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Office of Clean Energy Demonstrations

THE OFFICE OF CLEAN ENERGY DEMONSTRATIONS



Industrial Demonstrations Funding Opportunity Announcement: Concept Paper Feedback

Office of Clean Energy Demonstrations

U.S. Department of Energy

Funding Opportunity
Announcement No.
DE-FOA-0002936

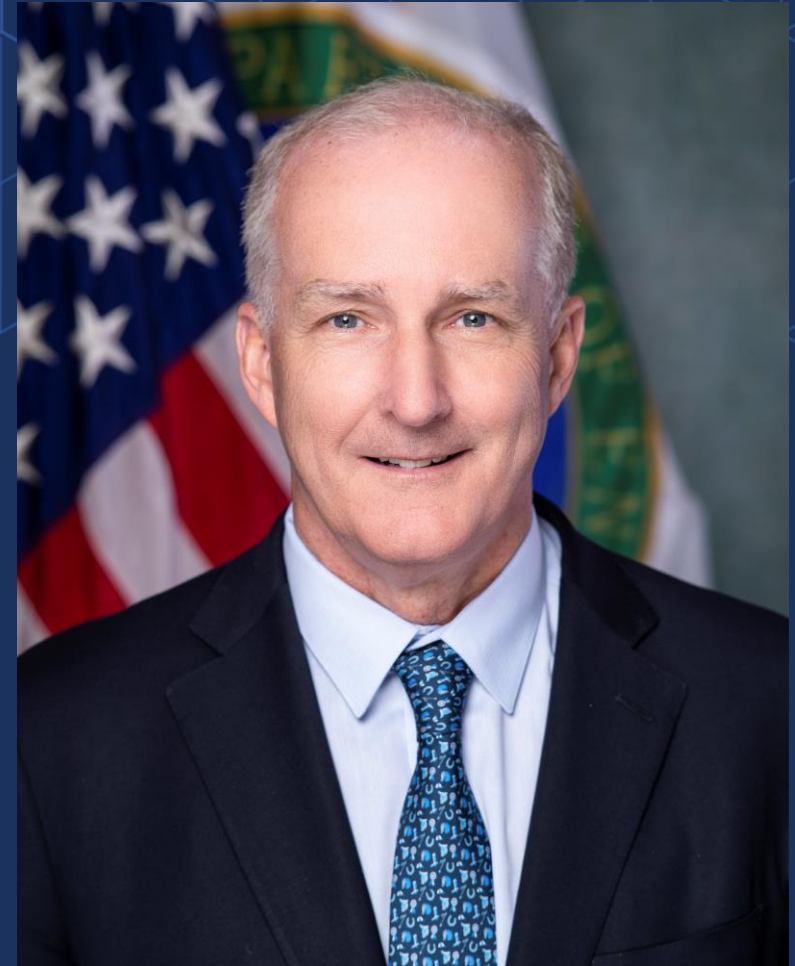
Disclaimer

Attending this webinar and watching the recording is completely voluntary and will not impact future application selections. There are no advantages or disadvantages to the application evaluation process with respect to attending or viewing this webinar.

This document is not a rule or regulation, and the recommendations it contains may not apply to a particular situation based upon the individual facts and circumstances. If there are any inconsistencies between a specific FOA and the statements in this document or webinar, the FOA is the controlling document.

Welcome and Introduction

David Crane
Director, Office of Clean Energy Demonstrations





Funding Opportunity and Concept Paper Overview

Up to **\$6 billion**

for transformational, advanced industrial facilities

- to **solidify a first-mover advantage for U.S. industry** in low- and net-zero carbon manufacturing
- to help **substantiate the market for clean products** through high-impact, replicable solutions
- to **build broadly shared prosperity** for American workers and communities



Program Priorities



Deep decarbonization

by demonstrating significantly less carbon-intensive industrial production processes leading to cleaner materials



Timeliness

through rapid technology demonstrations that can address emissions in the near-term, meet funding horizons, and be replicated by fast followers



Market viability

with technological approaches designed to spur follow-on investments for widespread decarbonization, and partnerships between buyers and sellers of the materials produced



Community benefits

tailored through substantial engagement with local and regional stakeholders, labor unions, and Tribal entities across the project lifecycle, supporting environmental justice; diversity, equity, inclusion, and accessibility; and economic opportunity for communities

Program Scope

All values anticipated

Topic Area 1



~\$100M – \$250M federal share*



~2 – 5 projects



Near-Net-Zero Facility Build Projects

World-leading, first- or early-of-a-kind, full facility builds resulting in significant emissions reductions up to net-zero operations.



8-12 years anticipated.
No statutory funding deadline.

Topic Area 2

~\$75M – \$500M federal share*

~10 – 30 projects

Facility-level Large Installations and Overhaul Retrofit Demonstrations

Large-scale overhauls for existing facilities, common technologies across multiple facilities, or new builds with accelerated planning, development, permitting, and financing strategies.

3 – 7 years anticipated.

Projects should aim to reach Phase 3 (construction) by Sept. 30, 2026.
Applicants should substantiate the viability of their proposed timeline.

Topic Area 3

~\$35M – \$75M federal share*

~10 – 30 projects

System Upgrades and Retrofits for Critical Unit Operations or Single Process Lines Within Existing Facilities

Upgrades, retrofits, and operational improvements that target decarbonization within a unit operation or process line at an existing facility or facilities.



Focus on Energy-intensive Industries and Processes

iron, steel, and steel mill products | aluminum | cement and concrete | glass | pulp and paper
chemicals and refining | industrial ceramics | other energy intensive industrial sectors

DOE is also interested in **crosscutting opportunities** that may address multiple facilities or sectors.



Concept Paper Overview

		Total Projects	Total DOE Funding Requested	Total Private Sector Cost Share
Concept Paper Requests	Chemicals and Refining	153	\$25.1B	\$46.9B
	Iron, Steel, and Steel Mill Products	40	\$11B	\$22.7B
	Cement and Concrete	53	\$5.8B	\$8.3B
	Pulp and Paper	26	\$3.4B	\$3.8B
	Aluminum	17	\$2.6B	\$2.8B
	Glass	17	\$2.3B	\$2.4B
	Cross-cutting	26	\$3.5B	\$3.7B
	Other Energy-Intensive Industrial Processes	79	\$8.1B	\$9.1B
Totals	Total Requests	411	>\$60B	~\$100B
	Total Encouraged	130		
	Total Target Awards	22-65	\$6B	



Funding Opportunity Announcement Modification

- On June 1, 2023, DOE released a modified version of the FOA (MOD 000001) with changes including:
 - An extension to the application deadline to August 11, 2023, at 5 p.m., ET.
 - Information on aspects of the Technical Volume, such as:
 - A more explicit substantiation of what the Department seeks for Technoeconomic Analysis (TEA) and Lifecycle Analysis (LCA), including templates for submission available under “Application Forms and Templates” on OCED eXCHANGE. (See FOA section 4.6.2.2(f).)
 - Additional details on supply chain and offtake information, along with a requirement for applications to include a business case analysis (See FOA section 4.6.2.2(b)).
 - A template for the project summary cover sheet (See FOA section 4.6.2.2(a) and Appendix D).
 - Additional clarity around starting Technology Readiness Level (TRL), eligible entities, and substantially similar retrofits at existing facilities. (Stay tuned for more during this webinar!)
- All changes are summarized in a table at the beginning of the FOA (MOD 000001).





General Concept Paper Feedback Themes

Concept Paper to Full Application

- The Full Application is an opportunity to expand on the technical, commercial, financial, management, and community benefits details of the ideas submitted in a Concept Paper.
- DOE identified the following themes and common points of feedback for applicants to keep in mind when developing full applications.
- Though DOE's concept paper response letters flagged areas assessed to be of particular emphasis for individual proposals, applicants should keep in mind all the following themes.
- Applicants are encouraged to evolve their proposal and incorporate feedback, so long as the concept isn't fundamentally different.



Nature of Encourage / Discourage Notifications

DOE reminds applicants that an **encourage notification** does not mean that an entity will be selected if it submits a Full Application, but that the proposal is on the right path towards submitting a Full Application. DOE expects significant competition among applicants, even if only encouraged applicants submit Full Applications.

Receiving a **discourage notification** to a Concept Paper does not prohibit applicants from submitting a Full Application. However, by discouraging the submission of a Full Application, DOE intends to convey its lack of interest in the proposed project for funding under this FOA in order to save applicants the considerable time and expense of preparing a Full Application that is unlikely to be selected for award negotiations.

(See Section 6.1.2 of the FOA).



Project Scope and Plan

- Proposed work should align with FOA objectives.
- Strong applications should:
 - Clearly describe the scope of the demonstration project, including:
 - Technology and systems to be developed
 - Emissions reduction potential
 - Replicability
 - Contain a preliminary development plan and timeline.
 - Include any key risks, challenges and possible mitigation strategies.
 - Clearly describe their timeliness, including their ability to address emissions in the near-term, meet funding horizons, and be replicated by fast followers.



Site Selection

- Section 50161(g)(2) of the Inflation Reduction Act defines eligible entities as owners or operators of a domestic, non-federal nonpower industrial or manufacturing facility engaged in energy intensive industrial processes.
- Each facility must be an eligible facility as defined in section 50161(g)(3) of the IRA for both single facility and multiple facility projects.
 - See sections 1.3.2.3 and 1.3.2.4 of the FOA.
- Applicants for Topic Areas 2 and 3 must be an eligible entity as defined in for all eligible facilities it proposes.
- *Applications should explain how they satisfy this requirement by clearly identifying the project's proposed facility or facilities.*



Topic Area Selection

- **Applicants are encouraged to consider which Topic Area would be most advantageous** for their proposal and to ensure that their proposal is appropriate for the timeline, funding, eligible entities, and carbon intensity reduction requirements of that Topic Area.
- **Applicants are free to submit their Full Applications to a different Topic Area** than what was identified in the Concept Paper – so long as the project is not fundamentally different from the concept!



Topic Area 1:

Near-Net-Zero Facility
Build Projects

99 Concept Papers

\$15 billion requested

2-5 awards anticipated

\$430M total funds available



Topic Area 2:

Facility-Level Large
Installations and Overhaul
Retrofit Demonstrations

187 Concept Papers

\$40 billion requested

10-30 awards anticipated



Topic Area 3:

System Upgrades and Retrofits
for Critical Unit Operations or
Single Process Lines

125 Concept Papers

\$5 billion requested

10-30 awards anticipated

\$5.46B total funds available



Technology Readiness Level for Commercial-scale Projects

- All Topic Areas require projects starting nominally at TRL 7 and advancing to TRL 9 by the end of the project.
 - Defined in FOA Section 4.6.2.2
- **Applicants should substantiate that their proposed technology has reached TRL 6 through pilot scale results or similar.**
 - Of particular interest is post-pilot scale integrated system technology to lower risk for market adoption and replicability.
- While its use not required, applicants are encouraged to review DOE's [Technology Readiness Assessment Guide](#).



Substantially Similar Retrofits at Multiple Facilities

- Each Full Application must describe a unique, scientifically distinct project.
- If an applicant plans to propose substantially similar retrofits at multiple facilities and locations, those retrofits should be proposed as a single, cross-cutting project in one Full Application (see FOA Section 3.4).
- ***Applicants may consider changing project scope by combining substantially similar retrofits into one application for a concept that had initially identified only one site.***



Industrial Emissions Reduction Potential

- Applicants should clearly articulate that their project is of a transformative, first- or early-of-a-kind nature with the potential to facilitate a transition to *significant* decarbonization.
 - Include information such as:
 - Data around project's target level of performance for carbon intensity reduction.
 - A preliminary project or facility-level baseline (and/or state-of-the-art estimate).
 - Explanation of the project's replicability as a mechanism with the potential to drive industry-wide emissions reductions.
- DOE encourages applicants to review the new information around Technoeconomic Analysis (TEA) and Lifecycle Analysis (LCA) in the FOA modification as a mechanism for making a well-founded case for projects' transformational potential. (See FOA section 4.6.2.2(f).)



Replicability and Market Uptake

- Given the scale of the decarbonization challenge, DOE seeks replicable projects that can be deployed with urgency and that will be best positioned to catalyze follow-on investments.
- Applications should:
 - Substantiate a pathway toward long-term financial and operational viability for their technologies.
 - Outline how the concept might be replicated, such as through:
 - Deployments at additional facilities
 - Accelerating domestic or global standard setting
 - Stimulating follow-on funding from the private sector
- DOE will evaluate market liftoff potential for projects and will give special consideration to shifting entire industries toward low-carbon products.
- Please reference the FOA modification for additional information on supply chain and offtake information and business case analyses (See FOA section 4.6.2.2(b)).



Management, Organization, and Partnerships

- Applicants are required to list senior and key personnel and their organizations.
 - If applicable, please include key technology providers and project partners and explain how those individuals/organizations will contribute to the project and how their experience will help them contribute to the execution of the project.
- See FOA section 4.6.2.2 for more detail regarding required Management and Organization information.
- DOE also encourages applicants to strengthen projects by partnering with technology providers, experts, universities, labor unions, community-based organizations, non-governmental organizations, product off-takers, and/or National Laboratories.
- Applicants may choose to incorporate additional partnerships beyond what was described in their Concept Papers when submitting their Full Applications.



Community Benefits Plan

Applicants should describe strategies and methods of accountability to ensure:

- Meaningful, two-way community and labor engagement
- Diversity, equity, inclusion, and accessibility
- Benefits to the surrounding community
- Quality jobs and workforce development
- Furthering the Justice40 Initiative

By **prioritizing community benefits**, we can ensure the next chapter in America's energy story is marked by greater justice, equity, security, and resilience.

The Inflation Reduction Act supports this goal by giving priority to projects that provide the **greatest benefit to the greatest number of people in nearby communities.**

Community & Labor Engagement



Diversity, Equity, Inclusion, & Accessibility



Greatest Benefit for the Greatest Number



Investing in the American Workforce



Justice40 Initiative

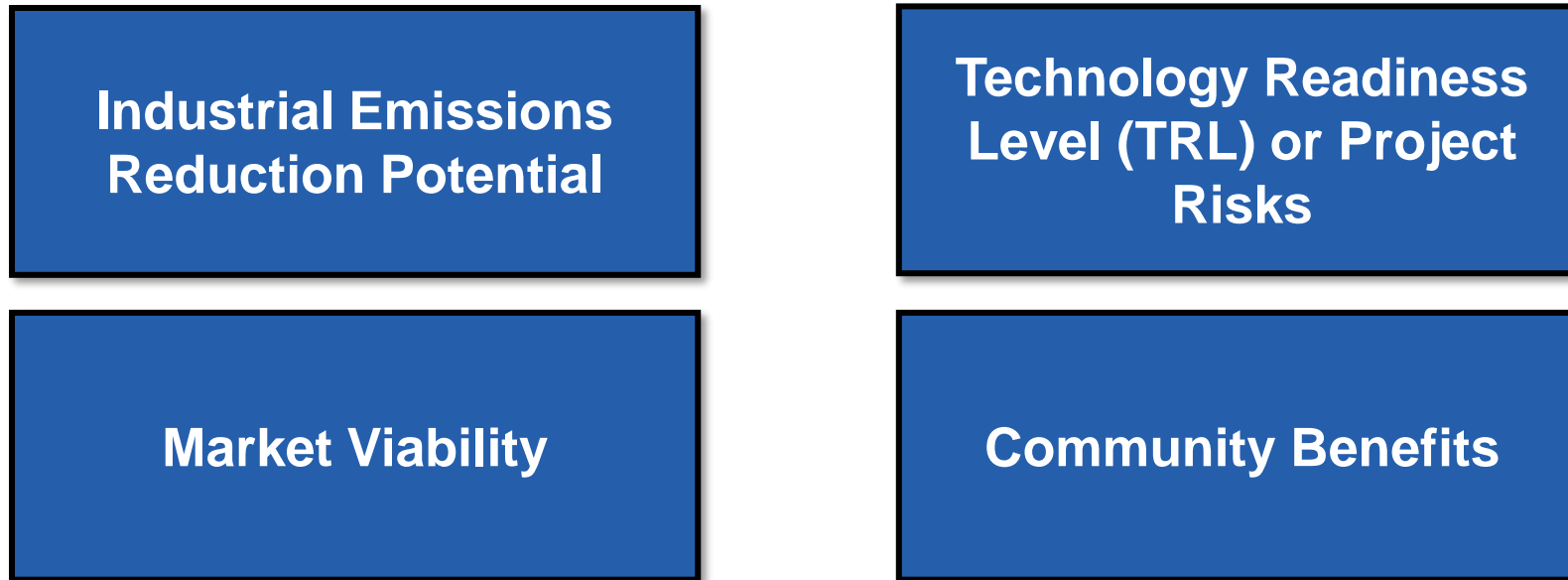




Discourage Feedback Themes

Discouraged Feedback Themes

- Below are the four major themes for discouraged Concept Papers where, even if expanded, the Full Application is unlikely to meet the requirements of the program:



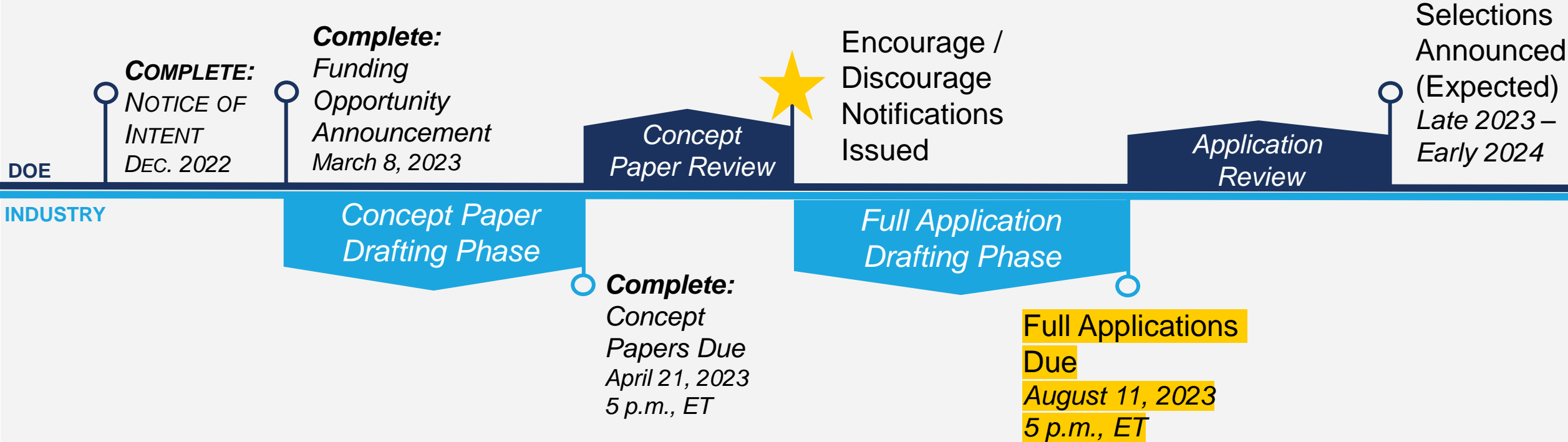
- The Next Steps section includes an overview of some other manufacturing opportunities



Next Steps



Timeline



Full Application Submission Guidance

- Full Application Submission Deadline: August 11, 2023, at 5 p.m., ET.
- Complete all application requirements, including required forms under “View Application Forms and Templates” tab in the FOA.

APPLICATION FORMS AND TEMPLATES

The following forms and templates may be used as part of the application submission. Note that these forms and templates do not necessarily constitute all the documents required for a complete application. Please refer to the 'Application and Submission Information' of the published announcement to learn more about the required application content requirements.

[View Application Forms and Templates](#)

- All required submissions must be submitted in OCED eXCHANGE no later than 5 p.m. ET on submission deadline date.
- Ensure SAM.gov registration is active and obtain a valid UEI number.



FOA Q&A

- Email OCED_Industrial@hq.doe.gov with questions, which will be posted anonymously.
- Visit oced-exchange.energy.gov for FOA Q&A, which is updated regularly.

Example Questions

Can an applicant submit to multiple FOAs and / or the Loan Programs Office for a single project?

- *Yes, though federal financing, such as grants or loan guarantees from federal agencies, cannot be leveraged by applicants to provide the required cost share or to otherwise support the same scope of the award. However, other federal support may be used for activities that fall outside of the award scope/budget. See FOA sections 4.6.2.2b and section 4.6.2.13.*

Can a technology provider serve as a prime recipient for a proposal that involves a number of owners of eligible facilities?

- *A project involving multiple facilities may apply; eligible entities are "Owners or operators of a domestic, non-federal nonpower industrial or manufacturing facility engaged in energy intensive industrial processes as stated in the areas of interest," however, a co-owner or co-operator does meet the criteria. See FOA section 3.1.*



Additional Resources: Pathways to Commercial Liftoff

Multiple offices within DOE launched the Pathways to Commercial Liftoff effort to collaborate, coordinate, and build trust with the private sector and create a common fact-base that drives public and private investment decisions and changes behavior of key actors across research, development, demonstration, and deployment.

The effort will help to inform capital allocation decisions that address risks and barriers to scale.

- The Department intends to release an early insights video of the Industrial Decarbonization Pathways Report insights in late June. To receive updates on when this video is available, sign up for OCED Alerts on the OCED webpage.
- The Industrial Decarbonization Pathways webinar will be held on June 26 at 1:30 p.m., ET*. Register [here](#).
- The full Industrial Decarbonization Pathways Report will be released later this summer.

**Date and time are subject to change*

For more information, visit liftoff.energy.gov.

Additional Manufacturing Opportunities

- The [48C Tax Credit](#) program may be suitable for projects that are at the upper technology readiness level bound for this funding opportunity (TRL 9+), incorporate commercial-off-the-shelf technologies, and/or have notable emissions reduction potential yet do not meet the threshold for deep facility and/or industry-wide decarbonization.
- The DOE [Industrial Efficiency and Decarbonization Office](#) provides funding opportunities at regular intervals for research, development, and pilot-scale demonstrations that may be suitable for projects that are at the lower technology readiness level boundary for this FOA (TRL 6 and below).
- DOE's [Technology Commercialization Fund](#), administered by the Office of Technology Transitions on behalf of the entire agency and will include OCED-related programs in the near future. In the past, commercialization programs launched by DOE have included voucher opportunities, prizes, work with National Laboratories, and more.
- DOE's [Loan Programs Office](#) provides, as a bridge to bankability for innovative and high-impact energy technologies, access to needed loans and loan guarantees.
- In addition, **other offices within DOE**, including the Office of Energy Efficiency and Renewable Energy (EERE), Fossil Energy and Carbon Management (FECM), Manufacturing and Energy Supply Chains (MESCC), and Nuclear Energy (NE) may have industrial-related funding opportunities of interest.



SPOTLIGHT: 48C Tax Credits

Investing in Energy Communities



MESC

OFFICE OF MANUFACTURING AND ENERGY SUPPLY CHAINS

48C: Overview

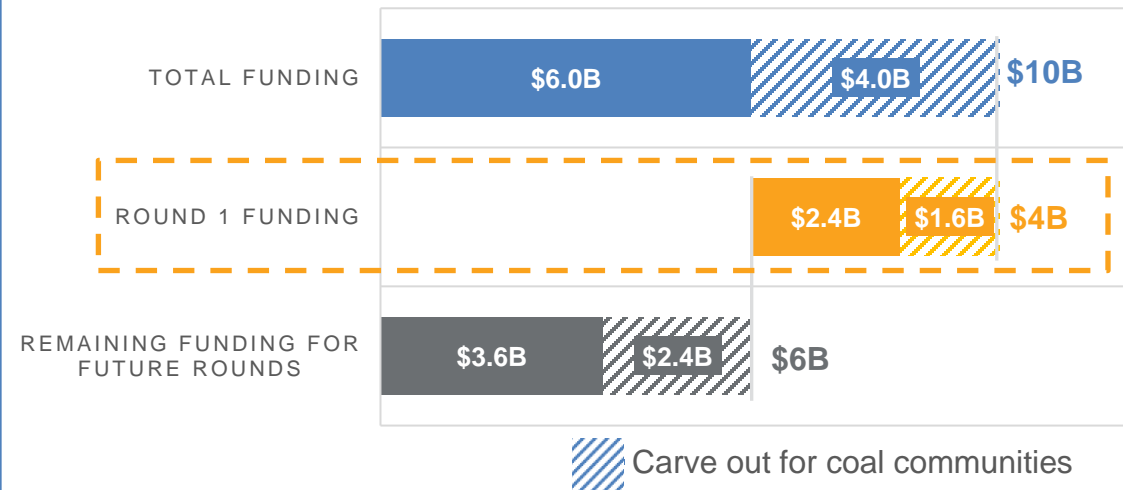
48C Expanded with \$10B in Funding

- Competitively-awarded **Investment Tax Credit (ITC)** first established by the 2009 Recovery Act
- **Expanded by IRA with \$10B** for
 1. clean energy manufacturing/recycling
 2. critical materials
 3. industrial GHG emissions reductions projects
- DOE will **accept a first round of applications in 2023** to allocate up to \$4B of the program's \$10B total, with additional application rounds in the future
- Selected projects receive a **30% ITC** (6% if apprenticeship and prevailing wage requirements are not met)
- In certain circumstances, **applicable entities can elect for direct pay** in lieu of a tax credit

Key Considerations for Round 1

- Open to **all project sizes** and DOE will not predetermine funding allocated to each category
- At least **40% of credits will be allocated to projects in energy communities**, if sufficient meritorious applications are received

48C FUNDING CARVE-OUT FOR COAL COMMUNITIES



48C: IRA expanded 48C's scope and intended impact

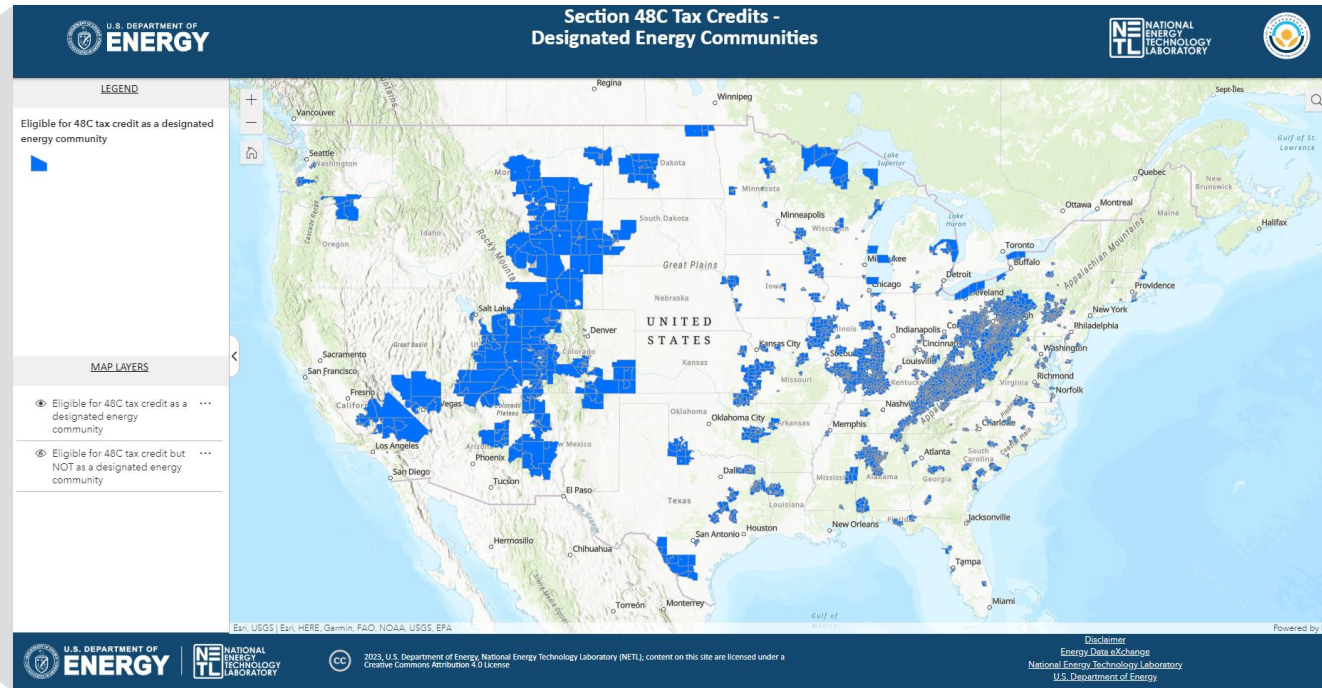
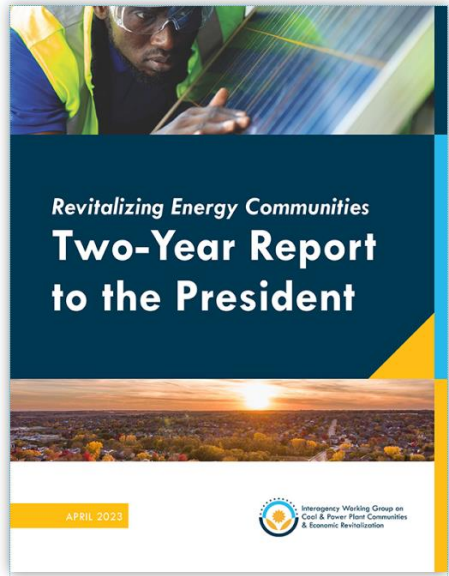
\$10B

Legend
■ Scope defined by ARRA in 2009
■ Scope added by IRA

	Scope	Intended Impact
Clean Energy Manufacturing and Recycling	<ul style="list-style-type: none"> Re-equip, expand, or establish industrial or manufacturing facility for production or recycling of clean energy and energy efficiency technologies 	<ul style="list-style-type: none"> Strengthen domestic clean energy supply chains Expand manufacturing capacity for products that will accelerate & enable the nation's transition to net-zero
Critical Materials Processing, Refining, and Recycling	<ul style="list-style-type: none"> Re-equip, expand, or establish industrial facility to process, refine, or recycle critical materials (50 USGS minerals + DOE critical materials) 	<ul style="list-style-type: none"> Strengthen domestic clean energy supply chains Expand manufacturing capacity for products that will accelerate & enable the nation's transition to net-zero
Industrial GHG Emissions Reductions	<ul style="list-style-type: none"> Re-equips industrial or manufacturing facility to reduce greenhouse gas emissions by at least 20% 	<ul style="list-style-type: none"> Reduce GHG emissions in U.S. industrial and manufacturing sector Catalyze transition to low-carbon industrial sector to decarbonize and enhance U.S. competitiveness

Each of these areas is essential to building a clean energy economy, tackling climate change, creating jobs, and strengthening our nation's energy security.

48C: \$4 billion allocated to energy communities



Of the \$10 billion in tax credits to be allocated, **at least \$4 billion must go to qualifying projects in energy communities.** As defined in the IRA, 48C energy communities include*:

- Census tracts with coal mines that have closed since December 31, 1999
- Census tracts with coal power plants that have closed since December 31, 2009
- Census tracts immediately adjacent to either of the above

These energy communities have knowledge, infrastructure, resources, and know-how to play a leading role in the move to a clean energy economy.

*Census tracts which have received 48C funding in previous rounds are not eligible for the 40% carve-out



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48C: Summary of May 31 Guidance

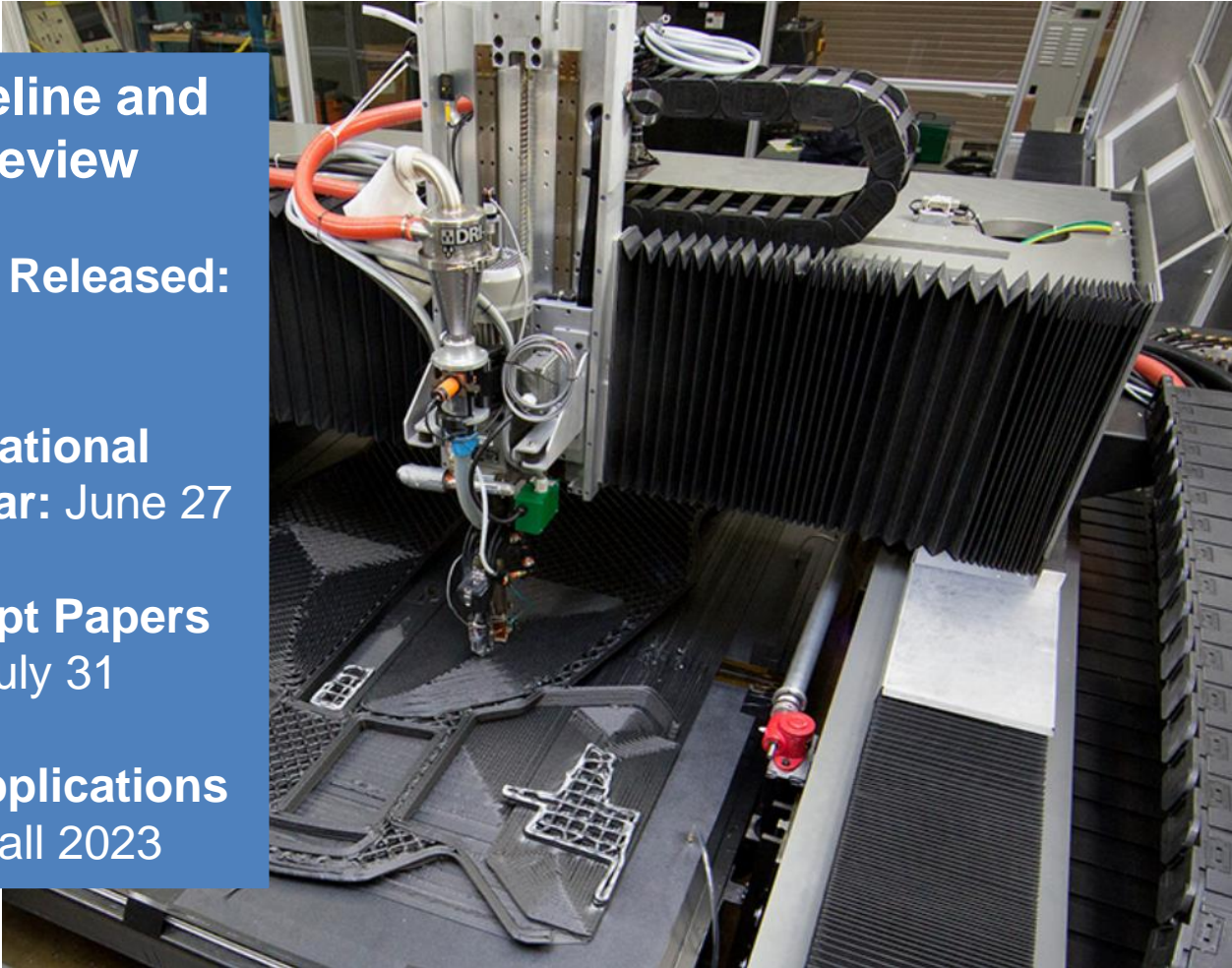
Timeline and Review

Notice Released:
May 31

Informational
Webinar: June 27

Concept Papers
Due: July 31

Full Applications
Due: Fall 2023



- Explains the **requirements for qualifying projects and gives examples** of products that could qualify
- Provides a detailed description of the **application process**
- Provides a detailed description of the **criteria and policy factors** that DOE will use to **evaluate concept papers and applications**, including:
 1. commercial viability
 2. greenhouse gas emissions impacts
 3. strengthening U.S. supply chains and domestic manufacturing for a net-zero economy
 4. workforce and community engagement
- Indicates **priority areas** for the first application round

This notice represents a significant step forward towards advancing the clean energy transition.



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Helpful Links

May 31, 2023 IRS Notice

<https://www.irs.gov/pub/irs-drop/n-23-44.pdf>

DOE 48C overview

<https://www.energy.gov/infrastructure/qualifying-advanced-energy-project-credit-48c-tax-credit-program>

48C eXCHANGE web portal

<https://48c-exchange.energy.gov>



Questions?

- For questions or comments regarding the non-tax aspects of this notice email 48CQuestions@hq.doe.gov.
- For applicant registration and/or application submission related questions email InfrastructureExchangeSupport@hq.doe.gov
- For Tax-related questions, please refer to the IRS contact information in the updated guidance



Register to Become a Merit Reviewer

- We invite experts with skills and experiences related to sign up to participate as independent merit reviewers for the Full Applications:
 - industrial decarbonization
 - environmental and energy justice
 - community benefits
 - workforce and labor; and,
 - diversity, equity, inclusion and accessibility

[Sign up on OCED
eXCHANGE](#)



Thank you!

- For questions regarding the FOA or any other information, please email: OCED_Industrial@hq.doe.gov
- To receive news about OCED's programs, please sign up for our newsletter: energy.gov/oced/contact-us
- *And a quick note on engagement during this time. For purposes of fairness, we are unfortunately unable to discuss or provide feedback on individual projects. We deeply appreciate your time, commitment, and interest in this opportunity!*



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For more information, please visit: energy.gov/OCED