for further information.
4. Cost Status. A comparison of the approved budget by budget period and the actual costs incurred during the reporting period shall be provided. If cost sharing is required, the cost breakdown shall show the DOE share, recipient share, and total costs.

5. Schedule Status. List milestones, anticipated completion dates and actual completion dates. If you submitted a project management plan with your application, you must use this plan to report schedule and budget variances. You may use your own project management system to provide this information.
6. Describe any changes during the reporting period in project approach and the reasons for these changes. Remember, significant changes to the project objectives and scope require prior approval by the Contracting Officer.
7. Describe any actual or anticipated problems or delays and any actions taken or planned to resolve them.
8. Describe any absence or changes of key personnel or changes in consortium/teaming arrangement during the reporting period.
9. List and describe any product produced or technology transfer activities accomplished during this reporting period, such as:
  - A. Publications (list journal name, volume, issue); conference papers; or other public releases of results. Attach or send copies of public releases to the DOE Program Manager identified in Block 15 of the Assistance Agreement Cover Page.
  - B. Web site or other Internet sites (list the URL) that reflect the results of this project.
  - C. Networks or collaborations fostered.
  - D. Technologies/Techniques (Identify and Describe).
  - E. Inventions/Patent Applications (Identify and Describe with date of application)
  - F. Other products, such as data or databases, physical collections, audio or video, software or NetWare, models, educational aid or curricula, instruments or equipment (Identify and Describe).

### **Special Status Report**

The recipient must report the following events by e-mail as soon as possible after they occur:

1. Developments that have a significant favorable impact on the project.
2. Problems, delays, or adverse conditions which materially impair the recipient's ability to meet the objectives of the award or which may require DOE to respond to questions relating to such events from the public. The recipient must report any of the following incidents and include the anticipated impact and remedial action to be taken to correct or resolve the problem/condition:
  - a. Any single fatality or injuries requiring hospitalization of five or more individuals.
  - b. Any significant environmental permit violation.

- c. Any verbal or written Notice of Violation of any Environmental, Safety, and Health statutes.
- d. Any incident which causes a significant process or hazard control system failure.
- e. Any event which is anticipated to cause a significant schedule slippage or cost increase.
- f. Any damage to Government-owned equipment in excess of \$50,000.
- g. Any other incident that has the potential for high visibility in the media.

## **B. SCIENTIFIC/TECHNICAL REPORTS**

### **Final Scientific/Technical Report**

Content. The final scientific/technical report must include the following information and any other information identified under Special Instructions on the Federal Assistance Reporting Checklist:

1. Identify the DOE award number; name of recipient; project title; name of project director/principal investigator; and consortium/teaming members.
2. Display prominently on the cover of the report any authorized distribution limitation notices, such as patentable material or protected data. Reports delivered without such notices may be deemed to have been furnished with unlimited rights, and the Government assumes no liability for the disclosure, use or reproduction of such reports.
3. Provide an executive summary, which includes a discussion of 1) how the research adds to the understanding of the area investigated; 2) the technical effectiveness and economic feasibility of the methods or techniques investigated or demonstrated; or 3) how the project is otherwise of benefit to the public. The discussion should be a minimum of one paragraph and written in terms understandable by an educated layman.
4. Provide a comparison of the actual accomplishments with the goals and objectives of the project.
5. Summarize project activities for the entire period of funding, including original hypotheses, approaches used, problems encountered and departure from planned methodology, and an assessment of their impact on the project results. Include, if applicable, facts, figures, analyses, and assumptions used during the life of the project to support the conclusions.
6. Identify products developed under the award and technology transfer activities, such as:
  - a. Publications (list journal name, volume, issue), conference papers, or other public releases of results. If not provided previously, attach or send copies of any public releases to the DOE Program Manager identified in Block 15 of the Assistance Agreement Cover Page;
  - b. Web site or other Internet sites that reflect the results of this project;

- c. Networks or collaborations fostered;
  - d. Technologies/Techniques;
  - e. Inventions/Patent Applications, licensing agreements; and
  - f. Other products, such as data or databases, physical collections, audio or video, software or netware, models, educational aid or curricula, instruments or equipment.
7. For projects involving computer modeling, provide the following information with the final report:
- a. Model description, key assumptions, version, source and intended use;
  - b. Performance criteria for the model related to the intended use;
  - c. Test results to demonstrate the model performance criteria were met (e.g. code verification/validation, sensitivity analyses, history matching with lab or field data, as appropriate);
  - d. Theory behind the model, expressed in non-mathematical terms;
  - e. Mathematics to be used, including formulas and calculation methods;
  - f. Whether or not the theory and mathematical algorithms were peer reviewed, and, if so, include a summary of theoretical strengths and weaknesses;
  - g. Hardware requirements; and
  - h. Documentation (e.g., user's guide, model code).

Electronic Submission. The final scientific/technical report must be submitted electronically-via the DOE Energy Link System (E-Link) accessed at <http://www.osti.gov/elink-2413>.

Electronic Format. Reports must be submitted in the ADOBE PORTABLE DOCUMENT FORMAT (PDF) and be one integrated PDF file that contains all text, tables, diagrams, photographs, schematic, graphs, and charts. Materials, such as prints, videos, and books, that are essential to the report but cannot be submitted electronically, should be sent to the DOE Administrator at the address listed in Block 16 of the Assistance Agreement Cover Page.

Submittal Form. The report must be accompanied by a completed electronic version of DOE Form 241.3, "U.S. Department of Energy (DOE), Announcement of Scientific and Technical Information (STI)." You can complete, upload, and submit the DOE F.241.3 online via E-Link. You are encouraged not to submit patentable material or protected data in these reports, but if there is such material or data in the report, you must: (1) clearly identify patentable or protected data on each page of the report; (2) identify such material on the cover of the report; and (3) mark the appropriate block in Section K of the DOE F 241.3. Reports must not contain any limited rights data (proprietary data), classified information, information subject to export control classification, or other information not subject to release. Protected data is specific technical data, first produced in the performance of the award that is protected from public release for a period of time by the terms of the award agreement.

## **Conference Papers/Proceedings**

Content: The Recipient must submit a copy of any scientific/technical conference papers/proceedings, with the following information: (1) Name of conference; (2) Location of conference; (3) Date of conference; and (4) Conference sponsor.

Electronic Submission. Scientific/technical conference paper/proceedings must be submitted electronically-via the DOE Energy Link System (E-Link) at <http://www.osti.gov/elink-2413>. Non-scientific/technical conference papers/proceedings must be sent to the URL listed on the Reporting Checklist.

Electronic Format. Scientific/technical conference papers/proceedings must be submitted in the ADOBE PORTABLE DOCUMENT FORMAT (PDF) and be one integrated PDF file that contains all text, tables, diagrams, photographs, schematic, graphs, and charts. If the proceedings cannot be submitted electronically, they should be sent to the DOE Administrator at the address listed in Block 16 of the Assistance Agreement Cover Page.

Submittal Form. Scientific/technical conference papers/proceedings must be accompanied by a completed DOE Form 241.3. The form and instructions are available on E-Link at <http://www.osti.gov/elink-2413>. This form is not required for non-scientific or non-technical conference papers or proceedings.

## **Software/Manual**

Content. Unless otherwise specified in the award, the following must be delivered: source code, the executable object code and the minimum support documentation needed by a competent user to understand and use the software and to be able to modify the software in subsequent development efforts.

Electronic Submission. Submissions may be submitted electronically-via the DOE Energy Link System (E-Link) at <http://www.osti.gov/estsc/241-4pre.jsp>. They may also be submitted via regular mail to:

Energy Science and Technology Software Center  
P.O. Box 1020  
Oak Ridge, TN 37831

Submittal Form. Each software deliverable and its manual must be accompanied by a completed DOE Form 241.4 "Announcement of U.S. Department of Energy Computer Software." The form and instructions are available on E-Link at <http://www.osti.gov/estsc/241-4pre.jsp>.

**Protected Personally Identifiable Information (PII). Management Reports or Scientific/Technical Reports must not contain any *Protected* PII. PII is any information about an individual which can be used to distinguish or trace an individual's identity. Some information that is considered to be PII is available in public sources such as telephone books, public websites, university listings, etc. This type of information is considered to be Public PII and includes, for example, first and last name, address, work telephone number, e-mail address, home telephone number, and general educational credentials. In contrast, *Protected* PII is defined as an individual's first name or first initial and last name in combination with any one or more of types of**

information, including, but not limited to, social security number, passport number, credit card numbers, clearances, bank numbers, biometrics, date and place of birth, mother's maiden name, criminal, medical and financial records, educational transcripts, etc.

### C. **FINANCIAL REPORTING**

Recipients must complete the SF-425 as identified on the Reporting Checklist in accordance with the report instructions. A fillable version of the form is available at [http://www.whitehouse.gov/omb/grants/grants\\_forms.aspx](http://www.whitehouse.gov/omb/grants/grants_forms.aspx).

### D. **CLOSEOUT REPORTS**

#### **Final Invention and Patent Report**

The Recipient must provide a DOE Form 2050.11, "PATENT CERTIFICATION." This form is available at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Reporting Forms.

#### **Final Property Report**

See Instructions under **SF-428 Tangible Personal Property Report Forms Family** below.

### E. **OTHER REPORTING**

#### **Annual Indirect Cost Proposal and Reconciliation**

Requirement. In accordance with the applicable cost principles, the recipient must submit an annual indirect cost proposal, reconciled to its financial statements, within six months after the close of the recipient's fiscal year, unless the award is based on a predetermined or fixed indirect rate(s), or a fixed amount for indirect or facilities and administration (F&A) costs.

Cognizant Agency. The Recipient must submit its annual indirect cost proposal directly to the cognizant agency for negotiating and approving its indirect costs. If the DOE awarding office is the cognizant agency, the Recipient must submit their annual indirect cost proposal to <https://www.eere-pmc.energy.gov/SubmitReports.aspx>

#### **Audit of For-Profit Recipients**

As required by 10 CFR 600.316 audits must be performed of For-Profit Recipients of financial assistance awards.

For-Profit Audit Guidance Parts I through IV is available to assist For-profit Recipients in complying with the audit requirements of 10 CFR 600.316. This Guidance is posted on the Financial Assistance Forms page of the DOE MA home page under the 'Coverage of Independent Audits' subheading at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms>.

Submission: The compliance audit report(s) is due to DOE within six months of the Recipient's fiscal year-end date. The compliance audit report must be submitted, along with audited financial statements (if applicable), to the appropriate DOE Contracting Officer at <https://www.eere-pmc.energy.gov/SubmitReports.aspx> as well as to the DOE Office of the Chief Financial Officer (CFO) at [DOE-Audit-Submission@hq.doe.gov](mailto:DOE-Audit-Submission@hq.doe.gov).

### **SF-428 Tangible Personal Property Report Forms Family**

- Requirement. The SF-428 is a forms family consisting of 5 forms: the SF-428, SF-428-A, SF-428-B, SF-428-C and SF-428S. Fillable versions of the SF-428 forms are available at [http://www.whitehouse.gov/omb/grants/grants\\_forms.aspx](http://www.whitehouse.gov/omb/grants/grants_forms.aspx). The SF-428 is the cover page and the submitter attaches the appropriate form or forms as listed on the SF-428.
- The SF-428A is the Annual report, due Oct 30<sup>th</sup> of each calendar year.
- The SF-428B is the Final Award Closeout Report, due 90 calendar days after completion or termination of the award.
- The SF-428C is the Disposition Report/Request.
- The SF-428S is the supplemental form for the SF-428-A, SF-428-B, and SF-428-C.

If at any time during the award the Recipient is provided Government-furnished property or acquires property with project funds and the award specifies that the property vests in the Federal Government (i.e. federally owned property), the Recipient must submit an annual inventory of this property to the DOE Administrator using the SF-428 and SF-428-A forms at the address on page 1 of this checklist no later than October 30<sup>th</sup> of each calendar year, to cover an annual reporting period ending on the preceding September 30<sup>th</sup>. The SF-428 and SF-428-B reports are required 90 calendar days after completion or termination of award to complete the closeout process.

Content of Inventory. As required on the SF-428-A and SF-428-S forms, the inventory must include a description of the property, tag number, acquisition date, and acquisition cost, if purchased with project funds. The location of property should be listed under the Comments section. The report must list all federally owned property, including property located at subcontractor's facilities or other locations.



# RESEARCH PERFORMANCE PROGRESS REPORT

## Standard Cover Page Data Elements and Reporting Categories

The standard cover page data elements shown below, as well as mandatory and optional components comprise the complete research performance progress report format. Each category in the RPPR is a separate reporting component. Each component is marked to indicate if it is optional or mandatory. Mandatory components must be addressed in each report, optional are at your discretion. If you have nothing significant to report during the reporting period on a question or item, state "Nothing to Report."

### 1. COVER PAGE DATA ELEMENTS: Mandatory

- a. Federal Agency and Organization Element to Which Report is Submitted
- b. Federal Grant or Other Identifying Number Assigned by Agency
- c. Project Title
- d. PD/PI Name, Title and Contact Information (e-mail address and phone number)
- e. Name of Submitting Official, Title, and Contact Information (e-mail address and phone number), if other than PD/PI
- f. Submission Date
- g. DUNS Number
- h. Recipient Organization (Name and Address)
- i. Project/Grant Period (Start Date, End Date)
- j. Reporting Period End Date
- k. Report Term or Frequency (annual, semi-annual, quarterly, other)
- l. Signature of Submitting Official (electronic signatures (i.e., Adobe Acrobat) are acceptable)

### 2. ACCOMPLISHMENTS: Mandatory

#### **What was done? What was learned?**

The information provided in this section allows the agency to assess whether satisfactory progress has been made during the reporting period. The PI is reminded that the grantee is required to obtain prior written approval from the Contracting Officer whenever there are significant changes in the project or its direction. Requests for prior written approval must be submitted to the Contracting Officer (submission via Fedconnect is acceptable).

#### **a. What are the major goals of the project?**

List the major goals of the project as stated in the approved application or as approved by the agency. If the application lists milestones/target dates for important activities or phases of the project, identify these dates and show actual completion dates or the percentage of completion. Generally, the goals will not change from one reporting period to the next. However, if the awarding agency approved changes to the goals during the reporting period, list the revised goals and objectives. Also explain any significant changes in approach or methods from the agency approved application or plan.

**b. What was accomplished under these goals?**

For this reporting period describe: 1) major activities; 2) specific objectives; 3) significant results, including major findings, developments, or conclusions (both positive and negative); and 4) key outcomes or other achievements. Include a discussion of stated goals not met. As the project progresses, the emphasis in reporting in this section should shift from reporting activities to reporting accomplishments.

**c. What opportunities for training and professional development has the project provided?**

Describe opportunities for training and professional development provided to anyone who worked on the project or anyone who was involved in the activities supported by the project. "Training" activities are those in which individuals with advanced professional skills and experience assist others in attaining greater proficiency. Training activities may include, for example, courses or one-on-one work with a mentor. "Professional development" activities result in increased knowledge or skill in one's area of expertise and may include workshops, conferences, seminars, study groups, and individual study. Include participation in conferences, workshops, and seminars not listed under major activities.

**d. How have the results been disseminated to communities of interest?**

Describe how the results have been disseminated to communities of interest. Include any outreach activities that have been undertaken to reach members of communities who are not usually aware of these research activities, for the purpose of enhancing public understanding and increasing interest in learning and careers in science, technology, and the humanities.

**e. What do you plan to do during the next reporting period to accomplish the goals?**

Describe briefly what you plan to do during the next reporting period to accomplish the goals and objectives.

**3. PRODUCTS: [Optional/Mandatory]**

**What has the project produced?**

Publications are the characteristic product of research. Agencies evaluate what the publications demonstrate about the excellence and significance of the research and the efficacy with which the results are being communicated to colleagues, potential users, and the public, not the number of publications. Many projects (though not all) develop significant products other than publications. Agencies assess and report both publications and other products to Congress, communities of interest, and the public.

List any products resulting from the project during the reporting period. Examples of products include: publications, conference papers, and presentations; website(s) or other Internet site(s); technologies or techniques; inventions, patent applications, and/or licenses; and other products, such as data or databases, physical collections, audio or video products, software or NetWare, models, educational aids or curricula, instruments, or equipment, or any other public release of information related to the project.

**a. Publications, conference papers, and presentations**

Report only the major publication(s) resulting from the work under this award. There is no restriction on the number. However, agencies are interested in only those publications that most reflect the work under this award in the following categories:

**i. Journal publications.** List peer-reviewed articles or papers appearing in scientific, technical, or professional journals. Include any peer-reviewed publication in the periodically published proceedings of a scientific society, a conference, or the like. A publication in the proceedings of a one-time conference, not part of a series, should be reported under "Books or other non-periodical, one-time publications." Identify for each publication: Author(s); title; journal; volume; year; page numbers; status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

**ii. Books or other non-periodical, one-time publications.** Report any book, monograph, dissertation, abstract, or the like published as or in a separate publication, rather than a periodical or series. Include any significant publication in the proceedings of a one-time conference or in the report of a one-time study, commission, or the like. Identify for each one-time publication: author(s); title; editor; title of collection, if applicable; bibliographic information; year; type of publication (book, thesis or dissertation, other); status of publication (published; accepted, awaiting publication; submitted, under review; other); acknowledgement of federal support (yes/no).

**iii. Other publications, conference papers and presentations.** Identify any other publications, conference papers and/or presentations not reported above. Specify the status of the publication as noted above.

**b. Website(s) or other Internet site(s)**

List the URL for any Internet site(s) that disseminates the results of the research activities. A short description of each site should be provided. It is not necessary to include the publications already specified above in this section.

**c. Technologies or techniques**

Identify technologies or techniques that have resulted from the research activities. Describe the technologies or techniques and how they are being shared.

**d. Inventions, patent applications, and/or licenses**

Identify inventions, patent applications with date, and/or licenses that have resulted from the research. Submission of this information as part of an interim research performance progress report is not a substitute for any other invention reporting required under the terms and conditions of an award.

**e. Other products**

Identify any other significant products that were developed under this project. Describe the product and how it is being shared. Examples of other products are: Databases; Physical collections; Audio or video products; Software or NetWare; Models; Educational aids or curricula; Instruments or equipment; Data & Research Material (e.g., cell lines, DNA probes, animal models); and Other.

**4. PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS: [Optional/Mandatory]**

**Who has been involved?**

Agencies need to know who has worked on the project to gauge and report performance in promoting partnerships and collaborations. The following information on participants must be provided:

**a. What individuals have worked on the project?**

Provide the following information for: (1) principal investigator(s)/project director(s) (PIs/PDs); and (2) each person who has worked at least one person month per year on the project during the reporting period, regardless of the source of compensation (a person month equals approximately 160 hours of effort).

Provide the name and identify the role the person played in the project. Do NOT include any other identifying information on individuals. Indicate the nearest whole person month (Calendar, Academic, Summer) that the individual worked on the project. Show the most senior role in which the person has worked on the project for any significant length of time. For example, if an undergraduate student graduates, enters graduate school, and continues to work on the project, show that person as a graduate student, preferably explaining the change in involvement. Describe how this person contributed to the project and with what funding support. If information is unchanged from a previous submission, provide the name only and indicate “no change”. Identify whether this person is collaborating internationally. Specifically is the person collaborating with an individual located in a foreign country and whether the person had traveled to the foreign country as part of that collaboration and duration of stay. The foreign country(ies) should be identified.

*Example:*

1. **Name:** Mary Smith
2. **Project Role:** Graduate Student
3. **Nearest person month worked:** 5
4. **Contribution to Project:** Ms. Smith has performed work in the area of combined error-control and constrained coding.
5. **Funding Support:** The Ford Foundation (Complete only if the funding provided from other than this award.)
6. **Collaborated with individual in foreign country:** Yes
7. **Country(ies) of foreign collaborator:** China
8. **Travelled to foreign country:** Yes
9. **If traveled to foreign country(ies), duration of stay:** 5 months

**b. What other organizations have been involved as partners?**

Describe partner organizations – academic institutions, other nonprofits, industrial or commercial firms, state or local governments, schools or school systems, or other organizations (foreign or domestic) – that have been involved with the project. Partner organizations may provide financial or in-kind support, supply facilities or equipment, collaborate in the research, exchange personnel, or otherwise contribute.

Provide the following information for each partnership:

1. Organization Name:
2. Location of Organization: (if foreign location list country)
3. Partner’s contribution to the project (identify one or more)
4. Financial support;
5. In-kind support (e.g., partner makes software, computers, equipment, etc., available to project staff);
6. Facilities (e.g., project staff use the partner’s facilities for project activities);
7. Collaborative research (e.g., partner’s staff work with project staff on the project);
8. Personnel exchanges (e.g., project staff and/or partner’s staff use each other’s facilities,

work at each other's site).

9. More detail on partner and contribution (foreign or domestic).

**c. Have other collaborators or contacts been involved?**

Some significant collaborators or contacts within the recipient's organization may not be covered by "What people have worked on the project?" Likewise, some significant collaborators or contacts outside the recipient's organization may not be covered under "What other organizations have been involved as partners?" For example, describe any significant: collaborations with others within the recipient's organization; especially interdepartmental or interdisciplinary collaborations; collaborations or contact with others outside the organization; and collaborations or contacts with others outside the United States or with an international organization. country(ies) of collaborations or contacts.

It is likely that many recipients will have no other collaborators or contacts to report.

**5. IMPACT: [Optional/Mandatory]**

**What is the impact of the project? How has it contributed?**

Over the years, this base of knowledge, techniques, people, and infrastructure is drawn upon again and again for application to commercial technology and the economy, to health and safety, to cost-efficient environmental protection, to the solution of social problems, to numerous other aspects of the public welfare, and to other fields of endeavor.

The taxpaying public and its representatives deserve a periodic assessment to show them how the investments they make benefit the nation. Through this reporting format, and especially this section, recipients provide that assessment and make the case for Federal funding of research and education.

Agencies use this information to assess how their research programs: increase the body of knowledge and techniques; enlarge the pool of people trained to develop that knowledge and techniques or put it to use; and improve the physical, institutional, and information resources that enable those people to get their training and perform their functions.

This component will be used to describe ways in which the work, findings, and specific products of the project have had an impact during this reporting period. Describe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the project relative to: the development of the principal discipline(s) of the project; other disciplines; the development of human resources; physical, institutional, and information resources that form infrastructure; technology transfer (include transfer of results to entities in government or industry, adoption of new practices, or instances where research has led to the initiation of a startup company); or society beyond science and technology.

**a. What is the impact on the development of the principal discipline(s) of the project?**

Describe how findings, results, and techniques that were developed or extended, or other products from the project made an impact or are likely to make an impact on the base of knowledge, theory, and research and/or pedagogical methods in the principal disciplinary field(s) of the project. Summarize using language that an intelligent lay audience can understand (*Scientific American* style). How the field or discipline is defined is not as important as covering the impact the work has had on knowledge and technique. Make the best distinction possible, for example, by using a "field" or "discipline", if appropriate, that corresponds with a single academic department (i.e., physics rather than nuclear physics).

**b. What is the impact on other disciplines?**

Describe how the findings, results, or techniques that were developed or improved, or other products from the project made an impact or are likely to make an impact on other disciplines.

**c. What is the impact on the development of human resources?**

Describe how the project made an impact or is likely to make an impact on human resource development in science, engineering, and technology. For example, how has the project: provided opportunities for research and teaching in the relevant fields; improved the performance, skills, or attitudes of members of underrepresented groups that will improve their access to or retention in research, teaching, or other related professions; developed and disseminated new educational materials or provided scholarships; or provided exposure to science and technology for practitioners, teachers, young people, or other members of the public?

**d. What is the impact on physical, institutional, and information resources that form infrastructure?**

Describe ways, if any, in which the project made an impact, or is likely to make an impact, on physical, institutional, and information resources that form infrastructure, including: physical resources such as facilities, laboratories, or instruments; institutional resources (such as establishment or sustenance of societies or organizations); or information resources, electronic means for accessing such resources or for scientific communication, or the like.

**e. What is the impact on technology transfer?**

Describe ways in which the project made an impact, or is likely to make an impact, on commercial technology or public use, including: transfer of results to entities in government or industry; instances where the research has led to the initiation of a start-up company; or adoption of new practices.

**f. What is the impact on society beyond science and technology?**

Describe how results from the project made an impact, or are likely to make an impact, beyond the bounds of science, engineering, and the academic world on areas such as: improving public knowledge, attitudes, skills, and abilities; changing behavior, practices, decision making, policies (including regulatory policies), or social actions; or improving social, economic, civic, or environmental conditions.

**g. What dollar amount of the award's budget is being spent in foreign country(ies)?**

Describe what percentage of the award's budget is being spent in foreign country(ies). If more than one foreign country is involved, identify the distribution between the foreign countries.

**6. CHANGES/PROBLEMS: [Optional/Mandatory]**

The PI is reminded that the grantee is required to obtain prior written approval from the Contracting Officer whenever there are significant changes in the project or its direction. Requests for prior written approval must be submitted to the Contracting Officer (submission via Fedconnect is acceptable). If not previously reported in writing, provide the following additional information, if applicable: Changes in approach and reasons for change; Actual or anticipated problems or delays and actions or plans to resolve them; Changes that have a significant impact on expenditures; Significant changes in use or care of animals, human subjects, and/or biohazards.

**a. Changes in approach and reasons for change**

Describe any changes in approach during the reporting period and reasons for these changes. Remember that significant changes in objectives and scope require prior approval of the

agency.

**b. Actual or anticipated problems or delays and actions or plans to resolve them**

Describe problems or delays encountered during the reporting period and actions or plans to resolve them.

**c. Changes that have a significant impact on expenditures**

Describe changes during the reporting period that may have a significant impact on expenditures, for example, delays in hiring staff or favorable developments that enable meeting objectives at less cost than anticipated.

**d. Significant changes in use or care of human subjects, vertebrate animals, and/or Biohazards**

Describe significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects, vertebrate animals, and/or biohazards during the reporting period. If required, were these changes approved by the applicable institution committee and reported to the agency? Also specify the applicable Institutional Review Board/Institutional Animal Care and Use Committee approval dates.

**e. Change of primary performance site location from that originally proposed**

Identify any change to the primary performance site location identified in the proposal, as originally submitted.

**7. SPECIAL REPORTING REQUIREMENTS: [Optional/Mandatory]**

Respond to any special reporting requirements specified in the award terms and conditions, as well as any award specific reporting requirements.

**8. BUDGETARY INFORMATION: [Optional/Mandatory]**

This component will be used to collect budgetary data from the recipient organization. The information will be used in conducting periodic administrative/budgetary reviews. Budgetary data identified and required by the CO should be submitted in an Excel spreadsheet format.

**9. PROJECT MANAGEMENT PLAN (PMP) [Optional/Mandatory]**

**Iterations and Maintenance**

The recipient is required to develop, update, and adhere to a project management plan. The purpose of the plan is to establish cost, schedule, and technical performance baselines, and to formalize the processes by which the project will be managed. These processes include considerations such as risk management, change management, and communications management. While it is primarily the project recipient's responsibility to maintain the plan, Federal staff may request changes. The plan is intended to be a living document, modified as necessary, and comprising the following iterations:

**Application Draft**

The recipient must submit a draft of the project management plan with the initial application for financial assistance.

**Negotiation Draft**

The selected recipient may be called upon by the selecting Office to revise its project management plan during the negotiation phase.

## Active Plan

Following formal award of the financial assistance agreement, the recipient must submit an updated project management plan, to include any changes requested during negotiation and a timeline based upon the actual award date.

### a. Revised Plan(s)

During the life of the project the recipient must submit a revised project management plan based on the following circumstances:

1. Developments that have a significant favorable impact on the project.
2. Problems, delays, or adverse conditions which materially impair the recipient's ability to meet the objectives of the award or which may require the program office to respond to questions relating to such events from the public. Specifically, the recipient must update the plan when any of the following incidents occur:
  - a) Any event which is anticipated to cause significant schedule or cost changes, such as changes to the funding and costing profile or changes to the project timeline.
  - b) Any change to Technology Readiness Level.
  - c) Any significant change to risk events (including both potential and realized events) or to risk management strategies
  - d) Failure to meet a milestone or milestones; any dependencies should be adjusted.
  - e) Any changes to partnerships.
  - f) Any significant change to facilities or other project resources.
  - g) Any other incident that has the potential for high visibility in the media.

### b. Content of revised PMP:

**Project Title:** The DOE award number and project title

**Recipient Organization:** Official name of the recipient organization

**Principal Investigator:** The name and title of the project director/ principal investigator

**Date of Plan:** The date the plan or plan revision was completed

The revised PMP must describe changes to any of the following sections of the PMP as well as provide updated versions of any logs, tables, charts, or timelines.

1. **Executive Summary:** Provide a description of the project that includes the objective, project goals, and expected results. The description should include a high level description of the technology, potential use or benefit of the technology, location of work sites and a brief discussion of work performed at each site, along with a description of project phases (if the project includes phases).
2. **Technology Readiness Levels (TRLs):** Identify the readiness level of the technology associated with the project as well as the planned progression during the course of project execution. A detailed explanation of the rationale for the estimated technology readiness level should be provided. Specific entry criteria for the next higher technology readiness level should be identified. The following definitions apply:
  - a) TRL-1. Basic principles observed and reported: Scientific problem or phenomenon identified. Essential characteristics and behaviors of systems and architectures are identified using mathematical formulations or algorithms. The observation of basic scientific principles or phenomena has been validated through peer-reviewed research. Technology is ready to transition from scientific research to applied research.



- b) TRL-2. Technology concept and/or application formulated: Applied research activity. Theory and scientific principles are focused on specific application areas to define the concept. Characteristics of the application are described. Analytical tools are developed for simulation or analysis of the application.
- c) TRL-3. Analytical and experimental critical function and/or characteristic proof of concept: Proof of concept validation has been achieved at this level. Experimental research and development is initiated with analytical and laboratory studies. System/integrated process requirements for the overall system application are well known. Demonstration of technical feasibility using immature prototype implementations are exercised with representative interface inputs to include electrical, mechanical, or controlling elements to validate predictions.
- d) TRL-4. Component and/or process validation in laboratory environment- Alpha prototype (component) Standalone prototyping implementation and testing in laboratory environment demonstrates the concept. Integration and testing of component technology elements are sufficient to validate feasibility.
- e) TRL-5. Component and/or process validation in relevant environment- Beta prototype (component): Thorough prototype testing of the component/process in relevant environment to the end user is performed. Basic technology elements are integrated with reasonably realistic supporting elements based on available technologies. Prototyping implementations conform to the target environment and interfaces.
- f) TRL-6. System/process model or prototype demonstration in a relevant environment- Beta prototype (system): Prototyping implementations are partially integrated with existing systems. Engineering feasibility fully demonstrated in actual or high fidelity system applications in an environment relevant to the end user.
- g) TRL-7. System/process prototype demonstration in an operational environment- Integrated pilot (system): System prototyping demonstration in operational environment. System is at or near full scale (pilot or engineering scale) of the operational system, with most functions available for demonstration and test. The system, component, or process is integrated with collateral and ancillary systems in a near production quality prototype.
- h) TRL-8. Actual system/process completed and qualified through test and demonstration- Pre-commercial demonstration: End of system development. Full-scale system is fully integrated into operational environment with fully operational hardware and software systems. All functionality is tested in simulated and operational scenarios with demonstrated achievement of end-user specifications. Technology is ready to move from development to commercialization.

3. **Risk Management:** *Provide a summary description of the proposed approach to identify, analyze, and respond to potential risks associated with the proposed project. Project risk events are uncertain future events that, if realized, impact the success of the project. At a minimum, include the initial identification of significant technical, resource, and management issues that have the potential to impede project progress and strategies to minimize impacts from those issues. The risk management approach should be tailored to the TRL. If a project or task is expected to progress to a higher TRL, then the risk plan should address the retirement of any risks associated with the first TRL and identify new risks related to moving to the next TRL. Additionally, the risk management approach should include risk opportunities that if realized, could benefit the project.*

4. **Milestone Log:** Provide milestones for each budget period (or phase) of the project. Each milestone should include a title and planned completion date. Milestones should be

quantitative (e.g., a date, a decision to be made, a key event) and show progress toward budget period and/or project goals. Milestones should also be important and few. Higher TRL projects (Demonstration and Deployment) typically have the most detailed milestone logs compared to lower TRL level projects (Research and Development). If applicable, milestones chosen should clearly reflect progress through various TRL stages.

*Note: The Milestone Status must present actual performance in comparison with the Milestone Log, and include:*

- (a) the actual status and progress of the project,*
- (b) specific progress made toward achieving the project's milestones, and,*
- (c) any proposed changes in the project's schedule required to complete milestones.*

5. **Funding and Costing Profile:** Provide a table (the Project Funding Profile) that shows, by budget period, the amount of government funding going to each project team member. Also a table (the Project Costing Profile) which projects, by month, the expenditure of both government and recipient funds for the first budget period, at a minimum. The Funding and Costing Profile should show the relationships with the Milestone Log (Item 4 above) and Project Timeline (Item 6 below); for example, Funding and Costing information could be shown as an overlay on milestone or timeline charts.
6. **Project Timeline:** Provide a timeline of the project (similar to a Gantt chart) broken down by each task and subtask, as described in the Statement of Project Objectives. The timeline should include a start date and end date for each task, as well as interim milestones. The timeline should also show interdependencies between tasks and include the milestones that are identified in the Milestone Log (Item 4 above). The timeline should also show the relationship to the Project Costing Profile (Item 5 above). If applicable, the timeline should include activities and milestones related to achieving succeeding TRLs.
7. **Success Criteria at Decision Points:** Provide well-defined success criteria for each decision point in the project, including go/no-go decision points and the conclusions of budget periods and the entire project. The success criteria should be objective and stated in terms of specific, measurable, and repeatable data. Usually, the success criteria pertain to desirable outcomes, results, and observations from the project. Key milestones can be associated with success criterion. If applicable, the success criteria should include exit criteria for progressing from one TRL to the next.
8. **Key Partnerships, Teaming Arrangements and Team Members:** Provide a list of key team members in the project as well as the role and contact information of each. A hierarchical project organization and structure chart should be provided along with a description of the role and responsibilities of each team member in terms of contribution to project scope. The section should also include key team members who fulfill single or multiple roles within a project as well as the contact information for each.
9. **Facilities and Resources:** Provide a list of project locations along with a discussion of capabilities and activities performed at each site in terms of contribution to project scope. The address of each work site should be provided.

10. **Communications Management:** Describe the communications needs and expectations for the project team members. The communications plan may be simple or detailed, depending on the complexity of the project. At a minimum, the plan should include contact information, methods of communicating and anticipated frequency.
  
11. **Change Management:** Provide a description of the process for managing change on the project. Describe how change will be monitored, controlled and documented within the project. This includes, but is not limited to, changes to the Scope, Schedule, and Budget. If applicable, Change Management should include assessing how changes impact TRLs.