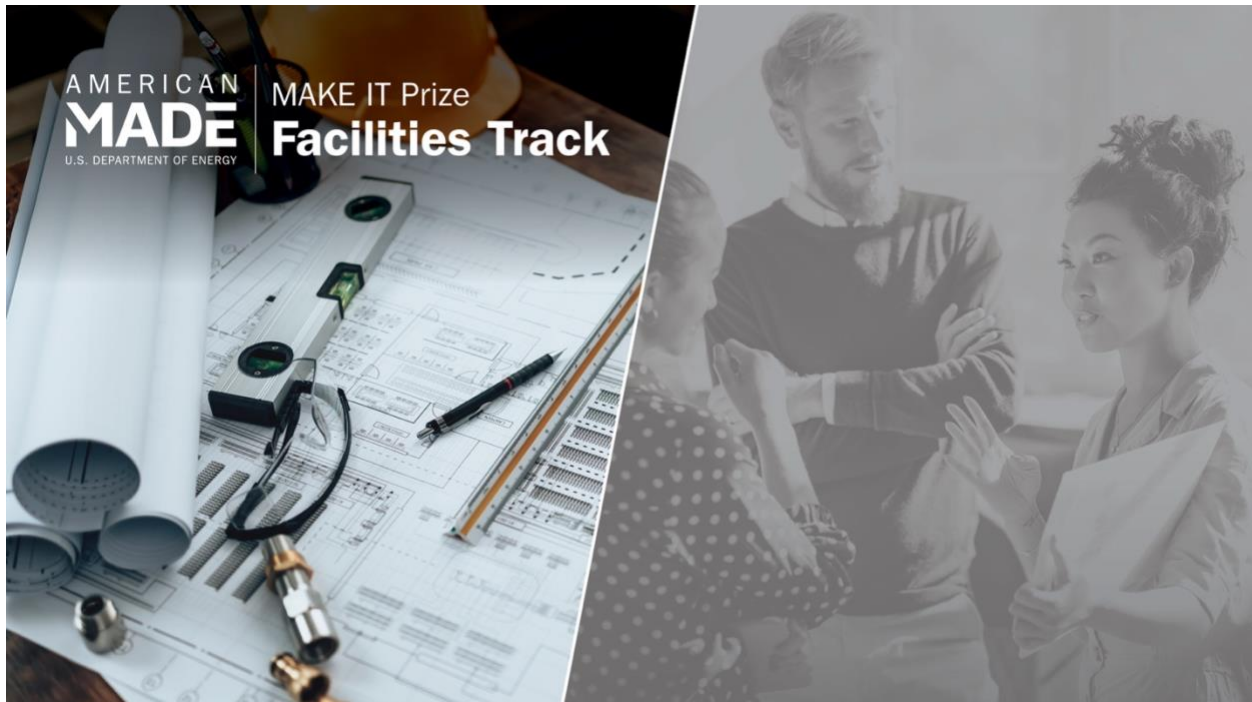


Manufacture of Advanced Key Energy Infrastructure Technologies Prize (MAKE IT) Facilities Track



July 2023

Preface

The U.S. Department of Energy's (DOE's) Manufacture of Advanced Key Energy Infrastructure Technologies (MAKE IT) Prize will be governed by 15 U.S.C. §3719 and this official rules document. This is not a procurement under the Federal Acquisitions Regulation and will not result in a grant or cooperative agreement under 2 Code of Federal Regulations (CFR) 200. The prize administrator reserves the right to modify this official rules document if necessary and will publicly post any such notifications as well as notify registered prize participants.

Date	Modification
Aug. 8, 2023	A typo was corrected on page 6.

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1 Executive Summary

DOE aims to catalyze domestic manufacturing to enable replication and commercial liftoff of clean energy demonstration projects, moving manufacturing facilities of critical clean energy technology components from planning to shovel-ready and enabling communities to prepare strategies for vibrant manufacturing activity in their area. The MAKE IT Prize offers a total prize pool of approximately \$30 million in cash prizes across two tracks. Each track has different submission requirements, timelines, and prize amounts. Winning teams may win up to \$5,000,000 across two phases of the Facilities track.

As part of the Bipartisan Infrastructure Law (BIL) Technology Commercialization Fund (TCF), the DOE Office of Technology Transitions (OTT), Office of Clean Energy Demonstrations (OCED), and the Office of Energy Efficiency and Renewable Energy (EERE) are launching the Manufacture of Advanced Key Energy Infrastructure Technologies (MAKE IT) Prize. The MAKE IT Prize has two tracks:

Facilities Track: U.S.-based entities and teams successfully complete the necessary work leading to shovel-ready facilities for manufacturing eligible components that will support clean energy infrastructure. The goal is to establish a robust and secure domestic supply chain for components deemed critical for the commercialization of clean energy technologies. This track is open to entities interested in construction of new facilities, the revitalization of shuttered facilities, brownfield development, and repurposing existing facilities, with particular interest in the latter three.

Strategies Track: Collaborative teams working to promote manufacturing activity, economic development, growth, and quality of life in their region or community will prepare a credible roadmap to establishing clean energy manufacturing activity. Successful competitors will also demonstrate interest by a manufacturing entity in establishing additional clean energy manufacturing capacity in their region. The objective of this track is to build interest, engagement, and community involvement around clean energy manufacturing, economic development, and job creation, particularly within disadvantaged communities.

This rules document is specifically for the Facilities Track. If your organization is working to promote manufacturing activity in your region, refer to the [Strategies Track rules](#).

1.1 MAKE IT Prize Facilities Track

The MAKE IT Prize Facilities Track is a two-phase prize. DOE anticipates offering approximately 12 prize awards of \$500,000 each in the Phase 1: Scope and up to four prize awards of \$4,500,000 each in the Phase 2: Shovel-Ready. It is designed to provide cash prizes to organizations able to prove completion of the preparatory work needed to establish a manufacturing facility (site identification and access, permitting and approvals, financing, execution of the community benefits plan, etc.). At the conclusion of the prize, the winning teams will have demonstrated proof of shovel-ready projects.

The MAKE IT Prize is open to any location in the United States¹; however, submissions involving plans to repurpose shuttered facilities, develop brownfield sites,² and/or that reequip current production lines for

¹ Inclusive of territories.

² A brownfield is defined as “a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.” To locate a brownfield, see <https://www.epa.gov/brownfields>.

manufacturing emerging clean energy technologies³ are of particular interest. Submissions related to incremental improvements or additions to existing permitted facilities are unlikely to score well.

DOE will issue two timelines for the Facilities Track. Each timeline has set deadlines for submitting a mandatory statement of intent and completing the Phase 1: Scope. However, this track will provide up to four opportunities to submit for the Phase 2: Shovel-Ready to accommodate uncertainty and variability in the project planning timelines required for project tasks that are beyond the competitors' control. Prizes will be awarded on a first-come, first-served basis. Phase 2: Shovel-Ready will close after four awards are made, even if that happens before the four submission deadlines. Competitors are encouraged to submit as soon as possible.

Contest	Winners	Prizes
Phase 1: Scope	Approximately 12	\$500,000 each
Phase 2: Shovel-Ready	Up to 4	\$4.5M each

1.2 Key Dates

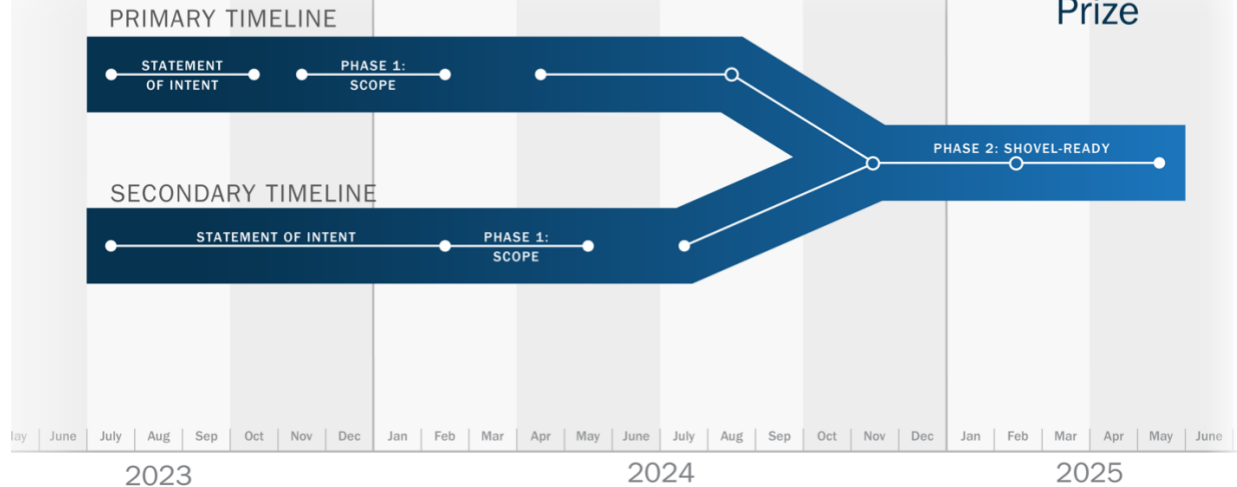
Visit [HeroX](#) for a list of deadlines and key dates. The Facilities Track timelines and phases will run as follows:

³ By using existing facilities, these projects may present benefits such as reduced costs and time to production resulting from the use of existing infrastructure, the ease of transition for the existing workforce, siting in connection with existing supply chain and community assets, and sustainability and environmental justice benefits arising from reuse rather than new builds. New facility builds, however, may offer advantages in the form of opportunities to resolve critical gaps in the establishment of secure, resilient domestic clean energy supply chains or to seize opportunities for emerging and projected market share. New facilities may also offer unique opportunities to incorporate advanced manufacturing practices that apply innovative technologies to produce new products and improve production of existing products; that train a highly skilled and diverse American workforce; that create products through economically-sound processes that minimize negative environmental impacts while conserving energy and natural resources; and that reduce pollution and reduce carbon emissions to zero or near zero via industrial decarbonization practices and technologies. Even where such advantages are present in connection with the building of new facilities, brownfield siting should be considered, and projects should draw upon existing skills of or seek to retrain dislocated workers.

FACILITIES TRACK

AMERICAN
MADE
U.S. DEPARTMENT OF ENERGY

MAKE IT
Prize



1.3 Eligible Technology Components

The MAKE IT Prize Facilities Track invites U.S.-based entities with demonstrated capabilities and commitment to domestic manufacturing to submit plans for establishing clean energy manufacturing facilities for specific clean energy technology components and/or processes. Only components and processes relevant to the domestic production of the following critical technologies are eligible for the Facilities Track. Submissions related to other technology components or for other applications will not be deemed eligible to compete:

- Manufacturing and/or recycling of components for production, processing, delivery, and storage, of clean hydrogen and/or hydrogen fuel cells:
 - Facilities to extract and process raw materials for electrolyzer and hydrogen fuel cell manufacturing.
 - Precision manufactured subcomponents for electrolyzers and fuel cells and facilities for electrolyzer and fuel cell assembly.
 - Optimized balance-of-plant components for electrolyzers.
 - Production capacity for hydrogen-specific infrastructure.
- Manufacturing of components related to electric grid upgrades and long-duration energy storage:
 - Components for distribution and large power transformers.
 - Components for high-voltage direct current transmission.
 - Manufacturing and assembly of long-duration energy storage components and systems.
- Manufacturing of components related to carbon capture and storage:
 - Carbon capture solvent, sorbent, and membrane recovery facilities.

Please see Appendix B for more details.

This prize will not support research, development, and/or demonstration activities for new technologies or new components. This prize is for establishing new manufacturing facilities; the technology component being manufactured is expected to be completely de-risked. Market potential and the degree of any

technology or adoption risk will be assessed as part of the Phase 1: Scope submission. Please see Appendix B for additional information on the list of eligible technologies.

Although only the technology components listed in this section and in Appendix B are eligible to compete in the MAKE IT Prize at this time, DOE might run the MAKE IT Prize and/or similar opportunities in the future and is interested in learning about additional clean energy technology components that are not widely manufactured domestically that have the potential to have a significant positive impact on the domestic clean energy supply chain. DOE encourages entities to submit their feedback on potential future areas of interest for similar programs to makeitcomments@nrel.gov.

1.4 Eligibility and Competitors

Statement of Intent/Initial Eligibility

- A single competitor may submit only one statement of intent per technology component as the lead but may be part of the team or otherwise be included in other submissions. A single competitor can submit more than one statement of intent as the lead if submissions are for different technology components. **See Section 1.3 and Appendix B for a complete list of eligible technology components.**
- If competitors are interested in pursuing multiple technologies, they must submit a separate statement of intent for each technology. Competitors must include the technology component in which they are interested in their statement of intent.
- Competitors must be U.S. persons (citizens or resident aliens) or entities incorporated in the United States and maintain a primary place of business in the United States. The prize administrator and DOE will review statements of intent for eligibility based on the list of allowable technology components for this track and the type of entity submitting the statement of intent.

Phase 1: Scope Eligibility

- Competitors must be an entity that submitted a statement of intent deemed eligible by DOE.
- If an individual was indicated as the lead in the statement of intent, the individual must designate a private entity, consortium, or nonfederal government entity as the lead organization in Phase 1: Scope submission to be considered eligible.
- The lead organization can be modified between submission of the statement of intent and submission of Phase 1: Scope; however, the competitor who submitted the statement of intent must be represented on the team in some way, and the relationship between them must be clearly defined in the submission materials.

Phase 2: Shovel-Ready Eligibility

- Only winners of Phase 1: Scope are eligible to compete in Phase 2: Shovel-Ready.
- The project must remain substantially the same between Phase 1: Scope and Phase 2: Shovel-Ready.

Ineligible Competitors

- DOE employees, employees of organizations sponsoring the prize, members of their immediate families (e.g., spouses, children, siblings, or parents), and persons living in the same household as such persons, whether related, are not eligible to participate in the prize.

- Individuals who worked at DOE (federal employees or support service contractors) within 6 months prior to the submission deadline of any contest are not eligible to participate in any prize contests in this program.
- Federal entities and federal employees are not eligible to participate in any portion of the prize.
- DOE national laboratory employees cannot compete in the prize.
- Individuals participating in a foreign government talent recruitment program⁴ sponsored by a country of risk⁵ 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 are not eligible to compete.
- 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.
- As part of your submission to this prize program, you 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 the information contained in this submission will be relied on by the federal government to determine whether to issue a prize to the named competitor. 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.

Project teams that include representation from minority-serving institutions, minority business enterprises, minority-owned businesses, woman-owned businesses, entities located in a disadvantaged community,⁶ and/or entities representing the interests of disadvantaged communities are encouraged to apply. The judge may consider the inclusion of these types of entities as part of the selection decision (see Section A14 for additional details).

Please read and comply with the additional requirements in Appendix A.

⁴ 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.

⁵ DOE has designated the following countries as foreign countries of risk: Iran, North Korea, Russia, and China. This list is subject to change.

⁶ Disadvantaged communities are defined according to the White House Climate and Economic Justice Screening Tool: <https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>.

2 Background

2.1 Prize Background and Objectives

The DOE TCF, administered by the OTT, was established by U.S. Congress through the Energy Policy Act of 2005 (EPAAct 2005)⁷ and reauthorized by the Energy Act of 2020 (EA 2020) to “promote promising energy technologies for commercial purposes.”⁸ TCF is a primary component of DOE’s ongoing effort to commercialize cutting-edge energy technologies.⁹

In November 2021, U.S. Congress passed into law the Infrastructure Investment and Jobs Act,¹⁰ more commonly known as the Bipartisan Infrastructure Law (BIL). The BIL appropriates more than \$62 billion to DOE.¹¹ Under BIL TCF, DOE pursues activities that broadly support the commercialization of promising energy technologies while simultaneously enhancing and improving American infrastructure, competitiveness, opportunity, and equity, and addressing the climate crisis. Working collaboratively across relevant program offices, OTT seeks to cultivate a broader innovation network around the BIL provision activities to enable faster replication and scaling of demonstration projects. To help achieve these aims, OTT, the Office of Clean Energy Demonstrations, and the Office of Energy Efficiency and Renewable Energy have developed the MAKE IT Prize.

The energy sector will evolve at an accelerated pace in the coming decades to reflect increasing demand for clean energy, in line with domestic and global climate goals. This creates an opportunity to invest in the domestic manufacturing base and strengthen our energy supply chains. Resilient, secure, and diverse supply chains and domestic manufacturing capabilities promote security and will be critical to maximizing the benefits of the energy transition and providing economic opportunity for all Americans.¹² Previous DOE work and stakeholder engagement, including the Pathways to Commercial Liftoff¹³ and “America’s Strategy to Secure the Supply Chain for a Robust Clean Energy Transition,”¹⁴ have identified several supply weaknesses and components whose manufacture present risks or barriers to large-scale demonstration.

⁷ Energy Policy Act of 2005, Public Law 109–58, 109th Cong. (August 8, 2005), Improved Technology Transfer of Energy Technologies, 42 U.S. Code § 16391 (a).

⁸ Consolidated Appropriations Act, 2021, Public Law 116–260, 116th Cong. (December 27, 2020), 134 Stat. 2597, Sec. 9003. <https://www.congress.gov/116/plaws/publ260/PLAW-116publ260.pdf>.

⁹ Learn more about the TCF at <https://www.energy.gov/technologytransitions/technology-commercialization-fund>.

¹⁰ Infrastructure Investment and Jobs Act, Public Law 117-58 (November 15, 2021).

¹¹ Learn more about the BIL and DOE: U.S. Department of Energy. 2021. “DOE Fact Sheet: The Bipartisan Infrastructure Deal Will Deliver for American Workers, Families and Usher in the Clean Energy Future.” <https://www.energy.gov/articles/doe-fact-sheet-bipartisan-infrastructure-deal-will-deliver-american-workers-families-and-0>.

¹² The White House. 2021. “Executive Order on America’s Supply Chains.” <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/02/24/executive-order-on-americas-supply-chains/>.

¹³ <https://liftoff.energy.gov>.

¹⁴ U.S. Department of Energy. 2022. “Securing America’s Clean Energy Supply Chain.” <https://www.energy.gov/policy/securing-americas-clean-energy-supply-chain>.

Activities rewarded under this prize will support the creation of quality jobs, the advancement of environmental justice, and the inclusion of underserved¹⁵ or overburdened¹⁶ communities, and they will work to ensure that at least 40% of the overall benefits of federal investments in climate and clean energy flow to disadvantaged communities.¹⁷

2.2 Competitor Support—American-Made Network

The American-Made Network cultivates resources and builds connections that enhance, accelerate, and amplify competitors' efforts. The objective is to link participants with the people, resources, financing, perspectives, and industry expertise necessary for long-term success.

The network comprises the following elements:

1. **Prize and Network Administrator (NREL):** DOE has partnered with the National Renewable Energy Laboratory (NREL) to administer the American-Made Challenges. NREL, as the administrator, helps competitors locate and leverage the vast array of national laboratory resources. NREL also connects elements of the network with the competitors, as described in this section.
2. **Power Connectors:** [Power Connectors](#) are organizations who play a more substantial role in the competition and receive funds to expand and amplify DOE and NREL's efforts. Through the MAKE IT Prize, Power Connectors will support competitor recruitment and provide opportunities for competitors to meet and match-make. These organizations are contracted to perform a variety of tasks for specific prizes that advance program successes, extending the reach and improving the diversity and inclusivity of the overall network.
3. **MAKE IT Prize Strategies Track Competitors:** The Strategies Track of the MAKE IT Prize incentivizes organizations working to promote clean energy manufacturing and economic development to create roadmaps for attracting clean energy manufacturing in their regions. Facilities Track competitors are strongly encouraged to reach out to Strategies Track competitors as potential partners.

Competitors are encouraged to form multidisciplinary teams while developing their concept. The [HeroX](#) platform provides a space where parties interested in collaborating can post information about themselves and learn about others who are also interested in competing in this contest. The prize administrator will also support additional teaming events and opportunities, directly and/or through the American-Made Network. Follow the [HeroX](#) platform for more information about teaming events and opportunities.

¹⁵ Per Executive Order On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government, the term "underserved communities" refers to populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life. <https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government/>

¹⁶ Per EJ 2020 Glossary, overburdened communities are minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks as a result of greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. ...The term describes situations where multiple factors, including both environmental and socioeconomic stressors, may act cumulatively to affect health and the environment and contribute to persistent environmental health disparities. <https://www.epa.gov/environmentaljustice/ej-2020-glossary>

¹⁷ The White House. 2021. "The Path to Achieving Justice40." <https://www.whitehouse.gov/omb/briefing-room/2021/07/20/the-path-to-achieving-justice40/>.

3 Statement of Intent to Compete

3.1 Goal

The goal of the statement of intent is to determine whether proposed submissions are eligible to compete in this prize.

3.2 How to Enter

Go to [HeroX](#) and follow the instructions to register and submit all required materials before the deadline.

3.3 Important Dates

Refer to the timeline on [HeroX](#) for relevant dates and deadlines.

DOE will offer two deadlines to submit a statement of intent (primary timeline and secondary timeline of the prize). Competitors who submitted a statement of intent deemed not eligible during the primary timeline may submit a new statement of intent to the secondary timeline if they so choose; however, DOE recommends that competitors prepare their second submission considering the feedback provided with the ineligibility determination.

3.4 Process

The submission of a statement of intent consists of the following steps:

1. **Submission:** Competitors determine that they are working to develop a domestic manufacturing facility for an eligible technology/technology component. Competitors complete their statement and submit it online before the deadline.
2. **Eligibility Assessment:** The prize administrator and DOE screen submissions for completion and eligibility as well as alignment with program and/or prize mission/objectives.
3. **Notification:** The prize administrator will notify competitors who submitted a statement of intent as to whether their statement was deemed eligible to compete for this prize.

3.5 What to Submit

A complete statement of intent should be no longer than two pages and include the following items:

- Project title
- Submitter information and contact information (name of the submitter and, if applicable, name of additional team members and/or company/organization associated with the submission)
- The technology component to be manufactured, including a clear identification of the corresponding technology on the list in Appendix B and a clear explanation of the relationship between the proposed manufacturing facility and the identified technology.
- One- to two-paragraph description of the facility/project/team's current status.
- Key project members (names, contacts, organization/affiliation, and links to their professional online profiles)
- City, state, and nine-digit zip code
- Summary slide.

3.6 Notification of Eligibility

Approximately 30 days after the deadline, the prize administrator will invite competitors deemed eligible to compete in the Phase 1: Scope.

4 Phase 1: Scope

4.1 Goal

Competitors who were invited to participate in the Phase 1: Scope will demonstrate that they have a credible plan to establish a manufacturing facility.

4.2 Prizes

Approximately 12 winners of \$500,000 each.

4.3 How to Enter

Go to [HeroX](#) and follow the instructions to register and submit all required materials before the phase deadline.

4.4 Important Dates

Refer to the timeline on [HeroX](#) for relevant dates and deadlines.

DOE will offer two deadline timelines to submit a statement of intent and two deadlines to submit the Phase 1: Scope package (primary timeline and secondary timeline) according to the following guidelines:

- Competitors who submitted a statement of intent that was deemed eligible during the primary timeline will have two opportunities to submit their Phase 1: Scope package.
- Competitors are strongly encouraged to submit their materials by the first deadline. A limited number of prizes are available, and the competition will close as soon as all funds are awarded.
- Competitors who submitted a statement of intent that was deemed eligible during the secondary timeline will have only one opportunity to submit their Phase 1: Scope package.

4.5 Phase 1: Scope Process

The Phase 1: Scope consists of the following steps:

- 1. Submission:** Competitors develop a credible plan to establish a manufacturing facility for their identified clean energy technology, complete their submission packages, and submit online before the phase closes.
- 2. Assessment:** The prize administrator screens submissions for eligibility and completion and assigns subject matter expert reviewers to independently score the content of each submission. Submissions are assessed based on the review criteria listed in Section 4.7. The prize judge will review the scores and other relevant materials and determine the winners.
- 3. Announcement:** After the winners are publicly announced, the prize administrator notifies them and requests the necessary information to distribute the cash prizes. After winning Phase 1: Scope, competitors develop their solutions in accordance with their plan and are eligible to compete in Phase 2: Shovel-Ready.

4.6 What to Submit

A complete submission package for the Phase 1: Scope should include the following items:

- Cover page
- Summary slide (will be made public)
- Narrative document:
 - Technology validation
 - Business validation
 - Management capability and key staff
 - List of potential site(s) being considered for construction
- Permitting and environmental plan
- Working financial model and identification of resources
- Community benefits plan
- Supporting documentation (optional).

4.6.1 Cover Page

List the basic information about your submission, including:

- Project title
- Name, city, state, and nine-digit zip code of the competitor and proposed facility location(s)
- Key project members (names, contacts, links to their professional online profiles)
- Other partners (if any), including names, role, description, and locations, including nine-digit zip code
- Technology component the competitor intends to manufacture (it must be included in the list of eligible components for this prize—see Appendix B).

4.6.2 Summary Slide (Will Be Made Public)

Make a public-facing, one-slide submission summary that introduces your team and your project. There is no template, so competitors are free to present the information in any format. Any text must be readable in a standard printed page and a conference room projection and should be in at least 14-point font.

4.6.3 Narrative Document

Submissions should discuss all the topics listed in this section. There is no word limit for the discussion related to each topic; however, **the aggregate document must not exceed 3,000 words**, excluding captions, figures/graphs, or references. A word count must be included at the end of your submission ([see template for details](#)). You may also include **up to five supporting images, figures, or graphs**. Suggested content for the narrative document is included below.

Narrative Document	
Technology Validation	
•	Describe the technology component intended to be manufactured at scale and how it fits the overall needs of the clean energy industry infrastructure. Describe how this is critical within the context of clean energy infrastructure needs.

- Discuss any pilot or demonstration plant data supporting the manufacturing readiness of the component for manufacturing at scale.
- Describe any project-specific engineering report already prepared/under development. Reports must be related to the specific technology being proposed to be manufactured in the planned facility. Reports related to the general technology are not of interest.
- Demonstrate having secured/having the ability to secure any industry-relevant certifications needed to sell the components manufactured in the proposed plant in the United States.
- Describe any residual technology risks associated with this technology component and how to mitigate them.
- Demonstrate possession of the IP rights necessary to manufacture and sell the proposed component.
- Describe the technology's secondary and tertiary supply needs and to what degree these have the potential to be based in the United States. Synergies with existing or announced facilities in the United States should be described and leveraged.

Business Validation

- Describe the technology advantage over existing competing technologies in the U.S. commercial marketplace today (if any) and its potential impact on overall cost and greenhouse gas emissions avoidance or reduction.
- Describe the potential market size and opportunity for the component being manufactured.
- Provide information on market and competition, including data to substantiate any claims. Useful information for such consideration includes average selling prices, segmentation (to the extent it exists), and both historical and forward-looking market trends.
- Demonstrate that the facility will be able to manufacture the specific component while being cost-competitive in the market. Clarify the reasons for the business claims (technology advantage, cost advantage, impact of potential tax/regulatory incentives, etc.). Also discuss opportunities for further cost reductions as the manufacturing effort scales up.
- Provide information on (potential or already signed) construction, equipment supply, feedstock, and offtake agreements supporting revenue and cost projections.
- Describe the expected groundbreaking date and anticipated timeline for completion and beginning of operations.
- Demonstrate a path for the proposed capability to remain in the United States.

Management Capability and Key Staff

- Describe the project team, including partners and experience or capabilities in clean energy manufacturing, equitable community development, and/or community and labor engagement.
- Describe management's experience, history, and organizational structure, as well as roles and responsibilities.
- Describe how the experience and skills of key employees will uniquely contribute to the success of the proposed construction plan. Include a description of the competitor's experience in and commitment to domestic manufacturing.
- Describe the project team's commitment to diversity, equity, inclusion, and accessibility (DEIA) both within the project team and in the communities in which projects are expected to be located.

- Describe the financial relationship of the lead competitor to the major project partners, including any foreign-owned entities. Include a breakdown of how all necessary funds are being contributed to ensure completion of the project.

Potential Site(s) Being Considered for Construction

- List potential site(s) for the future clean energy manufacturing facility, including address(es) that include nine-digit zip codes.
- Provide a description of each proposed site, including, if applicable, whether and how the proposal will repurpose shuttered facilities, reequip current production lines to produce emerging clean energy technologies, and/or whether facilities will be sited in brownfields (along with a brief description).
- Describe whether the proposed site(s) will positively and/or negatively impact disadvantaged communities.¹⁸

4.6.4 Permitting and Environmental Plan

Competitors should fully account for fulfilling permitting and environmental review requirements. Acquiring the various local, state, and federal permits that may be needed to implement a project is often a time-consuming process. As part of the Phase 1: Scope submission, competitors are asked to use the [provided template](#) to show a full understanding of all the permits to be obtained to begin construction in each potential site(s) being considered, a full understanding of the authorities having jurisdiction for each permit, and an expected timeline to secure required permits.

4.6.5 Working Financial Model and Identification of Resources

A working financial model, a budget for construction, and the identification of necessary resources (including resources to fully implement the community benefits and engagement plans) are necessary steps to evaluate and validate the prospects for the profitability of a construction project. DOE does not expect competitors to have a final financial model at this stage; however, DOE expects competitors to have developed a credible working financial model that can be used to assess the competitor’s plan and ability to execute the planned construction effort. DOE expects the construction budget to be consistent with a CD-1 or CD-2²⁵ level of accuracy at this stage. Suggested content for the working financial model is included below.

Working Financial Model

The financial model should have a structure that allows reviewers to access the model, test a range of assumptions, and understand the process through which the model is expected to achieve its results. The submission should provide a thorough explanation of the assumptions underlying the model, such as average production, costs, and selling prices as appropriate. The financial model should contain all relevant elements, including:

¹⁸ Competitors may use the Climate and Economic Justice Screening Tool (<https://screeningtool.geoplatform.gov/en/#3/33.47/-97.5>) to identify disadvantaged communities.

- Construction budget: total project cost estimate that covers the entirety of the project, including construction, capital, labor, contingency, and financing costs.
- Plan for how the project will be financed.
- List of public grant programs and/or private financial institutions that will be contacted to secure the necessary funding for construction.
- Reserve accounts for future expenses (e.g., major maintenance, decommissioning).
- If applicable, discussion on the strategy for the monetization of state and federal tax incentives. Possible strategies could include a sales agreement for Renewable Energy Certificates or the participation of an equity provider with the tax capacity to make use of tax incentives.

Identification of Resources

- Identify and account for all the necessary resources for a project to become fully operational, including capital goods, raw materials, operation-and-maintenance requirements, decommissioning, and resources to realize the community benefits plan.

4.6.6 Community Benefits Plan

Suggested content for the community benefits plan is included below.

Community Benefits Plan

- A community and labor engagement plan that will help align project impacts, plans, and decisions with community and labor priorities, needs, and concerns.
- A description of the proposed elements and execution plan for the community and labor engagement plan, including how engagement will impact project decisions and planning.
- A description of potential benefits and negative impacts to communities that could result from the project.
- A description of the steps the competitor will take to mitigate negative outcomes, maximize positive outcomes, and ensure the equitable distribution of impacts.
- A description of metrics and measures the competitor will use to assess progress and outcomes and ensure accountability to impacted communities. Wherever possible, metrics and measures should be specific, measurable, achievable, relevant, and timely.
- A description of DEIA goals and implementation strategies.
- A description of how the competitor plans to promote economic opportunity around clean energy manufacturing, particularly within disadvantaged communities, including through workforce development and apprenticeship programs and opportunities for career advancement for underrepresented groups.

4.6.7 Supporting Documentation (Optional)

Competitors may attach a **maximum of 20 pages** (in a single .PDF) of supporting documentation that demonstrates a likelihood of ultimately establishing a domestic clean energy manufacturing facility. These may include (but are not limited to) one-page letters of support from local authorities; one-page letters of intent from potential location(s); one-page letters of support from partners, including those representing the impacted communities, etc.

4.7 Phase 1: Scope Assessment

The prize administrator screens all completed submissions and ensures that the teams are eligible. The prize administrator then assigns eligible submissions to expert reviewers. The reviewers will include federal and nonfederal subject matter representatives with expertise in areas relevant to the competition. They will review the competitor's submission package according to the following criteria. The scores from each reviewer will be averaged to produce a final score for the competing team/organization. This score will inform the judge's decisions on the prize awards. Reviewers will assess submissions against the following criteria:

- **Criterion 1 (weight: 20%)- Manufacturing readiness, market viability, and project plan:**
 - The competitor demonstrates that the technology component they intend to manufacture has a high readiness level and describes the domestic and international market opportunity.
 - The competitor demonstrates the potential off-takers and strategies to retire any residual technology or adoption risks.
 - The competitor clearly identifies an execution plan with a credible timeline. The execution plan should include the time and resources needed to finalize the project plan, obtain the necessary permits, secure financing, start construction, start operations, and become revenue positive.
 - The competitor has identified a short list of potential sites¹⁹ and conducted a rigorous preliminary vetting process to assess the pros and cons of each (including impacts to nearby communities and level of community support or concern).
 - The competitor has submitted a comprehensive permitting plan for each proposed site, including identifying the authorities having jurisdiction to issue each permit or authorization and the expected timeline to obtain permits and authorizations.
 - The competitor has developed a credible cost model consistent with a CD-1 or CD-2²⁰ level of accuracy.
- **Criterion 2 (weight: 30%)- Impact:**
 - The competitor has demonstrated that the proposed manufacturing facility would generate significant economic activity in the selected region. Economic activity is measured through a variety of metrics, including but not limited to number of good jobs created during construction and during operations (both temporary and permanent jobs); expected revenue from steady-state operations of the facility; and annual production or recycling capacity supported by the facility (units or mass per day). Economic activity also includes direct and indirect economic benefits generated in the surrounding community, such as clean energy enterprise creation, contracting with minority business enterprises, and workforce development and training.
 - The competitor specifies and proposes a credible plan for tracking and reporting the metrics to measure economic activity, including plans to track the distribution of economic benefits, particularly to disadvantaged communities.
 - The competitor proposes a plan to reduce or eliminate waste production and mitigate any potential environmental impacts.

¹⁹ DOE recommends that competitors consider more than one potential site at this stage. Competitors should include feedback from their community engagement process to select the final site as part of Phase 2: Shovel-Ready submission.

²⁰ The Critical Decision Overview is an assessment of the precision of a budget estimate:
<https://www.directives.doe.gov/directives-documents/400-series/0413.3-BOrder-b-chg6-ltdchg>.

- The competitor demonstrates the potential to significantly enhance the domestic supply chain industry.
- **Criterion 3 (weight: 30%)- Team capabilities and experience:**
 - The competitor has shown previous relevant experience in developing manufacturing facilities or other infrastructure of similar size and with similar objectives.
 - The competitor has demonstrated a history of manufacturing with a focus on domestic economic development or other evidence of credibility toward success of the plan to be implemented.
 - The competitor has demonstrated the team’s safety performance history.
 - The competitor has shown clear support and commitment from the main decision makers within all partner organizations.
 - The competitor has experience with community and labor engagement, as well as equitable and just development.
- **Criterion 4 (weight: 20%)- Community benefits plan:**
 - The competitor has outlined a clear and robust plan to meaningfully engage local stakeholders (including community-based organizations, organizations that support or work with disadvantaged communities, and labor unions) and any impacted tribes or tribal entities in a manner that can impact project decisions, such as project site selection.
 - The competitor has demonstrated that they have the necessary resources or will obtain the necessary expertise to identify the communities or groups that could experience impacts from the project during construction, operation, and decommissioning and has described anticipated project impacts, including direct and indirect benefits and negative impacts.
 - The competitor has identified whether any potentially impacted communities are considered disadvantaged communities and has described how the project impacts could interact with existing burdens.
 - The competitor has included specific and high-quality actions to meet DEIA goals,²¹ including but not limited to DEIA recruitment and hiring procedures; supplier diversity plans; partnerships with underrepresented businesses, educational institutions, and training organizations that serve workers who face barriers to accessing good jobs; and other DEIA initiatives.
 - The proposal will meaningfully address at least one of DOE’s eight policy priorities for Justice40 Initiative implementation.²²

²¹ According to the Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce (EO 14035), **diversity** means the practice of including the many communities, identities, races, ethnicities, backgrounds, abilities, cultures, and beliefs of the American people, including underserved communities; **equity** means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment; **inclusion** means the recognition, appreciation, and use of the talents and skills of employees of all backgrounds; and **accessibility** means the design, construction, development, and maintenance of facilities, information and communication technology, programs, and services so that all people, including people with disabilities, can fully and independently use them.

²² (1) Decrease the energy burden in disadvantaged communities (DACs). (2) Decrease environmental exposure and burdens for DACs. (3) Increase parity in clean energy technology (e.g., solar, storage) access and adoption in DACs. (4) Increase access to low-cost capital in DACs. (5) Increase clean energy enterprise creation and contracting (MBE/DBE) in DACs. (6) Increase clean energy jobs, job pipeline, and job training for individuals from DACs. (7) Increase energy resiliency in DACs. (8) Increase energy democracy in DACs.

<https://www.energy.gov/diversity/justice40-initiative#:~:text=Section%20223%20of%20EO%2014008,the%20remediation%20and%20reduction%20of.>

4.8 Interviews

The prize administrator and/DOE may interview some or all the competitors. The interviews will be held prior to announcing the winners and will help clarify questions the reviewers may have. Interviews are not an indication of a competitor's likelihood to win. Participating in interviews is not required but may inform scoring and/or the judge's determination.

4.9 Final Determination

DOE will designate a federal employee as the judge before the final determination of the winners. The final determination of the winners by the judge will consider the submission materials, the reviewers' feedback and scores, the application of the program policy factors, and the interview findings (if applicable).

4.10 Announcement

Approximately 60 days after the contest closes, the prize administrator will notify the winners and request the necessary information to distribute the prizes. The prize administrator will then publicly announce the winners.

5 Phase 2: Shovel-Ready

5.1 Goal

Competitors demonstrate that they are "shovel ready" for the construction or repurposing of a manufacturing facility, including control of a site, permits obtained, financing secured, and proof of meaningful local community engagement.

5.2 Prizes

Up to four winners will receive \$4,500,000 each.

5.3 How to Enter

Go to [HeroX](#) and follow the instructions to register and submit all required materials before the phase deadline.

5.4 Important Dates

Refer to the timeline on [HeroX](#) for relevant dates and deadlines. There are four different Phase 2: Shovel Ready submission deadlines. Prizes will be awarded on a first-come, first-served basis, so once four awards are made, Phase 2: Shovel-Ready will close, even if that happens before the four submission deadlines occur. Teams may enter updated submissions if they are unsuccessful in previous submission periods, but they are strongly encouraged to submit only after all components of the final submission are complete and construction of the proposed facility is ready to proceed.

5.5 Phase 2: Shovel-Ready Process

Phase 2: Shovel-Ready consists of the following steps:

1. Submission: Competitors reach the point of being “shovel ready” to start construction of their manufacturing facility. Competitors complete their submission packages and submit online before the phase closes.

2. Assessment: The prize administrator screens submissions for eligibility and completion and assigns subject matter expert reviewers to independently score the content of each submission. Submissions are assessed based on the review criteria listed in Section 5.7.

3. Announcement: After the winners are publicly announced, the prize administrator notifies them and requests the necessary information to distribute the cash prizes.

5.6 What to Submit

A complete submission package for Phase 2: Shovel-Ready should include the following items:

- Cover page
- Summary slide, updated (may be made public)
- Narrative document
 - Business validation, updated
 - Management capability and key staff, updated
- Proof of secured site for construction
- Proof of secured permits and finalization of environmental reviews
- Working financial model and identification of resources
- Engineering, procurement, and construction contracts and integrated project schedule
- Proof of committed sources of financing
- Community benefits plan, updated
- Cybersecurity plan
- Supporting documentation (optional).

5.6.1 Cover Page

List the basic information about your submission, including:

- Project title
- Name, city, state, and nine-digit zip code of the competitor
- Key project members (names, contacts, links to their professional online profiles)
- Other partners (if any), including names, role, and locations, including nine-digit zip code
- Any other information not included in the following sections that you would like the reviewers to know.

5.6.2 Summary Slide, Updated (May Be Made Public)

Make a public-facing, one-slide submission summary that introduces your team and your project. There is no template, so competitors are free to present the information in any format. Any text must be readable in a standard printed page and a conference room projection and should be in at least 14-point font.

5.6.3 Narrative Document

You should discuss all the topics listed in this section. There is no word limit for the discussion related to each topic; however, **the aggregate document must not exceed 2,000 words**, excluding captions, figures/graphs, or references. A word count must be included at the end of your submission ([see](#)

[template for details](#)). You may also include **up to five supporting images, figures, or graphs**. Suggested content for the narrative document is included below.

Narrative Document
Business Validation, Updated
<ul style="list-style-type: none"> • Provide updated information on the potential market size and opportunity for the component being manufactured. • Provide updated information on the market and competition, including data to substantiate any claims. Useful information for such consideration includes average selling prices, segmentation (to the extent it exists), and both historical and forward-looking market trends. • Demonstrate that the facility will be able to manufacture the specific component while being cost-competitive in the market. Clarify the reasons for the business claims (technology advantage, cost advantage, impact of potential tax/regulatory incentives, etc.). Discuss opportunities for further cost reductions as the manufacturing effort scales up. • Provide information on (potential or already signed) supply and offtake agreements supporting revenue and cost projections. • Demonstrate a path for the proposed capability to remain in the United States.
Management Capability and Key Staff, Updated
<ul style="list-style-type: none"> • Describe the project team, including partners and experience or capabilities in clean energy manufacturing, equitable community development, and/or community and labor engagement. • Include management’s experience, history, and organizational structure, as well as roles and responsibilities. • Describe the type and nature of any financial relationship, technology partnership, or any type of partnership of the prime recipient to the major project partners, including any foreign-owned entities. • Describe how the experience and skills of key employees will uniquely contribute to the success of the proposed construction plan. Include a description of the competitor’s experience in and commitment to domestic manufacturing. • Describe the project team’s commitment to DEIA both within the project team and in the community in which the projects are expected to be located.

5.6.4 Proof of Secured Site for Construction

Competitors demonstrate proof of legal control of the site selected for construction (ownership or rental) and submit a plot plan showing the complete layout of the entire facility.

5.6.5 Proof of Secured Permits and Finalization of Environmental Reviews

Competitors should fully account for fulfilling permitting and environmental review requirements. As part of Phase 2: Shovel-Ready submission, competitors demonstrate that they have secured all the necessary

permits to begin construction at the selected site. In addition, competitors may be asked to complete a National Environmental Policy Act EQ1 form (see Section A.15 for additional information).

5.6.6 Working Financial Model and Identification of Resources

A working financial model, a budget for construction, and the identification of necessary resources are necessary steps to evaluate and validate the prospects for the profitability of a construction project. As part of Phase 2: Shovel-Ready submission, DOE expects competitors to have developed a credible working financial model that can be used to assess the competitor’s plan and ability to execute the planned construction effort. DOE expects the construction budget to be consistent with a CD-3 or CD-4²⁰ level of accuracy at this stage. Suggested content for the working financial model is provided below.

Working Financial Model
<p>The financial model should have a structure that allows reviewers to access the model, test a range of assumptions, and understand the process through which the model is expected to achieve its results; and a thorough explanation of the assumptions underlying the model, such as average production, costs, and selling prices as appropriate. The financial model should include all relevant elements, including:</p> <ul style="list-style-type: none"> ● Construction budget: total project cost estimate that covers the entirety of the project, including construction, capital, labor, contingency, and financing costs. ● Plan for how the project will be financed. ● List of public grant programs and/or private financial institutions providing the necessary funding for construction. ● Reserve accounts for future expenses (e.g., major maintenance, decommissioning) ● If applicable, discussion on the strategy for the monetization of state and federal tax incentives. Possible strategies could include sales agreements for Renewable Energy Certificates or the participation of an equity provider with the tax capacity to make use of tax incentives.
Identification of Resources
<ul style="list-style-type: none"> ● Identify and account for all the necessary resources for a project to become fully operational, including capital goods, raw materials, operation-and-maintenance requirements, decommissioning, and resources to realize the community benefits plan.

5.6.7 Engineering, Procurement, and Construction Contracts and Integrated Project Schedule

The competitor demonstrates that they are ready to proceed with construction work by submitting strong engineering, procurement, and construction contracts with creditworthy firms. In addition, the competitor submits an integrated project schedule for the construction work (including expected groundbreaking date and anticipated timeline for completion and beginning of operations). As part of this element of the submission package, competitors include basic layout drawings of the facility and the process flow diagram for construction.

5.6.8 Sources of Financing

The competitor clearly substantiates all sources of financing secured to begin construction. The competitor demonstrates access to all funding necessary through internal funding or through a single, committed, creditworthy financing firm. Financing can be in the form of equity, debt, or public grants.

5.6.9 Community Benefits Plan, Updated

Suggested content for the updated community benefits plan is provided below.

Community Benefits Plan
<ul style="list-style-type: none">● A community benefits plan to help maximize benefits, minimize burdens, and equitably distribute impacts within and across nearby communities.● A description of how the community and labor engagement plan submitted in the Phase 1: Scope was implemented, including the number of stakeholders engaged, the mechanisms and strategies for engagement, and how the results were incorporated into the project and operation plans, including a description of any negotiated or planned workforce and community agreements.● Plans, strategies, and timelines for ongoing and future community and labor engagement that incorporate lessons learned from earlier engagement and continue to align project impacts, plans, and decisions with evolving community and labor priorities, needs, and concerns.● A description of how DEIA strategies submitted in the Phase 1: Scope were implemented, an assessment of progress toward DEIA goals, and plans for continued activities and commitments to support DEIA.● A description of completed and planned actions to support worker health and safety, worker rights, and workforce training.● A description of actions taken to date to minimize and/or mitigate potential negative outcomes, ensure or amplify potential benefits, ensure the equitable distribution of impacts, and monitor and transparently report these impacts.● A system for tracking success and progress metrics and measures proposed in the Phase 1: Scope, any metrics/measures tracked to date, and a system for incorporating lessons learned from metrics tracking into future plans.● A description of any measurable community impact to date and anticipated community impact, including a description of how impacts are distributed (permanent jobs created, training and workforce development provided, funds injected into local economy, changes in local air and water quality, impacts on public health, etc.).

5.6.10 Cybersecurity Plan

Submit a cybersecurity plan following the provided template, including all essential elements needed to protect the security of computer networks and systems and of the entire infrastructure. Please use the required template to ensure that nothing is forgotten and that the project cybersecurity runs smoothly.

5.6.11 Supporting Documentation (Optional)

Attach supporting documentation (in a single PDF document) that demonstrates a likelihood of ultimately establishing a domestic clean energy manufacturing facility. These may include (but are not limited to) letters of support from local authorities; letters of intent from potential location(s); letters of support from partners, including from those representing the impacted community, labor unions, and/or workforce development organizations; submitted applications, etc.

5.7 Phase 2: Shovel-Ready Assessment

The prize administrator screens all completed submissions and ensures that the teams are eligible. The prize administrator then assigns eligible submissions to expert reviewers. Reviewers will include federal and nonfederal representatives with expertise in areas relevant to the competition. They will review the competitors' submission package according to the following criteria. The scores from each reviewer will be averaged to produce a final score for the competing team/organization. The score will inform the judge's decisions on the prize awards. Reviewers will assess submissions against the following criteria:

- **Criterion 1 (weight: 40%) - Manufacturing readiness, market viability, and project plan:**
 - The competitor demonstrates a viable business strategy, including a credible supply chain for their materials and facilities operations and a path to secure signed contracts with customers, suppliers, and off-takers.
 - The competitor has finalized the timeline for the construction of the facility and developed a convincing execution plan. The execution plan should include the time and resources (including financing) needed to start construction, start operations, and become revenue positive.
 - The competitor has identified major risks that could hinder the execution of their plan and delay construction of the proposed facility, including risks related to a lack of community acceptance. The competitor has identified possible risk mitigation plans.
 - The competitor has secured access to the construction site.
 - The competitor has obtained all necessary permits and approvals to start construction.
 - The competitor has developed a credible cost model consistent with a CD-3 or CD-4²⁰ level of accuracy.
 - The competitor has developed a plan to recruit, train, hire, support, and retain a diverse local workforce for the construction and ongoing operations of the facility. This plan supports worker organizing and the negotiation of enforceable workforce agreements.
- **Criterion 2 (weight: 20%) - Impact:**
 - The competitor has demonstrated that the proposed manufacturing facility would generate significant economic activity in the selected region. Economic activity is measured through a variety of metrics, including but not limited to the number of good jobs created during construction and during operations (both temporary and permanent jobs); the expected revenue from steady-state operations of the facility; and annual production or recycling capacity supported by the facility (units or mass per day). Economic activity also includes direct and indirect economic benefits generated in the surrounding community, such as clean energy enterprise creation, contracting with minority business enterprises, and workforce development and training.
 - The competitor specifies and proposes a credible plan for tracking and reporting the metrics to measure economic activity, including plans to track the distribution of economic benefits, particularly to disadvantaged communities.
- **Criterion 3 (weight: 20%) - Team capabilities and experience:**
 - The competitor has identified and established formal relationships with all the project members needed to begin construction.
 - The competitor has demonstrated a history of manufacturing with a focus on domestic economic development or other evidence of credibility toward success of the plan to be implemented.
 - The competitor has shown clear support and commitment from the main decision makers within all partner organizations.

- The competitor has demonstrated community and labor engagement, as well as equitable and just development.
- **Criterion 4 (weight: 20%) - Community benefits plan:**
 - The competitor has shown how they have meaningfully engaged local stakeholders (including community-based organizations, organizations that support or work with disadvantaged communities, and labor unions) and any impacted tribes or tribal entities, and how this engagement impacted project decisions.
 - The competitor has identified and described the communities or groups that could experience impacts from the project during construction, operation, and decommissioning, has identified whether they are considered disadvantaged communities, and has described anticipated project impacts, including direct and indirect benefits and negative impacts, while also considering existing burdens.
 - The competitor has demonstrated that the jobs supported by the proposed project will be good jobs,²³ and the competitor has provided a robust and credible plan to attract skilled local workers. This could include a description of plans to create legally binding and enforceable workforce and community agreements.²⁴
 - The competitor has included specific and high-quality actions to meet DEIA goals,²⁵ including but not limited to DEIA recruitment and hiring procedures; supplier diversity plans; partnerships with underrepresented businesses, educational institutions, and training organizations that serve workers who face barriers to accessing good jobs; and other DEIA initiatives.
 - The proposal will meaningfully address at least one of DOE’s eight policy priorities for Justice40 Initiative implementation.

5.8 Interviews/Site Visits

The prize administrator and/or DOE may interview or conduct a site visit with some or all the competitors. The interviews/site visits would be held prior to announcing the winners and would help clarify questions the reviewers may have. Interviews and/or site visits are not an indication of a competitor’s likelihood to win. Participating in interviews is not required but may inform scoring and/or the judge’s determination.

23 See “What is a ‘good job’?” <https://www.energy.gov/infrastructure/about-community-benefits-plans#:~:text=Community%20Benefits%20Plan%20Frequently%20Asked%20Questions%20%28FAQs%29%20What,accompany%20all%20agency%20funding%20opportunity%20announcements%20%28FOAs%29.-related%20projects.>

24 The term “workforce and community agreement” includes a range of formal agreements between a project developer/owner, impacted community groups, and relevant labor unions. Workforce and community agreements are tools used in project development and/or execution to ensure that benefits promised to communities and workers are realized. This could be an agreement specifying a project’s commitments to the community; it could also be a collective-bargaining agreement specifying wages, benefits, health and safety standards, workforce education and training, and other terms of employment with a labor union; or it could include both community and workforce provisions. This term as used here is inclusive of community benefits agreements, community workforce agreements, good neighbor agreements, project labor agreements, collective-bargaining agreements, and other similar contractual tools.

²⁵ According to the Executive Order on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce (EO 14035), **diversity** means the practice of including the many communities, identities, races, ethnicities, backgrounds, abilities, cultures, and beliefs of the American people, including underserved communities; **equity** means the consistent and systematic fair, just, and impartial treatment of all individuals, including individuals who belong to underserved communities that have been denied such treatment; **inclusion** means the recognition, appreciation, and use of the talents and skills of employees of all backgrounds; and **accessibility** means the design, construction, development, and maintenance of facilities, information and communication technology, programs, and services so that all people, including people with disabilities, can fully and independently use them.

5.9 Final Determination

DOE will designate a federal employee as the judge before the final determination of the winners. Final determination of the winners by the judge will consider the reviewers' feedback and scores, the application of program policy factors, and the interview findings (if applicable).

5.10 Announcement

Approximately 60 days after the contest closes, the prize administrator will notify the winners and request the necessary information to distribute the prizes. The prize administrator will then publicly announce the winners.

Appendix A: Additional Terms and Conditions

A.1 Requirements

Your submission for the MAKE IT Prize is subject to the following terms and conditions:

- You must post the final content of your submission or upload the submission form before the submission period closes. Late submissions or any other form of submission may be rejected.
- All submissions that you wish to protect from public disclosure must be marked according to the instructions in Section 10 of Appendix A (Section A.10). Unmarked or improperly marked submissions will be deemed to have been provided with unlimited rights and may be used in any manner and for any purpose whatsoever.
- You must include all the required elements in your submission. 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 as a result of technical challenges.
- Your submission must be in English and in a format readable by Microsoft Word or Adobe PDF. Scanned handwritten submissions will be disqualified.
- Submissions will be disqualified if they contain any matter that, in the sole discretion of DOE or NREL, is indecent, obscene, defamatory, libelous, and/or 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 prizes described in this document, these rules will form a valid and binding agreement between you and DOE and are in addition to the existing [HeroX](#) terms of use for all purposes relating to these contests. You should print and keep a copy of these rules. These provisions apply only to the prize described here and no other prize 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.
- As part of your submission to this prize, you 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 the information contained in this submission will be relied on by the federal government to determine whether to issue a prize to the named competitor. 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.

A.2 Verification for Payments

The prize administrator will verify the identity and role of all competitors before distributing any prizes. Receiving a prize payment is contingent upon fulfilling all requirements contained herein. The prize administrator will notify the winning competitors using the provided email contact information for the individual or entity that was responsible for the submission. Each competitor will be required to sign and return to the prize administrator, within 30 days of the date on the notice, a completed NREL Request for ACH Banking Information form and a completed W9 form (<https://www.irs.gov/pub/irs-pdf/fw9.pdf>). In

the sole discretion of the prize administrator, a winning competitor will be disqualified from the competition and receive no prize funds if- (i) the person/entity does not respond to notifications; (ii) the person/entity fails to sign and return the required documentation within the required time period; (iii) the notification is returned as undeliverable; and (iv) the submission or person/entity is disqualified for any other reason.

In the event of a dispute as to any registration, 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. All competitors may be required to show proof of being the authorized account holder.

A.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 its member competitors or teammates as they deem appropriate. The prize administrator will not arbitrate, intervene, advise on, or resolve any matters or disputes between team members or competitors.

A.4 Submission Rights

By making a submission and consenting to the rules of the contest, a competitor is granting to DOE, the prize administrator, and any other third parties supporting DOE in the contest, a license to publicly display and use the parts of the submission that are designated as “public” for government purposes. This license includes posting or linking to the public portions of the submission on the prize administrator or [HeroX](#) applications, including the contest 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 and reviewers for purposes of the contests, including but not limited to screening 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 the competitors’ team members and organization that participated in the submission indefinitely on the contest website.

By entering, the competitor represents and warrants that:

1. The competitor’s entire submission is an original work by the competitor and the competitor has not included third-party content (such as writing, text, graphics, artwork, logos, photographs, likeness of any third party, musical recordings, clips of videos, television programs, or motion pictures) in or in connection with the submission, unless (a) otherwise requested by the prize administrator and/or disclosed by the competitor in the submission, and (b) the competitor has either obtained the rights to use such third-party content or the content of the submission is considered in the public domain without any limitations on use.
2. Unless otherwise disclosed in the submission, the use thereof by the prize administrator, or the exercise by the prize administrator of any of the rights granted by the competitor under these rules, does not and will not infringe or violate any rights of any third party or entity, including, without limitation, patent, copyright, trademark, trade secret, defamation, privacy, publicity, false light, misappropriation, intentional or negligent infliction of emotional distress, confidentiality, or any contractual or other rights.
3. All persons who were engaged by the competitor to work on the submission or who appear in the submission in any manner have:

- a. Given the competitor their express written consent to submit the submission for exhibition and other exploitation in any manner and in any and all media, whether now existing or hereafter discovered, throughout the world
- b. Provided written permission to include their name, image, or pictures in or with the submission (or, if a minor who is not a competitor's child, the competitor must have the permission of the minor's parent or legal guardian), and the competitor may be asked by the prize administrator to provide permission in writing
- c. Not been and are not currently under any union or guild agreement that results in any ongoing obligations resulting from the use, exhibition, or other exploitation of the submission.

A.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 any other third-party rights of which the competitor is aware; and that the submission is free of malware.

A.6 Contest Subject to Applicable Law

All contests are subject to all applicable federal laws and regulations. Participation constitutes each participant's full and unconditional agreement to these official rules and administrative decisions, which are final and binding in all matters related to the contest. This notice is not an obligation of funds; the final award is contingent upon the availability of appropriations.

A.7 Resolution of Disputes

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

Neither DOE nor the prize administrator will arbitrate, intervene, advise on, or resolve any matters between team members or among competitors.

A.8 Publicity

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

Except where prohibited, participation in the contest 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.

A.9 Liability

Upon registration, all participants agree to assume any and all risks of injury or loss in connection with or in any way arising from participation in this contest. Upon registration, except in the case of willful misconduct, all participants 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 contest, whether the claim or cause of action arises under contract or tort.

In accordance with the delegation of authority to run this contest delegated to the judge responsible for this prize, the judge has determined that no liability insurance naming DOE as an insured will be required of competitors to compete in this competition per 15 U.S.C. § 3719(i)(2). Competitors should assess the risks associated with their proposed activities and adequately insure themselves against possible losses.

A.10 Records Retention and Freedom of Information Act

All materials submitted to DOE as part of a submission become DOE records and are subject to the Freedom of Information Act. The following applies only to portions of the submission not designated as public information in the instructions for submission. If a submission includes trade secrets or information that is commercial or financial, or information that is confidential or privileged, it is furnished to the government in confidence with the understanding that the information shall be used or disclosed only for evaluation of the application. Such information will be withheld from public disclosure to the extent permitted by law, including the Freedom of Information Act. Without assuming any liability for inadvertent disclosure, DOE will seek to limit disclosure of such information to its employees and to outside reviewers when necessary for review of the application or as otherwise authorized by law. This restriction does not limit the government's right to use the information if it is obtained from another source.

Submissions containing confidential, proprietary, or privileged information must be marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. government is not liable for the disclosure or use of unmarked information and may use or disclose such information for any purpose.

The submission must be marked as follows and identify the specific pages containing trade secrets, confidential, proprietary, or privileged information- "Notice of Restriction on Disclosure and Use of Data: Pages [list applicable pages] of this document may contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes. [End of Notice]"

The header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows- "Contains Trade Secrets, Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure." In addition, each line or paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets.

Competitors will be notified of any Freedom of Information Act 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 Freedom of Information Act representative prior to the release of materials. DOE does intend to keep all submission materials private except for those materials designated as "will be made public."

A.11 Privacy

If you choose to provide [HeroX](#) with personal information by registering or completing the submission package through the contest 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 contest unless you choose to receive updates or notifications about other contests or programs from DOE on an opt-in basis. DOE and NREL are not collecting any information for commercial marketing.

A.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 prize, as determined by DOE in its sole discretion, DOE may cancel the prize. Any performance toward prize goals is conducted entirely at the risk of the competitor, and DOE shall not compensate any competitors for any activities performed in furtherance of this prize.

Although DOE may indicate that it will select up to several winners for each prize, DOE reserves the right to only select competitors 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 competitors to be winners and will award no prize money.

DOE may conduct a risk review, using Government resources, of the competitor and project personnel for potential risks of foreign interference. The outcomes of the risk review may result in the submission being eliminated from the prize competition. This risk review, and potential elimination, can occur at any time during the prize competition. An elimination based on a risk review is not appealable.

A.13 Bonus Prizes

While no additional or bonus prizes are available at this time, DOE may leverage the MAKE IT framework to add bonus prizes at any time. Bonus prizes may range in value but will not exceed the value of that phase's prize. Updates will be posted to [HeroX](#) in the event that bonus prizes are added.

A.14 Program Policy Factors

While the scores of the expert reviewers will be carefully considered, it is the role of the prize judge to maximize the impact of prize funds. Some factors outside the control of the competitors and beyond the independent expert reviewer scope of review may need to be considered to accomplish this goal. The following is a list of such factors. In addition to the reviewers' scores, the following program policy factors may be considered in determining winners-

- The degree to which the submission promotes quality employment, equitable economic development, and/or other community benefits within disadvantaged communities.
- The degree to which the submission contributes to the Justice40 Initiative.
- Geographic diversity and potential economic impact of projects.
- The degree to which the submission operates in partnership with tribal energy development organizations, Indian tribes, tribal organizations, or territories, and/or substantially benefits tribes.
- Whether the submission will result in new initiatives, efforts, or activities not previously underway.
- Whether the use of additional DOE funds and provided resources are non-duplicative and compatible with the stated goals of this program and the DOE mission generally.
- The degree to which the submission exhibits technological or programmatic diversity compared to the existing DOE project portfolio and other competitors.
- 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 supports complementary DOE-funded efforts or projects, which, when taken together, will best achieve the goals and objectives of DOE.
- The degree to which the submission expands DOE's funding to new competitors and recipients who have not been supported by 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 toward enabling a just and equitable clean energy economy in their region and/or community.
- Whether the submission will lead to repurposing shuttered facilities
- Whether the submission uses brownfield rather than greenfield development
- Whether the submission will lead to reequipping existing production lines to newly produce emerging clean energy technologies.

A.15 National Environmental Policy Act Compliance

This prize is subject to the National Environmental Policy Act (NEPA) (42 U.S.C. § 4321, et seq.). NEPA requires federal agencies to integrate environmental values into their decision-making processes by considering the potential environmental impacts of their proposed actions. For additional background on NEPA, see DOE's NEPA website at <http://nepa.energy.gov/>.

While NEPA compliance is a federal agency responsibility and the ultimate decisions remain with the federal agency, all participants in the MAKE IT Prize will be required to assist in the timely and effective completion of the NEPA process in the manner most pertinent to their participation in the prize competition. Participants may be asked to provide DOE with information on their planned activities such that DOE can conduct a meaningful evaluation of the potential environmental impacts.

A.16 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 B: Eligible Technology Components

B.1 Background

DOE has identified the technology components listed in this appendix as eligible for this prize. DOE encourages competitors to look at the following reports and documents to better understand DOE assessment of manufacturing opportunities for critical components for the clean energy transition:

- DOE Pathways to Commercial Liftoff reports²⁶
 - Clean hydrogen²⁷
 - Long-duration energy storage (LDES)²⁸
 - Carbon management.²⁹
- America's Strategy to Secure the Supply Chain for a Robust Clean Energy Transition³⁰ reports
 - Carbon capture materials³¹
 - Electric grid, including transformers and high-voltage direct current (HVDC)³²
 - Energy storage³³
 - Fuel cells and electrolyzers.³⁴
- DOE National Clean Hydrogen Strategy and Roadmap³⁵
- Energy Storage Grand Challenge.³⁶

Please review the entirety of the prize rules. Only statements of intent related to one of the following technology components will be deemed eligible to compete for the prize.

This prize does not include research, development, and/or demonstration activities of new technologies or new components. This prize is for establishing new manufacturing facilities; the technology component being manufactured is expected to be completely de-risked and ready to being sold.

B.2 List of Eligible Technology Components

Manufacturing and/or recycling of components for production, processing, delivery, and storage, of clean hydrogen and/or hydrogen fuel cells

The production, processing, delivery, storage, and end use of clean hydrogen, including innovative uses in the industrial and transportation sector, are crucial to DOE's strategy for achieving the goal of a 100% clean electric grid by 2035 and net-zero carbon emissions by 2050.³⁷ The entire clean hydrogen supply

²⁶ <https://liftoff.energy.gov/>.

²⁷ <https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-Clean-H2-vPUB-0329-update.pdf>.

²⁸ <https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-LDES-vPUB-0329-update.pdf>.

²⁹ https://liftoff.energy.gov/wp-content/uploads/2023/04/20230424-Liftoff-Carbon-Management-vPUB_update.pdf.

³⁰ <https://www.energy.gov/policy/articles/americas-strategy-secure-supply-chain-robust-clean-energy-transition>

³¹ <https://www.energy.gov/sites/default/files/2022-02/Carbon%20Capture%20Supply%20Chain%20Report%20-%20Final%202.25.25.pdf>.

³² <https://www.energy.gov/sites/default/files/2022-02/Electric%20Grid%20Supply%20Chain%20Report%20-%20Final.pdf>

³³ <https://www.energy.gov/sites/default/files/2022-02/Energy%20Storage%20Supply%20Chain%20Report%20-%20final.pdf>.

³⁴ <https://www.energy.gov/sites/default/files/2022-02/Fuel%20Cells%20%26%20Electrolyzers%20Supply%20Chain%20Report%20-%20Final.pdf>.

³⁵ <https://www.hydrogen.energy.gov/clean-hydrogen-strategy-roadmap.html>.

³⁶ <https://www.energy.gov/energy-storage-grand-challenge/energy-storage-reports-and-data>.

³⁷ <https://www.energy.gov/oced/regional-clean-hydrogen-hubs>.

chain must scale rapidly, representing a significant opportunity as domestic and international markets mature. The following critical components are eligible for this prize:

- **Facilities to extract and process raw materials for electrolyzer and hydrogen fuel cell manufacturing:**

To meet the demands of a growing hydrogen market, large increases in the extraction and refining of many materials will be needed.³⁸ Electrolyzers for hydrogen production and fuel cells for heavy-duty transportation require raw materials, which are currently primarily provided by imports. Activities in support of facilities, components, or processes to extract and/or process raw materials for electrolyzers and hydrogen fuel cells are eligible for this prize. Applicants that are focused on raw material extraction and processing only should provide sufficient evidence that their manufacturing will improve the supply chain for electrolyzers and/or fuel cells. This could include a commitment from an electrolyzer, fuel cell, or electrolyzer-component manufacturer to purchase your future product.

- **Precision manufactured subcomponents for electrolyzers and fuel cells and facilities for electrolyzer and fuel cell assembly:**

The demand for electrolyzer components is likely to significantly exceed global supply until electrolyzer production expands. To enable the deployment of approximately 100 GW of operational electrolyzers by 2030, domestic production must scale from 4 GW of publicly announced capacity with target commercial operation dates to as much as approximately 20–25 GW per year by 2030. Additionally, the use of fuel cells in the transportation sector, particularly for heavy-duty vehicles, will increase over the next decade, and demand for more precision manufacturing is required. The manufacturers of any type of electrolyzer, hydrogen fuel cell, or relevant components are eligible to compete in this prize; preference is given toward electrolyzers, fuel cells, or components that represent new capabilities, designs, or significant performance or cost savings relative to current commercially produced products.

- **Optimized balance-of-plant components for electrolyzers:**

There is a significant need for balance-of-plant components for electrolyzer systems, specifically hydrogen compressors and power electronics. Hydrogen compression is essential for the transportation and storage of hydrogen. Power electronics, while widely available for many other uses, are a key need due to the lack of systems optimized for electrolyzers. Compressors or power electronics specifically manufactured for use with electrolyzers are eligible for this prize.

- **Production capacity for hydrogen-specific infrastructure:**

Hydrogen delivery via pressurized tube trailers and cryogenic liquid tankers will likely represent most hydrogen distribution pathways in the near- and mid-term for distributed end uses, such as transportation. On the other hand, power sector and industrial applications are more likely to be co-located with hydrogen production sites or connected via pipelines and are thus likely to have lower delivery costs. For more distributed use cases, U.S. tube trailer manufacturing is currently in the low 100 units per year, with lead times exceeding a year. Manufacturing efforts addressing issues with the cost of carbon fibers used in new tube trailers and supplies for hydrogen storage and distribution systems, as well as novel manufacturing techniques (e.g., for high-quality carbon fiber composites and storage tanks with the ability to duty-cycle many times per day) are eligible for this prize. Midstream systems for hydrogen-specific equipment, including liquefiers, valves,

³⁸ <https://www.energy.gov/eere/fuelcells/water-electrolyzers-and-fuel-cells-supply-chain-deep-dive-assessment>.

and hoses, must scale rapidly to meet the demand of the growing hydrogen industry, particularly components for heavy-duty vehicle fueling. Facilities manufacturing new designs emphasizing reliability, durability, and cost reductions at scale for these components are eligible to compete in this prize.

Manufacturing of components related to electric grid upgrades and LDES

The U.S. energy sector industrial base will require radical transformations to decarbonize by 2050, including renewable energy generation and transportation from carbon-neutral sources, combined with storage of that energy. LDES systems—10 or more hours in duration—can enhance the capabilities of customers and communities to more effectively integrate grid storage into their energy mix. Many critical components supporting the power grid have limited to no domestic manufacturing capacity and face complex challenges in supporting a rapid expansion of the grid to meet multiple objectives, including decarbonization goals. In addition, the LDES supply chain is nascent- <1 GW of LDES were deployed as of 2022, excluding pumped storage hydropower. For LDES to be a viable component of the net-zero equation, annual manufacturing and deployment capacity must approach 10–15 GW/year by 2035 and 30 GW/year by 2040.³⁹ An updated electric grid infrastructure and cheaper LDES technologies can increase local control of the power system, build resilience for communities, minimize power grid disruptions, and help reach the goal of 100% clean electricity by 2035 and net-zero emissions by 2050.^{40,41} This prize will focus on the following critical components:

- **Components for distribution and large power transformers:**

Transformers are used both at the transmission and distribution level to step up voltage to decrease the power losses from electricity transmission and to step down voltage for distribution at lower, more usable voltage levels. There is a current shortage in the United States of distribution transformers, and the average age of installed large power transformers is approximately 40 years, which is the end of their expected lifetime. This fact combined with potential bottlenecks to rapid grid expansion raise concerns about the vulnerability of the domestic electric grid. Within the distribution and transmission transformer supply chain, grain-oriented electrical steel (GOES), continuously transposed conduction copper wire, and insulating materials have a significant influence on final component availability and price. Manufacturing facilities for distribution and large power transformers as well as GOES are eligible for this prize.

- **Components for HVDC transmission:**

HVDC transmission provides an alternative electrical transmission system to conventional alternating current (AC), which increases the power grid's capacity to receive, transmit, and deliver large amounts of energy. HVDC technology is more cost-effective than HVAC for longer transmission distances. In addition, this technology improves grid resilience, security, and operation flexibility, and it accommodates the integration of renewable energy transmission into the existing grid to reach the nation's goal of carbon neutrality. The manufacturers of the four main HVDC components, as well as their subcomponents, are eligible for this prize. The main components are:

- Converters
- DC switchgear (breakers)

³⁹ <https://liftoff.energy.gov/wp-content/uploads/2023/03/20230320-Liftoff-LDES-vPUB-0329-update.pdf>

⁴⁰ <https://www.energy.gov/oced/long-duration-energy-storage-demonstrations>.

⁴¹ <https://www.energy.gov/energy-storage-grand-challenge/energy-storage-grand-challenge>.

- DC filters
- AC switchyards.

Eligible subcomponents include insulated-gate bipolar transistors, capacitors, inductors, arrestors, AC switches, resistors, and distribution transformers.

- **Manufacturing and assembly of LDES components and systems:**

LDES technologies encompass a broad variety of technologies and approaches that share the goal of storing energy for long periods of time for future dispatch. Within this prize, “long duration” is defined as 10 or more hours (intraday, multiday, and seasonal storage). Facilities to manufacture components related to any technological approach to LDES are eligible to compete in this prize if there is a clear path to commercial offtake as soon as construction of the facility is expected to be completed. In particular, the manufacturing and assembling of metal anode and flow batteries is of particular interest. Extracting and processing raw materials (especially nickel and vanadium from secure mines) and manufacturing and assembling for metal anode and flow batteries are priorities for multiday/week LDES.

Manufacturing of components related to carbon capture and storage

Carbon capture technologies are designed to improve the efficiency, effectiveness, cost, emissions reductions, and environmental performance of coal and natural gas use, including in manufacturing and industrial facilities. A typical carbon capture hub will integrate capture, transport, and storage infrastructure that can be deployed at fossil energy power plants and major industrial sources of carbon dioxide, such as cement, pulp and paper, iron and steel, and certain types of chemical production facilities.^{42,43} In an aggressive infrastructure deployment scenario, the likely upper bound of carbon capture and storage capacity for the United States is 1.7 Gt per annum by 2050.⁴⁴ The critical facilities needed to recycle solvents, sorbents, membranes, drilling mud, and other components used during the carbon capture and storage process are eligible for this prize:

- **Carbon capture solvent, sorbents, and membrane recovery facilities:**

It is expected that the United States will build extensive infrastructure to operate a 2 Gt/year system of carbon capture and storage by 2050. Part of the success of this new industry is the ability to recycle and, whenever possible, recover critical components and materials that would otherwise be disposed in a landfill. Facilities aiming at recycling and/or recovering solvents, sorbents, membranes, and any other material used in a typical carbon capture and storage facility are eligible to compete in this prize.

⁴² <https://www.energy.gov/oced/carbon-capture-large-scale-pilot-programs>.

⁴³ <https://www.energy.gov/oced/carbon-capture-demonstration-projects-program>.

⁴⁴ <https://www.energy.gov/sites/default/files/2022-02/Energy%20Storage%20Supply%20Chain%20Report%20-%20final.pdf>.