Laboratory Call for Energy I-Corps Cohort 9

Fiscal Year 2019

Office of Technology Transitions

Key Dates	
Laboratory Call Issue Date	*October 11, 2018*
Laboratory POC Registration	*Friday 5:00 p.m. (ET), October 19, 2018*
Informational Webinar for Laboratory POCs	*Tuesday 3:00 p.m. (ET), October 23, 2018*
General Informational Webinar	*Wednesday 3:00 p.m. (ET), October 24, 2018*
Submission Deadline for Intent to Apply	*Accepted through Friday 5:00 p.m. (ET), November 9, 2018*
Expected Date for Proposal Request Notifications	*Through Tuesday 5:00 p.m. (ET), November 27, 2018*
Submission Deadline for Full Team Proposals*	*Accepted through Friday 5:00 p.m. (ET), December 21, 2018*
Expected Date for Team Selection Notifications	*Through Friday 5:00 p.m. (ET), February 1, 2019*
Funding Transfers	*Through February, 2019*

Summary Information	
Means of Submission	Intent to apply and full applications must be submitted by email to EnergyICorps@hq.doe.gov. DOE will not consider proposals submitted through other means.
Total Amount to be Provided	Up to $1,050,000 for team support
Max Amount of Funding Per Team	Up to $75,000 per team, up to 14 teams per cohort
Period of Performance	Two months for Energy I-Corps training
Eligible Entity	Any U.S. Department of Energy national laboratory
Cost Share Requirement	Not required
Submission of Multiple Proposals	Laboratories may submit multiple proposals
Proposal Forms	Team application documents are provided in this call (See Appendix A and B)
Questions	Questions about the program rules and proposal process may be directed to EnergyICorps@Hq.doe.gov

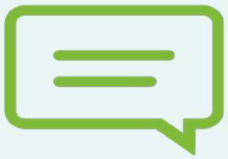
*Full Team Proposals are only required on request

Important Notes:

- **DOE's Office of Technology Transitions now serves as program administrator**. (See Section I C: Background)
- In an effort to meet the demand for this training across new and blended technology areas, **we are no longer restricting applications to those with participating offices listed in the call**. Any team with a technology that otherwise adheres to the program requirements and eligibility will be shared with interested offices, and alternative funding mechanisms may be considered. (See Section II D: Eligibility)
- **The Energy I-Corps team is requesting national labs submit a brief Intent to Apply form for teams prior to submitting full proposals**. Full proposals will only be required following stated interest from one or more DOE offices/external partners. (see Section III A: Process)
- To ensure the spirit of the training as an educational endeavor that teaches a repeatable process for industry engagement, **we are restricting applications to national lab researchers who have not already gone through the program**. Repeat successful applicants will only be considered if they are applying with both a different technology and a different team role than previously held. (See Section II D: Eligibility).
- While teams may request up to $75,000 in their proposals**, requests for lower amounts of funding will be strictly adhered to and potentially taken into consideration by interested partners**.
- While teams and their supporting DOE office have always been encouraged to communicate during and after the program, **structured debriefs and communication of training deliverables from teams to supporting offices is now a requirement of the program**.

Section I: Description and Topic Areas

A. SUMMARY



"As a former national lab scientist who launched a startup with my lab technology, I could have benefitted so much from Energy I-Corps. The tools the program provides have such enormous practical application."

— Peter Fiske, Energy I-Corps Instructor

"[Energy I-Corps] showed me how I can maximize the benefit of my basic research at Argonne to create technology that has real-world commercial impacts for Americans. That's a very rewarding feeling."

— Dr. Ralph Muehleisen, Cohort 1 Alumni

Energy I-Corps, formerly known as Lab-Corps, pairs teams of researchers with industry mentors for an intensive two-month training where the researchers define technology value propositions, conduct customer discovery interviews, and develop viable market pathways for their technologies. Researchers return to the lab with a framework for industry engagement to guide future research and inform a culture of market awareness within the labs. In this way, Energy I-Corps is ensuring that our investment in the national labs is maintaining and strengthening U.S. competitiveness long-term. Following on the success of eight cohorts, we proudly announce this call for applications to be a part of the ninth cohort in spring 2019.

B. GOALS

Energy I-Corps will train lab-based teams utilizing a customized curriculum to advance the following objectives:

- Increase the number of national laboratory-developed technologies that are transferred into commercial development or industry agreements.
- Train national laboratory researchers to better understand potential pathways to market and private sector needs.
- Provide researchers with a framework for industry engagement to guide future research and inform a culture of market awareness within the labs, in pursuit of a more secure energy future.

C. BACKGROUND

The U.S. Department of Energy's (DOE's) national laboratories are home to some of the world's most advanced technologies, facilities, and scientists. The labs have positioned the United States as a leader in energy and technology innovation and have given us an undeniable strategic advantage in the global marketplace. However, many barriers prevent national labs from getting more of their game-changing technologies into the market and collaborating effectively with U.S. innovators and businesses to build next-generation products. DOE invests

billions of dollars every year in U.S. national labs, yet without industry engagement and a business mindset at the labs, that investment has limited economic return.

Traditionally, market value determinations are done through methods such as analysis, workshops, and road-mapping exercises. The Energy I-Corps model aims to more rapidly provide critical feedback to the technology development process using lessons learned from activities like customer discovery interviews and industry mentor interactions. Launched in 2014 under Energy Efficiency and Renewable Energy (EERE)'s Tech-to-Market team, Energy I-Corps (then known as Lab-Corps) was modeled on the National Science Foundation's (NSF's) successful Innovation Corps (I-Corps™) program. DOE sought to create a training program based on the customer discovery process and industry engagement and identified the NSF's I-Corps program as one of the key validated models in this area, specifically focused on increasing the commercial impact of federally funded research and enhancing scientists' market awareness. Started in 2011, I-Corps is a nationally-recognized training program that helps prepare scientists and engineers to extend their focus beyond the lab. Energy I-Corps builds upon the I-Corps model while adapting it to the unique features of the national labs and DOE's mission space.

DOE collaborated with the NSF team to leverage best practices and create a similar training program tailored to the challenges faced by national lab researchers preparing laboratory-developed technologies for market evaluation. The National Renewable Energy Laboratory (NREL) was selected as the Program Node following a competitive selection process alongside the Site Lab and Cohort 1 Lab Call.

Energy I-Corps has benefited laboratory scientists across all EERE technology offices as well as from the Office of Nuclear Energy (NE), the Office of Fossil Energy (FE), the Office of Electricity Delivery and Energy Reliability (OE), and the Office of Environmental Management (EM). In response to the increasing demand for the program's offerings for technology areas outside of EERE, Energy I-Corps became a part of the larger Office of Technology Transitions (OTT) portfolio in 2018. Established within DOE in 2015, OTT is committed to expanding the commercial impact of DOE's research and development portfolio to advance the economic, energy, and national security interests of the Nation. OTT works across the DOE technology portfolio to streamline access to DOE's national labs and foster partnerships that will move innovations from the labs into the marketplace.

D. PROGRAM STRUCTURE

Energy I-Corps consists of four key elements, summarized below:




Lead Lab (aka the Node): The National Renewable Energy Laboratory (NREL) serves as the Node for this program. The Node is responsible for developing and delivering the training, as well as providing program guidance to participating labs. The initial in-person session will likely take place in Golden, CO.

Participating Labs (aka Sites): Energy I-Corps Sites recruit, assemble, and send teams to the Node for training, as well as support teams both during and after the program. Support might include assistance in identifying Entrepreneurial Leads (ELs) and Industry Mentors (IMs), as well as Technology Transfer/Technology Deployment support for potential market pathways identified by the team during training. Each site will also collect metrics during and after their team(s) participation in the program and distribute these quarterly to the Node. These metrics are critical to assessing and improving the program.

Teams: Applicants apply to Energy I-Corps as a team, composed of a Principal Investigator (PI) with a commercially relevant technology, an Entrepreneurial Lead (EL), and an Industry Mentor (IM) (see section I-E for team member descriptions). Over the course of the training, teams identify potential market pathways for their selected technology, as well as identify opportunities where further development could lead to commercial value. The time commitment to this program is significant for both the PI and the EL, and teams should do their best to organize their workload during the training period accordingly.

Training Program: The training program spans two months, utilizing a custom-designed curriculum built on the Lean LaunchPad methodology. During these two months, teams attend in-person sessions, participate in weekly webinars, and learn from one on ones with instructors to systematically identify the most appropriate market application and commercialization pathway for their technology. Participation also requires a considerable amount of time spent outside of the classroom conducting customer discovery interviews.

E. SCOPE OF ACTIVITIES

Funding is provided to cover time and expenses for teams to participate in the two-month training program. A sample syllabus for this training is provided in Appendix B. Below are some of the expected activities for participants:

1. Team presentations
2. Lectures
3. Workshop activities
4. Customer discovery interviews
5. Travel to opening and closing sessions
6. Participation in weekly webinars
7. Completion of pre- and post-training surveys
8. Communication of deliverables due during and after training
9. Regular interaction with lab manager, Node, and DOE supporting program during and after training

Team Requirements

The team is the core unit of the Energy I-Corps program. Each team consists of a Principal Investigator (PI), an Entrepreneurial Lead (EL), and at least one Industry Mentor (IM). Each team member is expected to fully participate in the training program—including the opening in-person session, online sessions, and in-person lessons learned closing session—and together they are expected to meet the requirements set by the Node. Over the course of the training, teams will explore potential market pathways for a selected technology and present a plan that includes next steps for that pathway at the closing session.

Lab Requirements

In addition to supporting the team during and after the program (see Section D: Program Structure), labs are required to provide quarterly updates on their teams, including but not limited to the following information:

- Licenses (in negotiation or executed)
- Start-ups launched (with PI, or built around licensed IP with outside entrepreneur)
- Industry partnerships, such as CRADAs (in negotiation or executed)
- Additional funding (Technology Commercialization Fund [TCF], Funding Opportunity Announcement [FOA] award, outside investment, etc.)
- Publications
- Media presence (articles, blogs, interviews, etc.)
- Speaking engagements (internal or external)
- Invitations to pitch events or technology showcases
- Inclusion in follow-on programs like Cleantech Open, Clean Energy Trust, NSF I-Corps™, etc.
- Advances in Technology Readiness Level (TRL)
- Industry engagement (customer discovery, investor discussions, etc.)

Note: Updates are required for all teams who are continuing to pursue commercialization activities, whether those activities are related to the technology they took through the Energy I-Corps program or not. If there are no updates to provide in a given quarter, a “no progress” statement should be reported.

Metrics are due on the following dates each year:

- March 31st
- June 30th
- September 30th
- December 31st

Recommended Team Structure

Principal Investigator (PI): The technical lead and project manager based at the DOE national lab is responsible for overall team management. The PI should have a laboratory technology or other form of intellectual property identified that the team believes has a potential market application. At least 50% of the PI's time should be committed to this project during the two-month core training period. Prior experience is not required; however, the PI should be committed to pursuing potential market pathways.

Entrepreneurial Lead (EL): The Entrepreneurial Lead may come from inside or outside of the lab. Eligible candidates include, but are not limited to, laboratory staff (beyond the PI), serial entrepreneurs, postdoctoral scholars, or graduate students. The EL is expected to commit at least 75% of their time during the core training period and should expect to contribute the most to coordinating customer interviews, delivering team presentations, and developing the business model.

Industry Mentor (IM): Ideally, the Industry Mentor is an experienced industry representative or entrepreneur with substantial expertise in a relevant sector. He or she is responsible for providing mentorship to the EL and PI through the learning experience. IMs are expected to be present during the in-person opening and closing sessions, and to meet with the team on a weekly basis during the mid-session, as available. Over the course of the program, the IM can expect to contribute up to 15% of their time. To ensure unbiased mentorship, the IM should not have a direct interest in the team's technology or intellectual property.

Use of Team Funds

Each selected team will receive up to $75,000 in funding via the relevant DOE program office or supporting entity. It is recommended funding be used for the following:

Primary uses

- Principal Investigator's salary (via a charge code) and compensation for the Entrepreneurial Lead, as appropriate; and
- Travel costs to cover training program participation, customer discovery meetings, and industry conferences and events.

Secondary uses (as budget allows)

- Training materials and educational resources;
- Techno-economic analysis;
- Supply chain and/or value chain analysis;
- Market survey reports;
- Technology maturation activities, such as testing and validation; and
- Specialized industry engagement support services from the laboratory or another relevant organization, beyond existing support from the lab site support team.

Funds are intended only for activities that explore the market potential of the selected technology and may not be used for any basic, early-stage, or applied research.

Note: Government-owned, government operated (GOGO) national labs for whom the above restrictions may prevent reasonable participation are free to use funding at their discretion as long as activities are in line with program structure and directed towards their participation in Energy I-Corps.

Section II: Funding Information and Eligibility

A. TYPE OF FUNDING INSTRUMENT

DOE anticipates funding the laboratory work through FY 2019 Annual Operating Plans with the national laboratories, through the technology office budgets.

B. ESTIMATED FUNDING

DOE anticipates that approximately $1,050,000 for Cohort 9 teams (subject to the availability of appropriated funds and congressional direction) will be available for this program. Teams will be funded using FY19 funds from participating DOE offices.

Max amount of funding to be provided per team by participating offices: **$75,000**

DOE is under no obligation to pay for any costs associated with preparation or submission of proposals. DOE reserves the right to fund, in whole or in part, any, all, or none of the proposals submitted in response to this Lab Call.

C. PERIOD OF PERFORMANCE

Two-month training program for team funding.

D. ELIGIBILITY

Only Department of Energy national laboratories are eligible to apply under this Lab Call. Teams from any technology area will be considered. Technologies submitted for consideration may be any TRL, but should be at a stage in development that allows the team to identify potential partners within a target market.

To ensure the spirit of the training as an educational endeavor that teaches a repeatable process for industry engagement, DOE is restricting applications to national lab researchers who have not already gone through the Energy I-Corps program. Researchers who have already gone through any previous Cohort of Energy I-Corps successful will only be considered if they are applying with **both** a different technology **and** a different team role than they previously held.

E. COST SHARING

Cost sharing is not required; however, labs may supplement team budgets with internal funding resources. DOE offices may also choose to share costs of a team with an overlapping technology area or external partner.

F. SELECTION NOTICES

Selected Applicants Notification: The technology office or external partner providing funding will work with OTT to select teams prior to the deadline indicated, and the Node will work with each lab to notify applicants selected for funding. Notice of selection will represent that the process for funding actions has begun and depending on lab policies may be considered an authorization to begin performance.

Non-selected Notification: Teams whose proposals have not been selected will be advised as promptly as possible through the Laboratory POC.

Section III: Application Review Information

A. PROCESS

1. Register Laboratory POC

The laboratory Point of Contact (POC) for this Lab Call should be a person with responsibility for Technology Transfer/Technology Deployment (or other relevant area) within the laboratory. To register as a POC for this Call, please send an email with the subject line “Energy I-Corps Site POC Registration” with your name, job title, email, and phone contact information no later than **October 19, 2018** to EnergyICorps@Hq.doe.gov.

Laboratory POCs are the primary conduit through which information regarding this Laboratory Call is sent and received from the Node. It is the responsibility of these individuals to make certain that each proposal and supporting materials responsive to this Call are submitted to the Node on behalf of their laboratory on time. It is also the responsibility of the POC to communicate programmatic decisions and actions to the PI named on the application from their laboratory faithfully and accurately as a result of the selection. Laboratories are welcome to name multiple POC(s) if they so desire.

2. Submit Intent to Apply

Laboratory POCs should submit an Intent to Apply form for any interested teams as soon as they are able to do so, which will be used to initiate conversations with potential partners as soon as they are received. See Appendix A for the form and details.

The Energy I-Corps team will work to identify potential partners for teams Laboratory POCs have registered with intent to apply on a rolling basis as they are received, until the deadline indicated. Potential supporters for teams MAY include, but are not limited to:

- DOE program offices, including but not limited to program offices within the Office of Energy Efficiency and Renewable Energy, the Office of Electricity, the Office of Environmental Management, the Office of Fossil

Energy, the Office of Nuclear Energy, National Nuclear Security Administration, and the Office of Science.

- Private sources, e.g. early–stage investment firms, etc.

3. Initial Eligibility Review

Prior to a full merit evaluation, the Node will perform an initial eligibility review to determine that (1) the applicant is an eligible entity under this Lab Call; (2) the information required by the Lab Call has been submitted; (3) all mandatory requirements are satisfied; and (4) the proposed project is responsive to the objectives of the Lab Call. Proposals that fail to pass the initial eligibility review will not be forwarded for merit review and will be eliminated from further consideration. Applications which have passed the eligibility review by the Node will be provided to the relevant program offices or external partners for further review and selection.

4. Submit Full Proposals (as requested)

Following the initial merit review of identified DOE program offices or external partners, Full Team Proposals may be requested for further review. Full Team Proposals are **not** required unless requested by a potential partner. Requests for Full Team Proposals will be communicated to Laboratory POCs as soon as they are requested through the deadline indicated.

5. Submit Request for Site Funding

Requests for site funding are by the deadline indicated. Requests are accepted at any point following the release of this Lab Call, however, final funding decisions and allocations will be made following the deadline. The amount each lab will receive will be decided based on the total amount requested for site funding as well as the quality of applications.

B. CRITERIA

1. Merit Review Process and Criteria for Team Selections

The areas of consideration during this review may include, but are not limited to, the following (areas are not weighted or ranked):

1. Potential for market viability and impact
2. Team capabilities and availability
3. Quality of application
4. Fit with program office priorities

2. Merit Review Process and Criteria for Site Funding

The areas of consideration during this review may include, but are not limited to, the following (areas are not weighted or ranked):

1. Potential impact of listed activities on stated goals of site funding and the Energy I-Corps program

2. The quantity and quality of applications received by the deadline

Section IV: Other Information

A. MODIFICATIONS

Notices of any modifications and other correspondences related to this Lab Call will be sent to all registered laboratory POCs.

B. PRELIMINARY TRAINING DATES

Kickoff Webinar: February 27, 2019

In-Person Opening Session: March 11-15, 2019 (Location TBD)

Weekly Webinars: Wednesday afternoons: March 20 – April 24

In-Person Closing Session: April 30-May 2 (Location TBD)

Section V: Proposal Submission Instructions and Templates

Both Intent to Apply and Full Proposals must be submitted by email to EnergyICorps@Hq.doe.gov. Senders should receive an email acknowledging receipt within 24 hours. Please contact Zack.Baize@hq.doe.gov if a receipt is not received. Intent to Apply should utilize the template in Appendix A. Full Team Proposals should utilize the template in Appendix B. Word documents of each will be provided to Laboratory POCs.

Instructions

1. All applications must be submitted through a registered laboratory POC. Applications submitted outside of this process will not be considered.
2. Applicants must utilize the templates provided below and submit applications through their laboratory POC to the submission email address provided.

Team Member Identification

At a minimum, the PI for the team must be identified at the time of submission. The EL and IM should also be identified at this time, when available. If the EL and IM are not identified at the time of submission, the PI should indicate their plan for identifying remaining team members (source, timeline, etc.). All remaining team members must be identified no later than February 27, 2019.

Appendix A: Intent to Apply Form

Department of Energy's Energy I-Corps Intent to Apply Form

Applications Due: **5:00 p.m. (ET) Friday, November 9th**

Please fill out the table below and submit responses as a word document (.doc or .docx) to EnergyICorps@Hq.doe.gov

Lab	
Identified team members (Full name, position, e-mail)	
Have any team members participated in previous cohorts of Energy I-Corps? (YES / NO) If YES, please identify which member and their previous role. (PI / EL)	
Technology area	
Brief technical description (no more than 200 words)	
Brief description of how the team would utilize/benefit from the training (no more than 200 words)	
Amount of funding requested (max is $75k)	
Which DOE technology offices do you think might be interested in funding this project?	
Are there alternative sources of funding (e.g. private industry partners) who you think might be interested in funding this project?	
Are the identified team members currently available to participate in the Cohort 8 dates listed in the Lab Call?	

Appendix B: Full Team Proposal

Department of Energy's Energy I-Corps Full Team Proposal Form

Applications Due: **5:00 p.m. (ET) Friday, December 21st**

Please submit answers as a .doc or .docx to EnergyICorps@Hq.doe.gov

1. **Team**:
   Please attach short bios for each member – one page max for each. (See Lab Call for member descriptions.)

   a. Principal Investigator (PI):

   b. Entrepreneurial Lead (EL):

   c. Industry Mentor (IM):

2. **Funding**:
   a. How was the development of your technology funded? (AOP, LDRD, etc.)

   b. How much funding are you requesting? (Max is $75k)

   Please attach a high-level budget that details the breakdown of your team's time and expenses (should include travel to opening and closing sessions).

3. **Selected Technology**:

   a. Title(s):

   b. Technology area:

   c. Brief technical description: (250-word limit)

   d. What intellectual property (IP) has been generated, and what is the status?

4. Describe the problem that your technology solves, and for whom the problem is being solved: (250-word limit)

5. Have you identified any competitors working in this space? Who might be your competition? How does your solution differ from the competition? This should include your market's current technology providers and innovators working on similar projects. (100-word limit)

6. Why do you want your team to participate in Energy I-Corps? What do you hope to learn or accomplish? (250-word limit)