



## QUESTIONS & ANSWERS

Updated as of: 10/25/24

### 2025 ARIES H2@Scale Cooperative Research and Development Agreement (CRADA) Call supporting Advanced Research on Integrated Energy Systems (ARIES)

Answers to questions received 10/09/24 through 10/17/24

1. **Can we ship our stack and test it at NREL?**
  - a. Yes, that is a standard partnership activity that NREL supports.
2. **Is collaborative funding available for partnering with European research bodies?**
  - a. Eligibility criteria is addressed in detail on the website. Foreign collaborative research awards must be approved by DOE. These agreements take longer to approve and may extend award timeframe. In the Letter of Interest, state why and how the organization meets the eligibility criteria.
3. **Can natural gas decomposition into hydrogen and carbon using recovered process heat be part of ARIES proposal?**
  - a. We don't comment on specific project ideas in the Q&A. Please submit a Letter of Interest with the project idea by the deadline of November 1 for consideration. We will catalog all ideas that we receive and will evaluate project ideas against the capabilities that NREL currently has online for immediate consideration.
  - b. Natural gas is part of NREL's capabilities, but please put your letter in.
4. **Is GreenHEART open access and does it work for methane pyrolysis?**
  - a. Yes, GreenHEART modeling tools are open access. We will be posting a link to the GitHub space. It does not currently work with methane pyrolysis, but that feature could be added.
5. **How important is the water purity for the electrolyzers and how is the desired water purity levels achieved?**
  - a. Water purity is crucial for the performance and longevity of electrolyzers, particularly in both PEM and alkaline systems. Impurities such as dissolved salts, organic compounds, and ions (e.g.,  $\text{Fe}^{2+}$ ,  $\text{Cl}^-$ ) can significantly affect electrolyte conductivity, degrade electrodes, and promote unwanted side reactions.
  - b. We are able to provide ASTM type I ultra-pure water to all electrolyzers, purified via reverse osmosis and mixed bed deionization at both Flatirons Campus and ESIF research facilities.
  - c. Each electrolyzer manufacturer and their individual technology approach will have different desired water conditioning requirements: purity, conductivity, etc. Please refer to the slides and reference links for the range of water purity and conductivity required for electrolyzers.
  - d. Also see the following links to electrolyzer/H2NEW workshops:

1. 2023, installation challenges, <https://www.energy.gov/eere/fuelcells/electrolyzer-installation-webinar>
2. 2022, H2NEW, <https://www.energy.gov/eere/fuelcells/advanced-liquid-alkaline-electrolysis-experts-meeting>
3. 2014, review workshop, <https://www.energy.gov/eere/fuelcells/articles/electrolytic-hydrogen-production-workshop>

**6. Are proposals by two collaborating companies working together allowed?**

- a. Yes, we will consider partnerships. Please review the templates prepared for the scenario. The proposals and documentation would list one lead Partner and other collaborators.

**7. Do we need clearance to visit NREL like other national labs?**

- a. NREL has visitor site access security procedures and those can be arranged prior to any visits. Your NREL host will be in contact to make those arrangements. For additional information about the documentation requirements please refer to: <https://www.nrel.gov/about/visiting-nrel.html>.

**8. Can the industry partner use any of the required cost share? Is the full award (federal and cost share) directed towards the national lab to perform the required work?**

- a. In-kind contributions are noncash contributions provided by the Participant to cover their costs to execute the project under the CRADA. In-kind contributions include collaboration in the research and development efforts of the CRADA project and may also include personnel time, services, facilities, materials, equipment, transportation and other resources. These costs include activities, services and materials that are necessary for performance of the project. In-kind contributions do not include work performed prior to execution of the CRADA.

**9. Can we submit three different proposals, one for each topic, and will they all be evaluated individually?**

- a. Yes, submissions are limited to one submission, per party, per topic. You can submit a project idea for each of the three topics. Each proposal will be evaluated against the other submissions for that topic.

**10. Is cost share the cost of shipping equipment and sending people to NREL during the experiment?**

- a. Please see Question #8 above.

**11. Does this program include a photobioreactor process of producing hydrogen?**

- a. The scope of this CRADA call does not include biologically produced hydrogen. Please review the following presentation for more information on that topic: "BioHydrogen (BioH<sub>2</sub>) Consortium to Advance Fermentative H<sub>2</sub> Production," <https://www.nrel.gov/docs/fy24osti/89832.pdf>.

**Answers to questions received 10/18/24 through 10/24/24**

**12. Is there a link to access GreenHEART?**

- a. Yes, the GreenHEART: Green Hydrogen Energy and Renewable Technologies model can be accessed on GitHub at <https://github.com/nrel/greenheart>.