NSF FUEL ENGINE IN LOUISIANA

Strategic and Implementation Plan

YEARS 1-5

fuel

LA.IO
LOUISIANA INNOVATION

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I. Mission and Vision

Future Use of Energy in Louisiana (FUEL) is an innovation engine with a region of service spanning the entire state of Louisiana.

The vision for FUEL is for future generations of Louisiana residents to enjoy even more prosperity from the energy producing and chemical manufacturing industry in Louisiana than they do today. Achieving this vision will benefit not only Louisiana, but also the nation and the world by expanding energy and chemical production while accelerating Louisiana's competitive advantage from carbon management technologies.

To achieve this vision, FUEL has a three-part mission:

1. **Build a thriving innovation ecosystem within Louisiana consisting of intellectual property-enabled growth companies that develop and scale commercial products centered around carbon management technologies.**

2. **Create jobs and wealth-building opportunities through innovation-based economic development that attracts and retains world-class talent, especially Louisiana innovators so they may develop and implement their ideas within the state.**

3. **Prepare an innovative energy workforce from across all Louisiana communities to fill and sustain the jobs created and retained.**

II. Strategic Plan

There are three principles guiding the development of the five-year Strategic and Implementation Plan:

1. It must be self-consistent with the vision statement in Section I.
2. It must be an instrument for executing the mission statement in Section I.
3. It must derive legitimacy from the community it serves.

The Technical North Star will enable the vision of FUEL to be achieved. But how, specifically, can more hydrocarbons be produced, refined, and manufactured while more effectively utilizing carbon? At the system level, there is only one approach – carbon capture followed by sequestration by one means or another. Louisiana is **already** on a path to establish carbon sinks operating in parallel with carbon sources. At this level, Carbon Capture and Storage (CCS) and Carbon Capture and Utilization (CCU) are harmonized. In this Strategic and Implementation Plan, FUEL assumes different roles in CCS and CCU:

- In CCS, FUEL is a workforce development and use-inspired research partner, with other organizations taking the lead in developing CCS projects.
- In CCU, FUEL is the principal organizer, promoter, and underwriter for developing an innovation ecosystem based on CCU.

The National Carbon Sink aggregates all carbon sequestration from CCS and CCU. This opportunity for FUEL was recognized at the time the original proposal was submitted to the NSF. Louisiana's regional competitive advantages leading to the ongoing development of the National Carbon Sink are in summary:

- Louisiana has geology, pipelines, concentrations of industrial sources, and regulatory mechanisms for permitting CCS.
- Louisiana has infrastructure, concentrations of industrial sources, and regulatory mechanisms for permitting CCU, but not the innovation ecosystem.

No place in the world has built the innovation ecosystem for CCU; therefore, it is the mission of FUEL to create it in Louisiana.

INFRASTRUCTURE

The FUEL strategy aims to establish, maintain, and sustain the carbon sink potential of CCU, creating a "people and place" resource that cannot be accessed remotely. This means the most innovative people, companies, and investors must have operations in Louisiana to succeed. Figure 1 illustrates the parallel and complementary way in which CCS and CCU lead to a future of carbon management in Louisiana. FUEL will create infrastructure consisting of at least two incubators for companies operating in the FUEL ecosystem to grow and scale. To achieve this, FUEL will enter into agreements with appropriate partners to locate, and/or construct, renovate, and operate sufficient facilities to ensure translation of use-inspired research and development (UIRD) for commercial use up the entire scale of Technology Readiness Levels (TRL).

The three types of entrepreneurship support resources required to achieve TRL 9 (system proven and ready for full commercial use or deployment) of CCU technologies invented in, or recruited to, Louisiana, are:

- **TRL 3-4.** A network of FUEL-affiliated Entrepreneur Support Organizations (ESOs) geographically distributed at key nodes across Louisiana. These ESOs will be contracted to practice a common entrepreneurship support program developed by FUEL. The curriculum will include IP protection, business planning, customer discovery, finance, investment, sales, employment, etc. All companies participating in the FUEL Proof-of-Concept fund shall be members of one of the affiliated ESOs in Louisiana.
- **TRL 5-6.** One or more incubators suitable for both software and hardware companies at the growth phase. FUEL is involved in the planning of two such facilities to be located in New Orleans and in Baton Rouge.
- **TRL 7-8.** One multi-tenant industrial park suitable for locating CCU companies scaling up to production facilities. One such facility exists in Louisiana at the Cornerstone Energy Park in Waggaman, where a $500 million plant to produce chemicals used in manufacturing battery electrolytes is being developed by UBE Corporation in partnership with Houston-based CCU startup HYCO1. The Louisiana subsidiary of HYCO1 is scaling a catalytic process for displacing methane with CO_2 to produce CO in the UBE plant.

When complete, the National Carbon Sink located in Louisiana will export energy products to the world; FUEL's contribution will be its role in enabling the development of the world's first comprehensive infrastructure for nurturing, growing, and scaling companies focused on CCU. Through this action, all of FUEL's missions are executed.

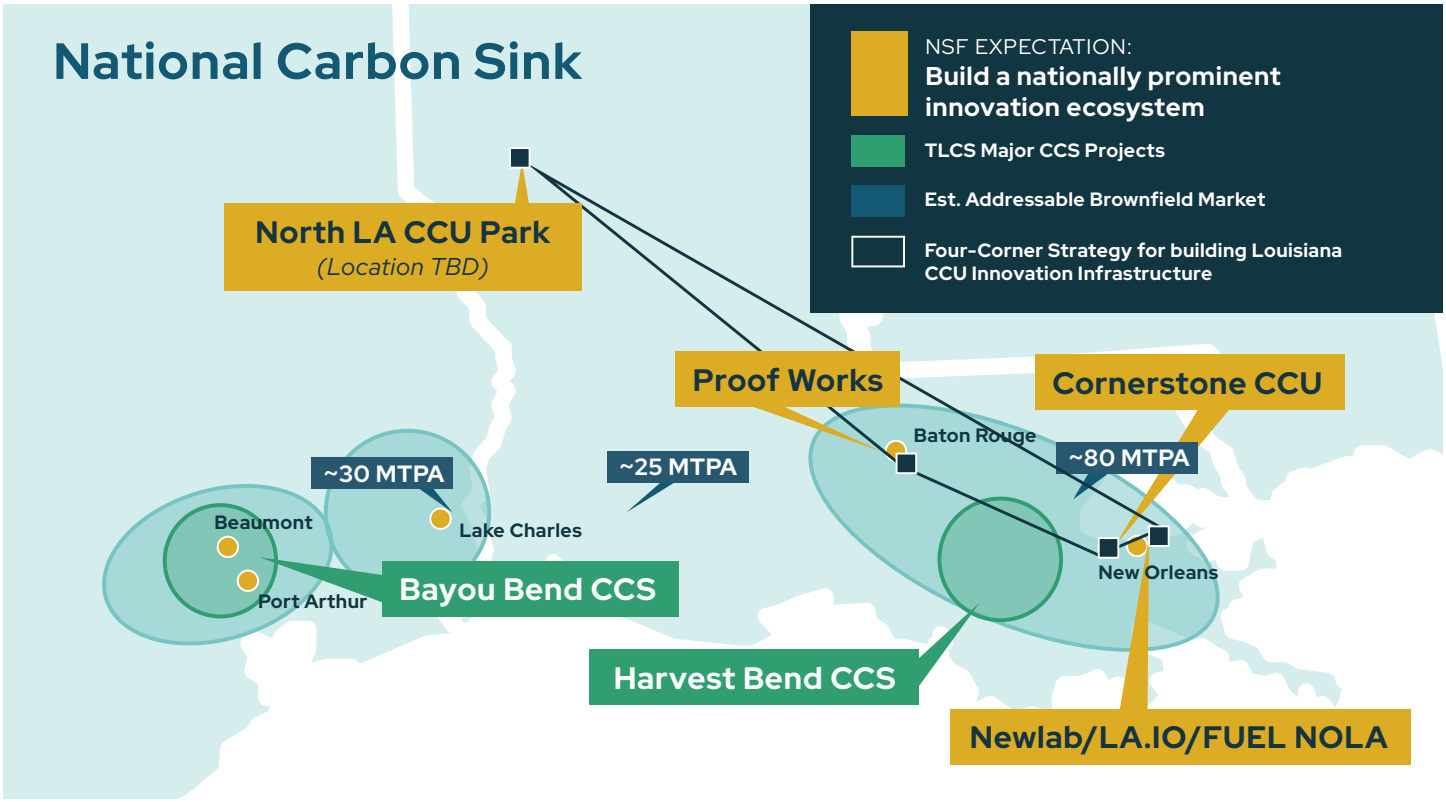


FIGURE 1: *FUEL will be the decisive element in accelerating the future of CCU, which will add capacity and reduce risk in establishing the National Carbon Sink in Louisiana. The future of CCU is already happening at the Cornerstone Energy Park in Waggaman, LA with the commitment by UBE LLC to build a $500 million plant displacing up to 50% of the methane traditionally used in this process with CO_2.*

ECONOMIC IMPACT

Table 1 lists the targeted economic impact over Years 1-5 of the Strategic Plan, with the first column linking each target to a mission in the FUEL Strategic and Implementation Plan and to one or more actions in the LED Strategic Plan.

Table 1. Targets for the Economic Impact of the Five-Year FUEL Strategic Plan and Their Mapping to the Missions of FUEL

MISSION	ACTION	ECONOMIC IMPACT	TARGET
1	LED pp. 26-28	Number of companies at the seed, growth, and scale stage in the FUEL innovation ecosystem at the end of the five-year plan period	MINIMUM: 60 SEED: 45 GROWTH: 12 SCALE: 3
1	LED pp. 27-28	Net wealth created per company in the FUEL innovation ecosystem at the end of the five-year plan period	MEDIAN VALUATION SEED: $5 million GROWTH: $20 million SCALE: $100 million
2	LED pp. 24-25	Number of individuals in Louisiana working in the FUEL innovation ecosystem by the end of the five-year plan period	MEDIAN EMPLOYEES IN SEED: 288 GROWTH: 600 SCALE: 450
3	LED pp. 24-25	Number of individuals in Louisiana working in the National Carbon Sink (Blue Chem = chemical manufacturing using CCS; Biofuel = fuel production using bio feedstocks)	NEW CHEMICAL: 2,240 NEW BLUE CHEM: 1,068 NEW BIOFUEL: 519

Achieving these targets will produce substantial economic benefits for Louisiana, including domestic and foreign direct investment, increases in state gross domestic product, wealth creation for founders, employees, and investors in the FUEL innovation ecosystem, and the retention of jobs and residents in the state. These results, among others, will be reportable outcomes measured by the evaluation plan. The implementation plan within Section V details the planned activities, projects, and resources to be implemented by FUEL and its partners to execute FUEL's missions and achieve the goals and key performance indicators forecast in Section III.

III. Implementation Plan

OVERVIEW

The Implementation Plan supports the Strategic Plan by describing the goals, key performance indicators, activities, projects, and linked budget line items necessary for the Strategic Plan to be fulfilled.

Period of the Plan

The Implementation Plan covers a fixed five-year time window. The first five years are further subdivided into Years 1-2 (defined as March 1, 2024 to February 28, 2026) and Years 3-5 (March 1, 2026 to February 28, 2029). The first period represents the period of performance of the cooperative agreement (CA) awarded by the National Science Foundation (NSF) to Louisiana State University (LSU), establishing the "NSF FUEL Engine in Louisiana" and the cooperative endeavor agreement (CEA) awarded by Louisiana Economic Development (LED) to LSU, establishing the state's co-funding of FUEL. Thus, Years 1-2 represent the award, while Years 3-5 represent the planned effort for the second incremental award of the CA. Two other periods are covered in the Strategic Plan. The third incremental award of the CA (if awarded) will cover Years 6-10. This second five-year period is not directly covered, but it is forecasted within the Implementation Plan. FUEL should be self-sustaining by the end of the third incremental award. The governance structure of FUEL is designed to identify and implement the best mechanisms leading to financial sustainability.

Logical Extension and Momentum

The first two years of the CA with the NSF and the CEA with LED have led to major investments that will collectively total $28.5 million. Tens of millions of dollars in additional resources have been attracted to the ecosystem, with most of the combined resources used for the following:

- Building the innovation ecosystem in carbon management within Louisiana
- Planning and selection of a Technical North Star
- Identification and funding of use-inspired research in the technical areas of FUEL
- Identification and support of companies in the FUEL innovation ecosystem
- Identification and funding of best practices for workforce development in Louisiana
- Identification and support for major incubator facilities in Louisiana
- Identification and support for programs supporting entrepreneurship in Louisiana

The activities and projects associated with the above list are documented in the FUEL Engine Activities report submitted to the NSF as part of regular progress reporting. The Implementation Plan for Years 3-5 is designed to be a logical extension of the Years 1-2 activities and to benefit from the *momentum* created by the investments. Figure 2 illustrates the logic of investments in Years 1-2 for future-proofing Louisiana's energy and chemical industries through carbon storage and utilization (carbon management). The Technical North Star is carbon utilization, where the greatest opportunity to produce the economic impacts expected from UIRD and TC in Mission 1 and workforce development (WFD) in Mission 2 is forecast to exist. Carbon storage remains a growing industry along the Gulf Coast and is forecast to contribute to the economic impacts expected from WFD in Mission 3.

TECHNICAL NORTH STAR: CARBON TO MOLECULES

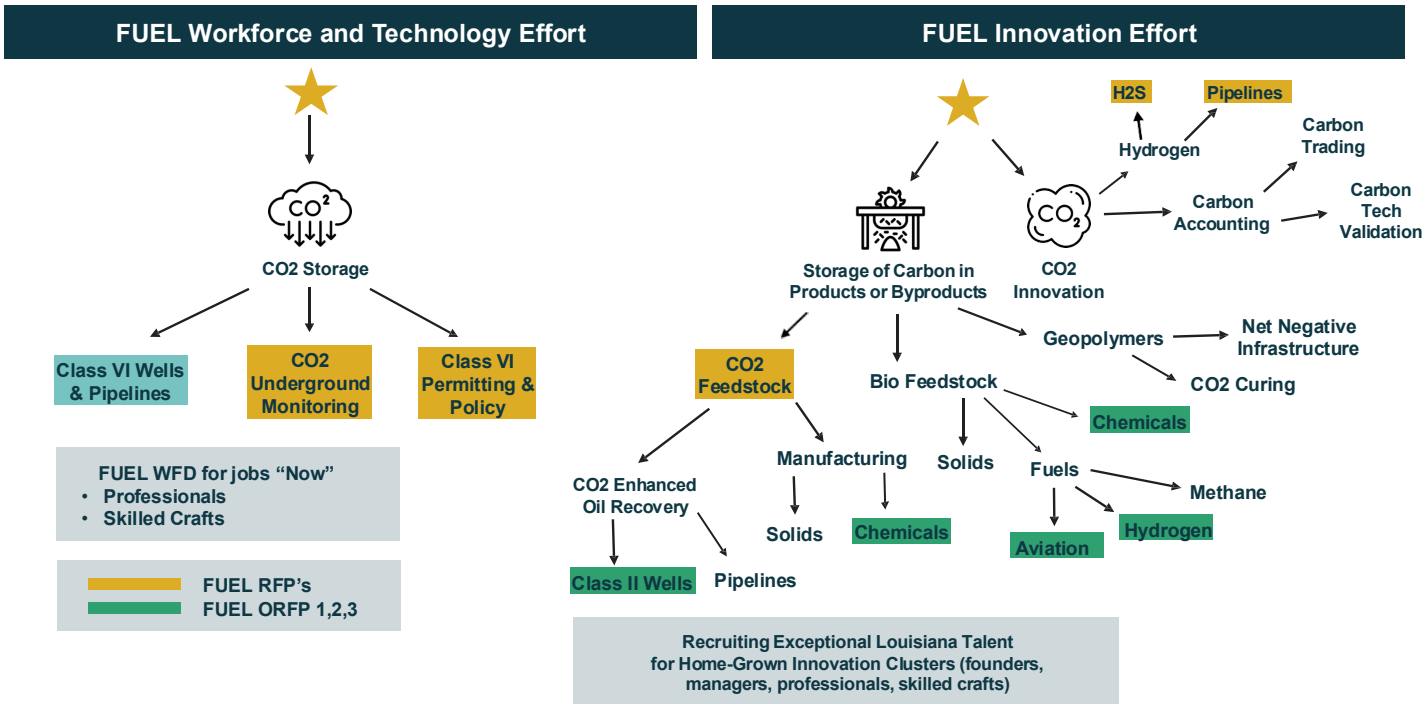


FIGURE 2: *UIRD, technology commercialization, and WFD Investments in Years 1-2 are establishing an innovation ecosystem in Louisiana around carbon innovation in the energy and chemical manufacturing industry.*

Figure 3 illustrates the outcomes of FUEL activities and projects that are building the momentum leading into Years 3-5.

$8.5+ Million disbursed to support transformative initiatives across FUEL's Core Functions

Over 100 personnel actively engaged in ecosystem development

16 Louisiana energy startups and small businesses supported

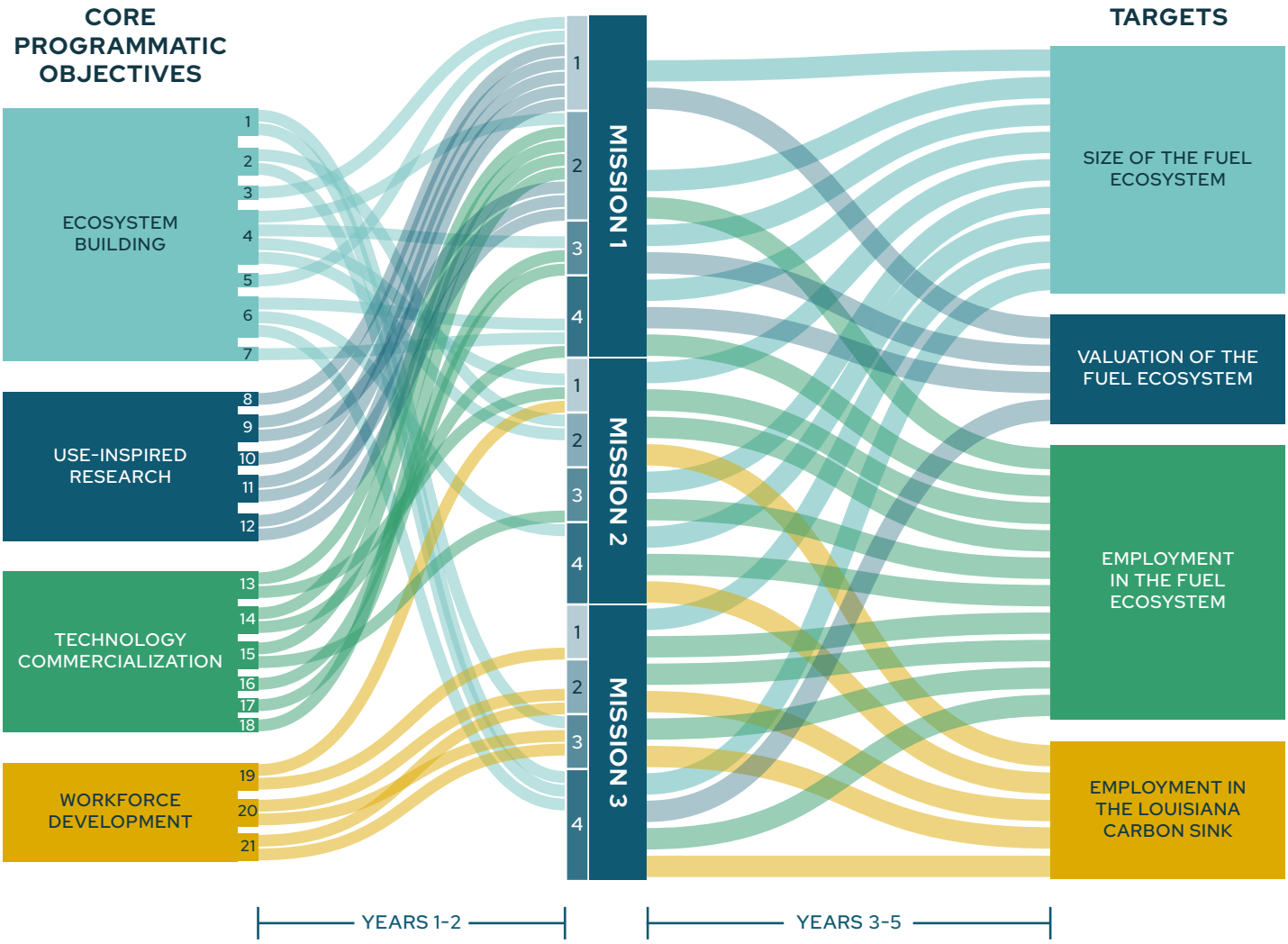
26 industry-academic-workforce development partnerships formalized

148 proposals received statewide

10 energy industry supported research projects

FIGURE 3: *FUEL outcomes building momentum for energy innovation in Louisiana.*

FUEL's Five-Year Strategic and Implementation Plan



CORE PROGRAMMATIC OBJECTIVES: ACTIVITIES AND PROJECTS

1. LSU Institute for Energy Innovation Community Survey
2. Emergent Method subawards (2)
3. Use-Inspired Research and Development subcommittee
4. Technology Commercialization subcommittee
5. Workforce Development subcommittee
6. Strategic Partnerships subcommittee
7. GNO, Inc. Cooperative Endeavor Agreement (Newlab NOLA)
8. One (1) University Capacity Building RFP subaward
9. Six (6) Outside of RFP subawards
10. Five (5) Published RFP from industry RFI
11. Seven (7) RFP awards under published RFP
12. TechInnovent consulting contract
13. Trepwise consulting contract
14. Seven (7) Proof-of-Concept subawards
15. Three (3) super prize subawards
16. A3/33 consulting contract
17. Callais Capital consulting contract
18. ProFab technical services contract
19. FUEL/Newlab Spinout Bootcamp
20. Six (6) Seed RFP subawards
21. Seven (7) Scale RFP subawards

FIGURE 4: *Sankey chart of FUEL's 5-Year Strategic and Implementation Plan.*

Figure 4 is a Sankey chart summarizing the complete five-year Strategic Plan, consisting of established activities in Years 1-2 and the planned activities within Years 3-5 of the Implementation Plan. The chart demonstrates the logic and momentum of the first two years of ecosystem building and investments in UIRD, TC, and WFD that FUEL has established, followed by the flow of resources and outcomes from the three missions that collectively will achieve the targeted economic benefits to Louisiana shown in Table 1.

ECONOMIC TRENDS

Building an innovation ecosystem based on carbon utilization will lead to financial self-sufficiency within ten years. Based on current global trends in energy policy and customer behavior, creating new economic value for carbon management to future-proof the state's energy and chemical industry will benefit all residents of Louisiana. These conclusions are drawn from several current and forecast economic trends discussed in this section.

The Gulf Coast of the United States has received unprecedented domestic and foreign direct investment for more than a decade. Figure 5 is a histogram of investments in energy manufacturing along the four-state Gulf energy-producing region based on announced projects. This data includes upstream oil as well as gas production and downstream refining and petrochemical manufacturing. Louisiana benefits from most of the recent announcements, even eclipsing Texas by a small margin. The low cost of energy and the more frequent use of natural gas as a fuel source are significant contributors to this trend. However, a decline in investment after 2025 must be offset by the recruitment of new economic development projects supported by robust innovation in carbon utilization. **Evidence for this possibility abounds in the number of projects using carbon storage or bio feedstocks announced in Louisiana over the last two years.**

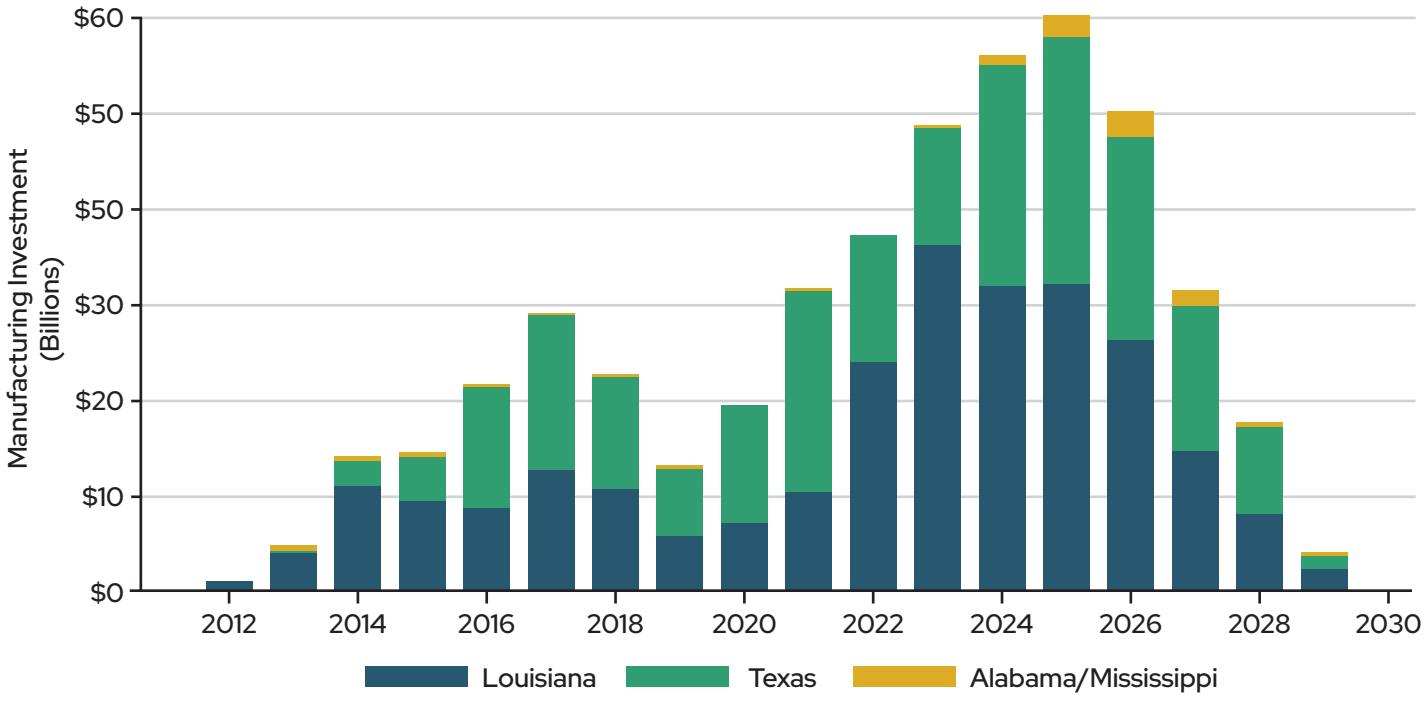


FIGURE 5: *Histogram of actual and forecast energy manufacturing investments among the four energy exporting states on the Gulf Coast. Source: 2025 Gulf Coast Energy Outlook, LSU Center for Energy Studies.*

FIGURE 6: *An essential mission of FUEL is workforce development to keep up with job creation from the nearly $100 billion in announced projects.*

Continuing this investment is essential for sustaining employment and wage growth in Louisiana. Figure 6 illustrates the direct link between every $1 billion in capital outlay projects and immediate employment in construction. The completion of construction is followed by permanent professional and skilled technical employment numbering in the hundreds, with these jobs ranking among the highest paid in Louisiana. Bearing in mind that $100 billion in new projects have been announced, the chair of the FUEL Industrial Advisory Board, Andrew Brennan, has asked the question, "Where will all of these employees come from?" The critical need for the WFD initiatives proposed in the FUEL implementation plan is supported by employment forecasts prepared by the LSU Center for Energy Studies with funding from FUEL.[1]

With so many projects announced in Louisiana, it is inevitable that new projects will be distributed across the state to satisfy the need for sites, infrastructure, and additional workers. Figure 7 is a snapshot of the locations of capital expenditure (CapEx) projects in Louisiana. **FUEL is a statewide economic development initiative for an industry that is distributed across the FUEL region of service.**

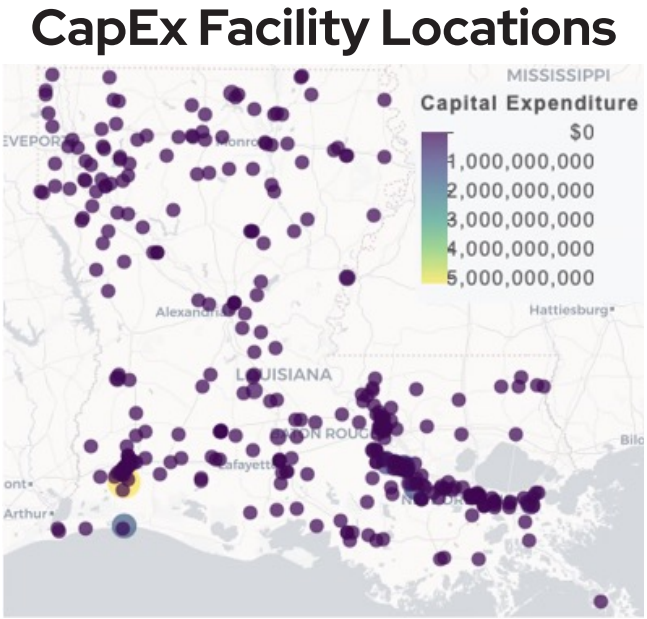


FIGURE 7: *Locations receiving billion dollar CapEx dot the entire state, providing abundant demand for new labor equitably across the FUEL region of service. Source: Center for Energy Studies, Louisiana Infrastructure Dashboard*

1 https://fuelouisiana.org/workforce-development-webinar-series

These economic trends will continue in Louisiana if the core energy and chemical manufacturing industries future-proof their competitive advantage in world markets through carbon innovation, which will simultaneously increase productivity and reduce costs. Years 3-5 of the Implementation Plan will accelerate this competitive advantage.

These economic trends also underwrite the opportunity for FUEL to generate revenue streams from state economic development funding and participation in wealth creation by intellectual-property-enabled technology startups and form the foundation for the financial sustainability forecast within the plan.

EMERGENT PHASE: YEARS 3-5

MISSION 1

Build a thriving innovation ecosystem in Louisiana consisting of intellectual-property-enabled growth within companies that develop and scale commercial products centered around carbon management technologies.

GOAL 1

Inspiring and broadening participation in use-inspired research to generate new IP

Increase IP licensing in CCU by 25% annually	Conduct one RFI cycle per year	Creating focused connections and translating industry RFIs to RFPs
	Increase participation in RFPs from academic institutions by 25% annually	FUEL Annual Innovation Fair
		Innovation Ambassadors
	At least 50% of funded UIRD projects result in IP disclosures	UIRD-RFP

GOAL 2

Develop pathways for 60+ companies to be added to the FUEL Innovation Ecosystem by Year 5

Support 12 seed-stage companies per year and 12 growth-stage companies by Year 5 and participate in recruiting three scale-stage companies by Year 5	Non-dilutive Investment in more than five seed companies per year	Proof-of-Concept (PoC) Program
	Five IP-enabled University spinouts per year	Use-Inspired Clusters
	Recruit two companies through ESO coalition and other strategic partners per year	Entrepreneur Support Organization coalition
	Progress up to seven companies from seed to growth stage (40% progression in three years)	IA +FUELr and Newlab NOLA (An LA.IO Initiative)
	Recruiting at least five growth and three scale-stage companies per year	Newlab NOLA (An LA.IO Initiative) and Cornerstone

GOAL 3

Accelerate startup value creation in the FUEL ecosystem by recruiting risk capital to Louisiana

Achieve median valuation of $5M for seed-, $20M for growth- and $100M for scale-stage companies	Attract at least ten new investors per year	Investor Education Program
	Raise early-stage risk capital of up to $50M	FUELr
	Attract at least one VC firm outside of LA to participate in a funding round per year	Annual Investor Summit
	Return on investment exceeds peer benchmark by Year 5	Investor Alliance (IA)
		Evaluate technologies and venture landscape

GOAL 4

Strategic co-investing in infrastructure that enables CCU TRL progression and value creation

Three incubators completed or under construction in the state by Year 5 for seed-, growth-, and scale-stage carbon management technology companies	Participate in three joint ventures building infrastructure in support of the growth of carbon management technology companies by Year 5	BTR Manufacturing
		Newlab NOLA (An LA.IO Initiative)
		Cornerstone Chem Co.
		Strategic planning for a future North LA site

MISSION 2

GOAL 1

Grow the number of energy-related founders in FUEL's Entrepreneurial Network of founders from 15 to more than 80 by Year 5

Add up to 15 founders in FUEL's ecosystem each year	Partner with regional ESO networks in Louisiana
Connect five founders to existing university IP each year	Partner with tech transfer offices at FUEL universities

GOAL 3

Increase the number of part-time entrepreneurs who join the FUEL ecosystem as either a founder or early hire

Add at least four retirees each year who join the entrepreneur network	Partner with retiree groups that promote lifelong learning, such as retired teachers' associations and the AARP
Recruit one part-time entrepreneur each year to join the entrepreneurship network	Partner with industry retiree clubs and groups to engage their members in FUEL's entrepreneur network
	Partner with regional ESO networks in Louisiana to encourage part-time entrepreneurship

KEY: PRIMARY KPI | SECONDARY KPI | ACTIVITY

Create jobs and wealth-building opportunities through innovation-based economic development that attracts and retains world-class talent, especially Louisiana innovators so they may develop their ideas within the state.

GOAL 2

Increase the number of individuals who work in our energy ecosystem who move back to Louisiana

- At least 20% of employees in the FUEL ecosystem of 60 companies will be returning from outside of Louisiana by Year 5
  - STEM alumni outreach *(see also Goal 4, Mission 3)*
  - Partner with LED
- Award 100% of FUEL relocation award annually
  - Create a FUEL relocation award incentive administered by state or regional EDO

GOAL 4

Transition veterans into new careers within FUEL's innovation ecosystem

- Host an annual Veteran Energy Exploration Day, serving 55 veterans per year, in partnership with an industry leader
  - *Veterans-to-Ventures* Boot Camps to translate enlisted technical skills into startup and innovation roles
  - Energy Awareness Campaign *(See also Mission 3, Goal 4)*
- Add at least 20 veterans to FUEL's entrepreneurship network
  - Veteran-Entrepreneur Pairings
  - Transition military-affiliated IP and innovators into Louisiana's energy ecosystem

MISSION 3

Prepare an innovative energy workforce from across all Louisiana communities to fill and sustain the jobs created and retained.

GOAL 1

Create an energy innovator pathway and related programming to intentionally equip 45-60 Louisiana higher education students with skills to launch and/or manage a startup company

- 50% retention of *Founder's Intensive* program participants in FUEL's Innovation Ecosystem upon graduation
  - Expose 300 higher education students and faculty annually to energy start-up opportunities
    - Energy innovator awareness activities: lunch/learn, speaker events, curriculum development proposal
  - 15-20 higher education students participating in founders intensive
  - An average of 1-3 energy companies created by Louisiana higher education graduates annually
    - *Founders Intensive*

GOAL 2

Increase the number of higher education learners in community colleges, four-year schools and graduate programs attaining degrees, certifications, and/or credentials that align directly with high-wage, high-demand careers in Louisiana's energy sector by 20% year over year

- 100 student annual increase in IBC/Associate's Degrees
  - Create stipend fund tied to energy programs
- 5-10 programs created/evolved to enhance energy workforce by Year 5
  - Competitive grant/RFP process for higher ed partners
- Over 100K unique views of energy workforce data by Year 5
  - Build energy workforce supply/demand dashboard

GOAL 3

Grow the number of high school students directly exposed to energy industry opportunities through either attaining industry-based credentials (IBCs) in craft skills and/or participating in work-based learning opportunities with energy-related employers by 100% by Year 5

- Growing high school internship opportunities in the energy landscape to 150 by Year 5
  - Recruit/build coalition of energy-related employers
  - Build/expand support services for school districts
- Increase the number of high school students attaining energy-relevant IBC/certificates of technical studies by an average of 100 students per year by Year 5
  - Establish/implement strategy to grow energy (IBC) attainment
- Create energy career exposure opportunities for K-8 students in 30% of Louisiana school districts by Year 5
  - Implement and scale K-8 energy career awareness
- Increase the number of K-12 teachers directly exposed to energy careers and relevant curriculum by 20% year over year
  - Scale teacher professional development

GOAL 4

Inform, engage, and inspire Louisiana citizens to participate in and/or support the FUEL Innovation Engine

- 200 individuals educated in Louisiana engaged in *Come Home, Louisiana* recruiting trips each year
  - STEM alumni outreach *(See also Mission 2, Goal 2)*
  - Energy Awareness Campaign *(See also Mission 2, Goal 4)*
- 1M views of FUEL-related social media
  - Build and maintain engaging communication of all FUEL activities
- 200 faith leaders and fenceline community members engaged in 15 meetings
  - Faith-based/fenceline community meetings

FORECAST: GROWTH PHASE: YEARS 6-10

FUEL's implementation plan outlines the activities, projects, and associated metrics for the three missions defined in the Strategic Plan. These missions focus on 4I's- Innovators (people), Intellectual Property (invention), Investors (risk capital), and Infrastructure (to incubate Carbon Capture and Utilization technologies in Louisiana). Figure 8 is a broader illustration of missions with tentative outcomes in Years 3-5 and projections for outcomes by Year 10. As illustrated, Mission 1 is about value creation and ecosystem development, which includes enabling IP generation, flow of risk capital, and strategic infrastructure investments. Mission 2 is about the critical component – people – which includes founders, managers, and risk-tolerant STEM professionals who are needed now if the Year 3-5 goals and KPIs are to be met. Mission 3 addresses the need for a sustainable, innovative workforce by providing the pipeline for future innovators and employees to work in Louisiana's carbon sink.

FIGURE 8: *Design of the FUEL Innovation Ecosystem to achieve the forecasted economic impact by Year 10.*

The Implementation Plan has well-defined goals, key performance indicators, and intermediate targets for economic impact. Internal targets for Missions 2 and 3 are omitted due to the uncertainty associated with the performance of any details of the plan and the expectation of pivots rooted in the findings of annual performance evaluations. However, an overall target for economic impact arising from the second five-year period is forecast to result from adding 150 companies to the ecosystem, each of which

is expected to increase in valuation by an average of $11.7 million (see Figure 9). When the minimum public funds expected to be attracted to the FUEL ecosystem are added, a total economic impact of $2 billion is calculated. Additional resources beyond those forecasted here are likely to be attracted to the ecosystem by Year 10.

The Math: The Total Economic Impact of FUEL on Louisiana by Year 10

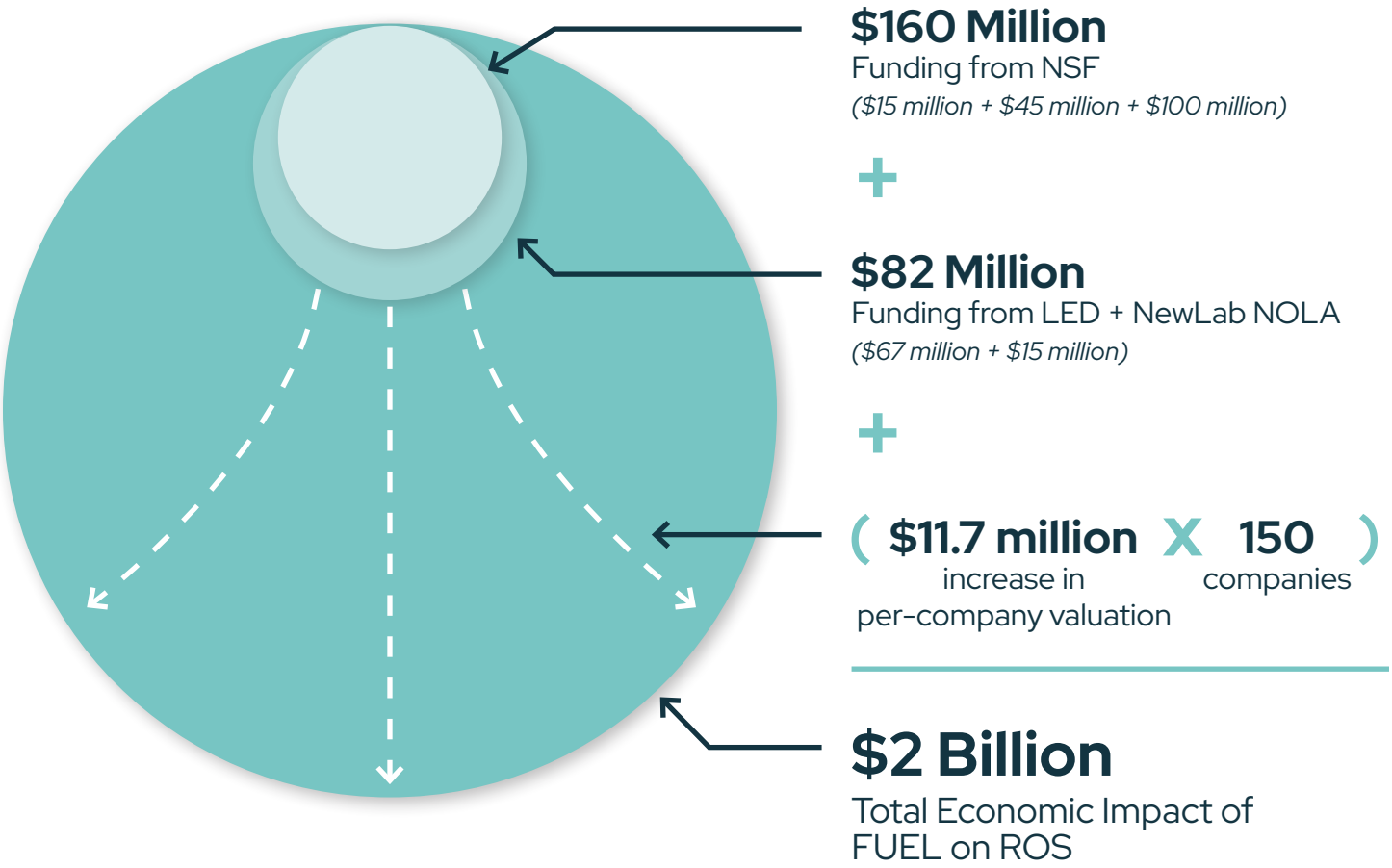


FIGURE 9: *A total economic impact from building the innovation ecosystem (150 fuel companies advancing through seed-growth-scale stages) is $2 billion due to an expected $11.7 million valuation increase per company. Other public and private (largely risk capital) investments are assumed beyond the $242 million public funding.*

These outcomes will establish a self-sustaining innovation ecosystem based on the assumption that increased opportunities for founding tech startups in CCU, and the reduced risk for investors to achieve acceptable returns on investments, will favor future participation in the FUEL innovation ecosystem over alternative peer locations.

LONG-RANGE FORECAST: FINANCIAL SUSTAINABILITY BEYOND YEAR 10

The principal long-term role for FUEL is to create an innovation ecosystem that is an engine for technology-fueled wealth creation through development of new intellectual property, successful entrepreneurship, and early-stage company formation, as well as investment-driven scaling to relevant market size and associated recruitment of large economic development projects. **The key outcome of this ecosystem building must be a demonstrated ability by the people and the place of Louisiana to deliver high returns on investment.** If the ecosystem is recognized for this outcome, then quality innovators that produce an adequate deal flow of new companies for a dedicated alliance of risk capital to invest in will be attracted to Louisiana over other options in the country. Therefore, the FUEL-branded engine must be recognized as the "but for" cause of this favorable outcome.

Financial sustainability is unlikely without the establishment of a prominent, nationally known innovation ecosystem. The long-term forecast for such an ecosystem includes at least four models of financial sustainability, but more may be possible.

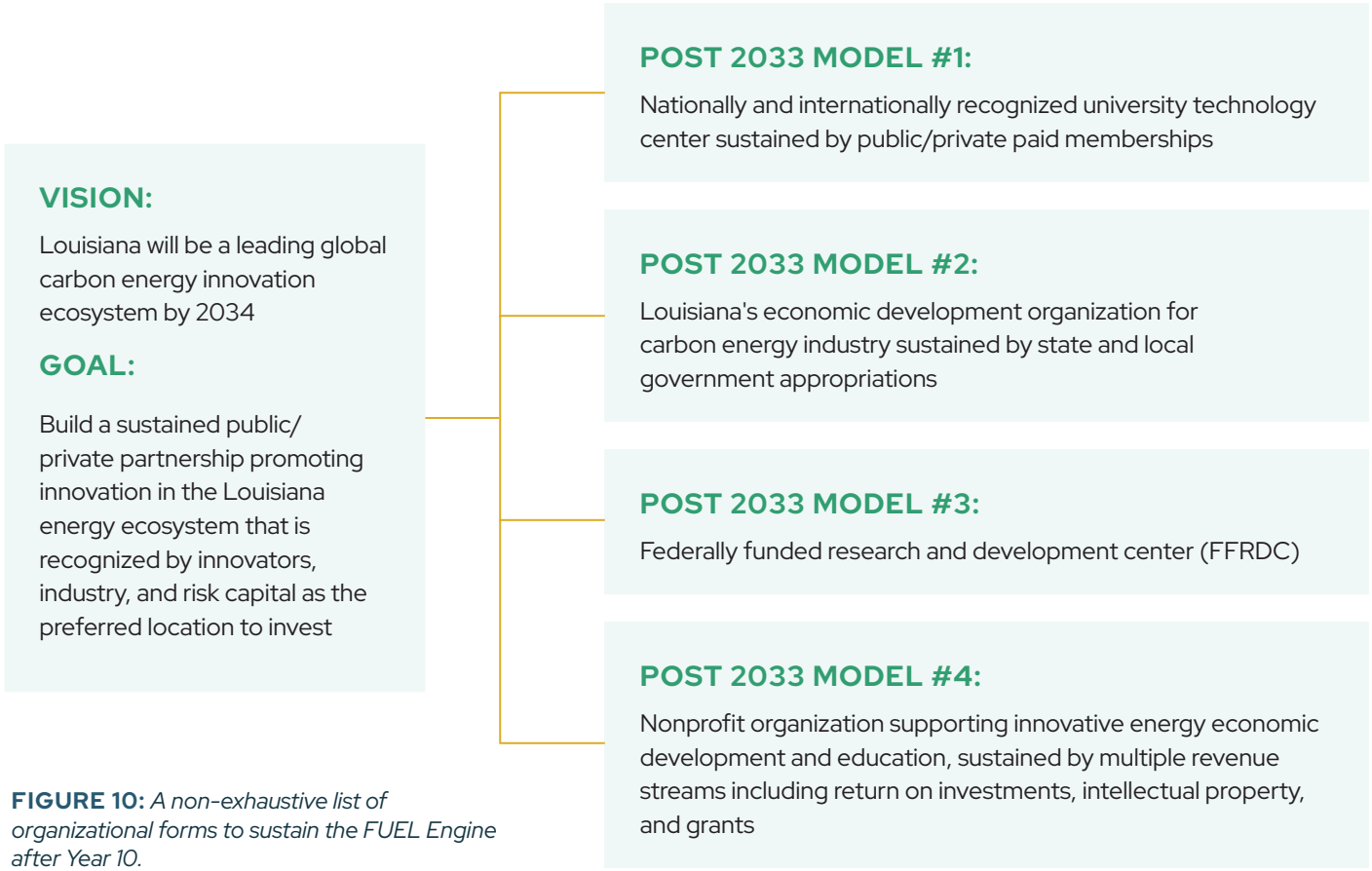


FIGURE 10: *A non-exhaustive list of organizational forms to sustain the FUEL Engine after Year 10.*

It will be the responsibility of the Governance Board to supervise the continuous development of a strategic plan leading to the financial sustainability of the FUEL engine by Year 10. Specifically, as the details of the financial performance of the ecosystem emerge, the Governance Board will oversee the development and implementation of a detailed financial sustainability strategy during Years 6-10, including diversified revenue models such as fee-based incubator services, IP licensing royalties, equity stakes in supported startups, and long-term state and private sector partnership investments to ensure the ecosystem remains financially self-sufficient.

IV. Evaluation Plan

EVALUATION TEAM

FUEL will be evaluated by two organizations: The Center for Research Evaluation (CERE) at the University of Mississippi serves as an external evaluator, and the Social Research and Evaluation Center of Excellence (SREC) in the LSU College of Human Sciences and Education serves as an internal evaluator. While the two university-based research and evaluation centers will collaborate and consult on one another's efforts, CERE's designated role will be to craft the ecosystem evaluation and co-lead the FUEL formative evaluation and summative evaluation efforts. SREC's designated role will be to develop and maintain data collection and reporting systems around select key performance indicators and activity records as outlined elsewhere in this plan, as well as others determined in consultation with FUEL leadership and the Governance Board. This dual evaluation team will ensure FUEL has reporting mechanisms and a tool to track progress over the course of the project.

The Evaluation Plan is guided by the Strategic and Implementation Plan, with the evaluation team reporting directly to the FUEL CEO.

EVALUATION PURPOSE

The purpose of the FUEL Evaluation Plan is threefold:

1. Collect developmental and formative feedback that supports the FUEL leadership team in its ongoing design and continuous improvement efforts
2. Report on key performance indicators to assess performance against the Strategic and Implementation Plan
3. Collect data exploring FUEL's impact over time

EVALUATION APPROACH

The evaluation team will adopt a utilization-focused approach, in that the evaluation is intended to be meaningful and to facilitate decisions made by the FUEL leadership and stakeholders. The evaluation team will continue to work closely with FUEL leadership to best understand program approaches and goals, as well as the interests and perspectives of these stakeholders. Evaluation questions, instrumentation, data collection and analytic approaches, and dissemination plans will be a function of these interactions.

EVALUATION METHODS

The evaluation team will adopt a mixed-methods approach to evaluation activities, combining the following key data collection methods (see Figure 11).

FIGURE 11: *Four methods for evaluation activities and examples of their application.*

FUEL DATA HUB: SREC has developed a web-based data collection and reporting system — the FUEL Data Hub — that will be the backbone of this work. This system will allow for the systematic and orderly collection of program activity and outcome data through forms designed with input from the FUEL stakeholders. The FUEL Data Hub will collect data regarding primary KPIs; secondary KPIs measuring progress associated with program activities and projects, such as subgrantee awards; recruitment of organizations and individuals; and partnership initiatives. The data collection will align with the missions, goals, and associated KPIs, activities, and projects in the FUEL Strategic and Implementation Plan. A reporting dashboard will be created in the FUEL Data Hub allowing for automated reports on demand, and SREC will produce manual reports at predetermined schedules.

Sample information to be collected by the FUEL Data Hub (subset of Mission 1)

PRIMARY/SECONDARY KPI	DATA COLLECTION VIA FUEL DATA HUB
GOAL 1: Conduct one RFI cycle per year	Activity log of RFI cycles
GOAL 1: Increase participation in RFPs from academic institutions by 25% annually	Activity log of RFP submissions, disaggregated by year
GOAL 1: At least 50% of the funded UIRD projects result in IP disclosures	Progress reports, submitted by UIRD award recipients
GOAL 2: Nondilutive investment in 5+ seed companies per year	Activity log of PoC awards
GOAL 2: 5 IP-enabled university spinouts per year	Progress reports completed by Use-Inspired Cluster liaisons
GOAL 2: Recruit 5 companies through ESO coalition and other strategic partners per year	Progress reports completed ESOs

FEEDBACK SURVEYS: Selected partners will be invited to complete feedback surveys collecting developmental and formative feedback on specific FUEL activities to generate recommendations for the adaptation and improvement of ongoing programs. Surveys will either be annual or one-off occurences, depending on the activity being evaluated. The goal will be to minimize the number of times an individual is asked to provide feedback; therefore, if an individual participates in more than one ongoing activity, surveys would be combined so they complete only one annual survey.

Sample information to be collected by Feedback Surveys (subset of Mission 1)

ACTIVITY	SURVEY TYPE | PARTICIPANTS	SURVEY FOCUS
GOAL 1: Create focused connections and translate RFIs to RFPs	Annual | Members of the Industry Advisory Board	IAB member experience; quality of RFI/RFP process; degree to which awards reflect industry needs
GOAL 1: Innovation Ambassadors	Annual | Innovation Ambassadors	Innovation ambassador experience; barriers and enablers experienced at their academic institution
GOAL 1: Innovation Fair	One-off | Attendees at Innovation Fair	Feedback on the Innovation Fair; recommendations for improvement
GOAL 2: ESO Coalition	Annual | Companies/ participants taking part in ESO activities	Feedback on support services provided by the coalition, including technical and advisory support and barriers and enablers to participation and growth

INTERVIEWS AND FOCUS GROUPS: Additionally, the evaluation team will conduct interviews or focus groups with key partners and stakeholders semiannually or after major milestones, such as large-scale innovation projects, key successes, policy changes, completion of joint initiatives, or significant collaborative efforts serving two primary purposes:

1. **Purpose 1:** Gather in-depth qualitative insights about their experiences with collaboration, goal alignment, communication, outreach, roles within the ecosystem, and long-term sustainability of the partnership
2. **Purpose 2:** Gather in-depth qualitative insights about project successes and the factors contributing to successes

Sample information to be collected by Interviews and Focus groups (subset of Mission 1)

ACTIVITY	FREQUENCY | PARTICIPANTS	INTERVIEW FOCUS
GOAL 3: FUELr	Annual | Interview with Callais Capital and companies that join the venture fund	Perceived progress; feedback on FUEL recommendations for adaptation and improvement
GOAL 3: Investor Alliance	Annual | Members of the investor alliance	Perceived progress; feedback on FUEL recommendations for adaptation and improvement
OVERALL	FUEL CEO and Project Directors	Overall assessment of progress; barriers and enablers; recommendations for adaptation

SECONDARY DATA: Where relevant, the evaluation team will support other FUEL partners in collating, analyzing, or reporting on secondary data as they relate to KPIs. For example, this would include data collected via PitchBook and similar data sources.

ANALYSIS STRATEGIES

Analysis strategies will be adapted to the specific data collection tool and purpose.

Survey data will be analyzed descriptively to identify performance on key metrics at an aggregate level and disaggregated by relevant categories where appropriate (e.g., race, sex, organization type [e.g., MSI vs R1 institution], subregion, role type, etc.). If sample sizes are sufficient, the evaluation team will explore possible multiple linear regression models to examine factors contributing to positive outcomes (e.g., high levels of engagement, strong understanding of governance model, etc.). These analyses would be exploratory in nature rather than confirmatory.

Program records will be coded using a predetermined rubric that maps to the ecosystem building metrics; this rubric will be used to assess the degree to which aspects of the metrics are reflected in the collected program records.

Interview and focus group data will be transcribed using Rev.com (or a similar platform) and will be analyzed using Conventional Content Analysis (Hsieh & Shannon, 2005), a flexible method for descriptively coding a phenomenon when there is limited prior documentation or literature.

EVALUATION REPORTING AND SENSEMAKING: The evaluation team will generate short interim reports, presentations, and dashboards on an as-needed basis as soon as possible after data collection. In addition, the evaluation team will compile an annual evaluation summary that includes a compilation of key evaluation data collected during the previous year. To facilitate sensemaking and use of evaluation data, the evaluation teams will host an annual evaluation workshop with the FUEL CEO and members of the FUEL leadership team for the purpose of interrogating evaluation data, collectively assessing performance against the Strategic and Implementation Plan, and discussing implications for ongoing adaptations and improvements.

EVALUATION DISSEMINATION: Where the FUEL CEO determines that evaluation data should be shared outside the leadership team, the evaluation team will develop or adapt dissemination materials to meet the needs of specific audiences, including short videos, infographics, presentations, or executive summary reports.

Note: Proposed surveys and interviews are representative only. A complete mapping of all missions and goals will be completed once the Strategic and Implementation Plan is approved.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