

WIND TURBINE MATERIALS RECYCLING PRIZE

OFFICIAL PRIZE
RULES

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U.S. DEPARTMENT OF ENERGY

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1 PRIZE PROGRAM SUMMARY

1.1 INTRODUCTION

The Wind Turbine Materials Recycling Prize is a \$5.1 million competition with a goal of awarding funding to designers of novel technologies and highly capable commercial entities to help develop a cost-effective and sustainable recycling industry for two high-impact categories of wind energy materials: fiber-reinforced composites and rare earth elements. This prize is explicitly focused on advancing technologies that enhance the ability to recycle materials when wind energy projects are decommissioned.

The Department of Energy (DOE) Wind Energy Technologies Office (WETO) is launching this prize in support of the Wind Energy Technology Recycling Research, Development, and Demonstration program (henceforth referred to as the Wind Recycling Program) that was authorized by the [Energy Act of 2020](#) and appropriated funding through the [Infrastructure Investment and Jobs Act](#).^{1,2} For this prize, DOE invites competitors to present innovative technologies that have not been applied to the recycling of wind energy system materials, as well as technologies that could substantially improve existing wind energy technologies material recycling processes. These may be technologies with commercial maturity in other industries as well as novel technologies that have not yet been applied commercially anywhere in the United States.

DOE currently funds research, development, and demonstration efforts to develop novel materials and manufacturing technologies for the wind energy industry and has been assessing the current state of the art and future needs for recycling of all wind energy system materials. Of particular concern to DOE are materials without industrial-scale and/or economically self-sustaining recycling options, especially those [materials that are considered to be critical](#) to the continued development of the United States' clean energy economy.³

1 Consolidated Appropriations Act, 2021. H.R. 113. 116th Cong. 116–260, Sec. 3003(b)(4). 2021. <https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf>.

2 Infrastructure Investment and Jobs Act. H.R. 3684. 117th Cong. 117-58, Sec. 41007(b)(2). 2021. <https://www.congress.gov/117/plaws/publ58/PLAW-117publ58.pdf>.

³ “Critical Minerals & Materials Program.” U.S. Department of Energy. <https://www.energy.gov/critical-minerals-materials>.

This prize consists of two phases: *Initiate!* and *Accelerate!* A summary of the cash and voucher awards available in each phase of the prize is found in Table 1. This prize also seeks to attract new talent and expertise to the wind energy industry and engage entities that have not previously engaged with DOE.

Table 1. Summary of Prizes Available in Each Phase

Phase	Winners	Prize
<i>Initiate!</i>	Up to 20	\$75,000 cash
<i>Accelerate!</i>	Up to six	\$500,000 cash and \$100,000 vouchers

1.2 PRIZE PHASES: *Initiate!* AND *Accelerate!*

Entrepreneurs, inventors, and researchers can compete for cash prizes, vouchers, and opportunities to work with national laboratory experts to help accelerate the development of their novel and potentially transformative technologies as well as to create a fundamentally sound plan to commercialize their technology. DOE invites anyone who meets the eligibility requirements to compete and transform a conceptual idea into a prototype demonstration. Table 2 lists the important milestones for this prize. Please see [the HeroX website](#) for exact dates for these important deadlines.

1.2.1 The Two Phases

By the *Initiate!* phase deadline, competitors will need to submit (as described in Table 4):

- An identification of the industry gap addressed by the technology.
- A brief description of the technology and how it would address the identified gap.
- A plan to develop and validate the concept, with a specific plan for a small-scale prototype demonstration during the next phase.
- Identification of key technical, financial, and regulatory risks to industrialization of the concept.

- An initial estimation of the market size and description of the intended industry ecosystem, including related industries and potential deployment locations.
- A Community Benefits Plan to address how an award would (1) advance diversity, equity, inclusion, and accessibility; (2) contribute to energy equity; and (3) invest in America's workforce.
- Competitors are encouraged to submit a dataset relevant for life cycle assessment. The data submission form can be found in APPENDIX 2.

DOE will select up to 20 winners of the *Initiate!* phase to be awarded \$75,000 cash each. Winners will also be invited to compete in the next phase. By the *Accelerate!* phase deadline, competitors will need to submit (as described in Table 8):

- A detailed description of the technology with reference metrics described in and discussion of work completed for the *Accelerate!* phase.
- Details of the prototype demonstration and associated validation activities.
- Details on how the competitor will leverage national laboratory expertise through a voucher award.
- Details of the intended secondary market for the product, including an assessment of key material properties of the material to be displaced and the maximum allowable recycled content for a product in the secondary market.
- A preliminary life cycle assessment of the industrial-scale process based on learnings from the prototype demonstration.
- A preliminary technoeconomic analysis of the industrial-scale process based on learnings from the prototype demonstration.
- A commercialization plan for scaling the proposed technology to relevant industrial scale.
- A Community Benefits Plan to address how an award would (1) advance diversity, equity, inclusion, and accessibility; (2) contribute to energy equity; and (3) invest in America's workforce.

DOE will select up to six awardees of the *Accelerate!* phase. Each awardee will receive a \$500,000 cash award and \$100,000 voucher to consult with a national laboratory on technology development.

Winners will also be invited to Pitch Day several months later with a group of investors.

1.3 VOUCHERS

Vouchers will be available to winners of the *Accelerate!* phase to access tools, equipment, and expertise at the national laboratories so that they may develop, test, and validate their technologies. More details on vouchers will be provided in the Voucher Guidelines. By the *Accelerate!* phase submission deadline, competitors must submit a Voucher Work Plan (see Table 8).

1.4 BACKGROUND

The Wind Recycling Program, coordinated by WETO within DOE's Office of Energy Efficiency and Renewable Energy (EERE), is committed to developing sustainable, equitable, and efficient solutions for recycling or recovery of wind materials. In support of the Wind Recycling Program's mission, DOE is launching the Wind Turbine Materials Recycling Prize.

As of June 2023, more than [138 GW](#) of wind energy was installed across the United States, with [the potential for 5–10 times](#) that amount to be installed by 2035 in order to meet domestic decarbonization goals.^{4, 5} These technologies require an array of critical and noncritical materials. Innovations in wind energy asset recycling could incentivize the diversion of wind energy materials away from suboptimal end-of-life pathways and into new pathways that result in reductions of material life cycle carbon dioxide (CO₂) equivalents, enhanced supply chain security, and extended wind energy materials values.

About 85%–90% of the mass of a wind energy system is made of materials that can be commercially recycled, although opportunities exist for all material classes to improve the economics and sustainability of end-of-life treatment. Of particular concern for the wind energy industry are those materials without commercial-scale recycling options and materials that are deemed critical for the continued deployment of clean energy systems, such as wind turbines. The bulk of unrecycled material in a wind energy system is composed of fiber-reinforced composites, which can be found in various forms in wind turbine blades, nacelle covers, and rotor caps. Some options exist

⁴ Hoen, B.D., J.E. Diffendorfer, J.T. Rand, L.A. Kramer, C.P. Garrity, and H.E. Hunt. 2018. United States Wind Turbine Database v6.0 (May 31, 2023). U.S. Geological Survey, American Clean Power Association, and Lawrence Berkeley National Laboratory data release. <https://doi.org/10.5066/F7TX3DN0>.

⁵ Denholm, P., P. Brown, W. Cole, T. Mai, B. Sergi, et al. 2022. *Examining Supply-Side Options to Achieve 100% Clean Electricity by 2035*. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-8164. <https://www.nrel.gov/docs/fy22osti/81644.pdf>.

commercially for processing of wind energy composites today, such as cement coprocessing, but there is opportunity to develop higher value and more sustainable options for future composite waste from wind energy technologies.

Similar to composites, some minerals found throughout the wind system currently do not have domestic commercial scale recycling options and could see drastic increases in demand from the wind energy industry. The wind energy industry depends on critical minerals, such as rare earth elements, which are particularly abundant in permanent magnet synchronous generators but may also be found in motors that control wind turbine systems, such as turbine yaw and blade pitching. Neodymium iron boron magnets that use rare earth elements, like neodymium and dysprosium, are almost exclusively sourced internationally and have historically seen high price volatility and risk of supply disruption. For both fiber-reinforced composites and rare earth elements, robust domestic recycling options could alleviate dependence on foreign supply and reduce the need for extraction and processing of raw materials, which can be damaging to the environment and surrounding communities. More information about America's wind energy supply chain, and other clean energy supply chains, can be found in a [series of reports](#) produced by DOE in response to [Executive Order 14017 on America's Supply Chains](#).^{6,7}

Please visit the [HeroX](#) site to find more information resources regarding recycling in the wind energy industry.

The prize supports the Biden-Harris administration's goals of achieving a carbon pollution-free power sector by 2035 and net-zero emissions by 2050 by developing a secure domestic supply chain and enabling an equitable, resilient, and sustainable clean energy future.

It is the policy of the Biden-Harris administration that:

The federal government should pursue a comprehensive approach to advancing equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality. Affirmatively advancing equity, civil rights, racial justice, and equal opportunity is the responsibility of the whole of our government. Because advancing

⁶ Office of Policy. "Securing America's Clean Energy Supply Chains." U.S. Department of Energy. <https://www.energy.gov/policy/securing-americas-clean-energy-supply-chain>.

⁷ The White House. "Executive Order on America's Supply Chains." Feb. 24, 2021. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-americas-supply-chains/>.

equity requires a systematic approach to embedding fairness in decision-making processes, executive departments and agencies must recognize and work to redress inequities in their policies and programs that serve as barriers to equal opportunity.

By advancing equity across the federal government, we can create opportunities for the improvement of communities that have been historically underserved, which benefits everyone.

As part of this whole-of-government approach, this prize seeks to encourage the participation of underserved communities and underrepresented groups. Competitors are highly encouraged to include individuals from groups historically underrepresented in science, technology, engineering, and mathematics on their project teams. As part of the submission, competitors are required to describe how diversity, equity, inclusion, and accessibility (DEIA) objectives will be incorporated in the project.

1.5 IMPORTANT DATES

Table 2. Important Dates and Deadlines for the Wind Turbine Materials Recycling Prize

Phase	Date	Prize Milestone
<i>Initiate!</i> Phase	July 12, 2023	Prize opens.
	August 3, 2023	Interested participants attend informational webinar.
	September 29, 2023	<i>Initiate!</i> phase submissions are due.
	November 2023 (Anticipated)	<i>Initiate!</i> phase winners are announced, and prize funds are disbursed to winners.
<i>Accelerate!</i> Phase	December 2023 (Anticipated)	<i>Accelerate!</i> phase opens. Competitors begin preparing their submission materials for the <i>Accelerate!</i> phase.
	July 2024 (Anticipated)	<i>Accelerate!</i> phase submissions are due.
	September 2024 (Anticipated)	<i>Accelerate!</i> phase winners are announced, and prize funds are disbursed.
Prepare for Pitch Day	September 2024 (Anticipated)	Pitch Day preparation begins. <i>Accelerate!</i> phase winners begin preparing for Pitch Day.
Pitch Day	To Be Determined	Pitch materials are due.

1.6 MATERIALS AND TECHNOLOGIES OF INTEREST

The overall goal of the Wind Turbine Materials Recycling Prize is to develop technologies and commercial entities capable of creating economically self-sustaining recycling solutions for two high

impact categories of wind energy materials: fiber-reinforced composites and rare earth elements. All of the following statements must be true for each submission:

- The proposed technology solution is related to recycling of wind energy materials of interest, as described in the subsequent Materials of Interest section.
- Activities described in submission package will develop recycling solutions for wind energy materials within the United States.
- The proposed solution is not dependent on new, pending, or proposed federal, state, or local government legislation, resolutions, appropriations, measures, or policies.
- The proposed solution does not involve the lobbying of any federal, state, or local government office.
- The proposed solution is based on sound scientific and technical principles.
- The proposed solution demonstrates basic understanding of the U.S. market economy, including financial analysis relevant to market size and relevant material volumes.
- The proposed technology has the potential for scaled prototype demonstration during the *Accelerate!* phase.

1.6.1 Materials of Interest

Although wind power plants are composed of dozens of distinct materials, this prize emphasize two categories:

- Fiber-reinforced composites, such as those found in wind turbine blades.
- Rare earth elements, such as those found in permanent magnets in some wind turbine generators.

These materials were selected with consideration of the following criteria:

- There are limited or no domestic industrial-scale recycling processes capable of economically and sustainably recycling material in scales relevant to the domestic fleet.
- These materials are particularly vulnerable to supply chain disruption and thus negatively impacting the ability to deploy sufficient domestic clean energy.
- These are materials with current end-of-service disposal pathways that have negative impacts on the social perception of wind energy technologies, the environmental sustainability of wind

energy materials, and/or fail to capture the significant economic value in decommissioned materials.

1.6.2 Technologies of Interest

This prize is explicitly focused on technologies that enhance the ability to recycle materials when wind energy technologies are decommissioned. If the proposed process has broader applications, such as accepting and recycling waste from manufacturing or other waste streams, this attribute will benefit the submission but should not be the primary driver.

1.6.3 Technologies *Not* of Interest

This prize is not intended to support efforts to redesign wind energy components, including using novel materials that offer greater potential for recycling or novel component assemblies that are more easily disassembled into constituent materials. The prize is also not intended to support efforts to develop material substitutes for vulnerable or critical wind energy materials.

1.6.4 Target Metrics

Competitors should aim to address following target metrics when developing their submissions and technology development plans, although competitors are encouraged to consider additional metrics relevant to their processes.

Table 3. Metrics for the Wind Turbine Material Recycling Prize

Metric	Definition	Material Category	Target		Unit
			Primary	Stretch	
Mass Yield	Ratio of recycled material recovered to input material ⁸	Composite	50%	95%	Ton of recycled or recovered material per ton of input material
		Rare Earth Element	90%	99%	
Reduction in Process Cost	Reduction of cost of material production compared to baseline technology ⁹	Composite	0%	100%	\$ per ton of recycled material compared to \$ per ton of baseline material
		Rare Earth Element	10%	50%	
Net Greenhouse Gas Emissions	Greenhouse gas emissions of process minus greenhouse gas credit of recycled material	Composite	0.2	0	Ton of CO ₂ equivalent per ton of recycled or recovered material
		Rare Earth Element	90	0	
Material Quality ¹⁰	Key retained or enhanced material performance metrics that would be required to displace virgin material	Composite	70%	100%	Percentage of recycled or recovered material performance as compared to virgin material being displaced
		Rare Earth Element	95%	100%	

⁸ "Input Material" refers to the composite or rare earth element material that is fed into the process. This will most likely be material that has been removed from the turbine and pre-processed to some extent.

⁹ The baseline for the reduction in process cost metric is up to the applicant to define. Guidance can be found in APPENDIX 3.

¹⁰ Material quality units will depend on the selected material and secondary market. It is up to the competitor to identify the relevant performance metrics and set a baseline. Material Quality should not be a cost metric.

1.7 GENERAL ELIGIBILITY REQUIREMENTS

Competitors in the Wind Turbine Materials Recycling Prize must comply with the general eligibility requirements in this section.

A single team may submit a maximum of two submissions. The subject processes of the submissions should be distinct. If DOE receives more than two submissions from a single team, DOE will only consider the two most recently provided submissions.

1.7.1 *Initiate!* Phase Eligibility

Individuals, teams of individuals, private entities (for-profits and nonprofits), nonfederal ((such as state, county, tribal, and municipality) government entities, and academic institutions are eligible to compete in the *Initiate!* phase.

1.7.2 *Accelerate!* Phase Eligibility

Only winners of the *Initiate!* phase are eligible to compete in the *Accelerate!* phase.

Competitors¹¹ must be a legally formed entity that is formed in and maintains a primary place of business in the United States with majority domestic ownership and control. A for-profit business entity is eligible to compete only if it includes a winner of the *Initiate!* phase as an employee or owner. Individuals or groups of individuals are not eligible to compete.

1.7.3 All Phases Eligibility

Individuals, private (for-profit and nonprofit) entities, and nonfederal government (such as state, county, tribal, municipality) entities, and academic institutions are subject to the following requirements:

- Individuals competing individually or as part of a team may participate if they are legally authorized to work in the United States, provided that the entity is a U.S.-based company or university.
- Academic institutions must be based in the United States.

¹¹ Competitors are defined as the key project members listed on the cover page of the *Accelerate!* phase submission package.

- Federal entities and federal employees are not eligible to win any prize phases in this program.
- The work and material sourcing will occur entirely in the United States.
- Employees of an organization that co-sponsors this program with DOE are not eligible to participate in any prize phases in this program.
- Individuals who worked at DOE (federal employees or support service contractors) within 6 months prior to the submission deadline of any phase are not eligible to participate in any prize phases in this program. Additionally, members of their immediate families (i.e., spouses, children, siblings, or parents) and anyone who lives in their household, regardless of relation, are not eligible to participate in the prize.
- Entities cannot propose a concept that is already receiving DOE funding.
- National laboratory employees are not eligible to participate in any prize phase.
- Entities and individuals publicly banned from doing business with the U.S. government, such as entities and individuals debarred, suspended, or otherwise excluded from or ineligible for participating in federal programs, are not eligible to compete.
- Individuals participating in a foreign government talent recruitment program¹² sponsored by a country of risk¹³ and teams that include such individuals are not eligible to compete.
- Entities owned by, controlled by, or subject to the jurisdiction or direction of a government of a country of risk.

¹² Foreign government-sponsored talent recruitment program is defined as an effort directly or indirectly organized, managed, or funded by a foreign government, or a foreign government instrumentality or entity, to recruit science and technology professionals or students (regardless of citizenship or national origin, or whether having a full-time or part-time position). Some foreign government-sponsored talent recruitment programs operate with the intent to import or otherwise acquire from abroad, sometimes through illicit means, proprietary technology or software, unpublished data and methods, and intellectual property to further the military modernization goals and/or economic goals of a foreign government. Many, but not all, programs aim to incentivize the targeted individual to relocate physically to the foreign state for the above purpose. Some programs allow for or encourage continued employment at United States research facilities or receipt of federal research funds while concurrently working at and/or receiving compensation from a foreign institution, and some direct participants not to disclose their participation to U.S. entities. Compensation could take many forms including cash, research funding, complimentary foreign travel, honorific titles, career advancement opportunities, promised future compensation, or other types of remuneration or consideration, including in-kind compensation.

¹³ DOE has designated the following countries as foreign countries of risk: Iran, North Korea, Russia, and China. This list is subject to change.

- By uploading a submission package either during registration or to any phase, a competitor certifies that it complies with these eligibility requirements. Eligibility is subject to verification before prizes are awarded. As soon as the prize administrator becomes aware that a competitor is not eligible for the *Initiate!* phase or *Accelerate!* phase, the competitor will be disqualified. The registered competitor is the entity that registers in [HeroX](#) to compete.
- As part of the submission to this prize program, competitors will be required to sign the following statement:

I am providing this submission package as part of my participation in this prize. I understand that in providing this submission to the federal government, I certify under penalty of perjury that the named competitor meets the eligibility requirements for this prize competition and complies with all other rules contained in the Official Rules document. I further represent that the information contained in the submission is true and contains no misrepresentations. I understand false statements or misrepresentations to the federal government may result in civil and/or criminal penalties under 18 U.S.C. § 1001 and § 287, and 31 U.S.C. §§ 3729-3733 and 3801-3812.

In keeping with the goal of growing a community of innovators, competitors are encouraged to form diverse, multidisciplinary teams while developing their concepts. The [HeroX](#) platform provides a space where parties interested in collaboration can post information about themselves and learn about others who are also interested in competing in this prize.

DOE may conduct a risk review, through government resources, of the competitor and project personnel to identify potential risks of foreign interference. The result(s) of a risk review may supersede the results of prize competition, preventing DOE from selecting a submission or reversing a selection of a submission for a prize. The results of a risk review are not appealable.

1.8 ADDITIONAL REQUIREMENTS

Please read and comply with the additional requirements in APPENDIX 1.

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

2 *Initiate!* PHASE DETAILS

2.1 INTRODUCTION

The Wind Turbine Materials Recycling Prize is a two-phase challenge providing vouchers and cash prizes. It is designed to incentivize application of material processing technologies of varying maturity levels to support recycling materials relevant to the wind energy industry. Teams will develop concepts into early-stage prototypes and develop a plan for a relevant scale demonstration.

Initiate! Phase Prize Awards

- There are up to 20 winners.
- Each winner receives a \$75,000 cash prize.

The *Initiate!* phase is the first in this two-phase series with up to \$1,500,000 in prizes. Anyone meeting the eligibility requirements can compete in the *Initiate!* phase, but only winners from this phase are eligible to compete in the subsequent *Accelerate!* phase.

The following information and rules are provided for competitors in the *Initiate!* phase.

2.2 *Initiate!* PHASE GOALS

The first phase of the Wind Turbine Materials Recycling Prize seeks concepts that have the potential to meet the goal of economically self-sustaining recycling solutions for wind materials. Submissions should:

- Describe the work already completed toward defining and/or exploring the concept.
- Describe, if the concept has been applied at a commercial scale in other industries, the existing application and surrounding supply chain necessary for sustained application of the technology and how that technology will be transitioned to wind energy material applications.
- Should focus, if the proposed technology is a modification to an existing commercial-scale process previously applied to wind energy materials, on the modification to the process and be thoroughly differentiated from the baseline process.
- Include enough detail for reviewers to be able to rate the concept based on design and/or experimental work that has already been accomplished.

- Detail the assumptions made and address the system boundary conditions, mass and energy balance.
- Include quantitative information on all necessary feedstocks, an estimated yield of recovered material, identification of any expected byproducts or waste products, as well as initial estimates of the metrics defined in Table 3.
- Provide a vision for a prototype demonstration to be completed during the *Accelerate!* phase.

Competitors are encouraged, but not required, to submit preliminary data through the form found in APPENDIX 3, which national lab experts will use to perform a preliminary life cycle assessment. Neither the voluntary data submission, nor the life cycle assessment results, will impact scoring in either phase. *Initiate!* phase awardees that do submit data will have the opportunity to engage with national lab experts before the *Accelerate!* phase submission in order to discuss results and collect feedback on assumptions. DOE may leverage these results into aggregated statistics across competitors, although no individual results or data will be publicized.

A panel of expert reviewers will evaluate submissions. DOE selects the *Initiate!* phase award winners, based on the reviewer assessment (outlined below) and program policy factors outlined in APPENDIX 1.

2.3 PRIZES TO WIN

The *Initiate!* phase offers \$75,000 in cash per winner.

2.4 HOW TO ENTER

To compete for the *Initiate!* phase award, a team must complete a submission package online at through the [HeroX](#) website before the phase closing date.

2.5 PROCESS

The *Initiate!* phase process consists of four stages:

- **Prepare.** Competitors prepare submission packages that highlight a concept for wind material recycling focused on economic and environmental sustainability. Submissions should include details of the technology used, the material of focus, work completed to date, a description of any prior commercial performance of this technology for other materials and industries, and a vision for demonstrating and validating their concept.

- **Submit.** Competitors complete their submission packages and submit them online before the *Initiate!* phase closes (Table 2).
- **Review.** The Prize Administrator reviews submission packages for compliance and eligibility and verifies that all required materials have been submitted. Subject matter expert reviewers will independently score the content of each submission that passes the initial compliance review.
- **Award.** DOE selects up to 20 winners based on the written submission, expert reviewer feedback, and the program policy factors outlined in APPENDIX 1.

2.6 WHAT TO SUBMIT

A complete submission package for the *Initiate!* phase should include the items listed in Table 4.

Table 4. *Initiate!* Phase Submission Package Items

Item	Content
90-Second Video	<p>Answer “What is your innovation?” in 90 seconds, made available to the public, with suggested content including:</p> <ul style="list-style-type: none"> • The concept you are developing. • A description of why your innovation has the potential to be transformational and achieve the Wind Turbine Materials Recycling Prize goal of developing an economically self-sustaining recycling industry for wind materials. • A description of why your team and facilities and your ability to safely carry out this project. • Be creative and produce a video that conveys the required information in exciting and interesting ways, but do not focus on time-consuming activities that only improve production values (i.e., technical elements such as décor, lighting, and cinematic techniques). The video content, <i>not the production quality</i>, will be considered for scoring of Concept Narrative Content. <p>The video file must be posted online (e.g., YouTube, Vimeo).</p>

<p>Cover Page</p>	<p>List basic information about your submission, including:</p> <ul style="list-style-type: none"> • Project name • Innovation tagline (e.g., your mission in a few words) • Key project members (names, email contact information, and links to their LinkedIn profiles) • Keywords that best describe your solution • Your city, state, and nine-digit zip code • Link to public video. <p>The Cover Page must be uploaded to HeroX as a PDF file.</p>
<p>Concept Narrative</p>	<p>This must answer four questions about the innovation, potential, team, and Community Benefits Plan plan.</p> <p>You should answer each of the narrative questions in Table 5. The content bullets are only suggestions to guide your responses. You decide where to focus your answers. The individual answers to the questions do not have a word limit; however, the aggregate response to these four questions must not exceed 2,500 words (does not include captions, figures/graphs, or references). Please see APPENDIX 4 for more guidance on developing a Community Benefits Plan.</p> <p>You must include a word count at the end of your entire submission. You may also include up to five supporting images, figures, or graphs. The reviewers will score the questions based on the content you have provided.</p> <p>The Concept Narrative must be submitted as a PDF file.</p>
<p>Summary Slide</p>	<p>Make your own public-facing, one-slide summary that contains technically specific details but can be understood by most people.</p> <p>There is no template, so feel free to present the information as you see fit.</p> <p>Please make any text readable in a standard printout and on a conference room projection.</p> <p>The summary slide must be uploaded to HeroX as a PowerPoint file.</p>

<p>Outside the United States Waiver</p>	<p>Describe the work or sourced material(s) from outside the United States, and justify why this cannot be done inside the United States.</p> <p>The waiver must be submitted to HeroX as a PDF file.</p>
<p>Letters of Commitment or Support (Optional)</p>	<p>Attach one-page letters (of support, intent, or commitment) from other relevant entities (e.g., potential users of the proposed innovation or strategic manufacturing partners), particularly from entities included as part of the development plan for your concept. Letters of support from partners or others that are critical to the success of your proposed innovation will likely increase your score. General letters of support from parties that are not critical to the execution of your solution will likely not factor into your score.</p> <p>Please do not submit multipage letters.</p> <p>These must be uploaded to HeroX as PDF files.</p>
<p>Life Cycle Assessment Data Form (Optional)</p>	<p>See form in APPENDIX 2.</p> <p>The optional life cycle data submission will be utilized by national laboratory experts to perform an initial life cycle assessment on the proposed concept.</p> <p>The results of the life cycle assessment will <i>not be assessed</i> in either prize phase.</p> <p>Those competitors who submit data and are awarded in the <i>Initiate!</i> phase will be able to spend 2 hours discussing results with national laboratory experts. Competitors may choose to leverage these results in the <i>Accelerate!</i> phase submission or perform their own using guidance in APPENDIX 3.</p>

Table 5. Concept Narrative Content

<p>Question 1: Innovation – What is the innovation and what is its potential to enhance the recyclability of wind energy materials?</p>	
<p>Suggested Content</p> <ul style="list-style-type: none"> • Describe the innovation, quantifying its significance with metrics. Please use the core metrics identified in Table 3, along with any additional metrics identified by the competitor. Be specific regarding the potential to recycle wind materials (which materials, the relative volume of materials in wind energy now and projected in the future, current material value at end of life and impact, etc.). • Describe the innovation in as much detail as possible, including boundary conditions, assumptions made, safety considerations, as well as any cost benefit expected from the sale of co-products or cost penalties in the handling of waste products. • Justify how the innovation could be scaled up to volumes relevant to the current wind energy industry and future material projections. • Describe where this work will be completed and where you will source materials for this work. 	<p>Review Criteria</p> <ul style="list-style-type: none"> • The competitor describes an innovation using relevant metrics. • The competitor provides sufficient detail to describe their innovation. • The proposed innovation is differentiated from the state of the art and, if successful, would represent significant progress. • The solution represents an innovative approach built on reasonable assumptions, valid technical foundations, and lessons learned from other notable efforts in this space. • The competitor provides compelling reasoning as to why the innovation has the potential to provide an industrial scale solution to recycling of wind energy materials without subsidies.

Question 2: Potential – Why will your innovation be successful?

Suggested Content

- Describe how the innovation has the potential to improve on the state-of-the-art in existing products or provide benefits over other emerging solutions.
- Describe the emissions as CO₂ equivalent produced at the site of recycling and from the feedstock, or the energy source needed for production (if any) as well as the offset in CO₂ equivalent emissions from primary manufacturing that the recycled material will displace.
- Describe the market opportunity for the product from the recycling process.
- Describe your plan to develop an economically, self-sustaining recycling process for the U.S. wind energy industry.
- Describe your plan to safely perform a small-scale prototype demonstration of your innovation.

Provide an estimated spend plan showing how you would leverage program resources toward meeting overall goals.

Review Criteria

- The competitor's assessment of current recycling technologies and practices for subject material, and their pros and cons, show a comprehensive understanding of the space.
- The competitor provides sufficient technical detail to justify how this innovation improves upon other technologies.
- The competitor has demonstrated an understanding of the relevant industry ecosystem, and there is clear market potential for the product.
- The competitor has a credible plan for managing any potentially harmful environmental impacts at the site of production.
- The proposed small-scale prototype demonstration plan effectively uses the resources available in this program to advance the innovation.

Question 3: Accomplishments and Team – What have you done to date, and what qualities give you a competitive edge?

Suggested Content

- Describe your efforts to advance your concept both prior to and since the announcement of the prize; highlight key milestones achieved.
- Explain why winning the *Initiate!* phase will substantively change the outcome of the proposed innovation.
- Introduce your team, explain how the team came together, and highlight the knowledge and skills that make it uniquely capable of achieving success.
- Highlight your team’s diversity, experience, and track record that makes it likely to succeed in the prize competition. What experience do you have trying new things, solving difficult problems, and overcoming barriers to bring ideas to reality?
- Describe the facilities available to you and their ability to carry out the work you propose safely.

Review Criteria

- The extent to which winning the *Initiate!* phase would build on prior efforts and accomplishments and significantly increase the team’s chances of taking a novel concept and developing it into a lab-scale demonstration.
- The team’s track record demonstrates notable qualities such as adaptability, creativity, decisiveness, and resourcefulness. This team is diverse (e.g., members of senior leadership team are from underrepresented groups) and has the knowledge, experience, and determination to transform their proposed innovation into a demonstration in the near term.
- The facilities described are adequate to safely carry out the research proposed.

Question 4: Community Benefits Plan	
<p>Suggested Content¹⁴</p> <ul style="list-style-type: none"> • Describe the overall goals of the team with respect to each of the three Community Benefits Plan elements: 1) DEIA, 2) Energy Equity, and 3) Workforce Implications. • Describe the impacts of the proposed project on each of the three aforementioned plan elements. • Develop an action plan with specific milestones defined for each of the three plan elements. Milestones should be able to be used to track progress towards the plan goals. 	<p>Review Criteria</p> <ul style="list-style-type: none"> • There are specific goals for each element of the Community Benefits Plan. Goals go beyond company policies in the area. • The potential impact of the Community Benefits Plan on each of the three plan elements is clearly defined. • The Community Benefits Plan is sound and executable, with clear and specific milestones that can be used to track progress. • If successful, the project will make meaningful progress toward advancing DEIA goals, energy equity, and will have positive domestic workforce implications.

Note: Portions of the submission package are made available to the public. These have been noted as such, and DOE does not intend to release the remaining parts of the submission to the public. If competitors choose to submit life cycle assessment data for national laboratory analysis, DOE may publish an aggregation of results across all submissions but will not publish individual results or data.

Please read and comply with additional requirements about your submission in APPENDIX 1.

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

¹⁴ A recommended Community Benefits Plan can be found in APPENDIX 4.

2.7 SCORING SUBMISSIONS

An expert panel of reviewers organized by DOE and the Prize Administrator will review proposals and provide numeric assessments for each submission element considering the review criteria for that element. The reviewers cannot have personal or financial interests in, or be an employee, officer, director, or agent of any entity that is a registered competitor in this phase; or have a familial or financial relationship with an individual who is part of a registered team.

The reviewers read, score, and comment on the content from each submission based on the scale in Table 6. Each reviewer scores content from each narrative question based on the bulleted list of statements. The bullets guide the single overall score for each section. The final score from an individual reviewer for a submission package equals the total weighted sum of the scores for all the sections. The weighting for the *Initiate!* phase can be found in Table 7. All reviewers' scores are then averaged for a final reviewer score for the submission package. The final prize judge considers reviewer scores when deciding the winners.

Table 6. Submissions Package Scoring Scale

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Expert reviewers will also provide comments to the Prize Administrator on the submissions they review.

The Prize Administrator, at their sole discretion, may decide to hold a short interview with a subset of the *Initiate!* phase competitors. Interviews would be held prior to the announcement of winners and would serve to help clarify questions the judge may have. Attending interviews is not required, but participation may influence the final decision. Interviews are not an indication of winning.

DOE, in consultation with the Prize Administrator, considers reviewer scores, program policy factors outlined in APPENDIX 1, and interviews (if applicable) when selecting *Initiate!* phase winners. DOE is the judge and final decision maker and may elect to award all, none, or some of the prize funds to competitors at each submission deadline.

The following details provide more guidance on what information to provide and how reviewers evaluate and score your submission. Reviewers will evaluate your submission by assigning a single score for each scored submission section based on their overall agreement or disagreement with a series of statements.

Table 7. *Initiate!* Phase Submission Item Score Weighting

Section	Weight
Pitch and Demo Video	Not Scored
Narrative Question 1 – Innovation	20%
Narrative Question 2 – Potential	30%
Narrative Question 3 – Accomplishments and Team	20%
Narrative Question 4 – Community Benefits Plan	25%
Reviewer Recommendation	5%

2.8 ADDITIONAL REQUIREMENTS

Please read and comply with the additional requirements in APPENDIX 1.

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

3 Accelerate! PHASE DETAILS

3.1 INTRODUCTION

The *Accelerate!* phase is the second phase of the Wind Turbine Materials Recycling Prize and offers up to \$3,600,000 in vouchers and cash prizes. *Initiate!* phase winners are encouraged to use award resources to further develop their concepts and are eligible to compete in the *Accelerate!* phase, which should result in a small-scale prototype demonstration.

Submissions must be provided to [HeroX](#) by the *Accelerate!* phase deadline shown in Table 2.

The following information and rules are provided for competitors in the *Accelerate!* phase.

Accelerate! Phase Prize Awards

- There are up to six winners.
- Each winner receives a cash prize of \$500,000 and \$100,000 in vouchers.

3.2 Accelerate! PHASE GOALS

Teams will develop submissions based around prototype demonstrations of their technologies and a plan to demonstrate the technology at full-scale. Competitors will define full-scale depending on target component and market. *Accelerate!* phase winners will each receive \$500,000 cash and \$100,000 in vouchers to help bring their technology closer to relevant scale demonstration and validation. Pitch Day will be held several months after the *Accelerate!* phase award selection, at which participants will have the opportunity to present work completed since the close of the prize.

Accelerate! phase winners are expected to use award resources to demonstrate and validate their technology. Detailed techno-economic analysis and life cycle assessment are included in anticipated validation activities. Competitors may utilize the supplementary materials in APPENDIX 3 to support techno-economic analysis and life cycle assessment activities.

3.3 PRIZES TO WIN

The *Accelerate!* phase offers up to six prizes, with each winner receiving \$500,000 in cash plus \$100,000 in vouchers. Winners will negotiate the scope of work to be performed under a voucher with the national laboratory identified to conduct the work.

3.4 HOW TO ENTER

Initiate! phase award winners are eligible to compete for the *Accelerate!* phase award and must submit online on or before the phase closing date shown on the [HeroX](#) site.

3.5 PROCESS

The *Accelerate!* phase process consists of four stages:

- **Prepare.** Leveraging the concept development work through the *Initiate!* phase award, competitors should perform a small-scale demonstration to validate the proposed idea along with updated techno-economic analyses and emissions analyses. The competitors should submit a plan to build on this demonstration to a full-scale demonstration.
- **Submit.** Competitors should submit their *Accelerate!* phase submission package on or before the phase close date shown on the [HeroX](#) site.
- **Review.** After submission, the Prize Administrator reviews submission packages for compliance and eligibility and verifies all required materials have been submitted. Subject matter expert reviewers will independently score the content of each submission that passes the initial compliance review.
- **Award.** DOE selects up to six winners based on the written submission, expert reviewer feedback, and program policy factors outlined in APPENDIX 1. The Prize Administrator announces the winners.

3.6 WHAT TO SUBMIT

A complete submission for the *Accelerate!* phase award must include the items in Table 8 and must be updated from the *Initiate!* phase (the cover page content may not change).

Table 8. Accelerate! Phase Submission Package Items

Item	Content
<p>3-Minute Pitch Video</p>	<p>In a 3-minute video (made available to the public), pitch on your innovation and proof of concept demonstration. Suggested content includes:</p> <ul style="list-style-type: none"> • A description of the real-world problem you are solving. • A description of your innovation and why it is transformational as compared to existing or other emerging solutions. • An explanation of the features of your prototype demonstration and how it addresses technology validation in a safe and effective manner. • A description of progress made over the competition period. • A description of your team and facilities and your ability to safely carry out this project. <p>Be creative and produce a video that conveys the required information in exciting and interesting ways, but do not focus on time-consuming activities that only improve production values (i.e., technical elements such as décor, lighting, and cinematic techniques). The video content, <i>not the production quality</i>, will be considered for scoring of Prototype and Scale-Up Narrative Content.</p> <p>The video file must be posted online (e.g., YouTube, Vimeo).</p>
<p>Cover Page</p>	<p>List basic information about your submission, including:</p> <ul style="list-style-type: none"> • Project name • Innovation tagline (e.g., your mission in a few words) • Key project members (names, email contact information, and links to their LinkedIn profiles) • Keywords that best describe your solution • Your city, state, and nine-digit zip code • Link to public video. <p>The Cover Page must be uploaded to HeroX as a PDF file.</p>

<p>Voucher Work Slide</p>	<p>The single slide should describe the work you plan to do with your voucher funds. Suggested content includes:</p> <ul style="list-style-type: none"> • Identification of the team and the team point of contact for voucher work. • Identification of up to three national laboratories that you would like to work with and rank them. • A brief description of your innovation. • A description of your proposed scope of work. • A description of progress made over the competition period, including national labs you worked with previously. <p>Additional information about the voucher award mechanism, including additional guidelines, templates, and timelines, will be uploaded to the HeroX site closer to the end of the <i>Initiate!</i> phase.</p> <p>The Voucher Work Slide must be submitted to HeroX as a PowerPoint slide.</p>
<p>Prototype Development and Scale-Up Narrative</p>	<p>The Prototype Development and Scale-Up Narrative answers questions about the innovation, team, development plan, and Community Benefits Plan. You should answer each of the narrative questions in Table 9. The content bullets are only suggestions to guide your responses. You decide where to focus your answers. The individual answers to the questions do not have a word limit; however, the aggregate response to these questions must not exceed 3,500 words (not including captions, figures/graphs, or references). A word count must be included at the end of your entire submission. You may also include up to five supporting images, figures, or graphs. The reviewers will score the questions based on the content you have provided.</p> <p>The Prototype Development and Scale-Up Narrative must be submitted to HeroX as a PDF file.</p>

<p>Summary Slide</p>	<p>Make your own public-facing, one-slide summary that contains technically specific details but can be understood by most people.</p> <p>There is no template, so feel free to present the information as you see fit.</p> <p>Please make any text readable in a standard printout and on a conference room projection.</p> <p>The summary slide must be uploaded to HeroX as a PowerPoint file.</p>
<p>Outside the United States Waiver</p>	<p>Describe the work or sourced material(s) from outside the United States and justify why this cannot be done inside the United States.</p> <p>The waiver must be submitted to HeroX as a PDF file.</p>
<p>Letters of Commitment or Support (Optional)</p>	<p>Attach one-page letters (of support, intent, or commitment) from other relevant entities (e.g., potential users of the proposed innovation or strategic manufacturing partners), particularly from entities included as part of the development plan for your concept. Letters of support from partners or others that are critical to the success of your proposed innovation will likely increase your score. General letters of support from parties that are not critical to the execution of your solution will likely not factor into your score.</p> <p>Please do not submit multipage letters.</p> <p>These must be uploaded to HeroX as PDF files.</p>

Table 9. Prototype and Scale-Up Narrative Content

<p>Question 1: Innovation – What progress have you made to prove your solution will be successful?</p>	
<p>Suggested Content</p> <ul style="list-style-type: none"> • Discuss the process and testing performed on your prototype. • Provide a high-level summary of what will be needed for a relevant-scale demonstration. • Describe your plan to demonstrate your technology at full scale, its technical specifications, and sufficient underlying details on how it will safely demonstrate and facilitate external validation of the performance claims you make. • Provide a safety plan for the demonstration of your technology. • Provide a preliminary techno-economic assessment and emissions analysis based on current understanding of your technology. • Describe your approach to reaching recycling targets. 	<p>Review Criteria</p> <ul style="list-style-type: none"> • Sufficient technical detail was provided on the underlying principles of operation of the innovation to adequately describe the proposed process. • The prototype is grounded in real- world assumptions and resolves critical technical risks. • The proposed innovation is differentiated from the state of the art and, if successful, would represent significant progress. • The plan to demonstrate your technology at relevant scale is safe and will be effective in advancing the innovation. • The prototype demonstration validates the critical assumptions necessary to advance the technology innovation. • The techno-economic assessment and emissions analysis approaches are reasonable. • The competitor has demonstrated clear economic potential for the technology. • The scale-up approach provides sufficient attention to safety details.

Question 2: Accomplishments and Team – What qualities give you a competitive edge, and how have you grown?

Suggested Content

- Introduce your team and highlight the diversity, knowledge, and skills that make the team uniquely capable of achieving success.
- Describe how your team has evolved during the competition, including any strategic hires or partnerships.
- Explain why winning the *Accelerate!* phase will substantively change the likelihood of your success.
- Describe the facilities available to you and their ability to safely carry out the work you propose.

Review Criteria

- The team’s drive, diversity, knowledge, and complementary skill sets provide a strong competitive edge toward realizing this solution on a timeline that supports the Biden-Harris administration’s 2035 decarbonization goals.
- The team identified skill gaps and brought in the right people or partners to fill those gaps between the *Initiate!* and *Accelerate!* phases.
- The extent to which winning the *Accelerate!* phase will increase the team’s chances of experimentally validating their innovation.
- The facilities described are adequate to safely carry out the research proposed.

Question 3: Development Plan – What is your plan to achieve your goals? See special instructions.¹⁵

Suggested Content	Review Criteria
<ul style="list-style-type: none"> • Describe who gave relevant feedback on your scale-up approach and any modifications you made as a result. • Provide quantitative SMART goals that you hope to meet in the next 12 months. • Describe risks to the development plan and mitigation strategies. • Provide a high-level spending plan, including how you will leverage vouchers to meet your goals. • Describe where this work will be completed and where you will source materials for this work. If any work is sourced outside the United States, you must submit a waiver (Table 8). 	<ul style="list-style-type: none"> • Competitors have provided ambitious, relevant goals for this phase and show a commitment to an accelerated solution development cycle. • The competitor has sufficiently identified key risks associated with the development plan and provided reasonable risk-mitigation strategies. • The competitors’ approach to completing their proposed prototype is well-reasoned and makes good use of the voucher available to them. • The work and material sourcing will occur entirely in the United States, or an adequate waiver has been provided.

¹⁵ Special instructions for Question 3

- Use only specific, measurable, achievable, relevant, and timely (SMART) outcome-based goals, not activity-based, so that a neutral third party can validate them (if possible). For example: Demonstrate a definitive achievement of progress (e.g., “X letters of interest signed” or “achieve Y% efficiency”); do **not** describe how you spent your time (e.g., “provide a report,” “talk to customers,” or “perform experiments”).
- SMART goals for the *Accelerate!* phase should include a relevant scale demonstration based on learning throughout the competition and at least one committed pilot test partner.
- When defining your SMART goals, include quantified, risk-reducing, meaningful, practical, and testable interim milestones.
- SMART goals should include assessment and feedback from relevant stakeholders (e.g., possible investors, customers, and experts in the solution space).
- Members of the American-Made Network may be able to help you to formulate your SMART goals.

Question 4: Community Benefits Plan	
<p>Suggested Content¹⁶</p> <ul style="list-style-type: none"> • Describe the overall goals of the team with respect to each of the three Community Benefits Plan elements: 1) DEIA, 2) Energy Equity, and 3) Workforce Implications. • Describe the impacts of the proposed project on each of the three aforementioned plan elements. • Develop an action plan with specific milestones defined for each of the three plan elements. Milestones should be able to be used to track progress towards the plan goals. 	<p>Review Criteria</p> <ul style="list-style-type: none"> • There are specific goals for each element of the Community Benefits Plan. Goals go beyond company policies in the area. • The potential impact of the Community Benefits Plan on each of the three plan elements is clearly defined. • The Community Benefits Plan is sound and executable with clear and specific milestones that can be used to track progress. • If successful, the project will make meaningful progress towards advancing DEIA goals, energy equity, and will have positive domestic workforce implications

Note: Portions of the submission package are made available to the public. These have been denoted as such, and DOE does not intend to release the remaining parts of the submission to the public. See APPENDIX 1 for additional details.

Please read and comply with additional requirements about your submission in APPENDIX 1.

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

¹⁶ A recommended Community Benefits Plan can be found in APPENDIX 4.

3.7 SCORING SUBMISSIONS

The following details provide more guidance on what information to provide and how reviewers evaluate and score submissions. Reviewers will evaluate submissions by assigning a single score for each scored submission section, based on their overall agreement or disagreement with a series of statements.

The score for each section will be weighted as shown in Table 10.

Table 10. Accelerate! Phase Submission Item Score Weighting.

Section	Weight
Pitch and Demo Video	Not Scored
Narrative Question 1 – Innovation	25%
Narrative Question 2 – Accomplishments and Team	20%
Narrative Question 3 – What is your plan to achieve your goals?	25%
Narrative Question 4 – Community Benefits Plan	25%
Reviewer Recommendation	5%

A panel of expert reviewers reads, scores, and comments on each submission. Each section of the narrative questions receives a weighted score based on the bulleted list of statements. The bullets guide the single overall score for each section. The final score from an individual reviewer for a submission package equals the total weighted sum of the scores for all the sections. All reviewers’ scores are then averaged for a final reviewer score for the submission package. The final prize judge considers reviewer scores when deciding the winners.

The reviewers cannot have personal or financial interests in, or be an employee, officer, director, or agent of any entity that is a registered competitor in this phase; or have a familial or financial

relationship with an individual who is part of a registered team.

Expert reviewers will also provide comments to the Prize Administrator on the submissions they review. The Prize Administrator will provide comments to competitors after the winners are announced to help all teams continue to improve and iterate on their innovations. The comments are the opinions of the expert reviewers and do not represent the opinions of DOE.

The Prize Administrator, at their sole discretion, may decide to hold a short interview with a subset of the *Accelerate!* Phase competitors. Interviews would be held prior to the announcement of winners and would serve to help clarify questions the judge may have. Attending interviews is not required, but participation may influence the final decision. Interviews are not an indication of winning.

DOE, in coordination with the Prize Administrator, will consider reviewer scores, program policy factors outlined in APPENDIX 1, and interviews (if applicable) when selecting *Accelerate!* Phase winners. DOE is the judge and final decision maker and may elect to award all, none, or some of the submissions accepted at each submission deadline.

3.8 PITCH PRESENTATION

Several months after the *Accelerate!* phase funds are awarded, participants will submit a recording of their Pitch Day presentation.

Suggested content for the Pitch Presentation includes:

- A description of your technology in detail.
- A description of the model(s) you used to project the cost of the recycling technology along with all relevant assumptions on feedstocks, capital and operations and maintenance expenses, as well as management of any co-products or waste-product streams.
- A description of any co-products that could be monetized, as well as any waste streams that must be managed with associated costs.
- A description of the emissions analysis performed along with all relevant assumptions and how this validates the technology's potential to meet recycling goals.
- A description of the progress made over the course of the competition and highlight key engagements, relationships, and milestones.

Following submission of the presentation, entities are eligible to participate in the Pitch Day. The structure of the Pitch Day event and content of recommended presentation contents is subject to

change. **The Pitch video must not exceed 10 minutes.**

The Pitch Day Presentation must be submitted to [HeroX](#) as a video and associated slide deck (PowerPoint).

3.9 PITCH DAY

The American-Made Network will host a Pitch Day event where *Accelerate!* phase winners can present their technology to potential investors and commercial partners.

Winners are encouraged to apply to funding opportunity announcements from DOE.

More details on the Pitch Day will be released as the date approaches.

3.10 ADDITIONAL REQUIREMENTS

Please read and comply with the additional requirements in APPENDIX 1.

COMPETITORS WHO DO NOT COMPLY WITH THESE REQUIREMENTS MAY BE DISQUALIFIED.

APPENDIX 1

ADDITIONAL TERMS AND CONDITIONS

A1.1 UNIVERSAL REQUIREMENTS

Your submission or submissions for the *Initiate!* and *Accelerate!* phases' awards are subject to the following terms and conditions:

- If any team member is actively receiving funding from the DOE at the registration deadline, DOE will review any potential prize awards, as well as other DOE funding, and make a decision as to whether to award a prize to individuals or entities already receiving funding is in line with the program policy factors stated later in these rules (See APPENDIX 1.13).
- You must post the final content of your submission or upload the submission form online through the [HeroX](#) website before the *Initiate!* and *Accelerate!* phases close. Late submissions or any other form of submission do not qualify.
- The video submission and summary slide will be made public.
- DOE does not intend to make the cover page, narrative, voucher work slide, voluntary data submissions, life cycle assessment results, and letters of commitment/support public; however, see APPENDIX 1.10 regarding the Freedom of Information Act.
- You agree to release your submission video under a Creative Commons Attribution 4.0 International License (see <http://creativecommons.org/licenses/by/4.0/>).
- You must include all the required submission elements. The Prize Administrator may disqualify your submission after an initial screening if you fail to provide all required submission elements. Competitors may be given an opportunity to rectify submission errors due to technical challenges.
- Your submission must be in English and in a PDF readable and searchable format. Scanned handwritten submissions will be disqualified.
- Competitors will be disqualified if during any engagement with the Wind Turbine Materials

Recycling Prize, including but not limited to the submission, the online forum, emails to the Prize Administrator, or other forms of communication, it contains any matter that, in the discretion of DOE, is indecent, lacking in professionalism, or demonstrates a lack of respect for people or life on this planet.

- If you click "Accept" on the [HeroX](#) platform and proceed to register for any of the phases described in this document, these rules will form a valid and binding agreement between you and DOE and is in addition to the existing HeroX terms of use for all purposes relating to these phases. You should print and keep a copy of these rules. These provisions only apply to the phases described here and no other phases on the HeroX platform or anywhere else.
- The Prize Administrator, when feasible, may give competitors an opportunity to fix non-substantive mistakes or errors in their submission packages.

A1.2 VERIFICATION FOR PAYMENTS

The Prize Administrator will verify the identity and the role of a competitor potentially qualified to receive the prizes. Receiving a prize payment is contingent upon fulfilling all requirements contained herein. The Prize Administrator will notify winners using provided email contact information after the date that the results are announced. Each winning team (or parent/guardian if under 18 years of age) will be required to sign and return to the Prize Administrator, within 30 days of the date the notice is sent, a completed National Renewable Energy Laboratory Request for ACH Banking Information form and a completed W9 form (<https://www.irs.gov/pub/irs-pdf/fw4.pdf>). At the sole discretion of the Prize Administrator, a winner will be disqualified from the competition and receive no prize funds if: (i) the entity cannot be contacted; (ii) the entity fails to sign and return the required documentation within the required time period; (iii) the notification is returned as undeliverable; or (iv) the submission or entity is disqualified for any other reason.

A1.3 TEAMS AND SINGLE-ENTITY AWARDS

The Prize Administrator will award a single dollar amount to the designated primary submitter, whether consisting of a single or multiple entities. The primary submitter is solely responsible for allocating any prize funds among team members as they deem appropriate.

A1.4 SUBMISSION RIGHTS

The public videos in this prize must be submitted and released to the public under [a Creative](#)

[Commons Attribution 4.0 International License](#).

By making a submission and consenting to the rules of the prize, a competitor is granting to DOE, the Prize Administrator, and any other third parties supporting DOE in the prize, a license to display publicly and use the parts of the submission that are designated as “public” for government purpose. This license includes posting or linking to the public portions of the submission on the [HeroX](#) prize website, DOE websites, and partner websites, and the inclusion of the submission in any other media, worldwide. The submission may be viewed by DOE, the Prize Administrator, and judges for purposes of the phases, including, but not limited to, reviewing and evaluation purposes. The Prize Administrator and any third parties acting on their behalf will also have the right to publicize the competitors’ names and, as applicable, the names of competitors’ team members and organizations, which participated in the submission on the prize website indefinitely.

A1.5 COPYRIGHT

Each competitor represents and warrants that the competitor is the sole author and copyright owner of the submission; that the submission is an original work of the competitor, or that the competitor has acquired sufficient rights to use and to authorize others, including DOE, to use the submission, as specified throughout the rules; that the submission does not infringe upon any copyright or upon any other third-party rights of which the competitor is aware; and that the submission is free of malware.

A1.6 PRIZE SUBJECT TO APPLICABLE LAW

All phases are subject to all applicable federal laws and regulations. Participation constitutes each competitor's full and unconditional agreement to these Official Prize Rules and administrative decisions, which are final and binding in all matters related to the prize. This notice is not an obligation of funds; the final awards are contingent upon the availability of appropriations.

A1.7 RESOLUTION OF DISPUTES

DOE is solely responsible for administrative decisions, which are final and binding in all matters related to the prize.

In the event of a dispute, the authorized account holder of the email address used to register will be deemed to be the competitor. The "authorized account holder" is the natural person or legal entity assigned an email address by an Internet access provider, online service provider, or other

organization responsible for assigning email addresses for the domain associated with the submitted address. Competitors may be required to show proof of being the authorized account holder.

The Prize Administrator will not arbitrate, intervene, advise on, or resolve any matters between team members or any disputes between teams.

A1.8 PUBLICITY

The phase winners (collectively, "winners") will be featured on DOE and NREL websites.

Except where prohibited, participation in the prize constitutes each winner's consent to DOE's and its agents' use of each winner's name, likeness, photograph, voice, opinions, and/or hometown and state information for promotional purposes through any form of media, worldwide, without further permission, payment, or consideration.

A1.9 LIABILITY

Upon registration, all competitors agree to assume and, thereby, have assumed any and all risks of injury or loss in connection with or in any way arising from participation in this prize or development of any submission. Upon registration, except in the case of willful misconduct, all competitors agree to and, thereby, do waive and release any and all claims or causes of action against the federal government and its officers, employees, and agents for any and all injury and damage of any nature whatsoever (whether existing or thereafter arising, whether direct, indirect, or consequential; and whether foreseeable or not), arising from their participation in the prize, whether the claim or cause of action arises under contract or tort.

In accordance with the delegation of authority to run this prize delegated to the Director of WETO, the Director has determined that no liability insurance will be required of competitors to compete in this competition, per 15 USC 3719(i)(2).

A1.10 RECORDS RETENTION AND FREEDOM OF INFORMATION ACT (FOIA)

All materials submitted to DOE as part of a submission become DOE records. Any confidential commercial information contained in a submission should be designated at the time of submission.

Competitors are encouraged to employ protective markings in the following manner:

- The cover sheet of the submission must be marked as follows and identify the specific pages containing trade secrets or commercial or financial information that is privileged or confidential:

Notice of Restriction on Disclosure and Use of Data:

Pages [list applicable pages] of this document may contain trade secrets or commercial or financial information that is privileged or confidential and is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. [End of Notice]

- The header and footer of every page that contains trade secrets or privileged commercial or financial information must be marked as follows: “May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure.”
- In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged or confidential must be enclosed in brackets.

Competitors will be notified of any FOIA requests for their submissions in accordance with 29 C.F.R.

§ 70.26. Competitors may then have the opportunity to review materials and work with a FOIA representative prior to the release of materials.

A1.11 PRIVACY

If you choose to provide HeroX with personal information by registering or completing the submission package through the prize website, you understand that such information will be transmitted to DOE and may be kept in a system of records. Such information will be used only to respond to you in matters regarding your submission and/or the prize unless you choose to receive updates or notifications about other phases or programs from DOE on an opt-in basis. DOE and NREL are not collecting any information for commercial marketing.

A1.12 GENERAL CONDITIONS

DOE reserves the right to cancel, suspend, and/or modify the prize, or any part of it, at any time. If any fraud, technical failures, or any other factor beyond DOE's reasonable control impairs the integrity or proper functioning of the phases, as determined by DOE in its sole discretion, DOE may cancel the prize.

Although DOE indicates in the *Initiate!* and *Accelerate!* phases that it will select up to several winners for each phase, DOE reserves the right to only select winners that are likely to achieve the goals of the program. If, in DOE's determination, no competitors are likely to achieve the goals of the program, DOE will select no winners and will award no prize money.

ALL DECISIONS BY DOE ARE FINAL AND BINDING IN ALL MATTERS RELATED TO THE PRIZE.

A1.13 PROGRAM POLICY FACTORS

While the scores of the expert reviewers will be carefully considered, it is the role of the Prize Administrator to maximize the impact of prize funds. DOE may need to consider some factors outside the control of competitors and beyond the independent expert reviewer's scope to accomplish this goal. The following is a list of such factors. In addition to the reviewers' scores, the below program policy factors may be considered in determining phase competitors:

- Geographic diversity and potential economic impact of projects in various regions.
- The degree to which the submission exhibits team member diversity and the inclusion of underrepresented groups, with competitors including but not limited to graduates and students of Historically Black Colleges and Universities (HBCUs) and other Minority-Serving Institutions (MSIs) or members operating within Qualified Opportunity Zones or other underserved communities.
- Whether the use of additional DOE funds and provided resources continue to be non-duplicative and compatible with the stated goals of this program and DOE's mission generally.
- The degree to which the submission exhibits technological or programmatic diversity when compared to the existing DOE project portfolio and other competitors.
- The level of industry involvement and demonstrated ability to accelerate commercialization and overcome key market barriers.
- The degree to which the submission is likely to lead to increased employment and manufacturing in the United States or provide economic and other benefits to U.S. taxpayers.
- The degree to which the submission will accelerate transformational technological, financial, or workforce advances in areas that industry by itself is not likely to undertake because of technical or financial uncertainty.

- The degree to which the submission expands DOE’s funding to new competitors and recipients that have not been supported by DOE in the past.
- The degree to which the submission describes a novel technology, component, or integration that has not been funded by the DOE in the past.
- The degree to which the submission enables new and expanding market segments.
- Whether the project promotes increased coordination with nongovernmental entities for the demonstration of technologies and research applications to facilitate technology transfer.

A1.14 DEFINITIONS

Prize Administrator means both the Alliance for Sustainable Energy operating in its capacity under the Management and Operating Contract for NREL and WETO. When the Prize Administrator is referenced in this document, it refers to staff from both the Alliance for Sustainable Energy and WETO staff. Ultimate decision-making authority regarding prize matters rests with the Director of WETO.

Voucher Funding – Vouchers are part of the prize and may only be used at national laboratories. The funds will be provided directly to the laboratory on behalf of the winner to conduct a mutually agreed upon scope of work between the laboratory and the team.

A1.15 RETURN OF FUNDS

As a condition of receiving a prize, competitors agree that if the prize was made based on fraudulent or inaccurate information provided by the competitor to DOE, DOE has the right to demand that any prize funds or the value of other non-cash prizes be returned to the government.

ALL DECISIONS BY DOE ARE FINAL AND BINDING IN ALL MATTERS RELATED TO THE PRIZE.

APPENDIX 2

Initiate! PHASE LIFE CYCLE ASSESSMENT DATA SUBMISSION FORM

Life cycle assessment data should consist of two components: 1) a process flow diagram that labels all the mass and energy entering and leaving the recycling process and 2) a corresponding data table with quantitative estimates for all mass and energy labeled in the process flow diagram.

Figure A1 shows an example process flow diagram with generic mass and energy labels. The quantity and names of flows shown in this diagram are for example only and are intended to be modified with actual flow names.

Table A11 displays an example data table corresponding to the flows shown in Figure A1. The names listed in the table are for example only and are intended to be modified with actual flow names. The value column of Table A11 should be completed with actual estimated quantitative values for all flows. The notes column of Table A11 is available for inputting any notes relevant to interpreting the life cycle assessment data entered in the table. For thermal and electrical energy sources, applicants are encouraged to identify if there is a specific fuel source (e.g., natural gas) typically used for this energy in the notes.

A Microsoft Excel based life cycle assessment data template and completed example are located on the [HeroX](#) website.

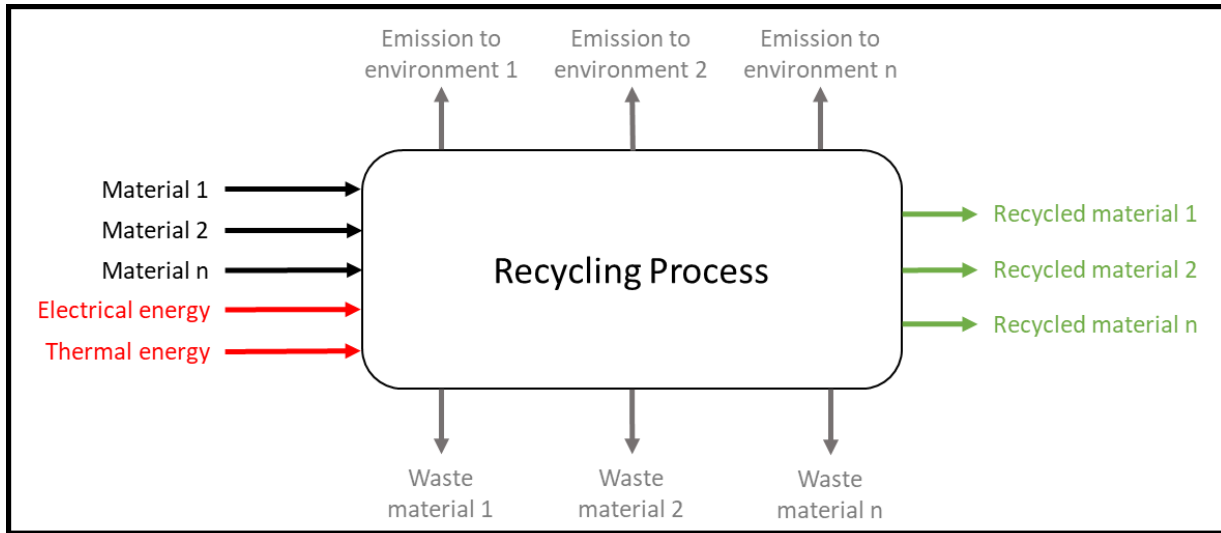


Figure A1. Example process flow diagram

Table A11. Example Life Cycle Assessment Data Table

Recycling Process			
Inputs	Value	Units	Notes
Material 1		Kilograms (kg)	
Material 2		kg	
Material n		kg	
Thermal Energy		MJ	
Electrical Energy		kWh	
Outputs	Value	Units	Notes
Recycled material 1		kg	
Recycled Material 2		kg	
Recycled Material n		kg	

Waste Material 1		kg	
Waste Material 2		kg	
Waste Material n		kg	
Emission to Environment 1		kg	
Emission to Environment 2		kg	
Emission to Environment n		kg	

APPENDIX 3

LIFE CYCLE ASSESSMENT AND TECHNOECONOMIC ANALYSIS RESOURCES

A3.1 GENERAL LIFE CYCLE ASSESSMENT AND TECHNO-ECONOMIC ANALYSIS RESOURCES

Life cycle assessment and techno-economic analysis are tools used to evaluate the environmental impacts and economic costs of processes such as recycling. This series of short videos provides trainings on best practices for conducting life cycle assessment and techno-economic analysis. These videos were produced by the U.S. Department of Energy's Advanced Materials and Manufacturing Technologies Office and Industrial Efficiency and Decarbonization Office.

[Life Cycle Assessment and Techno-Economic Analysis Training | U.S. Department of Energy](#)

In addition to the general content provided by these videos, additional resources relevant to metrics, life cycle assessment, and techno-economic analysis include.

- For metrics:
 - [U.S. Environmental Protection Agency's Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts](#)
- For the techno-economic analysis:
 - [Techno-economic, Energy, & Carbon Heuristic Tool for Early-Stage Technologies Tool](#)
 - [Report on Techno-Economic Analysis: Best Practices and Assessment Tools from Sandia National Laboratories](#)
- For the life cycle assessment:
 - [Material Flows through Industry tool](#) from the National Renewable Energy Laboratory

- [Critical Material Life Cycle Assessment Tool](#) from Purdue University, the U.S. Department of Energy, and Critical Materials Institute.
- [Greenhouse gases, Regulated Emissions, and Energy use in Technologies Model](#) from Argonne National Laboratory
- [U.S. Federal Life Cycle Assessment Commons](#)
- [OpenLCA Software](#).

A3.2 SPECIFIC BASELINE CONSIDERATIONS FOR FIBER-REINFORCED COMPOSITES

Reduction in process cost is a comparison of the operational costs required to produce the recycled material to a separate baseline process. The majority of current wind turbine blade material reaching end of life is sent to landfill. Landfill tipping fees for wind turbine blades vary geographically within the U.S., ranging from \$50 per ton of material to over \$100 per ton of material. Landfilling should be used as the baseline for composites to determine the reduction in process cost metric shown in Table 3. The percent reduction should be determined relative to the specific landfill fees of the geographic region being considered.

A3.3 SPECIFIC BASELINE CONSIDERATIONS FOR PERMANENT MAGNETS AND RARE EARTH ELEMENTS RECYCLING

Profitability of magnet recycling and rare earth element recovery processes is contingent on many complex factors, such as dynamic rare earth element market prices, collection efficiency of waste magnets, the state of recovered products, processing costs, and other uncertain supply chain factors. Prior techno-economic assessment of rare earth element refining processes shows that direct operating costs related to materials, utility, and maintenance are the largest contributors to process costs and, thus, profitability. Applicants should report how their recycling innovations saves on process operating costs compared to a defensible and well-defined baseline scenario, such as virgin magnet production or other feasible recycling (e.g., hydrometallurgical) processes.

APPENDIX 4

COMMUNITY BENEFITS PLAN

The U.S. Department of Energy is committed to investing in research and development innovations that deliver benefits to the American public and leads to commercialization of technologies and products that foster sustainable, resilient, and equitable access to clean energy. Further, the U.S. Department of Energy is committed to supporting the development of more diverse, equitable, inclusive, and accessible workplaces to help maintain the nation's leadership in science and technology.

To support the goal of building a clean and equitable energy economy, work funded under the Bipartisan Infrastructure Law award are expected to (1) advance diversity, equity, inclusion and accessibility (DEIA); (2) contribute to energy equity; and (3) create quality jobs and invest in America's workforce. To ensure these objectives are met, submissions should include a Community Benefits Plan that addresses the three objectives stated above.

The below sections set forth the content requirements for the Community Benefits Plan, which addresses each of the foregoing objectives. Competitors should address all three sections.

The competitor's Community Benefits Plan should include at least one specific, measurable, achievable, relevant, and timely (commonly shortened to SMART) target in each prize phase. The Community Benefits Plan will be evaluated as part of the technical review process.

The plan should be specific to the proposed project and not a restatement of an organization's policies. Competitors should describe the future implications or a milestone-based plan for identifying future implications of their research on energy equity, including, but not limited to, benefits for the U.S. workforce. These impacts may be uncertain, occur over a long period of time, and/or have many factors within and outside the specific proposed research. Competitors are encouraged to describe the influencing factors and the most likely workforce and energy equity implications of the proposed research if the research is successful. While some guidance and example activities are provided in the Examples section below, competitors are encouraged to leverage promising practices and develop a plan that is tailored for their project.

The competitor's Community Benefits Plan should address the following three sections.

A4.1 DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY

To build a clean and equitable energy economy, it is important that there are opportunities for people of all racial, ethnic, socioeconomic and geographic backgrounds, sexual orientation, gender identity, persons with disabilities, and those re-entering the workforce from incarceration. This section of the plan should demonstrate how DEIA is incorporated in the technical project objectives. The plan should identify the specific action the competitor would undertake that integrated into the research goals and project teams. Submitting an institutional DEIA plan without specific integration into the project will be deemed insufficient.

A4.2 ENERGY EQUITY

This section should articulate the competitor's consideration of long-term equity implications of the research. It should identify how the specific project integrates equity considerations into the project design to support equitable outcomes should the innovation be successful. Like cost reductions and commercialization plans, the Community Benefits Plan requires description of the equity implications of the innovation if successful.

A4.3 WORKFORCE IMPLICATIONS

This section should articulate the competitor's consideration of long-term workforce impacts and opportunities of the research. It should identify how the project is designed and executed to include an understanding of the future workforce needs should the resulting innovation be successful.

Please find additional guidance on the recommended Community Benefits Plan on the [HeroX](#) website.

This is the end of the rules document. Thank you for reading.