INNOVATION INCUBATOR

Founded by WELLS FARGO | NREL


# Innovating at Scale

## Annual Report 2024

in2ecosystem.com

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Sarah Derdowski, IN2 Program Manager, NREL

Jeffrey Schub, Head of Sustainability, Wells Fargo

# From the Directors

Innovation is more than just generating creative ideas: It is transforming those ideas into impactful solutions that address real-world challenges. True innovation does not stop there. It makes it possible to scale these solutions, redefine what's possible, and drive progress for humanity. In 2024, the Wells Fargo Innovation Incubator (IN2) made significant strides in breaking down barriers to energy technology adoption and implementation by engaging with demand-side stakeholders, while continuing to support early-stage technologies.

2024 marked a decade of IN2's commitment to advancing energy innovation. We celebrated this milestone by evolving and deepening our impact goals. We consolidated our focus on the built environment and fully embraced a startup mentality of actionable optimism.

The IN2 portfolio now includes 74 emerging technology companies that collectively have secured more than $2.5 billion in follow-on capital and realized 14 acquisitions, along with one startup that has successfully released an initial public offering (IPO). Our Channel Partner network now consists of more than 60 organizations, and with the addition of new tracks and corporate partners, we are more prepared than ever to tackle the challenges ahead.

The brand-new Scalable Tech Track is a groundbreaking approach that supports energy technology startups by addressing adoption barriers such as organizational dynamics, technology confidence, and siloed ecosystems. We recruited 10 partners, including large corporations and community organizations, which were eager to adopt innovative technologies and join a network of innovation-ready companies. The six-month program helped the partners in the creation of tailored adoption playbooks, technology selection, and impact analysis. Participants competed for funds to implement pilot projects that were selected based on speed, feasibility, and impact.

We also welcomed another cohort to the Emerging Tech Track, a new name for IN2's traditional startup approach. Among these participants are two startups that address the rapidly growing building cooling sector and one company focused on improving grid resiliency through behind-the-meter storage solutions.

Collaboration continues to be key to our success. In 2024 we expanded the Channel Partner network, welcoming six new partners and distributing $767,000 in strategic awards. We also demonstrated our strength as a convener to host Camp Cleantech, a first-of-its-kind event where startups engaged with our partner accelerators and incubators, forged new connections, and shared lessons learned.

As global energy demand continues to grow, our commitment remains resolute. We are focused on creating a resilient grid, driving efficiencies, and accelerating the deployment of technologies that address the urgent need for abundant and reliable energy. The pace of innovation is accelerating, and the need to rapidly bring these technologies to market is more critical than ever.

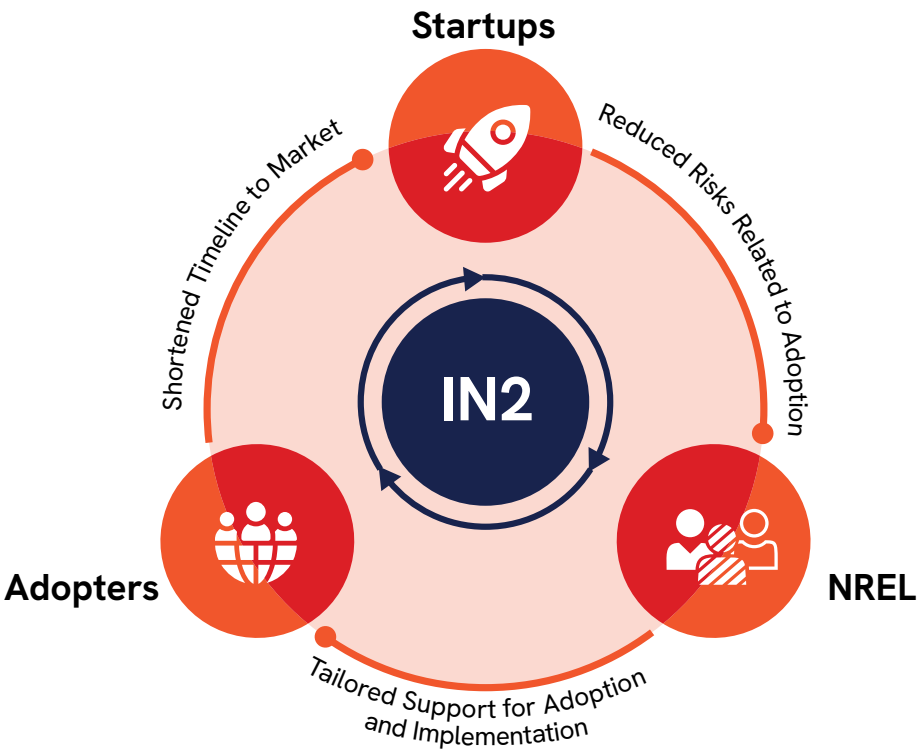
Thank you for your partnership and support over the past decade. We are excited to embark on this next chapter of IN2, where adoption is the driving force behind our efforts. Together, we strive to create equilibrium between the supply and demand for transformative technologies.

# Program Overview

The Wells Fargo Innovation Incubator (IN2) is a $55 million-dollar program funded by Wells Fargo and coadministered by the U.S. Department of Energy's (DOE's) National Renewable Energy Laboratory (NREL). IN2 advances energy technologies from concept to commercialization—validating and de-risking emerging startups in the built environment and infrastructure sectors while facilitating connections with adopters who receive guidance on implementation practicalities and strategies.

Founded in 2014 and administered by NREL's Innovation and Entrepreneurship Center (IEC), IN2 initially focused on solutions that reduce energy used in the built environment and later expanded its efforts to address agricultural technology (agtech). IN2 has supported 74 startups, providing each with up to $250,000 in nondilutive funding for research and development (R&D) support from world-class scientists at NREL or the Donald Danforth Plant Science Center in St. Louis, Missouri.

After 10 years of impact, IN2 grew to include programming for corporate and community adopters, address demand-side market barriers, and increase widespread adoption of scalable energy solutions. Adopters use IN2's funds to develop tailored technology deployment programs, access best practices and financing for implementation, and install startup technology.



## Innovative Partnerships

IN2 is a comprehensive initiative to unite stakeholders in streamlining a traditionally fragmented approach to energy technology innovation and implementation.

As a global leader in advancing energy efficiency, transportation, and advanced power technologies, NREL provides the knowledge to integrate and optimize a wide range of energy solutions. IN2 companies benefit from the expert guidance of NREL researchers and access to the laboratory's leading-edge facilities.

Agtech startups collaborate with the Danforth Center, the world's largest independent plant science research institute. Founded in 1998, the nonprofit offers extensive facilities, including a 44,220-square-foot greenhouse complex, 38 growth chambers, and 51 custom growth rooms.

Aligned with IN2's enhanced focus on adoption and implementation, a partnership with asset management and investment experts at Overlay Build provides participants with additional support in technology adoption playbook development and organizational change management.

IN2's holistic approach effectively connects startups and adopters with Channel Partners, industry leaders, and investors, creating an integrated ecosystem for maximum success. By bringing together these groups, IN2 accelerates the development and adoption of energy solutions.

## Shared Power, Shared Progress

IN2 drives energy solutions to ensure all communities benefit from a resilient advanced energy future. By combining innovative technologies with community-driven approaches, IN2 integrates resiliency into all programming, addressing energy challenges while building stronger, more adaptable systems through:

- **Collaborative Innovation:** Partnering with communities to cocreate practical, lasting energy solutions that meet local energy needs and build more scalable and resilient energy systems.
- **Energy Empowerment:** Supporting sharing of advanced energy benefits and responsibilities, as well as tools, resources, and funding, through stakeholder engagement and strategic planning.
- **Real-World Testing:** Validating community-prioritized solutions via simulations and regular measurement to assess and report on initiatives' impact, reliability, and effectiveness.

### IN2 By the Numbers

**74**
portfolio companies

**10**
innovation-ready adopters

**$2.56B**
in follow-on funding raised by portfolio companies

**121:1**
For every $1 invested by IN2, portfolio companies raise more than $121

**15**
mergers and acquisitions of portfolio companies

**83%**
of portfolio companies advanced their TRL through IN2

# Celebrating a Decade of IN2

It's fitting that IN2's story began like many startups—with an idea sketched on a napkin. Wells Fargo envisioned a program to strengthen the advanced energy ecosystem and address a key gap: scaling promising solutions to commercialization.

"Wells Fargo was already working with business incubators, but learned there wasn't a great process to qualify the technical feasibility of promising solutions to scale," said Kate Moore, IN2's first program manager and current head of strategic partnerships for NREL. "They leveraged NREL's unique expertise by developing a first-of-its-kind public-private partnership."

## An Unprecedented Collaboration

At the time, it was groundbreaking for a national lab to collaborate directly with a corporation to facilitate support for startups, rather than the corporation working independently with startups.

"The overall mission was to help energy technologies navigate the valley between garage-based startup to commercialization," said Curt Radkin, Wells Fargo executive director for corporate properties sustainability strategy. "This idea of helping companies navigate the path to market by having NREL manage the program and validate the technologies was super attractive for us."

From the outset, IN2 was designed to be mutually beneficial. Startups gained access to NREL's world-class facilities and researchers, while the lab deepened its connections with industry and gained invaluable market insights. The program also furthered NREL goals, establishing relationships with startups that often extend beyond IN2.

"This partnership is built on a collaborative model where both the startup and the researcher are informing a commercialization project to move the needle," Moore said. "It's really rewarding for researchers because they can immediately see their impact."

According to NREL Associate Laboratory Director for Innovation, Partnering, and Outreach Bill Farris, one early meeting captured the essence of IN2's potential.

"It was just a fantastic meeting to witness," Farris said. "We brought bankers, who knew about capital and how important that was to fuel a business. They were joined by entrepreneurs, these bright folks with big ideas. Our NREL team contributed its R&D tool set. It was a magical meeting because they all got along really well. It showed the complementary aspect of those three pieces."


## A Pipeline for Innovation

A key element critical to IN2's early and sustained success was the creation of its Channel Partner network. Developed in conjunction with plans for the program's launch, the network provides a steady pipeline of high-quality applicants.

"It was part of our master plan from the beginning," said Moore. "We wanted to think of a system approach from Day One to build that pipeline of innovation."

Over the years, the Channel Partner network grew, and it now includes 64 organizations, collectively representing more than 6,000 startups. This expansive network ensures that IN2 works with the best and brightest in energy solutions, amplifying the program's impact.

"The Channel Partner network helps us find the best startups to work with, and we then give those selected startups access to NREL's facilities and support to help those startups progress," said Farris.

## A Blueprint for Public-Private Partnership

As IN2 evolved, it became a blueprint for other incubation programs that involve NREL in public-private partnerships and tap into the Channel Partner network. The IN2 model provides a foundation for new programs, with specific systems customized to meet each funder's unique needs.

"We built something that works so well by pairing the prestige of NREL with the ability for partners to tailor their efforts and investment," said Trish Cozart, director of NREL's IEC.

The partnership's success is a point of pride for both organizations. Farris attributes much of IN2's achievements to the strength of the collaboration with Wells Fargo.

"We are unique in the industry to get the kind of results that we have," Farris said. "We tell everybody what we do with IN2 because we're so proud of it. It is a relatively simple recipe, but it's still proven to be unique."

For Wells Fargo, the program underscores its commitment to innovation.

"It's something that sets Wells Fargo apart from some of our peers and competitors," Radkin said. "I'm proud to have been able to play a role and contribute." ■

# Innovating at Scale Since Cohort 1

In commemoration of the 10-year anniversary, IN2 checked in with three participants from the inaugural cohort to see how the companies have progressed over the last decade.

## ESS Battery Supplies Long-Lasting Energy Storage

The ESS Inc. long-duration batteries fit inside a standard-size shipping storage container for utility and industrial stationary storage applications. These include use in microgrids, on university campuses, or by municipalities that require energy around the clock, making long-duration storage critical.

The only minerals in the battery are iron and salt, meaning it does not need precious metals required for other types of batteries. ESS's flow battery also has no risk of catching fire, and it can go through thousands of cycles before needing to be replaced.

"Our battery is water-based," ESS Senior Vice President Hugh McDermott said. "During charging, the iron creates a thin layer of film on the carbon plate, and the solution is clear when it's fully charged. When we want to discharge the battery, we just reverse the polarity without any degradation in battery performance."

ESS is the only IN2 company to date to go public, traded on the New York Stock Exchange with a 2021 IPO valued at approximately $1.1 billion.

ESS has signed up to deliver 2 gigawatt-hours of storage before the end of the decade in Sacramento, California. The company is also working with Tampa, Florida, and Portland, Oregon, and collaborates with NREL on modeling for overseas markets such as Bulgaria and Morocco.

"We're immensely proud of having gotten to where we are," McDermott said. "At the time of the first IN2 cohort, every penny mattered for us. Every bit that we got in gave us more time and gave us another extension of time to get this product to market. Without that support, we just wouldn't be the success we are today."

ESS worked closely with NREL Senior Building Energy Researcher Shanti Pless, who championed the startup through the entire process.

"I believed in ESS because of the simplicity of the company's flow batteries," Pless said. "The battery business in general is hard, and back in 2014 there were many different flow batteries in the market."

Since helping curate the first cohort, Pless has continued in that role to this day. In the past decade, he has helped at least 10 other IN2 companies.

"For the IN2 companies, it's pretty simple to understand what success looks like," Pless said. "If your partner is successful, they raise a bunch of money or they get purchased. They grow into their ultimate destiny, and to be able to support that is amazing."


## LiquidCool Brings Down Chip Temperatures

LiquidCool uses an electrically nonconductive heat-transfer fluid to cool down electronics, often in data centers. Traditionally, those centers were cooled with air, but as microchips become more advanced for use in artificial intelligence and machine learning functions, their tendency to overheat increases.

"It's been known for decades that you can cool certain electronics using a fluid," said David Roe, LiquidCool program manager. "For a lot of reasons, data center operators were reluctant to bring liquid in. But now they have to—the chips are just too hot."

Instead of a traditional water-based approach, LiquidCool uses a commercially available dielectric fluid that conducts heat but not electricity. This technology cools electronics while alleviating the risk of short circuits.

"We've reduced the amount of power needed to cool a data center by up to 98% compared to air cooling," said Herb Zien, former chief executive officer and now vice chairman of LiquidCool.

Over the past decade, LiquidCool has continued to improve its technology. It now has four installations and hopes for many more on the horizon.

When NREL Senior Mechanical Engineer Eric Kozubal first learned about the company's technology, he was eager to work with it.

"It immediately struck me that there was better potential to recapture energy than that found in any other technology," Kozubal said. "Typical data centers use up to two times more energy to cool their systems than to run computations. With LiquidCool's technology, you can cool a data center using no water, because a cooling tower is no longer needed."

Ten years ago, participating in IN2 felt more like an experiment than a proven model, but Zien and Roe believe it was a crucial step for LiquidCool.

"I can't tell you how important it was for a startup like ours to get this boost from NREL and Wells Fargo," Zien said. "That's a big deal for a small company. We were blown away by how great it turned out to be, and we had no expectations."

Kozubal conducted a study of LiquidCool's technology that the company still uses today. NREL tests showed LiquidCool can reclaim and capture 90%–95% of the heat from data centers to reuse in helping heat either an entire building or just its water. This makes the whole building system more efficient.

"We use the results of that original study to promote our technology," Roe said. "This type of third-party


validation is very valuable, especially when it's from NREL. We use it every day to show potential customers the low risk and high reward."

Zien and Roe believe the shift from water- and air-cooled data centers to liquid cooling is inevitable.

"Chips are getting so hot that there's going to be no alternative," Zien said. "Our pipeline is growing pretty fast, because air cooling is in the rearview mirror."

## Whisker Labs Pivots to Fight Fires

The Whisker Labs business today looks very different than when the company joined the first IN2 cohort. At the time, it made power consumption sensors. But after an electrical fire burned down the house of Cofounder and CEO Bob Marshall's sister-in-law, Whisker Labs pivoted away from producing the original sensor and created a supersmart plug called Ting.

"You plug it into any outlet, and it monitors the entire electrical system within your home," he said. "With it, it's possible for owners to prevent 80% of electrical fires that can devastate homes. Using machine learning and artificial intelligence, we monitor for faults in the home electrical system that could cause fires."

While watching over each home, the network of Ting devices also monitors the overall electric utility grid. With 600,000 sensors installed across the United States, Whisker Labs can see all the faults that actively occur in the portion of the electric utility grid it monitors.

"There is no comparable network—we're collecting about 20 gigabytes of data per second across our fleet of sensors," Marshall said.

Whisker Labs is growing very rapidly, shipping devices to around 50,000 new homes each month. It also has partnerships with insurance companies that give the Ting away for free, including State Farm, Nationwide, and Liberty Mutual.

Whisker Labs is now working with utilities and government agencies to inform them about the weaknesses the company detects on energy grids across the country.

The sensors in today's Ting device trace their origins to the original sensors tested during the IN2 program.

"This was a nonintrusive way of monitoring power consumption at the circuit level," said NREL Senior Research Engineer Bethany Sparn, who began working with Whisker Labs shortly after the IN2 program got underway. "After rigorous accuracy testing, we did a demonstration in a Wells Fargo building to study installed performance. It was a very novel idea at the time."

"Being able to work alongside experts like there are at NREL was extremely helpful," Marshall said. "If you're a young startup doing anything anywhere in the energy space, talk to NREL and consider participating in these types of programs. You're working with the foremost energy experts in the world. All that knowledge and expertise ultimately contributed to the Ting sensor." ■

# Making Innovation Happen

At Ponderosa High School in Coconino County, Arizona, students are determined to overcome obstacles on their path to graduation. Some arrive behind on credits, while others are returning to the classroom after time away. The alternative school offers more than a second chance—it is an opportunity for transformation.

"Our goal at Ponderosa is to create opportunities that shift perspectives—helping students see a hopeful future and discover industries they may not have considered," Ponderosa High Principal Les Hauer said. "The energy future is full of possibility, and this initiative helps us show students what's possible while preparing them to succeed."

Coconino County is one of 10 members in IN2's latest cohort, the first focused on implementing energy technologies within established organizations rather than supporting startups.

Before pitching their projects in December 2024, participants engaged in months of preparation and education, including technology selection and impact analyses. The pitch session culminated in the cohort presenting their plans to install and use a tool or system within six months, with winners receiving a share of $750,000 in Wells Fargo funding to bring their projects to life.

The participants in the cohort were:

- Avangrid
- Coconino County
- CBRE
- Digital Realty
- Galvanize Real Estate (GRE)
- Intermountain Health
- Prime Data Centers
- Schneider Electric
- Southern Company
- University of Colorado Boulder.

Although some cohort members are large companies, they face unique barriers where IN2's support is invaluable. During pitch day, one of the presenters made the problem plain: Even large, well-funded organizations may find resistance to innovative technologies if it could compromise profitability.

"Pursuing new technologies is often seen as a cost and business risk for any size organization," said Howard Branz, director of Science and Impact for Galvanize Climate Solutions. "At GRE, our scientists and investors work together to mitigate these risks by piloting technologies in real-world settings where we can test and prove their performance, ensuring that increasing profitability and meeting our metrics go hand-in-hand. The IN2 award allows us to further accelerate the deployment of cutting-edge building technology solutions, advancing our goals."

## Coconino County's Teaching Moment

Coconino County's ambitious vision stood out among the pitches in early December with its goal of reducing the district's energy consumption by 40% while creating a replicable model for schools in the region.

"We hope to transform our local schools by serving as a demonstration site for retrofitting and energy practices," Superintendent Cheryl Mango-Paget said.

Ponderosa High School, located near the Grand Canyon, has about 70 students. The district identified heating, ventilation, and air conditioning (HVAC) as the best opportunity because it could have the greatest impact. The district's aging air conditioning units are due for replacement, and the hope is that Ponderosa can serve as a blueprint for surrounding schools.

To achieve that, Coconino County would integrate three technologies in one building. Blue Frontier, a company that graduated from IN2 several years ago, will install a new AC unit that uses liquid desiccant technology developed by NREL. Rensair will improve air quality. And Komfort will address energy through lighting. The single Blue Frontier unit could replace up to 18 AC units already on the building. Estimates done during IN2 show the new systems, at minimum, could cut utility costs by 50%.

"This partnership with NREL and IN2 is a powerful teaching tool," Hauer said. "We're giving students a hands-on experience beyond the classroom by letting them observe the installation process."

While the students will not install the systems themselves, they will learn from the process and gain insight into future job opportunities in the HVAC and advanced energy industries.

## CBRE's AC Pivot

When Jeff Dunbar, senior sustainability director for CBRE, first got involved with IN2, he thought their project would focus on cement. Then he realized they only had six months to implement, so he pivoted to a faster solution: rooftop HVAC units.

"We replace thousands of rooftop units every year in the U.S.," Dunbar said. "This became an easy lever for us to pull."

CBRE manages more than 7 billion square feet of property around the world and spent more than $33 billion with suppliers last year globally. Once CBRE identified the HVAC direction, NREL helped pinpoint where to go next.

"I stood in a room at NREL and stared at Blue Frontier's mockup of this technology while an NREL engineer explained how it works," Dunbar said. "Together, we found our 'Goldilocks' site that matches the necessary specs on a building in Delaware."

The pilot project will install and test Blue Frontier's unit on this building in Delaware, with the potential of replicating it at other sites nationwide. The system is designed as a drop-in replacement—it integrates seamlessly with existing infrastructure and eliminates the need for costly modifications.

"Our hope is that by the end of the first summer season, the results will give us the confidence to move forward with other sites," Dunbar said during the pitch.

Additionally, CBRE is not giving up on the idea of a cement-focused project.

"As an offshoot, NREL pulled us into conversations with several concrete partners about a potential project in 2025," Dunbar said. "We can continue to pursue this challenge outside of the IN2 program."

## Intermountain Health's Strive for Change

Glen Garrick, system sustainability director for Intermountain Health, is also working with NREL on a project separate from the IN2 pitch he presented. The company has 16 traditional shuttles, and it wants to change that and incorporate advanced technologies.

Initially, the employee responsible for managing the fleet resisted the idea, uncertain about its feasibility. But the project gained momentum after a visit to NREL.

"We flew out to NREL and sat in a room talking with 10 experts," Garrick said. "Some on our team had a healthy skepticism about the shuttles. But after candid discussions with subject matter experts and experienced professionals from NREL, those individuals on our team completely changed their mindset."

With approximately 400 clinics and 34 hospitals across the Intermountain West, Intermountain Health plans to order the first set of shuttles in 2025 and begin using them in 2026.

The driving force behind the decision is to avoid taking money away from patient care.

"Every dollar that goes to energy or waste is one less for patient funding," he said. "Whenever I can bring in external funding, that's money saved for patient care."

## NREL's Assistance

This cohort did not have to figure out the solutions to their organization's challenges on their own. With guidance from NREL experts and support from consulting firm Overlay Build, participants overcame technical and strategic hurdles unique to their companies to move their projects forward.

For Coconino County, narrowing down a daunting list of 168 potential HVAC technologies was a critical first step.

"When I saw the list, first I cried," Mango-Paget said. "But IN2 and NREL helped us discover the best bang for our buck, and that led us to three companies that could make the biggest impact."

NREL's support did not stop at the planning phase. For CBRE, NREL's direct involvement in monitoring the Delaware pilot will ensure a smooth transition from concept to implementation.

"The scientists who helped birth this liquid desiccant technology are going to come help monitor the site in Delaware," Dunbar said. "That helps de-risk it for us. We're trying to do this at scale; it's exciting to be at the front end of that curve."

The value of NREL's expertise also extends beyond IN2's formal structure. By providing both education now and actionable solutions down the road, NREL and IN2 have empowered these organizations to overcome barriers, adopt innovative technologies, and make measurable progress.

## Winners

Five of the 10 participants in this first-of-its-kind cohort earned monetary awards.

- CBRE received $150,000 for its project, which will cover the engineering, design, and construction costs for the pilot and a scalability study.
- Coconino County received $55,000 for the Rensair and Komfort parts of its project.
- Digital Realty received $125,000 to partner with Hayzel and improve chilling in its data centers in Santa Clara, California.
- Galvanize Real Estate received $200,000 to work with IN2 portfolio company EnKoat and Alpen for a pilot on a building in Pedricktown, New Jersey.
- The University of Colorado Boulder received $220,000 to work with INOVUES to retrofit existing windows in aging buildings with hermetically sealed high-performance glass.

But all the participants, including the five teams that did not earn funding, are walking away with tailored technology adoption playbooks and access to expertise in digitization and change management.

"Alongside the new relationships formed with NREL, the program itself is an award," Derdowski said. "We're already seeing renewed efforts to change the culture at all of these organizations."

"I'm really glad we went through the process because we saved one project because of it," Garrick said. "If it wasn't for that contact with NREL, that project would have died." ■

# Our Portfolio: Built Environment

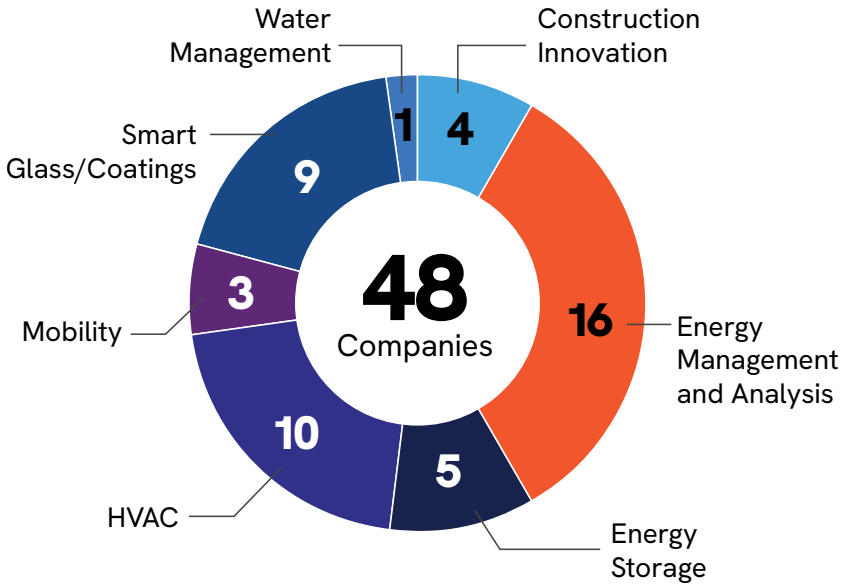
The buildings and construction sector accounts for 34% of global energy demand,[1] underscoring an urgent need for technologies that can drive energy advancement. IN2 portfolio companies are rising to this challenge, advancing innovations in areas such as energy management, efficient systems, and new materials. In 2024, three companies graduated from the Emerging Tech Track, poised to make an impact on grid reliability and building controls. At the same time, three new startups joined the portfolio, bringing scalable solutions designed to accelerate advancement in commercial and residential buildings.

"When we went out in the community to ask people to work with us and use our technology, because of IN2, we knew it was going to work."

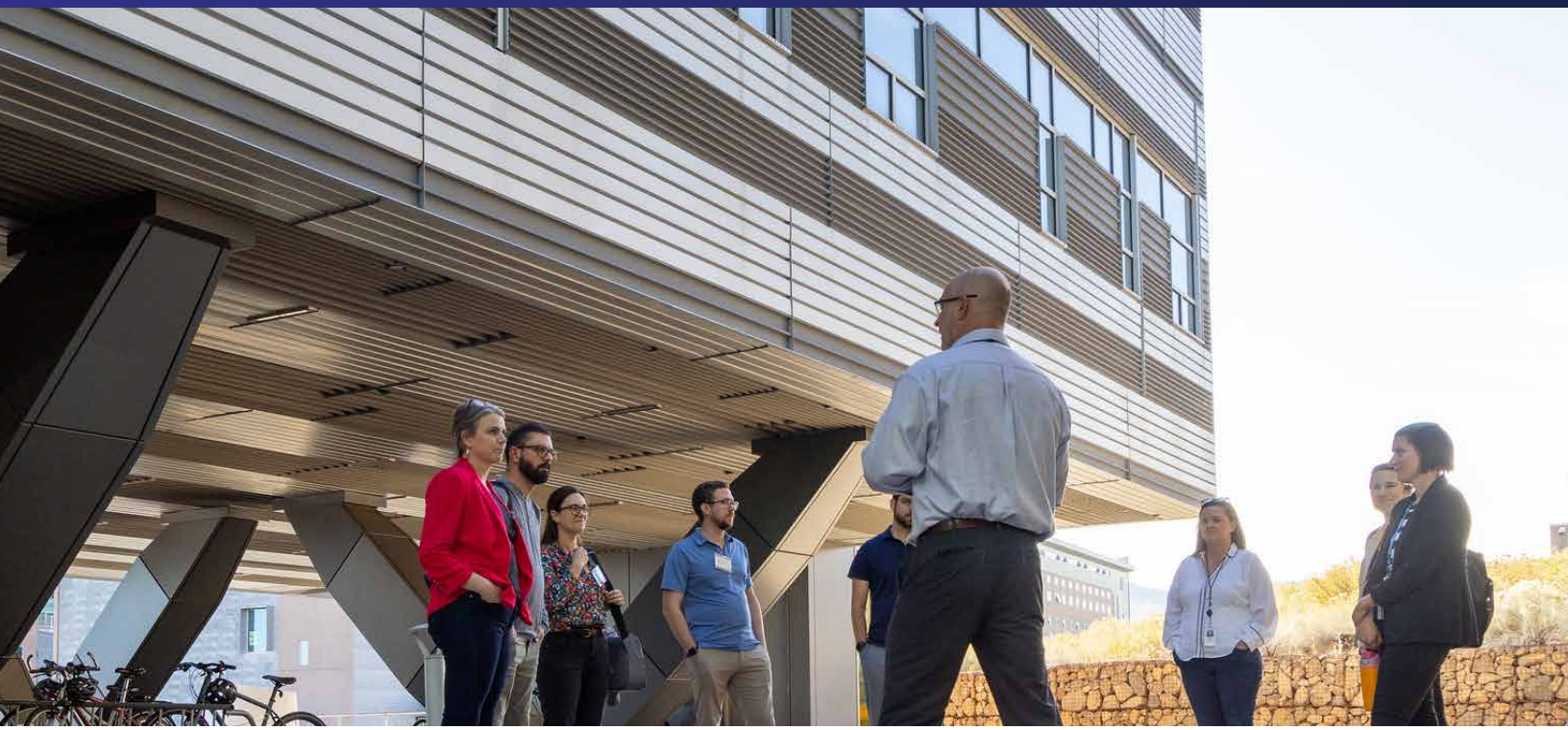
— Forest Frizzell, CEO and Co-Founder, Shifted Energy

"IN2 helped us jump from a cool laboratory idea to a product where it could be transformational for the industry."

— Daniel Betts, CEO, Blue Frontier




1 United Nations Environment Programme. 2022 Global Status Report for Buildings and Construction. 2022.



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|---|---|
| blip | **Blip Energy** transforms energy burdens into resources. Its smart battery platform controls when energy is pulled from the grid by high load appliances like air conditioners, refrigerators, and more. This affordable drop-in technology makes an immediate impact without the typical barriers around permitting and installation. For the Blip Energy IN2 project, NREL plans to simulate the smart battery technology's impact on energy use, energy cost, and load shifting for a variety of building types, including hotel, small commercial, and multifamily buildings. |
| BLOC POWER | **BlocPower** was designed to help low- and moderate-income multifamily housing building owners and tenants in cities harness energy efficiency by completing energy retrofits and digitizing components of energy efficiency transactions. For the BlocPower IN2 project, NREL created physics-based models of typical apartments using a cold-climate heat pump and thermal energy storage device. |
| COREPOWER MAGNETICS | **CorePower Magnetics** designs, optimizes, and manufactures high-performance electric motors, inductors, and transformers. These components enable electric vehicles (EVs) to travel farther and redefine the operational limits of the power grid to accelerate adoption of advanced energy. As part of its IN2 project, CorePower is working with Eaton to demonstrate its power-dense transformers in EV applications. NREL also is providing technical guidance and technoeconomic analysis. |
| EVERCLOAK | **Evercloak** is revolutionizing how buildings are cooled with its refrigerant-free dehumidification systems, which are powered by graphene-oxide membrane technology. The solution can drastically decrease building cooling systems' energy use. For the Evercloak IN2 project, NREL will evaluate its membrane dehumidifier, quantifying the efficiency over several inlet conditions. NREL will also identify improvements that may be able to increase efficiency further. |

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|---|---|
| KIT SWITCH | **Kit Switch** installs and analyzes its prefabricated kitchen modules with integrated plumbing and electrical systems in underutilized spaces. Each unit can be premanufactured, flat-packed, and assembled on-site for reduced costs and timelines. Instead of demolishing the 6 billion square feet of vacant buildings zoned for housing in the United States, Kit Switch offers to make them viable again. In its work with NREL, Kit Switch installed demonstrations in California while NREL helped with process efficiency and network connections. |
| NeoCharge™ | **NeoCharge**'s integrated software platform will synchronize charging of EVs and appliances. The company's smart splitters allow fast, simple charging at home. NREL tested load profiles for typical equipment that may pair with smart splitters in real-world applications in its Systems Performance Lab. The rest of the IN2 project work will involve validating the performance of a prototype in the lab. |
| transaera | **Transaera**'s advanced dehumidification system addresses the energy-intensive nature of air conditioning in humid climates. The company's solution integrates with standard HVAC systems to reduce the energy consumption of commercial air conditioning by 40%. In the Transaera IN2 project, NREL will collaborate with Transaera to characterize, model, and optimize the system's desiccant wheel. |
| UbiQD UBIQUITOUS QUANTUM DOTS | **UbiQD** produces nanomaterials for energy harvesting that provide a simple, scalable, low-cost, and aesthetically pleasing approach to solar windows. NREL has conducted durability assessments of UbiQD's prototype devices, and the project also includes a demonstration of five windows installed at the NREL café on the Golden, Colorado, campus. These five windows were upgraded in 2023 to incorporate R&D resulting in higher efficiencies, and NREL is comparing the performance of these newer windows to the previous installation. |
| YOTTA ENERGY | **Yotta Energy** develops modular energy storage integrated with solar, designed to reduce cost and expand development of energy storage and grid resiliency on commercial buildings. NREL characterized the technology performance of two Yotta Energy prototype units as compared to a baseline unit in a laboratory environmental chamber, subjected to a range of ambient conditions. The final phase of Yotta's IN2 work includes the integration of a modeling capability for the Yotta system type into NREL's REopt® tool, plus a demonstration of several Yotta SolarLEAF units installed in the NREL café. |

## Our Alumni

75F
7AC Technologies
Adept Materials
AeroShield
APANA—inactive
Blokable—inactive
Blue Frontier
Community Energy Labs
Cypris Materials
Darcy Solutions
EdgePower
EnKoat
ESS
Geli
Glass Dyenamics
Go Electric
Heliotrope—inactive
J2 Innovations
Kelvin
Ladybug Tools
LiquidCool Solutions
Maalka
NETenergy
NEXT Energy Technologies
NineDot Energy
PowerFlex
Pre Framing Corp
Shifted Energy
simuwatt (buildee)
SPAN
Stash Energy
STRATIS IoT
Tallarna
Thermolift
Transformative Wave
Turntide Technologies
VG SmartGlass
WattIQ
Whisker Labs

# Innovating at Scale for the Built Environment

Since its inception, IN2 has prioritized supporting startups that drive advanced energy technologies and practices in the built environment. Here are just three examples of impactful alumni companies.

## NETenergy Improves on Batteries While Helping Students

NETenergy is at the forefront of energy storage innovation with its thermal batteries designed to improve the energy efficiency of building heating and cooling systems. Unlike traditional HVAC systems powered by electricity or natural gas, NETenergy's system utilizes a two-fluid design, using refrigerants to "store cold" by capturing cool energy during off-peak hours and distributing it during peak periods to even out the load.

"Our battery is lighter, smaller, and faster than other options," NETenergy Founder Said Al-Hallaj said. "It uses about 40% less energy during peak demand periods and improves efficiency by at least 10%."

NETenergy's participation in IN2's second cohort in 2016 catalyzed the startup's success with validation and technical guidance from experts at NREL.

"After NREL's thorough review, they confirmed there was real merit to our idea," Al-Hallaj said.

NREL played a pivotal role in refining the technology by designing the two-fluid thermal storage system that NETenergy subsequently licensed. This innovative system utilizes a refrigerant to capture and store cool energy during off-peak hours, while a second fluid acts as a heat transfer medium to distribute that stored energy for cooling buildings.

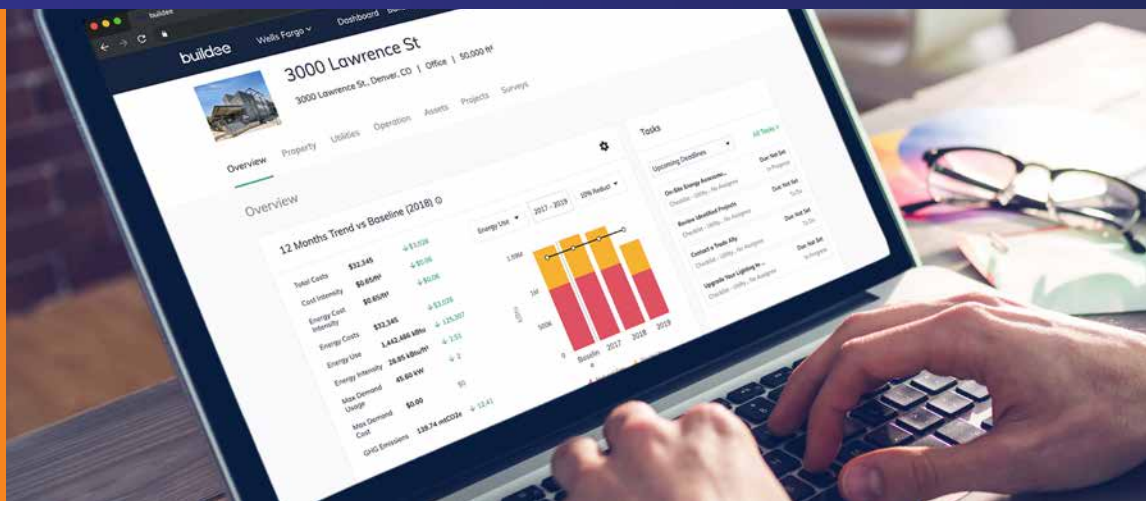
The compressors run at night when electricity is cheaper and temperatures are usually cooler. This enables efficient deployment of the stored cold during peak demand periods, ultimately reducing both energy demands and operational costs.

Today, NETenergy is working with NREL and industry leaders such as Copeland and Trane to move the technology closer to commercial use. NREL is already testing a full-scale NETenergy thermal battery and plans to integrate it with a commercial HVAC system in early 2025. The U.S. Department of Defense (DOD), one of the nation's largest building owners, is preparing for field testing at one of its military bases in summer 2025.

"The DOD said to us: 'We want to be the first adopter, and we'll give you money to demonstrate that it works,'" Al-Hallaj said.

NETenergy is not only revolutionizing thermal energy storage but also shaping the future of the energy workforce. Through a unique partnership with the University of Illinois Chicago, where Al-Hallaj is a research professor of chemical engineering, students can practice real-world entrepreneurship and play a vital role in advancing the commercialization of startup technologies developed by fellow students and faculty members.

"The experience they gain is invaluable, because they work on real-world problems and contribute to actual solutions," Al-Hallaj said.




## Simuwatt Pinpoints Companies' Decarbonization Priorities

As companies increasingly commit to ambitious energy goals, many face a daunting challenge: where to begin. Identifying the most impactful steps to reduce carbon emissions, especially in the building sector, is a complex and overwhelming task. This is where simuwatt steps in.

"One of the first steps in tackling carbonization is determining where to begin and how to prioritize," said Bryan Conklin, CEO and president of simuwatt.

"We're focused on helping building owners and managers, utilities, and energy and sustainability firms identify projects and equip them with the tools to get it done," said Matt Brown, simuwatt cofounder and chief product officer.

Simuwatt's subscription-based software platform, buildee, rapidly identifies and prioritizes high-impact energy savings, decarbonization, and water savings opportunities within a specific building or across a portfolio of buildings. Simuwatt often supports commercial and multifamily buildings, as well as light industrial structures. The software has applicability to other building types, too.

"Buildee pinpoints capital projects that can reduce energy expenses, water expenses, or greenhouse gas emissions," said Conklin. "Essentially, we streamline the collection of utility- and device-level data, using no hardware or sensors, and use that data to identify and prioritize the opportunities that will make the biggest impact. Those opportunities are then laid out in a multiyear capital plan tied to client or compliance goals and targets."

Simuwatt goes beyond offering recommendations to building owners or property managers. The company also collaborates directly with utilities to enhance energy savings programs.

"We partner with utilities and equip their staff to educate consumers on energy efficiency opportunities, along with available rebates," Brown said. "Our approach improves customer engagement and provides a roadmap for utilizing rebates, maximizing the opportunities our software identifies."

Simuwatt was already working with NREL before the IN2 program launched in 2014. Building on that foundation, the company joined IN2's third cohort just a few years later.

"IN2 truly opened up new doors for us," Conklin said. "It sparked discussions with partners like Wells Fargo, and the association with NREL gave our product a credibility boost that supports our entry into the customers and segments we serve."

Since it went through the IN2 program, simuwatt has seen substantial growth. According to Conklin, the company's prospect pipeline in the past two years has expanded sixfold and its customer base has grown four times over.

"There are significant savings to be had by building owners," Conklin said. "We are focused on how we continue to expand the base of customers we serve and deliver an exponential growth path to investors. We truly have an incredible product and are eager to meet the increasing need in the marketplace."


## Stash Energy Combines Energy Storage with Heat Pumps

Stash Energy credits participation in IN2 with shaving an entire year off the time to get their technology into the market.

"IN2 allowed us to accelerate the engineering and modeling work," Dan Curwin, VP of market development, said. "We normally need one year for a full testing cycle, but we were able to condense that with IN2's help."

Stash Energy develops heat pump systems with a unique twist: built-in thermal energy storage. A heat pump can heat or cool a building through electricity only.

"Heat pumps are the most efficient way to heat and cool your home electrically, and their popularity is skyrocketing in North America and Europe," Curwin said. "The challenge then becomes that utilities are hit with these massive demand spikes in the morning and in the evening. Our product is able to store energy during off-peak hours, overnight or the middle of the day, and then use that when the utility grid faces high demand."

Stash Energy's thermal energy storage is a phase-change material, meaning it moves between solid and liquid forms. At room temperature, the salt-based hydrate is solid. The heat pump melts that salt into a liquid, which stores energy for both heating and air conditioning during peak hours. As the liquid salt dispenses the energy, it turns back into a solid, ready to charge up again during off-peak hours. Curwin said the system can melt the solid form two or three times a day.

"Instead of everyone demanding electricity at the same time, we're able to shift the demand to off-peak hours," he said.

Recognizing the importance of meeting both heating and cooling needs, Stash Energy expanded its focus during its participation in IN2. The Canadian company joined Cohort 8 in 2021 with initial plans to focus exclusively on heating systems. The work at NREL inspired the company's diversification to address air conditioning systems, as well.

"IN2 helped us figure out what design changes we needed to target air conditioning markets," Curwin said. "Addressing the two different markets didn't require any grand redesign for our system, but it did require very specific modeling work from NREL."

Thanks to IN2, Stash Energy will begin pilots of its air conditioning units in the summer of 2025, targeting areas where the power grid is often pushed to its limit. It plans to start customer sales in 2026 and work directly with HVAC distributors to integrate the technology with existing systems. Curwin says IN2 continues to help the company make connections and explore areas for growth.

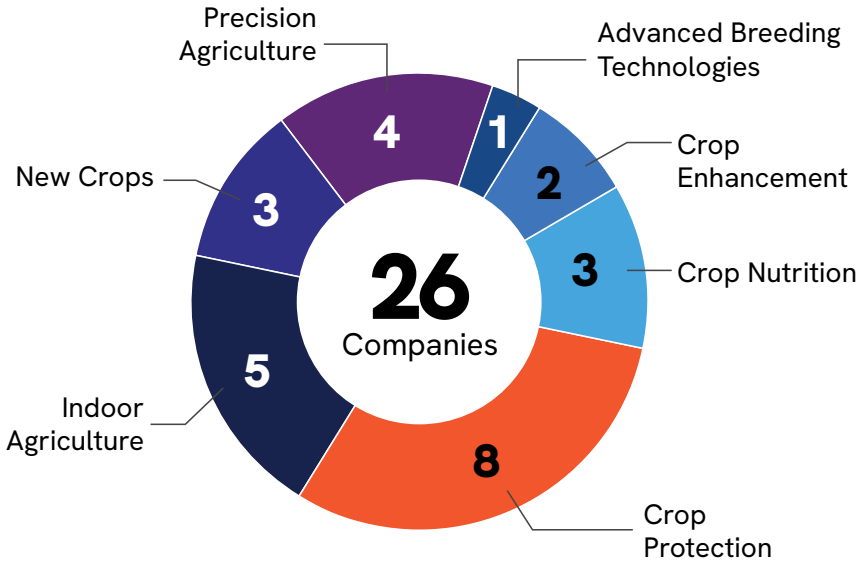
"IN2 is competitive, and there's a lot of validation with getting into the program. It's looked positively on by investors, utilities, and governments," Curwin said. "NREL expertise is unmatched, and the program allows for the resources to scope out a multiyear project. It's not just a science experiment—it's engineering work that's going to help accelerate the product launch." ■

# Our Portfolio: Agtech

The agriculture sector uses half of the planet's habitable land and accounts for 70% of freshwater withdrawals.[2] Bold innovation is required to address these negative impacts, boosting productivity while safeguarding reliability. In 2024, seven startups graduated from IN2, showcasing diverse solutions such as precision nutrient management, sustainable pest control, crop resilience biosciences, and data-driven systems to optimize agricultural practices.

"IN2 helped us fine-tune our product. It was extremely significant. We were able to leverage the results and the program to accelerate our progress. It's hard to quantify just how much IN2 helped us, but it was transformative."

— Tyler Sickels, Founder and CEO, SolGro




2 Schrempf, Bridget et. al. "Hungry for Change: Are companies driving a sustainable food system?" 2020.

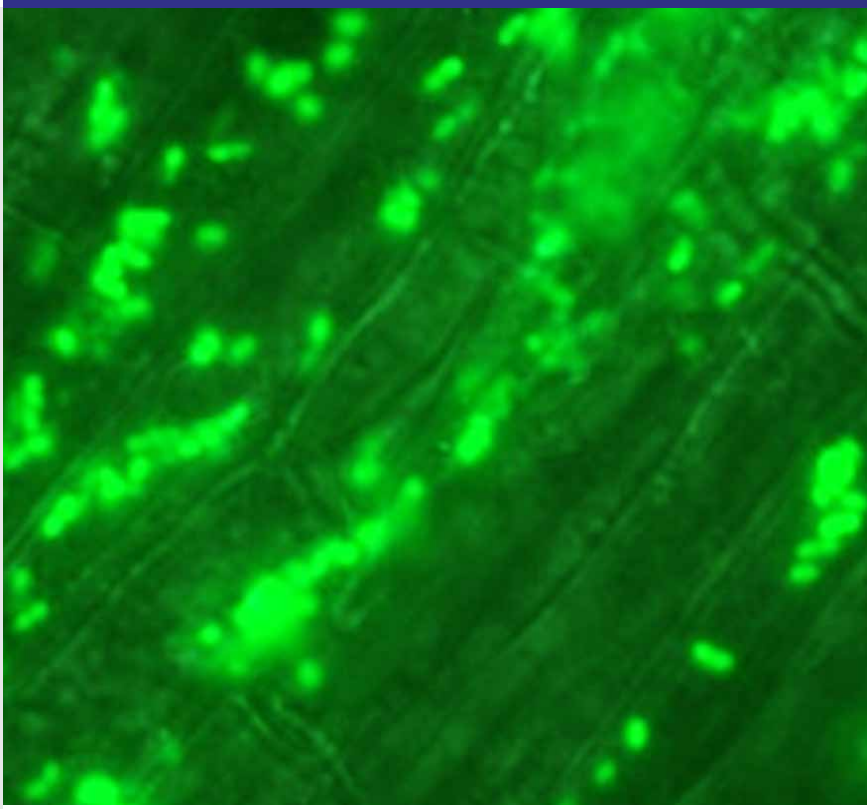
| | |
|---|---|
| ATLAS Sensor Technologies Inc. | **Atlas Sensor Technologies** develops real-time water hardness sensing combined with sensors to detect nitrogen compounds for improved crop development. Atlas successfully developed a new in-line nitrate sensor, the prototype of which is currently being tested at the Danforth Center for functionality and fit with applications in different greenhouse environments. |
| CYTOPHAGE | **Cytophage Technologies** uses synthetic biology to generate bacteriophage products that specifically target and eliminate problematic bacteria. They are currently working with scientists at the Danforth Center to extend their technology, previously demonstrated as effective in humans and animals, to commercially important crops. |
| INNERPLANT | **InnerPlant** develops seed technology to tap into plants' natural response pathways and code crops to communicate early, specific stresses via easy-to-collect optical signals. The technology helps farmers understand plants' needs and prescribe the right amount of fertilizer and crop protection products at the optimal time. The company is working with Danforth Center scientists on an initial proof-of-concept project to demonstrate the validity of its technology. |
| robigo | **Robigo** is creating the next generation of sustainable microbial pesticides that are more effective in controlling disease, environmentally friendly, and nontoxic to field workers. The company is currently validating its technology with the help of Danforth Center researchers. |

## Our Alumni

AgroSpheres
Aker Technologies
CarbonBook—inactive
CoverCress
EarthSense
Edison Agrosciences
Growflux
Habiterre
Impetus Ag
Impossible Sensing
Intrinsyx Bio
Mirai Solar
mobius
New West Genetics
Peptyde Bio
Plastomics
Pluton Biosciences
RNAissance AG
Running Tide—inactive
Sentinel Fertigation
SolGro
TerViva

# Innovating at Scale for Agtech

In 2019, IN2 began partnering with the Donald Danforth Plant Science Center in St. Louis, Missouri, on a series of cohorts focused on agriculture technologies. On the 10th anniversary of IN2, the program checked in with the participants in the first cohort of the agtech program.



## Intrinsyx Bio Uses Endophytes to Improve Crop Yields and Sustainability

Intrinsyx Bio harnesses the power of endophytes—beneficial bacteria that benefit plants much like probiotics aid humans. Just as yogurt helps maintain gut health by adding probiotics, Intrinsyx's technology introduces powerful microbes to crops, increasing mineral nutrition, boosting harvest yield, and enhancing sustainability.

"Plants depend on these microbes to thrive," said John Freeman, chief science officer and cofounder of Intrinsyx Bio. "Overuse of fertilizers and pesticides disrupts the natural soil and plant microbiome, but our endophytes help crops endure in challenging environmental conditions."

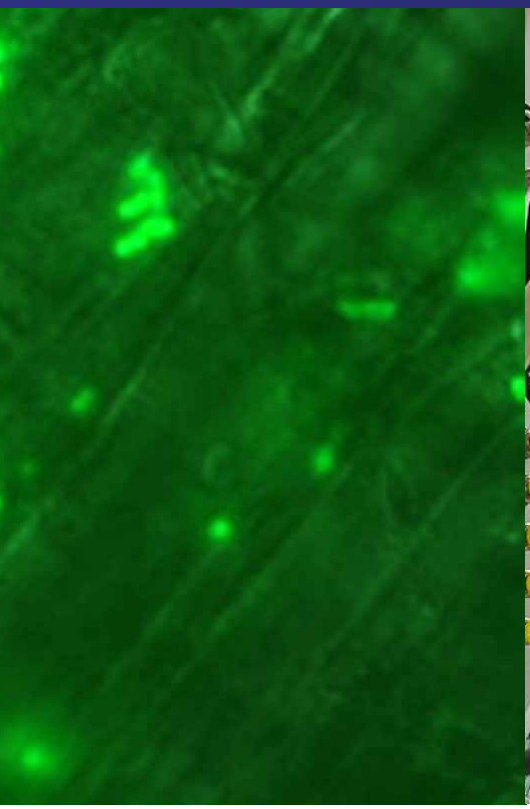
In addition to helping crops grow, Intrinsyx Bio's process sources nitrogen from the air and improves its availability to plants, reducing reliance on synthetic fertilizers. Fertilizers can leach into ground and surface water as pollution.

Field tests on winter wheat in England demonstrated impressive results, with yields increasing by an entire ton per hectare in the world's most productive region.

"It's above and beyond typical yields," said Mariola Kopcinski, Intrinsyx's head of commercialization and business development. "We are also seeing endophytes help crops become more resilient in extreme climates. Plants that have stronger internal endophyte support are better able to withstand heat, drought, salt, cold, or even flooding."

Since completing its IN2 work at the Danforth Center, Intrinsyx now sells products in northwestern Europe and recently established an agreement with Syngenta, an international distributor of biologicals. Currently, Intrinsyx Bio's products focus on grains such as corn and wheat, but the company is also moving forward with work related to other crops, such as canola, beans, and vegetables.

"We're testing products in 20 countries and plan to launch more in the next couple of years," Kopcinski said.




## RNAissance AG Creates Targeted, Safer Pesticides

For decades, farmers relied on blanket pesticides to protect crops from insects and fungal infections. But these broad-spectrum chemicals kill beneficial insects, contributing to pesticide-resistance species and raising health concerns for consumers. RNAissance AG offers a smarter solution.

"We created a natural biopesticide that only kills the targeted species," said Steve Meyer, CEO of RNAissance AG. "It doesn't harm nontarget organisms because we engineer a specific ribonucleic acid (RNA) sequence for selectivity. And we're doing it at a cost that's affordable."

RNAissance AG's biopesticide spray is applied directly to plants. When a pest consumes the treated leaves, it ingests the RNA designed to kill the insect. The first target of this technology is the Colorado potato beetle.

"The beetles eventually die because the RNA disrupts essential functions they need to survive," Meyer said. "But beneficial insects, like bees, remain unharmed."

The biopesticide is designed to last in the environment only five to seven days once sprayed. RNAissance AG had to balance the need for a product to last long enough to be effective but not harm the environment.

"You don't want to protect the biopesticide to the point where it lingers for months," Meyer said. "It's like applying sunscreen to the plant or packaging it. It's shielded from microbial enzymes, yet still accessible to the target organisms."

RNAissance AG was founded by Danforth Center Senior Research Scientist Bala Venkata, who developed the RNA interference technology, using novel mechanisms to target lepidoptera pests on a wide range of crops. The startup received support from private equity firm TechAccel Partners and was still in its early stages when it joined IN2.

"IN2 helped our team understand the process and refine the experiments in our pipeline," Meyer said. "Companies often fail due to a lack of funding, not technical success. IN2 gives you that extra gas in the tank."

## SolGro's Greenhouse Material Grows Yields

SolGro Founder and CEO Tyler Sickels believes his technology, a plastic material for greenhouses that alters the light spectrum, can significantly boost productivity while reducing energy costs.

"We developed a special material that shifts sunlight to the red-blue spectrum," Sickels said. "Plants under our material mature faster and farmers can increase the overall crop yield."

Most modern greenhouses use plastic coverings instead of more expensive glass. SolGro's material, a plastic additive originally developed at the University of Texas at Arlington, enhances traditional plastic by increasing light efficiency. That reduces the need for artificial lighting, delivering at least 20% in energy cost savings—which can amount to a $1 million annual expense for large greenhouses.

Better light improves yields, either in the form of growing larger volumes of produce or cycling through different crops about a week faster than normal.

"If we can cut down on the use of artificial light by even a couple hours, it ends up being a substantial energy reduction," he said. "Large greenhouses may still need to run them a bit, but we've seen a 20% reduction in run time. Some smaller greenhouses may not even need artificial lighting with our plastic."

Sickels describes SolGro's participation in the IN2 program as a pivotal experience.

"Being able to say, 'Hey, we have data from the Danforth Center,' was a massive win for a young startup," Sickels said. "The Center's reputation as a prestigious independent body added significant credibility to our work."

Looking ahead, SolGro is focused on securing pilot projects to move closer to commercialization and is looking for pilot and distribution partners. ■

# Our Ecosystem

To innovate at scale and help portfolio companies amplify their impact, IN2 cultivates a robust ecosystem of customers, investors, and collaborators through various networks and boards. The Channel Partner network, comprising more than 60 incubators, accelerators, and universities, extends IN2's geographic and market reach while connecting startups to local mentorship and resources.

In 2024, IN2 prioritized scaling up the Channel Partner network to engage untapped regions and deepen collaboration across local and regional ecosystems. IN2 also sought partnerships closer to home, encouraging other IEC incubation programs to support the Channel Partner network by sharing resources and increasing financial backing.


## Growing The Channel Partner Network

The Channel Partner network serves as a feedback loop, providing insights into the startup landscape and acting as a pipeline for innovation to and from NREL. The following organizations joined the network in 2024 to further IN2's mission of accelerating advanced energy technologies to market:

- **Colorado School of Mines Beck Venture Center** (Golden, Colorado) specializes in engineering and applied science, supporting startups with expertise, resources, and connections in the energy and natural resources sectors.
- **Energy Tech Nexus** (Houston, Texas) is a global energy and carbon-tech hub focusing on hard-tech solutions and connecting technology stakeholders with Houston's energy ecosystem.
- **Koffman Southern Tier Incubator** (Binghamton, New York) serves as an innovation ecosystem hub for startup activity within New York's Southern Tier region, offering coworking spaces, offices, and laboratories, as well as a broad suite of entrepreneurial programs.
- **Louisiana State University** (Baton Rouge, Louisiana) supports energy-focused startups through programs designed to strengthen the state's energy ecosystem and provide access to cutting-edge research, talent, and resources.
- **mHUB** (Chicago, Illinois) is a leading independent hard tech and manufacturing innovation center that focuses on physical product innovation to ensure that the manufacturing industry continues to accelerate, grow, and thrive.
- **Spark Innovation Center** (Knoxville, Tennessee) aims to support, attract, and retain the nation's most promising technology startup companies by providing access to top quality lab space, expert mentoring and guidance, programming, prototyping resources, and sources of early-stage capital.

# Innovating at Scale with Channel Partners

The Channel Partner network is a cornerstone of IN2, helping both refer startups to the program and serve their communities with entrepreneurial resources. IN2 supports this group through strategic financial awards that scale impact at the local and regional levels.

## 2024 Strategic Award Winners Deliver Essential Resources for Startups

In April 2024, IN2 awarded grants to Channel Partners to develop and deliver tailored workshops at Camp Cleantech, a first-of-a-kind event designed as a one-stop resource for startup executives to access insights and networking opportunities. Sponsored by Wells Fargo and held at CSU Spur in August 2024, this inaugural gathering of more than 180 attendees featured workshops on critical topics led by 15 Channel Partners.

"Entrepreneurs need a wide variety of resources to get across the finish line, so it's important to convene those resources in one spot," said Hyder Shuja, senior manager of the LACI Debt Fund. "Having that all in one place, especially face to face, is incredibly valuable."

Camp Cleantech featured 21 workshops over a day and a half, with topics ranging from building relationships with utilities to preparing for successful pilot partnerships and partnering with communities on advanced energy projects and manufacturing.

"NREL has a very special way of bringing together a lot of groups in ways that others can't," said Sophie Cestari, FORGE program manager. "Never have I seen such an interesting and diverse group all in one place with one goal."

The event's collaborative approach reinforced the power of the Channel Partner network.

"Entrepreneurs come from all 50 states, so we need organizations from all 50 states to support them," Shuja said. "While there are competitors in the network and people looking to work on the same projects with the same money, we are ultimately looking forward to having a greater impact by acting in unison."

"The room was filled with test cases," Axelson told her audience. "I was just standing there with the future—no big deal."

A majority of the workshops were not lectures but working sessions. The idea was not just to talk to startups, but to engage with them and help develop the skills necessary for success.

Grid Catalyst President and Founder Nina Axelson ran a workshop titled "Getting Pilot Ready" to a very full room. She talked not only about startups planning for success but also planning for failure—ensuring a company has contingency plans for whatever happens. Axelson also talked about the importance of finding the right type of partner.

"How do you keep from getting high-fived to death if it's not going to actually help you get where you need to go?" Axelson asked the workshop. "If you have the right partner at the table with you, they don't want to see you fail."

Axelson talked about why organizations like Grid Catalyst are in NREL's Channel Partner network and want to share their knowledge with startups at Camp Cleantech.

"I think it is an absolute privilege to help startups get their stuff to the market," she said. "Being in their corner and helping them figure it out makes me deeply happy."

Camp Cleantech showcased the power of collaboration within the Channel Partner network, reinforcing IN2's mission to accelerate innovation through collective expertise and support. By creating a space for meaningful connections, the event demonstrated the value of scaling efforts to drive impact at local, regional, and national levels.

## Thanks To All of the Channel Partner Workshop Hosts

**Activate Global** | Thriving in Chaos with Beyond Resilience

**Activate Global** | Kickstarting and Navigating Startup-Corporate Collaborations with Simple Partnership Agreements

**BRITE Energy Innovators** | Mock Venture Capital Interviews

**Colorado Cleantech Industries Association** | Values in the Workplace: Addressing Underrepresentation, Company Values, and Hiring for Diversity

**Centrepolis Accelerator** | How To Design Your Climate-Tech Product for Manufacturability and Successfully Get to Market

**Centrepolis Accelerator** | Partnering with Communities on Clean Energy Projects and Manufacturing

**Cleantech Group** | Winning with the Gatekeepers: Strategies for Making the Innovation Case to Corporate Decision-makers

**Cleantech Open** | Your Customer's Hero Journey: Position for Market Leadership

**Dominion Energy Innovation Center** | Working with Utilities: Building Relationships and Projects

**Elemental Impact** | Square Partnerships Model: Deploying Climate Technology with Community in Mind

**Evergreen Climate Innovations** | The Evergreen Canteen: Essential Tools for Raising Your First Round

**FORGE** | Planning for Scaling Manufacturing

**Greentown Labs** | Best Practices for Working with Corporates

**Grid Catalyst** | Getting Pilot Ready

**Los Angeles Cleantech Incubator** | Loan Readiness Workshop

**Rice Alliance Clean Energy Accelerator** | Industry Pilot Partnerships

**Urban Future Lab** | Navigating Community Benefits Plans and Justice40


# 2023 Strategic Award Winners Support Startups' Commercialization Success

In May 2023, IN2 chose seven winners for its seventh Channel Partner Strategic Awards cycle. Throughout 2024, the awardees applied these funds to support pilot and demonstration projects for startups. Here is how four of the winners used their awards and the impact they made in just one year.

## *AgLaunch Creates a Network of Farmers*

AgLaunch focuses on accelerating agriculture technologies. The organization works with a network of farmers in the Mississippi Delta region and has added representation from farms across the Midwest, Pacific Northwest, Great Plains, and Southern Appalachia. These farmers offer a test bed for new ideas.

"Our farmers provide data, field trials, and expertise, and in return, they own a piece of the business network," AgLaunch President Pete Nelson said.

Since its founding, AgLaunch has recruited members in 10 states.

With its award from the Channel Partner network, AgLaunch set its sights on increasing its membership in new regions and finding ways to help underserved markets, such as those in urban settings.

With the award funding, AgLaunch worked with the North Carolina Agricultural & Technical State University to survey farmers and identify those interested in joining its network. Additionally, AgLaunch is working with farmers already in the network to further support them in conducting field trials, in addition to supporting startup founders.

## *Grid Catalyst Expands Opportunities for Startups*

Before creating Grid Catalyst, the technology accelerator's President and Founder Nina Axelson led sustainability initiatives for a utility. For years, she sat across the table from startups looking for opportunities to run pilot or demonstration projects. She always had to ask if they had experience running a pilot project and turned them away if they did not.

"This is why we help startups that are in the precommercialization stage, especially ones that need to demonstrate that their technology actually works in the real world," Axelson said.

Grid Catalyst's strong network of community and ecosystem partners focuses on finding partnership opportunities for startup founders.

Axelson said the award from the Channel Partner network made a huge difference.

"It felt like we might not be able to fulfill our mission until the award," she said. "It helped us expand, and now I can say with certainty that we are going to fulfill our purpose."

Axelson also said being part of the Channel Partner network is a vital source of support.

"We don't do any of this alone," she said. "I had no idea that this world of people existed before starting Grid Catalyst. It's so deeply collaborative, and everybody is cheering for each other. I could gush forever about what it means to be in a community with those folks."

## *Launch Alaska Welcomes Startups from Around the World*

With the award from IN2, Suzanna Caldwell, tech deployment track manager for Launch Alaska, said the accelerator expanded its reach, bringing participants with cutting-edge technologies from halfway around the world.

"They were from all over the U.S., plus one from the United Kingdom, and one from Sweden," Caldwell said.

Based in Anchorage, Launch Alaska is an eight-month accelerator program for companies to develop technologies in the northernmost state. Funding from the Channel Partner network led to the organization's most successful cohort so far.

"We were able to support 19 companies in this recent cohort thanks to the award," Caldwell said. "Eleven graduated—the most companies we've ever invited into our portfolio in a year. They each found successful market traction in Alaska and have several projects in the works."

Alaska faces unique challenges when it comes to energy. The state has many communities that are not easily accessible by roads. For example, fuel must first go to Anchorage, then be delivered to a rural hub, and from there be shuttled to the smallest towns.

"We have many places that struggle with the high cost of fuel," Caldwell said. "Even Anchorage, the most populated area of the state, is facing a natural gas shortage."

Energy costs are already high, and the people in Alaska need solutions that are not dependent on unreliable transportation.

"If you can do business in Alaska, you can do business anywhere," Caldwell said. "We have some really big challenges—like transportation logistics and extreme cold—but we're also home to the third-busiest cargo airport in the world."

This makes the state an intriguing place for startups that want to test the limits of their technologies. Once innovators join the Launch Alaska program, they discover that the state is similar to a big small town—everyone knows someone. Participants meet with advisors who help make local connections.

Launch Alaska is always striving to expand its reach. For the last cohort, a local startup joined the program for the first time and flourished.

## *Urban Future Lab Brings Community Together*

With its award, Urban Future Lab (UFL) at the New York University (NYU) Tandon School of Engineering rallied the technology ecosystem, uniting key players across the entire industry life cycle at a groundbreaking event.

In June 2024, UFL hosted the Urban Future Forum, drawing more than 160 attendees. Beforehand, UFL engaged with nearly two dozen organizations to shape the agenda around the community's needs and wants.

During the Urban Future Forum, attendees explored new technologies, industry challenges in piloting innovations, and workforce progress and barriers. Representatives from the New York City Mayor's Office, local utilities, national accelerators, and others participated in addressing these pivotal issues.

UFL launched in 2009 with its flagship ACRE (Accelerator for a Clean and Resilient Economy) Incubator, which supports startups for two to three years as they grow and scale up. UFL has since expanded to include three additional six-month programs, in which several IN2 portfolio companies participated.

"It's about giving startups tailored assistance to help them on their business journey," said Jeannette Williams, chief operating officer of UFL. "The focus is on solutions for the urban environment and the necessary infrastructure to support them."


The panel discussions at UFL's June event focused on piloting solutions. During the first panel, IN2 portfolio company NineDot Energy highlighted its partnership with the Bronx Charter School for Better Learning, discussing a nearby installation and the team's involvement in a STEM engagement program.

The second panel was an exercise in myth-busting, addressing and clarifying the assumptions different stakeholders held about each other.

"It was both candid and refreshing for everyone," Williams said. "The discussion revealed a strong desire for clearer communication and a shared understanding of our common goals. It's not easy to achieve that level of alignment at an event, but it's crucial for progress."

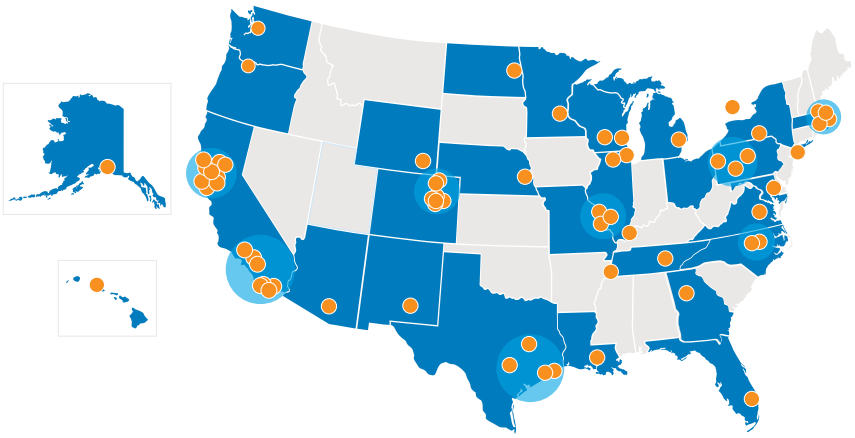
The third panel addressed the role of communities and cities as customers, while the fourth panel focused on building the new workforce.

"They discussed not only the need to upskill people and introduce them to jobs, but also the gap between training and actual careers," Williams said. "Nobody is going to use the new technology if no one is there to install it and maintain it."

As UFL works to make the gathering an annual event, Williams finds great inspiration in the Channel Partner network.

"We're united in solving the same issues," she said. "There are plenty of problems for all of us to work on, and the Channel Partner network is instrumental in helping us tackle them together."

# Channel Partner Network



- Activate | Berkeley, CA
- AgLaunch | Memphis, TN
- AgStart | Woodland, CA
- Alliance for Climate Transition | Boston, MA
- BioGenerator | St. Louis, MO
- BRITE Energy Innovators | Warren, OH
- Browning the Green Space | Boston, MA
- California Institute of Technology - Rocket Fund | Pasadena, CA
- Carnegie Mellon University - Wilton E. Scott Institute for Energy Innovation | Pittsburgh, PA
- Cleantech Group | San Francisco, CA
- Cleantech Open | Los Angeles, CA
- Cleantech San Diego | San Diego, CA
- Coachella Valley Economic Partnership | Palm Springs, CA
- Colorado Cleantech Industries Association | Denver, CO
- Colorado School of Mines - Beck Venture Center | Golden, CO
- Colorado State University - Energy Institute | Fort Collins, CO
- Dominion Energy Innovation Center | Ashland, VA
- Elemental Impact | Honolulu, HI
- Energy Tech Nexus | Houston, TX
- Evergreen Climate Innovations | Chicago, IL
- F3 Tech Accelerator | Easton, MD
- FORGE | Somerville, MA
- Georgia Institute of Technology - ScaleUp Lab | Atlanta, GA
- Grand Farm (Emerging Prairie) | Fargo, ND
- Greentown Labs | Somerville, MA
- Grid Catalyst | Minneapolis, MN
- HBCU Clean Energy Initiative | Miami, FL
- Imagine H2O | San Francisco, CA
- Innosphere Ventures | Fort Collins, CO
- Innovation Corridor | Denver, CO
- Koffman Southern Tier Incubator | Binghamton, NY
- Larta Institute | Los Angeles, CA
- Launch Alaska | Anchorage, AK
- Lawrence Technological University - Centrepolis Accelerator | Southfield, MI
- Los Angeles Cleantech Incubator | Los Angeles, CA
- Louisiana State University | Baton Rouge, LA
- MaRS Discovery District | Toronto, Canada
- MassChallenge | Boston, MA
- mHUB | Chicago, IL
- New Energy Nexus | San Francisco, CA
- New Mexico State University - Arrowhead Center | Las Cruces, NM
- New York University - Urban Future Lab | New York, NY
- North Carolina Biotechnology Center | Research Triangle Park, NC
- Penn State University | University Park, PA
- Powerhouse | Oakland, CA
- Prospect Silicon Valley | San Jose, CA
- Rice University - Rice Alliance for Technology and Entrepreneurship | Houston, TX
- Spark Innovation Center | Knoxville, TN
- Stanford University - TomKat Center for Sustainable Energy | Stanford, CA
- Syracuse University - Syracuse Center of Excellence | Syracuse, NY
- Texas A&M University - Engineering Experiment Station, Clean Energy Incubator | College Station, TX
- The Water Council | Milwaukee, WI
- The Yield Lab | St. Louis, MO
- University of Arizona - Center for Innovation | Tucson, AZ
- University of California Davis - Energy and Efficiency Institute | Davis, CA
- University of Colorado Boulder - Venture Partners | Boulder, CO
- University of Nebraska - Daugherty Water for Food Global Institute | Lincoln, NE
- University of North Carolina - Institute for the Environment | Chapel Hill, NC
- University of Texas Austin - Austin Technology Incubator | Austin, TX
- University of Texas Austin - Texas Venture Labs | Austin, TX
- University of Washington - Buerk Center for Entrepreneurship | Seattle, WA
- University of Wisconsin Madison - Wisconsin Energy Institute | Madison, WI
- University of Wyoming - Impact 307 | Laramie, WY
- VertueLab | Portland, OR

# External Advisory Boards

The IN2 External Advisory Boards determine the companies accepted in each cohort. They provide insights and expertise in sector trends, challenges, opportunities, and understanding of the technologies, both traditional and emerging. The two boards have expertise in either (1) the commercial and residential built environment or (2) agriculture and the food-energy-water nexus.

Nick Brozović
*Director of Policy, Daugherty Water for Food Global Institute*

Craig Collin
*Senior Vice President, Tavistock*

Christine Daugherty
*Head of Sustainability, Conagra Brands*

Laura Dwyer
*Business Development, DuPont Ventures*

Vonnie Estes
*Vice President of Technology, Produce Marketing, Produce Marketing Association (PMA)*

Jennifer Fortenberry
*Sustainability Innovation & Marketing Leader, Schneider Electric*

Tom Hardiman
*Executive Director, Modular Building Institute*

Andrew Jordan
*Owner, Jordan Associates*

Christine Karslake
*Senior Director, Bunge*

Nanda Kumar Puthucode
*Chief Investment Officer and Global Head of Ventures, Bunge*

Luke Leung
*Director of Sustainable Engineering, Skidmore Owings and Merrill LLP*

John Mangano
*Regional President, Toll Brothers*

Bob Morris
*President, AndMore Associates LLC*

Betsy Scott
*Executive Director Program & Engagement, Housing Innovation Alliance*

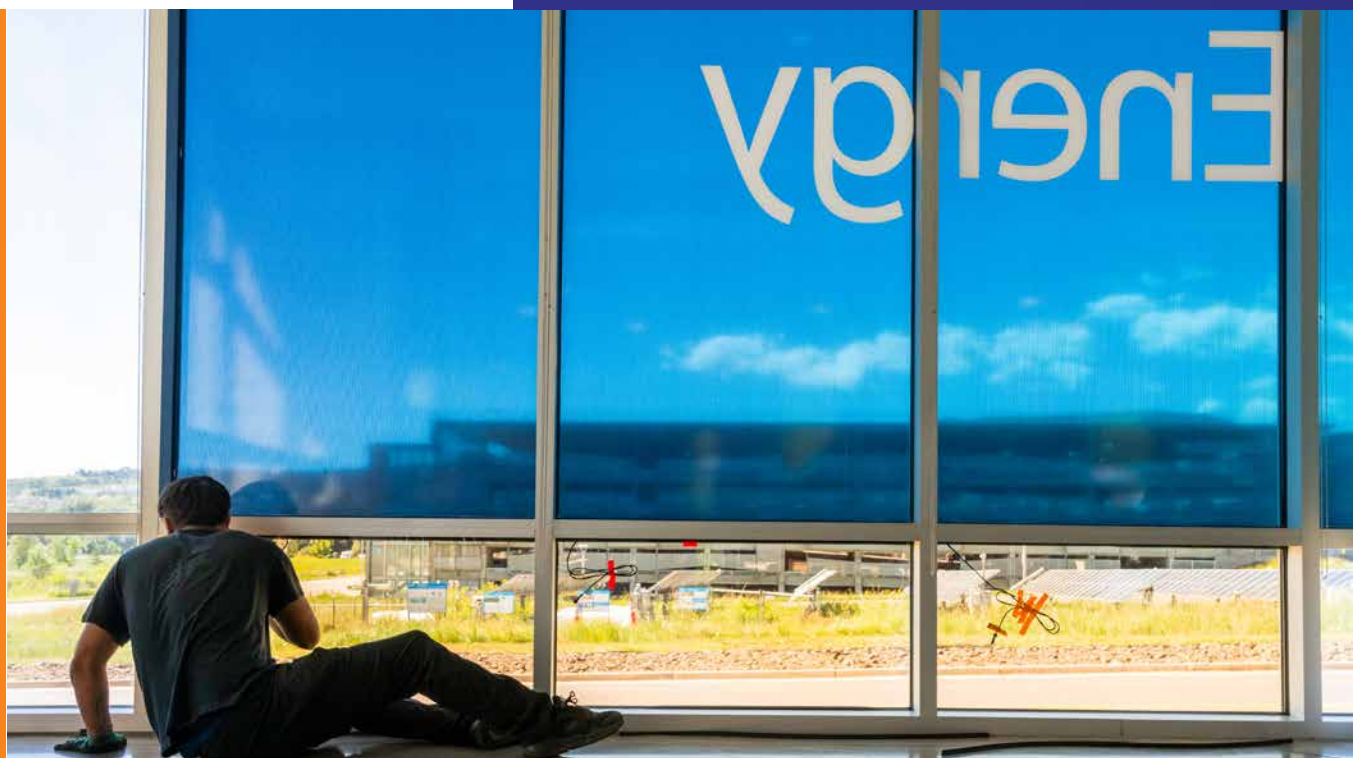
Rusty Smith
*Associate Director, Rural Studio, Auburn University*

Phil Taylor
*Open Innovation Lead, Bayer U.S.*

Renée Vassilos
*Director of Ag Innovation, The Nature Conservancy*

Steve Welker
*Operating Partner, Lewis and Clark AgriFood*

Millie (Mulumebet) Worku
*Professor of Animal Sciences, North Carolina A&T State University*




## Wells Fargo IN2 Advisory Board

The Wells Fargo IN2 Advisory Board is composed of executives and senior managers from Wells Fargo, representing more than a dozen lines of business, who support the IN2 program through direct input, expertise, engagement, and influence. This group serves in an ad hoc advisory capacity and is invited to participate in cohort downselection discussions, kept apprised of portfolio company milestones, and invited to attend key events as appropriate. Members are also encouraged to adopt the role of IN2 ambassadors, increasing awareness of IN2 within their networks and elevating opportunities for continued programmatic evolution.

Romie Basra, Commercial Banking Group

Mary Brown, Public Affairs Group

Tim DiGiulio, Commercial Banking Group

Steve Grass, Commercial Banking Group

Tom Harper, Commercial Banking Group

Phil Hopkins, Commercial Banking Group

Ramsay Huntley, Commercial Banking Group

Matt Jernigan, Corporate Properties Group

Chris Johnson, Public Affairs Group

Akhlaq Khan, Technology Group

Jennivine Kwan, Corporate Properties Group

Bill Lawler, Corporate Properties Group

James Madson, Commercial Banking Group

Jennifer Manfre, Public Affairs Group

John Moon, Public Affairs Group

Steve Nelson, Corporate Properties Group

Geneviève Piché, Corporate and Investment Banking Group

Molly Porter, Public Affairs Group

Curt Radkin, Corporate Properties Group

Tim Rafalovich, Commercial Banking Group

Tom Richardson, Commercial Banking Group

Jeff Schub, Public Affairs Group

Matt Servatius, Commercial Banking Group

Kelly Souza, Corporate and Investment Banking Group

Christie Toal, Public Affairs

Robin Wenzel, Commercial Banking Group

# Team

The program management team at NREL works together with partners at the Danforth Science Center and Overlay Capital to grow the IN2 ecosystem and help our companies realize success.

## *NREL*

Sarah Derdowski,
*IN2 Program Manager*

Catherine Dolezal,
*Channel Partner and Portfolio Network Lead*

Kristin Field-Macumber,
*IN2 Buildings Technical Project Manager*

Peggy Littleton,
*Communications Lead*

Tonya McCabe,
*Project Controller*

Evan Rabb,
*Project Controller*

Hanna Sotiropoulos,
*Technical Project Controller*

## *Partners*

Elizabeth Blankenship-Singh,
*Senior Associate, Overlay Capital*

Genevieve Heidkamp,
*Project Manager, Overlay Build*

Elliott Kellner,
*Director of Commercial Innovation—Innovation Team, Danforth Center*

Julieta Moradei,
*Managing Partner, Overlay Build*

INNOVATION INCUBATOR

Founded by WELLS FARGO | NREL

Wells Fargo Innovation Incubator (IN2)

IN2@nrel.gov ▪ IN2ecosystem.com

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