Opportunity to DOE National Laboratories*

U. S. Department of Energy National Energy Technology Laboratory

Title: EMP/GMD Modeling and Assessments; Testing and Validation; and Mitigation Laboratory Call for Proposals

Announcement Type: New

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ISSUING OFFICE: U.S. DEPARTMENT OF ENERGY
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Issue Date: March 1, 2021
Proposal Due Date: April 14, 2021

It is strongly recommended that proposal submissions begin well in advance of (at least 48 hours before) the Proposal Due Date. ALL proposals in response to this announcement must be submitted to GMD.EMPannouncement@netl.doe.gov.

Only DOE National Laboratories are eligible to submit proposals under this opportunity.

Contents

SECTION I – OVERVIEW AND PURPOSE

A. SUMMARY

The Department of Energy (DOE) National Energy Technology Laboratory (NETL) on behalf of the Office of Cybersecurity, Energy Security, and Emergency Response (CESER) is seeking proposals to support three topic areas to address the risks of electromagnetic pulses (EMP) and geomagnetic disturbances (GMD). This work is directed in the Executive Order on Coordinating National Resilience to Electromagnetic Pulses, outlined in DOE's EMP Resilience Action Plan, mentioned in the National Space Weather Strategy and Action Plan, instructed in the National Defense Authorization Act for Fiscal Year (FY) 2020, and funded by Congress in FY 2020.

Only DOE National Laboratories, are eligible to apply for funding under this opportunity. See Section III, Part A of this Laboratory Call for Proposals (Lab Call) for a full discussion of eligibility information.

The intent of this opportunity is to provide support under the specific topic areas listed below in the areas of: (1) Modeling and Assessments; (2) Testing and Validation; and (3) Mitigation. Partnerships with other government agencies and the private sector, as appropriate, are important to success. CESER wants to identify gaps in knowledge and capabilities in each area and explore and develop solutions to fill those gaps and enhance capabilities to better understand the risks of EMP and GMD to the energy sector. The intent of the announcement for support to CESER to address the risks of EMP and GMD is not limited to identification of problems and shortcomings in capabilities and development of solutions to address these issues. CESER desires modeling, simulations, and assessments; testing and validation; and mitigation projects that use such capabilities and tools to advance industry's understanding of potential adverse impacts (and ways to mitigate or protect against such potential negative consequences) from EMP and GMD events.

B. BACKGROUND INFORMATION

CESER leads efforts in DOE to: secure the United States (U.S.) energy infrastructure against all hazards, reduce the impact of disruptive events, and respond to and facilitate recovery from energy disruptions, in collaboration with industry and State and local governments.

EMP can be generated by non-nuclear means and the field strengths can be quite high, albeit with a very limited and directed area of effect. Non-nuclear EMP generators are typically used to simulate EMP for testing components for their ability to withstand electromagnetic interference or radiation, but have also been designed as point target weapons. EMP can also be caused by nuclear weapons and if exploded at high altitudes (HEMP) can cover a very large area with significant amounts of electromagnetic radiation. *Both of these EMP threats (non-nuclear and nuclear) are of concern today for CESER and industry and along with an extreme GMD, on the scale of a so-called 100-year storm, are the foci of this Laboratory Call.*

CESER has been addressing both EMP and GMD (a phenomenon that is caused by space weather events) for a number of years. Due to the potentially catastrophic impacts from either an EMP or a 100-year GMD event, and from identifying gaps in the Nation's ability to effectively address both risks, CESER has developed this Lab Call. Funding for efforts to address both EMP and GMD is intended to advance stakeholders' understanding of these high impact, low probability phenomena and what can be done to enhance the resilience of the Nation's energy infrastructure, with an initial focus on the electricity grid (systems and components) and eventually the Nation's oil and natural gas systems and components, including the production, processing/refining, storage, and transportation of oil and natural gas.

The Sun is volatile and solar flares and Coronal Mass Ejections (CME) are visible (via solar telescopes) reminders. CMEs cause GMDs capable of causing major disturbances of the Earth's magnetosphere. A CME is created by magnetic field changes in the Sun which result in an explosive projectile of plasma flung into space. A CME can change the geomagnetic fields of the Earth. Such changes in the geomagnetic fields could induce geoelectric fields on the earth's surface which result in ground-induced currents (GIC) in man-made structures such as rail lines, pipelines, electric transmission lines, and some communications lines. This effort seeks to address scientific and technical questions concerning the impacts of GIC flows in power transformers. For instance, one concern is to understand if the GICs flowing into a transformer are significant to the point they could damage the transformer and potentially destabilize the electric grid to the point of collapse.

Energy from an EMP or GMD can couple into electric utility systems in multiple ways that can severely damage and/or impact component performance and lifetime, causing extended outages of the electrical infrastructure. Improving the understanding of this energy coupling and the susceptibility of the exposed components to an EMP or GMD event is key to improving existing component and system designs as well as developing more resilient technologies that can be readily integrated into the electrical grid.

To close the knowledge gaps and enable effective risk mitigation for the United States' primary energy systems, an increased engagement between CESER, the DOE National Laboratories, and the electric and oil and natural gas industries is necessary.

In December 2015, the Secretary of Energy directed the Infrastructure Security and Energy Restoration (ISER) division, now in CESER, to develop an EMP strategy for DOE leading to the development of a Joint Electromagnetic Pulse Resilience Strategy which was publicly released in July 2016. In 2017 and 2018, a pilot program plan was developed to field deployed commercially available technologies to mitigate the impacts of ground-induced currents from an EMP or GMD.

In March 2019, the White House released an Executive Order entitled "Coordinating National Resilience to Electromagnetic Pulses.**"** The purpose of the Executive Order (EO) is to improve the resilience of the Nation to the effects of EMP through coordination between and among all of government and the owners and operators of critical infrastructure. Roles and responsibilities of selected executive departments are spelled out and then specific actions are directed and assigned. The EO directs the Department of Energy as the Sector Specific Agency (SSA) for energy to take many different actions and in addition to support the Department of Homeland Security (DHS) on many other action items.

In March 2019, the White House also released the National Space Weather Strategy and Action Plan. This updated Strategy and Action Plan identifies strategic objectives and high-level actions necessary to achieve a space-weather-ready Nation. Each action includes a proposed timeline for completion. DOE is responsible for a number of space weather-related actions and like the EO on EMP is directed to support DHS on many other action items over the next few years.

CESER leads DOE's efforts to address both EMP and GMD. Although EMP and GMD activities and actions have been ongoing in DOE and its labs for many years, over the past year, CESER moved beyond its focus on planning and research to efforts on designing, building, commissioning, and operating a national capability for validating existing models, commissioning system components, and developing new technologies that will initially focus on increasing the resiliency of the electric grid to EMP and GMD events. The activities will allow feedback early in the design stages of new components and access to a national capability for validating component performance in relevant electromagnetic environments. This capability must impact the process of analysis, modeling and simulation, experimental testing and validation to be fully effective. It must also inform utilities, transmission operators, oil and natural gas companies, and technology providers on the critical measures required to harden existing and future electrical transmission and distribution systems and oil and natural gas assets and systems.

DOE goals related to addressing the risk of EMP to the electric grid are shown in the box below.

Shared Goals

1. **Improve and share understanding of EMP: threat, effects, and impacts**
2. **Identify priority infrastructure**
3. **Test and promote mitigation and protection approaches**
4. **Enhance response and recovery capabilities to an EMP attack**
5. **Share best practices across government and industry**

CESER's three topic areas for this Lab Call, all related to addressing EMP and GMD are:

- **Modeling and Assessments:** modeling estimates levels of voltage and current surges for specific equipment including coupling models of how energy enters the systems. Also includes simulations and expected impacts. Assessments compare simulation results with damage thresholds that are determined through testing. When the stress exceeds the strength, equipment damage is likely to occur. System impacts, including stability will also be analyzed. A variety of threat, vulnerability, and consequence assessments will be required. Peer reviews of assessments are expected.
- **Testing and Validation:** identifies ability of components to withstand various levels of insult; there is a limited capability at present to field test and validate protection schemes. This task may include support to identify gaps in testing and test capabilities, develop and evaluate solutions for those gaps, prioritize testing needs, and produce test plans and test cases, and testing of live and de-energized equipment. The testing program is also expected to provide data with which to benchmark DOE's modeling program.

- **Mitigation:** develops new components, architectures, and advanced controls that address regulation, stability, and power management for EMP and GMD events. The mitigation program will be informed by the testing program and DOE's separate electric field environment work to prioritize testing of mitigation strategies for protecting at risk components. Development and implementation of pilot programs to field and validate mitigation and protection devices and technologies, including partnering with utilities is part of the mitigation topic area.

C. STATUTORY AUTHORITY

The statutory authority for the EMP/GMD program is provided by several DOE authorities such as, but not limited to:

- **Federal Energy Administration Act of 1974, section 13** (P.L. 93-275, 15 U.S.C. 761 et seq.) grants DOE the authority to collect, assemble, evaluate, and analyze energy information.
- **Federal Power Act,** as amended, (16 U.S.C. 824a(e)) provides the Secretary authority with regard to reliability of the interstate electric power transmission system.
- **FAST Act,** (P.L. 114-94) amended the Federal Power Act to allow the Secretary of Energy to respond to grid emergencies by issuing mandatory orders to grid operators, to protect national security.
- **Defense Production Act of 1950,** as amended, (P.L. 81-774) designated "energy" as a strategic and critical material.
- A number of Executive Orders (including the 2019 Executive Order entitled **Coordinating National Resilience to Electromagnetic Pulses**) and Presidential Directives also designate DOE responsibilities related to Energy security and provide authorities to DOE to take actions related to EMP/GMD preparedness.

D. LAB CALL DESCRIPTION

CESER is looking to enhance resilience of the energy sector to EMP and extreme GMD events by advancing understanding of: (1) potential and expected adverse impacts and consequences of such events (should they occur) to energy system components, systems, and operations; and (2) potential mitigation and protection measures and technologies. CESER's EMP and GMD work and activities focus on the three topic areas of this funding opportunity: Modeling and Assessments, Testing and Validation, and Mitigation. DOE is requesting individual proposals on these three topic areas. A national laboratory and its partner team can submit proposals on one, two, or all three topic areas of interest to CESER. R&D work is not considered a separate topic and should be addressed as it relates to the individual topic being covered in a proposal. Each of the three topic areas are briefly described below.

Topic Area 1: Modeling and Assessments

In order to estimate system impacts and consequences from an EMP or GMD event, enhancing and then utilizing improved models and running simulations are required. Running the models and simulations will result in identifying the factors, parameters, assumptions, estimates, etc. that are the most important in driving and determining adverse consequences. One CESER objective is to identify gaps and limitations in EMP modeling and reduce the level of uncertainty in the areas within the

model that have the largest impact on results. Use of models should lead to model validation against real data which in turn should identify areas of uncertainly and sensitivity to focus on, in order to improve models in the future.

DOE has been directed to contribute to EMP threat assessments and EMP and GMD risk assessments on a recurring basis. CESER will need to assess criticality, vulnerabilities, and potential and expected consequences from EMP, as well as extreme space weather events. Assessments may be on energy sector components, equipment, and systems, and on interdependent systems. Assessments should clearly state assumptions, unknowns, and level of confidence in conclusions.

The proposed team must include at least one key personnel with experience modeling EMP and/or GMD impacts related to the energy sector.

While an Offeror should propose what they believe will accomplish the Modeling and Assessments objectives of this announcement, DOE offers the following as some examples of concepts that could represent a portion of the proposed scope:

- Identifying problems, issues, and gaps in EMP models;
- Recommending improvements to modeling capabilities;
- Use of models and simulations to estimate potential impacts to the energy sector from EMP and GMD;
- Vulnerability assessments of the most critical energy components, systems, and functions;
- EMP risk assessments of the electric grid, natural gas systems, and petroleum systems;
- Assessments of expected stability, disruption, and damage to energy systems from EMP;
- Priorities for components and equipment hardening; and
- Recommended actions, activities, solutions to reduce risk of EMP and/or GMD events.

Suitable applications are not limited to the above examples. Similarly, DOE offers the following as some examples of concepts that would **not** be well suited to this Modeling and Assessments topic area of this announcement:

- R&D on new EMP models;
- Purchasing commercially available EMP or energy sector modeling software;
- Utilizing funds to travel to and attend workshops, training, or conferences;
- Developing or improving codes used to calculate EMP effects;
- Duplication of recent assessments related to EMP and GMD, as this announcement desires breaking new ground in areas of energy sector assessments; and
- Assessments that use proprietary company data or classified information that limits the ability of DOE to share results, provided that sharing by DOE will be conducted consistent with national security interests.

Topic Area 2: Testing and Validation

To estimate or calculate expected or potential impacts from EMP or GMD on the energy sector, one must understand the response of components, equipment, and systems. While impacts can be estimated, a better understanding can be gained by testing components and equipment and evaluating behavior due to currents and voltages generated or induced from EMP and/or GMD events. Performance testing is desired to better understand adverse consequences from potential EMP and GMD events. The focus of the proposal should be on component and equipment testing to identify the ability of components to withstand different levels of EMP, both radiated and conducted. One of the main objectives is to determine the amount of current and/or voltage that critical components and equipment can withstand before becoming disrupted or upset and also the (higher) amount that would lead to damage and require repair and replacement. Testing results that only identify whether individual components meet a particular standard are not sufficient.

The proposed team must include at least one key personnel with experience planning and executing EMP and/or GMD testing. All proposed testing must ensure compliance with any Federal, State, or local laws and requirements. While an Offeror should propose what they believe will accomplish the Testing and Validation objectives of this announcement, DOE offers the following as some examples of concepts that could represent a portion of the proposed scope:

- Test Standard Development for specific tests, e.g., current/voltage levels and duration;
- Enhancements to the planned prioritization of electrical grid component testing;
- Order of tests;
- Test cases;
- Offering or developing mobile EMP testing capabilities;
- Forensics or diagnostics of equipment that fails in a test;
- Testing of components, equipment, and systems;
- Validation of modeling;
- Testing mitigation technologies;
- Identification of gaps and/or inadequate testing capabilities;
- Plans to address gaps or inadequacies in EMP and/or GMD testing capabilities; and
- Improved test capabilities that plug identified gaps or inadequacies, particularly relating to system and field testing.

Suitable applications are not limited to the above examples. Similarly, DOE offers the following as some examples of concepts that would **not** be well suited to this Testing and Validation portion of this announcement:

- Plans to build new or enhance government-owned, lab-owned or contractor-owned testing capabilities or purchase testing equipment that would duplicate already existing capabilities in the United States, whether commercially- or government-owned; and
- Substantial funds for fact finding and research.

CESER is particularly interested in understanding testing capabilities and ideas for test campaigns (and costs) rather than the pre-selection of specific equipment types and models by the Offeror.

Topic Area 3: Mitigation

DOE and the Secretary of Energy specifically have been directed to plan and implement a number of pilot projects to field deploy and test protection and mitigation technologies to reduce or eliminate adverse consequences from EMP or extreme space weather events. These projects are to be deployed and evaluated, to validate mitigation and protection techniques and equipment on actual energy sector systems. Technologies to be field deployed can include ones that enhance resilience of components, architectures, controls, regulation, stability, and other facets of energy systems. Plans should include how such mitigation projects are to be selected, procured and deployed, operated and maintained, and evaluated.

All Mitigation proposals must include energy sector partners. Every specific mitigation project or pilot must identify the planned energy sector partner and that partner must express an understanding and willingness to provide required cost share. See cost share requirements in Section E below. For example, if a pilot project required $200,000 for equipment, the partner receiving the equipment may need to agree to pay at 50 percent of the cost of such equipment. One or multiple mitigation projects can be included in the single proposal allowed for submission under the Mitigation topic area of this Lab Call announcement. If multiple projects are proposed, the specific partner for each project must be identified.

While an Offeror should propose what they believe will accomplish the mitigation objectives of this announcement, DOE offers the following as some examples of concepts that could represent a portion of the proposed scope:

- Identification and evaluation of mitigation and protection technologies;
- Plans for pilot projects to enhance resilience of components, equipment, and systems to EMP and or GMD induced disruption and/or damage;
- Plans for site assessments;
- Deployment of commercially available mitigation and protection technologies;
- Justification for R&D efforts to address gaps in available mitigation and/or protection technologies; and
- R&D efforts to include identification of potentially new EMP and/or GMD mitigation and/or protection technologies to explore/investigate.

Suitable applications are not limited to the above examples. Similarly, DOE offers the following as some examples of concepts that would **not** be well suited to this Mitigation portion of this announcement:

- Basic scientific research related to EMP and/or GMD mitigation and protection—each technology explored should have some realistic potential for application and use;
- Component testing, other than field/validation testing that any deployed mitigation and/or protection technology was properly installed and is operational.

E. NATIONAL LABORATORY GUIDING PRINCIPLES

To ensure alignment, Offerors should consider the following when developing their proposals in response to the Topic Areas below:

- All projects must include annual milestones, deliverables, and go/no-go decisions.
- Any non-National Laboratory entity (excluding Federal partners) that is proposed on a project team, must provide cost share in proportion to the Federal funding that the entity will receive on the project in accordance with the Energy Policy Act of 2005, §988. There is a requirement for a 20 percent cost share for R&D (excluding basic and fundamental R&D) and a requirement for a 50 percent cost share for demonstration and commercial application activities. The cost share must come from non-Federal sources, meaning Federal partners are not required to provide any cost share to participate in any of these CESER projects. There may be cost share requirements on the applied R&D and, in particular, on the mitigation topic area. There is not an expectation that partners would be required to provide cost shares on the Modeling and Assessments or Testing and Validation topic areas (unless, of course, the project involves applied R&D.)
    - **Example:** CorpA proposes to utilize $500,000 in Federal funding as a team member on ProjectA. CorpA must commit to provide 20 percent cost share for their R&D activities (assuming the use of $400,000 in Federal funds for R&D requiring $100,000 selectee cost share) and 50 percent cost share for any demonstration tasks/activities (assuming $100,000 in Federal funds for demonstration requiring $100,000 in selectee cost share).
- Proposals should be prepared so that tasks and demonstration or pilot projects (along with associated budget estimates) are segregated and can be readily identified. Moreover, since cost share requirements differ for tasks (20%) and demonstration (50%) projects, the ability to distinguish between tasks and demonstration work will result in a more accurate determination of overall project cost share for non-government project team members.
- CESER strongly encourages projects that bring together partners from the energy sector, facilitating collaboration and leveraging expertise and core or enabling capabilities.

Note on Topic Areas:

- Offerors may submit only one proposal per Topic Area; in addition, an Offeror may not submit an identical proposal under more than one Topic Area. Hence up to three different proposals, one per each of the three Topic Areas, may be submitted by an Offeror. Each Topic Area proposal may include multiple tasks/concepts.
- Offerors must clearly identify the Topic Area they are applying to in the Project Narrative.
- If DOE believes a proposal fits more appropriately in a Topic Area other than the one to which it was submitted, DOE may evaluate the proposal under the more appropriate Topic Area.

F. TOPIC AREAS

This Lab Call includes three Topic Areas. **Only proposals that specifically address a Topic Area listed in the following section will be accepted under this Lab Call. Detailed descriptions of each of these Topic Areas are in Section D, the Lab Call Description.**

TOPIC AREA 1: Modeling and Assessments

TOPIC AREA 2: Testing and Validation

TOPIC AREA 3: Mitigation

SECTION II – FUNDING INFORMATION

A. TYPE OF FUNDING INSTRUMENT

DOE anticipates providing funding for selected projects to DOE-Sponsored National Laboratories. Any project funded as a result of the opportunity will be processed as a Field Work Proposal (FWP), an Inter Entity Work Order (IEWO), Interagency Agreement (IAA), or any other allowable method deemed appropriate by the government. The Prime National Laboratory will flow down, as appropriate, any terms and conditions in its funding agreement with the Government to subcontractors.

B. ESTIMATED FUNDING

Approximately $4 million is available under this Lab Call. Additional funding (amount TBD) is expected to support up to three (3) years of this multi-year project.

Funding for all proposals selected under this Lab Call and future budget periods is contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority.

C. EXPECTED NUMBER OF SELECTIONS

DOE anticipates selecting one proposal to receive approximately $1 million each for the Modeling and Assessments topic area and for the Mitigation topic area. DOE anticipates selecting two proposals to receive $1 million each for the Testing and Validation topic area or alternatively selecting one proposal to receive approximately $2 million for this topic area. DOE reserves the right to fund, in whole or in part, any, all, or none of the proposals submitted in response to this opportunity and will issue the number of instruments that serves the public purpose and is in the best interest of the government.

D. ANTICIPATED PROJECT SIZE AND PROJECT TEAM REQUIREMENTS

A National Laboratory is required to serve as the prime for this contract, which must be documented with a formal letter of commitment provided as part of a proposal to this opportunity. A team of National Laboratories may be proposed, but one Laboratory must be identified as the prime for a proposed project.

DOE encourages collaboration involving one or more energy sector stakeholders, defined in Section

III.A – *Eligible Offerors*, as project team member subcontractors. While involvement with one or more energy sector stakeholders is encouraged, no more than 50 percent of the total Federal funding can be provided to a single non-government project team member.

Subcontractor participation must be documented with formal letters of commitment and included in the proposal.

NOTE: This information is for estimating purposes only and in no way commits the government.

E. PERIOD OF PERFORMANCE

DOE anticipates funding projects with an estimated project period not to exceed three (3) years. DOE reserves the right to set the expected period of performance to meet DOE's objectives for national security interest and serve the best interest of the government.

Projects must be divided into phases, with go/no-go decision points at the end of each phase. A decision will be made by DOE regarding continuation, redirection, or termination of the project at each decision point.

SECTION III – ELIGIBILITY INFORMATION

A. ELIGIBLE OFFERORS

DOE National Laboratories are eligible to submit proposals. DOE National Laboratories may also be proposed as a project team member subcontractor.

NOTE: NETL is not considered eligible for funding under this announcement and may not be proposed as a team member on another entity's proposal.

B. PROJECT TEAM MEMBERS

The Offeror's proposal may include project team members from the energy sector—including utilities, universities, and research organizations—and other National Laboratories. Domestic U.S. team members and entities are preferred. The Offeror's proposal must identify any proposed team members that are non-domestic entities. [1]

[1] For purposes of this Lab Call, non-domestic entities include: (1) any foreign government or foreign government agency or instrumentality thereof; (2) any international organization; (3) any form of business enterprise or legal entity organized, chartered or incorporated under the laws of any country other than the United States or its territories; (4) any form of business enterprise organized or incorporated under the laws of the United States or a State or other jurisdiction within the United States which is owned, controlled, or influenced by a foreign government, agency, firm, corporation, or a person who is not a citizen or national of the United States; and (5) any person who is not a citizen or national of the United States.

C. NOTIFICATION OF NON-DOMESTIC ENTITIES

Offeror must indicate in its proposal whether it will include any non-domestic entity in the tasks conducted pursuant to this Lab Call, including any National Laboratory, energy sector partner, contractor, subcontractor, university (including students or interns), or other supporting personnel. The proposal should indicate the party's status as a non-domestic entity and what type of work such non-domestic entity will complete. Domestic U.S. entities and U.S. persons[2] are preferred for EMP-related tasks in each of the three Topic Areas in this Lab Call. An Offeror may not include a non-domestic entity in its execution of the tasks under this Lab Call unless such non-domestic entity is identified in the Proposal as conducting work related to such task or approved in writing by DOE.

SECTION IV – SUBMISSION REQUIREMENTS

A. SUBMISSION INSTRUCTIONS

Proposals must be submitted electronically to GMD.EMPannouncement@netl.doe.gov by the date provided by DOE. Late submissions will not be evaluated.

Due to e-mail attachment constraints, please ensure that the emails including the attachments are less than 25 Megabytes. The Offeror is encouraged to request a return notification to verify receipt of proposal.

PROPOSALS RECEIVED AFTER THE DEADLINE WILL NOT BE REVIEWED OR CONSIDERED FOR FUNDING.

B. PROPOSAL TIMELINE

DOE anticipates the proposal period to be open for proposals from March 1, 2021 with proposals due April 14, 2021 no later than 3:00 pm Easter Daylight Time.

SECTION V – PROPOSAL PREPARATION

A. PREPARATION OF PROPOSAL

The Project Narrative submitted by an Offeror is required to be: no more than 20 pages (excluding the resume file, commitment letters and any other required information that is stated below as being excluded from the page count), single-spaced, 1" margins (top, bottom, left, right), and when printed will fit on size 8 1/2" by 11" paper. The type must be legible and not smaller than 11 point. Evaluators will review only the number of pages specified. Therefore, any proposals exceeding these limitations may result in a lower overall score due to the lack of review of excess proposal pages. To produce a comprehensive proposal for this opportunity, the offeror should address, at a minimum, the areas listed in the Table of Contents below.

[2] For the purposes of this Lab Call, U.S. persons includes U.S. citizens and U.S. nationals.

Section	Section Number
Table of Contents	I
List of Tables (if applicable)	II
List of Figures (if applicable)	III
List of Acronyms (if applicable)	IV
Project Narrative	V
Extended Field Work Proposal	VI
Resume File	VII
Commitment Letters	VIII
Appendices (see below)	As Needed

The entire proposal, that includes all materials included in the Table of Contents, should be saved as a single PDF file under the following file name: "Lab Name - PI", e.g., "NETL –Smith."

The **Project Narrative** must include:

Project Objectives: This section should provide a clear, concise statement of the specific objectives/aims of the proposed project.

Technical Discussion: The proposed approach for meeting the objectives of the Topic Area and the specific actions, activities, and products to be developed and delivered must be clearly described. If procurement of property is anticipated or required, this should be discussed and explained. Expected costs for labor, materials, and travel should be detailed. Proposed scheduled should be provided and include time built in for government review and acceptance of research, findings, and products.

If the proposal is for the Testing and Validation Topic Area, details must be provided on the expected equipment to be purchased and tested. Details should also be provided on the methodology for determining what if any new or enhanced EMP testing capabilities are needed.
If a proposal is for the Mitigation Topic Area, details must be provided on the types of mitigation / protection to be developed, deployed, and/or evaluated. The methodology should be described on how potential mitigation projects are to be evaluated for selection.

Merit Review Criterion Discussion: This section should be formatted to address each of the merit review criterion and sub-criterion listed in Section VII. B and provide sufficient information so that reviewers will be able to evaluate the proposal in accordance with these merit review criteria. DOE WILL EVALUATE AND CONSIDER ONLY THOSE PROPOSALS THAT ADDRESS SEPARATELY EACH OF THE MERIT REVIEW CRITERION.

Description of Proposed Work with Comparison to the Current State of the Art and Gap(s) Addressed: This section should explain why the work is needed today and how it differs from existing capabilities.

Relevance and Outcomes/Impacts: This section should explain the relevance of the effort to the objectives in the program announcement and the expected outcomes and/or impacts.

Roles of Participants: Describe the roles and the work to be performed by each expected and committed participant, business agreements between the prime Offeror and participants, and how the various efforts will be integrated and managed.

Project Coordination: The primary Offeror must identify each subcontractor contact and provide a "Coordination and Management Plan" that describes the organization structure of the project. This plan should be included as an appendix and, at a minimum, include:

- Process for making decisions on scientific/technical direction;
- Publications;
- Intellectual property issues;
- Communication plans;
- Procedures for resolving conflicts; and
- Roles and administrative, technical, and scientific responsibilities for the project.

NOTE: *A Coordination and Management Plan appendix will not count in the project narrative page limitation.*

Bibliography & References Cited Appendix: Provide a bibliography of any references cited in the Project Narrative. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication. Include only bibliographic citations. Offerors should be especially careful to follow scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. In order to reduce the number of files attached to your proposal, please provide the Bibliography and References Cited information as an appendix to your project narrative. This appendix will not count in the project narrative page limitation.

Facilities & Other Resources Appendix: This information is used to assess the capability of the organizational resources, including subcontractor resources, available to perform the effort proposed. Identify the facilities to be used (Laboratory, Computer, Office, and Other). If appropriate, indicate their capacities, pertinent capabilities, relative proximity, and extent of availability to the project. Describe only those resources that are directly applicable to the proposed work. Describe other resources available to the project (e.g., machine shop, electronic shop) and the extent to which they would be available to the project. In order to reduce the number of files attached to your proposal, please provide the Facility and Other Resource information as an appendix to your project narrative. This appendix will not count in the project narrative page limitation.

Equipment Appendix: List major items of equipment already available for this project and, if appropriate, identify location and pertinent capabilities. In order to reduce the number of files attached to your proposal, please provide the Equipment information as an appendix to your project narrative. This appendix will not count in the project narrative page limitation.

The following proposal requirements must also be provided for each non-government project team member:

Intellectual Property: A discussion of any potential intellectual property to be developed under the proposed agreement by non-government project team member(s) must be provided as an appendix to the project narrative. See Section IX. Part I. herein for additional information regarding rights in technical data and an invention that is conceived or first actually reduced to practice under DOE funding with a non-government entity. The Intellectual Property appendix will not count in the project narrative page limitation.

Budgets for Subcontractors: Budgets for Subcontractors, other than National Laboratories, must be submitted for each subcontractor that is expected to perform work estimated to be $100,000 or more. Offerors shall use the Detailed Budget Justification form provided as Attachment 2 to this opportunity.

Data Management: Each proposal must include = a Data Management Plan. The Data Management Plan outlines the proposed plan for data sharing or preservation. The Data Management Plan should include: (1) a description of the types of data that will be generated under the project, (2) a description of the types of data that will be made publicly available, and (3) a description of any restrictions that will be placed on the data. If software is anticipated to be developed under the project, the Data Management Plan should also include a plan for its distribution (e.g., open source or commercial licensing). The Data Management Plan for each non-government entity should not exceed six pages when printed using standard 8.5" by 11" paper with 1-inch margins (top, bottom, left, and right) single spaced. The Data Management appendix will not count in the project narrative page limitation.

The following proposal requirements must also be provided for each National Laboratory project team member:

Budgets for Subcontractors: Budgets for Subcontractors must be submitted for each subcontractor that is expected to perform work estimated to be $100,000 or more. Offerors shall use the Detailed Budget Justification form provided as Attachment 2 to this opportunity.

B. EXTENDED FIELD WORK PROPOSAL

The offerors shall prepare an Extended Field Work Proposal. **See Attachment 1 – NL Extended Field Work Proposal and Attachment 2 – Detailed Budget Justification.**

C. RESUME FILE

Provide a resume for each key person proposed, including subcontractors if they meet the definition of key person. A key person is any individual who contributes in a substantive, measurable way to the execution of the project. Resumes are not included in the page count.

Each resume must not exceed two pages when printed on 8.5” by 11” paper with 1-inch margins (top, bottom, left, and right) with font not smaller than 11 point and should include the following information, if applicable:

- *Education and Training*: Undergraduate, graduate, and postdoctoral training, including institution, major/area, degree, and year.
- *Professional Experience*: Beginning with the current position list, in chronological order, professional/academic positions with a brief description.
- *Publications*: Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. Patents, copyrights, and software systems developed may be provided in addition to or instead of publications.
- *Synergistic Activities*: List no more than five professional and scholarly activities related to the effort proposed.
- *Citizenship*: List country or countries of citizenship. Note that domestic U.S. entities and U.S. persons are preferred for EMP-related tasks in each of the three Topic Areas in this Lab Call.

D. COMMITMENT LETTERS

Include separate Commitment Letter(s) for ***all*** proposed project partners, including other National Laboratories, if applicable. Commitment letters are not included in the page count.

Commitment Letters from Team Members Contributing to Cost Sharing: If the project team member is required to comply with Federal cost share requirements, in particular for projects that field deploy mitigation and/or protection technologies to a non-Federal partner site, then the commitment letter from that team member must include a firm commitment to providing a specific minimum dollar amount of cost sharing. The commitment letter should also identify the proposed cost sharing (e.g., cash, services, and/or property) to be contributed.

Commitment letters must be signed by the person authorized to commit the expenditure of funds by the entity and be provided in a PDF format. If firm commitments are not available, Offerors shall provide a plan to obtain the required funding for the non-Federal partner's share of the project cost. The plan must describe any limitations, conditions, or other factors that could affect the availability of funding.

Section VII – EVALUATION AND SELECTION

A. INITIAL REVIEW CRITERIA

Prior to a comprehensive merit evaluation, DOE will perform an initial review to determine that:

1. The information required by the opportunity has been submitted,
2. All mandatory requirements are satisfied, and
3. The proposed project is responsive to the objectives of the opportunity.

Proposals that do not meet the initial criteria may be excluded from review; any proposal exceeding the page limit will only have the first 20 pages reviewed.

B. MERIT REVIEW CRITERIA

Each proposal submitted in response to this opportunity will be evaluated and scored in accordance with the criteria and weights listed below:

Criterion 1: Technical Experience and Expertise of Staff in Performing Work Similar to the Topic Area of the Proposal (WEIGHT: 40%)
This criterion will evaluate the degree to which the Offeror demonstrates that the staff that will perform the work, whether at the National Laboratory or from subcontractors, have successfully performed the type of work being proposed. Stating that the National Laboratory or the subcontractor entities have done related work, or that they can, is not adequate. Specifically address:

- Direct and relevant experience and expertise from the staff committed and proposed for the work.
- Demonstrated success of project team members in developing and delivering similar plans, outcomes, results, reports, products, deliverables, tools, and other scientific advancements.

Criterion 2: Technical Approach and Potential Industry Impact (WEIGHT: 35%)
This criterion will evaluate the approach taken by the Offeror and the degree to which the proposed methodology and deliverables meet the stated objectives of the opportunity and will enhance the energy sector's capability to understand and cost-effectively address the risks of EMP and GMD. Demonstrate:

- Soundness of the proposed technical approach and likelihood of success as demonstrated through scientific or engineering merit.
- Reasonableness of the proposed approach to provide a path for energy sector acceptance of findings, results, and recommendations by asset owners/operators.
- Significance of the benefits and impact of the proposed methodology, deliverables, and findings, or products compared with current state of the art.
- How research gaps are to be identified and addressed.
- Justification and explanation of the approach and expected outcomes.
- Thoroughness of the discussion in terms of anticipated scientific advancements or performance improvements (technical, operational, and environmental aspects) and cost savings compared to current understanding and practices.
- Degree to which the approach will lead to findings and deliverables that will have broad applicability to the U.S. energy sector and allow better cost-effective risk-based investments in enhancing the resilience of the sector to EMP and GMD.

Criterion 3: Collaboration (WEIGHT: 15%)
This criterion will evaluate the degree to which the Offeror builds on past efforts and collaborations to achieve the best possible outcomes at the best value for the government including:

- Effectiveness of the proposed strategic approach to establish a partnership with stakeholders in the energy sector including but not limited to industry, energy utilities (i.e., asset owners and operators), vendors, academia, and other government departments and agencies.
- Extent to which the Offeror's approach would lead to dissemination of lessons learned and foster collaboration with entities not immediately involved with the project.
- Degree to which commitment is demonstrated by including commitment letters from all proposed team members.

Criterion 4: Project Management (WEIGHT: 10%)
This criterion will evaluate the soundness of the approach to ensure the project is performed with a well-defined scope, and a budget and schedule commensurate with the scope:

- Comprehensiveness of the proposal in explaining how the project will be managed using sound management principles to achieve stated objectives on time and within budget, including identification and coordination of team member roles and responsibilities, go/no-go decision criteria, and risk assessment/mitigation planning.
- Adequacy, appropriateness, and reasonableness of the budget for the Primary National Laboratory and subcontractor team member(s). This includes the labor distribution, purchases, and effort by work breakdown budget structure to accomplish the stated objectives.

C. OTHER PROGRAM FACTORS

The following program factors may be used by the Selection Official during the selection process that are not indicators of the Offeror's merit. These factors may assist in determining which of the ranked proposals shall receive DOE funding support:

1. It may be desirable to select project(s) that add technical diversity to the EMP/GMD Portfolio.

2. It may be desirable to select project(s) that demonstrate solutions that are scalable and cost-effective with a clear industry acceptance for commercialization.

3. It may be desirable to select project(s) that support complementary efforts or projects, which, when taken together, will best achieve the research goals and objectives.

4. It may be desirable to select project(s) that represent a diversity of technologies and technical approaches, methods, and Topic Areas in order to provide a balanced programmatic effort and a variety of different technical perspectives.

5. It may be desirable to select project(s) that are of less technical merit than other project(s) if such a selection will optimize use of available funds by allowing more projects to be supported and not be detrimental to the overall objectives of the program.

6. Cost is an important factor in a selection decision, when comparing the merits of multiple proposals from different Offerors, but only for those that meet the merit review criteria. That is, a proposal that meets the review criteria for a specific topic area may be selected for funding, over a proposal that exceeded the review criteria, if the expected cost is significantly

lower, but considered realistic. Proposals that unrealistically underestimate the costs associated with the work will not be selected for that work.

7. If and where applicable, use of American made products, or services from American owned companies, during the project, is preferred.

D. SUBMISSION FROM SUCCESSFUL OFFERORS

If selected for funding, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information;
- Other budget information;
- Name and contact information of the Contracting Officer for the Laboratory; and
- Other supporting documentation.

SECTION VIII – ADMINISTRATION INFORMATION

A. STATEMENT OF SUBSTANTIAL INVOLVEMENT FOR PROJECT TEAM MEMBERS

DOE and the primary National Laboratory will enter into FWP, IEWO, or IA.

The primary National Laboratory, with guidance and oversight provided by the DOE NETL's Project Manager, will be responsible for the day-to-day administration of the project and activities performed by project team members.

Stewardship activities include, but are not limited to, conducting site visits, reviewing performance and financial reports, providing technical assistance and/or intervention in unusual circumstances to address deficiencies that develop during the project activities, and ensuring that the project objectives have been accomplished.

The responsibilities of a project team, including the Primary National Laboratory, will include, but not be limited to, the following:

- Performing all activities described in the project Statement of Work/Statement of Project Objectives, including providing the required personnel, facilities, equipment, supplies, and services;
- Managing and controlling project activities in accordance with established processes and procedures to ensure tasks and subtasks are completed within schedule and budget constraints;
- Notifying the DOE NETL Project Manager and the primary National Laboratory in a timely manner of issues that arise during the course of the project that may jeopardize the technical objectives, schedule, and/or budget;

- Coordinating all project activities with the primary National Laboratory to ensure effective integration of all work elements;
- Defining approaches and plans, submitting the plans to the primary National Laboratory for review and incorporating their comments;
- Attending annual program review meetings and presenting project status and results when requested by the primary National Laboratory;
- Submitting required reports on a quarterly, annual, and final basis to the primary National Laboratory for inclusion in their reporting to DOE/NETL; and
- Complying with all Reporting Requirements and Terms and Conditions defined in the subcontractor's agreement with DOE NETL.

The responsibilities of DOE NETL's Project Manager will include, but not be limited to, the following:

- Collaborating with the Primary National Laboratory regarding project activities and recommending alternate approaches or delaying/shifting work emphasis, if needed, to adequately address critical project and/or programmatic issues, including goals established by DOE CESER and governing documents such as the *EMP EO* and *Space Weather Strategy and Action Plan*;
- Participating in project management planning activities, including risk analysis, to ensure DOE program requirements or limitations are considered in performance of the work elements; and
- Reviewing and approving go/no-go decision points in a timely manner to authorize the continuation of project work.

B. PROHIBITION ON FOREIGN GOVERNMENT-SPONSORED TALENT RECRUITMENT PROGRAMS

Domestic U.S. entities and Persons are preferred. Persons participating in a Foreign Government-Sponsored Talent Recruitment Program[3] of a Foreign Country of Risk (COR) are prohibited from participating in projects selected under this Lab Call. The purpose of this prohibition is to ensure the

[3] Foreign Government-Sponsored Talent Recruitment Program. An effort directly or indirectly organized, managed, or funded by a foreign government to recruit science and technology professionals or students (regardless of citizenship or national origin, and whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illegal means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to physically relocate to the foreign state for the above purpose. Some programs allow for or encourage continued employment at U.S. research facilities or receipt of Federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

protection of U.S. competitive and national security interests and DOE program objectives; prevent potential conflicts of interest; and limit unauthorized transfers of scientific and technical information[4].

The primary National Laboratory must provide a certifications to the NETL Project Manager, based on the primary National Laboratory's due diligence, that none of individuals on the project team are participants in Foreign Government-Sponsored Talent Recruitment Programs of a COR (currently includes: Russia, Iran, North Korea, and China). The COR list is subject to be expanded at any time, without prior notice.

During period of performance, the primary National Laboratory must continue to exercise due diligence and regularly file reports with certifications to DOE on whether there is a reasonable basis to report that any individual on the project team is a participant in a Foreign Government-Sponsored Talent Recruitment Program of a COR. Further, the primary National Laboratory must notify the NETL Project Manager within five (5) business days upon learning that an individual on the project team is or is believed to be participating in such a program. All individuals on the project team must submit a signed statement to their home institution within thirty days of joining the project team, which certifies the individual is not a participant in a in a Foreign Government-Sponsored Talent Recruitment Program of a COR. Upon request by DOE, the primary National Laboratory will provide the signed statements submitted by the individuals.

SECTION IX – OTHER INFORMATION

A. MODIFICATIONS

Notices of any modifications to this opportunity will be sent via e-mail directly to the National Laboratories. The e-mail will contain a web link to the modified version located at the NETL and CESER websites.

B. GOVERNMENT RIGHT TO REJECT OR NEGOTIATE

DOE reserves the right, without qualification, to reject any or all proposals received in response to this opportunity and to select any proposal, in whole or in part, as a basis for negotiation and/or funding.

If selected for funding, DOE reserves the right to request additional or clarifying information from non-government subcontractors for any reason deemed necessary, including, but not limited to:

- Budget information;
- Name and phone number of the Designated Responsible Employee for complying with national

[4] Scientific and Technical Information. Information products deemed by the originator to be useful beyond the originating site (i.e., intended to be published or disseminated), in any format or medium, which contain findings and technological innovations resulting from research and development (R&D) efforts and scientific and technological work of scientists, researchers, and engineers. Scientific findings are communicated through various media – e.g., textual, multimedia, audiovisual, and digital – and are produced in a range of products such as technical reports, scientific/technical conference papers, journal articles, workshop reports, program documents, invention reports, patent applications, patents, publicly available scientific research datasets, or other forms of scientific and technical information.

policies prohibiting discrimination (See 10 CFR 1040.5); and

- Representation of Limited Rights Data and Restricted Software, if applicable.

C. EVALUATION AND ADMINISTRATION BY NON-FEDERAL PERSONNEL

In conducting the merit review evaluation, the government may seek the advice of qualified non-Federal personnel as reviewers, in a manner that is consistent with the Federal Advisory Committee Act, and other laws as appropriate. The government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The Offeror, by submitting its proposal, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing a proposal. Non-Federal personnel conducting administrative activities must sign a non-disclosure agreement.

D. NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned, or pending legislation.

E. DISCUSSIONS AND SELECTION

The government may enter into discussions with a selected Offeror for any reason deemed necessary, including but not limited to: (1) the budget is not appropriate or reasonable for the requirement, (2) only a portion of the proposal is selected for funding, (3) the government needs additional information to determine that the Primary National Laboratory is capable of complying with Federal requirements, and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the government will preclude selection of the Offeror.

F. PROPRIETARY PROPOSAL INFORMATION

Patentable ideas, trade secrets, or proprietary or confidential commercial or financial information, disclosure of which may harm the Offeror, should be included in a proposal only when such information is necessary to convey an understanding of the proposed project. The use and disclosure of such data may be restricted, provided the Offeror includes the following language on the first page of the project narrative and specifies the pages of the proposal which are to be restricted:

- "The data contained in pages [*Insert pages*] of this proposal have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this Offeror receives funding as a result of or in connection with the submission of this proposal, DOE shall have the right to use or disclose the data herein to the extent provided in the selection. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the Offeror."

To protect such data, each line or paragraph on the pages containing such data must be specifically identified and marked with a legend like the following:

- "The following contains proprietary information that (name of Offeror) requests not be released to persons outside the government, except for purposes of review and evaluation."

G. INTELLECTUAL PROPERTY DEVELOPED UNDER THIS PROGRAM

This section is only applicable to non-government team members.

Patent Rights. The government will have certain statutory rights in an invention that is conceived or first actually reduced to practice under DOE funding. 42 U.S.C. 5908 provides that title to such inventions vests in the United States, except where 35 U.S.C. 202 provides otherwise for nonprofit organizations or small business firms. However, the Secretary of Energy may waive all or any part of the rights of the United States subject to certain conditions. (See "Notice of Right to Request Patent Waiver" below.)

Rights in Technical Data. Normally, the government has unlimited rights in technical data created under a DOE agreement. Delivery or third-party licensing of proprietary software or data developed solely at private expense will not normally be required except as specifically negotiated in a particular agreement to satisfy DOE's own needs or to ensure the commercialization of technology developed under a DOE agreement.

H. PROGRAM COVERED UNDER SPECIAL PROTECTED DATA (DECEMBER 2014)

Special Protected Data Statutes. This program is covered by a special protected data statute. The provisions of the statute provide for the protection from public disclosure, for a period of up to five years from the development of the information, of data that would be trade secret, or commercial or financial information that is privileged or confidential, if the information had been obtained from a non-Federal party. Generally, the provision entitled, Rights in Data Programs Covered Under Special Protected Data Statutes (Item 4 under 2 CFR 910 Appendix A to Subpart D), would apply to a selection made under this announcement. This provision will identify data or categories of data first produced in the performance of the selected project that will be made available to the public, notwithstanding the statutory authority to withhold data from public dissemination and will also identify data that will be recognized by the parties as protected data.

I. TABLE OF PERSONNEL

If selected for negotiations, the selected Offeror must submit an updated list of personnel who are proposed to work on the project, both at the primary National Laboratory level and sub levels. The table should include the individuals' names, job titles, and their employer. The personnel that fall in one or more of the following categories must be included:

- Principal Investigator
- Business Agent
- Co-Principal Investigator
- Co-Investigator(s)
- Postdoctoral associate

- Other professional or researcher
- Collaborator

Primary National Laboratories will have an ongoing responsibility to notify DOE of changes to the personnel and submit an updated list during the life of the life of the project as there are changes to the personnel working on the project. Offerors may not permit non-domestic entities to work on EMP-related tasks without prior written approval from DOE.

Upon selection, personnel on the project team may be required to disclose information related to potential conflicts of interest and commitment.

J. NOTICE OF RIGHT TO EXCLUDE INDIVIDUALS FROM PARTICIPATION

DOE may exclude any individual from receiving funding issued under this Lab Call, from using the resources of a project funded under this Lab Call, and from participating in project activities funded under this Lab Call if DOE identifies adverse information with respect to such individual. DOE's decision to exclude an individual on the basis of adverse information is not appealable.

K. NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Offerors may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this announcement, in advance of or within 30 days after the effective date of the project selection. Even if such advance waiver is not requested or the request is denied, the selectee will have a continuing right under the selection to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the selected project. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784. See http://www.energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1 for further information. Domestic small businesses and domestic nonprofit organizations will receive the patent rights clause at 37 CFR 401.14, i.e., the implementation of the Bayh-Dole Act. This clause permits domestic small businesses and domestic nonprofit organizations to retain title to subject inventions. Therefore, small businesses and nonprofit organizations do not need to request a waiver.

L. CONFERENCE SPENDING

The selected project team shall not expend any funds on a conference not directly and programmatically related to the purpose for which the agreement was funded that would defray the cost to the U.S. Government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the U.S. Government would otherwise exceed $20,000, thereby circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

M. TRAVEL

The selected project team shall not expend any funds on travel without advanced approval from the DOE Program Manager or Contracting Officer. Travel is expected for some of the Topic Areas. The travel reporting requirements exist to allow better oversight of program-related travel and to ensure that it is needed for the project, not to discourage reasonable and needed travel for accomplishment of objectives.

N. NOTIFICATION OF SELECTION/NON-SELECTION

DOE NETL anticipates completing the project selection process and notifying prime Offerors of the final results by July 30, 2021. DOE NETL will notify primary Offerors of selection results via email from GMD.EMPannouncement@netl.doe.gov.

O. QUESTIONS/AGENCY CONTACTS

Specific questions about this opportunity should be submitted via e-mail to GMD.EMPannouncement@netl.doe.gov. To ensure fairness across all labs, individual DOE or DOE NETL staff cannot answer questions while the opportunity remains open. To keep all interested entities informed, DOE NETL will send questions and answers to all primary Offerors via periodic e-mail communication from GMD.EMPannouncement@netl.doe.gov.