



OCTOBER 30, 2024

Innovation Crossroads Program Introduction

PRESENTED BY

Dan Miller, Program Director

Kelly Wampler, Program Manager



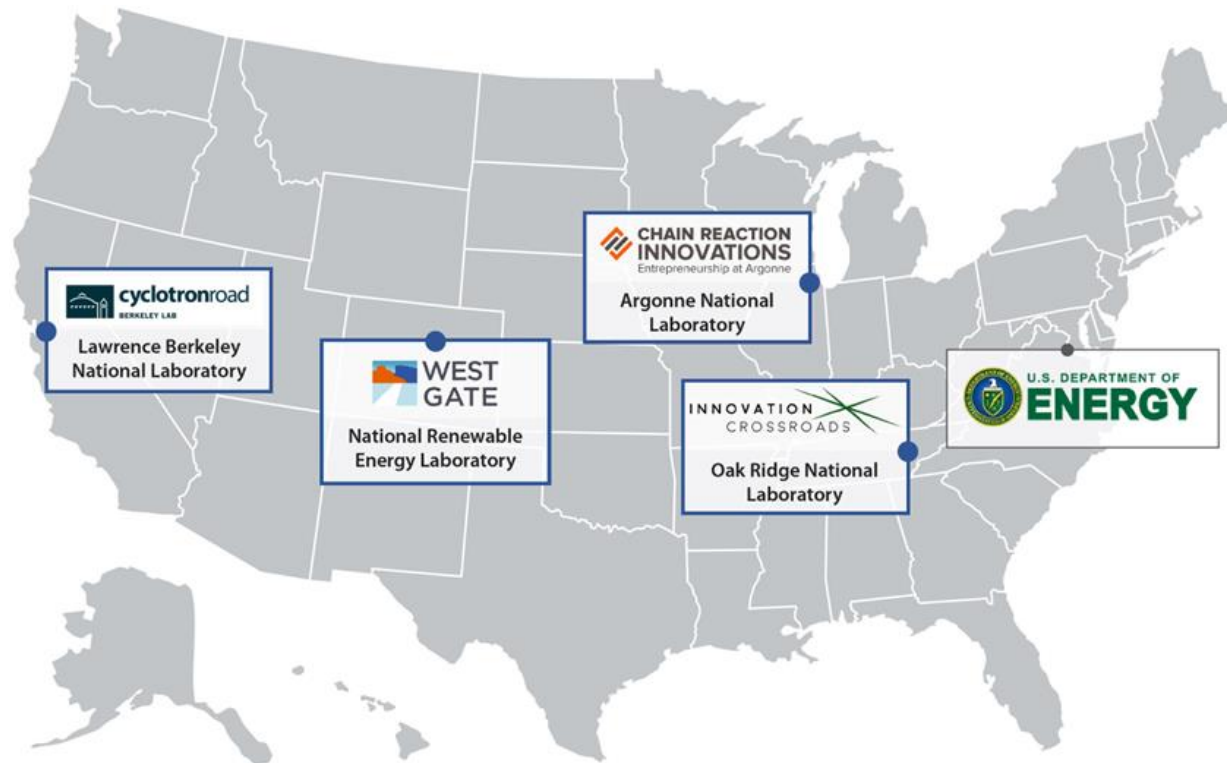
U.S. DEPARTMENT OF
ENERGY

ORNL IS MANAGED BY UT-BATTELLE LLC
FOR THE US DEPARTMENT OF ENERGY



The LEEP fellowship connects entrepreneurs with DOE labs and scientists

The Lab-Embedded Entrepreneurship Program (LEEP) is a fellowship that connects entrepreneurs with world-leading scientists and facilities at US Department of Energy national laboratories. LEEP accelerates the deployment of transformative energy technologies that address climate change and other challenges, while also creating jobs, promoting domestic manufacturing, and providing benefits to disadvantaged communities.



Vision:

- **Recruit** the best energy and advanced manufacturing innovators
- **Leverage** expert mentorship and world class facilities at national labs on a win-win basis
- **Position** people and technology for market

LEEP offers comprehensive support to accelerate the growth of hard-tech startups



Personal living stipend

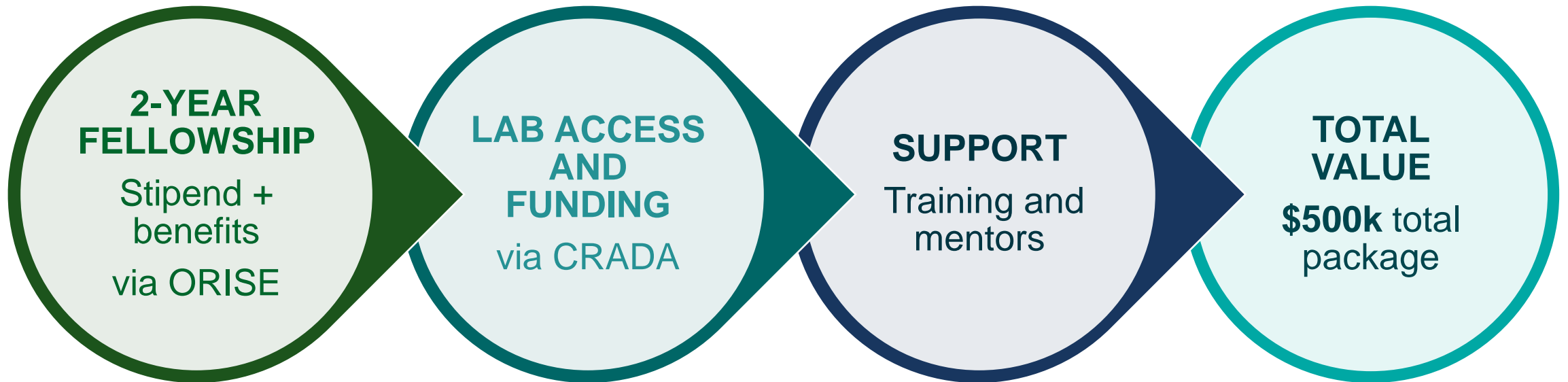


National lab access and support



Business mentoring assistance

Innovation Crossroads provides the support needed to allow an entrepreneur to focus on building a successful company



DOE's support for the program continues to grow, driving increased impact and innovation



U.S. Department of Energy's

- Advanced Materials and Manufacturing Technologies Office
- Building Technologies Office
- Office of Electricity
- Office of Science Advanced Scientific Computing Research program
- Office of Science Basic Energy Sciences program

Tennessee Valley Authority

Oak Ridge National Laboratory

ORNL's powerful resources are transformative to small companies

Building Technologies
Research and Integration Center



Manufacturing
Demonstration Facility



Carbon Fiber
Technology Facility



National Transportation
Research Center



Center for Nanophase
Materials Sciences



Oak Ridge Leadership
Computing Facility



High Flux Isotope Reactor



Spallation Neutron Source



Our team has a depth of experience in entrepreneurship, technology transfer, communication, and business strategy



Mike Paulus
Director, Partnerships



Jennifer Caldwell
Director, Technology Transfer



Dan Miller
Program Director



Kelly Wampler
Program Manager



Karen Dunlap
Partnerships Communications Coordinator



Gary Rawlings
Commercialization Consultant



Angelique Adams
Business Solutions Consultant



John Derrick
Strategic Consultant



Mike Paley
Government Funding Consultant

The program is informed by a council of industry and investment leaders

Brendan Abolins – Eastman Chemical Company

Coleman Adams – Clean Energy Venture Group

Jason Blumberg – Earth Foundry

Brandon Bruce – Market Square Ventures

John Bruck – Market Square Ventures

Doug Buerkle – LTM Ventures

Lindsey Cox – Launch Tennessee

Eric Dobson – Community Equity Partners

Jonathan Goldman – Georgia Tech VentureLab

Alison Gotkin – Raytheon Technologies Research Center

Maha Krishnamurthy – University of Tennessee Research Foundation

Paul Leggett – Mithril Capital Management

Vig Sherrill – General Graphene

Lilly Tench – Spark Innovation Center

Grady Vanderhoofven – Three Roots Capital

Peter Winter – In-Q-Tel

Johanna Wolfson – Prime Impact Fund



Meet our talented entrepreneurs



COHORT 2017

2017-2019

4 Innovators / 3 companies

Sponsors: AMO, ORNL



COHORT 2018

2018-2020

5 Innovators

Sponsors: AMO, ORNL



COHORT 2019

2019-2021

7 Innovators

Sponsors: AMO, ORNL, TVA

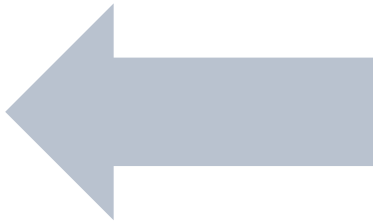
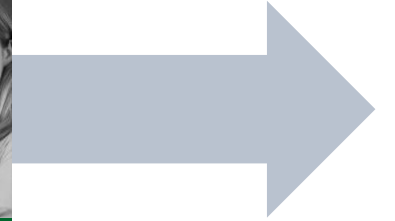


COHORT 2020

2020-2022

5 Innovators

Sponsors: AMO, ORNL, TVA



COHORT 2024

2024-2026

7 Innovators

Sponsors: AMMTO, ORNL, TVA, BTO, SC-BES



COHORT 2023

2023-2025

7 Innovators

Sponsors: AMMTO, ORNL, TVA, BTO, OE, SC-ASCR



COHORT 2022

2022-2024

5 Innovators

Sponsors: AMMTO, ORNL, TVA



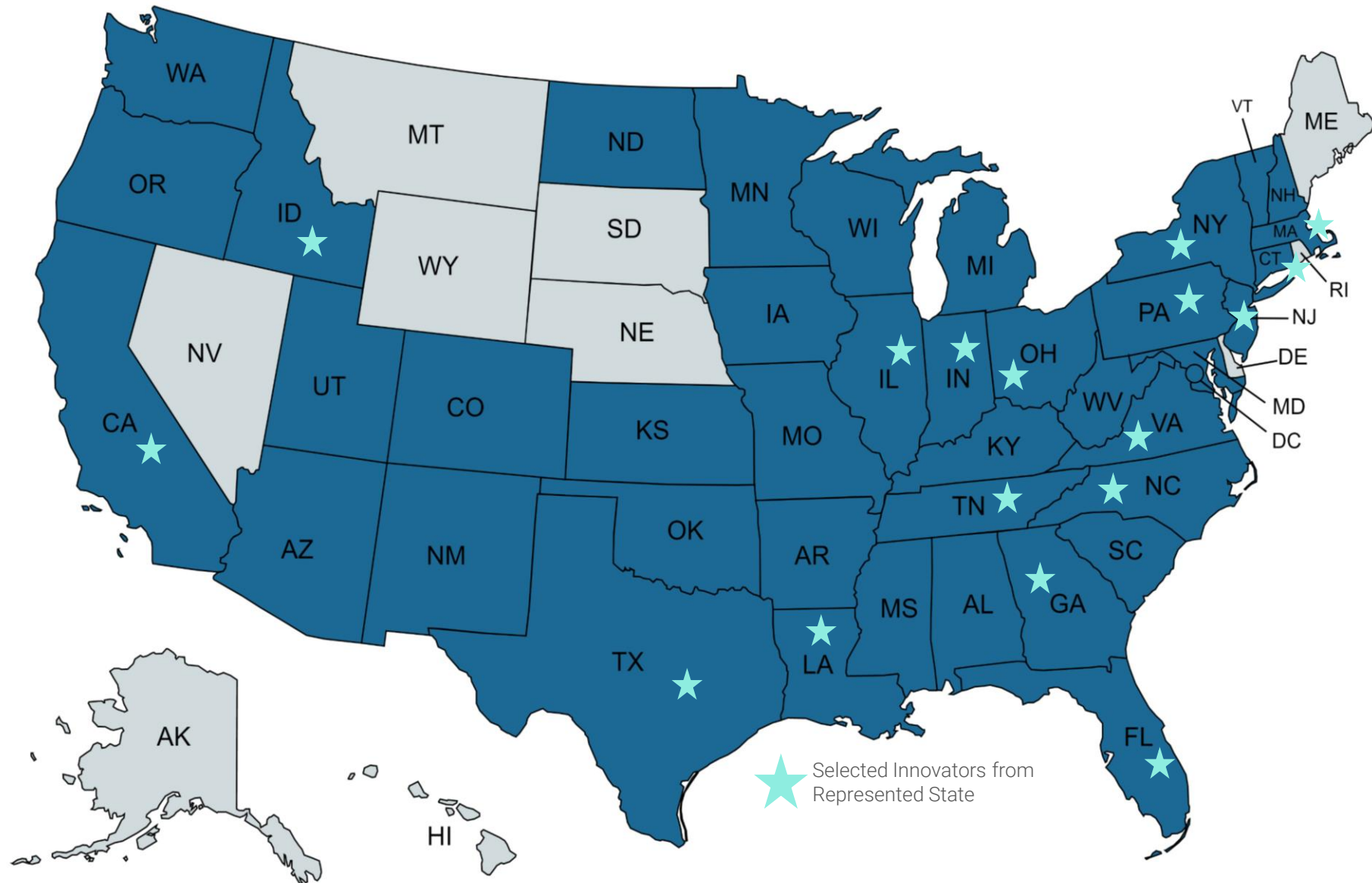
COHORT 2021

2021-2023

6 Innovators

Sponsors: AMO, ORNL, TVA, BTO

Innovation Crossroads draws from across the U.S.



Our program has proven to be effective and impactful

INNOVATION CROSSROADS

45
startups
supported

\$115
million
non-dilutive
funding
received

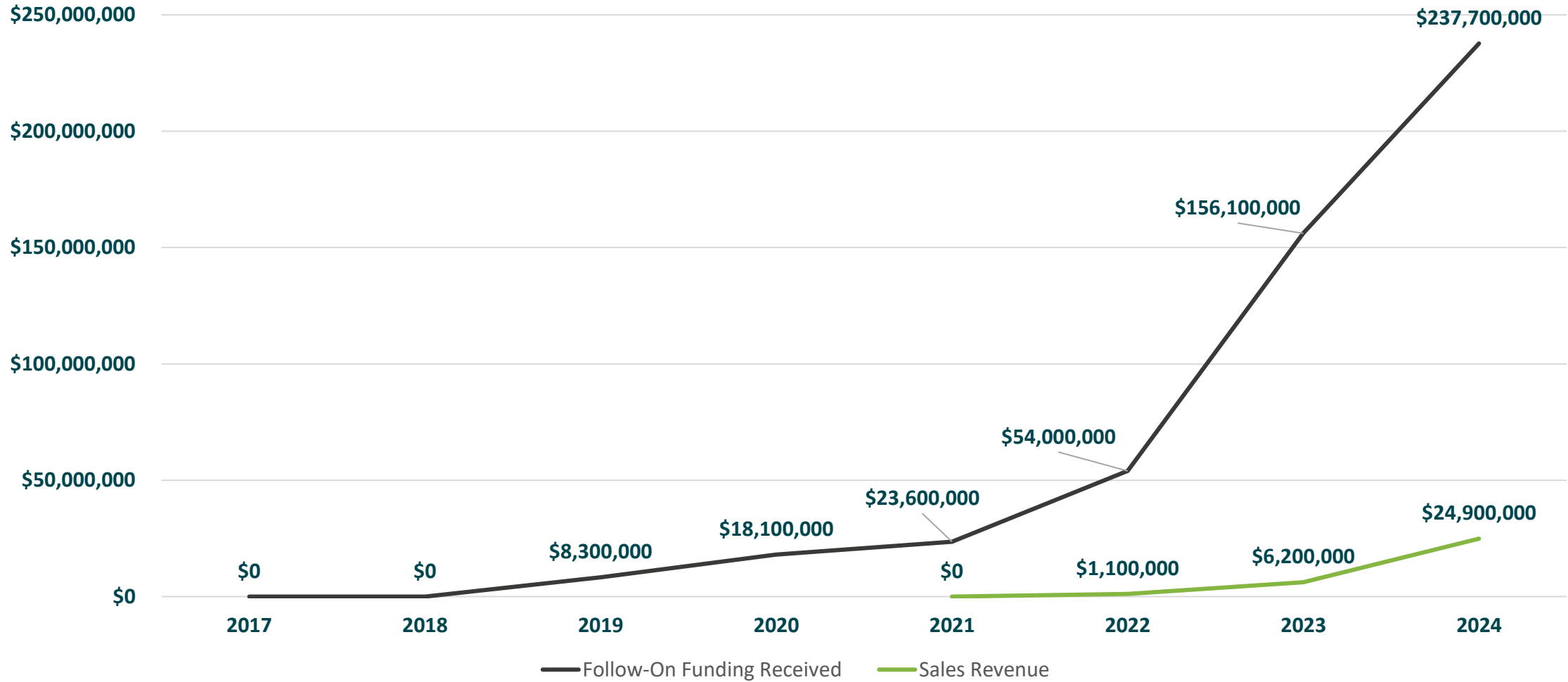
281+
jobs
created

\$122
million
venture funding
raised

19
startups
with sales

\$24.9
million
in sales
revenue

'Hockey stick' pattern indicates potential for large scale growth



Companies are staying in Tennessee, creating a vibrant supportive network



Innovation Crossroads is accelerating the deployment of clean energy technology



SkyNano

- Opened a 20,000 square foot private lab/office in Knoxville, Tennessee
- Secured \$2 million DOE ARPA-E award with partners Endeavor Composites and the University of Tennessee, Knoxville
- 2020 R&D 100 Award Winner
- Named 2019 Forbes 30 Under 30 in Energy



Nth Cycle

- Opened first-of-its-kind 21,000 square foot refining facility in Fairfield, Ohio
- Raised \$37 million Series B round, with an additional \$7 million in non-dilutive
- Closed a \$13 million Series A round, led by Clean Energy Venture
- Named 2019 Forbes 30 Under 30 in Energy



Hempitecture

- Awarded \$8.42 million from the DOE Manufacturing and Energy Supply Chains Office
- Opened first bio-based insulation manufacturing plant in the U.S.
- Received \$1.1 million from NYSERDA to manufacture bio-based insulation product using regionally grown industrial fibers
- Raised \$5.7 million in seed funding from more than 1,700 investors via Wefunder



Holocene

- Made history by signing a first-of-its-kind, record-setting direct air capture purchase agreement with Google, valued at \$100 per ton
- 2024 R&D 100 Award Winner
- Unveiled first, industrial direct air capture pilot facility in Knoxville, Tennessee
- Named 2024 Forbes 30 Under 30 in Energy

Innovation Crossroads is the keystone to the regional ecosystem

INCUBATORS AND ACCELERATORS



INNOVATION
CROSSROADS
OAK RIDGE NATIONAL LABORATORY

2016



SPARK
INNOVATION
CENTER

2020

LOCAL SUPPORTERS



OAK RIDGE
National Laboratory



Launch
Tennessee



TVA



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE



THREE
ROOTS
CAPITAL



ENERGY
NETWORK

A Launch Tennessee &
Tennessee Advanced Energy
Business Council Initiative



PYA



COMMUNITY
EQUITY
PARTNERS



INNOV865
ALLIANCE



FAIRVIEW
TECHNOLOGY CENTER

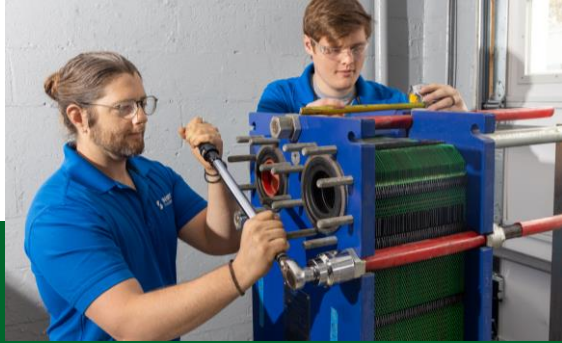


BOLDSQUARE



KEC
KNOXVILLE
ENTREPRENEUR
CENTER

By combining resources, we are building a stronger program for entrepreneurs



Product

DELIVERABLE:

Minimum Viable Product



Business Model

DELIVERABLE:

Go-to-Market Plan



Finance

DELIVERABLE:

Basic Financial Model

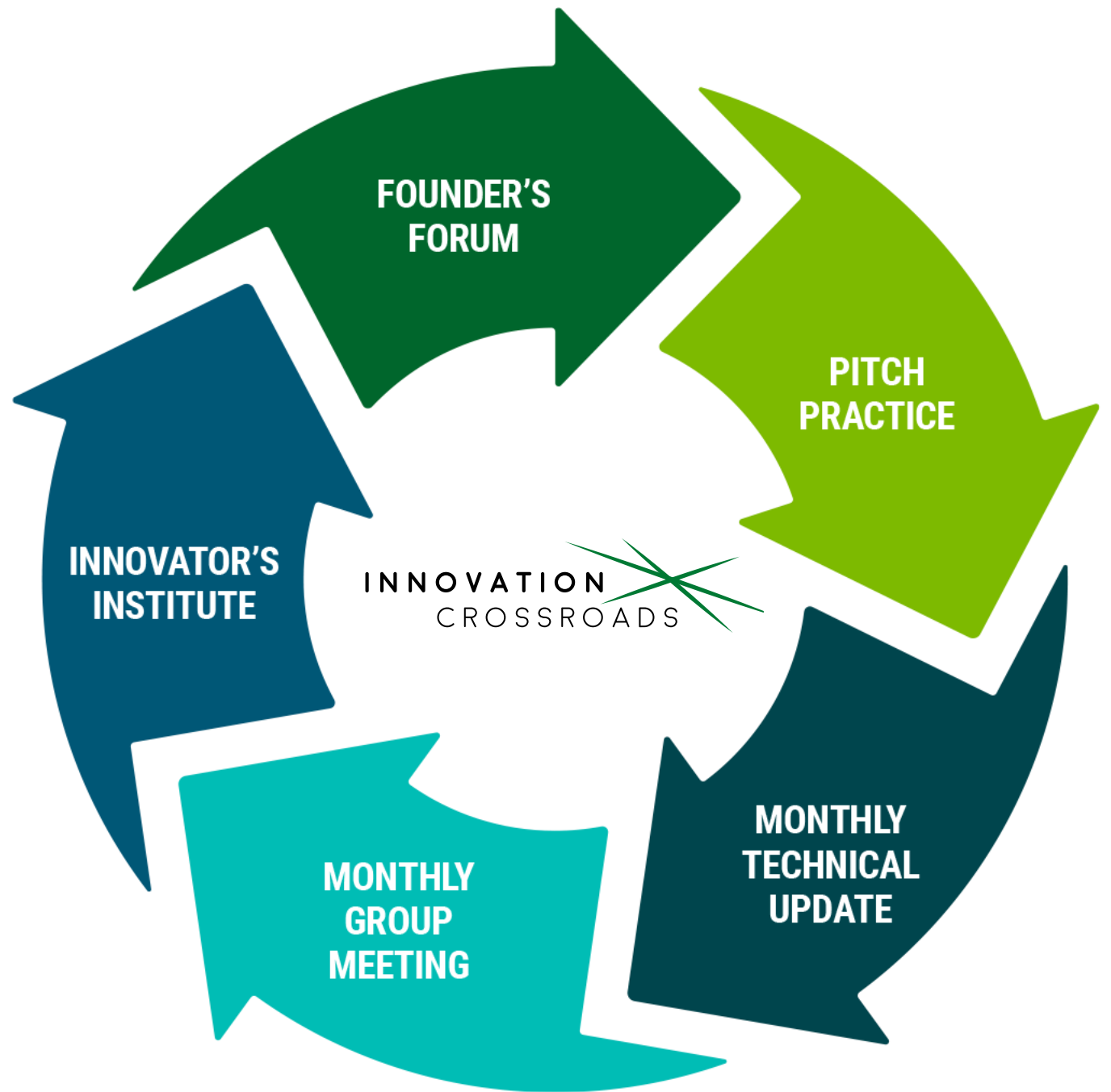


Pitch

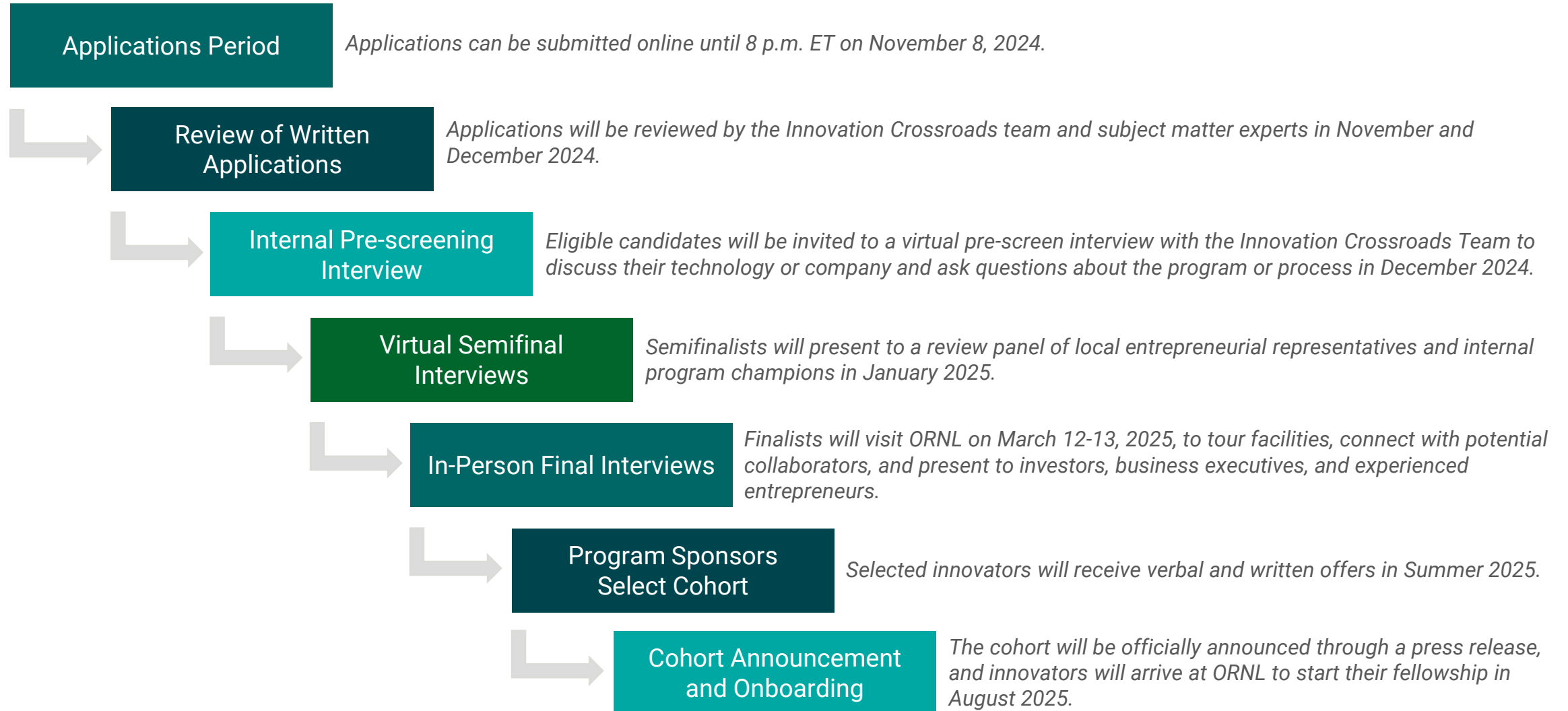
DELIVERABLE:

Public Pitch at Demo Day

Steady cadence of milestones, driven by leadership's personal commitment, moves fellows through program



The phased selection process is competitive



Our sponsors invest in Innovation Crossroads to advance deployment of key technologies



Advanced materials



Circular economy technologies and systems



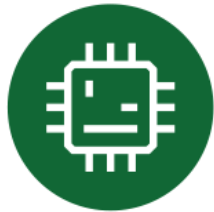
Data and networking systems and technology



Energy storage and grid optimization



Improving manufacturing efficiency



Quantum computing



Solar and wind energy



Carbon capture, utilization, and sequestration

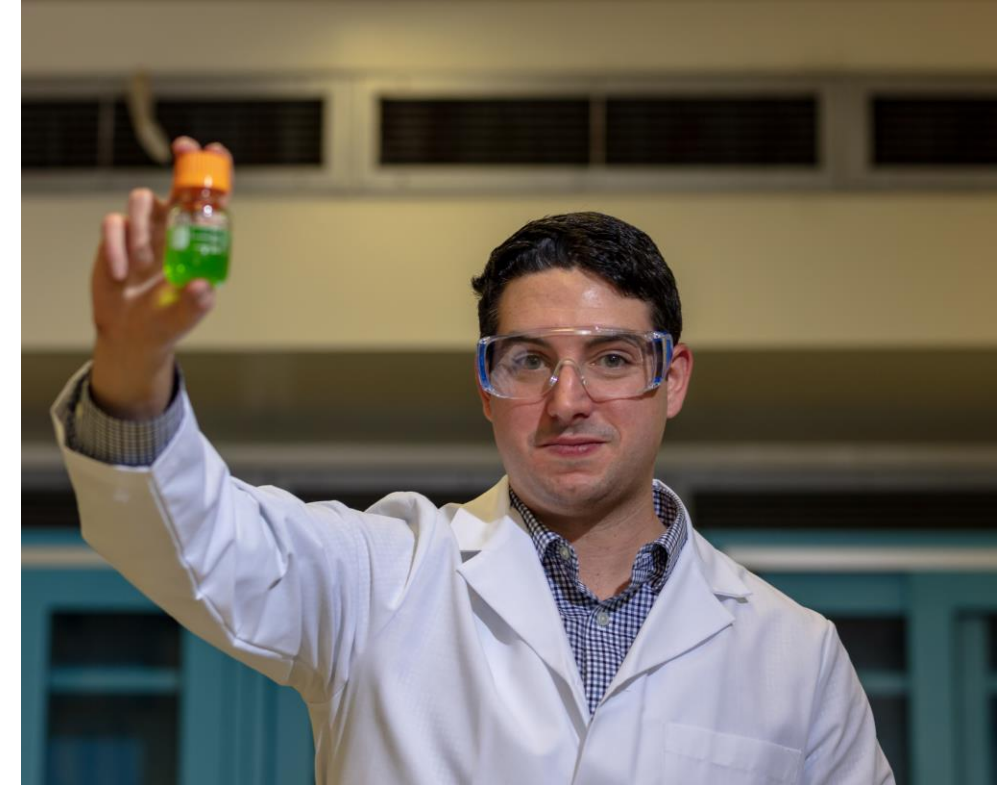


Lowering building carbon and energy footprints

The eligibility criteria ensure a selective pool of candidates, allowing us to identify the best talent

For acceptance into the program, applicants must:

- Apply as an individual, not as a company or organization
- Have doctoral degree or equivalent experience
- Leverage ORNL R&D capabilities and have alignment with DOE's and/or TVA's mission
- Be willing to relocate to the Knoxville-Oak Ridge area
- Be a U.S. citizen or lawful permanent resident at time of application
- Have raised no more the \$2 million USD in debt or equity funding from non-government sources within three years prior to program application
- Successfully execute a cooperative research and development agreement (CRADA) with ORNL
- Disclose background intellectual property rights, if necessary, that may be needed to freely operate on R&D-related tasks as outlined within the CRADA



Key application materials

1. Complete online application form
2. Applications should consist of a single 8-page PDF document containing the following information:
 - **Cover Page:** Include only your completed "Basic Information" table.
 - **Abstract:** Provide a brief summary of your application.
 - **Problem and Solution:**
 - **Problem Statement:** Describe the problem your innovation addresses and its impact.
 - **Technology Description:** Summarize your product/solution and how it solves the problem.
 - **Scientific Feasibility:** Explain the soundness of the science behind your solution.
 - **Tech Development Plan:** Outline your development plan and risk mitigation strategies.
 - **Alternative Approaches:** Justify why your solution is superior to alternatives.
 - **Mission Impact:**
 - **Importance of Problem:** Highlight the urgency and significance of the problem.
 - **Relevance to Sponsors:** Discuss the potential impact on DOE, TVA, and ORNL missions.
 - **Time to Market:** Estimate the timeline for your first commercial sale.
 - **ORNL Fit:**
 - **Program Resources:** Explain how your team will benefit from Innovation Crossroads and ORNL's resources.
 - **Passion/Motivation:** Demonstrate your commitment and drive to commercialize your technology.
 - **Business Potential:**
 - **Competitive Edge:** Explain your advantage in the marketplace.
 - **Market Understanding:** Show your expertise in the market and identify opportunities.
 - **Market Share:** Estimate the market share your innovation could capture and why.
 - **Personal Narrative:** Share the origin of your idea and your motivation for pursuing it.
 - **Additional Info:** Include any other relevant details.
 - **Resume:** Recommended 1-page, included within the 8-page limit.

Submit Your Application:

Access the application template and submit your application here: usg.valideval.com/teams/ornl_ic_2025/signup



High-level evaluation criteria for program participation



Candidate eligibility



Soundness of business concept



Innovation of the proposed approach



Alignment with ORNL capabilities



Technical understanding of the problem and solution



Feasibility within the 2-year program



Market impact potential



Candidate's experience and education

INNOVATION CROSSROADS



OAK RIDGE NATIONAL LABORATORY



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