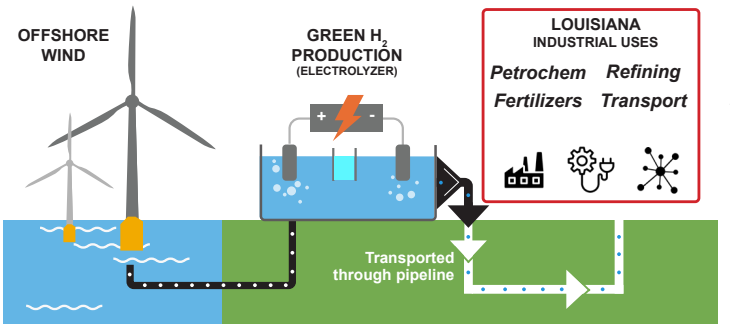
H_2theFUTURE
ENERGY TRANSFORMATION IN SOUTH LOUISIANA

H_2theFuture Synopsis: Louisiana Reimagined as an Equitable Energy State of the Future

Since the invention of the first submersible drilling rig, launching the boom in offshore oil and gas exploration in the Gulf of Mexico and across the globe, South Louisiana has been at the center of energy innovation. For six decades, South Louisiana offshore oil and gas expertise has served the country by ensuring stable, cost-effective energy, indelibly defining Louisiana as an "energy state." In recent years, however, this historical hydrocarbon dominance – dependence even – has created economic and environmental challenges. Louisiana has seen more oil and gas job loss than any U.S. state, with nearly 22,000 positions lost from 2001- 2020 (Emsi). Compounding this economic loss, rural and majority Black populations near South Louisiana industrial plants face 95% higher health risks than most Americans (EPA).

The traditional hydrocarbon economy in Louisiana is waning, and environmental concerns are accelerating this change as consumers, investors, and governments focused on reducing CO_2 require cleaner energy. **Without major intervention to position the economy for future job growth aligned with carbon-reduction goals, Louisiana faces protracted and systemic economic malaise, and continued environmental degradation.**

Despite these challenges, South Louisiana is well positioned to bridge to a higher-job, lower-carbon future. Specifically, a transition to the production and use of "green" (zero-carbon) hydrogen (H_2) can both decarbonize South Louisiana's industrial corridor, and preserve well-paying jobs. Green hydrogen- in contrast to traditional "gray" or "blue" hydrogen extracted from fossil fuels- is produced by splitting water (H_2O) with electrolyzers powered by renewable electricity, such as wind. As a flexible, zero-carbon energy carrier, green hydrogen can decarbonize hydrogen end-users (petrochemicals, refineries) as well as new, hard-to-abate sectors (long-haul road/maritime transportation, steel refining). In fact, green hydrogen has the potential to reduce total emissions by as much as 68% in Louisiana (IEA). **Analysts estimate global demand for green hydrogen will soar 500+% by 2050, to account for 71% of total hydrogen use, while creating 3.4M new jobs** (McKinsey & Co.).



Green hydrogen production for industrial use in LA

There is a strong and multifaceted equity argument for South Louisiana to make this transition to clean hydrogen – decades of structural inequities have affected the region, which are reflected in current statistics: in the energy industry, while jobs are well-paying, only 29% are held by minorities, compared to over 50% in the lower-wage hospitality sector (Emsi); average wages are $62,000 for whites compared to $33,000 for African Americans (ACS 5-Year Estimates); also, air and soil pollution disproportionately affect communities living close to industry. According to the EPA, of the top 15 census tracts with the highest cancer risk in the nation, 7 are majority-black population tracts in South Louisiana.

Louisiana has also endured more recent socioeconomic challenges. Hurricanes Laura and Ida were two of the largest storms to ever hit the U.S. Together, the hurricanes caused $84B of damage and over 116,000 people to lose their jobs. Further, COVID has been a human tragedy for Louisiana, with over 14,000 deaths and a mortality rate 42% higher than the U.S. average. Of those deaths, 70% have been African Americans, despite being only 33% of the population.

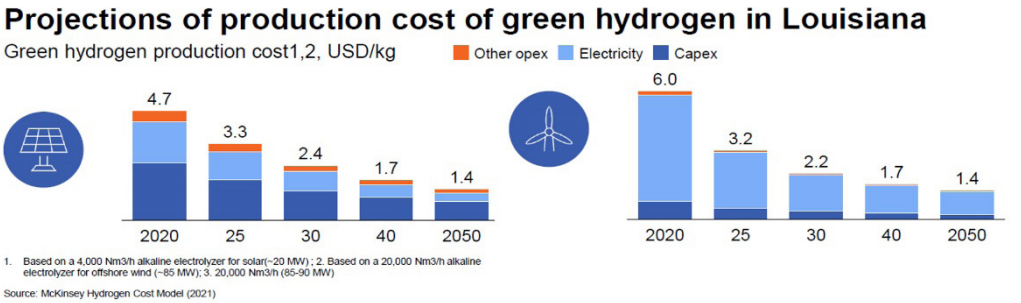
H_2theFuture can create new jobs to advance economic equity, while improving environmental equity at the same time, with a multipronged equity strategy that specifically addresses three groups impacted by the above challenges:

1) Black populations that have been historically excluded
2) Rural oil & gas workers who have lost their jobs (or in danger of loss, given trends)
3) Rural communities and communities of color impacted by carbon-intensive industry

The H_2theFuture strategy is significantly de-risked by Louisiana's strong competitive advantages to become *both* a green hydrogen producer *and* consumer. Most importantly,

Louisiana's current, existing demand for hydrogen is the highest in the U.S. per capita (and second highest on an aggregate basis), consuming 30% of all U.S. industrial hydrogen. Beyond this pre-existing user base, Louisiana also enjoys access to a dense hydrogen pipeline system, the largest port complex in the Western Hemisphere, and immense offshore wind energy potential (#4 in U.S.; NREL). The financial investment to replicate this infrastructure is nearly insurmountable and creates a competitive "moat." If leveraged, these advantages position Louisiana as a global leader in green hydrogen, resulting in over 34,500 new high-paying direct jobs by 2030. Most jobs will emanate from renewable electricity projects (primarily offshore wind); technical and engineering talent in hydrogen-related fields; and, new firms with green hydrogen end-use innovations. **But without intentional, strategic investment, the state will miss a generational opportunity to transition existing energy jobs, and catalyze innovation for decarbonization and economic diversification.**

Based on extensive industry interviews conducted by McKinsey & Co. on behalf of the H_2theFuture coalition, the greatest barrier to attract private capital and catalyze a sustainable green hydrogen economic boom in South Louisiana is the marginal average cost gap between gray/blue hydrogen and green hydrogen (currently $2/kg vs $5/kg). If not cost-competitive, green hydrogen will fail to find sustainable commercial application. The higher marginal cost is largely a consequence of the relatively small scale of projects to-date. To overcome this barrier and reduce the green hydrogen cost per kg, **industry is asking for organizational and governance systems that will: facilitate large-scale green hydrogen projects; leverage existing and new stakeholder assets; and, support innovative technologies that will increase renewable energy and electrolyzer capacity – all underpinned by a well-trained and abundant workforce.**



Given the rapid cost decline of renewable energy in solar and offshore wind over the last decade,-97% and-67%, respectively (IEA), expert projections indicate that, with sufficient scale, green hydrogen will be cost competitive with grey hydrogen within seven to eight years.

Responding to the moment, the H_2theFuture coalition (26 partners) has developed a set of component projects to collectively address the opportunity for green hydrogen, while mitigating risks. The cluster is structured around the six workstreams:

1) H_2Workforce (H_2W)

- **H_2W Key Role**: *Ensuring equity and opportunity in workforce training; coordinating schools into a "one-stop" for talent so green hydrogen projects can scale*

H_2W is demand-driven workforce training programs for displaced workers, rural citizens, minorities, and re-entry citizens. Focus will be on curricula development, equity initiatives, career services, and awareness campaigns across the eight community and technical colleges in South Louisiana. Led by Louisiana Community and Technical College System; equity partners include Urban League of Louisiana and Louisiana Parole Project, who will pilot work-based learning programs in clean energy and aid in outreach efforts; executed in close partnership with H_2BD and the H_2N Talent Council.

2) H_2Business Development (H_2BD)

- **H_2BD Key Role**: *Establish South LA as top global destination for green H_2-related companies*

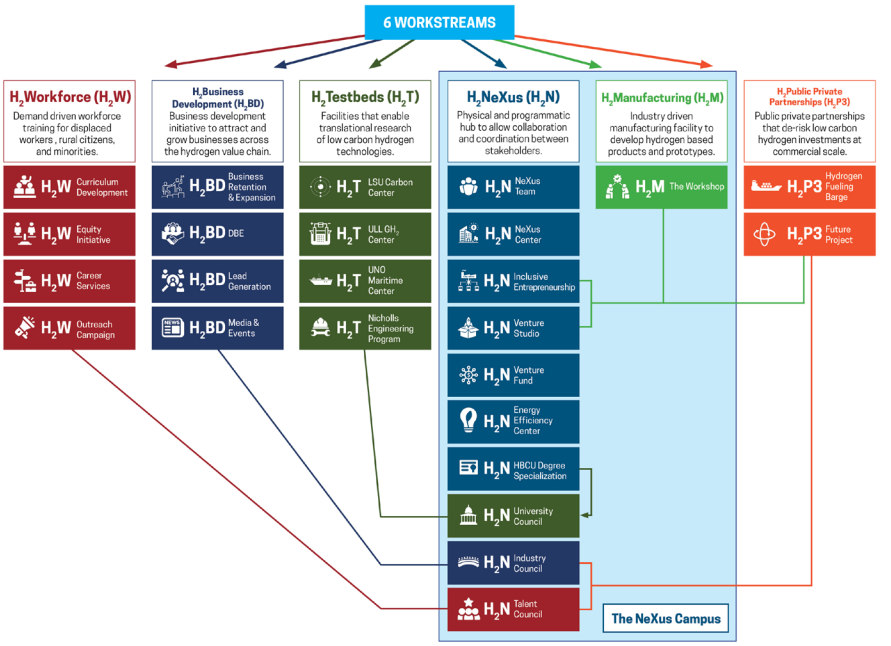
H_2BD is a business development initiative to attract and grow companies across the hydrogen value-chain. Focus will be on DBE services, corporate attraction, business retention/expansion, and marketing. Led by Greater Baton Rouge Economic Partnership; partners are Louisiana Black

Chamber of Commerce Foundation, One Acadiana, Southwest Louisiana Economic Alliance, South Louisiana Economic Council, and Greater New Orleans Development Foundation; executed with H_2N Industry Council.

3) H_2Testbeds (H_2T)

➢ **H_2T Key Role:** *Leverage LA's university research to drive green H_2 costs down and innovation up*

H_2T is a unifying approach to university-based investments in applied research of low-carbon hydrogen technologies. Includes four component projects: H_2T – Louisiana State University Carbon Center; H_2T – University of Louisiana at Lafayette Green Hydrogen Center; H_2T – University of New Orleans Maritime Center; and, H_2T – Nicholls Institute for Engineering Technology. Each project will partner with H_2BD and H_2N University Council.



4) H_2NeXus (H_2N)

➢ **H_2N Key Role:** *Physical and organizational governance and program hub; coordination of all players to make "the whole greater than the sum of the parts;" focused on industry growth and sustainability*

H_2N is a physical and programmatic hub to drive collaboration and coordination between stakeholders. Includes two component projects: H_2N – NeXus (programming) led by Greater New Orleans Development Foundation; and H_2N – NeXus Center (physical building) led by Port of New Orleans. Program partners include Opportunity Hub (Inclusive Entrepreneurship Program); Green Light New Orleans (Energy Efficiency Center); Southern University and A&M College, Southern University of New Orleans, Xavier University of Louisiana, Dillard University (HBCU New Energy Specialization); Louisiana Economic Development; City of New Orleans; and industry representatives on the H_2N Industry, Talent, and University Councils. To accelerate new ventures, a proven Venture Lab model will generate high-growth businesses through technical assistance, corporate partnerships, and commercialization of high applied research.

5) H_2Manufacturing (H_2M)

➢ **H_2M Key Role:** *Leverage industry to drive green hydrogen costs down and innovation up*

H_2M – The Workshop is an industry-driven manufacturing facility to develop prototypes across the green hydrogen value-chain. The Workshop leverages a multimodal Port of New Orleans site for new and established businesses to test products. On an adjacent site to The NeXus Center, the workshop will be a tool for corporate tenants and universities. Led by Port of New Orleans with H_2NeXus and and the H_2N Industry Council.

6) H_2Public Private Partnership (H_2P3)

➢ **H_2P3 Key Role:** *Leverage Public/Private Partnerships to drive green hydrogen costs down and innovation up*

H_2P3 is a "P3" to de-risk green hydrogen investments at commercial scale. The first project, H_2P3 – Hydrogen Fueling Barge, will fill a gap in the hydrogen maritime fueling infrastructure by adding a dedicated e-methanol (hydrogen fuel derivative) barge at Port of South Louisiana. Led by Port of South Louisiana in partnership with H_2NeXus and and the H_2N Industry Council.

H_2theFuture is supported by a range of complimentary initiatives outside of EDA BBRC

investment, including: 1) *Louisiana Climate Initiative Action Plan* (the only state NetZero plan in the Southeast U.S.); 2) BOEM *Gulf of Mexico Intergovernmental Renewable Energy Task Force* launched by Louisiana Gov. Edwards' request in June 2021; 3) Louisiana leadership in a multi-state application for a *Department of Energy Hydrogen Hub* per IIJA objectives; 4) City of New Orleans *Master Urban Plan initiative for New Orleans East* (location of H_2NeXus and H_2Manufacturing); 5) SSBCI-matching investment in *$10M H_2NeXus Venture Capital Fund*; 6) *Louisiana Space Campus*, led by Louisiana Economic Development and National Center for Advanced Manufacturing at NASA's Michoud Facility; and 7) *GNOwind Alliance* of over 130 private companies, universities, and nonprofits supporting offshore wind power.

Programmatic announcements will be staggered starting with the launch of H_2NeXus (programming) as the centerpiece of the cluster immediately upon award (est. October 2022), including the H_2N Industry, University, and Talent Councils. To accelerate industry participation, the coalition partners will announce H_2Business Development shortly thereafter, including an overarching website and promotion campaign for the H_2theFuture concept. H_2Workforce will be the final programmatic rollout by Fall 2023. Construction projects will announce in the following sequence: H_2P3 bunkering barge "christening" will occur late 2023 for immediate deployment and use; H_2T University Testbeds will be installed by late 2024, followed by the grand opening of The NeXus Center (physical building) and H_2Manufacturing – The Workshop.

H_2theFuture aligns perfectly with all regional CEDS: Attracting investments to LED Certified Sites for community development (IMCAL); Support and enhance economic development capacity to recruit, retain and grow businesses throughout the region; position the Energy Corridor as a global leader in energy servicing and manufacturing including new and emerging energy enterprises (APC); Develop plan to attract emerging sector businesses to the region; Establish stronger entrepreneurship programs Capital Region (CRPC); Enhance education and workforce development opportunities to advance creation of quality jobs that match the needs of regional business and industrial clusters; Foster entrepreneurship and small business development (SCPDC); and, Develop seamless, market-driven workforce development systems that accelerate the growth and global competitiveness of target industry clusters; Diversify and strengthen the regional economy by building systems that enable small and disadvantaged enterprises to increase and sustain business contracts, revenues and wealth generation (NORPC).

The success of the South Louisiana Green Hydrogen Cluster will be measured by the cost competitiveness of green hydrogen ($/kg vs $/kg for gray/blue H_2) and the resulting equitable wealth creation and carbon reduction in the region. At full capacity in 2026, the cluster will have generated over 17,273 new jobs with median earnings at $54K (45% higher than the current regional median) of which over 8,000 will represent BIPOC, rural, and displaced workers. **H_2theFuture will be one of the most transformational economic development strategies in Louisiana's history.**

<u>H_2theFuture Project Location: A Region with a Rich History of Innovation and Challenges</u>

South Louisiana is a region of unique economic and cultural significance. In 1803, the Louisiana Purchase secured nearly 1/3 of the continental U.S., solely to take possession of the entrepôt of New Orleans. South Louisiana has since provided the U.S. with agriculture, energy, and even the advanced manufacturing that played a pivotal role in WWII (Higgins Boats) and put a man on the moon in 1969 (NASA's Michoud Facility). However, concurrent with historic, economic, and cultural contributions, populations have suffered from disinvestment, inequity, and compounding impacts of environmental injustice.

The region consists of 35 parishes, home to 3.48M residents and the state's largest metros: New Orleans, Baton Rouge, Lafayette, Houma-Thibodeaux, and Lake Charles as well as a multitude of suburban, rural, and disconnected communities. The population is 56% white, 30% Black, 8% Latinx, and 2% Asian (2020 Census). Educational attainment is below national averages: 15% without high school degrees; 33% with high school degrees; 21% with some college; 17% with bachelor's degrees; 9% with graduate degrees. South Louisianan's median annual wage is $37,357, compared to a U.S. median of $41,910; 48% have household incomes below $50,000, compared to 40% U.S. average (Emsi; ACS 5-Year Estimates).

The region's GDP is $187.8B and is responsible for 80% of Louisiana's total value added (U.S. Bureau of Economic Analysis). South Louisiana is home to many assets critical to the success of

the regional green hydrogen cluster, including a massive industrial base that consumes 30% of America's industrial hydrogen (15 oil refineries – 15% of U.S. capacity; four ammonia facilities – 35% of U.S. capacity); one of the densest pipeline network in the world, including the largest hydrogen system, stretching more than 700-miles from Galveston Bay in Texas to New Orleans (EIA); significant clean-energy potential with #4 most offshore wind potential in U.S. (NREL); the largest combined port complex in the western hemisphere; generations of population trained in relevant energy work (e.g., process technology); multiple universities skilled in energy training; and, major private sector industrial companies already leading the hydrogen revolution like CF Industries, Air Products, and Shell. Land-based assets are protected by levee systems, grounded in $14.5B in federal investment since Hurricane Katrina, and a frontline of wetlands under restoration through the State-led $50B Coastal Master Plan.

There are four H_2theFuture target participant groups: 1) **20,000+ workers who have lost traditional energy jobs**, and can transition to new, clean energy jobs; 2) **Rural workers**, who have been hit hardest both by the waning of traditional oil and gas, as well as the environmental impacts of traditional industry; 3) **BIPOC communities**, who have borne the brunt of environmental injustice, without access to well-paying energy jobs; and, 4) **Future workers**, who must receive STEM training to thrive in the decarbonized economy.

H_2theFuture Private Sector Participation: Regional & Global Broad Support

H_2theFuture benefits from broad private sector support, including industry engagement across all workstreams. This private sector support includes:

- **H_2NeXus:** Coordinating hub for H_2theFuture private sector participation. Primary industry engagement will occur through the three Councils listed below.
  - ***H_2NeXus Talent Council*:** Focused on workforce engagement; inaugural members **Crowley, Danos, CF Industries**
  - ***H_2NeXus Industry Council*:** Focused on infrastructure, policy, and public-private partnerships; inaugural members **Shell Renewables, Entergy, Ørsted, RWE, Jacobs**
  - ***H_2NeXus University Council*:** Focused on applied research and technology commercialization in partnership with *all* regional universities; inaugural members **Gulf Wind Technology, Wood Thilsted, MiNO Marine, Keystone Engineering**
- **H_2NeXus Venture Fund: Maritime Partners** committed $5M (1:1 match) to create a $10M non-profit evergreen fund (taking advantage of federal SSBCI program administered by Louisiana Economic Development) providing seed capital to green hydrogen/clean energy entrepreneurs
- **H_2Business Development GNOwind Supply Chain Initiative:** German company **RWE** (#2 wind farm operator in the world) has committed to investing in a comprehensive supply chain initiative for South Louisiana; will identify Tier-2 to Tier-5 suppliers with oil and gas expertise relevant to offshore wind; through workshops, interviews, and research endeavors, initiative create an online database to facilitate future growth of Gulf of Mexico and U.S. wind projects
- **H_2Business Development GNOwind Alliance:** Over 130 local, national, and international companies committed to developing offshore wind in South Louisiana – the clean power source for green hydrogen; members include major international developers **Shell, SSE, Ørsted** as well as traditional oil and gas services firms with Louisiana presence like **Williams, Gulf Island Fabrication, Nucor, Deep South Crane & Rigging**
- **H_2NeXus HBCU Specialization**: Demand-driven workforce curricula development with private industry participation, including **Ørsted, RWE;** industry partners will support through curricula development, supplying Faculty of Practice, and internship opportunities for HBCU students at Dillard University, Southern University and A&M College, Southern University at New Orleans, and Xavier University of Louisiana
- **H_2NeXus Center:** Will house over a **dozen startups** in green hydrogen and take advantage of H_2Manufacturing assets; startups will include commercial spin-offs from H_2Testbed programs
- **H_2Testbeds:** Each university testbed will work with private sector partners to pursue solutions that address industry needs and have commercialization potential through new ventures and/or royalty payments; H_2T LSU Carbon Center partners **Haliburton, Schlumberger, ConocoPhillips**; H_2T ULL GH_2 Center partners **Cleco Power, First Solar, St. Landry Landfill, Lafayette Utility Systems, H2O**; H_2T UNO Maritime partners **Conrad Industries, MetalShark,**

Crowley, WinGD, Scale Innovations; H_2T Nicholls partners **Morrison Engineering, Entergy, Morris Hebert Surveying and Engineering, T. Baker Smith**

H_2theFuture Sustainability Plan: A Strategy for Post-Funding Success

H_2theFuture is grounded in long-term, market-based sustainability, based on both demand for, and supply of, green hydrogen. Critical to sustainability will be cost parity between clean hydrogen, and dirty, "gray" hydrogen. Per McKinsey & Co., "By 2030 low-cost clean hydrogen is set to become cost competitive in chemicals or refining, and long-haul trucking." Cost competitiveness is driven by improving green hydrogen value-chain efficiency, including offshore wind power and electrolyzers. As a result, demand for green hydrogen is expected to grow 500% by 2050, and South Louisiana's unmatched demand is the most efficient place to supply this need. This is amplified by an interstate partnership recently announced by the governors of Louisiana, Arkansas, and Oklahoma to act as a symbiotic, single hub for the hydrogen economy.

In addition, each of the component workstreams has specific sustainability mechanisms developed to optimize the initial EDA and ***State of Louisiana unencumbered cash match***.

- **H_2Workforce [sustainability = tuition, state education, and training programs]**

H_2W is designed to complement existing LCTCS programs by filling specific gaps in current funding streams. As programs ramp-up and successfully place graduates in jobs, a variety of sources will augment and sustain courses post EDA award, including state Rapid Response Funds ($10M/year to high-demand training programs; leveraged for hydrogen-related skills development like fuel-cell and blade technicians). LED FastStart provides similar funding with a focus on large corporate investment projects. The new MJ Foster Program provides $10.5M/year for adults to enter training to pursue technical fields, while Carl Perkins funding ($22M/year) allows LCTCS to coordinate training and equipment needs with industry to ensure career pathways are market relevant and produce a high school to college talent pipeline.

- **H_2Business Development [sustainability = member dues, state support]**

Capacity building investments into H_2BD will be sustained by each Regional Economic Development organizations' ongoing operations, which includes annual support from Louisiana Economic Development as well as corporate membership dues for each organization. For example, 60% of lead applicant Greater New Orleans Development Foundation's operations are sustained by annual corporate membership dues.

- **H_2Testbeds [sustainability = tuition, NSF support, corporate support]**

Capacity building investments into H_2Testbed facilities will be sustained by student tuition, state higher education funding (including $330M/year TOPS program), federal grants such as University of Louisiana at Lafayette's $1M Department of Energy grant to produce metal-supported solid oxide electrolysis cells. With job growth generated by H_2BD results, universities will see demand increases for specialized engineering talent developed by H_2T programs. The consistent flow of incoming students pursuing well-paying jobs in the hydrogen economy will provide program sustainability. Related, H_2T equipment investments are designed to respond to current corporate applied research needs – as proven by the respective H_2T industry investments (including $1M by Cleco at UL Lafayette) and support letters. Once established, the H_2T university consortium, in partnership with the region's HBCUs, will explore pursuing *NSF Center of Excellence* models whereby private sponsors benefit from early technology disclosures in exchange for supplying program funding.

- **H_2NeXus [sustainability = lease payments, neighborhood development]**

Lease payments from corporate tenants in coworking and office space leases in the H_2NeXus Center (physical building), which will also include membership to The Workshop to develop/build prototypes (allowing for higher rates than typical office leases). The long-term vision is to grow the NeXus Campus across the 43-acre plot with additional buildings, corporate lessors, and assets to increase programmatic growth and sustainability across H_2NeXus programs. Additionally, in partnership with the City of New Orleans, H_2NeXus will serve as a catalytic investment in New Orleans East, a community that has experienced acute economic distress since Hurricane Katrina. H_2NeXus will serve as an organizing theme to revitalize the entire area (dedicated city funds and master planning underway), while the National Center for Advanced Manufacturing and Louisiana Economic Development are also pursuing an advanced manufacturing campus near NASA's Michoud Assembly Facility. These targeted geographic investments will secure long-term viability of livable communities.

- **H_2Manufacturing [sustainability = membership fees, corporate testing fees]**

In addition to membership fees of NeXus leases, wherein tenants and startups pay for office space and prototyping resources, H_2M will generate revenue from corporate pilot and testing needs.

- **H_2Public Private Partnerships [sustainability = future revenue flows]**

By design, the H_2P3 Hydrogen Fueling Barge is part of revenue-generating opportunity to supply fuel (eMethanol) to the next generation of vessels that run on hydrogen-based fuels. With this bunkering barge, effectively an infrastructure investment, Port of South Louisiana will share revenue with a barge operator (to be procured) generated from the sale of and provision of fuel services to customers, such as Maritime Partners (owner of the first-in-the-world Hydrogen-powered maritime vessel). Port revenue will fund similar investments in next-generation energy solutions, and the Port has committed to providing a portion of funds to workforce and training programs managed by H_2theFuture.

H_2theFuture Community Engagement Plan: Building Support from the Ground Up

H_2theFuture is grounded in community engagement – the only way to ensure sustainable, equitable, successful project outcomes. The Community Engagement Plan includes:

- **Louisiana Climate Initiative Task Force**: H_2theFuture was unanimously adopted by the Governor's Climate Initiative Task Force on March 9, 2022 as the first initiative of the Climate Action Plan; H_2theFuture will now become part of the Governor's overall Climate Initiative; this statewide promulgation will drive community awareness, and media attention
- **Louisiana Black Chamber of Commerce Foundation:** LBCCF will work across H_2theFuture workstreams to help ensure projects bring contracting opportunities and economic benefits to local businesses, especially BIPOC businesses; efforts will be documented, and results collected and analyzed to drive on-going improvement in DBE procurement outcomes
- **Greater New Orleans AFL-CIO:** Leveraging an existing relationship with the Greater New Orleans AFL-CIO, the coalition will work with leadership to ensure that union members are incorporated into H_2theFuture construction and other opportunities
- **Louisiana Parole Project:** LPP, an organization that specializes in helping formerly incarcerated citizens return to society, is a partner in H_2Workforce to work with soon-to-be-released prisoners from maximum security Angola prison to secure training and jobs in the green hydrogen economy, working with the state's Department of Corrections to establish a pre-release to post-release talent pipeline
- **Urban League of Louisiana:** H_2theFuture coalition members have consistently demonstrated commitment to DEI and community engagement; an example, coalition lead Greater New Orleans Development Foundation invested $70,000 in 2020 and dozens of staff hours for an in-depth DEI process with Urban League whereby we investigated the organization's policies and practices through a DEI lens ("Building Your Organization's Infrastructure to Advance Racial Equity") and developed an internal Racial Equity Framework that both reinforced existing DEI practices and offered new practices for implementation
- **Regional Economic Development Organizations:** Inherently community-based organizations, Regional Economic Development Organizations leading H_2BD are composed of local businesses and citizens
- **Community-Based Marketing:** H_2theFuture will drive community engagement through a variety of means, including an H_2theFuture "pitch deck" to South Louisiana community organizations, including faith-based groups, Rotary and other membership clubs, and schools

H_2theFuture Equity Strategy: Intentional Economic & Environmental Action

Louisiana suffers from a range of historical equity challenges. In the energy industry, while jobs are well-paying, only 29% are held by minorities compared to over 50% in lower-wage hospitality jobs. This disparity is reflected in average wages, which are $62,000 for whites and $33,000 for African Americans (ACS 5-Year Estimates). Moreover, air and soil pollution disproportionately affect populations living in fenceline communities close to industry. These rural and majority Black populations face 95% higher health risks than most Americans (EPA), underscoring concerns about environmental justice. The majority of the H_2theFuture project territory, 23 of 35 parishes, are rural (populations under 60,000).

H_2theFuture is an intentional response to these equity challenges, with specific partners and

strategies to ensure that the benefits of the growing green hydrogen cluster are equitably shared by distressed and historically excluded populations, including racial minorities, rural communities, and individuals left behind by the energy transition. These strategies include:

- **H_2NeXus – HBCU New Energy Specialization:** The HBCU New Energy Specialization, in partnership with the region's four HBCUs: Dillard University, Southern University and A&M College, Southern University New Orleans, and Xavier University of Louisiana, HBCU students will be positioned as hydrogen industry leaders in business, public policy, and law. The project will deploy industry experts from RWE, Ørsted, and other companies as adjunct professors and with paid internships, bolstering HBCU capacity. HBCU representatives will sit on the H_2N University Council, the first inclusive commercialization governance body in South Louisiana. Additionally, via events, networking, and masterclasses, current and aspiring BIPOC entrepreneurs will be nurtured in the OHUB-developed Inclusive Entrepreneurship Program, which will help to overcome a classic challenge of access to capital for minority entrepreneurs.
- **H_2Workforce – New Energy Training and Apprenticeship Programs:** Project lead Louisiana Community and Technical College System will develop industry-driven training and career services for hydrogen and renewable energy projects for displaced workers, re-entrants, and a diverse student body (currently 63% of LCTCS student body is non-white, 52% is female). Component project partner Urban League of Louisiana, whose mission is to assist underserved communities in securing economic and civic justice, will partner with LCTCS to deploy outreach campaigns to increase equity in training pathways and build a pilot "New Energy Apprenticeship Program." Louisiana Parole Project will develop a pilot training model for re-entrants.
- **H_2Business Development – Procurement Opportunity Partnership:** H_2BD coalition partners will take the existing model of the Baton Rouge Procurement Opportunity Partnership (BR-POP) initiative and replicate it across the South Louisiana region. Like BR-POP, H_2BD will provide DBE businesses with direct access to corporate Procurement Managers and relevant information on current procurement opportunities. Project partner Louisiana Black Chamber of Commerce Foundation will complement the initiative by connecting its network of registered DBE businesses to H_2BD programs and procurement throughout H_2theFuture construction projects.
- **H_2P3 –** The POSL will work with H_2theFuture coalition member the Louisiana Black Chamber of Commerce Foundation to ensure a fair and equitable distribution of construction funds in the procurement process (contracting and subcontracting opportunities) of the hydrogen bunkering barge and its operation – with a goal of reaching 35% MBE/DBE allocation.
- **H_2Testbeds – Equity Commitments:** Universities leading H_2T projects have explicit equity commitments. Examples of universities' DEI plans include UNO (which has a 40% first-generation student body) harnessing its H_2T Maritime Center to foster engineering and energy interests in low-income, minority summer camps. ULL has executed an MOU with Tunica-Biloxi Tribe to advance green energy opportunities in Indigenous communities and assembled partnerships with HBCUs Southern University and Grambling State University for project deployment. Nicholls will invite students from minority groups to serve as representatives and recruitment ambassadors for its Engineering program. LSU's chemical PhD program is ranked first in the nation for number of African-American graduates, while its Engineering program attracts a large percentage of African American students; further, LSU will broaden outreach to K-12 institutions to expose students to hydrogen technologies. Finally, LBCCF will align DBEs to pursue contracting and subcontracting opportunities across H_2T construction projects.
- **H_2Manufacturing – BIPOC Startups:** H_2NeXus partners OHUB and HBCUs will help create business/product development plans, and then launch and scale BIPOC startups. This will help start the "fly-wheel" of Black wealth creation in the new energy sector.

H_2theFuture Outcomes & Outputs: Local Success / A National Model

H_2theFuture's overall goal is to establish a world-leading green hydrogen cluster in South Louisiana. In doing so, H_2theFuture will create jobs and economic growth, drive equitable and inclusive opportunity, protect the environment, and establish South Louisiana as a model for replication across America. The region will retain its position as a global energy and industrial hub, but with up to 68% less carbon emissions (IEA).

Aggregate quantifiable outcomes by 2030 from H_2theFuture include:

Impact by:	**2026**	**2030**
Direct Job Creation [1]	7,566	15,132
Total Job Impact [2]	17,273	34,546
Jobs Retained [3]	42,124	84,248
Regional Employment Growth [4]	3.1%	
Median Earnings - H_2 Economy [5]	$54,017 (45% higher than regional median)	
Total Regional GDP Growth [6]	+3.5%	
Equity Impact (Direct Jobs) [7]		
• **BIPOC** *(35% of direct)*	2,650	5,300
• **Rural** *(3% of direct)*	227	454
• **Displaced Workers** *(25% of direct)*	1,890	3,780
Cost of Green H_2 @ scale [8]	$3/kg	$/1kg
Carbon Emission Reduced [9]	71% gray/green H_2 replacement = 19M ton CO2 savings	

Notes: [1]based on job creation goals for six workstreams; [2]based on LA energy job multiplier used by PwC; [3]assuming 80% retention of existing LA direct energy jobs; [4]of total labor participation; [5]EMSI data; [6]GNODF IMPLAN calculations; [7] Coalition objectives and metrics; [8]based on McKinsey & Co estimates and University objectives; [9]IEA & McKinsey & Co data

Specific workstream outcomes include:

- **H_2NeXus** and **H_2Manufacturing** will **1) Grow the regional ecosystem of inventors, engineers, and entrepreneurs**, to increase deal-flow, launch, and scale new ventures in wind and green hydrogen; **2) De-risk concepts and generate new high-growth startups** by designing quickly deployable pilots, validating business models, and laying the foundation for transformational impact with industry partners; **3) Stimulate job growth and entrepreneurship** by integrating new technologies into commercial-scale projects, while attracting investment capital for the wind and green hydrogen sectors. Specific **H_2NeXus** and **H_2Manufacturing** outcomes include:
  - Venture Studio and H_2M: 60 companies launched or recruited to pilot and scale technological innovations in energy; 750 permanent jobs created; $200M+ debt and/or equity capital raised by companies to commercialize energy technology innovations
  - NeXus Team: 8 new commercial scale project announcements by Y4 due to H_2N – Industry Council coordination (1,000 total direct jobs) and 15 new startup technology integration into commercial scale projects by Y4 (from startups generated by Venture Lab and OHUB)
  - H_2N – Councils: Each council will deliver an initiative design and implement strategy. Talent Council: Internal employer survey to properly anticipate future workforce needs. University Council: University survey of hydrogen-related technology and creation of "living" technology database. Industry Council: List of infrastructure, policy, and governance recommendations for Louisiana's HALO application to DOE's Hydrogen Hub program
  - OHUB Inclusive Entrepreneurship: 400 businesses assisted; 200 businesses enrolled in technical assistance program; 20 graduate companies established per year
  - HBCU New Energy Specialization: At full ramp-up, this program will enroll 160 students per year across four HBCUs of which 32 will pursue careers in new energy, while 16 will launch startup careers through H_2N – OHUB Inclusive Entrepreneurship and H_2N – Venture Studio programs. In parallel, each HBCU will have established 2 new energy courses that are integrated into course catalogues
  - Green Light Energy Efficiency Center: 160 households with energy efficiency measures; 400 residents educated on energy efficiency and CO_2 reduction measures
  - Venture Fund: Invest $10M over 4-year period ($9M min in Louisiana companies); $100K average seed investment; $200M in follow-on funding; 100 company investments; 40% in DBE; 800 full-time jobs created (based on performance metrics achieved by the New Orleans Startup Fund)
- **H_2Workforce:** 8 new hydrogen industry driven training created by Y4; 5% increase in current training capacity (30 classroom); 1 "New Energy Apprenticeship" for BIPOC and re-entry talent;

480 new BIPOC students per year enter hydrogen related training; 4,000 current labor force obtain hydrogen related upskilling; 3,000 new entrants (15-19 age group) enter hydrogen training

- **H_2Business Development:** 5,000 new jobs created by Y4; $2B capital expenditures by Y4; 15 corporate announcements per year in Y3-Y5; providing BRE services to 35% DBE companies, approximately 340 of estimated 975 South Louisiana DBE firms
- **H_2Testbeds:** Through programmatic and equipment investments in the university research centers, H_2Testbeds will position institutions as integrated Hydrogen Centers of Excellence and as a production hub of talent and technology; also, in the first four years of operation, the H_2T projects will produce the following outcomes:
  - 4,104 new B.S. and M.S. graduates as well as 2,000 students credentialed or certified
  - 96 industry-sponsored demonstration projects in carbon and green hydrogen
  - 40 technology disclosures (and thus patents) potentially commercialized
  - 516 startup jobs generated from commercialized technology
- **H_2P3:** Creation of 50 permanent jobs for operation and maintenance of bunkering barge and Marine Vessel Hydrogen One; 400 construction jobs; finally, the expectation is that this investment will launch construction of 16 new vessels running on eMethanol and other hydrogen-derivative fuels

H_2theFuture Phase I Work

- H_2theFuture engaged energy and finance experts from leading consulting firm McKinsey & Co. to provide analysis and custom research findings on opportunities and barriers related to green hydrogen for South Louisiana. The findings supplied detailed information on industry sectors ripe for green hydrogen adoption and related workforce requirements. Consultants conducted industry stakeholder interviews to confirm the H_2theFuture hypothesis and prioritize investments.
- After thorough conversation amongst coalition members and EDA Technical Advisors, H_2theFuture strengthened organizational and governance structures under the H_2N umbrella and added three Advisory Councils. The H_2N University, Industry, and Talent Councils will supply expertise across the coalition and are the foundation for stakeholder engagement.
- Considering the relatively small VC community in Louisiana, the coalition looked to leverage the federal SSBCI program to catalyze seed and venture capital. GNODF secured the creation of a $10M Evergreen Venture Fund, co-funded by Maritime Partners.
- Offshore wind initiative, GNOwind Alliance, developed a partnership with RWE to educate South Louisiana offshore oil and gas suppliers on opportunities in offshore wind.
- A significant amount of work went into analyzing eligible sites across South Louisiana to accommodate the NeXus Campus concept. Ultimately, the coalition selected a Port of New Orleans site with long-term potential for growth of the green hydrogen cluster.

H_2theFuture Changes Since Phase I Submission

- To emphasize the cohesion of the component projects, the coalition decided on a new naming system and organized projects and respective scopes of work along six workstreams.
- The concept of H_2NeXus Campus/Building (formerly *New Energy Institute of America* (NEIA)) expanded to include both the original building and a complementary prototyping workshop. The resulting H_2N Campus, a 43-acre Port of New Orleans site, includes additional acreage to accommodate long-term growth potential for adjacent buildings/businesses.
- To augment the H_2theFuture workforce component relevant to offshore wind and marine services, the coalition added Nicholls State University as a coalition partner.
- H_2theFuture coalition members further engaged with the State of Louisiana Department of Natural Resources in light of the state's intent on pursuing a multi-state application (entitled HALO) for a federal Department of Energy (DOE) *Hydrogen Hub*.
- While the initial Green Hydrogen end-to-end pilot project involved an RFP process to identify projects and industry coalitions, the coalition pivoted to take advantage of an immediate opportunity to procure the H_2P3 Hydrogen Fueling Barge – sending a clear message to the hydrogen market, and becoming the first U.S. port with a dedicated H_2 fueling barge.
- Gov. John Bel Edwards committed 20% cash match/unencumbered funding for H_2theFuture.