Financial Assistance

Notice of Funding Opportunity

Part 1

U.S. Department of Energy (DOE)

Solar Energy Technologies Office (SETO)

Solar with Wildlife and Ecosystem Benefits 2 (SolWEB2)

Notice of Funding Opportunity Number: DE-FOA-0003492

Concept Papers due: February 14, 2025

Applications due: May 2, 2025

Modifications

Mod. No.	Date	Description of Modification
000002	1/2/25	• Informational Webinar date and time changed to Friday, January 10 at 1pm ET

All modifications to the Notice of Funding Opportunity (NOFO) are HIGHLIGHTED in the body of the NOFO.

Modifications to this NOFO will be posted on eXCHANGE and Grants.gov. Grants.gov will automatically notify applicants when a NOFO modification is processed. Applicants must be registered to this NOFO in Grants.gov to receive email notifications. See Registration Requirements in Part 2 of this NOFO.

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Before You Begin

Navigating the Notice of Funding Opportunity

The OMB Memorandum M-24-11 directs federal agencies to reduce the burden on applicants in the notice of funding opportunity (NOFO) process and limit the length of the NOFO information requests. With Fiscal Year (FY) 2025 NOFOs, the U.S. Department of Energy (DOE) has separated the NOFO into two parts.

The NOFO Part 1 describes the specific DOE programmatic goals and evaluation criteria, eligibility, and other components that are specific to each funding opportunity. The NOFO Part 2 includes the fixed DOE requirements that generally do not change from NOFO to NOFO, including standard information for the application phase, expectations for award negotiations, and post-award requirements. Applicants must review both the NOFO Part 1 and the NOFO Part 2 prior to applying. To facilitate navigation, you will find links throughout this document to additional information found in Part 2.

There are several required one-time actions applicants must take before applying to this NOFO. Some of these actions may take several weeks, so it is vital applicants build in enough time to complete them. Failure to complete these actions could interfere with application or negotiation deadlines or the ability to receive an award if selected. If you have previously completed the necessary registrations, make sure your registration is active and up to date. All registrations are free. Please refer to NOFO Part 2, *Get Registered*, for additional information.

This announcement is published in conjunction with NOFO Part 2 Version 1.

I. Basic Information

A. Key Facts

Issuing Agency	DOE, Office of Energy Efficiency and Renewable Energy (EERE), Solar Energy Technologies Office (SETO)
Funding Opportunity Title	Solar with Wildlife and Ecosystem Benefits 2 (SolWEB2)
Announcement Type	Initial
Funding Opportunity Number	DE-FOA-0003492
Funding Instrument	Cooperative Agreement
Assistance Listing Number	87.087
Funding Opportunity Description	This NOFO is being issued by DOE's EERE SETO to invest in R&D, technical assistance, and stakeholder engagement activities that improve the compatibility of large-scale solar (LSS) facilities with wildlife and facilitate the dual use of land for agricultural and solar energy production (agrivoltaics). Projects selected in this NOFO will a) test strategies that mitigate adverse impacts and/or maximize benefits to wildlife and ecosystems at LSS facilities, b) provide technical assistance and engagement opportunities that enable stakeholders to improve the compatibility of LSS facilities with wildlife, or c) provide technical assistance and stakeholder engagement opportunities related to agrivoltaics.
Program Goals & Objective(s)	This NOFO will work to improve LSS siting processes and outcomes while promoting meaningful benefits for wildlife, ecosystems, and host communities.

Topic Areas	• Topic Area 1: Wildlife-Solar Energy Research, Technical Assistance, and Stakeholder Engagement
	  ○ Area of Interest 1: Strategies to Mitigate Adverse Impacts on and/or Maximize Benefits to Wildlife
	  ○ Area of Interest 2: Wildlife-Solar Energy Technical Assistance and Stakeholder Engagement

KEY DATES

Notice of Funding Opportunity Issue Date: December 23, 2024

Informational Webinar: January 10, 2025

Concept Paper Deadline: February 14, 2025

Application Deadline: May 2, 2025

Anticipated Selection Notification Date: July 15, 2025

Anticipated Award Date: January 1, 2026

Estimated Period of Performance: January 1, 2026 – December 31, 2028/2029

	• Topic Area 2: Agrivoltaics Technical Assistance and Stakeholder Engagement
Eligible Applicants	Domestic entities are eligible to apply as recipients or subrecipients. The following types of domestic entities are eligible to participate as a recipient or subrecipient of this NOFO: • Institutions of higher education (e.g., universities, colleges, and minority-serving institutions [MSIs]) • For-profit organizations (e.g., environmental consultants, LSS developers, facility owners and operators, utilities) • Nonprofit organizations (e.g., research institutions, conservation nonprofits, hunting organizations, environmental nonprofits, trade associations, utilities and electric cooperatives) • Federally funded R&D centers (FFRDCs) • State and local governmental entities (e.g., state wildlife or agricultural agencies) • Indian Tribes, as defined in Section 4 of the Indian Self-Determination and Education Assistance Act, 25 U.S.C. § 5304.[1]
eXCHANGE URL and Helpdesk	https://eere-exchange.energy.gov/Default.aspx#FoaIdfe6561f9-adf8-4737-8f55-84d6104313f1 eere-exchangesupport@hq.doe.gov

1. Funding Details

Multiple Topic Areas

Approximate total available funding, including all topic areas: $11,000,000 in FY 2025

Topic Area 1: Wildlife-Solar Energy Research, Technical Assistance, and Stakeholder Engagement

- Approximate total available funding: $8,000,000 in FY 2025
- Approximate number of awards: 2–5
- Approximate dollar amount of individual awards: $1,000,000–$3,000,000
- Minimum cost share required:
  - Area of Interest 1: 20% of the total project costs
  - Area of Interest 2: 0% of the total project costs

[1] "**Indian Tribe**," for the purposes of this NOFO and as defined in in Section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 5304), means any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688, 43 U.S.C. § 1601, et seq.), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

- Approximate award project period: 24–48 months
- Anticipated length of budget periods: 12–24 months

Topic Area 2: Agrivoltaics Technical Assistance and Stakeholder Engagement

- Approximate total available funding: $3,000,000 in FY 2025
- Approximate number of awards: 1–3
- Approximate dollar amount of individual awards: $1,000,000–$3,000,000
- Minimum cost share required: 0% of the total project costs
- Approximate award project period: 24–36 months
- Anticipated length of budget periods: 12–18 months

2. Period of Performance

DOE anticipates making awards comprised of multiple budget periods. If applicable, project continuation will be contingent upon DOE's Go/No-Go decision. For a complete list and more information on the Go/No-Go review, see the NOFO Part 2, *Award Administration Information*. Funding for all budget periods, including the initial budget period, is not guaranteed.

B. Executive Summary

This notice of funding opportunity (NOFO) is being issued by the U.S. Department of Energy's (DOE's) Office of Energy Efficiency and Renewable Energy (EERE) Solar Energy Technologies Office (SETO) to invest in R&D, technical assistance, and stakeholder engagement activities that improve the compatibility of large-scale solar (LSS) facilities with wildlife and ecosystems and facilitate the dual use of land for agricultural and solar energy production (agrivoltaics).

SETO invests in research and innovation to accelerate the advancement of solar technology and deployment of solar energy in the United States. DOE's *Solar Futures Study* provides a vision for solar power's role in cost-effectively contributing to the nation's clean energy goals. Achieving this vision is projected to require approximately 5.6 million acres of land to host LSS facilities by 2035. While this is a small fraction of the total land in the contiguous United States (0.3%), this expansion will result in increased interactions between LSS facilities and the surrounding environment, including natural wildlife habitats and agricultural areas. Land-use conflict due to siting and permitting of LSS facilities is already becoming more prevalent. Projects supported by this NOFO will help stakeholders overcome those conflicts by testing and helping implement strategies that improve LSS siting processes and outcomes for wildlife, ecosystems, and communities that host LSS facilities.

Projects selected in this NOFO will a) test strategies that mitigate adverse impacts and/or maximize benefits to wildlife and ecosystems at LSS facilities, b) provide technical assistance and engagement opportunities that enable stakeholders to improve the compatibility of LSS facilities with wildlife, or c) provide technical assistance and stakeholder engagement opportunities related to agrivoltaics. Topic Area 1 is focused on improving the ability of stakeholders to implement strategies that improve the compatibility of LSS facilities with wildlife and ecosystems. Projects will test new or existing strategies for mitigating adverse impacts on and/or maximizing benefits to wildlife and ecosystems from LSS development (e.g., wildlife-permeable fencing, native vegetation management, wildlife movement corridors). Projects will also provide technical assistance and stakeholder engagement opportunities on

wildlife-solar interactions to improve coordination and collaboration among stakeholders and make research findings and best practices more accessible.

Topic Area 2 is focused on disseminating agrivoltaic research, sharing best practices, and enabling cross-sector collaboration. Projects will provide technical assistance and engagement opportunities to entities involved in LSS development, including but not limited to solar industry members, agricultural practitioners, rural cooperatives, Tribal governments and communities, and local governments.

Applicants must include the team members needed to achieve the stated objectives, disseminate the project outputs, and convene the appropriate stakeholders, including those who can implement proposed solutions. Team member or partner willingness to participate in the project can be demonstrated by providing letters of commitment in project applications. Organizations that are eligible to apply or participate as project collaborators include but are not limited to private or for-profit entities, colleges and universities, state agencies, non-profits, community-based organizations, and federally funded R&D centers (FFRDCs). Relevant stakeholder groups include solar developers, owners, and operators, environmental consultants, academic researchers with wildlife or agrivoltaics expertise, Tribal governments and communities, and state agencies and nonprofits working on wildlife, hunting, conservation, environmental, and agricultural issues.

C. Agency Contact Information

Office of Energy Efficiency and Renewable Energy
Solar Energy Technologies Office
U.S. Department of Energy
1000 Independence Ave SW
Washington, D.C. 20585

For questions relating to this specific notice of funding opportunity (NOFO), please send emails to solarwildlife@ee.doe.gov.

DISCLAIMER: Applicants are discouraged from submitting information considered proprietary unless it is deemed essential for proper evaluation of the application. If the application contains information that the applicant organization considers to be trade secrets, information that is commercial or financial, or information that is privileged or confidential, the pages containing that information must be identified as specified in the application instructions. When such information is included in the application, it will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act, with the understanding that the information will be used or disclosed only for evaluation of the application. The information contained in the application will be protected by the U.S. Department of Energy (DOE) from unauthorized disclosure, consistent with the need for merit review of applications of financial assistance awards to assure the integrity of the competitive process and the accuracy and completeness of the information. If a federal financial assistance award is made as a result of or in connection with an application, the federal government has the right to use or disclose the information to the extent authorized by law. This restriction does not limit the federal government's right to use the information if it is obtained without restriction from another source.

II. Eligibility

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these eligibility requirements, it will be considered ineligible and removed from further evaluation and ineligible for any award. DOE will not make eligibility determinations for potential applicants prior to the date on which applications to this NOFO must be submitted. The decision whether to apply in response to this NOFO lies solely with the applicant. The information included here is specific to eligibility requirements for this NOFO. For eligibility requirements applicable to all NOFOs, please consult the NOFO Part 2, *Eligibility*.

A. Eligible Applicants

To be considered for substantive evaluation, an applicant's submission must meet the criteria set forth below. If the application does not meet these eligibility requirements, it will be considered ineligible and removed from further evaluation.

1. Domestic Entities

Domestic entities are eligible to apply as recipients or subrecipients. The following types of domestic entities are eligible to participate as a recipient or subrecipient of this NOFO:

- Institutions of higher education (e.g., universities, colleges, MSIs)
- For-profit organizations (e.g., environmental consultants, large-scale solar (LSS) developers, facility owners and operators, utilities)
- Nonprofit organizations (e.g., research institutions, conservation nonprofits, hunting organizations, environmental nonprofits, trade associations, utilities and electric cooperatives)
- State and local governmental entities (e.g., state wildlife or agricultural agencies)
- Indian Tribes, as defined in Section 4 of the Indian Self-Determination and Education Assistance Act, 25 U.S.C. § 5304.[1]

2. Foreign Entity Participation

In general, foreign entities are not eligible to apply as either a recipient or subrecipient. In limited circumstances, DOE may approve a waiver to allow a foreign entity to participate as a recipient or subrecipient.

A foreign entity may submit an application to this NOFO, but the application must be accompanied by an explicit written waiver request. Likewise, if the applicant seeks to include a foreign entity as a subrecipient, the applicant must submit a separate explicit written waiver request in the application for each proposed foreign subrecipient. Please see NOFO Part 2, *Application Content Requirements* for the requirements for submission of a foreign entity waiver request. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

Recipients must only be legally formed in the United States and have a physical location for business operations in the United States.

Entities that are organized, chartered, or incorporated (or otherwise formed) under the laws of the United States or a particular state or territory of the United States and have a physical location for business operations in the United States are eligible to apply for funding as a recipient or subrecipient.

Foreign Entity Participation
A foreign entity is eligible to apply for funding as a recipient if it designates in the application a subsidiary or affiliate incorporated (or otherwise formed) under the laws of a state or territory of the United States to be the recipient. The application must state the nature of the corporate relationship between the foreign entity and domestic subsidiary or affiliate.

Foreign entities may request a waiver of the requirement to designate a subsidiary in the United States as the recipient in the application (i.e., a foreign entity may request that it be the recipient). To do so, the applicant must submit an explicit written waiver request in the application.

NOFO Part 2, *Application Content Requirements* lists the information that must be included in a request to waive this requirement. The applicant does not have the right to appeal DOE's decision concerning a waiver request.

Participant Limitations
Participation of the following entities are limited as follows.

- DOE federally funded R&D centers (FFRDCs)[2] are eligible to apply for funding as a recipient or subrecipient.
- Non-DOE FFRDCs are eligible to participate as a subrecipient but are not eligible to apply as a recipient.
- Federal agencies and instrumentalities (other than DOE) are eligible to participate as a subrecipient but are typically not eligible to apply as a recipient.

Performance of Work in the United States
All work for the awards under this NOFO must be performed in the United States. To request a waiver of this requirement, the applicant must submit an explicit waiver request in the application. Absent an approved waiver, such costs will not be allowable under the award. NOFO Part 2, *Application Content Requirements* lists the requirements for submission of a foreign work waiver request.

Ineligible Participants
The following entities are ineligible for participation in this NOFO as a recipient, subrecipient, or subcontractor.

- In accordance with 2 CFR 200.214, entities banned from doing business with the U.S. government such as entities debarred, suspended, or otherwise excluded from or ineligible for participation in federal programs.
- Entities identified on Department of the Treasury Office of Foreign Assets Control Treasury's Sanctions Program Specially Designated Nationals list are prohibited from doing business with the United States government and are not eligible. See the list of Specially Designated Nationals.

[2] FFRDCs are public-private partnerships that conduct research for the U.S. government. A listing of FFRDCs can be found at www.nsf.gov/statistics/ffrdclist/.

- Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code of 1986 that engaged in lobbying activities after December 31, 1995, are not eligible to apply for funding.

Entity of Concern Prohibition
Entities of Concern are prohibited from participating in projects selected under this NOFO (see NOFO Part 2, *Eligibility, Other Eligibility Information, Entity of Concern Prohibition* section for details and definitions).

B. Limitation on Number of Concept Papers and Applications Eligible for Review

An entity may submit more than one concept paper and associated application to this NOFO provided that each describes a unique, scientifically distinct project concept and an eligible concept paper was submitted for each Full Application.

C. Cost Sharing

Applicants are expected to follow through on estimated cost share commitments proposed in their applications if selected for award negotiations. Please refer to the NOFO Part 2, *Eligibility* for more information on Cost Sharing.

1. Cost Share Requirements

The cost share must be at least 20% of the total project costs[3] for R&D.[4] This requirement applies specifically to projects submitted under Topic 1, Area of Interest 1: Strategies to Mitigate Adverse Impacts on and/or Maximize Benefits to Wildlife at LSS Facilities.

Cost share is not required for education and outreach projects. This applies specifically to projects submitted under (1) Topic 1, Area of Interest 2: Wildlife-Solar Technical Assistance and Stakeholder Engagement, and (2) Topic 2, Agrivoltaics Technical Assistance and Stakeholder Engagement. Projects submitted under Topic 1 cannot blend cost share or combine areas of interest. If research on solar-wildlife is being proposed, the project must apply under Topic 1, Area of Interest 1.

Tribes and Tribal Nation applicants are required to provide only a minimum 10% cost share pursuant to EERE's blanket cost share reduction applicable to NOFOs issued after October 3, 2024, entitled Determination to Reduce Non-Federal Cost Share Requirements for Tribes and Tribal Nations Applying for Funding from the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy[BH2] [KG3].

[3] Total project costs are the sum of the government share, including FFRDC costs if applicable, and the recipient share of project costs.

[4] Energy Policy Act of 2005, Pub. L. 109-58, sec. 988. Also see 2 CFR 200.306 and 2 CFR 910.130 for additional cost sharing requirements.

Table 1. Cost Share Requirements

Topic	Type of Projects	Recipient Cost Share (%)
Topic 1, Area of Interest 1	Research & Development	20%
Topic 1, Area of Interest 2	Education & Outreach	0%
Topic 2	Education & Outreach	0%

Applications that do not meet the minimum required cost share will be deemed ineligible during the initial compliance review and will not be further reviewed. The cost share must come from non-federal sources unless otherwise allowed by law.

The cost share percentage is calculated by dividing the cost share by the total allowable project costs for the award where the total allowable project costs include government share (including FFRDC costs if applicable) and cost share. To help applicants calculate proper cost share amounts, DOE has included a cost share information sheet and sample cost share calculation in NOFO Part 2, *Eligibility—Cost Sharing, Cost Share Calculation Examples*.

2. Unallowable Cost Share Sources, NOFO Specific

The unallowable cost share sources identified here are specific to this announcement. Refer to NOFO Part 2, *Eligibility—Cost Sharing, Unallowable Cost Share Sources* for unallowable cost share sources applicable to all NOFOs.

D. FFRDC Eligibility Criteria

1. DOE FFRDCs as the Applicant

A DOE FFRDC is eligible to apply for funding under this NOFO if its cognizant Contracting Officer provides written authorization and this authorization is submitted with the application.

The following wording is acceptable for the authorization:

> *Authorization is granted for the laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory and will not adversely impact execution of the DOE assigned programs at the laboratory.*

If a DOE FFRDC is selected for award negotiation, the proposed work will be authorized under the DOE work authorization process and performed under the laboratory's Management and Operating (M&O) contract.

2. DOE and Non-DOE FFRDCs as a Subrecipient

As long as they have no conflict, DOE and non-DOE FFRDCs may be proposed as a subrecipient on another entity's application subject to the following guidelines:

Authorization for non-DOE FFRDCs

The federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of an FFRDC must be consistent with its authority under its award.

Authorization for DOE FFRDCs

The cognizant Contracting Officer for the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The following wording is acceptable for this authorization:

Authorization is granted for the laboratory to participate in the proposed project. The work proposed for the laboratory is consistent with or complementary to the missions of the laboratory and will not adversely impact execution of the DOE assigned programs at the laboratory.

Funding, Cost Share, and Subaward with FFRDCs

The value of and funding for the FFRDC portion of the work will not normally be included in the award. DOE FFRDCs participating as a subrecipient on a project will be funded directly through the DOE Work Authorization process in accordance with DOE O 412.1A. Non-DOE FFRDCs participating as a subrecipient will be funded through an interagency agreement with the sponsoring agency.

Although the FFRDC portion of the work is excluded from the award, the applicant's cost share requirement will be based on the total cost of the project, including the applicant's, the subrecipient's, and the FFRDC's portions of the project.

All DOE FFRDCs are required to enter into a Cooperative Research and Development Agreement[5] (CRADA) or, if the role of the DOE FFRDC is limited to technical assistance and intellectual property is not anticipated to be generated from the DOE FFRDC's work, a Technical Assistance Agreement (TAA), with at least the recipient. A fully executed CRADA or TAA must be in place or be compliant with a Master Scope of Work process prior to the FFRDC starting work directly allocable to the Financial Assistance award.

A CRADA is used to ensure accountability for project work and provide the appropriate management of IP, e.g., data protection and background IP. A Data Management Plan is not suited for this purpose.

Responsibility

[5] A Cooperative Research and Development Agreement is a contractual agreement between a national laboratory contractor and a private company or university to work together on R&D. For more information, see www.energy.gov/gc/downloads/doe-cooperative-research-and-development-agreements.

The recipient will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to disputes and claims arising out of any agreement between the recipient and the FFRDC.

III. Program Description

A. Background and Purpose

This notice of funding opportunity (NOFO) is being issued by the U.S. Department of Energy's (DOE) Office of Energy Efficiency and Renewable Energy (EERE) Solar Energy Technologies Office (SETO) to invest in research and development (R&D), technical assistance, and stakeholder engagement activities that improve the compatibility of large-scale solar (LSS) facilities with wildlife and facilitate the dual use of land for agricultural and solar energy production (agrivoltaics).

SETO invests in research and innovation to accelerate the advancement of solar technology and deployment of solar energy in the United States. The office supports solar energy research, development, demonstration, and technical assistance in seven areas—photovoltaics, concentrating solar-thermal power, systems integration, manufacturing and competitiveness, soft costs, solar workforce development, and solar energy access—to improve the affordability, reliability, and domestic benefit of solar technologies on the electric grid.

In September 2021, DOE released the *Solar Futures Study*,[6] which provides a vision for solar power's role in cost-effectively contributing to the nation's clean energy goals. According to the study, solar power will need to grow from supplying 5% of U.S. electricity demand in 2022 to 40% by 2035. This will require the United States to install 30 gigawatts alternating current (GW_{ac}) of solar generation capacity each year through 2025 and ramp up to 60 GW_{ac} per year from 2025 to 2030. Solar installations in the United States could supply 1 terawatt (TW_{ac}) of generating capacity for the power grid by 2035 and 1.6 TW_{ac} of capacity by 2050. (See Figure 1.)

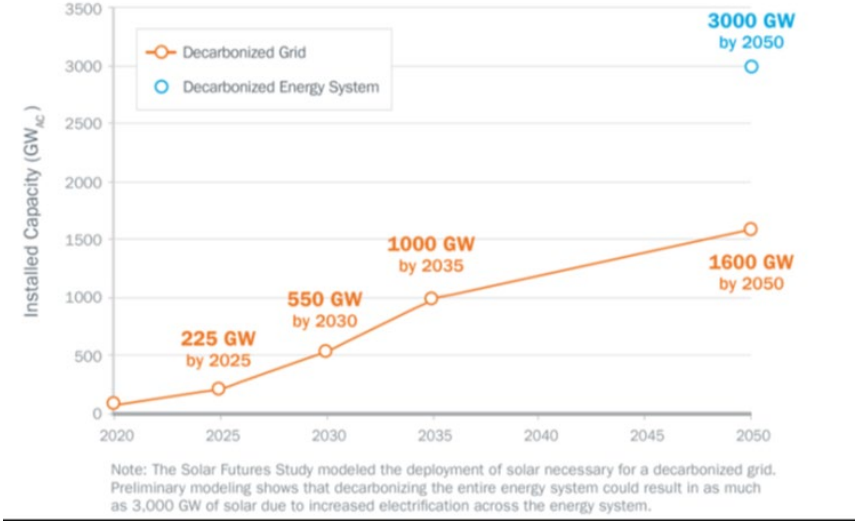

Figure 1. Scenarios of installed solar capacity in the *Solar Futures Study*. Source: National Renewable Energy Laboratory (NREL)

[6] DOE. 2021. *Solar Futures Study*. U.S. Department of Energy. www.energy.gov/eere/solar/solar-futures-study.

Achieving the vision articulated in the *Solar Futures Study* is projected to require approximately 5.6 million acres of land to host LSS facilities by 2035. While this is only a small fraction of the total land in the contiguous United States (0.3%), this expansion will result in increased interactions between LSS facilities and the surrounding environment, including natural wildlife habitats and agricultural areas. Land-use conflict due to siting and permitting of LSS facilities is becoming more prevalent and is already impacting the scale and pace of deployment necessary to meet DOE's goals. Research, technical assistance, and stakeholder engagement activities supported by this NOFO will help stakeholders overcome those conflicts by testing and helping to implement strategies that improve the compatibility of LSS facilities with wildlife and facilitating the dual use of land for agricultural and energy production (agrivoltaics).

B. Technology Space and Strategic Goals

This funding opportunity is being issued by SETO's Strategic Analysis and Institutional Support (SAIS) team. SAIS is focused on reducing soft costs (i.e., non-hardware costs) and other barriers to the deployment of solar energy.[7]

The goal of this NOFO is to improve the processes and outcomes of LSS development for wildlife, ecosystems, and communities hosting LSS facilities by soliciting projects that will a) test strategies that mitigate adverse impacts and/or maximize benefits to wildlife and ecosystems at LSS facilities, b) provide technical assistance and engagement opportunities that enable stakeholders to improve the compatibility of LSS facilities with wildlife, or c) provide technical assistance and engagement opportunities related to agrivoltaics. This funding opportunity will support R&D, technical assistance, and stakeholder engagement activities related to ground-mounted LSS facilities that are 1 megawatt direct current (MW_{dc}) or larger, located on private or public land.

Key decisions during the siting, permitting, design, and construction of an LSS facility determine the benefits and adverse impacts the facility will have on local wildlife, ecosystems, and agricultural areas.[8] These processes are complex because they require decision makers to evaluate current research findings and best practices and consult multiple entities, including LSS developers, utilities, regulators and permitting officials, Tribal governments and communities, environmental and conservation organizations, state or local governments, and host communities. Regional variation in habitat types, species of interest, community priorities, and agricultural practices further complicate these decision-making processes. Further research is needed, as well as technical assistance and stakeholder engagement activities that make the research findings and best practices well-known and accepted by stakeholders.

Given the current and projected scale of deployment of ground-mounted LSS facilities, ways to mitigate potential impacts to wildlife from LSS development need to be evaluated. "Mitigation" is defined as "measures that avoid, minimize, or compensate for effects caused by a proposed action."[9] The standard

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[7] DOE. "Soft Costs." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/soft-costs.

[8] DOE. "Large-Scale Solar Siting Research." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/large-scale-solar-siting-research.

[9] eCFR. "National Environmental Policy Act (NEPA). 40 CFR Part 1508.1(s)." Code of Federal Regulations. www.ecfr.gov/current/title-40/chapter-V/subchapter-A/part-1508/section-1508.1.

hierarchy to mitigate adverse impacts on wildlife populations begins with avoidance followed by minimization and compensatory mitigation.[10] In the context of LSS development, "avoidance" generally refers to selecting sites that do not cause adverse impacts in the first place. "Minimization" involves actions that limit the degree or magnitude of an adverse impact, such as the incorporation of design features or operation and maintenance measures that reduce harm to wildlife from LSS development. Additionally, there are strategies that could enable LSS facilities to provide new benefits to wildlife and the surrounding environment, such as planting native vegetation or pollinator habitat.[11] For this NOFO, SETO is primarily interested in minimization strategies that reduce adverse impacts, provide benefits, and ultimately improve the compatibility of LSS with wildlife and their habitats.

Research examining wildlife interactions with LSS infrastructure has been expanding rapidly in recent years,[12, 13, 14, 15, 16] but the efficacy of mitigation strategies at LSS facilities remains largely understudied. Stakeholders have identified the development and evaluation of strategies to mitigate wildlife risks at solar facilities as a research priority.[17] The shortage of research studies on the efficacy of mitigation strategies is in part due to the timescale that is required to definitively evaluate impacts and benefits to wildlife, challenges with implementing a study design that includes LSS facilities with different mitigation treatments and corresponding controls, and the costs associated with implementing studies at the necessary scale. Nevertheless, LSS developers and other stakeholders have started implementing mitigation strategies, such as wildlife-permeable fencing, native vegetation management, wildlife movement corridors through or around the LSS facility, construction practices that minimize soil and vegetation disturbance, and translocation or relocation of sensitive species before construction.

The most prominent concerns regarding wildlife impacts from LSS development are disturbance of wildlife movements and loss of natural habitat. LSS facilities are required to include security fencing around the perimeter of each project, which can prevent wildlife from entering the facility or moving

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[10] U.S. Fish and Wildlife Service. 2023. *Mitigation Policy (Appendix 1, 501 FW 2).* www.fws.gov/sites/default/files/policy/pdfs/FWS-Mitigation-Policy.pdf.

[11] Walston, L., et al. 2023. "If You Build It, Will They Come? Insect Community Responses to Habitat Establishment at Solar Energy Facilities in Minnesota, USA." *Environmental Research Letters*, vol. 19(1). doi.org/10.1088/1748-9326/ad0f72.

[12] Wilbert, T. R., et al. 2015. "Non-Invasive Baseline Genetic Monitoring of the Endangered San Joaquin Kit Fox on a Photovoltaic Solar Facility." *Endangered Species Research*, vol. 27: pp. 31–41. https://www.int-res.com/articles/esr_oa/n027p031.pdf.

[13] Karban, C., et al. "Predicting the Effects of Solar Energy Development on Plants and Wildlife in the Desert Southwest, United States." *Renewable and Sustainable Energy Reviews*, vol. 205. doi.org/10.1016/j.rser.2024.114823.

[14] Diehl, R., et al. 2024. *Investigating the "Lake Effect" Influence on Avian Behavior from California's Utility-Scale Photovoltaic Solar Facilities*. California Energy Commission. www.energy.ca.gov/sites/default/files/2024-06/CEC-500-2024-055.pdf.

[15] Sawyer, H., et al. 2022. "Trade-offs Between Utility-Scale Solar Development and Ungulates on Western Rangelands." *Frontiers in Ecology and the Environment,* vol. 20(6): pp. 345–351. doi.org/10.1002/fee.2498.

[16] Todd, B., et al. 2021. *Mitigating Impacts of Solar Energy Development on Desert Tortoises: Indoor Rearing and Release of Head Started Desert Tortoises*. California Energy Commission. www.energy.ca.gov/sites/default/files/2021-07/CEC-500-2021-039.pdf.

[17] REWI. 2023. *National Solar Wildlife Research Plan 2023–2025*. Renewable Energy Wildlife Institute. rewi.org/wp-content/uploads/2023/05/REWI-National-Solar-Wildlife-Research-Plan-2023-2025.pdf.

through it. In a 2021 survey of state fish and wildlife agencies (SFWAs), the Association of Fish and Wildlife Agencies identified habitat fragmentation and permanent direct impacts as the largest concerns nationally pertaining to LSS development.[18]

Western big game species are reliant on long-distance migration routes and seasonal ranges that can overlap with areas that are prime for LSS development.[19] In 2022, Sawyer et al. published a study focused on the impacts of an LSS facility on pronghorn activity.[15] The study monitored the movement of 30 pronghorn in Wyoming pre- and post-construction of an LSS facility and found that, post-construction, the amount of areas highly used by the pronghorn within 1–2 km of the facility was reduced by 40%. Impermeable security fencing, construction activities, and the presence of new infrastructure on the landscape are all considered possible causes of this change in activity. There is limited empirical evidence on the efficacy of strategies that intend to mitigate these adverse impacts, such as wildlife movement corridors, roadway offsets, and other fencing designs (e.g., rounded or angled fence corners).

Other strategies such as low-impact construction practices, native vegetation preservation and planting, and vegetation management regimes during operation can help maintain or provide new habitat for wildlife within LSS facilities. These tactics, paired with wildlife-permeable fencing that enables movement in and out of facilities,[20, 21] could be beneficial for wildlife species of concern, such as gopher tortoises and desert tortoises that are especially susceptible to habitat loss. However, empirical evidence of the efficacy and impact of these strategies is also lacking. In addition, barriers for adopting these strategies, such as increased costs or concerns about liability from the presence of sensitive species at LSS facilities, need to be evaluated and addressed.

There is a need for improved cross-sector communication and coordination between stakeholders involved in LSS siting and permitting processes. The 2021 survey of SFWAs also found that ensuring early coordination between project proponents (including consultants, developers, etc.) and SFWAs during the LSS development process is a top priority, but 54% of respondents reported that such coordination was conducted either rarely or never/almost never.[18] As research on wildlife-solar interaction continues to advance, stakeholders need support applying the latest research findings to decisions about LSS site location, facility design, and operations and maintenance regimes.

"Agrivoltaics" or "agrivoltaic systems" is agricultural production (crop or livestock production) underneath solar panels or in between rows of solar panels.[22] Agrivoltaics is a promising strategy

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[18] AFWA. *Solar Siting Survey Final Report*. Association of Fish and Wildlife Agencies. www.fishwildlife.org/application/files/7616/8053/3632/Solar_Siting_Survey_Summary_AFWA_FINAL.pdf.

[19] Sawyer, H., and J. Holst. 2024. *Big Game Guidelines for Utility-Scale Photovoltaic Solar Development.* Theodore Roosevelt Conservation Partnership. www.trcp.org/wp-content/uploads/2024/09/TRCP-Big-Game-Solar-Guidelines-Final_081224.pdf.

[20] Cypher, B.L., et al. 2021. "Photovoltaic Solar Farms in California: Can We Have Renewable Electricity and Our Species, Too?" *California Fish and Wildlife*, vol. 107: pp. 231–248. doi.org/10.51492/cfwj.hwisi.6.

[21] Kalies, L., et al. 2022. *Impacts of Conservation Practices at Solar Facilities: Vegetation, Pollinator, and Wildlife Monitoring (2018–2021).* North Carolina Pollinator Alliance. ncpollinatoralliance.org/wp-content/uploads/2022/06/Solar-farm-monitoring-report-FINAL-May-2022.pdf.

[22] DOE. "Agrivoltaics: Solar and Agriculture Co-Location." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/agrivoltaics-solar-and-agriculture-co-location.

because it could provide agricultural producers with diversified revenue sources, create ecological and environmental benefits for host communities, optimize land use, and reduce land use conflict between the solar and agricultural sectors.[23, 24]

Active research on agrivoltaics is helping stakeholders identify optimal designs for energy and agricultural production. Many new agrivoltaic systems are demonstrating innovative and inclusive business models and cross-sector collaborations. However, research results, data, and best practices are not readily accessible to all stakeholders, especially those that have no or limited experience with agrivoltaics. In addition, since agrivoltaics is a relatively new strategy, many stakeholders remain skeptical or unaware of potential benefits and use cases. There is a need for technical assistance and stakeholder engagement opportunities that make the benefits and costs of agrivoltaic systems available to all interested stakeholders. Agrivoltaic systems may be of particular interest to small- and medium-sized farms (those with under $1 million gross cash farm income per year).[25]

Relevant Work Funded by SETO

In 2022, SETO awarded nine projects through the first SolWEB funding opportunity.[26] These projects are evaluating wildlife-solar energy interactions at LSS facilities, developing and testing monitoring technologies, and creating data-sharing infrastructure. For example, the Wildlands Network is studying pronghorn and other mammal activity in response to construction of LSS facilities in the Four Corners region and evaluating multiple methodologies to identify cost-efficient monitoring regimes for solar-mammal interactions.[27] The University of Arkansas is assessing the factors influencing wildlife presence and abundance within LSS facilities in Arkansas and Kansas.[28] The Renewable Energy Wildlife Institute (REWI) is developing a nationwide solar-wildlife data-sharing infrastructure (called the SolSource Database) to make wildlife-solar data more accessible and establish data standards and templates.[29] Other projects from the SolWEB funding program are gathering empirical data on ecosystem services such as carbon sequestration, pollination, and ground and stormwater management at LSS facilities to develop frameworks and tools that could inform future solar site selection and design decisions. SETO

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[23] Pascaris, A., et al. 2023. "From Niche-Innovation to Mainstream Markets: Drivers and Challenges of Industry Adoption of Agrivoltaics in the U.S." *Energy Policy*, vol. 181. doi.org/10.1016/j.enpol.2023.113694.

[24] Macknick, J., et al. 2022. *The 5 Cs of Agrivoltaic Success Factors in the United States: Lessons From the InSPIRE Research Study.* Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-83566. www.nrel.gov/docs/fy22osti/83566.pdf.

[25] USDA. 2024. "Farm Structure and Contracting." U.S. Department of Agriculture, Economic Research Service. www.ers.usda.gov/topics/farm-economy/farm-structure-and-organization/farm-structure-and-contracting/.

[26] DOE. 2024. "Deploying Solar with Wildlife and Ecosystem Services Benefits (SolWEB) Funding Program." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/deploying-solar-wildlife-and-ecosystem-services-benefits-solweb-funding-program.

[27] Wildlands Network. 2024. "Wildlife and Renewable Energy: How Will Solar Energy Development Impact Wildlife Movement?" www.wildlandsnetwork.org/wildlife-solar.

[28] Willson Lab. 2024. "WildSNaP: Wildlife in Solar Through Native Planting." University of Arkansas. www.willsonlab.com/nativesolar.

[29] REWI. 2024. "SolSource Database." Renewable Energy Wildlife Institute. rewi.org/about-us/our-work/solsource/.

also previously funded three projects in 2019 focused on the development of novel tools, technologies, and methodologies to assess and monitor avian impacts at LSS facilities.[30]

SETO has invested in research on agrivoltaics for over nine years. Since 2015, SETO has funded NREL's Innovative Solar Practices Integrated with Rural Economies and Ecosystems (InSPIRE) project to improve the environmental compatibility and mutual benefits of solar development with agriculture and native landscapes.[31] In 2020, SETO awarded four projects focused on siting solar systems with agriculture,[32] including the development the Agri-Solar Clearinghouse by the National Center for Appropriate Technology.[33] In 2022, SETO awarded six research projects under the Foundational Agrivoltaic Research for Megawatt Scale (FARMS) funding opportunity that are examining how agrivoltaics can provide mutual benefit to farmers, host communities, and the solar industry.[34]

C. Expected Performance Goals

Successful projects funded through this NOFO will collaborate with stakeholders, including solar developers, owners, and operators, environmental consultants, academic researchers with wildlife or agrivoltaics expertise, Tribal governments and communities, and state agencies and nonprofits working on wildlife, hunting, conservation, environmental, and agricultural issues.

Selected projects are expected to provide the following short-term outcomes, which may vary between Topic Areas and Areas of Interest:

- Research results and robust datasets published in peer reviewed journals.
- Stakeholder convenings and facilitated conversations to interpret and apply actionable insights from research on solar-wildlife interactions.
- Resources (e.g., implementation manuals, factsheets, videos) that reflect stakeholder perspectives and improve LSS siting processes and outcomes while promoting meaningful benefits for wildlife, ecosystems, and host communities.
- Technical assistance to make research findings, best practices, and business models more accessible to stakeholders interested in agrivoltaics.

Beyond these short-term outcomes, successful projects will have long-term impacts on LSS siting process and outcomes, including:

- Reduced soft costs of LSS development.

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[30] DOE. 2024. "SETO FY2019 – Balance of Systems Soft Cost Reduction." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/seto-fy2019-balance-systems-soft-cost-reduction.

[31] NREL. 2024. "Innovative Solar Practices Integrated with Rural Economies and Ecosystems." National Renewable Energy Laboratory. openei.org/wiki/InSPIRE.

[32] DOE. 2024. "SETO 2020 – Solar and Agriculture." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/seto-2020-solar-and-agriculture.

[33] National Center for the Appropriate Technology. 2024. "Agrisolar Clearinghouse." www.agrisolarclearinghouse.org.

[34] DOE. 2024. "Foundational Agrivoltaic Research for Megawatt Scale (FARMS) Funding Program." U.S. Department of Energy, Solar Energy Technologies Office. www.energy.gov/eere/solar/foundational-agrivoltaic-research-megawatt-scale-farms-funding-program.

- Reduced permitting delays and public opposition to facilities due to wildlife and ecosystem impacts and land use conflicts.
- Improved compatibility of LSS facilities with wildlife, ecosystems, and agricultural areas.
- Additional ecological and environmental benefits for communities hosting LSS facilities.
- Improved access to resources for agricultural producers, rural landowners, industry actors, and other stakeholders interested in agrivoltaics.

D. Teaming Partner List

DOE is compiling a Teaming Partner List to facilitate the formation of project teams for this NOFO. The Teaming Partner List allows organizations that may wish to participate on a project to express their interest to other applicants and explore potential partnerships.

The Teaming Partner List will be available on eXCHANGE and will be regularly updated to reflect new teaming partners who provide their organization's information.

SUBMISSION INSTRUCTIONS: View the Teaming Partner List by visiting the eXCHANGE homepage and clicking on "Teaming Partners" within the left-hand navigation pane. This page allows users to view published Teaming Partner Lists. To join the Teaming Partner List, submit a request within eXCHANGE. Select the appropriate Teaming Partner List from the drop-down menu, and fill in the following information: Investigator Name, Organization Name, Organization Type, Topic Area, Background and Capabilities, Website, Contact Address, Contact Email, and Contact Phone.

DISCLAIMER: By submitting a request to be included on the Teaming Partner List, the requesting organization consents to the publication of the above-referenced information. By facilitating the Teaming Partner List, DOE is not endorsing, sponsoring, or otherwise evaluating the qualifications of the individuals and organizations that are identifying themselves for placement on this Teaming Partner List. DOE will not pay for the provision of any information, nor will it compensate any applicants or requesting organizations for the development of such information.

E. Topic Areas

The goal of this NOFO is to improve the processes and outcomes of LSS development for wildlife, ecosystems, and communities hosting LSS facilities by soliciting projects that will a) test strategies that mitigate adverse impacts and/or maximize benefits to wildlife and ecosystems at LSS facilities, b) provide technical assistance and engagement opportunities that enable stakeholders to improve the compatibility of LSS facilities with wildlife, or c) provide technical assistance and stakeholder engagement opportunities related to agrivoltaics.

Projects funded by SETO are expected to produce high-impact outcomes with a view toward public access. Projects focused on solar-wildlife research (Topic 1, Area of Interest 1) will implement communications strategies based on project goals, target audiences, and regional scope to engage stakeholders and ensure widespread dissemination of project outputs. Projects focused on convening stakeholders and facilitating conversations between different sectors (Topic 1, Area of Interest 2, and Topic 2) will develop communications and engagement strategies to identify expected outcomes and outputs, stakeholders participating in or benefiting from project activities, the format for stakeholder convenings and engagement, metrics of project success, and strategies for bridging conflicting priorities or perspectives among stakeholders. Any projects proposing to create digital resources such as datasets,

models, decision support tools, websites, or resource hubs must include a plan for the maintenance or commercialization of the resources by the end of the project period of performance, to ensure that the resources remain useful and available to all relevant stakeholders after the end of DOE funding.

This funding opportunity has two topic areas:

- **Topic Area 1: Wildlife-Solar Energy Research, Technical Assistance, and Stakeholder Engagement.** Topic Area 1 is divided into two areas of interest: 1) Strategies to Mitigate Adverse Impacts on and/or Maximize Benefits to Wildlife at LSS Facilities, and 2) Wildlife-Solar Technical Assistance and Stakeholder Engagement. A single project cannot address both areas of interest. This topic area is focused on improving the ability of stakeholders to implement strategies that improve the compatibility of LSS facilities with wildlife and ecosystems. Projects under Area of Interest 1 will test new or existing strategies for mitigating adverse impacts on and/or maximizing benefits to wildlife and ecosystems from LSS development. Projects under Area of Interest 2 will provide technical assistance and stakeholder engagement opportunities on wildlife-solar interactions to improve coordination and collaboration among stakeholders and make research findings and best practices more accessible.
- **Topic Area 2: Agrivoltaics Technical Assistance and Stakeholder Engagement.** Topic Area 2 is focused on disseminating research on agrivoltaics, sharing best practices, and enabling cross-sector collaboration. Projects will provide technical assistance and engagement opportunities to stakeholders, including but not limited to solar industry members, agricultural producers, rural cooperatives, and local governments.

Projects that only concern wildlife-solar energy research must apply to Topic 1, Area of Interest 1. Projects that only concern technical assistance and stakeholder engagement related to wildlife-solar interactions must apply to Topic 1, Area of Interest 2. Projects focused on providing technical assistance or stakeholder engagement opportunities related to agrivoltaics must apply to Topic 2.

1. Topic Area 1: Wildlife-Solar Energy Research, Technical Assistance, and Stakeholder Engagement.

Area of Interest 1: Strategies to Mitigate Adverse Impacts on and/or Maximize Benefits to Wildlife at LSS Facilities

Projects responsive to this area of interest will test new or existing strategies for mitigating adverse impacts on and/or maximizing benefits to wildlife and ecosystems from LSS development. Strategies may include but are not limited to wildlife-permeable fencing, native vegetation management, wildlife movement corridors through or around LSS facilities, construction practices that minimize soil and vegetation disturbance, and translocation or relocation of sensitive species before construction. To better evaluate the impact of mitigation strategies, applicants should consider ways to leverage data that has already been collected (e.g., pre-construction data on wildlife presence or movement) or implement study designs that enable the collection of data before, during, and after the construction of an LSS facility. Project outputs must be relevant to other LSS facilities so that entities involved in LSS development (including solar industry actors, state and federal wildlife agencies, and Tribal governments and communities) can apply research findings, replicate study designs, gather and share additional data on solar-wildlife interactions, and/or develop evidence-based best management practices.

SETO is interested in studies that examine how big game species respond to mitigation strategies such as wildlife movement corridors, roadway offsets, and fencing designs (e.g., rounded or angled fence

corners). Projects must evaluate the optimal dimensions and configurations of these strategies and produce actionable insights for how to best implement these strategies during facility design and construction. SETO is also interested in research to evaluate strategies that preserve or promote native vegetation and soils at LSS facilities, such as low-impact construction practices that could improve the compatibility of LSS facilities with sensitive species such as gopher and desert tortoises. Other wildlife species and habitats of conservation concern are also of interest, especially those where LSS deployment is increasing, such as grasslands in the Midwest and the Great Plains, deserts in the Southwest, and forested land in the East. Applicants may propose research projects addressing any taxa, species, and/or habitat type, but must justify the need for this research and articulate a link between the wildlife they propose to study and the economic or cultural priorities of local communities.

Projects must address challenges or limitations associated with the adoption of the studied mitigation strategies. Challenges include but are not limited to increased project development costs, delays in obtaining permits, limitations to the scale at which mitigation actions can be executed, and constraints related to site conditions (e.g., incompatible terrain, pre-construction land use, and conflict with neighboring properties).

Applications must identify project partners that enable real-world testing and verification of the proposed mitigation strategy. If the proposed project will require accessing existing solar installation sites, modifying or retrofitting existing LSS facilities, or implementing design strategies during construction of new facilities, applicants must provide evidence that the site owner or controller is willing to participate in the study (e.g., letter of commitment) or present a viable pathway for obtaining that support.

Applicants must present a cohesive study design that identifies specific and clearly articulated research questions and hypotheses, independent and dependent variables, treatment and control groups, data collection methodologies, data analysis methodologies, expected sample sizes, and other critical components of the study design. Projects must implement data collection methodologies that provide reliable and robust datasets on wildlife presence, movement, and response to the mitigation strategies being implemented.

Applicants must also describe how project outputs will inform current practices and explain improvements relative to existing benchmarks. Applications must discuss limitations with the proposed study design, risks and challenges to implementing the design, and justification or mitigation strategies for addressing those limitations and risks. Projects under this area of interest must be no more than four years long.

Area of Interest 2: Wildlife-Solar Technical Assistance and Stakeholder Engagement
As the science of wildlife and solar facility interactions evolves, stakeholders need support in applying the latest research findings to improve the compatibility of LSS facilities with wildlife and ecosystems. Applications responsive to this area of interest will improve LSS siting and permitting processes by developing resources, facilitating cross-sector conversations, and providing technical assistance to stakeholders. SETO is interested in projects that involve and meaningfully incorporate the perspective of all entities involved in the siting and permitting processes for LSS facilities, including but not limited to LSS developers, utilities, state and federal wildlife agencies, Tribal governments and communities, and environmental and conservation organizations.

Applicants must describe a cohesive communications and engagement strategy, including but not limited to expected outcomes and outputs, stakeholders participating in or benefiting from project activities, the format for stakeholder convenings and engagement, metrics of project success, and strategies for bridging conflicting priorities or perspectives among stakeholders.

Project activities may include but are not limited to workshops, trainings, or webinars that facilitate cross-sector collaboration by disseminating the latest research findings, helping stakeholders identify common challenges and research priorities, and providing access to resources that can inform LSS siting and permitting processes. Applicants must identify clear project objectives and outputs and acknowledge limitations or challenges associated with the proposed approach.

SETO is also interested in projects that provide technical assistance to stakeholders, such as to SFWAs, LSS developers, and engineering, procurement, and construction companies (EPCs) to improve their ability to site, permit, and manage LSS facilities that minimize adverse impacts and maximize benefits to wildlife. Applications focused on providing technical assistance to stakeholders must identify the expected audience, the method of technical assistance delivery, the topics covered, and the expected outcomes or outputs from proposed activities.

Given the variation in species of interest, habitat types of conservation concern, and LSS deployment trends, a regional approach to the projects under this area of interest could be appropriate. Applicants must identify and justify the region(s) of focus and discuss how topics of interest will vary between regions.

2. Topic Area 2: Agrivoltaics Technical Assistance and Stakeholder Engagement.

Applications responsive to this topic area will develop and disseminate informational resources, make research and data more accessible, educate new audiences, facilitate cross-sector collaborations, and provide technical assistance on agrivoltaic systems. SETO is interested in cross-sector initiatives and convenings that apply the latest research findings and benefit farmers, developers, and rural communities. Entities that could participate in and benefit from these technical assistance and engagement activities include but are not limited to agricultural producers (including tenant, land-owning, and small- and medium-sized farms and ranches), agricultural interest groups and nonprofits, solar industry members, EPCs, state and local governments, Tribal governments and communities, utilities, and electric cooperatives.

Applicants must describe a cohesive communications and engagement strategy that identifies expected outcomes and outputs, stakeholders participating in or benefiting from project activities, the format for stakeholder convenings and engagement, metrics of project success, and other key considerations for project success. Project activities may include but are not limited to hosting workshops, providing one-on-one technical assistance, developing and implementing educational curriculums, conducting trainings, and organizing community events, such as site visits. In addition, applicants must provide a platform (e.g., website or resource hub) for hosting educational materials and other resources that is user-friendly, publicly accessible, and maintained beyond the project period of performance.

SETO is interested in outreach, technical assistance, and stakeholder engagement initiatives that make agrivoltaic system implementation more accessible for small- and medium-sized farms and solar industry participants that have not previously developed agrivoltaic systems. Project activities should

introduce stakeholders to the challenges and benefits of developing agrivoltaic systems, provide science-based educational materials, and offer opportunities to engage with other interested stakeholders, including those from other sectors.

SETO is also interested in projects that provide technical assistance or engagement opportunities to state and local governments that are interested in expanding their own capacity to engage constituents and facilitate the development of agrivoltaic systems in their jurisdictions. Applicants aiming to implement national-level technical assistance or engagement programs must describe a strategy and include the appropriate partners to implement the program across multiple states or regions.

F. Applications Specifically Not of Interest

The following types of applications will be deemed nonresponsive and will not be reviewed or considered (please also refer to the Responsiveness Review section below):

- Applications that fall outside the technical parameters specified in the Background and Purpose and Topic Areas sections above.
- Applications for proposed technologies that are not based on sound scientific principles (e.g., violates the laws of thermodynamics).
- Projects that focus on solar generation deployed on rooftops at the residential or the commercial scale. This funding opportunity is only focused on ground-mounted LSS systems that are 1 MW_{dc} or larger. LSS facilities may or may not include storage.
- Projects focused on concentrating solar thermal power. This funding opportunity is only focused on photovoltaic technologies.
- Projects that focus on the design of photovoltaic modules, heliostats, inverters, or turbine-generators.
- For Topic 1:
    a. Projects that conduct research solely on ecosystem services from solar facilities.
    b. Projects that perform data collection or impact evaluation of solar sites, but do not test existing and/or develop new mitigation strategies to mitigate adverse impacts or maximize benefits relating to wildlife.
    c. Projects that focus solely on avoidance (i.e., site selection) as a mitigation strategy.
    d. Projects that focus solely on mitigation strategies for avian species.
    e. Projects that address both areas of interest.
- For Topic 2:
    a. Field research on agrivoltaics, including research on agricultural or energy production, economic viability, cost, or social dimensions of agrivoltaics.

G. Statement of Substantial Involvement

DOE anticipates awarding cooperative agreements under this NOFO, which include a statement of DOE's "substantial involvement" in the work performed under the resulting awards. For cooperative agreements, DOE does not limit its involvement to the administrative requirements of the award. Instead, DOE has substantial involvement in the direction and redirection of the technical aspects of the project. DOE's substantial involvement in resulting awards may include the following:

A. DOE shares responsibility with the recipient for the management, control, direction, and performance of the project.

B. DOE may intervene in the conduct or performance of work under this award for programmatic reasons. Intervention includes the interruption or modification of the conduct or performance of project activities.
C. DOE may redirect or discontinue funding the project based on the outcome of DOE's evaluation of the project at the Go/No-Go decision point(s).
D. DOE participates in major project decision-making processes.

H. Statutory Authority

The programmatic authorizing statute is the Energy Act of 2020, Section 3004(b)(1)(A), Section 3004(b)(1)(B)(vi), and Sections 3004(b)(2)(A)(i), (iv), and (viii) (codified at 42 U.S.C. § 16238), which states that "the Secretary shall establish a program to conduct research, development, demonstration, and commercialization of solar energy technologies … to reduce the cost, risk, and other potential negative impacts across the lifespan of solar energy technologies, including manufacturing, siting, permitting, installation, operations, maintenance, decommissioning, and recycling" by "... awarding grants and awards on a competitive, merit-reviewed basis," "… providing technical assistance," and "… conducting education and outreach activities."

Awards made under this announcement will fall under the purview of 2 CFR Part 200 as adopted and supplemented by 2 CFR Part 910.

I. Diversity, Equity, and Inclusion

As part of the application, applicants are required to describe how diversity, equity, and inclusion (DEI) objectives will be incorporated in the project. Specifically, applicants are required to submit a DEI Plan that describes the actions the applicant will take to foster a welcoming and inclusive environment, support people from underrepresented groups in science, technology, engineering, and mathematics (STEM), advance equity, and encourage the inclusion of individuals from these groups in the project—and the extent the project activities will be located in or benefit underserved communities (see Section IV.C.4). This plan will be evaluated as part of the technical review process and incorporated into the award if selected.

This NOFO seeks to encourage the participation of underserved communities[35] and underrepresented groups. Applicants are highly encouraged to include individuals from groups historically

[35] The term "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life, as exemplified by the list of in the definition of "equity" (E.O. 13985). For purposes of this NOFO, as applicable to geographic communities, applicants can refer to economically distressed communities identified by the Internal Revenue Service as Qualified Opportunity Zones; communities identified as disadvantaged or underserved communities by their respective states; communities identified on the Index of Deep Disadvantage referenced at news.umich.edu/new-index-ranks-americas-100-most-disadvantaged-communities/, and communities that otherwise meet the definition of "underserved communities" stated above.

underrepresented[36, 37] in STEM on their project teams. Further, MSIs,[38] minority business enterprises, minority-owned businesses, woman-owned businesses, veteran-owned businesses, or entities located in an underserved community that meet the eligibility requirements (see Section II.A) are encouraged to apply as the prime applicant or participate on an application as a proposed partner to the prime applicant. The Selection Official may consider the inclusion of these types of entities as part of the selection decision (see Section VI.D).

Applicants are required to describe how DEI objectives will be incorporated in the project through the DEI Plan. The following are examples of activities that project teams could implement as part of the DEI Plan:

- Project location: Study a project location's social history and its past environmental injustices and apply it to the research questions, outputs, and outreach. Identify relevant organizations also working in the project location.
- Community engagement: Engage with host communities to ensure that research questions are reflective of community priorities and external output from the project team benefits people/groups outside the project.
- Resource Accessibility: Facilitate the equitable distribution of knowledge and resources developed by the project team.
- Impact evaluation: Measure and publish the impact of DEI activities conducted during the award.

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[36] According to the National Science Foundation's 2019 report titled, "Women, Minorities and Persons with Disabilities in Science and Engineering", women, persons with disabilities, and underrepresented minority groups—Black or African American, Hispanic or Latino, and American Indians or Alaska Natives—are vastly underrepresented in the STEM (science, technology, engineering, and math) fields that drive the energy sector. That is, their representation in STEM education and STEM employment is smaller than their representation in the U.S. population. (See: ncses.nsf.gov/pubs/nsf19304/digest/about-this-report.) For example, in the United States, Hispanics, African Americans, and American Indians or Alaska Natives make up 24% of the overall workforce, yet only account for 9% of the country's science and engineering workforce. DOE seeks to inspire underrepresented Americans to pursue careers in energy and support their advancement into leadership positions. (See: www.energy.gov/articles/introducing-minorities-energy-initiative.)

[37] Also note that Congress recognized in Section 305 of the American Innovation and Competitiveness Act of 2017, Public Law 114-329:

> (1) [I]t is critical to our Nation's economic leadership and global competitiveness that the United States educate, train, and retain more scientists, engineers, and computer scientists; (2) there is currently a disconnect between the availability of and growing demand for STEM-skilled workers; (3) historically, underrepresented populations are the largest untapped STEM talent pools in the United States; and (4) given the shifting demographic landscape, the United States should encourage full participation of individuals from underrepresented populations in STEM fields.

[38] Minority-serving institutions (MSIs), including historically Black colleges and universities/Other Minority Institutions (OMIs) as educational entities recognized by the Office of Civil Rights (OCR) and U.S. Department of Education, and identified on the OCR's Department of Education U.S. accredited postsecondary minorities' institution list.

IV. Application Content and Form

This section includes application information specific to this NOFO Part 1. Refer to the NOFO Part 2, *Application Content and Form* for standard information that applies to all DOE NOFOs, such as formatting and content requirements, and funding restrictions.

A. Summary

The application process includes three submission phases: concept paper, application, and reply to reviewer comments.

Table 2. Application Process Submission Phases

Application Submission Phase	Eligibility for Submission
Concept Paper	Required to be submitted by the specified due date and time to be eligible to submit an application.
Application	Must be submitted by the specified due date and time to be eligible for comprehensive merit review.
Replies to Reviewer Comments	Required to be submitted by the specified due date and time.

B. Concept Paper

Each concept paper must be limited to a single research project or stakeholder engagement and technical assistance project. The concept paper must conform to the requirements listed below, including the stated page limits.

Table 3. Concept Paper Requirements

Section	Page Limit	Description
Cover Page	1 page maximum	The cover page should include the project title, the specific announcement topic area being addressed (if applicable), both the technical and business points of contact (POC)—including the Administrative Officer, if applicable—names of all team member organizations, the project location(s), and any statements regarding confidentiality.
Project Description	5 pages maximum	Applicants are required to succinctly describe:

Section	Page Limit	Description
		• The proposed research, technical assistance, and/or stakeholder engagement activities, including how proposed activities are unique and innovative. • A research study design (Topic 1, Area of Interest 1) or a communications and engagement strategy (Topic 1, Area of Interest 2 and Topic 2). • The current state of the art in the relevant field, including key shortcomings, limitations, and challenges being addressed by project activities. • The key technical risks that threaten project objectives and how the proposed project activities will overcome these risks. • The potential impact that the proposed project would have on the relevant field. • The proposed approach for integrating DEI principles into the project, including how project activities will impact and benefit underserved communities. • How the geographical location and scope of the proposed project influences project outputs and impacts. • The impact that DOE funding would have on the proposed project.
Addendum	1 page maximum	Applicants are required to succinctly describe the qualifications, experience, and capabilities of the proposed project team, including: • Whether the Principal Investigator (PI) and project team have the skill and expertise needed to successfully execute the project plan. • Whether the applicant has prior experience performing tasks of similar risk and complexity. • Level of commitment from project partners and stakeholders needed to execute proposed activities and achieve proposed objectives. • Whether the applicant has worked together with its teaming partners on prior projects or programs. • Whether the applicant has adequate access to equipment and facilities necessary to accomplish the effort and/or clearly explain how it intends to obtain access to the necessary equipment and facilities. • Applicants may provide graphs, charts, or other data to supplement their Project Description.

Total concept paper Maximum Page Limit: 7 pages.

DOE makes an independent assessment of each concept paper based on the technical review criteria for Concept Papers described below. DOE will encourage a subset of applicants to submit applications. Other applicants will be discouraged from submitting an application. Please see NOFO Part 2, *Selection and Award Notices—Concept Paper Notifications*.

C. Application Content Requirements

Each application must be limited to a single concept. Applications must conform to the following requirements and must not exceed the stated page limits. Please refer to the NOFO Part 2, *Application Content and Form* for a complete list of application requirements. Detailed guidance on the content and form of NOFO-specific requirements is provided following the Summary of Application Requirements table below.

1. Covered Individual Definition, Designation, and Responsibility

Several of the Application Content Requirements listed below and in the NOFO Part 2 are required of covered individuals.

For the purposes of this NOFO, a Covered Individual means an individual who (a) contributes in a substantive, meaningful way to the development or execution of the scope of work of a project proposed for funding by DOE, and (b) is designated as a covered individual by DOE.

DOE designates as covered individuals any PI, project director (PD), co-principal investigator (Co-PI), co-project director (Co-PD), project manager, and any individual regardless of title that is functionally performing as a PI, PD, Co-PI, Co-PD, or project manager. Status as a consultant, graduate (master's or Ph.D.) student, or postdoctoral associate does not automatically disqualify a person from being designated as a "covered individual" if they meet the definition in (a) above.

The applicant is responsible for assessing the applicability of (a) above, against each person listed on the application. Further, the applicant is responsible for identifying any such individual to DOE for designation as a covered individual, if not already designated by DOE as described above.

The applicant's submission of a current and pending support disclosure and/or biosketch/resume for a particular person serves as an acknowledgement that DOE designates that person as a covered individual.

DOE may further designate covered individuals during award negotiations or the award period of performance.

2. Summary of Application Requirements

Table 4. Summary of Application Requirements

Component	File Format	Page Limit	File Name
Application for Federal Assistance	PDF	N/A	ControlNumber_LeadOrganization_424

Component	File Format	Page Limit	File Name
(SF-424)			
Technical Volume	PDF	15	ControlNumber_LeadOrganization_ TechnicalVolume
Letters of Commitment	PDF	1 page each	ControlNumber_LeadOrganization_ LOCs
Impacted Indian Tribes Documentation	PDF	N/A	ControlNumber_LeadOrganization_ ImpactedTribes
Statement of Project Objectives	MS Word	10	ControlNumber_LeadOrganization_ SOPO
Budget Justification Workbook	MS Excel	N/A	ControlNumber_LeadOrganization_ Budget_Justification
Subrecipient Budget Justification	MS Excel	N/A	ControlNumber_LeadOrganization_ Subrecipient_Budget_Justification
Work Proposal for FFRDC (see DOE O 412.1A)	PDF	N/A	ControlNumber_LeadOrganization_ WP
Authorization for Non-DOE or DOE FFRDCs	PDF	N/A	ControlNumber_LeadOrganization_ FFRDCAuth
Waiver for Foreign Entity Participation	PDF	N/A	ControlNumber_LeadOrganization_ FEW
Performance of Work in the United States (Foreign Work Waiver)	PDF	N/A	ControlNumber_LeadOrganization_ FWW
Diversity, Equity, and Inclusion (DEI) Plan	PDF	5	ControlNumber_LeadOrganization_ DEIPlan
Resumes	PDF	3 pages each	ControlNumber_LeadOrganization_ Resumes
Current and Pending Support (for each covered individual)	PDF	N/A	ControlNumber_LeadOrganization_ CPS
Digital Persistent Identifier (for each covered individual)	N/A	N/A	Include in Current & Pending Support

Component	File Format	Page Limit	File Name
Research Security Training Requirement (for each covered individual)	N/A	N/A	Include in Current & Pending Support
Transparency of Foreign Connections	PDF	N/A	BusinessSensitive_ControlNumber_LeadOrganization_TFC
Potentially Duplicative Funding Notice	PDF	N/A	ControlNumber_LeadOrganization_PDFN
Data Management Plan	PDF	N/A	ControlNumber_LeadOrganization_DMP
Disclosure of Lobbying Activities, if applicable (SF-LLL)	PDF	N/A	ControlNumber_LeadOrganization_SF-LLL
Certification Regarding Lobbying (OMB 4040-0013)	PDF	N/A	ControlNumber_LeadOrganization_Cert Lobbying
Summary for Public Release	PDF	1	ControlNumber_LeadOrganization_Summary
Summary Slide	MS Power Point	1	ControlNumber_LeadOrganization_Slide

3. Technical Volume

The Technical Volume must conform to the following content and form requirements. This volume must address the technical review criteria as discussed in Technical Review Criteria.

Applicants must provide sufficient citations and references to the primary research literature to justify the claims and approaches made in the Technical Volume. However, DOE and reviewers are under no obligation to review cited sources.

The Technical Volume to the application may not be more than 15 pages, including the cover page, table of contents, and all citations, charts, graphs, maps, photos, or other graphics, and must include all information below. The applicant should consider the weighting of each of the technical review criteria (see Technical Review Criteria) when preparing the Technical Volume.

The Technical Volume should clearly describe and expand upon information provided in the concept paper.

Table 5. Technical Volume Content Requirements Overview

Section	Approximate Percent Content of the Technical Volume
Cover Page	N/A
Project Overview	10%
Technical Description, Innovation, and Impact	30%
Workplan	40%
Technical Qualifications and Resources	20%

Cover Page
The cover page must include all of the following:

- The project title
- Specific NOFO topic areas
- Technical and business POCs
- The project team, including recipient name, entity type, and names of all team member organizations
- The project location(s)
- The proposed federal funding level, cost share, and period of performance
- Senior/key personnel and other covered individuals
- Statements regarding confidentiality.

Project Overview (Approximately 10% of the Technical Volume)
The Project Overview should contain the following information:

- **Background and Context:** The applicant should discuss background information, including important context that identifies the problem or challenge being addressed by proposed project activities.
- **Project Objectives:** The applicant should explicitly identify the project objectives (i.e., goals and/or expected outcomes) and the critical success factors in achieving these objectives.
- **DOE Impact:** The applicant should discuss the impact that DOE funding would have on the proposed project. Applicants should specifically explain how DOE funding, relative to prior, current, or anticipated funding from other public and private sources, is necessary to achieve the project objectives.

Technical Description, Innovation, and Impact (Approximately 30% of the Technical Volume)
The Technical Description should contain the following information:

- **Relevance and Outcomes:** The applicant should provide a detailed description of the proposed research, technical assistance, and/or stakeholder engagement activities. This section should

describe the relevance of the proposed project to the goals and objectives of the NOFO, including the potential to meet specific DOE technical targets or other relevant performance targets. The applicant should clearly specify the expected outcomes of the project.

- **Feasibility:** The applicant should demonstrate the technical feasibility of the proposed project activities and the capability of the applicant team to achieve the anticipated performance targets. This section should also address the project's access to necessary infrastructure (e.g., project sites) and relationships with stakeholders that will enable the team to meet project objectives. This section should also address the key technical risks that threaten project objectives and how the proposed project activities will overcome these risks.
- **Innovation and Impacts:** The applicant should describe the current state of the art in the applicable field, the specific innovation of the proposed project, and the overall impact on advancing the state-of-the-art/technical baseline if the project is successful.

Workplan (Approximately 40% of the Technical Volume)
The Workplan should include a summary of the Technical Scope, Work Breakdown Structure (WBS), Project Tasks, Milestones, Go/No-Go decision points, and project schedule. A detailed statement of project objectives (SOPO) is separately requested as part of the application. The Workplan should contain the following information:

- **Technical Scope Summary:** The applicant should provide a description of the overall work scope and approach to achieve the project objective(s).
    a. For Topic Area 1, Area of Interest 1, the applicant should provide a comprehensive description of the research study design, including but not limited to research questions and hypotheses, independent and dependent variables, treatment and control groups, data collection methodologies, data analysis methodologies, and expected sample sizes.
    b. For Topic Area 1, Area of Interest 2 and Topic Area 2, the applicant should provide a comprehensive communications and engagement strategy, including but not limited to expected outcomes and outputs, stakeholders participating in or benefiting from project activities, the format for technical assistance and stakeholder convenings and engagement, metrics of project success, and strategies for bridging conflicting priorities or perspectives among stakeholders.
- **WBS and Task Description Summary:** The Workplan should describe the work to be accomplished and how the applicant will achieve the milestones, will accomplish the final project goal(s), and will produce all deliverables. The Workplan is to be structured with a hierarchy of performance period (approximately annual), task, and subtasks, which is typical of a standard WBS for any project. The Workplan must contain a concise description of the specific activities to be conducted over the life of the project. The description must be a full explanation and disclosure of the project being proposed (i.e., a statement such as "we will then complete a proprietary process" is unacceptable). It is the applicant's responsibility to prepare an adequately detailed task plan to describe the proposed project and the plan for addressing the objectives of this NOFO. The summary provided should be consistent with the SOPO. The SOPO will contain a more detailed description of the WBS and tasks.
- **Milestone Summary:** The SOPO should provide a summary of appropriate milestones throughout the project to demonstrate progress and success. A milestone may be either a progress measure (which can be activity based) or a specific, measurable, achievable, relevant, and timely (SMART) technical milestone. SMART milestones should be specific, measurable, achievable, relevant, and timely, and must demonstrate a technical achievement rather than simply completing a task. Unless otherwise specified in the NOFO, the minimum requirement is

that each project must have at least one milestone per quarter for the duration of the project with at least one SMART technical milestone per year (depending on the project, more milestones may be necessary to comprehensively demonstrate progress). The applicant should also provide the means by which the milestone will be verified. The summary provided should be consistent with the Milestone Summary Table in the SOPO.

- **Go/No-Go Decision Points:** The applicant should provide a summary of project-wide Go/No-Go decision points at appropriate points in the Workplan. At a minimum, each project must have at least one project-wide Go/No-Go decision point for each budget period (12 to 18-month period) of the project. The applicant should also provide the specific criteria to be used to evaluate the project at the Go/No-Go decision point. The summary provided should be consistent with the SOPO. Go/No-Go decision points are considered "SMART" and can fulfill the requirement for an annual SMART milestone.
- **End of Project Goal:** The Workplan should include a summary of the end of project goal(s). At a minimum, each project must have one SMART end of project goal. The summary provided should be consistent with the SOPO.
- **Project Schedule (Gantt Chart or similar):** The applicant should provide a schedule for the entire project, including task and subtask durations, any milestones, and any Go/No-Go decision points.
- **Build America, Buy America (BABA) Requirements for Infrastructure Projects:** Within the first two pages of the Workplan, include a short statement on whether the project will involve the construction, alteration, maintenance, and/or repair of public infrastructure in the United States. See Build America, Buy America | Department of Energy and 2 CFR 184 for applicable definitions and other information regarding Infrastructure Projects and the Buy America Requirement.
- **Project Management:** The applicant should discuss the team's proposed management plan, including the following:
    - The overall approach to and organization for managing the work.
    - The roles of each project team member.
    - Any critical handoffs/interdependencies among project team members.
    - The technical and management aspects of the management plan, including systems and practices, such as financial and project management practices.
    - The approach to project risk management, including a plan for securing a qualified workforce and mitigating risks to project performance, including but not limited to community or labor disputes or conflicts related to siting.
    - Approach to addressing permits and mandatory approvals, including compliance with any current permits, and any permits and natural or cultural resource issues that could require discretionary permits or approvals.
    - A description of how project changes will be handled.
    - If applicable, the approach to Quality Assurance/Control.
    - How communications will be maintained among project team members.

Technical Qualifications and Resources (Approximately 20% of the Technical Volume)
The Technical Qualifications and Resources should contain the following information:

- A description of the project team's unique qualifications and expertise, including those of key subrecipients.
- A description of the project team's existing equipment and facilities, or equipment or facilities already in place on the proposed project site, that will facilitate the successful completion of the

proposed project. Include a justification of any new equipment or facilities requested as part of the project.
- Relevant, previous work efforts, demonstrated innovations, and how these enable the applicant to achieve the project objectives.
- The time commitment of the key team members to support the project.
- A description of the technical services to be provided by DOE FFRDCs, if applicable.
- The skills, certifications, or other credentials of the construction and ongoing operations workforce.
- For multi-organizational projects, describe succinctly:
    - The roles and the work to be performed by the project manager and Senior/Key Personnel at the recipient and sub levels
    - Business agreements between the applicant and sub
    - How the various efforts will be integrated and managed
    - Process for making decisions on technical direction
    - Publication arrangements.
- Strategy to address known resource, including intellectual property and real property, constraints, or challenges
- Communication plans.

4. Program-Specific DEI Plan

As part of the application, applicants are required to describe how DEI objectives will be incorporated in the project. Specifically, applicants are required to submit a DEI Plan that describes the actions the applicant will take to foster a welcoming and inclusive environment, support people from groups underrepresented in STEM, advance equity, and encourage the inclusion of individuals from these groups in the project—and the extent the project activities will be located in or benefit underserved communities. The plan should include at least one SMART milestone per budget period supported by metrics to measure the success of the proposed actions and will be incorporated into the award if selected. The DEI Plan should contain the following information:

- Equity Impacts: The impacts of the proposed project on underserved communities, including social and environmental impacts.
- Benefits: The overall benefits of the proposed project, if funded, to underserved communities.
- How DEI objectives will be incorporated in the project.

The following is a non-exhaustive list of actions that can serve as examples of ways the proposed project could incorporate DEI elements. These examples should not be considered either comprehensive or prescriptive. Applicants may include appropriate actions not covered by these examples.

a. Include persons from groups underrepresented in STEM as PI, Co-PI, and/or other senior personnel.
b. Include persons from groups underrepresented in STEM as student researchers or post-doctoral researchers.
c. Include faculty or students from MSIs as PI/Co-PI, senior personnel, and/or student researchers, as applicable.
d. Enhance or collaborate with existing diversity programs at your home organization and/or nearby organizations.
e. Collaborate with students, researchers, and staff in MSIs.

f. Disseminate results of R&D in MSIs or other appropriate institutions serving underserved communities.
g. Implement evidence-based, diversity-focused education programs (such as implicit bias training for staff) in your organization.
h. Identify minority business enterprises, minority-owned businesses, woman-owned businesses, and veteran-owned businesses to solicit as vendors and sub-contractors for bids on supplies, services, and equipment.
i. Study a project location's social history and its past environmental injustices and apply it to the research questions, outputs, and outreach. Identify relevant organizations also working in the project location.
j. Engage with host communities to ensure that research questions are reflective of community priorities and external output from the project team benefits people/groups outside the project.
k. Facilitate the equitable distribution of knowledge and resources developed by the project team.
l. Measure and publish the impact of DEI activities conducted during the award.

The DEI Plan must not exceed five pages. Save the Diversity, Equity and Inclusion Plan in a single PDF file using the following convention for the title: "ControlNumber_LeadOrganization_DEIP".

D. Funding Restrictions

Program-specific funding restrictions applicable to awards funded under this NOFO are identified below. Standard funding restrictions are described in the NOFO Part 2, *Funding Restrictions* section.

Table 6. Applicable Funding Restrictions

Title	Location	Additional Information
Allowable Costs	NOFO Part 2	Applicable to awards made under this NOFO
Pre-Award Costs	NOFO Part 2	Applicable to awards made under this NOFO
Performance of Work in the United States (Foreign Work Waiver Requirement)	NOFO Part 2	Applicable to awards made under this NOFO
Foreign Travel	NOFO Part 2	Foreign Travel is not allowed for awards made under this NOFO
Lobbying	NOFO Part 2	Applicable to awards made under this NOFO
Equipment and Supplies	NOFO Part 2	Purchasing American-made equipment and supplies is applicable to this award
Construction Signage	NOFO Part 2	Applicable to awards with construction activities made under this NOFO

Title	Location	Additional Information
Build America, Buy America Requirements for Infrastructure Projects	NOFO Part 1	Applicable to awards made under this NOFO

1. Build America Requirement for Infrastructure Projects

Awards funded through this NOFO that are for, or contain, construction, alteration, maintenance, or repair of public infrastructure in the United States undertaken by applicable recipient types, require that:

- All iron, steel, and manufactured products used in the infrastructure project are produced in the United States.
- All construction materials used in the infrastructure project are manufactured in the United States.

Please refer to the NOFO Part 2, *Buy America Requirements for Infrastructure Projects; Required Use of American Iron, Steel, Manufactured Products, and Construction Materials;* and 2 CFR Part 184 to determine whether the Buy America Requirement applies and if they should consider the application of the Buy America Requirement in the proposed project's budget and/or schedule. (Note that the Buy America Requirement does not apply to prime recipients that are For-Profit Entities.)

V. Submission Requirements and Deadlines

There are several one-time actions applicants must take before applying to this NOFO. Some of these may take several weeks, so it is vital applicants build in enough time to complete them. Failure to complete these actions could interfere with application or negotiation deadlines or the ability to receive an award if selected. These requirements are outlined in detail in the NOFO Part 2, *Get Registered*.

A. Required Registrations

1. Unique Entity Identifier (UEI) and System for Award Management (SAM)

You must have an active account with SAM.gov. This includes having a Unique Entity Identifier (UEI). SAM.gov registration can take several weeks. To register, go to SAM.gov Entity Registration and click Get Started. From the same page, you can also click on the Entity Registration Checklist for the information you will need to register.

Each applicant must:

1. Be registered in SAM.gov before submitting an application
2. Provide a valid UEI in the application

3. Continue to maintain an active registration in SAM.gov with current information at all times during which the applicant has an active federal award or an application or plan under consideration by a federal agency.

DOE may not make a federal award to an applicant until the applicant has complied with all applicable UEI and System for Award Management (SAM) requirements and, if an applicant has not fully complied with the requirements by the time DOE is ready to make a federal award, the DOE will determine that the applicant is not qualified to receive a federal award and use that determination as a basis for making a federal award to another applicant.

2. eXCHANGE

Register and create an account on the eXCHANGE site identified in the Key Facts section of the NOFO Part 1. This account can be used to apply to open NOFOs in eXCHANGE. To view and submit applications to open opportunities under a specific DOE office(s), you must access the applicable instance of the system. You may need to be registered in more than one instance to submit applications for opportunities managed by different DOE offices.

Each organization or business unit, whether acting as a team or a single entity, should use only one account as the contact point for each submission. Applicants must also designate backup POCs. **This step is required to apply to this NOFO.**

B. Application Package

1. eXCHANGE

The application package requirements are outlined in the Application Content and Form section above. Several templates for application requirements are included in eXCHANGE. To access these materials, select the appropriate NOFO on the Funding Opportunity page of eXCHANGE.

Note: The maximum file size that can be uploaded to the eXCHANGE website is 50MB. Files larger than 50MB cannot be uploaded and hence cannot be submitted for review. If a file is larger than 50MB but is still within the maximum page limit specified in the NOFO, it must be broken into parts and denoted to that effect. For example:

- TechnicalVolume_Part_1
- TechnicalVolume_Part_2

DOE will not accept late submissions that resulted from technical difficulties due to uploading files that exceed 50MB.

In addition to eXCHANGE, the application forms and instructions are available at www.energy.gov/eere/funding/eere-funding-application-and-management-forms.

Electronic Authorization of Applications and Award Documents
Submission of an application and supplemental information under this NOFO through electronic systems used by the DOE, including eXCHANGE, constitutes the authorized representative's approval and electronic signature.

C. Submission Date and Times

All required submissions must be submitted to the eXCHANGE site identified in the Key Facts section of NOFO Part 1 no later than 5 p.m. ET on the dates provided in the Key Facts section.

There may be more than one deadline, depending on whether a letter of intent and a concept paper is required.

Applicants are strongly encouraged to submit all required application documents at least 48 hours in advance of the submission deadline. Under normal conditions (i.e., at least 48 hours before the submission deadline), applicants should allow at least one hour to submit application documents. Once the application documents are submitted in the eXCHANGE site identified in the NOFO Part 1, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit them before the applicable deadline. DOE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

D. Intergovernmental Review

This NOFO is not subject to Executive Order 12372, Intergovernmental Review of Federal Programs.

VI. Application Review Information

A. Standards for Application Evaluation

Applications that are determined to be eligible will be evaluated in accordance with this NOFO by the standards set forth in EERE's Notice of Objective Merit Review Procedure (76 Fed. Reg. 17846, March 31, 2011) and the guidance provided in the "DOE Merit Review Guide for Financial Assistance," effective October 1, 2020, which is available at: energy.gov/management/downloads/merit-review-guide-financial-assistance-and-unsolicited-proposals-current.

B. Responsiveness Review

The following concept papers and applications will be deemed nonresponsive and will not be reviewed or considered:

- Project concepts or approaches not based on established scientific principles.
- Project concepts or approaches identified specifically as NOT of interest (see the Applications Specifically Not of Interest section above).

C. Review Criteria

1. Compliance Criteria

All applicant submissions for concept papers and applications must:

- Comply with the applicable content and form requirements listed in Application Content Requirements and Submission Requirements and Deadlines of the NOFO Part 1 and 2.
- Include all required documents.
- Be uploaded successfully in eXCHANGE site indicated in the Key Facts section above, including clicking the Submit button.
- Comply with the submission deadline stated in Key Facts.

DOE will not review or consider submissions through means other than the eXCHANGE site indicated in Key Facts, submissions after the applicable deadline, or incomplete submissions.

Applicants must submit a concept paper by 5 p.m. ET on the due date listed on the Key Facts section to be eligible to submit an application. Applicants who do not submit a concept paper are not eligible to submit an application.

Applicants are strongly encouraged to submit all required application documents at least 48 hours in advance of the submission deadline. Under normal conditions (i.e., at least 48 hours before the submission deadline), applicants should allow at least one hour to submit application documents. Once the application documents are submitted in the eXCHANGE site identified in the Key Facts section, applicants may revise or update that submission until the expiration of the applicable deadline. If changes are made to any of these documents, the applicant must resubmit them before the applicable deadline. DOE will not extend the submission deadline for applicants that fail to submit required information by the applicable deadline due to server/connection congestion.

2. Technical Review Criteria

Concept Papers

Concept papers are evaluated based on consideration of the following factors. All sub-criteria are of equal weight.

Concept Paper Criterion: Overall NOFO Responsiveness and Viability of the Project (Weight: 100%)
This criterion involves consideration of the following factors:

- The applicant has clearly described the proposed research, technical assistance, and/or stakeholder engagement activities, including how the activities are unique and innovative and how the activities will advance the current state of the art.
- The applicant has succinctly described a research study design and/or communications and engagement strategy that presents a clear plan for how project objectives will be achieved.
- The applicant has identified risks and challenges of proposed project activities and specific mitigation strategies to address those risks and challenges.
- The applicant has shown the impact that DOE funding and the proposed project activities would have on the relevant field and application.
- The applicant has succinctly described their approach to integrate DEI principles into the project.
- The applicant has the qualifications, experience, capabilities, and partners necessary to complete the proposed project activities.
- The proposed work, if successfully accomplished, would clearly meet the objectives as stated in the NOFO.

Applications

Applications will be evaluated against the technical review criteria shown below. All sub-criteria are of equal weight.

Table 7. Review Criteria Overview

Criterion	Weight
Technical Merit, Innovation, and Impact	50%
Project Research and Workplan	25%
Team and Resources	15%
Diversity, Equity, and Inclusion Plan	10%

Criterion 1: Technical Merit, Innovation, and Impact (50%)

This criterion involves consideration of the following factors:

Technical Merit, Innovation, and Impact

1. Extent to which the proposed project is innovative.
2. Degree to which the current state of the science and the proposed advancement are clearly described.

3. Extent to which the application specifically and convincingly demonstrates how the applicant will move the state of the science to the proposed advancement.
4. Sufficiency of technical detail in the application to assess whether the proposed work is scientifically meritorious and revolutionary, including relevant data, calculations, and discussion of prior work with analyses that support the viability of the proposed work.
5. Extent to which project has buy-in from needed stakeholders to ensure success.
6. Degree to which siting and environmental constraints are considered for deployment.
7. Sufficiency of existing infrastructure to support addition of proposed demonstration.

Impact of Technology Advancement

1. Ability of the project to advance industry adoption.
2. Extent to which the project supports the topic area objectives and target specifications and metrics.
3. Potential impact of the project on advancing the state of the science.
4. Extent to which project activities are replicable and could lead to future adoption or implementation by industry actors and other stakeholders.
5. Extent to which the project facilitates stakeholder relationships across new or existing stakeholders to gain technical buy-in and increase potential for future deployments.

Project Management

1. Adequacy of proposed project management systems, including the ability to track scope, cost, and schedule progress and changes.
2. Reasonableness of budget and spend plan as detailed in the budget justification workbook for proposed project and objectives.
3. Adequacy of contingency funding based on quality of cost estimate and identified risks.
4. Adequacy, reasonableness, and soundness of the project schedule, as well as periodic Go/No-Go decisions prior to further funds disbursement, interim milestones, and metrics to track process.
5. Adequacy, reasonableness, and soundness of the project schedule, as well as annual Go/No-Go decisions prior to a budget period continuation application, interim milestones, and metrics to track process.
6. Adequacy of the identification of risks, including labor and community opposition or disputes, and “timely” and appropriate strategies for mitigation and resolution.
7. Soundness of a plan to expeditiously address environmental, siting, and other regulatory requirements for the project, including evaluation of resilience to climate change.
8. Completeness, comprehensiveness, accuracy, and strength of the application deliverables, such that DOE and independent experts will be able to identify project risk.

Criterion 2: Project Research and Workplan (25%)

This criterion involves consideration of the following factors:

Research Approach, Workplan, and SOPO

1. Degree to which the approach and critical path have been clearly described and thoughtfully considered.
2. Degree to which the research study design (Topic 1, Area of Interest 1) and/or a communications and engagement strategy have been clearly described.
3. Degree to which the task descriptions are clear, detailed, timely, and reasonable, resulting in a high likelihood that the proposed Workplan and SOPO will succeed in meeting the project goals.

Identification of Technical Risks

1. Discussion and demonstrated understanding of the key technical risk areas involved in the proposed work and the quality of the mitigation strategies to address them.

Baseline, Metrics, and Deliverables

1. Level of clarity in the definition of the baseline, metrics, and milestones.
2. Relative to a clearly defined project baseline, the strength of the quantifiable metrics, milestones, and mid-point deliverables defined in the application, such that meaningful interim progress will be made.

Criterion 3: Team and Resources (15%)

This criterion involves consideration of the following factors:

1. Capability of the project manager(s) and the proposed team to address all aspects of the proposed work with a high probability of success. The qualifications, relevant expertise, and time commitment of the individuals on the team.
2. Diversity of expertise and perspectives of the team and the inclusion of industry partners that will amplify impact.
3. Sufficiency of the facilities to support the work.
4. Degree to which the proposed consortia/team demonstrates the ability to improve the processes and outcomes of LSS development for ecosystems, wildlife, and host communities.
5. Level of participation by project participants as evidenced by letter(s) of commitment and how well they are integrated into the Workplan.
6. Reasonableness of the budget and spend plan for the proposed project and objectives.

Criterion 4: Diversity, Equity, and Inclusion Plan (10%)

This criterion involves consideration of the following factors:

Diversity, Equity, Inclusion, and Accessibility

- Clear articulation of the project's goals related to DEI.
- Quality of the project's DEI goals, as measured by the goals' depth, breadth, likelihood of success, inclusion of appropriate and relevant SMART milestones, and overall project integration.
- Degree of commitment and ability to track progress toward meeting each of the DEI goals.
- Extent of engagement of organizations that represent disadvantaged communities or underrepresented populations as a core element of their mission, including MSIs, underrepresented businesses, and Tribal, nonprofit, or community-based organizations.

Other Considerations Linked With Energy and/or Environmental Justice

- Clear workplan tasks, staffing, research, and timeline for engaging energy equity and community and/or environmental justice stakeholders and/or evaluating the possible near- and long-term implications of the project for the benefit of the American public, including but not limited to public health and public prosperity benefits.
- Approach, methodology, and expertise articulated in the plan for addressing energy and/or environmental justice questions or concerns associated with the technology innovation.
- Likelihood that the plan will result in improved understanding of distributional public benefits and costs related to the innovation if successful.

3. Criteria for Replies to Reviewer Comments

DOE has not established separate criteria to evaluate Replies to Reviewer Comments. Instead, Replies to Reviewer Comments are attached to the original applications and evaluated as an extension of the application.

D. Other Selection Factors

In addition to the above criteria, the Selection Official may consider the following program policy factors in determining which applications to select for award negotiations:

1. The degree to which the proposed project exhibits technological diversity when compared to the existing DOE project portfolio and other projects selected from the subject NOFO.
2. The degree to which the proposed project, including proposed cost share, optimizes the use of available DOE funding to achieve programmatic objectives.
3. The level of industry involvement and demonstrated ability to accelerate demonstration and commercialization and overcome key market barriers.
4. The degree to which the proposed project will accelerate transformational technological advances in areas that industry by itself is not likely to undertake because of technical and financial uncertainty.
5. The degree to which the proposed project, or group of projects, represent a desired geographic distribution (considering past awards and current applications).
6. The degree to which the proposed project incorporates applicant or team members from MSIs, and partnerships with businesses majority owned or controlled by underrepresented persons or groups of underrepresented persons or Indian Tribes.
7. The degree to which the proposed project, when compared to the existing DOE project portfolio and other projects to be selected from the subject NOFO, contributes to the total portfolio meeting the goals reflected in the DEI Plan criteria.
8. The degree to which the proposed project will employ procurement of U.S. iron, steel, manufactured products, and construction materials.

VII. Selection and Award Notices

Please see the NOFO Part 2, *Selection and Award Notices* for information on notifications for Concept Papers (if applicable), Applications, Award Negotiations, and Post-Selection Information Requests.

VIII. Award Administration Information

A. Post-Award Requirements and Administration

DOE requires all award recipients to follow and accept requirements governed by laws and policies—both federal government-wide and DOE or program specific. These post-award requirements include all National and Administrative Policy Requirements; financial assistance general Certifications and Representations; Build America, Buy America requirements; Davis-Bacon Act requirements; Bipartisan Infrastructure Law-Specific Requirements; Fraud, Waste, and Abuse requirements; Safety, Security, and Regulatory requirements; and Environmental Review in Accordance with National Environmental Policy Act requirements.

Post-Award requirements and administration applicable to awards funded under this NOFO are identified below. Detailed descriptions of standard funding restrictions are provided in the NOFO Part 2, *Post-Award Requirements and Administration* section. Detailed descriptions of program-specific funding restrictions are provided below the table.

Table 8.Applicable Post-Award Requirements and Administration

Title	Location
Award Administrative Requirements	NOFO Part 2
Subaward and Executive Reporting	NOFO Part 2
National Policy Requirements	NOFO Part 2
Applicant Representations and Certifications	NOFO Part 2
Statement of Federal Stewardship	NOFO Part 2
Uniform Commercial Code (UCC) Financing Statements	NOFO Part 2
Interim Conflict of Interest Policy for Financial Assistance	NOFO Part 2
Whistleblower Protections	NOFO Part 2
Fraud, Waste, and Abuse	NOFO Part 2
Participants and Collaborating Organizations	NOFO Part 2
Current and Pending Support	NOFO Part 2
Prohibition Related to Malign Foreign Talent Recruitment Programs	NOFO Part 2

Title	Location
Foreign Collaboration Considerations	NOFO Part 2
U.S. Manufacturing Commitments	NOFO Part 2
Subject Invention Utilization Reporting	NOFO Part 2
Intellectual Property Provisions	NOFO Part 2
Go/No-Go Review	NOFO Part 2
Conference Spending	NOFO Part 2
Invoice Review and Approval	NOFO Part 2
Cost-Share Payment	NOFO Part 2
Implementation of Executive Order 13798, Promoting Free Speech and Religious Liberty	NOFO Part 2
Affirmative Action and Pay Transparency Requirements	NOFO Part 2
Construction Signage	NOFO Part 2
Human Subjects Research	NOFO Part 2
Real Property and Equipment	NOFO Part 1
Rights in Technical Data	NOFO Part 1
Energy Data eXCHANGE	NOFO Part 1

1. Real Property and Equipment

Real property and equipment purchased with project funds (federal share and recipient cost share) are subject to the requirements at 2 CFR 200.310, 200.311, 200.313, and 200.316 (non-federal entities, except for-profit entities) and 2 CFR 910.360 (for-profit entities).

For resulting awards under this NOFO, the recipients may (1) take disposition action on the real property and equipment, or (2) continue to use the real property and equipment after the conclusion of the award period of performance with Grants Officer approval. The recipient's written request for Continued Use must identify the property and include: a summary of how the property will be used

(must align with the authorized project purposes), a proposed use period (e.g., perpetuity, until fully depreciated, or a calendar date when the recipient expects to submit disposition instructions), acknowledgement that the recipient must not sell or encumber the property or permit any encumbrance without prior written DOE approval, current fair market value of the property, and an estimated useful life or depreciation schedule for equipment.

When the property is no longer needed for authorized project purposes, the recipient must request disposition instructions from DOE. For-profit entity disposition requirements are set forth in 2 CFR 910.360. Property disposition requirements for other non-federal entities are set forth in 2 CFR 200.310 – 200.316. In addition, pursuant to the FY23 Consolidated Appropriations Act (Pub. L. No. 117-328), Division D, Title III, Section 309, at the end of the award period the Secretary or a designee of the Secretary, at their discretion, may vest unconditional title or other property interests acquired under this project regardless of the fair market value of the property.

2. Rights in Technical Data

Data rights differ based on whether data is first produced under an award or instead was developed at private expense outside the award.

"Limited Rights Data": The U.S. government will not normally require delivery of confidential or trade-secret-type technical data developed solely at private expense prior to issuance of an award, except as necessary to monitor technical progress and evaluate the potential of proposed technologies to reach specific technical and cost metrics.

Government Rights in Technical Data Produced Under Awards: The U.S. government retains unlimited rights in technical data produced under government financial assistance awards, including the right to distribute to the public. One exception to the foregoing is that invention disclosures may be protected from public disclosure for a reasonable time to allow for filing a patent application.

3. Cost Share Payment

DOE requires recipients to contribute the cost share amount incrementally over the life of the award. Specifically, the recipient's cost share for each **billing period** must always reflect the overall cost share ratio negotiated by the parties (i.e., the total amount of cost sharing on each invoice when considered cumulatively with previous invoices must reflect, at a minimum, the cost sharing percentage negotiated).

B. Helpful Websites

EERE website – www.energy.gov/eere/office-energy-efficiency-and-renewable-energy

"How Do I Apply for EERE Funding?" – www.energy.gov/eere/funding/how-do-i-apply-eere-funding

C. Questions and Support

1. Questions

Upon the issuance of a NOFO, DOE personnel are prohibited from communicating (in writing or otherwise) with applicants regarding the NOFO except through the established question and answer process described below. Questions regarding this NOFO must be submitted to solarwildlife@ee.doe.gov no later than three (3) business days prior to the application due date and time. Please note, feedback on individual concepts will not be provided through Q&A.

All questions and answers related to this NOFO will be posted on the eXCHANGE site listed in the Key Facts section above. **You must first select the NOFO Number to view the questions and answers specific to this NOFO**. DOE will attempt to respond to a question within three (3) business days unless a similar question and answer has already been posted on the website.

Questions related to the registration process and use of the eXCHANGE site listed in the Key Facts should be submitted to eere-exchangesupport@hq.doe.gov.

2. Support

Grants.gov

Grants.gov provides 24/7 support. You can call 1-800-518-4726 or email support@grants.gov. Hold on to your ticket number.

SAM.gov

If you need help, you can call 866-606-8220 or live chat with the Federal Service Desk.

IX. Other Information

Please see the NOFO Part 2, *Other Information* for additional information and requirements that apply to all DOE NOFOs.