

Notice of Intent No. DE-FOA-0003338

Notice of Intent to Issue Funding Opportunity Announcement No. DE-FOA-0003269

The Office of Energy Efficiency and Renewable Energy (EERE) intends to issue, on behalf of the Solar Energy Technologies Office (SETO), a Funding Opportunity Announcement (FOA) titled “Concentrating Solar Flux to Heat and Power.”

The intended FOA will support building a clean and equitable energy economy and addressing the climate crisis. The FOA will advance the Biden Administration’s goals to achieve carbon pollution-free electricity by 2035 and to “deliver an equitable, clean energy future, and put the United States on a path to achieve net-zero emissions, economy-wide, by no later than 2050”¹ to the benefit of all Americans. The U.S. Department of Energy is committed to pushing the frontiers of science and engineering, catalyzing clean energy jobs through research, development, demonstration, and deployment, and ensuring environmental justice and inclusion of underserved communities.

The research, development, and demonstration (RD&D) activities to be funded under this FOA will support the government-wide approach to the climate crisis by driving innovation that can lead to the deployment of clean energy technologies, which are critical for climate protection.

For next-generation concentrating solar-thermal power (CSP) plants (Generation 3 CSP or Gen3 CSP), SETO has set a target to lower the cost of electricity from baseload plants with greater than 12 hours of storage to \$0.05 per kilowatt-hour by 2030. Across a range of solar industrial process heat (SIPH) concepts, SETO targets a levelized cost of heat (LCOH) of \$0.02 per kilowatt-hour thermal to be directly competitive with natural gas heating. This LCOH includes cost for the collector system, receiver and thermal transport system, and thermal energy storage.

SETO anticipates that the FOA will seek RD&D projects in three topic areas. Technologies in each area may support a variety of concentrating solar-thermal (CST) forms including CSP, SIPH, and high-temperature solar-thermal reactors. Each topic area focuses on scaling and maturing impactful technologies for specified CST subsystems.

Topic Area 1: Scalable Concentrating Solar Collectors seeks advanced collector concepts that can enable a low cost and reliable integrated collector field. SETO is interested in innovations to

¹ Executive Order 14008, “Tackling the Climate Crisis at Home and Abroad,” January 27, 2021.

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decrease the installed costs of solar collectors to \$50 per square meter with high reliability and efficiency over a 30-year lifetime. Heliostat systems, line-focusing collectors, and other novel collector forms are of interest.

Topic Area 2: Scalable Supercritical Carbon Dioxide (sCO₂) Turbomachinery seeks proposals to mature the technology readiness level (TRL) of viable turbines and compressors for the specified power cycle. SETO is interested in proposals for RD&D to enable the deployment of sCO₂ turbomachinery for advanced CSP systems. Multiple heat engine and heat pump cycles are of interest to enable cost effective CST plants coupled with thermal energy storage.

Topic Area 3: Scalable Concentrating Solar-thermal Receivers and Reactors seeks innovative receiver or reactor concepts that could enable new CST systems, as well as the development of receivers to improve existing CSP systems. SETO is interested in proposals for novel solar receivers, solar reactors, and improvements to existing solar receiver concepts. Successful receiver or reactor technologies will support the deployment of CST systems that can benefit the U.S. market.

The Scalable Outputs for Leveraging Advanced Research (SOLAR) Tiers methodology for translating lab-scale research and development projects to large-scale pilot demonstrations will be used in all topic areas in this FOA. The methodology emphasizes thoughtfully traversing the TRL scale and is shown in Figure 1 below.

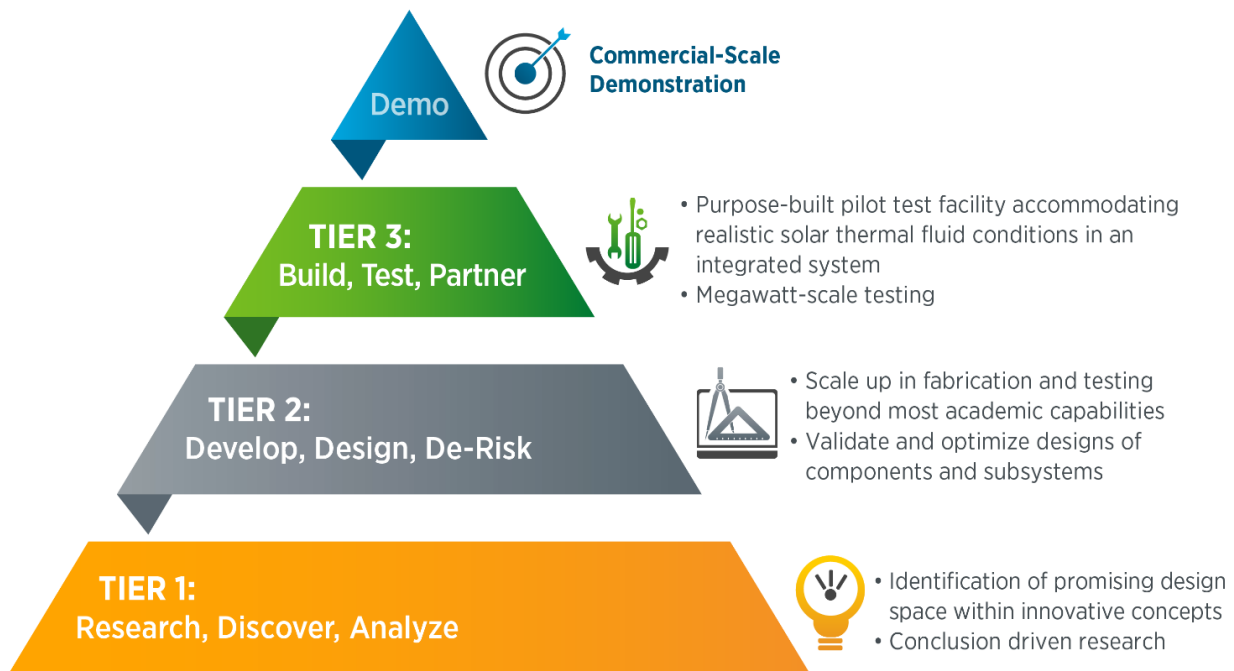


Figure 1: SOLAR Tiers methodology structure

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EERE anticipates issuing multiple financial assistance awards in the form of cooperative agreements, totaling approximately \$30 million of federal funding. EERE may issue one, multiple, or no awards for each topic. Individual awards may vary between \$750,000 and \$10 million depending on the SOLAR Tier assigned to the project:

- SOLAR Tier 1: up to \$3 million
- SOLAR Tier 2: up to \$5 million
- SOLAR Tier 3: up to \$10 million

The estimated period of performance for each award will be approximately 12 to 36 months.

A teaming and partnering list is anticipated to be available on eere-exchange.gov to enable new collaborations. Appropriate project partners are critical to progress through each SOLAR Tier and enable commercial adoption of new technologies.”

Next Steps for Potential Applicants

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

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

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

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

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

It is recommended that each organization or business unit, whether acting as a team or a

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single entity, use only one account as the contact point for each submission. Questions related to the registration process and use of the EERE Exchange website should be submitted to: EERE-eXCHANGESupport@hq.doe.gov

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

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

- Register in FedConnect at <https://www.fedconnect.net/>. To create an organization account, your organization's SAM MPIN is required. For more information about the SAM MPIN or other registration requirements, review the FedConnect Ready, Set, Go! Guide at https://www.fedconnect.net/FedConnect/Marketing/Documents/FedConnect_Ready_Set_Go.pdf
- Register in Grants.gov to receive automatic updates when Amendments to a FOA are posted. However, please note that applications will not be accepted through Grants.gov. <http://www.grants.gov/>. All applications must be submitted through EERE eXCHANGE.

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