



INNOVATION CROSSROADS

An early stage entrepreneurial fellowship program at Oak Ridge National Laboratory

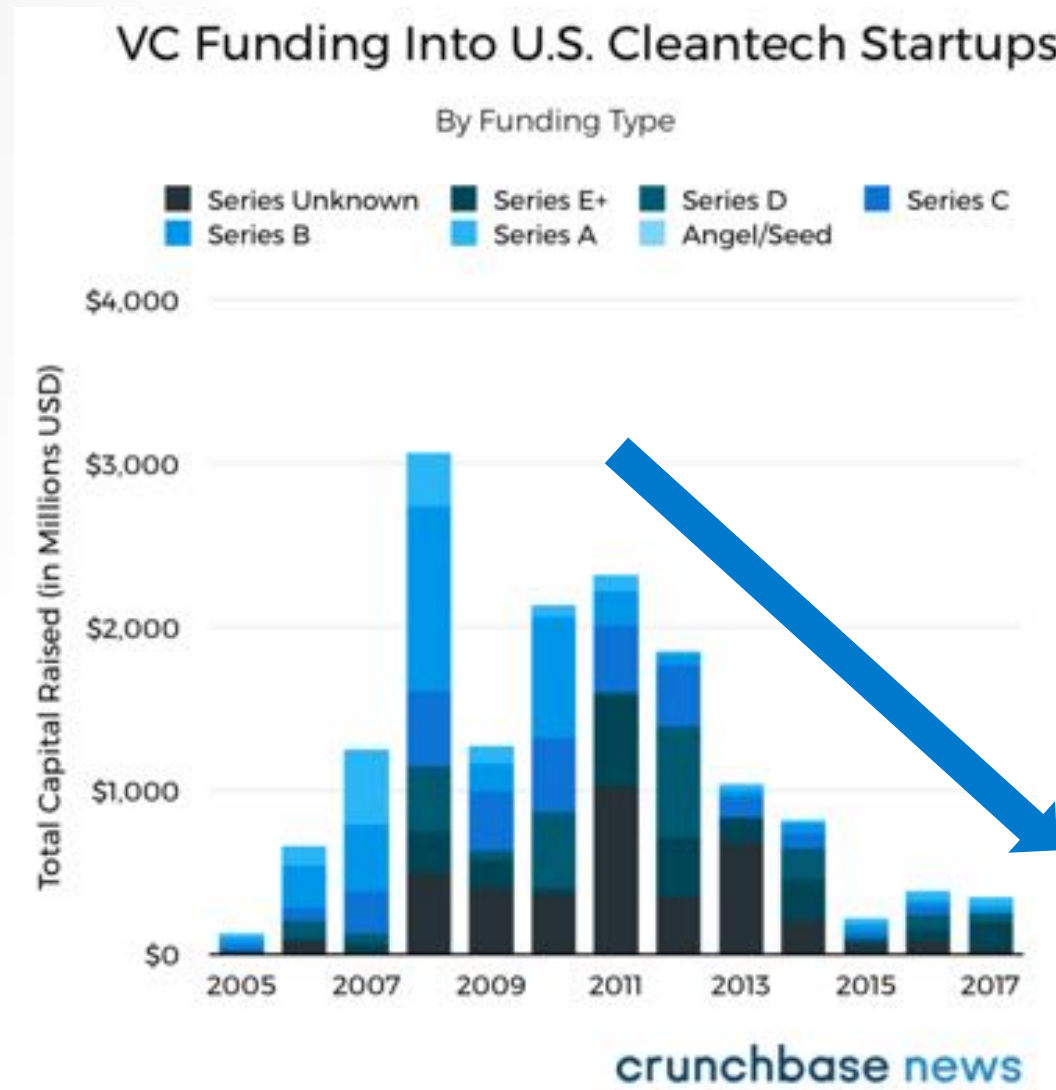
Our Premise:

Hardware-based technology startups are challenging

- They require a great idea, understanding of the market, creation of sound business models, extensive R&D efforts and prototype development, manufacturing processes...*and customers!*
- This is a time-consuming process, and entrepreneurs need to “de-risk” their ideas to find investors.
- Why not leverage ORNL resources to help the best and brightest cross the chasm?



Need for additional Clean Energy Technology Investments



ORNL's Innovation Crossroads Team



Tom Rogers
Director



Dan Miller
Chief Operating Officer



Kelly Wampler
Administration & Marketing

Innovator Benefits

Participants selected for cohort three will receive: *

- **A two-year fellowship** – Includes a personal living stipend of up to \$90,000/year depending on education and experience, along with health insurance and travel allowance
- **Lab access and research funding** – In addition to unparalleled access to facilities, equipment, and expertise at Oak Ridge National Laboratory, fellows receive \$200,000 of R&D funding to support collaboration opportunities with researchers across the lab.
- **Business mentors, entrepreneurial training, and networking** – Participants receive access to experienced business mentors, entrepreneurial training programs, and exclusive networking opportunities. Innovators are also exposed to a wide range of leaders from academia, industry, government, and finance that can serve as advisors and partners.

*All support is subject to performance and availability of funds.

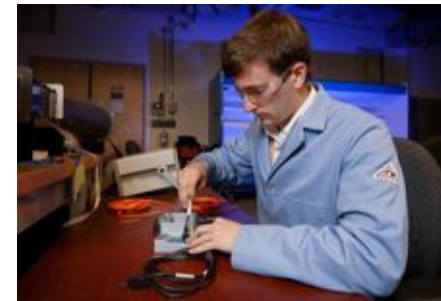


What's a CRADA?

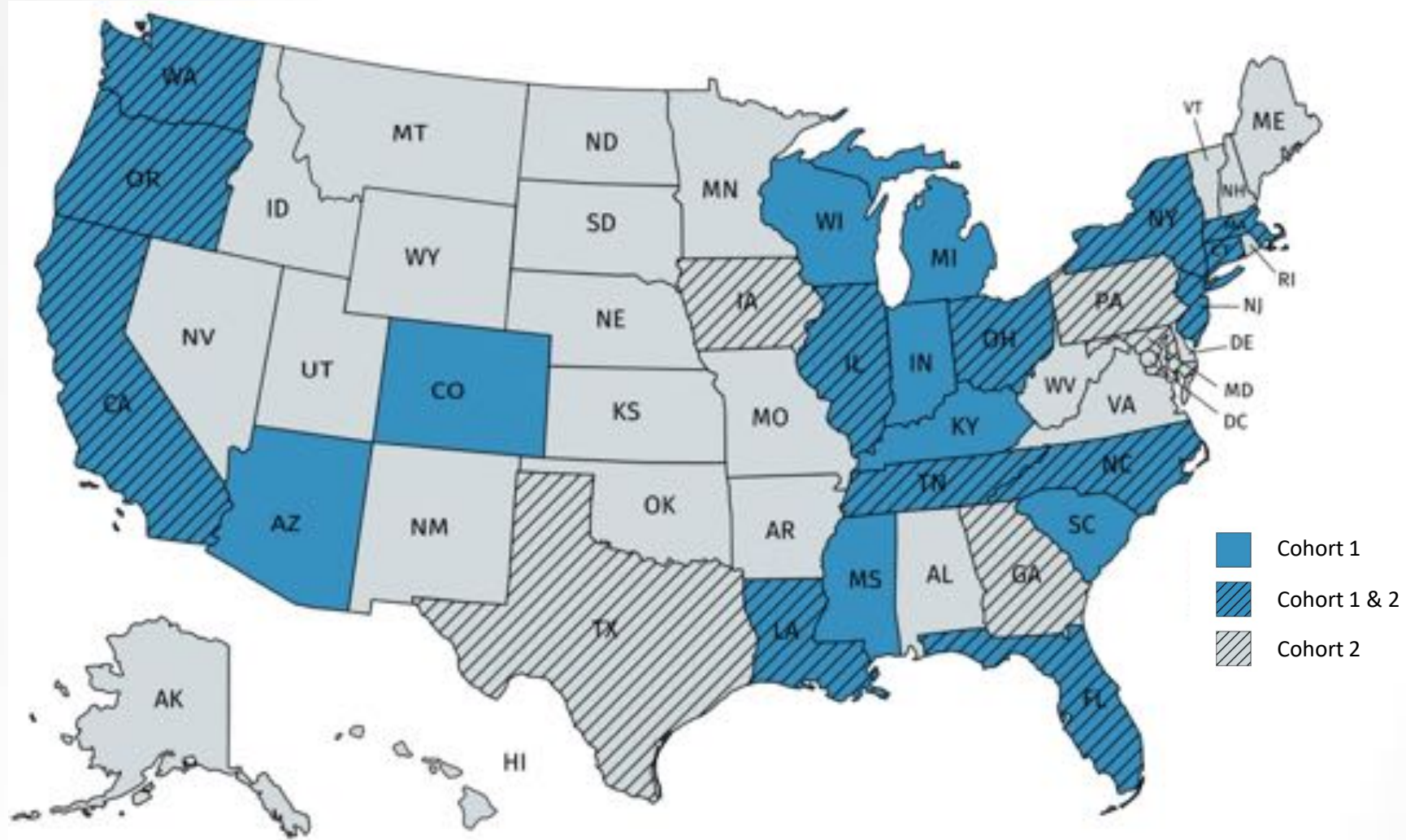
- An agreement between ORNL and companies to conduct specified R&D activities consistent with the mission of the laboratory
- Each party provides personnel, services, facilities, equipment, intellectual property or other resources via the CRADA
- For Innovation Crossroads, up to \$200,000 of DOE or TVA funds will be used to finance ORNL's portion of the project. Innovators will be asked to provide in-kind contributions
- Innovation Crossroads staff will assist innovators with introductions to candidate PIs and with the development of CRADA statements of work, schedules and budgets
- CRADAs should be completed during the innovator's 2-year appointment

Business guidance is a key element of Innovation Crossroads

- Business Model Development through an initial bootcamp
- Participation in Tennessee Energy Mentor Network
- Market research assistance from University of Tennessee Bredesen Center
- Advisory Boards established for each company
- Free financial and legal assistance from partners
- Opportunities to interact with successful energy entrepreneurs
- Frequent introductions to industry contacts and investors
- Introductions to the local entrepreneurial ecosystem



In the past 18 months we've received nearly 100 applications from 25 states!



Innovation Crossroads Innovators – Cohort 1



Samuel Shaner & Matthew Ellis
Yellowstone Energy
Massachusetts Institute of Technology



Michell Ishmael
Active Energy
Cornell University



Anna Douglas
SkyNano Technologies
Vanderbilt University



On-boarded: May 2017
Fellowship Completion: May 2019

Innovation Crossroads Innovators – Cohort 2



Don DeRosa
Eonix

State University of New York at Albany



Shane McMahon
Lux Semiconductors

State University of New York at Albany



Justin Nussbaum
Ascend Manufacturing
University of South Florida



Megan O'Connor
Nth Cycle
Duke University



Matt Smith
TCPoly
Georgia Institute of Technology



On-boarded: May 2018
Fellowship Completion: May 2020

Cohort 3 Application Timeline

- **Applications open:** September 6 – October 29, 2018
- **Initial application review:** November 2018
 - Applications are reviewed by the Innovation Crossroads team, as well as scientific and industry subject matter experts
- **Phone interviews:** December 2018
 - Based on initial review, selected applicants will be invited to conduct a brief phone screen with the Innovation Crossroads team.
- **Semi-final interviews:** January 2019
 - Semi-finalists will be invited to visit Oak Ridge National Laboratory to tour facilities, connect with potential collaborators, and present for our team of reviewers.
- **Final interviews:** February 2019
 - Finalists will be invited to visit Oak Ridge National Laboratory to connect with potential principal investigators and mentors, and present for our team of reviewers.
- **Cohort three selected:** March 2019
- **Cohort three starts at Innovation Crossroads:** May 2019

Cohort 3 Eligibility Criteria

For acceptance into the program, applicants:

- Must have PhD or equivalent experience
- Must be focused on energy or manufacturing innovation
- Must leverage ORNL R&D capabilities and have an impact on the Department of Energy (DOE) or Tennessee Valley Authority (TVA) mission
- Must be willing to relocate to the Knoxville-Oak Ridge area
- Must be US citizens or lawful permanent residents at time of application

Sponsor Information

ENERGY & ADVANCED MANUFACTURING	INTEGRATED GRID
Sponsor	
DOE Advanced Manufacturing Office	Tennessee Valley Authority
Mission	
Catalyze research, development and adoption of advanced manufacturing technologies and practices to drive U.S. economic competitiveness and energy productivity.	Support investments in technologies to achieve an integrated grid: a power system that is highly flexible, resilient, and connected and that optimizes energy production, delivery, and use.
Specific technologies of interest include	
Additive Manufacturing	Biogas
Advanced Materials Manufacturing	Customer Side Energy Storage
Battery Manufacturing and Recycling	DER (Distributed Energy Resources) Integration, including Hosting Capacity
Bioenergy and Biomaterials	DER Visibility, Control, Standards, Aggregation
Combined Heat and Power (CHP) Systems	Electric Vehicle Charging
Composites and Carbon Fiber	Electricity Demand Forecasting Tools and Methods
Critical Materials	Energy Harvesting
Lightweight Metals Processing	Grid-Scale Energy Storage
Low-Temperature Materials Synthesis	Increasing Flexibility of Electricity Generation Resources
Magnetic Field Processing	Industrial Electrification
Nuclear Materials and Systems	Inverter-Based Resources
Process Heating	Materials for High-Voltage Transmission
Roll-to-Roll Processing	Microgrid Controllers
Sustainable Manufacturing	Sensors and Connectivity
Waste Heat Recovery Systems	Superconductors
Wide Bandgap Semiconductors	Water Efficiency

Application Information

1. Complete online application form
2. Attach requested application materials as a single PDF document containing the following information:
 - **Resume** (one page)
 - *Please provide a resume highlighting your education, experience, and skills.*
 - **Project abstract** (one paragraph)
 - *Provide an abbreviated summary of your research technology.*
 - **Tell us about yourself** (one page)
 - *Explain why you have chosen to pursue an entrepreneurial career path.*
 - **Tell us about your technology concept** (two pages)
 - *Describe the technology concept you want to pursue. Use the Heilmeier catechism as a guide for what's most relevant.*
 - **What is the potential impact on the DOE or TVA mission?** (one paragraph)
 - *Please comment on the potential for impact on the sponsor's mission area for your primary application track.*
 - **Why ORNL and Innovation Crossroads?** (one page)
 - *What most attracts you to Innovation Crossroads? Why would this be the ideal home for you and your project? Which people and/or facilities at ORNL would be particularly valuable in supporting your work?*
 - **What else?** (one page)
 - *An extra page for anything else that you feel we should know.*

Heilmeier Questions

- What are you trying to do?
 - Articulate your objectives using absolutely no jargon.
- How is it done today, and what are the limits of current practice?
- What is new in your approach and why do you think it will be successful?
- Who cares?
 - If you are successful, what difference will it make?
- What are the risks?
- How much will it cost?
- How long will it take?
- What are the mid-term and final “exams” to check for success?

Evaluation Criteria

- How innovative is the proposed approach
- Potential market impact
- Applicant's technical understanding of the problem and proposed solution
- Evidence that ORNL capabilities can help advance the idea
- Soundness of the business concept
- Likelihood that the idea can be matured in the 2-year program

COHORT 3 APPLICATIONS OPEN APPLY TODAY!

INNOVATIONCROSSROADS.ORNL.GOV

Application Information

Innovation Crossroads will select up to seven entrepreneurial fellows for cohort three. Sponsors include DOE's Advanced Manufacturing Office and the Tennessee Valley Authority. Fellows are selected in part based on their ability to advance our sponsors' mission.

What you get

- **A two-year fellowship**
Includes a personal living stipend of up to \$90,000/year depending on education and experience, along with health insurance and travel allowance
- **Lab access and research funding**
In addition to unparalleled access to facilities, equipment, and expertise at Oak Ridge National Laboratory, fellows receive \$200,000 of R&D funding to support collaboration opportunities with researchers across the lab.
- **Business mentors, entrepreneurial training, and networking**
Participants receive access to experienced business mentors, entrepreneurial training programs, and exclusive networking opportunities. Innovators are also exposed to a wide range of leaders from academia, industry, government, and finance that can serve as advisors and partners.

Eligibility Requirements

- Must have PhD or equivalent experience
- Must be focused on energy or manufacturing innovation
- Must leverage ORNL R&D capabilities and have an impact on the Department of Energy or Tennessee Valley Authority mission
- Must be willing to relocate to the Knoxville-Oak Ridge area
- Must be US citizen or lawful permanent resident at time of application

Important dates

- September 6, 2018 – Applications Open
- October 29, 2018 – Applications Close
- January 2019 – Semi-final Interviews
- February 2019 – Final Interviews
- May 2019 – Cohort 3 Begins

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