



EnergyTech UP

FISCAL YEAR 2024 ANNUAL REPORT

U.S. Department of
ENERGY | Office of Technology
Transitions

Greetings,

As we reflect on the third year of the EnergyTech University Prize (EnergyTech UP) program, I am proud to share that the 2024 competition demonstrated the incredible potential of our nation's student innovators. This annual report presents the program's latest data and successes through 2024.

U.S. Department of Energy (DOE) Office of Technology Transitions (OTT) designed EnergyTech UP to introduce collegiate students to commercialization best practices and inspire them to develop a business plan for a clean energy technology from their university or one of DOE's National Laboratories. Throughout the program, students work alongside industry and DOE experts to conduct market research, and all students have the opportunity to pitch their ideas to an audience and panel of judges at one of 15 regional Explore Events. Select teams move on to the National Pitch Event for a chance to win cash prizes.

The 2024 iteration offered the largest prize pool in the program's history! OTT awarded \$450,000 in cash prizes to 28 exceptional student teams. Nearly 800 students from 223 teams representing 117 collegiate institutions participated in the 2024 program. Following the 15 regional Explore Events, 28 finalist teams moved on to compete at the National Pitch Event at Zpryme's Energy Thought Summit in Austin, Texas. Additionally, bonus prize finalists attended and presented their solutions to audience members. This was the second in-person competition event for EnergyTech UP, and we were excited to enable more students than ever to attend and present live.

The array of insightful ideas was inspiring, and OTT ultimately awarded three national winners at the National Pitch Event. The first-place team from the University of Chicago, Rise Reforming, was awarded \$50,000 for their business plan and has incorporated since program participation!

The 2024 program also featured the first-ever opportunity for faculty members to win cash prizes to further entrepreneurial education at their institutions. This inaugural Faculty Track included an "Explore Phase", designed to support participants who are excited to implement entrepreneurship and/or commercialization activities, a "Develop Phase" in which Faculty Explorers and others were given access to DOE mentorship, resources, and activities with experts from the DOE and National Laboratories, and an "Implementation Phase", designed to expand on how energy entrepreneurship topics could be integrated into student activities at their home institution. A total of \$100,000 was awarded to successful faculty entries throughout the competition phases.

For the first time this year, following the National Event in April, several National Winners from both faculty and student tracks attended the Earth Day event at the White House and participated in a technology commercialization roundtable with government and industry experts.

Thank you to all who contributed to the success of the 2024 program. Your dedication and passion for clean energy innovation are driving the transformation we need to meet the challenges ahead.



Dr. Vanessa Z. Chan

Chief Commercialization Officer
U.S. Department of Energy Director
Office of Technology Transition

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About EnergyTech University Prize

EnergyTech University Prize Overview

The [Office of Technology Transitions](#) (OTT) [EnergyTech University Prize](#) (EnergyTech UP), launched in 2021, seeks to attract the talented students of today and help them develop into the engineers, policymakers, entrepreneurs, market analysts, and project developers of tomorrow. Commercialization and business skills are critical to the success of all clean energy solutions, and EnergyTech UP fosters that skillset in our next generation of experts. In addition to the traditional Student Track, the 2024 competition introduced a new Faculty Track, challenging faculty to develop and implement educational activities to engage more students in energy technology commercialization and entrepreneurship topics at their institution.

EnergyTech UP is an OTT program that is administered by the National Renewable Energy Lab and is part of the American Made Challenges (American-Made) portfolio. American-Made hosts a suite of DOE prizes.

With both the Student and Faculty Tracks, EnergyTech UP aims to build a foundation of next generation innovators that are trained in commercialization and familiar with the clean energy technology industry. The goals of the program are to:

- Build engagement between colleges, universities, the DOE, DOE National Labs, and industry.
- Inspire students and faculty on the possibilities of leveraging energy technologies.
- Foster innovation in energy technology commercialization and entrepreneurship across U.S. institutions
- Increase commercialization of energy technologies.
- Help launch careers.

The geographic reach of the EnergyTech UP prize from 2022 through 2024 is displayed in Figure 1.

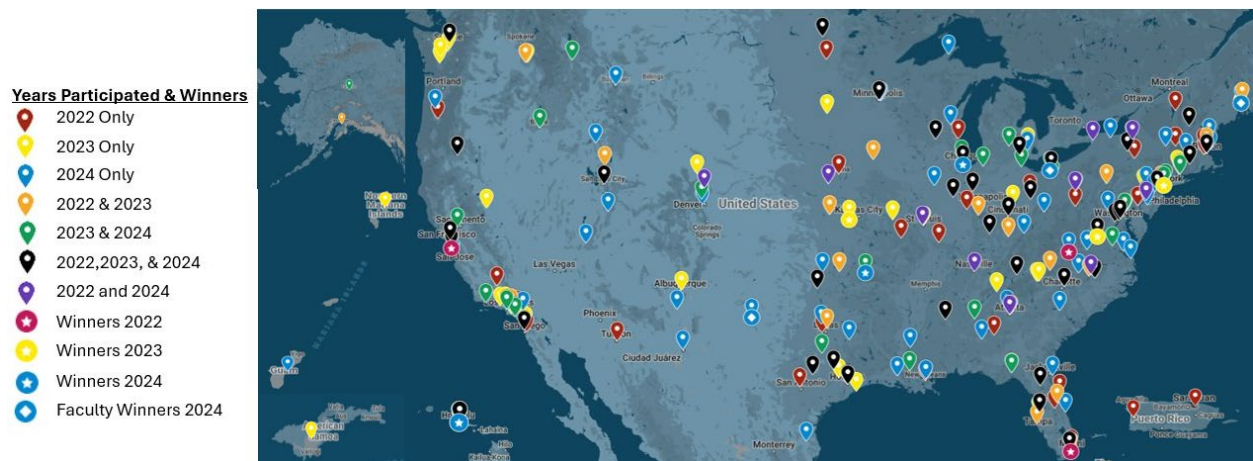


Figure 1: Geography of Participation in EnergyTech UP 2022-2024.

Student Track

In the Student Track, multidisciplinary collegiate student teams develop and present a business plan that leverages DOE National Laboratory-developed or other high-potential energy technologies, including university-developed technologies or other technologies of interest. The student teams gain experience in viewing new technologies through a market-viability lens, learning how to conduct market research, and developing and presenting a business pitch. EnergyTech UP awards cash prizes to select teams that successfully identify an energy technology, assess its market potential, and propose a strategy for commercialization. In addition to OTT, various other technology offices within DOE contribute funds to bonus prize awards.

Faculty Track

The 2024 competition for the first time included a Faculty Track program that was designed to support faculty members interested in implementing entrepreneurship and commercialization activities into curriculum or other student programming at their home institution. The Faculty Track included an Explore Phase, a Develop Phase, and Implementation Phase with mentorship and a down selection process similar to the Student Track.

Funding

OTT commits a portion of its annual funding to operate this program in support of its mission to advance the commercialization of energy technologies developed by DOE National Labs. Additionally, the CHIPS Act included a funding designation, recognizing the need to host a collegiate business plan competition. Furthermore, individual program offices across the Department of Energy also provide strategic bonus prize funding in direct recognition of the program's critical utility for advancing commercialization efforts in their specific sector. Offices typically tailor their prize(s) to align with their specific technology office's strategic goals and priorities. The total prize pool for the student prize was \$450,000, the most in program history, thanks to supplemental funding provided by nine DOE program offices beyond OTT. An additional \$100,000 of cash prizes were awarded to faculty winners.

The following nine DOE program offices offered Student Track bonus prizes of \$25,000. Each prize's focus was specific to the funding office's mission space.

1. [Building Technologies Office](#),
Focus: Business plans that increase the adoption of electrification solutions for commercial or residential HVAC technologies that increase market adoption and address industry challenges.
2. [Geothermal Technologies Office](#),
Focus: Business plans that increase the adoption of geothermal technologies that address key exploration and operational challenges.
3. [Hydrogen & Fuel Cell Technologies Office](#) – 2024 was the first time involvement in EnergyTech UP
Focus: Business plans that identify mechanisms for commercially viable hydrogen technologies to achieve market liftoff, supporting domestic competitiveness, job creation, and achievement of climate goals.
4. [Office of Electricity](#) (3 bonus prizes)
 - i. Focus: Business plans that increase the adaption of grid-enhancing technologies to benefit the U.S. power grid

- ii. Focus: Business plans that stimulate the adoption of flexible large power transformers in the electric sector
 - iii. Focus: Business plans for a long duration energy storage (LDES) technology solution that addresses market challenges to enable greater adoption of LDES
- 5. [Office of Fossil Energy and Carbon Management](#),
Focus: Business plans to increase the adoption of carbon dioxide removal technologies.
- 6. [Office of Manufacturing & Energy Supply Chains](#)– *2024 was the first time involvement in EnergyTech UP*
Focus: Business plans for deployment of smart manufacturing solutions at small and medium-sized manufacturers
- 7. [Office of Nuclear Energy](#),
Focus: Business plans to accelerate the development and deployment of advanced technologies supporting advanced reactors and fuel cycle technologies.
- 8. [Office of Technology Transitions](#) (2 bonus prizes)
 - i. Focus: Undergraduate-only bonus prize - Most meritorious business plan presented by a team comprised of only undergraduate students
 - ii. Focus: National Lab Intellectual Property Licensing bonus prize - Most meritorious business plan that uses a DOE technology
- 9. [Solar Energy Technologies Office](#)
Focus: Business plans that improve the performance, affordability, reliability, and value of solar technologies on the U.S. grid and to tackle emerging challenges in the solar industry
- 10. [Water Power Technologies Office](#)
Focus: Business plans for a selected novel hydropower or marine technology that tackles emerging challenges in the water power industry and aims at improving the performance, affordability, reliability, and value of hydropower or marine energy in the United States.

Highlights from the 2024 Program

EnergyTech UP 2024 marked the third year of the program. The 2024 program was launched in May 2023 and concluded in April 2024.

- 1000+ competitors (students & faculty), with the **highest student participation in program history**.
- **Inaugural year of the Faculty Track.**
- Participation from 117 schools, representing 39 states & Washington, DC.
- Students competed for a portion of the **\$450,000 prize pool – the largest in program history**. An additional \$100,000 awarded to faculty winners.
- The 2024 program introduced the **first ever OTT-funded Undergraduate-only Team Bonus Prize** to support teams who are participating as undergraduates.
- Use of DOE technology increased to the highest in history of program history.
- Select Student and Faculty Winners were **invited to the White House!**



Image 1: Select 2024 EnergyTech UP Student and Faculty Prize winners and EnergyTech UP Program Managers before attending the White House Earth Day Round Table.

EnergyTech UP 2024 - Student Track

Similar to previous years, the 2024 EnergyTech UP competition was structured as three phases (Figure 2). Throughout the phased program, student teams receive industry connections, mentorship, and commercialization exposure. Teams first virtually competed at their respective regional pitch competition, and top teams were invited to the in-person National Pitch Event at Zpryme's Energy Thought Summit in Austin, Texas.



Figure 2: 2024 EnergyTech UP Student Track Structure

Explore Phase (September 27, 2023 – February 29, 2024)

After the January 2024 submission deadline, 223 participating teams from 117 collegiate institutions were [announced](#). These teams comprised 791 student participants, a 25% increase from the 2023 program.

To promote maximum engagement across the country, the program divides the U.S. and its territories into 15 regions. All student teams are assigned their respective region and attend that region's virtual pitch competition, called the Explore Event. The 15 Explore events are hosted by DOE's industry partners and are referred to as "Regional Conveners." Regional conveners provide local connections, trusted outreach, and relevant judges for the Explore events. In 2024, there were 17 regional conveners: organizations ranging from universities to incubators (Table 1).

Table 1: 2024 EnergyTech UP Regional Conveners

2024 EnergyTech UP Region	Regional Convener
East Texas	Rice Alliance for Technology and Entrepreneurship
Mountain West	WY Ranch
Mid-Atlantic	Wilton E. Scott Institute for Energy Innovation at Carnegie Mellon University
Northeast	Cleantech Open Northeast
New York City Metro	1. Syracuse Center of Excellence and 2. NYSERDA
South Atlantic	Research Triangle Cleantech Cluster
Great Lakes	Evergreen Climate Innovations
Southwest	University of Arizona Center for Innovation
Central Northwest	University of Washington Buerk Center for Entrepreneurship
Southeast	University of Kentucky
Southern California	1. Cleantech San Diego and 2. University of California San Diego
Northern Plains	Grid Catalyst
National Capital Region	National Renewable Energy Laboratory
South Central & U.S. Islands	Elemental Excelsior
Florida & Alabama	Florida High Tech Corridor

All 15 Explore Events occurred virtually on February 27, 28, or 29, 2025. At each Explore Event, up to 15 student teams pitched a 7-minute presentation to describe their initial idea and business plan for their chosen technology. A panel of industry judges evaluated the teams' presentations.

One overall Regional Winner was chosen at each event, as well as one Bonus Prize Finalist per technology area, where applicable. Staff within each DOE program office providing prizes then reviewed all finalists in their respective technology areas and selected one Bonus Prize Winner per category. These winner teams were each awarded \$3,000 and received an invitation to the National Pitch Event, held in April 2025.



Image 2: Photo of Team Ion Clean PV presenting their technology at the National Pitch Event.

Refine Phase (March 1, 2024 – April 12, 2024)

After the Explore Events concluded, Regional Winners moved forward to the Refine Phase. During this phase, student teams refined their pitches and were connected to industry mentors to learn about commercialization and understanding how to evaluate their technologies through a market-needs lens. Student teams engaged in networking opportunities and attended educational presentations with DOE leadership and organizations such as the Collegiate Entrepreneurs' Organization (C-E-O). With this phase focusing on refining business plans and pitches, no deliverables or public events took place.

Pitch Phase (April 13 – 15, 2024)

After five weeks refining their business plan, the 15 Regional Winners who were identified at the Explore Events, plus each technology bonus prize finalist, and one undergraduate-only team finalist attended the EnergyTech UP National Pitch Event. On April 15, 2024 the National Pitch event took place in Austin, Texas as part of Zpryme's Energy Thought Summit. Each student gave 10-minute pitches, followed by up to 5 minutes of questions from a panel of industry reviewers, who scored the pitches based on their technology identification, market assessment, economic feasibility assessment, potential impact, and strength of the overall business plan.

The national first-place winner was awarded \$50,000; the national second place winner was awarded \$20,000; and the national third-place winner was awarded \$10,000. Prizes of \$22,000 each were made to 11 technology bonus prize finalists, the undergraduate-only bonus prize, and the National Lab IP Licensing bonus prize.

The three National Winners were:

- First Place, awarded \$50,000: Team Rise Reforming from The University of Chicago.
- Second Place, awarded \$20,000: Team ProPika from the University of Arkansas.
- Third Place, awarded \$10,000: Team Ion Clean PV from Hawaii Pacific University.

See all awardees [here](#).



Image 3: Photo of 2024 EnergyTech UP Student Track National Winners.

EnergyTech UP 2024 - Faculty Track

New to the 2024 EnergyTech UP competition was the EnergyTech UP Faculty Track, which tasked individual faculty members (or faculty teams) to compete for \$100,000 in cash prizes for the successful development of energy technology commercialization and entrepreneurship activities at their home institution. The Faculty Track created the space to increase visibility for faculties' ideas through DOE.

Additionally, while the Student and Faculty Tracks were run separately, many synergies between student teams and faculty advisors were observed. Several faculty track applicants were also listed by student teams as mentors/faculty advisors, fostering greater involvement in both competition tracks.

The 2024 Faculty Track was composed of three phases: the Explore Phase, the Develop Phase, and the Implementation Phase. These phases are summarized in Figure 1.



Figure 3: 2024 EnergyTech UP Faculty Track Structure

Explore Phase

The Explore Phase of the Faculty Track was intended to encourage faculty who are interested in implementing energy commercialization & entrepreneurship activities at their institutions, but whose home institutions have limited institutional knowledge, resources, or experience in this topic. In their Explore Phase proposals, each faculty applicant outlined their initial ideas and identified opportunities for new educational activities or curricula. DOE selected 10 winners from the Explore Phase, referred to as “Faculty Explorers.” Each Faculty Explorer received a \$4,000 cash prize and was encouraged to continue advancing their winning proposal. Faculty Explorers also gained increased visibility for their success through a letter of congratulations sent to contacts at their institutions.

Develop Phase

The Develop Phase offered tutorials, resources, and mentorship to any interested faculty in the three months after Faculty Explorers were selected. The support and resources shared throughout this phase were available to all interested faculty, regardless of participation in the earlier Explore Phase.

Each faculty competitor was assigned a mentor in the energy commercialization space and was encouraged to incorporate OTT content into their Implementation Phase application. This content included DOE's [Adoption Readiness Level \(ARL\)](#) framework, which helps identify a technology's readiness for commercialization at scale; the [Lab Partnering Service \(LPS\)](#), which helps connect institutions to National Laboratories and contains a database of licensable National Laboratory technologies; and the [Pathways to Commercial Liftoff](#) reports, which are a series of reports that identify how commercialization might occur for emerging zero-carbon energy technologies. No prize money was awarded in this phase.

Implementation Phase

The Implementation Phase tasked faculty competitors with developing a more detailed plan for energy commercialization and entrepreneurship programming or curricula, with required demonstration of institutional support. Eligible applicants competed for a total of \$60,000 in prize money as part of the Implementation Phase. Implementation Phase participants were not required to have won the Explore Phase to be eligible.

In the Implementation Phase, DOE selected first, second, and third place winners who won \$25,000, \$15,000, and \$10,000 respectively to further their proposed programming or curricula, and five runners-up were awarded \$2,000 each. Each Implementation Phase winner also had a letter of recognition sent from DOE's Chief Commercialization Officer and OTT Director, Dr. Vanessa Chan to their institution leadership.

The top three national Faculty Track winners were as follows:

- **1st Place:** Maryam Younessi, "**Empower Women in Engineering via Entrepreneurship**", *Cleveland State University*
- **2nd Place:** Brien Walton, "**Equitable Energy Transition Innovation Incubator**", *Husson University*
- **3rd Place:** Cassandra McQuillen, "**Energy Transition Strategy and Development for Future Business Leaders**", *Texas Tech University*

The geographic distribution of Faculty Track participants and winners is displayed in Figure 4.

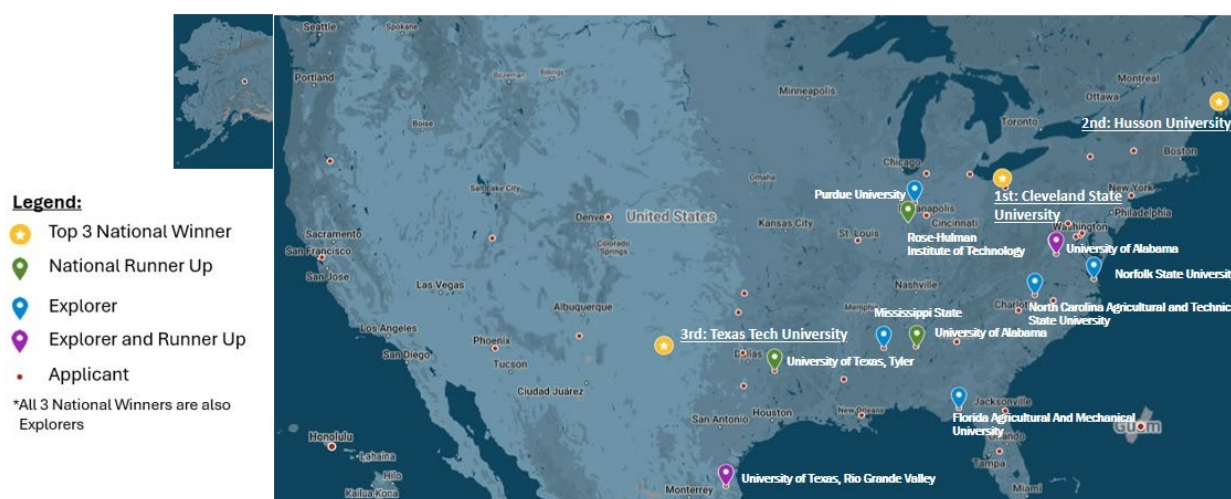


Figure 4: Geography of Faculty Track Participation in EnergyTech UP 2024.

Faculty Track Prize Pool

A summary of the \$100,000 awarded to Faculty Track competitors is displayed in Table 2.

Table 2: Summary of Faculty Track awards across Explore and Implementation Phases

Category	Amount	Number Awarded	Total
Explore Phase			
Faculty Explorers	\$4,000	10	\$40,000
Implementation Phase			
1 st place	\$25,000	1	\$25,000
2 nd place	\$15,000	1	\$15,000
3 rd place	\$10,000	1	\$10,000
National Runner-Up Prizes	\$2,000 each	5	\$10,000
Total Prize Money (Both Phases)			\$100,000

Overall Program Outcomes

EnergyTech UP's 2024 outcomes were far-reaching. Table 3 outlines key outcomes of the Student Track since it was launched in 2021 and Table 4 outlines key outcomes from the Faculty Track's inaugural 2024 year.

Table 3: Summary statistics of Student Track outcomes.

Metric	2024 Program Outcomes	Cumulative Program Outcomes to date (since program launch in 2021)
Total student participants	791	1,900+
Participating collegiate institutions	117	Appx 200
Total percent of schools that were MSIs	21%	22% average
Number of states represented	44 states, Washington DC, and 2 U.S. territories	48 states, Washington DC, and 3 U.S. territories
Number of regional conveners.	17	22 distinct organizations
Number of Regional Explore Events	15	41
Amount awarded (includes National prizes, bonus prizes and regional awards)	\$450,000	\$1,054,500
Number of unique DOE offices that contributed funding to EnergyTech UP	10 (Building Technologies Office , Geothermal Technologies Office , Hydrogen & Fuel Cell Technologies Office *, Office of Electricity , Office of Fossil Energy and Carbon Management , Office of Manufacturing & Energy Supply Chains *, Office of Nuclear Energy , Office of Technology Transitions , Solar Energy Technologies Office , Water Power Technologies Office) *Denotes new in 2024	10 (Building Technologies Office , Geothermal Technologies Office , Hydrogen & Fuel Cell Technologies Office , Office of Electricity , Office of Fossil Energy and Carbon Management , Office of Manufacturing & Energy Supply Chains , Office of Nuclear Energy , Office of Technology Transitions , Solar Energy Technologies Office , Water Power Technologies Office)
Number of teams awarded prize funds	28	68
Number of unique Regional & National Convener Partners	18	25
Competitors who reported an increased interest in an energy career	78%	79% average
Competitors who reported increased knowledge of the skills required for technology commercialization	85%	79% average

Table 4: Summary statistics of Faculty Track outcomes

Metric	2024 Program Outcomes
Total Faculty participants	122
Participating collegiate institutions	51
Total percent of schools that were MSIs	27%
Number of Faculty Applicants Awarded Funds	10
Amount awarded (across Explore & Implementation phases)	\$100,000

Success Stories

The following three stories describe the influence EnergyTech UP has had on students following the program's completion. The highlighted students participated in the 2023 and/or 2024 programs.

As the inaugural year of the Faculty Track, there are not currently follow-on successes to share at the time of this writing.

Team Flux XII, 2023 Regional Winner: Go with the Flow Batteries (University of Wisconsin-Madison)

Flux XII, a team formed under the University of Wisconsin-Madison with 30+ combined years of in-lab research experience designing renewable energy materials and devices, was named a 2023 EnergyTech UP Regional Winner and has since formed an organic energy solutions startup company that uses organic molecules to create flow batteries for grid energy storage. Their innovative approach eliminates the need for mining, making renewable energy integration more reliable and affordable.

Since their success in the EnergyTech UP, this team has been named one of the 20 Flow Battery Startups to Watch by [StartUs Insights](#) and joined the [Third Derivative](#) climate accelerator cohort.

Team ProPika, 2024 Second Place National Winner: Biomass to Jet Fuel (University of Arkansas)

After securing a \$20,000 second-place win at the 2024 EnergyTech UP National Pitch Event, Team ProPika went on to win an additional \$13,000 in various competitions within the [2024 Heartland Challenge](#). This team, comprised of members from the University of Arkansas, focused on commercializing sustainable processes for drop-in fuels and chemicals. Their patented catalytic membrane reactor combines the dissolution and hydrolysis of cellulose, a natural polymer that is difficult to process, and the separation of the product stream into a single step.

Most recently, ProPika participated in the international [Bangkok Business Challenge](#) in June 2024. The challenge, hosted by at the Sasin School of Management, drew 276 student teams from 62 universities on five continents. ProPika was the only U.S. team to make the final round where they took home the grand prize, winning a cash prize of \$18,000.

In an interview with the University of Arkansas Office of Entrepreneurship and Innovation, Nhiem Cao, EnergyTech UP 2024 ProPika team lead said, "We were able to get people to believe it's possible. That sense of validation is important in any start-up, especially when doubt starts to creep in. The technical challenges are still daunting, but we are pressing onward."

Team Rise Reforming, 2024 First Place National Winner: Rise Reforming (University of Chicago)

Following their success as first place winners of the EnergyTech UP 2024 in April, this team formed Rise Reforming, Inc., a business seeking to turn the tide on the "plastic disaster" using a revolutionary path to carbon-negative chemicals like dimethyl ether (DME) and methanol.

In November 2024, Rise Reforming was selected as a Voucher Recipient for DOE's Voucher Program, meant to grant non-traditional partners such as small businesses access to established experts to support commercialization of clean energy technologies. Also in November, Rise Reforming announced they were invited by deep tech network, Hello Tomorrow, to attend a global deep tech summit in Paris, France in Spring 2025.

George Rose, who has worked as an undergraduate researcher in the Patel Group, cofounded Rise Reforming with his classmates Lucas Zubillaga Maharg, BS '25, a former research assistant in the Gagliardi Group and intern at Argonne National Lab, and Jona van Oord, BS '26.

Stay Tuned on the Latest EnergyTech University Prize Updates

Learn more about EnergyTech UP by visiting the [OTT program webpage](#). To see the latest prize details or to apply to participate, visit the [EnergyTech UP HeroX webpage](#). You can also learn more about the teams that participated in the [2022 edition](#) and who participated in the [2023 edition](#) of the competition.

To get the latest OTT program updates and opportunities, [sign up for the OTT newsletter](#).