Notice of Intent No. DE-FOA-0003443

Notice of Intent to Issue
Notice of Funding Opportunity No. DE-FOA-0003373

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Wind Energy Technologies Office (WETO), a Notice of Funding Opportunity (NOFO) entitled "Bipartisan Infrastructure Law (BIL), Provision 41007(b)(2), Wind Turbine Technology Recycling".

Background

In the event a NOFO is issued, and awards made, such awards would be funded by the Infrastructure Investment and Jobs Act, more commonly known as the Bipartisan Infrastructure Law (BIL). The activities under this NOFO support BIL section 41007(b)(2).

BIL is a once-in-a-generation investment in modernizing and upgrading American infrastructure to enhance U.S. competitiveness, drive the creation of good-paying union jobs, tackle the climate crisis, and ensure strong access to economic and environmental benefits for underrepresented communities. BIL appropriates more than $62 billion to the U.S. Department of Energy (DOE) to invest in American manufacturing and workers; expand access to energy efficiency and clean energy; deliver reliable, clean, and affordable power to more Americans; and demonstrate and deploy the technologies of tomorrow through clean energy demonstrations.

To support the goal of building a clean and equitable energy economy, the BIL-funded projects are expected to (1) support meaningful community and labor engagement; (2) invest in America's workforce; (3) advance diversity, equity, inclusion, and accessibility; and (4) contribute to the President's goal that 40% of the overall project benefits flow to disadvantaged communities (the Justice40 Initiative[1]).

DOE's BIL investments will support efforts to build a clean and equitable energy economy that achieves a zero-carbon electricity system by 2035, and to put the United States on a path to achieve net-zero emissions economy-wide by no later than 2050 to benefit all Americans. This NOI supports the DOE Floating Offshore Wind Shot™, part of DOE's Energy Earthshots™

[1] The Justice40 initiative, created by E.O. 14008, establishes a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities. The current Justice40 guidance provides a broad definition of disadvantaged communities (Pages 8-10): Final DOE Justice40 General Guidance 072522.pdf (energy.gov)

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Initiative, which aims to reduce the cost of floating offshore wind energy by more than 70% by 2035.

Technical Objectives

The United States may need to deploy a terawatt or more[2] of wind energy capacity by 2035 to meet national energy sector decarbonization goals. With at least 150 GW of wind deployed domestically so far, annual wind deployments will need to increase significantly over the current trend of roughly 10 GW/year. This increase in deployment will require a similar increase in the volume of materials needed, including critical materials and certain materials that are difficult to recycle, such as fiber-reinforced composites. The long-term sustainability of the wind energy industry will depend upon efficient, cost effective, and environmentally responsible disassembly of, and resource recovery from, wind energy technologies at the end of life for constituent materials.

Currently, 90% or more of the mass of materials in a wind turbine can be economically recycled, with the remaining unrecycled materials being largely fiber-reinforced composites or metallic components with significant amounts of critical materials, such as rare earth element magnets found in generators. This unrecycled mass represents an opportunity to increase the sustainability and value of wind energy materials, while also reinforcing domestic supply chains. There are several challenges adversely impacting the recyclability of these materials:

- Existing domestic recycling facilities cannot easily process these kinds of composites and magnet materials
- Material transportation costs are an important consideration for decision makers when planning the end-of-life treatment of materials. Landfills tend to be closer to wind plants than appropriate recycling facilities, making it simply cheaper to send materials to landfills in most cases; further many landfills are located near or within those historically overburdened by legacy pollution and environmental exposure.
- Secondary markets that would utilize recycled materials are not yet mature
- Emerging and immature recycling solutions may have high operating costs, low processing capacity, or both
- Current disassembly equipment, such as cranes, may be costly and limited in availability leading to sub-optimal decommissioning practices which negatively impact the quality of decommissioned materials
- Sorting of decommissioned materials may be costly and time consuming

[2] Examining Supply-Side Options to Achieve 100% Clean Electricity by 2035 https://www.nrel.gov/docs/fy22osti/81644.pdf

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BIL section 41007(b)(2) provides funding for the program provided in section 3003(b)(4) of the Energy Act of 2020, known as the Wind Energy Technology Recycling Research, Development, and Demonstration Program. DOE anticipates providing $20M in federal funding to support this NOFO with the overall goals to:

- Address technological and supply chain challenges limiting recycling of fiber reinforced composites and rare earth element magnets in wind turbines
- Accelerate development of designs that are more easily recyclable and reusable
- Accelerate development of end-of-life processing technologies to cost effectively, sustainably, and efficiently recycle and recover materials from wind turbines, including manufacturing waste

DOE anticipates that it would be important for applicants to demonstrate partnerships across the supply chain, including original equipment manufacturers, component and material suppliers, wind plant owners, workers and labor unions, decommissioners, end of life material processors, and secondary market customers.

DOE expects to facilitate a Teaming Partner List should a NOFO be issued. The Teaming Partner List will be made available on EERE Exchange at https://eere-exchange.energy.gov under NOI DE-FOA-0003373. The Teaming Partner List will be updated periodically until the close of the Full Application period of the potential NOFO to reflect new Teaming Partners who have provided their information. By facilitating this Teaming Partner List, EERE does not endorse or otherwise evaluate the qualifications of the entities that self-identify themselves for placement on the Teaming Partner List. EERE will not pay for the provision of any information, nor will it compensate any respondents for the development of such information.

It is anticipated that the NOFO may include the following Topic Areas:

Topic 1: Enabling Sustainable Wind Turbine Components

This topic would seek to support projects that will de-risk sustainable and recyclable wind turbine component designs and materials and accelerate broad commercial acceptance of these designs.

Current industry behaviors relating to recycling and sustainability are limited by inherent difficulties with recycling and reusing certain components, especially those composed primarily of fiber-reinforced composites or that use large amounts of critical minerals and critical engineered materials.

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In recent years, the wind industry and other advanced materials industries have developed promising alternatives to incumbent product designs and their constituent materials. These innovations may offer several advantages, including but not limited to: enhanced recyclability of manufacturing waste and upon decommissioning, reduced complexity of maintenance and repair activities during operation, enhanced ability to reuse or remanufacture components, and manufacturing processes that are more efficient.

The two primary components of interest for this topic are wind turbine blades and wind turbine generators that use significant amounts of critical materials. A successful project would show the sustainability and recyclability advantages offered by the innovation and de-risk the innovation for commercialization. De-risking may include, but would not be limited to: cost reduction, proof of operational reliability, sustainability improvements, and more.

Topic 2: Enabling Wind Turbine Material Recycling and Reuse Processes

This topic would seek to support the demonstration and commercialization of material processing technologies and techniques that can be applied at commercial scale to wind turbine materials.

Currently, the majority of wind turbine materials are recycled upon decommissioning. The current rate of recycling is enabled by existing commercial scale processes that are understood and cost-effective for responsible parties. However, certain wind turbine materials like fiber-reinforced composites or metallic components with significant amounts of critical materials, such as rare earth element magnets found in generators, are lacking domestic commercial scale recycling processes and supply chains.

With an increasing number of turbines expected to be decommissioned in coming years, paired with an expected increase in manufacturing waste with increased new production, there is a significant opportunity to advance novel processing technologies and techniques to enhance the recyclability, reusability, and sustainability of the wind energy industry.

A number of entities have been working to develop innovative recycling and reuse processes for wind turbine materials and components but additional support is needed to accelerate the commercial viability of these technologies so they may have a positive impact on wind energy sustainability in the near-term while mitigating any further harms to those who have historically been overburdened by environmental exposure and legacy pollution.

Successful projects in this topic should demonstrate the ability to economically and sustainably recycle wind turbine materials at a scale relevant to the domestic wind energy industry. The

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innovation should address end of life products, factory waste, or both listing any proactive or mitigation that could address any unintentional impacts to the communities who may live near or in a community where recycling usually may occur including a disadvantaged community.

Topic 3: Recycled and Recyclable Material Qualification

Recent assessments of industry behaviors suggest an important obstacle to acceptance of novel sustainable materials and recycled materials is the qualification and certification of new materials and recycled materials. This topic would seek to develop a research collaborative to provide a key mechanism to qualify and certify new recycled materials that are relevant for wind energy technologies.

Through the capabilities and expertise of collaborative partners, the collaborative should develop certification standards and characterization methodologies that are informed by industry requirements for secondary market adoption of recycled materials. The collaborative should also examine the possibility of acting as a certification body for recycled materials.

This research collaborative should be led by an impartial research organization, such as a national lab, university, research institute, or standards organization. Members should include other research organizations with distinct capabilities and expertise, owners of innovative recycling processes and recycled materials, component manufacturers, wind plant developers, and potential secondary market stakeholders.

EERE envisions awarding multiple financial assistance awards in the form of cooperative agreements. The estimated period of performance for each award will be approximately two to four years.

This Notice is issued so that interested parties are aware of the EERE's intention to issue this NOFO in the near term. All of the information contained in this Notice is subject to change. EERE will not respond to questions concerning this Notice. Once the NOFO has been released, EERE will provide an avenue for potential Applicants to submit questions.

EERE plans to issue the NOFO on or about December of 2024 via the EERE eXCHANGE website https://eere-eXCHANGE.energy.gov/. If Applicants wish to receive official notifications and information from EERE regarding this NOFO, they should register in EERE eXCHANGE. When the NOFO is released, applications will be accepted only through EERE eXCHANGE.

In anticipation of the NOFO being released, Applicants are advised to complete the following steps, which are **required** for application submission:

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- Register and create an account in EERE eXCHANGE at https://eere-eXCHANGE.energy.gov. This account will allow the user to apply to any open EERE NOFOs that are currently in EERE eXCHANGE.

  To access EERE eXCHANGE, potential applicants will be required to have a Login.gov account. As part of the eXCHANGE registration process, new users are directed to create an account in Login.gov. Please note that the email address associated with Login.gov must match the email address associated with the eXCHANGE account. For more information, refer to the Exchange Multi-Factor Authentication (MFA) Quick Guide in the Manuals section of eXCHANGE.

  It is recommended that each organization or business unit, whether acting as a team or a single entity, use only one account as the contact point for each submission. Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-eXCHANGESupport@hq.doe.gov

- Register with the System for Award Management (SAM) at https://www.sam.gov. Designating an Electronic Business Point of Contact (EBiz POC) and obtaining a special password called an MPIN are important steps in SAM registration. Please update your SAM registration annually. Upon registration, SAM will automatically assign a Unique Entity ID (UEI).

  NOTE: Due to the high demand of UEI requests and SAM registrations, entity legal business name and address validations are taking longer than expected to process. Entities should start the UEI and SAM registration process as soon as possible. If entities have technical difficulties with the UEI validation or SAM registration process they should utilize the HELP feature on SAM.gov. SAM.gov will work entity service tickets in the order in which they are received and asks that entities not create multiple service tickets for the same request or technical issue. Additional entity validation resources can be found here: GSAFSD Tier 0 Knowledge Base - Validating your Entity.

- Register in FedConnect at https://www.fedconnect.net/. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf

- Register in Grants.gov to receive automatic updates when Amendments to a NOFO are posted. However, please note that applications will not be accepted through Grants.gov. http://www.grants.gov/. All applications must be submitted through EERE eXCHANGE.

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Applicants are also advised that DOE has new requirements for applications that potentially impact Indian Tribes. Under these new requirements, projects proposed on Tribal Land will require documentation of Tribal Government support at the time of application, and projects that potentially impact an Indian Tribe in other ways require Tribal government awareness of the project at the time of application. Meaningful Tribal engagement can take time and applicants are advised to plan accordingly.

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