

# CARBON INNOVATION IN LOUISIANA

2024-2025 Report



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# Letter from the Executive Director

**2024 marked a transformative year for establishing the FUEL ecosystem across Louisiana. What began as a vision has evolved into a robust statewide foundation for carbon innovation.**

Since relocating to Louisiana from North Carolina in July of 2024, I've been amazed by this state's industrial strength, innovative spirit, and extraordinary willingness to collaborate to build a global movement for innovation in carbon management. With its rich history of competitive excellence on a global scale, there is no better state for entrepreneurs to build exciting new tech startups bringing next-generation energy solutions to full-scale commercial use.

As we conclude our first operational year, FUEL is proud to partner with the National Science Foundation and Louisiana Economic Development to future-proof our essential energy and chemical manufacturing industry. I hope you will take a moment to read this report and celebrate with us a few of our accomplishments.

I extend my sincere gratitude to all who embraced FUEL's mission, especially Louisiana's newest statewide organization LA.IO as we collaborate to promote a culture of innovation across the state. Together, we're fueling the next generation of energy and chemical manufacturing in Louisiana, providing energy security for the nation and the world.

Sincerely,

**Dr. Michael Mazzola,**

FUEL Executive Director & CEO

# Fueling the Next Generation of Energy

**Future Use of Energy in Louisiana (FUEL) is a collaborative effort to tackle emerging energy challenges head-on to help future-proof the energy economy in Louisiana, for the world.**

FUEL brings together a growing team of 50+ partners consisting of universities, community and technical colleges, government, community, industry, and capital partners all united under the same vision to position Louisiana at the forefront of global energy innovation.

As global energy demands surge, there is an urgent need for innovative solutions, and Louisiana is uniquely positioned to lead the charge. As a leading manufacturer of energy, touching nearly 20% of energy in the U.S., Louisiana boasts a combination of favorable geology, existing infrastructure, generational workforce, and rich history of energy expertise. With transformational funding from the National Science Foundation Regional Innovation Engines (NSF Engines) program of up to \$160 million, FUEL will leverage Louisiana's unique advantages to pioneer a new era of abundant energy to meet the world's growing energy needs.

## CORE FUNCTIONS

Through innovative partnerships, programs, and activities, FUEL cultivates an energy innovation ecosystem with a focus on three core functions:



### Use-Inspired Research and Development

FUEL fosters collaboration across industries, accelerating use-inspired research and development to build a portfolio of technologies supporting energy innovation in Louisiana and across the globe, while creating an innovation engine where researchers and startups work collaboratively to address current energy challenges and opportunities.



### Technology Commercialization

FUEL leverages the state's unparalleled energy expertise, favorable geology, strong workforce, and established infrastructure to bring competitive, Louisiana-made energy solutions to the global market by providing entrepreneurs with the tools needed to accelerate the commercialization of their use-inspired research.



### Workforce Development

Building on Louisiana's history of energy expertise and strong workforce presence, FUEL champions the creation and implementation of transformative workforce development programs that cultivate a skilled and adaptable energy workforce ready to meet the needs of the evolving energy landscape.



# Meet the FUEL Team



**Michael Mazzola, Ph.D.**

**Executive Director/CEO,**  
[mikemazzola@fuelouisiana.org](mailto:mikemazzola@fuelouisiana.org)

As FUEL's Executive Director, Dr. Mazzola leads FUEL's efforts to position Louisiana as a global energy leader, driving competitive and innovative energy solutions across Louisiana.



**Stephen Loy**

**Director of Technology  
Commercialization,**  
[stephenloy@fuelouisiana.org](mailto:stephenloy@fuelouisiana.org)

Stephen Loy is FUEL's Director of Technology Commercialization, driving initiatives to position the state as a global energy innovation leader by transforming research into innovative enterprises and helping entrepreneurs start and grow their companies, pushing them to know their customers and make smart and quick decisions.



**Lacy McManus, MBA**

**Director of Workforce  
Development,**  
[lacymcmanus@fuelouisiana.org](mailto:lacymcmanus@fuelouisiana.org)

Lacy McManus is FUEL's Director of Workforce Development, building a comprehensive workforce ecosystem in Louisiana to support current and future energy talent needs.



**Girard Melancon, Ph.D.**

**Director of Strategic Partnerships,**  
[girardmelancon@fuelouisiana.org](mailto:girardmelancon@fuelouisiana.org)

Dr. Melancon, FUEL's Director of Strategic Partnerships, drives FUEL's collaborative efforts across higher education, government, community, industry, and capital, by identifying and cultivating key partnership opportunities that advance FUEL's mission.



**Ashwith Chilvery, Ph.D.**

**Director of Use-Inspired Research  
and Development,**  
[ashwithchilvery@fuelouisiana.org](mailto:ashwithchilvery@fuelouisiana.org)

Dr. Chilvery is FUEL's Director of Use-Inspired Research and Development, supporting FUEL's efforts to build an extensive portfolio of technologies that support energy innovation in Louisiana and across the globe.



**Katharine Bailey**

**Director of Research and  
Program Management,**  
[katharinebailey@fuelouisiana.org](mailto:katharinebailey@fuelouisiana.org)

Katharine Bailey serves as FUEL's Director of Research and Program Management, responsible for maintaining the administrative and programmatic aspects of the project.

# 24-25 Highlights

Awarded

**\$15 million**

in funding from the NSF Engines program to establish FUEL.

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**Welcomed six energy experts**

to the FUEL team.

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Established a new office in

**New Orleans.**

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**Launched 26 innovative programs**

to drive energy-focused use-inspired research, workforce development, and technology commercialization across Louisiana.

**Explored Louisiana's energy landscape,**

engaging with FUEL partners to catalyze initiatives driving energy innovation across the state.

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**\$8.5 million**

invested in research, technology commercialization, and ecosystem building.

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Participated in **key national conferences**

to connect and share insights with global energy thought-leaders and position Louisiana at the forefront of global energy.

# FUELING ENERGY INNOVATION THROUGH

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**\$15 million** from NSF Engines Program

**\$6.75 million** from Louisiana Economic Development

**50+** strategic partners across industry,  
academia, and government

## TOTALS

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**\$8.5M+**  
disbursed to support  
transformative initiatives across  
FUEL's Core Functions

**26**  
industry-academic-workforce  
development partnerships  
formalized

**16**  
Louisiana energy startups and  
small businesses supported

Over **100**  
personnel actively engaged in  
ecosystem development

**148**  
proposals received statewide

**10**  
energy industry supported  
research projects

**FUEL Impact**



# On the Road with FUEL

The FUEL team traveled across Louisiana to visit our partners and learn more about their innovative initiatives that are shaping the future of energy.

## FUEL COALITION MEETING

FUEL hosted its 2025 Coalition Meeting at the University of Louisiana at Lafayette, convening over 100 leaders across education, government, community, industry, and risk capital to engage in strategic planning for the future of carbon innovation across the state. Attendees participated in panels and breakout sessions led by FUEL's leadership team discussing key topics including scaling carbon capture and utilization (CCU), developing an innovative workforce, and use-inspired research opportunities in CCU.







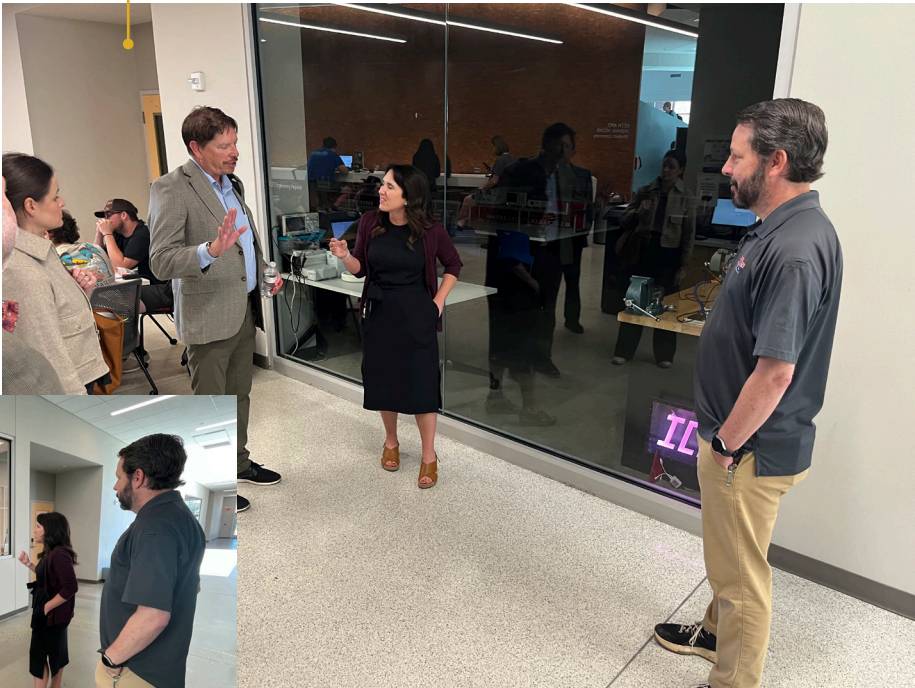
## BOSSIER PARISH COMMUNITY COLLEGE (BPCC)

The FUEL team traveled to Shreveport to visit BPCC's oil and gas training assets and met with area business leaders driving innovative direct air capture projects.



## LOUISIANA TECH UNIVERSITY (LA TECH)

The FUEL team visited LA Tech's cutting-edge research facilities, exploring the Institute for Micromanufacturing and Trenchless Technology Center with Vice President Dr. Ramu Ramachandran and learning about the university's innovative project-based engineering program from Dr. Mary Caldorera-Moore.





## TULANE FUTURE OF ENERGY FORUM

At Tulane University's inaugural Future of Energy Forum, the FUEL team delivered the opening keynote and participated in panels discussing initiatives to drive use-inspired research and development, commercialize innovative carbon management technologies, and build Louisiana's energy workforce through investments.



## DIRECT AIR CAPTURE CONFERENCE

FUEL Executive Director Mike Mazzola and Director of Workforce Development Lacy McManus spoke on panels at the 2025 Direct Air Capture Conference, exchanging insights with other industry leaders on innovative strategies for implementing direct air capture technologies effectively.







## CERAWEEK

FUEL showcased Louisiana's energy excellence at CERAWeek, alongside other industry leaders, highlighting its initiatives to develop the energy workforce, advance use-inspired research, and bring innovative solutions to global energy challenges.



# Why Louisiana?

## WHERE TRADITION FUELS TOMORROW

### Exceptional Assets



**\$50+ billion** invested in energy innovation



**25+** higher education partners



**44,000 miles** of pipeline infrastructure



**100+ years** as a national leader in energy production

Louisiana's century-long tradition of energy excellence has cultivated generations of expertise in energy production, maintenance, and engineering, supported by extensive infrastructure built to meet the needs of the growing industry. The state's unique geology provides energy producers with exceptional natural advantages, including ideal sediments, temperature, salt domes, and deep saline aquifers to produce hydrocarbons and store carbon.

Building on this rich history of energy leadership, robust infrastructure, and favorable geology, Louisiana continues to invest in energy innovation. Statewide projects and institutions are spearheading competitive solutions that are future-proofing Louisiana's, and the world's, energy sector. With this unparalleled combination of assets and commitment to energy leadership, there is no better place for energy innovation to thrive.



# Programs

## WORKFORCE DEVELOPMENT

### SEED FUND

FUEL's Seed Fund is designed to quickly accelerate new energy-focused workforce development projects, specifically seeking to launch pilot initiatives in under a year.

**AWARDED:**

**\$120,000**

**6** programs



The FUEL Seed Fund is a game-changer for FIRST Robotics in St. Mary Parish. As a rural district with limited access to advanced STEM programs, this support has opened doors our students never imagined possible. This grant is not only helping us build robots—it's fueling confidence, creativity, and a lasting excitement for innovation in our students through hands-on, real-world experiences."

- Noelle Lowrimore, St. Mary Parish Public Schools



Being a part of the FUEL grantee portfolio has helped deepen our connections to the community and higher education pathways. The convening hosted by FUEL this May helped us identify various collaborations that have the potential to strengthen our work over the next 10 years. Without the support of FUEL, we would not have the resources to effectively engage educators across East Baton Rouge Parish interested in launching projects in the 2025/26 school year."

- Luella Provenza, ProFab Education Co-founder





# SCALE FUND

FUEL’s Scale Fund is designed to quickly accelerate energy-focused workforce development projects, seeking to expand the impact of existing programs in under a year.

**AWARDED:**  
**\$700,000**  
**7** programs



The FUEL Scale Fund enables GBRIA to expand our outreach through educator externship programs and a “Faces of the Energy Industry” campaign. We are expanding the number of educators both within our current footprint as well as to rural communities. Educators have a large influence on the next generation of the energy talent pipeline, and we are excited to be able to double our reach with FUEL’s support.”

- Brandon Smith, Greater Baton Rouge Industry Alliance (GBRIA) Director of Safety, Workforce Development, and Operational Strategy



# TECHNOLOGY COMMERCIALIZATION

## PROOF-OF-CONCEPT FUND (POC)

FUEL's POC Fund provides non-dilutive capital to early-stage companies to begin their founder's journey. Participants can use POC funds to position themselves for professional investor funding, propelling the companies to success faster while reducing risk.

AWARDED:

**\$896,409**

**5** companies



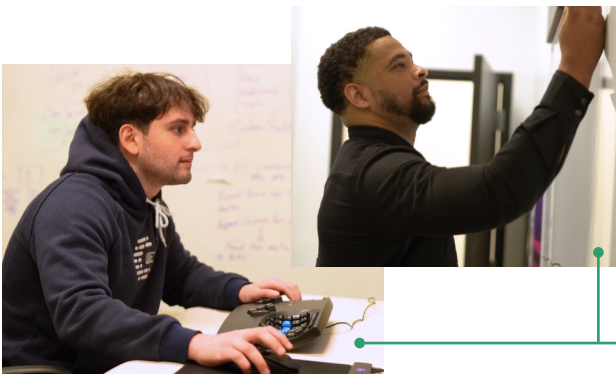
With the FUEL Proof-of-Concept investment, we can not only grow our technology but also make a product that will generate revenue and extend our runway."

- William McGehee, Encore CO<sub>2</sub> Co-founder



FUEL is giving young companies like Cavendish the opportunity to confirm our technology, reach out to the community, and get our first customers."

- John Fredian, Cavendish Energy President and CEO



FUEL's network allows us to reach places we wouldn't be able to walk to ourselves. That network is key compared to any other location. They have access to things that we wouldn't otherwise, and we love the fact that the network has bought into what we're doing. It makes room for easier access to things that will put us ahead of the curve."

- Kellen Francis, CodeGig Founder and CEO



# USE-INSPIRED RESEARCH AND DEVELOPMENT

## USE-INSPIRED RESEARCH AND DEVELOPMENT PROGRAM (UIRD)

FUEL's UIRD program opens a path to commercializing research outcomes by incentivizing collaboration between industry and academic institutions across the state.

AWARDED:

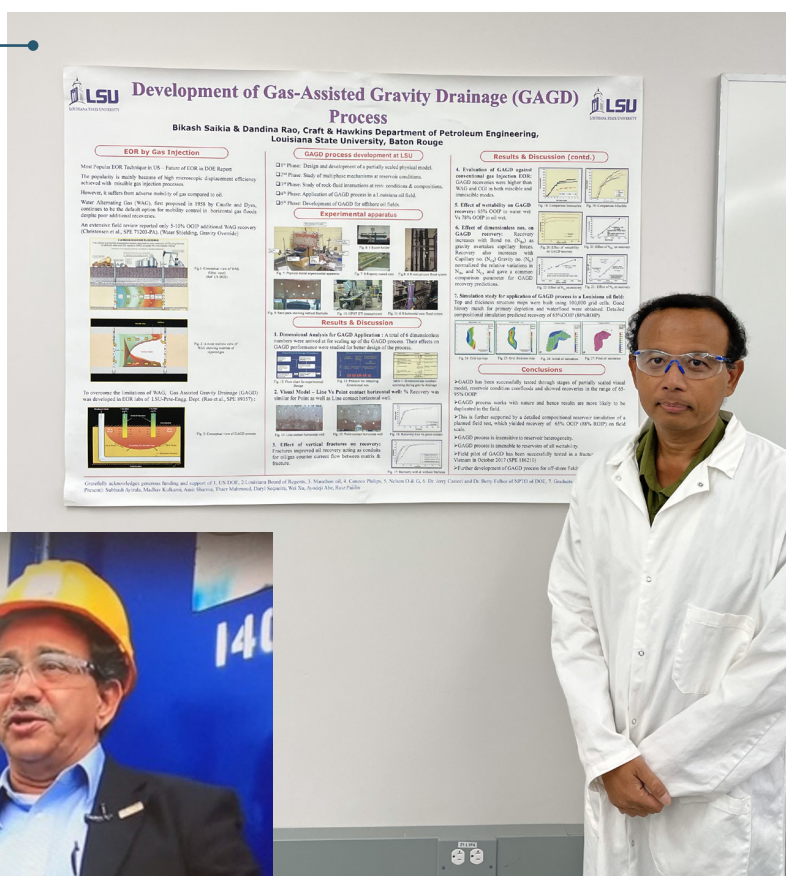
**\$1,644,442**

**10** awards



The support from FUEL's Use-Inspired Research and Development program has enabled LSU to file a provisional patent application on the Gas-Assisted Gravity Drainage process's latest application to orphan and remote oil fields. A successful field test and commercialization of this process will help achieve the elimination of gas flares and CO<sub>2</sub> emissions from remote oil fields, and also convert orphan wells into carbon-neutral producing wells while sequestering large quantities of CO<sub>2</sub>."

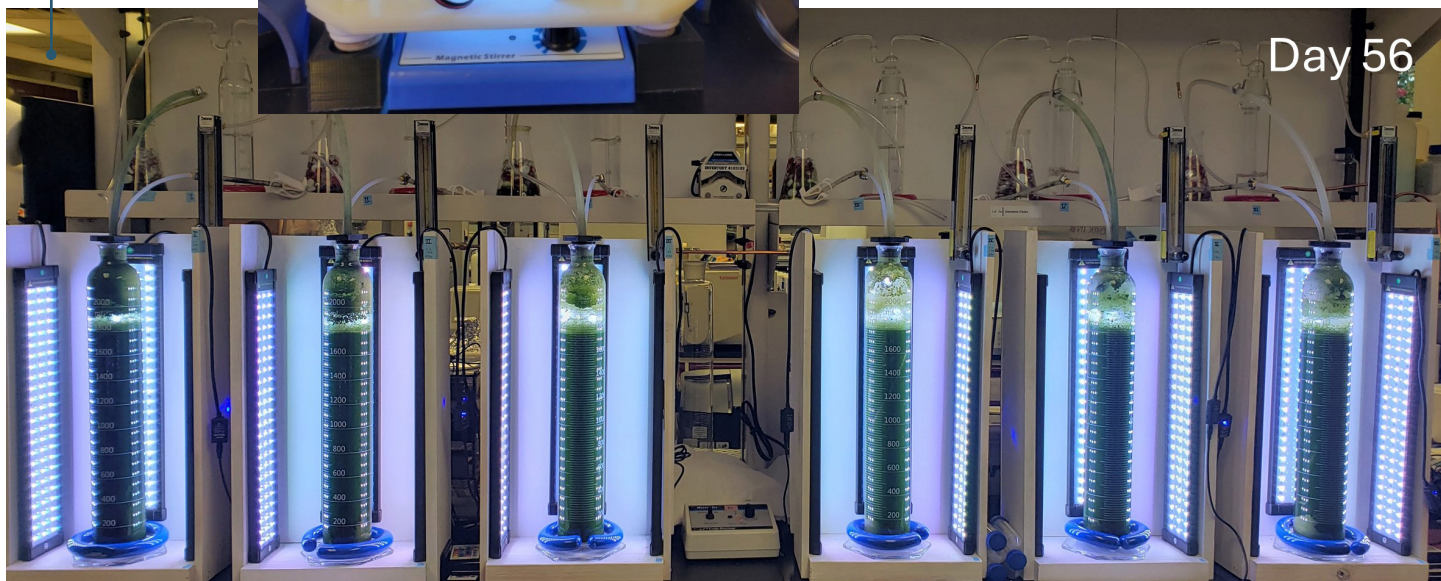
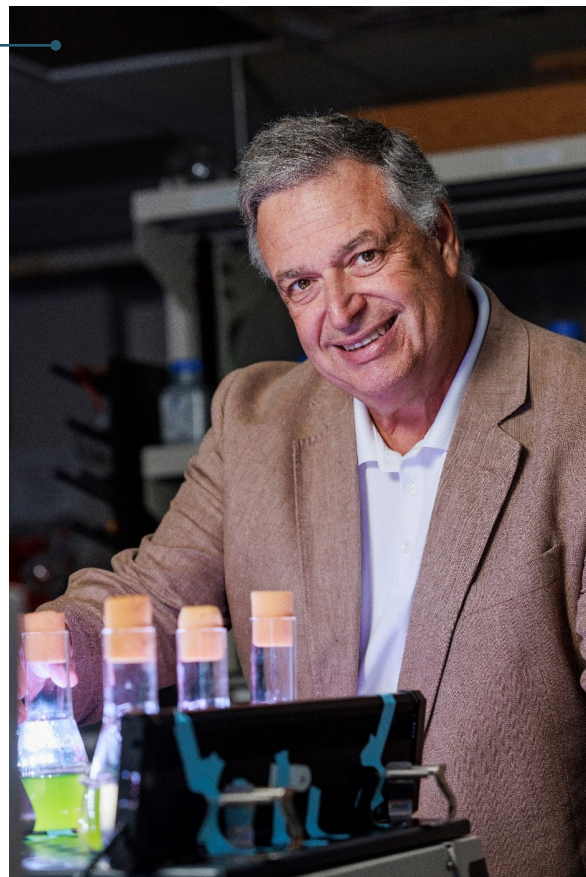
– Dr. Dandina N. Rao, Louisiana State University





The FUEL program has so well integrated academic R&D with industry and government stakeholder interests that Louisiana has become a model for use-inspired process development to support the energy needs of the state and the nation. This fertile ground allows my team to achieve process development at a pace not typical of academic research while also providing our students with world-class learning experiences."

- Dr. Mark E. Zappi,  
Executive Director of the Energy Institute of Louisiana





## SUPER PITCH

FUEL's inaugural Super Pitch event spotlighted four energy entrepreneurs as they competed for funding and resources to support their companies' growth. Selected through a competitive application process, participants had to be Louisiana-based or have plans to relocate and offer innovative solutions to address one of FUEL's technical areas. Through Super Pitch, FUEL awarded funding and resources to four innovative companies:

**AWARDED:**

**\$175,000**

**4** companies

### FIRST PLACE: Zentech Concrete Solutions

Zentech Concrete Solutions secured the first-place prize with its revolutionary, zero-carbon pavement coating, which is made from Louisiana-sourced materials including river sand and recycled coal plant waste (fly ash) and offers greater flexibility, durability, and cost savings compared to traditional concrete seals.

### SECOND PLACE: Encore CO<sub>2</sub>

Encore CO<sub>2</sub> was awarded second place for its innovative carbon recycling technology which combines CO<sub>2</sub> with water to create ethanol, a widely used chemical in alcoholic drinks, disinfectants, fuels, and more.

### THIRD PLACE: NovaSpark Energy

NovaSpark Energy showcased its first-of-a-kind mobile atmospheric hydrogen generator, which captures water in the air and transforms it into hydrogen on the go, serving both commercial and military applications including backup fueling, disaster recovery, and improved energy resilience.

### FOURTH PLACE: MaxBoring

MaxBoring received the fourth-place prize for its technology that captures natural gas burned in flares and turns it into electricity, with a focus on reducing high electricity costs and meeting high-power demands of data centers.

# FUEL Partners

FUEL encompasses a growing ecosystem of partners, including leaders in industry, higher education, government, community, investment, and trade, who are committed to providing expertise, time, capital, and resources in support of FUEL's goals and activities.

## EDUCATION



## GOVERNMENT AND COMMUNITY



## INDUSTRY AND CAPITAL



# The FUEL Footprint

## BATON ROUGE

### AWARDS

- Louisiana State University
- Greater Baton Rouge Industrial Alliance
- Louisiana Arts and Science Museum
- East Baton Rouge Parish School System

- TRC XR EDU, LLC
- Pro Fab Education
- Encore CO<sub>2</sub>
- ApplicaRAD Inc.
- Cavendish Energy

### PARTNERS

- Louisiana State University
- Board of Regents
- Southern University
- Baton Rouge Community College
- Louisiana Community & Technical College System
- West Baton Rouge Chamber of Commerce
- Louisiana Economic Development
- Louisiana Mid-Continent Gas & Oil Association
- Louisiana Department of Energy and Natural Resources
- Louisiana Chamber of Commerce Foundation
- Louisiana Business Incubation Association
- Nexus Louisiana Tech Park

- America's SBDC Louisiana
- LSU Foundation
- Baton Rouge Area Chamber
- State of Louisiana
- Baker Hughes
- JRE Capital
- Saber Equity
- Exxon Mobil
- Worley
- Greater Baton Rouge Industry Alliance
- Innovation Catalyst
- Bernhard Capital Partners

## NEW ORLEANS

### AWARDS

- Xavier University of Louisiana
- Greater New Orleans STEM

### PARTNERS

- Dillard University
- Tulane University
- Southern University of New Orleans
- Delgado Community College
- University of New Orleans

- Xavier University of Louisiana
- GNO, Inc.
- The Hackett Group
- Crosby Land & Resources





## Stay In Touch With Us

Visit our website and follow our social media channels to stay up to date on FUEL's activities.



[fuelouisiana.org](https://fuelouisiana.org)



[@Future Use of Energy in Louisiana](https://www.facebook.com/FutureUseofEnergyinLouisiana)



[@Future Use of Energy in Louisiana](https://www.linkedin.com/company/fuelouisiana)



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