



DRAFT Louisiana Priority Climate Action Plan

NOVEMBER 15, 2023

This Draft Priority Climate Action Plan (PCAP), developed as part of an EPA Climate Pollution Reduction Grant (CPRG) Phase I Planning Grant, is a partial document that contains the critical sections of the final PCAP. These sections cover the development of the PCAP, the priority measures for reducing greenhouse gas emissions and achieving other goals of the CPRG program, and a LIDAC benefits analysis. These sections are the heart of the PCAP, which is why we are seeking public comment on them. Public comments are due by November 30, 2023.

The outputs and actions identified in this PCAP supplement and build on—but do not replace—the goals, strategies, and actions of the 2022 Louisiana Climate Action Plan. This plan is intended to serve as a resource and guide for applicants seeking CPRG Phase II Implementation Grants, not as a comprehensive list of policy and program recommendations for Louisiana to reduce its emissions to net zero. The final PCAP will address gaps in quantification of greenhouse gas reductions and other co-benefits as well as include other sections that are currently under development, including a greenhouse gas inventory, review of authority to implement, matrix of relevant federal funding opportunities, and a technical appendix.

Development of the Priority Measures

This chapter covers the methodology for identifying community-driven, near-term, high-priority, implementation-ready measures and actions that align with Louisiana’s climate action plan. Leveraging and refining the 2022 Louisiana Climate Action Plan, the state implemented an iterative, four-month process based on a broad array of stakeholder and community feedback to develop the PCAP. The PCAP builds on Louisiana’s climate planning foundation, leverages other sources of federal funding and ongoing public and private efforts, and empowers community-driven solutions.

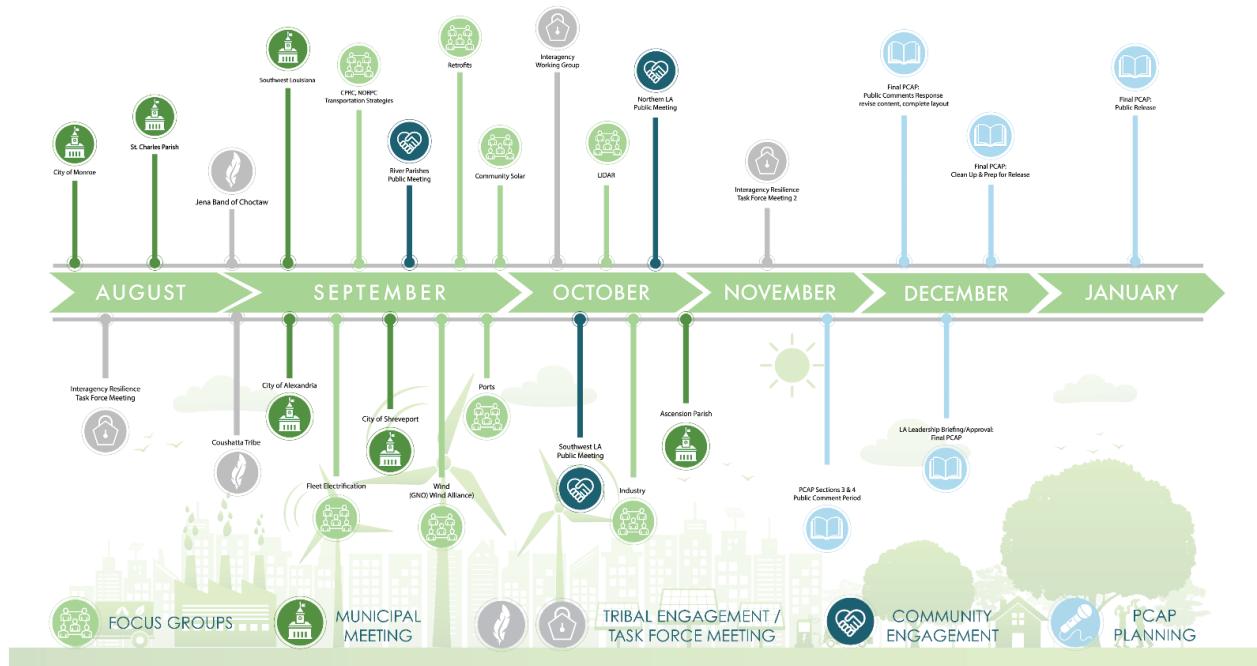


Figure 1: Timeline of activities for PCAP development

The state established a PCAP development model allowing for parallel tracks of engagement and iterative decision making to produce a focused and comprehensive list of priority actions in an accelerated time frame. The state developed an outreach and engagement plan inclusive of state, local, and tribal government coordination, discussions with key stakeholders and subject matter experts, and three public meetings throughout the state of Louisiana. The state also bookended the process with guidance and support from the Climate Initiatives Task Force.

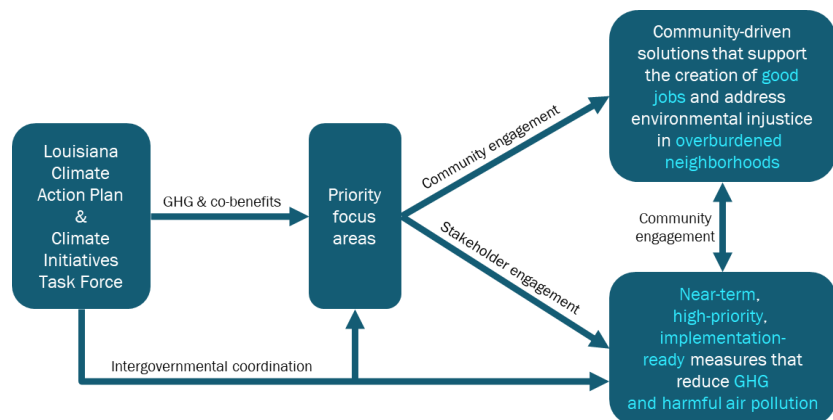


Figure 2: Overview of the process of developing the PCAP

Climate Initiatives Task Force Meetings

This Priority Climate Action Plan builds on the previous effort of the Climate Initiatives Task Force and its development of the 2022 Louisiana Climate Action Plan. Accordingly, with the full list of LCAP actions as a foundation, PCAP development began with engaging members of the Climate Initiatives Task Force and other climate stakeholders.

The Louisiana Climate Initiatives Task Force met in August 2023 to prioritize actions from the 2022 Louisiana Climate Action Plan and identify opportunities to integrate workforce development, emission reductions, and benefits to low-income and disadvantaged communities (LIDAC) into the portfolio of priority actions. This workshop-style Task Force meeting was also open to the public and streamed online for virtual participation. More than 100 participants prioritized actions and provided input and feedback on the actions' benefits in-person and via an online engagement platform. Participants were encouraged to select two actions within each section of the Louisiana Climate Action Plan that best aligned with the PCAP directive to identify near-term, high-priority, implementation-ready measures. Input from the workshop was synthesized into a list of Focus Areas encompassing all sectors of Louisiana's economy, leveraging other sources of funding, and filling essential gaps in setting Louisiana on the pathway to net zero emissions identified in the 2022 Louisiana Climate Action Plan. The Task Force met again in November 2023 and was presented with the focus areas and priority actions prior to public comment release of the Priority Climate Action Plan.

Focus Areas

- Community Solar
- Offshore Wind
- Community Resilience Hubs
- Transmission Planning
- Industrial Decarbonization
- Methane Emissions
- Fleet Transition
- Ports
- Regional Transit
- Built Environment Retrofits
- Urban and Community Forestry
- Sustainable Agriculture
- Coastal Protection and Restoration

Intergovernmental Coordination

Throughout the PCAP development process, the core planning team engaged with relevant state, regional, local, and tribal government representatives. These representatives were engaged as both subject matter experts and potential implementation grant applicants, and in certain circumstances as fellow recipients of a CPRG Planning Grant.

State Agency Coordination

The DOA and Governor's Office coordinated closely with the Louisiana Department of Natural Resources (LDNR) and Louisiana Department of Environmental Quality (LDEQ) throughout the planning process. LDNR and LDEQ were identified as implementation partners for the most number of near-term actions in the 2022 Louisiana Climate Action Plan—20 and 15 actions, respectively. Accordingly, LDNR and LDEQ were essential partners both in designing methodology for PCAP development and as potential implementation grant applicants. State agencies were further engaged through existing interagency groups, namely the Interagency Grid Working Group and the Interagency Resilience Coordination Team.

The Interagency Grid Working Group (IGWG) consists of representatives from the Governor's Office, DOA, LDNR, Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), and Public Service Commission (PSC) and meets to coordinate around grid investment and long-term regional resilience opportunities. In July 2023, general information about the CPRG Planning Grant was shared with the IGWG. In September, the IGWG was reengaged as a Focus Group of regulators and potential implementation grant applicants for feedback on measures related to Transmission Planning, Community Solar, and Offshore Wind.

The Interagency Resilience Coordination Team (IRCT) was established by the Louisiana Legislature in 2023 by Act 315 to maintain awareness, communication, and alignment with regard to the state's resilience and risk mitigation needs, progress, and priorities and to oversee development of the statewide resilience report. The IRCT is chaired by the Louisiana Chief Resilience Officer and includes resilience officers from various state agencies. The IRCT was similarly engaged twice—information about CPRG was shared in August and a workshop-style activity that included IRCT members and in-person members of the public was conducted in September to solicit feedback on resilience components to capture in the PCAP, particularly related to Built Environment Retrofits, Community Solar, and Nature-Based Solutions including Coastal Protection and Restoration and Urban and Community Forestry.

MSA Coordination

The Core Planning Team met twice with the Capital Region Planning Commission (CRPC) and New Orleans Regional Planning Commission (NORPC) as CPRG Planning Grant recipients for the Baton Rouge and New Orleans MSAs, respectively. These meetings focused on aligning priority action development and outreach efforts as appropriate to bolster effective climate action through complementary efforts.

Additionally, the State engaged CRPC and NORPC as subject matter experts on transportation and land use in an effort to develop and implement strategies that reduce GHG emissions while also realizing LIDAC and workforce benefits. In Louisiana, transportation and land use investments and decisions are most often made at the regional and local levels, so these areas were identified as priorities for alignment between local programs and projects and the state's goals for climate pollution reduction. Looking at transportation improvement plans, both MSAs identified several projects and strategies to inform the priority actions within the fleet transition focus area.

Local and Regional Outreach

The state solicited input from local and regional elected officials from Louisiana's largest metropolitan areas that did not receive CPRG Planning Grants and parishes and municipalities with the highest concentrations of GHG emissions and co-pollutants.

During these virtual interviews, the state provided an overview of the Louisiana Climate Action Plan and an introduction to the Climate Pollution Reduction Grant planning effort. The Planning Team then facilitated a discussion about the most relevant, pressing climate pollution-related issues and any ongoing or planned efforts that may reduce GHG emissions in the area.

Local priorities and the status of ongoing climate action varied across the state. However, several focus areas consistently emerged as potential implementation grant subjects. In particular, Community Solar, Community Resilience Hubs, Fleet Transition, Regional Transit, and Urban and Community Forestry were discussed in multiple interviews. Local and regional governments have the authority to implement numerous actions across these focus areas; in fact, several municipalities are already pursuing projects that align with these priorities and that this plan is designed to build on. Additionally, several cities expressed an interest in receiving funding to pursue their own climate planning efforts as Baton Rouge and New Orleans did through the CPRG program.

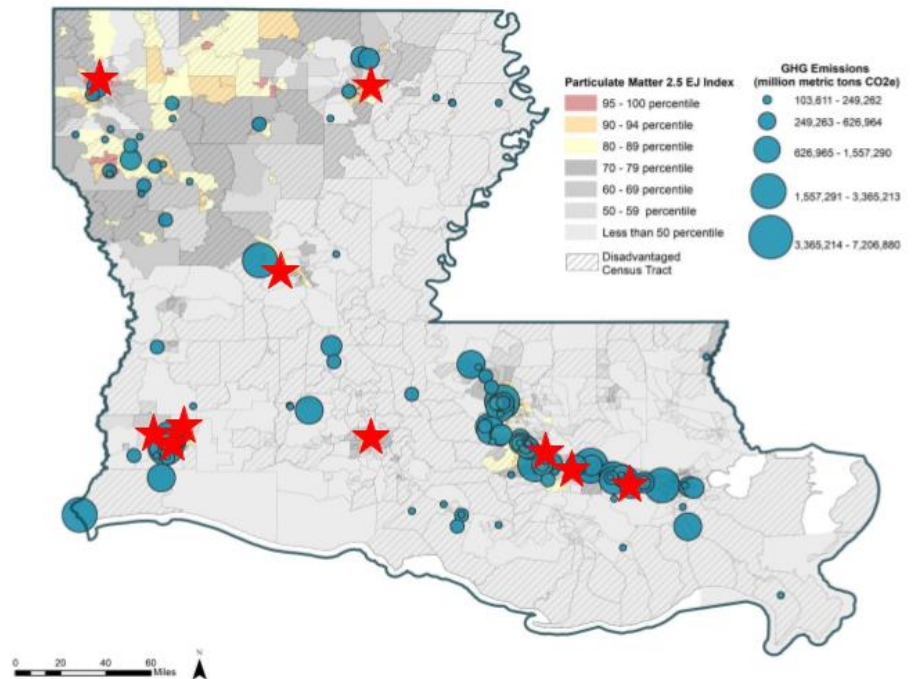


Figure 3: 1hr interviews were held with representatives from local government, federally recognized tribes, and CPRG MSA planning grant recipients.

Tribal Government Meetings

Louisiana is home to four federally recognized tribes: the Jena Band of Choctaw Indians, the Tunica-Biloxi Tribe of Louisiana, the Coushatta Tribe of Louisiana, and the Chitimacha Tribe of Louisiana. The Planning Team contacted all four tribes to share information about Louisiana's Climate Pollution Reduction Grant planning efforts and further engaged with three tribes to learn about their climate action needs and priorities which are reflected in this plan's priority actions.

Stakeholder Engagement

In order to build out a robust set of realistic priority actions, the state sought input from key stakeholders and subject matter experts by convening virtual Focus Groups, integrating into existing stakeholder groups, and conducting targeted conversations.

The state conducted virtual Focus Area-specific Focus Groups throughout the development of the Priority Climate Action Plan to receive feedback from subject matter experts and key stakeholders on the most critical, implementation-ready programs, projects, or initiatives that would position Louisiana’s state agencies and local governments well to compete for CPRG implementation grants. Focus Groups reviewed 2022 LCAP goals and objectives and were asked to identify (1) near-term challenges and obstacles to reducing GHG emissions, (2) first steps that could jump-start progress, (3) ways to ensure that overburdened communities are prioritized for benefits, and (4) ways to scale up and sustain efforts over the long-term. Focus groups were tailored in size and composition depending on the specific Focus Area but generally consisted of representatives from the private and public sectors, non-governmental organizations, and academia.

The state also sought feedback at meetings from relevant existing groups of stakeholders, such as the IGWG and IRCT discussed above and the September session of the GNOWind Alliance. Louisiana’s PCAP development approach was also presented at the Louisiana Infrastructure Opportunities Webinar series in August and the Louisiana Chapter American Planning Association conference in September 2023.

Finally, the state conducted targeted conversations with subject matter experts and stakeholders where time-constraints or other barriers prevented existing group integration or focus group assembly for a focus area. These discussions provided essential insights into, for example, market-readiness and private sector priorities for industrial decarbonization approaches and available technologies for methane emissions monitoring and abatement.

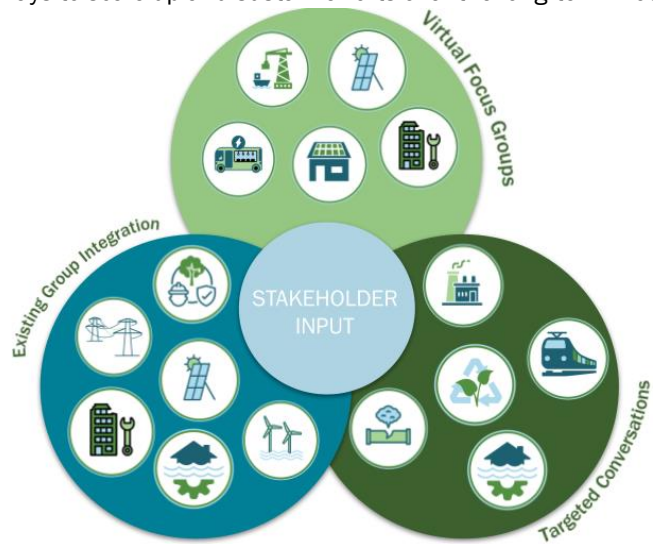


Figure 4: To receive stakeholder input, the state held targeted conversations with subject matter experts on methane emission reductions, industrial decarbonization, regional transit, sustainable agriculture, and coastal protection and restoration.

Community Engagement

The state conducted in-person community meetings in St. James Parish and the cities of Shreveport and Lake Charles.¹ These locations were chosen based on the heaviest GHG and co-pollutant emissions concentrations and significant concentrations of LMI households and LIDAC representation. Population size was considered for the location of the public meetings and central, accessible, community venues were chosen for on-site public meetings.

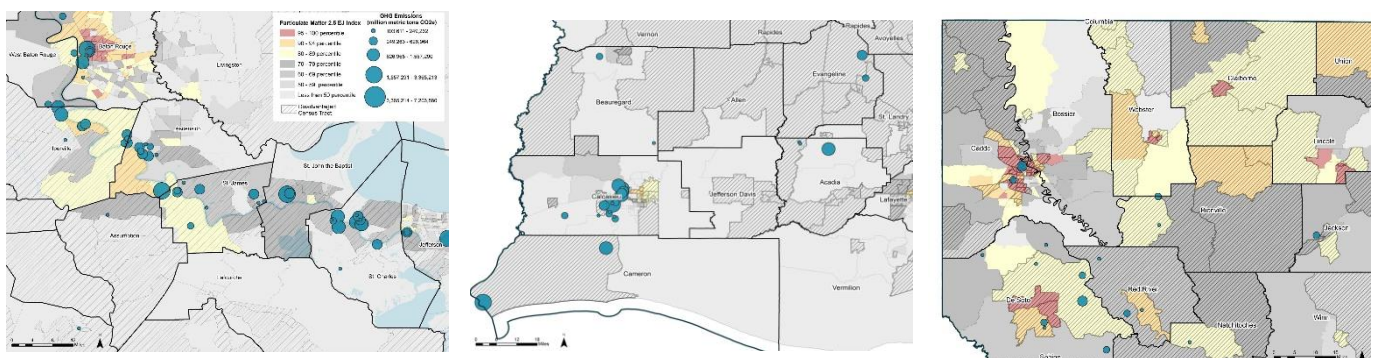


Figure 5: Climate pollution extend throughout the state and overlap with LIDAC; the southwest (m), northwest (r), and industrial corridor along the Mississippi River (l) were chosen for public engagement.

¹ Community meetings were also live-streamed on the CITF’s YouTube page where they remain to be accessible to the public.

During the public meetings, the state provided an overview of Louisiana’s Climate Action Plan, an introduction to the Climate Pollution Reduction Grant, and a focus on regional conditions and opportunities. Throughout the presentation, attendees were polled on relevant topics to gauge climate knowledge, communication preferences, and priorities of greenhouse gas reduction measures and their benefits. In each of the public meetings, more than 50% of participants did not know about the state’s existing Climate Action Plan.

Attendees were then asked to participate in group discussions around the Focus Areas and community benefits and asked to discuss (1) the greatest near-term challenges for them and their community, (2) their greatest concerns related to climate change and clean energy, (3) what types of climate-related activities they would like to see in their community in the next 5-10 years, and (4) how the State could ensure that communities most burdened by pollution and economic inequality are prioritized for benefits. The results of these discussions are reflected in the next chapter.

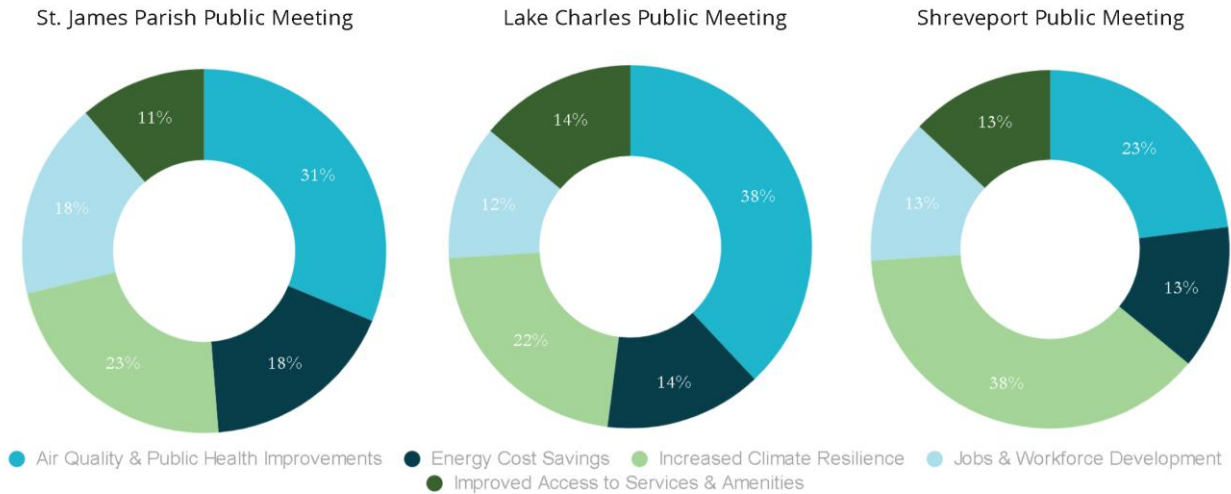


Figure 6: Ranking of benefits according to highest priority to least priority by public meeting participants

Priority Measures

The Climate Pollution Reduction Grant allows for identifying and priming greenhouse gas reduction measures for implementation. The 2022 Louisiana Climate Action Plan identified three key policy pillars for Louisiana to achieve net zero by 2050: renewable electricity generation, industrial electrification, and industrial fuel switching to low- & no-carbon hydrogen. These pillars are directly and indirectly supported by a number of focus areas identified below. For example, community solar and offshore wind are generating renewable power and rely on transmission planning to supply community resilience hubs and ports. Industrial decarbonization requires fuel switching and industrial electrification – which requires transmission planning and renewable energy generation. Additional carbon reductions will be achieved by detecting and addressing methane leak sources, mode shifts and alternative fuel sources in transportation, investments in energy efficiencies in the built environment, and investments in carbon sequestrations and co-pollutant reductions within the natural working lands and wetlands. Although many of the priority actions can be initiated and supported by state agencies, the public service commission, and other quasi-governmental entities, they are also intended as a blueprint for implementation funding and climate action planning for local governments across the state.

This chapter introduces each of the thirteen focus areas. It describes the current status of each focus area in Louisiana and identifies priority actions that support future implementation. Each focus area description includes carbon reduction potential, a description of what has been done to date, and the focus area’s potential for transformative impact. A crosswalk for alignment with federal funding and authority to implement is provided in a matrix at the end of this chapter.

The priority actions represent a focused list of near-term, high-priority, implementation-ready steps that align with the state’s climate roadmap, incorporate stakeholder input on obstacles and opportunities, and consider community concerns.

GHG emission reductions for priority actions are quantified based on the corresponding outputs those actions could reasonably be expected to produce. A forthcoming technical appendix will detail all assumptions, tools, citations, datasets, and methods used to estimate and quantify GHG emissions and co-pollutant reductions.

An implementation matrix at the end of this chapter provides an overview of federal funding intersections and the authority to implement.



COMMUNITY SOLAR

Community solar projects generate electricity from sunlight, and that electricity flows through a meter to the utility grid. Community solar subscribers (i.e. households, businesses, or any other electricity customer) pay for a share of the electricity generated by the community solar project.

Community solar customers typically subscribe to—or in some cases own—a portion of the energy generated by a solar array and, in turn, receive an electric bill credit for electricity generated by their share of the community solar system. Community solar can be a great option for people who are unable to install solar panels on their roofs because they are renters, they cannot afford solar, or their roofs or electrical systems are not suited to solar. Subscribers can either use the solar power directly or sell it back to the local utility, which can help reduce electricity costs for the subscriber.

Status of Community Solar in Louisiana

Currently, Louisiana is one of six states that does not have at least one community solar project or enabling legislation for community solar. Louisiana does not have a renewable energy portfolio or regulations in place that would decrease the uncertainty and delays facing investors. This challenge was shared by stakeholders during discussions: community solar implementation in Louisiana is viewed as too risky and the value of solar credits for community solar is too low for project development to make financial sense. Louisiana's current net metering regulations have opened up opportunities for co-ownership in solar resources. However, the system capacity under the state's current rules is only up to 300 kW. Having a cap of 300 kW is not cost-effective for the types of community solar projects that would be utilized under this program—current nationwide community solar projects are more in the 5 MW range. With projects larger than 300 kW going onto PSC's agenda, the current policy framework is not congruent in a way that would help achieve the goal of delivering access to clean energy resources, particularly to low-income and disadvantaged communities.

Planned large-scale utility solar projects will increase Louisiana's solar operations in the next decade. Entergy Louisiana was approved by the Louisiana Public Service Commission (PSC) to develop 475 MW of solar power, tripling its existing renewable capacity. Ventress Solar, the largest solar farm in Louisiana at 345 MW, is under construction in Pointe Coupee Parish. Amazon is planning two solar farms, a 100 MW farm in St. Landry Parish and a 200 MW farm in Morehouse Parish. Southwestern Electric Power Company (SWEPCO) will add 72.5 MW of solar from the Shreveport area near Houston. Cleco, an electric utility company, contracted a Power Purchase Agreement for 240 MW of solar on the site of their retired Dolet Hills coal-powered plant, enabling a green tariff for large customers. They are also optioning sites for an additional 50-200 MW of solar in their region. Additionally, First Solar selected Acadiana Regional Airport as the site of its fifth American manufacturing facility. With an investment of up to \$1.1 billion, the facility will produce high-performance photovoltaic (PV) solar modules, creating more than 700 new direct jobs with a total annual payroll of at least \$40 million. While private investments are underway, local governments are adopting ordinances to provide guidance for solar development. To ensure that the ordinances meet the goals intended, a Model Solar Toolkit was developed.

Intersection with Federal Funding

The LA Department of Nature Resources is pursuing funding under the U.S. EPA's Greenhouse Gas Reduction Fund's Solar for All Competition to develop incentives and complementary investments to help enable community solar development to support low-income households in the state.

The State of Louisiana through the LA Department of Nature Resources will pursue the maximum amount of funding available to the state under the GGRF Solar for All competition: \$250 million over the 5-year program period. The State's application includes a holistic program to reach 15,000 households across the state with opportunities for roof improvements, weatherization, solar panels, battery storage, community solar, and community resilience hubs. These efforts are designed

to support, complement, and integrate with the state’s nation-leading resilience initiatives, based on unique needs facing households in the state.

Community-driven solutions

Community solar is uniquely tailored to provide a wide-spectrum of community benefits, particularly in the areas of energy cost savings, climate resilience, and workforce development. Public outreach, local government engagement, and stakeholder input all suggested broad support for community solar as a clean source of distributed electricity. However, interviews with tribal governments and municipalities also uncovered concerns about available land and best use of land for solar farms.

To address stated barriers, priority actions aim to improve education and awareness of community solar options, both for the benefit of the public, and to provide pre-decisional resources for regulators and industry with concerns over the scalability of community solar in Louisiana.

“Use empty pastures for solar farms.”

“Community solar – make it accessible to all – start in high needs communities first to demonstrate commitment to community not just profit.”

“All underground infrastructure needs to be addressed and assessed.”

Transformative Impact

Local generation of electricity at or near where it will be used can accelerate the deployment of reliable, renewable technologies and projects in Louisiana. Community solar is also scalable and could create significant local economic and environmental benefits. Scaling up and receiving the benefits requires a number of conditions, such as cross-sector collaboration, usually with community-based organizations. Cross-sector collaboration towards implementation of community solar can have significant impact in underserved communities, promote business model innovations, and fill knowledge gaps around renewable energy production.² Furthermore, community solar provides an opportunity to generate clean energy and replace fossil fuel derived energy, improve air quality and public health, contribute to meet rising energy demands in Louisiana, and support workforce development through solar-specific technical training, which can be applied throughout the country.

COMMUNITY SOLAR PRIORITY ACTIONS

Output	GHG emission reductions (MMT CO ₂ e)	Co-pollutant reductions (lbs)			
		SO ₂	NO _x	VOCs	NH ₃
Support development of 500 MW of community solar statewide by 2030	0.056	68,350	108,360	3,830	4,300

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Improve metering rate

The State of Louisiana will support analysis and facilitate collaborative processes to develop a fact base around the value of community solar installed at the distribution level in order to improve the metering rate for community solar billing.

Simplify financing

The State will support efforts by state and local financial institutions, in collaboration with community-based organizations and local governments, to develop loan products that enable the growth of community solar projects led by local governments

²<https://repositories.lib.utexas.edu/bitstream/handle/2152/82897/TexasCommunitySolarRoadmap.pdf?sequence=3&isAllowed=y>

and nonprofits and include local community benefits, such as community ownership or wealth-building opportunities. Such financing can fill in the gaps of access to low-cost capital for such projects, enable them to access federal tax credits through elective pay, enable innovative financing structures, and allow them to compete with traditional community solar projects while supporting long-term community ownership and wealth-building.

Incentivize community solar for low-income households

The State of Louisiana will incentivize community solar projects that provide at least 20% electricity bill savings to households in low-income and disadvantaged communities. The incentive will be based on economic analysis to determine a cost-effective incentive amount and performance requirement that enables project development and recruitment of low-income subscribers. The analysis will take into consideration models that enable projects to capture and maximize federal tax incentives provided under the Inflation Reduction Act, as well as depreciation, and elective pay opportunities for local governments and non-profit organizations.

Establish a Community Solar Working Group

The State will support the convening of a community solar working group with representatives from impacted communities, local governments, financial institutions, developers, utilities, and regulators. The working group can address regulatory, bureaucratic, and procedural obstacles to community solar development and issues such as standard practices, regulation updates, billing systems, consumer protections, marketing disclosures, performance, and sustainability of community solar program design.

Leverage schools as lead sites

The State will support efforts by local governments, school districts, and school facility operators to leverage public schools as anchor and host sites for community-located community solar projects. Locating community solar projects at schools helps overcome trust and marketing gaps for projects, while supporting and providing direct community benefits. Further, community solar projects connected to a school premises, if co-located with energy storage, can support resilient school operations in the event of a broader grid outage, creating the opportunity for the school to act as a community resilience hub.

Coordinate outreach through trusted local entities

The State will work with partners to engage community-based organizations to do geographic-specific outreach to support residential customer subscriptions to community solar projects. Community-based organizations can manage marketing, public outreach, public interactions, income verification (for Louisiana Solar for All), and other local education needs to overcome trust and information barriers to residential participation in community solar.



OFFSHORE WIND

Offshore wind power is a renewable energy source that results in zero emission of GHGs. It is the generation of electricity through multiple turbines in offshore waters. Underwater transmission lines and substations are needed to transfer and transmit the electricity generated by the wind turbines. Offshore wind turbines in the Gulf of Mexico can supply a zero-emission source of electricity to Louisiana’s power grid or to electrolyzers to produce no-carbon hydrogen fuel. Both of these activities will be essential in reducing emissions from Louisiana’s industrial, transportation, building, and power sectors and will require heavy dependence on electrification and fuel-switching.

According to the National Renewable Energy Laboratory, Louisiana ranks as the fourth highest state in the nation for offshore wind technical potential, with potential for a single offshore wind project to create 4,470 construction jobs and 150 full-time operations jobs. In addition to offshore wind deployment, Louisiana is well positioned to be a manufacturing and servicing hub for offshore wind across the U.S. In fact, Louisiana companies were integral in the design, fabrication, and construction of the nation’s first commercial offshore wind farm in Block Island, Rhode Island.

Current Status of Offshore Wind in Louisiana

In August 2023, the Bureau of Ocean Energy Management held the first offshore wind energy auction in the Gulf of Mexico, resulting in one lease area offshore of Lake Charles receiving a high bid of \$5.6 million from RWE Offshore US Gulf, LLC. The 102,480-acre lease area has the potential to generate 1.24 gigawatts of offshore wind energy, which can power nearly 435,400 homes with clean, renewable energy. RWE earned bidding credits for commitments to support workforce training programs and develop a domestic supply chain for the offshore wind energy industry, as well as for contributing compensatory mitigation for impacts to fisheries. The final lease included further stipulations including tribal engagement and increased reporting requirements and assessments for protected species, among others. In October 2023, BOEM announced four additional Wind Energy Areas in the Gulf of Mexico, including another area south of Lake Charles.

In May 2023, the Louisiana Department of Natural Resources (DNR) published a Notice of Intent to promulgate rules and regulations for entering into leases and operating agreements for offshore wind development on state water bottoms. In 2023, the Louisiana Legislature allocated \$3 million for LDNR to develop a Comprehensive Wind Roadmap for the State of Louisiana. Over the next 24 months, the State intends to develop a robust presence for offshore wind energy and support the growth and development of its associated supply chain, ports, and vessels in Louisiana by developing and publishing the Louisiana Wind Roadmap. The Roadmap will provide a path for the state to guide offshore wind investments, support and secure necessary supply chains, identify potential opportunities to achieve policy objectives, and coordinate a complex network of stakeholders and actions moving forward.

Across a spectrum of stakeholders—industries, businesses, developers, academia, non-profits, and coalitions—there has been collaboration on a number of initiatives, programs, and deliverables related to offshore wind development in Louisiana. Developers are working with non-profit organizations to create supply chain databases and webinars to inform local businesses and companies on how they can engage in the clean energy market. Organizational coalitions are working toward the development of a green hydrogen cluster potentially powered by offshore wind. Businesses and industries are researching and developing blades and turbines that are hurricane resistant, manufacturing wind components and materials for use in other parts of the country and internationally and building some of the first Jones-Act compliant service vessels for offshore wind. Higher education facilities and community and technical colleges are establishing curriculum and workforce training programs for blue- and white-collar jobs in the offshore wind sector.

Intersection with Federal Funding

In October 2023, President Biden and the U.S. Economic Development Administration (EDA) selected the Gulf Louisiana Offshore Wind (GLOW) Propeller as one of just 31 designated U.S. Tech Hubs. The Tech Hubs program, authorized by the bipartisan CHIPS and Science Act, aims to drive regional innovation and job creation by strengthening a region’s capacity to

manufacture, commercialize, and deploy technology that advances American competitiveness. The LSU-led GLOW Propeller consortium brings together five universities, two community colleges, industry groups, economic development and workforce training organizations, applied research institutes, and various other public and private partners. Designation as a Tech Hub allows the consortium to apply for an EDA grant between \$40 million and \$70 million for implementation of its plan to accelerate offshore wind research and development in Louisiana.

Community-Driven Solutions

The workforce development and supply chain benefits of an expanding offshore wind industry are already apparent in Louisiana, and the priority actions in this plan aim to enhance Louisiana’s role in the global offshore wind industry to diversify Louisiana’s energy economy. This plan also aims to maximize the impacts of Community Benefits Agreements and otherwise bridge the physical gap between offshore wind and affected communities. This will be increasingly important in identifying onshore points of interconnection and building out transmission infrastructure.

Stakeholders voiced concern about where the transmission connection for an offshore wind development would be routed and lack of Renewable Energy Credit market or incentive structure for incentivizing offshore wind production. During public meetings, participants’ support and knowledge varied from either being unaware or indifferent to being supportive of offshore wind power. However, the opportunity to diversify the economy and invest in the local workforce were mentioned as desired outcomes of offshore wind development.

“The state should take a more active role in creating and overseeing job opportunities, and especially eliminate barriers for accessing and maintaining employment for newly trained workers with little to no experience.”

“The state needs to incentivize the end results of zero carbon. Not just the effort.”

Transformative Impact

The availability of wind power as an energy resource from the Gulf of Mexico has the potential to position Louisiana as a strong offshore energy producing state. Offshore wind power can supply clean energy to the industrial sector which is currently by far the highest contributor to greenhouse gas emissions in Louisiana. The successful implementation of offshore wind also has the potential for market adoption and future leases in the Gulf of Mexico both offshore and onshore, which could provide additional clean energy to Louisiana and beyond. Furthermore, as stated above, Louisiana’s workforce is already skilled in contributing to wind turbine development and assembly. There is a great potential for scaling the turbine manufacturing and installation sector.

OFFSHORE WIND PRIORITY ACTIONS

Output	GHG emission reductions (MMT CO ₂ e)	Co-pollutant reductions (lbs)			
		SO ₂	NO _x	VOCs	NH ₃
Support 5 GW of offshore wind energy by 2035	0.885	1,206,990	1,380,450	44,990	64,070

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Support a State Waters Technology Hub

The State will support the development of a consortium-based offshore wind technology hub and accelerator focused on offshore wind development in State waters. The consortium’s members will represent the core industry, agency, research, teaching, and training partners. The consortium should support national and state energy transition goals through the transformation of a historically underserved region into an epicenter of competitive energy transition talent and technology development. The primary purpose of the hub will be to “learn by doing” on what it will take to support a large-scale offshore wind development for the state. The cornerstones of the State Waters Technology Hub are:

- an “in-water” test center comprising multiple offshore wind turbines, and
- an onshore test center consisting of a wind tunnel and other equipment to test and validate prototype technologies, materials, and components. The State Waters Technology Hub would support the development of wind turbine technology options that are cost-efficient and resilient to operate in the coastal waters and mitigate impacts on coastal wildlife.

Identify points of grid interconnection

The State will work with the Public Service Commission, state utilities, the regional transmission organization, BOEM, and other stakeholders to identify possible and preferred points of interconnection for clusters of offshore wind development in both State and Federal waters. The analysis will further investigate likely pathways for routing of submarine, underground, and overhead transmission infrastructure from offshore to onshore, and permitting requirements.

Develop Offshore Wind Manufacturing Cluster

The State will support the development of an Offshore Wind Manufacturing Cluster to drive the development of a supply chain network within Louisiana for projects ramping up in other states, to increase economic impact for Louisiana companies. Manufacturers involved in the cluster should include those that have experience with the offshore oil and gas industry, turbine and nacelle components, offshore and onshore substations and transmission equipment, and shipping. This effort will also help position the state to support manufacturing of wind components and construction for Louisiana Offshore Wind development anticipated from 2030-2035, and further growth beyond.

Identify workforce training needs

The State will work to conduct a skills gap analysis for offshore wind development, based on technology and development trends, and identify long-term workforce needs, including the number and type of workers, skills needed, and estimated salaries and wages supported by a new offshore wind development and manufacturing industry in the state.

Foster local government partnerships

The state will support engagement with affected communities through an ongoing consultation process to provide clarity, identify local concerns, and co-create solutions.

Build local capacity

The state will support efforts to build local capacity and provide technical support to communities in order to promote investments and development of community benefits.



COMMUNITY RESILIENCE HUBS

Community Resilience Hubs are community-serving buildings equipped with grid-interactive, carbon-free distributed energy resources and long-duration storage. During disasters, resilience hubs can provide shelter, air conditioning or heating, fresh water, emergency & health services, food distribution, and general information distribution. Community resilience hubs can provide different types of community amenities and grid improvement services during non-emergencies. Due to Louisiana's proximity to the Gulf of Mexico and practice with hurricanes and other events, post-disaster community resource hubs have emerged over time, but they currently lack energy security. Those in existence are powered by fossil fuel-generated energy. To increase the number of community resilience hubs available to Louisiana's residents, provide access to energy post-disaster, and reduce their carbon footprint, 385 carbon-free microgrids serving Community Resilience Hubs and critical facilities will be deployed by 2031. This effort would target a minimum of 40 MW of distributed solar and 251 MWh of energy storage for microgrids supporting community resilience hubs and critical facilities throughout Louisiana.

Initial deployment of community resilience hub pilots should be strategically located to target critical facilities and communities most at risk from environmental and economic harm.

Current Status of Community Resilience Hubs

Although not yet specifically coined community resilience hubs, many efforts across the state are underway to provide services at centralized locations before, during, and after events. In the southeastern part of the state, the New Orleans City Council used \$1 million in philanthropic funds for deploying resilience hubs in the City of New Orleans to increase energy resilience and reduce energy burdens. The Community Lighthouse Program, led by the community-based organization Together Louisiana, is partnering with faith-based congregations and community institutions across New Orleans to deploy a network of commercial-scale solar powered microgrids with battery backup capacity, which will serve as resilience hubs during power outages and natural disasters. The Community Lighthouse Program has made plans and investments to expand statewide through similar community-led efforts statewide. Feed the Second Line, another New Orleans-based nonprofit, launched the Get Lit, Stay Lit Initiative to deploy solar-powered microgrids with battery backup to be deployed among restaurants across the City of New Orleans to serve as resilience and food distribution hubs in disaster events.

Through its Next 100 Years Challenge, the Greater New Orleans Foundation awarded \$100,000 to fund Hazard Mitigation and Tribal Resilience Hubs for the United Houma Nation. The United Houma Nation is the largest Native American tribe in Louisiana with over 19,000 citizens, more than 50 percent of whom live in hurricane-prone, low-lying parishes. The project aims to minimize impact from hurricane and sea-level rise by anticipating the critical needs of tribal members following storms and utilizing indigenous knowledge of Louisiana bayou communities to emphasize cultural preservation.

In the south-central part of the state, the University of Louisiana Lafayette (ULL) is upgrading the Cleco Alternative Energy Center in Crowley to a general-purpose Grid Test Facility. Researchers will simulate and test a wide variety of microgrid-related equipment and related impacts on the grid overall. The same facility will also be home to the new hydrogen electrolysis test bed through the H2theFuture initiative, which will demonstrate generation of hydrogen from solar and biomass, and utilization of this hydrogen for electrical power generation and green fuel feedstock.

In the southwestern part of the state, following Hurricane Ida in 2021, the Southwest region developed a [50-Year Resilience Master Plan for Calcasieu and Cameron Parishes](#). Among other strategies, the plan identifies several critical areas for resilience hubs, as "communities (those living in the northern, western, and eastern edges of the parish struggle to have the same access) with new resilience hubs would minimize the driving distance to a resource center and promote storm-prepared communities."³

³ <https://www.visitlakecharles.org/just-imagine-swla/>

Intersection with Federal Funding

In 2023, the US Department of Energy announced an award for the State of Louisiana to launch the Hubs for Energy Resilient Operations (HERO) project, a strategic energy resilience initiative that will establish a foundational approach for accelerating more abundant, affordable, and reliable clean energy for greater power resilience in the face of rising extreme weather and more frequent natural disasters. HERO will support the deployment of 385 carbon-free microgrids serving community resilience hubs and critical facilities, initiate a comprehensive, data-driven integrated community energy planning process, and enhance state disaster response. The State will prioritize efforts that support and build on the comprehensive nature of the HERO project.

Community-Driven Solutions

Feedback from community members at public meetings confirmed that increasing climate resilience is a priority for residents across the state. According to NOAA, Louisiana had the second highest cumulative damages in the country from billion-dollar disasters between 1980 and 2021. This disaster risk is not unique to coastal regions, nor is it confined to tropical storm events or flooding. Therefore, while resilience must be woven into any climate action plan for Louisiana, effective resilience measures will not look the same across all the state’s communities. Strategically-located community resilience hubs supported by carbon-free microgrids will allow a tailored approach to reducing GHG emissions, increasing energy security, and providing post-disaster assurance, particularly for low-income and disadvantaged communities. The demand for such hubs is supported by the state’s HERO award and was repeatedly emphasized during the state’s conversations with local, regional, and tribal government officials. The priority actions in this plan lay the groundwork for an extensive and coordinated network of community resilience hubs to increase resilience, provide a venue for equitable and accessible amenities, and demonstrate the value of renewable energy.

“Expanding access to help communities during increasingly frequent power outages.”

“Extreme weather patterns and climate outages need to be met with increased access.”

“Community resilience hubs are an absolute priority...we have none.”

“We need a network of new and existing buildings. “

Transformative Impact

Community resilience hubs have great potential for serving as model community facilities. Their performance in providing the targeted service efficiently and effectively could result in the formulation and adoption of standards for multi-purpose building, including being a place with energy security through renewable energy integration.

COMMUNITY RESILIENCE HUBS PRIORITY ACTIONS

Output	GHG emission reductions (MMT CO2e)	Co-pollutant reductions (lbs)			
		SO ₂	NO _x	VOCs	NH ₃
Deploy 385 carbon-free microgrids serving Community Resilience Hubs and critical facilities by 2031	0.0045	5,640	8,610	310	350

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Deploy Community Resilience Hubs

The State, through its HERO project, will work with communities to deploy 385 carbon-free microgrids serving community resilience hubs and critical facilities by 2031.

- Resilient-In-Place Hubs. Microgrids deliver resilient power to Hubs in communities that can provide shelter, food, medical support, emergency services support, and other community needs for community

members that cannot be resilient at home, but that are unable to evacuate due to isolation, expense, and a variety of factors. The Resilient-In-Place Hubs can include shelters, churches, education campuses, and community gathering centers.

- Evacuation Route Hubs. Microgrids deliver resilient power to Hubs deployed along designated evacuation routes or along freeways further inland, that can be powered and can serve as accessible shelters for evacuating community members and support recovery efforts during extreme weather events and associated grid outages.
- Critical facilities. Microgrids deliver resilient power on-site at critical facilities, such as medical centers, flood and levee protection systems, emergency services, water treatment facilities, and other essential services that serve community resilience needs.

Facilitate community-driven planning

The State will work closely with communities to pilot new models for community-centric energy resilience project planning, aimed to protect disadvantaged and critical communities during extreme weather, natural disasters, and other threats to energy security. The effort will focus on identifying, recruiting, training, and supporting community-based organizations in the design and deployment of community-based planning efforts; providing funding for community conversations that gain local knowledge on identifying and mapping community resilience needs.

Deploy mobile battery storage

The State will support the launch of mobile energy storage projects that deploy small, packaged energy storage units to households with limited mobility or that rely on electricity-dependent equipment during extended outages.

Unlock compensation for energy storage as a grid resource

As part of an integrated community energy planning process, the State will support efforts to enable distributed energy resource microgrids to get compensated for providing grid services, such as peak demand reduction or demand response.

Establish resiliency standards

The State will investigate the opportunity to incorporate requirements for energy resiliency into future building codes and/or development standards to ensure community gathering places have resilient power and are designed to support community members during extreme weather events and other energy disruptions.

Secure long-term federal loan for virtual power plants

The State and its state financial institution partners will pursue securing a long-term loan guarantee from the U.S. DOE Loan Programs Office for a lead state entity or coalition in order to get access to low-cost debt and a federal loan guarantee to deploy community resilience hubs and critical facility microgrids. The loan commitment would enable state and local partners to gain low-cost access to funds to deploy projects, capture federal tax incentives, and operate energy storage facilities as virtual power plants to ensure projects can achieve a return while providing long-term resilience and security value.



TRANSMISSION PLANNING

Transmission Planning refers to the necessary measures to prepare the power grid to support a clean energy transition and withstand increased climate-related hazards. Electricity is the backbone of the economy and a requirement for high quality of life. A clean and resilient power grid is the lynchpin for Louisiana’s carbon emissions reduction ambitions. With increased adoption of industry, transportation, and building electrification measures, it is essential that Louisiana plans to meet anticipated load growth and resource requirements with clean and reliable electricity sources.

Louisiana’s grid is managed by two Regional Transmission Organizations (RTOs), which are nonprofit organizations created to ensure reliable supplies of power, adequate transmission infrastructure, and competitive wholesale electricity markets. Most of the state’s grid is managed by the Midcontinent Independent System Operator, which includes 15 states mostly in the south and Midwest regions of the country. The grid in northwest Louisiana is managed by the Southwest Power Pool, which serves 17 states in the central part of the country. Engagement of these two RTOs is critical for effective and implementable transmission planning.

Current Status of Transmission Planning

Louisiana’s transmission grid is aging with few current projects for large scale updates to address an aging and failing infrastructure and prepare for offshore and solar power distribution. Challenges of cost, timing, and siting must be overcome to update, upgrade, and increase transmission capacity. The current cost of grid investments is a significant capital investment and transmission line development often takes more than ten years because transmission projects have impacts across utilities and state lines, with complicated approval and cost-allocation processes through regional transmission organizations. Therefore, regional coordination is key to success. Despite these challenges, the state has been taking steps to modernize and prepare its power infrastructure.

Intersection with Federal Funding

Louisiana’s Interagency Grid Work Group guides the state in developing and supporting initiatives related to grid modernization and energy transition through IIJA and IRA. The group has collaborated with utilities, universities, and community partners to submit nearly \$700 million in IIJA proposals to support energy resilience and grid modernization in Louisiana.

The State Energy Office submitted to the Department of Energy a preliminary revision to Louisiana’s Energy Security Plan in September 2022, with a final submission in September 2023. In collaboration with the Governor’s Office of Homeland Security and Emergency Preparedness, this plan overlays Louisiana’s energy profile with physical and cyber threats and vulnerabilities; the Climate Action Plan is highlighted as an approach to address these risks.

Transformative Impacts

The priority actions identified are supporting large scale updates, upgrades, and investments in power transmission and the planning necessary to ensure grid integration of renewable energy generation into the existing infrastructure. Although an ambitious goal, the priority actions will provide long-term guidance for investments. Over time, these plans will be implemented and transform power distribution across Louisiana and its contributions to MISO.

TRANSMISSION PLANNING PRIORITY ACTIONS

Output	GHG emission reductions (MMT CO2e)
Increase new transmission capacity by 30% by 2035	TBD

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

- ***Integrate Advanced Conductors***

The State will support the development of a comprehensive plan to integrate advanced conductors on existing and new transmission routes to expand transmission capacity and reduce risk of failure. The State will prioritize the following elements:

- Understanding future transmission needs. Conducting a review of contemporary transmission needs and planning studies to determine high and low scenarios of transmission expansion needed over the next 20 years.
- Evaluating role of advanced conductors. Conducting a study of the potential of advanced conductors to expand transmission capacity, reduce risk of failure, and lower energy cost, by transmission segment (new and existing).
- Establishing advanced conductor standards. Based on the fact base established in the transmission needs analysis and advanced conductor study, working to establish a standard that requires the use of advanced conductors where cost-effective. Establishing a standard would allow for the rebuild of transmission lines with advanced conductors, and create a cost-benefit basis for retrofit projects.

- ***Develop Offshore Wind Transmission plan***

In coordination with its Offshore Wind pathway, the State will support a study to determine routing strategies, interconnection needs, and anticipated costs of various scenarios for the connection of offshore wind development to the onshore transmission system.

- ***Facilitate Regional Resource Strategic Planning***

The State will work with regional states, utilities, and transmission operators to begin a regional resource planning process based on future scenarios of energy generation availability, changes in electric loads, and anticipated transmission projects, to identify multi-jurisdictional strategies to deploy new transmission projects across multiple states and transmission organizations to cover identified gaps in transmission capacity.

- ***Support essential transmission projects***

The State will provide support to active transmission capital infrastructure development projects that provide access to new renewable energy generation with technical assistance on siting, permitting and other integration challenges.



INDUSTRIAL DECARBONIZATION

Industrial decarbonization refers to avoiding the combustion of fossil fuels to reduce emissions from the industrial process chain. Industrial decarbonization is inclusive of numerous cross-cutting technologies, processes, and practices, including energy efficiency upgrades, process equipment electrification, use and production of low- and no-carbon fuels and feedstocks, advanced recycling, and deployment of carbon management technology.

The industrial sector accounts for two-thirds of Louisiana's emissions due to demand for products produced in Louisiana that are then exported and sold to the rest of the nation and world. Omitting of large power generation facilities, Louisiana's top 20 industrial facilities emit around 61 Mt per year⁴, with ammonia production and oil refineries leading this emission. To reduce carbon and co-pollutant emissions, facilities need to increase efficiency, use low- and medium-heat industrial processes, and use low- and no-carbon hydrogen rather than fossil fuels.

Current Status of Industrial Decarbonization in Louisiana

Addressing carbon emissions in the industrial sector is one of the most impactful measures that can be taken to reduce greenhouse gases. To date, several efforts are underway to support clean hydrogen production, carbon capture, utilization, and storage, and industrial electrification.

The report [Industrial Electrification in the U.S. States](#) analyzes nine of Louisiana's industrial subsectors and the changes in energy use, CO₂ emissions, and energy costs that would occur if individual industrial processes were electrified. This report studied Louisiana's industrial pulp and paper, container glass, ammonia, methanol, plastic recycling, wet corn milling, aluminum casting, beer, and soybean oil sectors. Key insights of the report include that electrifying ammonia or methanol production in Louisiana can significantly reduce emissions and electrifying recycled plastic production may reduce energy costs per unit of production⁵.

Intersection with Federal Funding

A \$50M grant from the U.S. Economic Development Administration Build Back Better Regional Challenge in 2022 and \$24.5M from the State of Louisiana [H₂theFuture](#) will support holistic, equitable economic and workforce opportunity across Louisiana's energy transition with 25 partner organizations across 35 Louisiana parishes. H₂theFuture will build a clean hydrogen energy cluster to decarbonize the South Louisiana industrial corridor through the execution of projects across five interrelated workstreams. These workstreams focus on research of low-carbon hydrogen technologies through university partnerships, create a physical and programmatic hub to foster collaboration and coordination between stakeholders, identify business development initiatives supportive of the hydrogen value chain, workforce developing for displaced workers, rural citizens, and minorities, and private public partnerships to de-risk low-carbon hydrogen investments at commercial scale.

[Project Cypress](#), a Regional Direct Air Capture Hub to be located in southwest Louisiana, aims to capture more than 1 MT of existing CO₂ from the atmosphere each year and sequester the CO₂ permanently deep underground. Project Cypress will implement a robust two-way communication program with local communities and stakeholders to solicit input into the project as it develops its Community Benefits Plan while also generating new employment opportunities and advancing diversity, equity, inclusion, and accessibility principles.

The [HALO Hydrogen Hub](#) is a bipartisan three-state partnership between Louisiana, Oklahoma, and Arkansas, created to compete for up to \$1.25 billion of a total \$7 billion in funding set forth in the Bipartisan Infrastructure Law. HALO's approach

⁴ https://www.lsu.edu/ces/publications/2021/louisiana-2021-greenhouse-gas-inventory-df-rev_reduced.pdf

⁵ <https://static1.squarespace.com/static/5877e86f9de4bb8bce72105c/t/6423ba22463c665e94ff5476/1680063011162/Louisiana+Industrial+Electrification+Factsheet.pdf>

is to employ public-private partnerships to catalyze the development of an extensive hydrogen network in the three constituent states, ultimately to be integrated into the national hydrogen network. HALO goals support transformative technologies and investments that will drive lower costs and increase adoption of hydrogen to reduce carbon and other emissions. DOE announced hydrogen hub finalists in October 2023, and the HALO Hub was not selected to receive funding through the Regional Clean Hydrogen Hubs program. Members of the HALO Hub are continuing to seek ways to leverage the partnerships that have been established through this effort.

Community-Driven Solutions

Industrial decarbonization is Louisiana’s most pressing challenge and single most impactful opportunity to improve air quality and public health, which was a top priority of every community the state engaged with over PCAP development. However, many residents were apprehensive of further capital support of Louisiana’s large industrial actors, typically grounded in a history of distrust. The public expressed strong concerns over state and federal oversight of industrial activities, including the number of plants permitted and their cumulative impact on air quality, and perceived lack of emission regulation enforcements. This plan does not propose policy or regulatory recommendations as the intention is to identify options for CPRG implementation grant applications.⁶ Therefore, the priority actions of this plan aim to address community concerns by prioritizing proactive and consistent engagement and transparency with affected populations; building capacity for regulators to better monitor and enforce existing standards; and responsibly siting new infrastructure to prioritize public health improvements, environmental protection, and cultural preservation.

“I’m worried about losing oil and gas jobs despite us suffering EJ harms.”

“Jobs- engage unskilled labor, need to re-skill training for climate friendly jobs and with employers other than refineries or offshore rigs.”

“Need equitable access to retraining opportunities. Those who need these jobs- the most are people who live here.”

“Stop permitting near densely disproportionately impacted communities.”

Transformative Impacts

Industrial GHG emissions are widely thought of as the most difficult GHG emissions to abate. Therefore, many companies and governments alike do not plan to address these significant and challenging emissions within the decade, instead prioritizing lower hanging fruit. With an overwhelming contribution of emissions in the state from the industrial sector, Louisiana’s unique net-zero pathway which requires immediate and aggressive industrial GHG emission reductions offers an opportunity to lead by example for other states and nations in industrial decarbonization. The identified priority actions elevate the importance of engaging affected communities and increasing means for monitoring and accountability that will be essential for Louisiana to responsibly deploy new technology and provide lessons that may be exported to other heavily industrialized areas. This plan also prioritizes incentivizing pilot projects and equipment that are currently cost-prohibitive to prove market-readiness and future adoption.

⁶ See 2022 LCAP for policy-based actions related to industrial decarbonization.

INDUSTRIAL DECARBONIZATION PRIORITY ACTIONS

Output	GHG emission reductions (MMT CO ₂ e)	Co-pollutant reductions
Enhance energy efficiency in chemical and refining facilities by an average of 10% by 2030	7.1	TBD
Electrify 15% of all low- and medium-heat processes, with a goal of 100% of all new and replacement boilers and process heaters being electric by 2040	The annual emissions from process heaters and boilers from all industry types are estimated to be 13 MMT CO ₂ e The annual emissions from process heater and boilers excluding the refineries, chemical and metal industries is estimated to be 7.88 MMT CO ₂ e	
Increase on-site renewable and clean electricity generation, including energy storage and grid integration, to 20% of industrial facilities by 2030	13.3 annually in 2030	
Switch 25% of all hydrogen to clean hydrogen used in ammonia and refining production by 2030	18.4 annually in 2030	
Transition 5 MTPA of steam methane reformers to low- or no-carbon hydrogen	TBD	
Reduce demand for cement, iron and steel, and water and waste by 30% through material efficiency, advanced recycling, and other circularity initiatives	TBD	
Apply carbon capture, utilization, and storage at as close as possible to 90% capture rate at a majority of natural gas processing facilities, petroleum refineries, and ammonia and chemical manufacturing plants by 2030	19.7 annually in 2030	
Reduce ~6,000 tons of N ₂ O emissions annually from fertilizer production facilities through N ₂ O abatement strategies	1.7 annually	

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Enhance process efficiency

The State will support the deployment of pilot and demonstration projects that accelerate energy and operational efficiency and leverage BIL stimulus and IRA incentives.

Incentivize process electrification

The State will support the adoption of industrial electrification measures accelerated with federal incentives, as well as provide additional rebates or incentives where federal resources are insufficient. For example, the state could provide funding to meet the marginal price difference of replacing conventional boilers with electric boilers.

Assess the feasibility of industrial heat alternatives

The state will conduct a feasibility assessment of industrial heating solutions to guide electrification, fuel-switching, or lower-heat alternatives.

Increase access to clean energy

The state will support measures to increase direct or virtual industrial access to clean, high-capacity, firm power energy, such as building out on-site, behind-the-meter solar with long duration energy storage on greenfield or underutilized acreage on industrial campuses or virtual power purchase agreements.

Incentivize low- and no-carbon hydrogen production

The state will support broad adoption of low- and no-carbon hydrogen to replace carbon-intensive hydrogen in chemicals and refining production through incentives and public-private collaborations to seize BIL stimulus and IRA incentives, specifically:

- Direct feedstock switching in refineries
- Transitioning steam methane reformers to clean hydrogen in sectors like ammonia production and refining, accelerated with IRA incentives
- Integrating CCS into facilities with SMRs will likely only capture the concentrated process emission streams as these provide the most economic capture costs

Low- and no-carbon hydrogen supply chain

The state will support the formation of public and private collaborations to develop domestic electrolyzer manufacturing, recycling, raw materials, and components for electrolyzer production critical to the hydrogen value chain, with a plan for long-term growth and a self-sustaining market.

Plan for clean hydrogen infrastructure

The state will plan for cost-effective pipelines, distribution, and storage infrastructure as critical anchors to the clean hydrogen economy with the launch of capital infrastructure plans with prioritized select pilots and demonstration projects.

Promote steam methane reformers for clean hydrogen production

The state will promote SMRs to produce hydrogen for industrial processes and as an inorganic feedstock to make specialty chemicals (e.g., ammonia, methanol).

Enable low-carbon material use and raw material substitution

The state will assess the viability and promote the utilization of low-carbon steel and other material production processes with innovative and sector-specific approaches. The state will also enable raw material substitution, including biochemicals, biofuels and other low-carbon feedstocks, in the chemicals and refining industry with the launch of strategic public-private collaborations to deploy pilots and demonstration projects leveraging federal incentives focused on:

- Renewable natural gas (RNG) produced from biogas
- Sustainable aviation fuel produced from waste oils or gasified waste woody biomass.
- CO₂ or industrial/consumer waste products (such as plastics) as feedstocks to produce carbon-based chemicals and fuels.

Improve product circularity across the supply chain

The state will support the creation of integrated waste management hubs capable of mechanical and advanced recycling for residential, industrial, and agricultural waste streams. Hubs should be strategically located in high-population areas with rail and/or port access to efficiently move product to end markets. The state will also build capacity at Louisiana Department of

Environmental Quality to develop and execute a comprehensive product circularity plan across the supply chain to significantly reduce industrial Scope 3 emissions as a growing demand from end use customers.

Reduce N₂O emissions through abatement technologies

The State will support the development of an emissions offset backstop to support private investment in long-term N₂O abatement strategies at fertilizer production facilities in the state. N₂O is a highly potent greenhouse gas with a global warming potential (GWP) 273 times that of CO₂. N₂O abatement strategies can include the following:

- Secondary N₂O abatement includes installation of a catalyst bed within the existing nitric acid reactor, under the platinum catalyst gauze. Total emissions reductions may range from about 50-70%, and
- Tertiary N₂O abatement is an end of pipe solution which involves installation of a separate reactor vessel, heater and reducing agent injection system to eliminate up to 99% of N₂O emissions.

Monitoring, accountability, and enforcement

The State will build capacity at the Louisiana Department of Environmental Quality to monitor and enforce emissions standards for existing facilities and operations, as well as emerging technologies that support decarbonization. This could include increased fence line and ambient monitoring to establish baselines and encourage accountability from emitters. This may also support added capacity to re-evaluate and improve methods of reviewing and quantifying the significance of GHG emissions, particularly in areas with high concentrations of emitting facilities and/or vulnerable populations.

Demonstrate feasibility of carbon capture and storage (CCS) in natural gas processing

Deployment of pilots and demonstration projects to prove the feasibility of capture on lower-purity sources of CCS on high-purity CO₂ streams, such as natural gas processing, will help build out the infrastructure needed to reduce costs for projects on low-purity streams in the future. Focus early deployment in assets with nearby access to existing transport and storage infrastructure.

Manage carbon emissions in coordination with affected communities

The state will coordinate early-stage engagement with and between industry and community based on the U.S. Department of Energy (DOE) Office of Fossil Energy and Carbon Management (FECM) framework on carbon management project development as guiding principles to ensure that tangible environmental, economic, and social benefits flow to communities during the decision-making process. The state will collaborate with the private sector on DOE-supported “hubs” for direct air capture (DAC) and carbon capture, utilization, and storage (CCUS) by creating standard commercial arrangements that simplify the project development process. Across CCUS, the need for multiparty agreements (e.g., between emitting facilities, capture providers, transport providers, and storage facilities) and a lack of commercial standardization complicate project development are barriers to be addressed early on.

Expand the workforce

The state will perform a labor needs assessment and engage companies, labor unions, and higher education institutions to develop a regional plan for skilled workforce and relevant training programs to rapidly expand the industrial decarbonization workforce. The state will work with industrial employers and local governments to help ensure high-quality jobs are filled with members of the affected community to balance the distribution of impacts.

Maintain consistent engagement with affected communities

The state will expand direct public engagement around issues of facility emissions and ambient air quality in low-income and disadvantaged communities. This will include educational workshops to improve transparency and listening sessions to increase the opportunity for public input. The state will also provide technical assistance and/or directly collaborate with industrial actors wishing to address public concerns through the development of Community Benefits Plans, market adoption of Community Benefits Agreements, Project Labor Agreements, and responsible business and labor practices. The state will maintain consistent engagement coordination with communities and industry to address inconsistent public acceptance of the industrial sector and decarbonization strategies due to environmental and human health risks, environmental justice, and labor concerns.

Enable clean policy measures

Enable lowering the cost of capital investment by proving the business case for decarbonization policy measures, such competitive tax credits, monitoring reporting, and pilot projects.

Establish industry standards

The state will establish an Environmental Product Declarations (EPD) Assistance Program and a low-embodied-carbon “eco-labeling” system for construction materials currently under development by the US Environmental Protection Agency to simplify, centralize, and streamline the EPD development process, including the ready-mix concrete and asphalt pavement industries. Coordinate with the Clean Energy Ministerial Industrial Deep Decarbonization Initiative alongside industry and stakeholders to address the barriers so that EPDs are easy and affordable and have a greater degree of fairness, reliability, and comparability.

Establish a decarbonization planning and implementation fund for industrial clusters

The state will support coordinated decarbonization approaches that capitalize on geographic proximity, both for operations co-located at a common campus and regionally situated. The state will establish a fund for the development of industrial cluster decarbonization plans and implementation of those plans. This fund will drive direct, facility-level investment in innovative regional decarbonization strategies and create new, high-quality jobs for a low-carbon future.

Facilitate public-private partnerships

Proactively form cooperative agreements to deploy public and private capital investments on industrial decarbonization pilots and demonstration projects based on technology readiness level (1-9) and adoption readiness level (1-9) to close the persistent cost gap between incumbent and decarbonized technology for industrial producers and de-risking public and private sector investment to achieve commercialization at scale.



METHANE EMISSIONS

Methane is a common and elusive greenhouse gas and more than twenty-five times more potent than CO₂. As such, leaks from orphaned wells, landfills, and routine industrial practices such as venting and flaring can significantly contribute to greenhouse gas emissions. The most effective way to reduce leaks is to require frequent, and where possible, continuous monitoring of leaks, and plugging orphaned wells. As of 2023, Louisiana had more than 4,600 documented orphaned wells⁷ affecting air quality, water resources, and public health. Furthermore, there are ~17,000 non-productive wells in Louisiana that do not require the operator to plug it because of future utility registration.

Because methane is both a greenhouse gas and an ozone precursor, reductions of methane emissions have the potential to simultaneously mitigate climate change and improve air quality. Plugging leaks can also reduce economic losses for companies while creating jobs and preventing the release of greenhouse gases.

Current Status

In 2021, the Louisiana Legislature passed Senate Bill 245 to give LDNR more flexibility in how much it can spend to plug and restore abandoned wells. This has enabled DNR to address a greater number of abandoned wells for remediation.

To ensure that current and future unproductive wells are not becoming orphaned and/or leak methane, LDNR revised regulations to limit operators from extending the future utility status of wells and increased fees on wells that have been inactive and unplugged for five years or more. The regulations also reduced fees for operators who plug ten or more wells a year.⁸ The new regulations help make Louisiana eligible for up to \$70 million more in federal funding for plugging abandoned oil and gas wells. LDNR is also working to finalize a proposed rulemaking to prohibit venting and flaring of natural gas except as specifically authorized. Both rulemakings were specifically identified as actions in the LCAP.

Intersection with Federal Funding

Through the Infrastructure Investment and Jobs Act, Louisiana was awarded more than \$100 million through 2030 to plug orphaned wells. LDNR received an initial \$25 million to develop procedures to measure and track contamination of groundwater and surface water, to deploy methane monitoring stations that will provide information to help identify which wells are most likely to leak methane and thus should be plugged most urgently, and to begin plugging, capping, and reclaiming orphaned wells across the state with a priority of those wells located in low-income communities. In 2023, DNR plugged 636 wells.

Community-Driven Solutions

Curbing methane emissions from wells, pipelines, refineries, and landfills has widespread support from stakeholders and the public as it is a potent GHG, harmful air pollutant to local communities, and waste of a valuable natural resource. Nonetheless, stakeholder and community engagement revealed concerns about monitoring, leak detection, and accountability. The priority actions of this plan aim to build on the significant progress the state has already made in reducing methane emissions with added state capacity, technology utilization, and prioritization of highest-emitting sources near vulnerable communities.

“Have to self-evacuate. No alarm or warning for fumes.”

“No accountability for emissions”

⁷ <https://www.edf.org/sites/default/files/2021-10/Orphan%20Well%20FactSheet%20LA.pdf>

⁸ https://www.dnr.louisiana.gov/assets/OC/eng_div/Rules/LAC43XIX137_NOI_InactiveWellAssessments.pdf

Transformative Impacts

Many states have established Leak Detection and Repair (LDAR) programs, modeled after the U.S. EPA LDAR Program and Best Practices Guide, to monitor GHG emissions and criteria pollutants and require owners and operators to find and fix leaky and malfunctioning equipment at production facilities, compressor stations, natural gas storage facilities, and process plants within a set time period of detection. There is an opportunity for DEQ to work with outside stakeholders to utilize and deploy emerging technologies, such as remote sensing and satellite imagery, alongside traditional in-situ sensing for continuous monitoring of methane emissions. The demonstration project was developed to identify scalability and effectiveness for wider adoption of anaerobic digester systems of organic waste.

The priority locations for these landfill recovery projects would be in the state's LIDAC communities as confirmed by the CEJST and EJScreen tools, ensuring that the projects would benefit air quality in the communities surrounding these landfill sites.

METHANE EMISSIONS PRIORITY ACTIONS

Output	GHG emission reductions
Identify and address the top 20% of leaking/emitting wells	432 metric tons CO ₂ e annually
Support the development of 12 landfill methane recovery projects for recovered methane procurement	0.74 MMTCO ₂ e

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Launch methane detection and monitoring program

The State will support the roll-out of a statewide methane detection and monitoring program to identify concentrations and associated emissions of methane from different sources within the state, including orphan, abandoned, and active wells, pipelines, refineries, and landfills. This will include selection of a cost-effective and precise measurement program and associated analysis, including handheld detectors at known facilities, fly-over measurements at unidentified or unmeasured facilities, and other innovative methods.

Expand Orphan & Active Well Leak Detection and Repair

The State will use the results from its methane detection and monitoring program to identify the top 20% leaking/emitting orphan and active wells in the State, which are estimated to be causing 80% of associated well emissions (based on preliminary testing). The cost to plug 20% of all wells in the State (3,300 wells) would be approximately \$132 million. It is projected that orphan wells are more likely to be emitting significant quantities of methane in comparison to marginal and idle wells, and thus the proportion of orphan wells may represent a larger proportion of the total number of wells. A portion of this cost (for orphan wells) could be leveraged from US Department of Interior funding.

Launch Pipeline Leak Detection and Repair effort

The State will use the results from its methane detection and monitoring program to identify significant sources of leaking/emitting methane from pipeline and other infrastructure. Identified leak locations from active networks will be communicated to network owners with warnings about the detected concentration or measured emissions from locations. The State will support efforts to create a publicly transparent database of leak locations, owners, and projected emission quantities, and make referrals for environmental enforcement where applicable.

Support local landfill gas collection projects

The State will support the installation of landfill gas collection control systems in Louisiana's municipal solid waste (MSW) landfills to capture and utilize methane for MSW landfills that currently lack a gas collection system and promote the conversion to recovery for energy at MSW landfills that currently employ only flaring as a control system. The state's efforts to reduce methane emissions from MSW landfills will include:

- Data-driven prioritization of highest-emitting MSW landfills. The state will work with facilities to use the LandGEM model to identify landfills that are large emitters of GHGs. This data will help determine the most cost-effective methods to reduce GHGs.
- Aerial monitoring to track methane reductions. The state will employ unmanned aerial vehicles (UAVs) equipped with methane laser technology to create methane laser technology to create methane heat maps of the landfills, enabling effective tracking of methane reduction
- Outreach and education campaigns. The state will actively engage with landfill operators and promote the benefits of installing gas collection systems. Outreach campaigns will emphasize economic advantages, environmental responsibility, and the effective use of methane.
- Equity-driven approach to maximize benefits. Priority will be given to landfills located within CEJST-identified disadvantaged communities and those with high Environmental Justice indexes as indicated by EJScreen.
- Continued coordination to accelerate and improve implementation. The state will collaborate with landfills associations (LSWA), offer workshops, and provide resources to facilitate the smooth implementation of gas collection systems in all of Louisiana’s MSW landfills.

Pursue anaerobic digester demonstration project

The State will support the development of a local government high-efficiency anaerobic digester system to process yard, food, and other organic waste. This will introduce biogas production capability at a local government’s Compost Facility and build on existing residential yard waste composting programs. The demonstration project will evaluate the feasibility and cost-effectiveness of the use of anaerobic digesters to process local organics collected by local governments to reduce methane emissions.



FLEET TRANSITION

Fleet transition is the process of moving from fossil fuel operated public and private fleet vehicles to alternative fuel powered, including electric, fleet vehicles.

Louisiana's 2021 Greenhouse Gas Inventory shows the transportation sector is the second largest share of GHG emissions, totaling over 49 MMT CO₂e in 2018. From a high of over 60 MMT in 2000, transportation emissions have been relatively flat for the last decade (2008-2018). The sector represents 22% of the state's fossil fueled GHG emissions, more than the electric power sector (16%) but far less than the industrial sector (60%). Transportation sector emissions include multiple fuel types, such as aviation gasoline, motor gasoline, kerosene, naphtha, natural gas (methane), and other fuel types. Motor gasoline has the most emissions of all fuel types, though it has fallen from its 2006 peak as stricter fuel efficiency standards (NHTSA's corporate average fuel economy, or CAFE, standards) were enacted in 2007 and phased in beginning in 2011. Since 2015, natural gas related transportation emissions have been rising, from below 3 MMT per year to over 7 MMT in 2018, as alternative fuel vehicles have come into increased use. About 3% of Louisiana's vehicles are publicly owned and an assumed 9% of those are medium and heavy-duty vehicles.

Current Status of Fleet Transition

In 2019, the state in conjunction with Louisiana Clean Fuels, designated several of its interstates as alternative fuels corridors, followed by the release of a DC Fast Charging Master Plan in 2023.

However, infrastructure to support alternative fuels is insufficient to fully support fleet transition, a concern that stakeholders voiced especially around evacuation needs. Other challenges include the current high upfront cost of medium- and heavy-duty electric vehicles; the lack of shared, publicly accessible charging infrastructure; incompatibility of charging time and fleet operation's needs; supply chain delays for vehicles and charging infrastructure; unwillingness of dealers to participate in public procurements; lack of information on life-cycle costs, benefits, and opportunities; and lack of upfront capital and resources for purchasing. Federal and private strategies and investments will need to be explored and implemented in the near future to address these challenges for a successful fleet transition.

Intersection with Federal Funding

As of October 2023, seven Louisiana school districts are participating in the electric school bus adoption through EPA's Clean School Bus Rebate Program and more than \$43 million have been awarded to the districts to purchase new buses and eligible infrastructure.

The New Orleans Regional Transit Authority received \$71.4 million as part of the Low or No Emission Bus program to electrify a portion of its bus fleet. Using these funds, the RTA will fund 20 new electric buses and charging infrastructure, including \$30 million to build a microgrid of charging stations that continue to provide electricity during and after severe storms⁹.

The Louisiana Department of Transportation and Development (LA DOTD) is participating in the National Electric Vehicle Infrastructure (NEVI) Program. Through this program, Louisiana will receive ~73 million dollars for electric vehicle (EV) infrastructure throughout the state over the next five years. To disburse these funds, LA DOTD is developing a competitive and phased grant program to build out electric vehicle supply equipment within one mile of designated corridors.

Community-Driven Solutions

Public and commercial fleet transition, as well as building out infrastructure to support an increase in personal EVs, was widely supported by stakeholders and the public and also provides an opportunity for local governments to reduce GHG

⁹[https://www.norta.com/news-list/new-orleans-rta-receives-\\$71-4-million-grant-from-president-biden%E2%80%99s-infrastructure-law-to-help-prov](https://www.norta.com/news-list/new-orleans-rta-receives-$71-4-million-grant-from-president-biden%E2%80%99s-infrastructure-law-to-help-prov)

emissions. Stakeholders predictably noted procurement policy barriers; however, there was also concern over the long-term maintenance and ancillary services necessary to support an increasingly diversified fleet. The priority actions in this plan aim to address this concern as it was highlighted as a gap in other federal funding sources.

The importance of reliable vehicles for evacuation and disaster response operations was also noted as a significant concern and barrier to widespread fleet transition in Louisiana. Accordingly, priority actions call for improved support infrastructure, particularly along key evacuation routes, and integration of alternative energy transportation into statewide plans.

Transformative Impact

Transitioning the fleet can result in significant fuel cost savings for agencies due to lower energy costs of alternative energy, reduce reliance on fossil fuels, and decrease greenhouse gas emissions. Modeling shows that actions aimed at decarbonizing vehicles and buildings had a small role in reducing emissions by 2030 (<1 MMT CO₂e per year), but a larger role by 2050 (>5 MMT CO₂e per year), indicating that the lag time of the actions results in carbon emission reductions long term.

As the infrastructure for alternative fuels is expanded, the potential for private vehicles to transition to low-to-zero carbon emission fuels increases. Since Louisiana has 3.8 million motor vehicles, there is an opportunity to significantly scale up vehicular transition beyond the public fleet and further reduce greenhouse gas emissions from Louisiana’s second largest carbon emission sector. Over the long term, environmental benefits such as improved air quality and public health can be expected.

Fleet Transition Priority Actions

Output	GHG emission reductions (MMT CO ₂ e)	CO-POLLUTANT REDUCTIONS
Support electrification of 20,000 (25%) public fleet vehicles by 2030.	0.25 - 0.68 by 2030	TBD
Support electrification or fuel-switching (e.g. hydrogen and low-carbon or zero-carbon biofuels) of 119,250 (5%) medium- and heavy-duty vehicles in the state by 2030.	0.29 - 3.75	
Deploy 1,200 fast and ultrafast charging stations or alternative fueling stations designed for on-route charging or fueling of medium- and heavy-duty vehicles.	TBD	

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Develop Public fleet electrification incentives

The State will coordinate the deployment of fleet vehicle purchase incentives, paired with easy-to-access financing, to enable units of local government to afford the upfront cost of electric vehicle purchasing for light-, medium-, and heavy-duty fleet vehicles, including transit vehicles, to enable public fleets to capture low life-cycle costs from electric vehicles over the life of the asset. Low-cost, easy-to-access financing will create an opportunity for local units of governments to avoid upfront capital constraints, as well as gain bridge financing to federal tax credits and elective pay options, as well as federal rebate opportunities.

Prioritize shared electrification

The State will prioritize efforts to plan for and deploy publicly accessible shared charging infrastructure for medium- and heavy-duty fleet vehicles. Shared electrification infrastructure will be deployed in communities with large concentrations of fleet vehicle activity, and in and near communities burdened by surface-level emissions from large traffic volumes of diesel vehicles and other cumulative pollution burdens. Efforts could include incorporation of onsite clean power to mitigate grid impacts.

Create resilient evacuation strategy

The State will develop a statewide plan for ensuring the resiliency of evacuation operations in the shift to electrified transport options for communities that rely on publicly- or privately-owned school bus, passenger, or transit vehicles for evacuating at-risk communities during extreme weather events and other emergencies. The plan will include the assessment of needed charging infrastructure (and resilient power) along key evacuation routes, as well as the deployment of key pilot sites to support early-adopters, and the expansion of pilots once demonstrated.

Lead by example through State procurement

The State will commit to electrify 25% of its public vehicle fleet by 2030, consisting of 12,500 light-duty vehicles, 5,000 medium-duty vehicles, and 2,500 heavy-duty vehicles, including both owned and contracted vehicles. This will include training for state procurement officials to build capacity and tools for those making purchasing decisions.

Create data repository

The State will support data collection to bolster statewide electric vehicle planning needs, including developing a repository for vehicle registration data on trends and locations in electric vehicle adoption and the identification of areas where infrastructure can be placed for higher-capacity charging infrastructure. This data will support planning efforts among utilities and the Public Service Commission, and establish a common fact set for stakeholders.

Deploy fleet conversion pilot projects

The State will support the deployment of electric fleet conversion pilot projects to develop case studies, best practices, and shared learnings to understand the challenges and opportunities for fleet electrification in Louisiana. Pilot projects will be prioritized based on potential for beneficial impacts to disadvantaged communities and be required to support information sharing activities statewide.

Build capacity for Maintenance, Repair, & Workforce

The State will support capacity building for an electric vehicle and supporting infrastructure installation workforce, as well as for a maintenance and repair workforce and contractor network that can be stood up to support the near- to long-term repair and maintenance needs of public and private electric vehicle fleets in the state.

Build capacity for Ancillary Support

The State will support a capacity building needs analysis for ancillary support services in areas lacking capacity to adapt to and learn about electric vehicles and infrastructure. This could include training and support of fire department response to fire incidents involving electric vehicles and safety training for electric vehicle infrastructure.

Expand markets for biofuels

As an interim step, the State will support education, training, and facilitation of markets to support lower-carbon solutions such as biofuels for harder-to-electrify vehicle types.

Reduce idling

The State will support efforts to implement strategies for the reduction of idling for diesel vehicles, particularly in areas near sensitive populations, such as schools and health facilities.

Support local government and business education

The State will support education, training, and planning for local governments and businesses looking to electrify their vehicles, including through making available fleet planning tools, frequently asked questions, data on pilot projects and case studies, and financial planning tools.



PORTS

One and waterborne operations at ports emit greenhouse gases. There are 32 ports in Louisiana of which 13 are inland ports, nine are coastal ports, six are deep draft ports, and four ports are in development. Neither the GHG Inventory nor the CAP Net Zero Pathway address port emissions specifically. The Inventory notes that boats comprise 17% of non-highway mobile emission shares, though ports also have vehicles that are not boats. The vessels categorized in the inventory emitted 0.029 MMT CO_{2e} in 2018.

Current Status of Ports

Louisiana’s ports are working to install shore power options to allow vessels to use grid electricity instead of additional marine diesel while in dock. Following a 2020 shore power installation at Port Fourchon, Entergy recently completed a project at the Port of Lake Charles with the Crowley Corporation to power their tugboats. This project is estimated to reduce carbon dioxide emissions by 500 MT per year.

The Louisiana International “Deep Water” Gulf Transfer Terminal is currently in development and specifically focuses on becoming “America’s first deep water “Energy Hub” and transfer terminal designed to provide clean energy options and accommodate the demands of Post-Panamax and larger Cape Size vessels.”¹⁰

Intersection with Federal Funding

Through the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) program, the U.S. Department of Transportation awarded the Columbia Port Commission \$10,537,798 for land acquisition and construction activities for a Truck Parking Facility located near the inland Port of Columbia, Ouachita River, and LA State Highway 165. This includes surface parking for approximately 50 commercial trucks, 100 cars, and 12 electric vehicle (EV) charging stations. The Clean Ports Program represents a significant opportunity to braid funds available through the CPRG. The Inflation Reduction Act provides EPA with \$3 billion to fund zero-emission port equipment and technology and to help ports develop climate action plans to reduce air pollutants. EPA anticipates a Notice of Funding Opportunity in late 2024 for the Clean Ports Program.

Community-Driven Solutions

Conversations with public meeting participants identified emission reduction at ports through decarbonizing ships and reducing idling times and spills as an important aspect of improving air quality and public health locally. However, current challenges for emission reduction center around the cost of electric forklifts (three times the price of non-electric options), an unclear pathway to meet significant shore power demand of port tenants and tank cleaning businesses with renewable energy and idling of trucks off-site and ships.

“Ports are a resource to capitalize on to benefit locals. Address environmental harms caused by building and expansion of ports.”

Transformative Impacts

Ports serve as a vital link in the global supply chain and can be acutely vulnerable to environmental risks such as rising sea levels, hurricanes, and drought. Therefore, ports provide an opportunity for cross-sector climate action with potential benefits spanning in scale from local to global.

¹⁰ <https://ligtt.com/>

PORTS PRIORITY ACTIONS

Output	GHG emission reductions
Convert 100 berths at Louisiana ports to shore power by 2030	0.81 MT CO ₂ e annually
Electrify 15% of port forklifts by 2030	2.9 - 57.6 MT CO ₂ e which would rise to between 4.4 - 88.5 MT CO ₂ e per year for a 50% clean grid
Displace 15% of Louisiana port marine diesel with hydrogen fueling by 2023	22.44 pounds of CO ₂ e/g marine diesel
Mode-shift 270,000 tons of material from truck and rail transport to barge	TBD

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Deploy Shore Power

The State will work to aggressively pursue the provision of shore power capacity at ports across Louisiana in order to reduce emissions from idling engines. Shore power is a type of electric power that is supplied to ships while they are docked. This power can be used to operate the ship's electrical systems, such as lights, air conditioning, and cooking equipment. Using shore power instead of idling engines reduces air pollution and noise. The State will coordinate with electric utilities serving ports to assess the demand and potential for shore power to serve current and future customer needs. Shore power needs may be met with a combination of electric infrastructure expansion, energy efficiency, energy storage incorporation, and renewable deployment.

Contract and install for Renewable Power

The State will support contracting and installation of new renewable energy sources at the port, such as solar and wind power, to provide direct sourcing or offset of electricity for port operations, including shore power.

Deploy Resilient Alternative Fuel Transport Stations (RAFTS)

The State will strategically plan for the co-location of alternative fuel stations near truck staging areas for port operations. The Resilience Alternative Fuels Transport Stations (RAFTS) would include support for multiple fuel types, including hydrogen and electric charging stations. Alternative fuels are a cleaner and more sustainable alternative to traditional fuels, such as gasoline and diesel, and would build necessary capacity for decarbonization of freight serving and using ports. Further, co-locating RAFTS near existing idling and staging areas allows for efficient dwell time as trucks are notified to enter the port. Further, in emergencies, RAFTS can serve as charging/refueling locations to support medium- and heavy-duty transit vehicles charging needs along evacuation corridors, when connected to resilient power sources.

Build Hydrogen Fueling Barge capacity

The State will seed the purchase and operation of fuel tugs to support vessels fueled by hydrogen. This effort will build the capacity of local ports to provide hydrogen fueling options for shipping, including the development of hydrogen storage, and marketing to tenants for conversion.

Support planning for Ports Decarbonization

The State will support individual port planning to coordinate investments by tenants in emission-reducing initiatives. Ports are typically not aware of all individual tenant plans for, or appetite for, emissions-reducing investments. This planning effort will focus on the development of planning timelines for upgrades for shared investments based on what customers on what they are looking for (such as shore power infrastructure investments, hydrogen fueling, transportation alternative fuel or charging needs, and the use of fuel cells for energy and resilience needs), map ambitions to grant opportunities, and develop strategies to share costs and needed investments.

Pilot a Shared Crane for Mode Shift

The State will support foundational investments to encourage mode shift to lower-emitting barge traffic from higher-emitting rail and truck transport along shipping corridors. This initiative will deploy a shared crane(s) on a barge that can be deployed on river ports to create capacity at multiple ports that do not currently have the capacity to develop their own infrastructure. A shared crane could shift 270,000 tons of material annually to barge traffic as a more cost-effective shipping option to than other modes, creating a more efficient connection for freight transport to access I-49, I-10, and I-12 that run east to Florida and West to Texas, Arizona, and California than current North-South highway corridors.

Create Electric Forklift Incentive

The State will work to establish an incentive program to support the switch to electric forklifts, reducing emissions. Electric forklifts are a clean and sustainable alternative to traditional forklifts. They produce zero emissions and can help to reduce air pollution.

Identify Buffer zone opportunities

The State will identify locations for the deployment of natural vegetation near ports, providing habitat for wildlife and reducing air pollution impacts on nearby communities.



REGIONAL TRANSIT

Regional transit planning includes not only projects related to public transportation routes and vehicles, but also bike and pedestrian options, carpool lanes, traffic mitigation, physical resilience of roadways, and many other aspects that affect our ability to safely access and experience our neighborhoods and the surrounding communities. Regional transit, whether rail, bus, carpool, or other mass transit options, is currently not well built out in Louisiana. As a result, personal vehicles are the main mode of transportation for Louisiana residents, which contributes to the state’s second largest GHG emission sector – Transportation.

Current Status of Regional Transit and Intersection with Federal Funding

Identified as one of the most transformative projects following Hurricane Katrina and Rita post-disaster regional planning effort in 2007, the Baton Rouge to New Orleans train route is one step closer to fruition. While the communities that will have stops have prepared for station development¹¹ and the state was awarded a RAISE grant, Amtrak has updated the train tracks in recent years. The state is now awaiting an award for a federal-state partnership to implement this route - one of the few regional transit connections in the deep south.

The Rapides Area Planning Commission is working to improve transit service in its region by implementing improvements to Alexandria Transit (ATRANS) and piloting a Natchitoches and Grant Parishes rural curb-to-curb transit service. Baton Rouge and Gonzales will receive \$20 million for train stations along the future Baton Rouge to New Orleans InterCity Rail Service, while other projects in Shreveport and Natchitoches will provide much-needed improvements for bus service and protected bicycle lanes. The Kings Highway corridor in Shreveport will benefit from a \$22 million RAISE grant, connecting healthcare institutions around the area. This project will reconstruct the roadway to include bus pull-outs, bus rapid transit improvements using battery-electric buses, improved bicycle facilities, and Americans with Disabilities Act (ADA) access. Similarly, in Natchitoches, a \$17 million RAISE grant will support the Texas Street business corridor, install sidewalks and implement bicycle and pedestrian routes throughout the city.

Community Driven-Solutions

Public meeting participants stated the need for regional transit for easier access to jobs and as a way to save on transportation costs associated with vehicle ownership. There was general knowledge and support for the regionally ongoing transit efforts, including the commuter rail between New Orleans and Baton Rouge. A need for additional transit options to connect Shreveport to Dallas and Lake Charles to Houston was identified to be beneficial for regional connections.

“No reliable public transport in St. Charles. Have to carpool”

“Weather makes public transit hard”

“Needs to benefit local community through expanding transit options for longer hours and greater reach”

Transformative Impacts

Regional transit can have a transformative impact on Louisiana’s metropolitan areas in numerous ways. By providing regional transit options, vehicular miles traveled will go down, thereby reducing congestion and GHG emissions. Regional transit can also be scaled up, connecting several communities, including putting LIDA communities on the routes, to meet the needs of people. A well-designed regional transit system at scale will achieve the desired outcomes of this grant, including access to jobs, energy cost savings (through fuel not purchased by individuals), improved air quality, and increased resilience as regional transit can move larger amounts of people at any given time during events such as hurricanes into safer areas.

¹¹[https://www.norta.com/news-list/new-orleans-rta-receives-\\$24-million-in-federal-funding-for-downtown-transit-center-1](https://www.norta.com/news-list/new-orleans-rta-receives-$24-million-in-federal-funding-for-downtown-transit-center-1)

REGIONAL TRANSIT PRIORITY ACTIONS

OUTPUT	GHG EMISSION REDUCTIONS	CO-POLLUTANT REDUCTIONS
Double use of alternative modes of transportation by 2035	Shifting 7% of passenger vehicle trips by 2035 results in a reduction of 0.41 MMT CO ₂ e in 2030 (our year of analysis)	While this mode shifting policy includes more trips than just commuting, it shows that reducing single-vehicle trips in Louisiana more broadly would have a positive impact on GHG emissions. As this output is quantified in terms of CO ₂ equivalents, it also includes reductions in co-pollutants, such as NO _x , CO, PM, and others
Increase access to clean transportation options, including public transit, for low-income and disadvantaged communities by 10% each year by 2030	Shifting 20% of passenger vehicle trips by 2035 results in a reduction of 1.18 MMT CO ₂ e in 2030 (our year of analysis)	

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Procure Electric and alternative fuels public transit vehicles

The State will support the procurement of electric and alternative fuel buses or other transit vehicles to reduce GHG and co-pollutant emissions.

Pursue Traffic improvements

Municipalities and regional planning organizations will pursue traffic improvements that reduce idling and total travel time through signalized directional medians, traffic signal coordination, and signal synchronization projects.

Increase Regional connectivity

Alongside local and intra-city transit, the State will support increased regional connectivity to encourage greater use of public transportation across rural and urban areas, with particular focus on improving access to services and amenities for low income and disadvantaged communities. Possible measures to encourage regional transit use and carpooling include:

- Dedicated bus lanes
- High-occupancy vehicle (HOV) lanes
- Bus Rapid Transit (BRT) on interstates, state highways, and major arterial roadways

Expand Shared use paths

The State will support the expanded inclusion of multi-use paths in city and regional transportation and land use plans to encourage mode-shifting and reduce vehicular congestion.

Build capacity for Ancillary support

The State will support the build-out of support facilities and preventative maintenance capacity for buses, vans, and other rolling stock. Facilities should support existing and projected electric or alternative fuel vehicles.

Develop Resilience plans

The State will support the development of regional transportation resilience plans that assess and plan for both physical and operational vulnerabilities of the transportation system. This could include considerations of the carbon intensity and durability of materials for planned projects and the coordination of local projects with local and statewide hazard and evacuation plans. These resilience plans will allow the varying authorities responsible for Louisiana's transportation system to align and improve braiding of resources.



BUILT ENVIRONMENT RETROFITS

Built Environment Retrofits refers to a broad category of modifications to residential, commercial, and public buildings. Examples may include upgrades to appliances or structural components that could improve energy and water efficiency thereby reducing utility costs and reduce greenhouse gas emissions and decrease air pollutants associated with electricity production thereby improving indoor air quality and incorporating weatherization improvements to increase the building's ability to withstand environmental hazards.

The GHG Inventory shows that emissions from residential and commercial buildings comprised 5.2 MMT CO₂e in 2018. These emissions are down slightly from 6 MMT in 2000. The inventory notes that these emissions fluctuate slightly because of variations in weather-related demand for fossil fuels, particularly methane gas. Appendix 1 of the GHG Inventory further shows that emissions from residential buildings comprised 2.049 MMT CO₂e from methane gas combustion.

Retrofitting buildings over the next 25+ years will have direct and indirect effects on Louisiana's jobs and the workforce. Jobs will be created by the implementation of energy efficiency retrofits, and construction and manufacturing industries.¹² Already, it is anticipated that The Building Codes Implementation for Efficiency and Resilience Program will create more than 6,000 jobs from new construction.

Current Status of Built Environment Retrofits

As of January 1, 2023, the 2021 International Codes with Louisiana amendments are in effect. Act 635 of the Louisiana Legislature directed the Louisiana State Uniform Construction Code Council (LSUCCC) to create an Energy Code Commission and to update the Louisiana Construction Code with the 2021 International Energy Conservation Code and 2021 International Residential Code (IRC) Chapter 11 on Energy Efficiency. This energy code update follows the regular code update cycle from 2022.

To make applications to the Weatherization Assistance Program more accessible, local nonprofits have developed outreach and application assistance events. These events are designed to reduce barriers for applicants, including limited access to information, lack of transportation, and the technical difficulty of completing the required forms and document requirements.

Intersection with Federal Funding

The Louisiana Housing Corporation has received funding to implement the Weatherization Assistance Program, designed to "create energy-efficient and comfortable living spaces for Louisiana homeowners."¹³ This program has been supported by local nonprofits holding application events throughout the year, targeting low-income and underserved communities. CENLA Interfaith in Alexandria has an Energy Efficiency Program offering assistance to residents for the Weatherization Program. There are opportunities emerging for training and capacity building for local nonprofits to provide application assistance throughout the state.

Through the Building Codes Implementation for Efficiency and Resilience Program, the State received \$1.6 million to build more energy-efficient houses that will be more equipped to survive hurricanes¹⁴.

¹² <https://www.sciencedirect.com/science/article/pii/B9780128498699000053>

¹³ <https://www.lhc.la.gov/weatherization>

¹⁴ <https://www.wwno.org/coastal-desk/2023-07-12/after-updating-decade-old-building-code-1-6m-to-help-louisiana-build-energy-efficient-homes>

The state also received a combined \$212,566,860 in formula funding towards the Home Energy Performance-Based, Whole-House Rebate Allocations and High Efficiency Electric Home Rebate Allocations. These programs are administered through LA DNR and are intended to “accelerate the deployment of clean energy technologies, catalyze local economic development and create jobs, reduce energy costs, and avoid pollution through place-based strategies involving a wide range of government, community, business and other stakeholders.” ¹⁵

Community-Driven Solutions

Community meetings revealed general interest in pursuing residential building retrofits, particularly due to increasingly costly utility bills. Additionally, there was support for improving the air quality of indoor environments, especially in key facilities such as schools. However, residents and business owners noted challenges with navigating the various financing programs and meeting minimum pre-weatherization requirements. Accordingly, the priority actions in this plan aim to eliminate barriers and improve the accessibility of programs that facilitate affordable retrofits.

“Can’t pay energy bill with one job”

“Need to retrofit homes with hurricane clips”

“Cannot recover from 2020 hurricanes with fluctuating Entergy insurance.”

BUILT ENVIRONMENT RETROFITS PRIORITY ACTIONS

Output	GHG emission reductions	Co-pollutant reductions
Scale up to 1% annual retrofits by 2030, 2% annual retrofits by 2035, and 5% annual retrofits by 2040.	0.16 MMTCO ₂ E by 2030, 1.4 MMTCO ₂ E by 2050	TBD
Install 815,000 additional space and water heat pumps by 2030.	TBD	

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Develop one-stop shop

The State will develop a statewide one-stop shop for state, federal, and local incentives, grants, and loans that can be leveraged for a project, including weatherization, roof repairs, Solar for All, and HOME and HERA rebate programs. The one-stop shop should encourage braiding of resources to comprehensively address capital needs/resources. Messaging and resources should be especially geared towards low-income homes, multi-family homes, or rental properties that face additional barriers to adoption and tend to face a disproportionately higher energy burden.

Create Building Retrofit Learning Hubs

The State will develop a network of building retrofit learning hubs across the State to create local networks of trusted advisors, local contractors, audits and assessments, and new incentive programs to accelerate building retrofit opportunities. The hubs will include physical demonstration facilities and expert personnel, and will be focused on market segments (such as low-income residential markets, multi-family buildings, commercial markets, and small industrial markets), to develop locally-specific messaging and education around the costs and benefits of retrofits, and serve as a nexus to state, federal, and local resources. The hubs will support the development and dissemination of local case studies and demonstration sites.

Prioritize Resilience Upgrades

The State will prioritize energy efficiency upgrades that also improve energy resilience to better ensure access to adequate heating, cooling, ventilation, and shelter during and after natural disasters or other major disruptions. This includes weatherization, sealing, and load reductions that can be paired with energy storage to ensure long-duration resilience.

¹⁵ <https://www.energy.gov/articles/biden-harris-administration-announces-state-and-tribe-allocations-home-energy-rebate>

Reduce contractor resistance

The State will work with regional hubs and other stakeholders to develop early education around end of life replacement to ensure replacements are best available, lowest life-cycle cost. This effort will include the consideration of the development of mid-stream rebates to incentivize contractors.

Create Statewide Energy Efficiency implementor

The State will support the development of an independent, third-party energy efficiency program implementer that could be focused on outcome-based performance for energy efficiency programs and long-term sustainable delivery.

Provide Health & Safety funding

The State will create a health & safety fund to support repairs and upgrades necessary prior to making energy efficiency upgrades and retrofits for low-income households. A lack of time and financial resources for these baseline improvements often stands as a barrier to pursuing emission reduction upgrades. This would largely include roof repair, wiring repairs, doorway and window structure repairs, ventilation and mold remediation, plumbing leaks, and other basic building envelope problems that must be addressed before energy efficiency investment can be made. Repairs and upgrades will focus on improving indoor air quality and protection from poor outdoor air quality.

- **Conduct direct outreach**

The State will prioritize the development of a direct marketing effort to households that are low-income with high energy burden to provide specific messaging around opportunities and availability of funding and long-term assistance for new funding opportunities.

Build Workforce capacity

The State will prioritize investments in workforce development programs to support the skill set for building decarbonization investments, as well as weatherization and health & safety repairs. The workforce training efforts will focus on filling technical school, high school, and community college gaps, and include support of pre-apprenticeship training and apprenticeship programs. Workforce development should also include training and continuing education for professional services—including architects, engineers, and lawyers—that are essential pieces in implementing efficiency and weatherization upgrades and ensuring homeowners optimize state and federal resources.

Develop Building Materials Case Studies

The State will support pilot projects and case studies around the use of low-carbon and highly-efficient building materials to demonstrate the long-term operational savings (and building and homeowner value) of such investments in Louisiana.

Launch Non-profit Retrofit Program

The State will develop an energy efficiency program focused on nonprofits that serve low-income and disadvantaged communities to support energy cost reductions for these entities, and provide a pathway to facilitate federal payments/incentives.

Incentivize Audits and Deep Retrofit Evaluations

The State will develop a program to incentivise facility audits, energy management, and comprehensive retrofit evaluations for multi-family buildings, commercial buildings, and industrial facilities.

Simplify local permitting

The State will support processes at the local level to reduce complexity, cost, and time involved in permitting retrofit projects, including incorporating advanced energy codes and performance-based options.



URBAN AND COMMUNITY FORESTRY

Urban and Community Forestry focuses on the care, maintenance, and placement of vegetation in urban cities, suburban areas, and towns. This takes place through community engagement, partnerships, and private sectors. The health of urban trees and forests affects the quality of life for residents that are surrounded by them.

Green vegetation offers a variety of benefits to communities and residents such as positive impacts on mental health, a place for outdoor recreation and beautification, reduced cooling cost, reduced urban heat island effect, improved air quality, stormwater management, reduced noise pollution, wind moderation, enhanced wildlife habitat, and jobs creation.

Equitable tree cover means expanding tree canopies across the state to strategically reach communities living on low-incomes and communities of color and other communities disproportionately impacted by extreme heat and other environmental hazards. Tree Equity is making sure every neighborhood has enough trees so that every person can benefit from them. Urban tree canopy (UTC) is the overhead cover of leaves and greenery provided by trees that offers a plethora of mental and physical benefits to a community. UTC is often maintained by community groups, residents, and local governments.

An increase in urban forests and tree canopy cover brings development of jobs and opportunities. For every \$1 million invested in urban forestry, an average of 25.7 jobs are supported.¹⁶ These jobs could be full-time, part-time, or seasonal. There are a vast amount of jobs that could become available with the increase in tree canopy. They can be arborists, traditional foresters and urban foresters, people who fight wildfires and prescribed burns to manage urban forests, people who grow trees in nurseries, arborists, urban foresters, and similar jobs that can benefit trees and green infrastructure.

Louisiana has an urban tree canopy density of approximately 48%. Louisiana residents who live in poverty and people of color usually inhabit and live in areas of the state that have about 29% or less of tree canopy cover. The state has 38% of people in poverty and 47% of people of color. By looking at the numbers, over 75% of residents living in poverty and over 60% of people of color do not live in an area of the state with adequate tree canopy cover and are experiencing the harmful effects due to the lack of trees. In most cities, trees are sparse in low-income and disadvantaged neighborhoods and some neighborhoods of color.

When considering expansion of urban and community forestry, several considerations should be taking into account:

- **Density:** Too many trees can hinder the functionality of a community or urban forest. When trees are overstocked and grow too close together, they have to compete for these resources such as nutrients, water, and sunlight. This will result in weaker trees that are more susceptible to disease, insect infestations, and drought.
- **Invasive Species:** Due to the lack of host trees and natural enemies, invasive species and a variety of diseases have caused significant damage to natural and urban forests. Invasive pests can decline rates of tree reproduction and survival and affect the growth of native species. As a result, there already has been a significant loss in tree canopy coverage and carbon storage. Purdue University revealed that the carbon storage lost to pests each year is the same as the amount of carbon emitted by 5 million vehicles.
- **Diseases:** The introduction of new diseases can be intensified by climate change. Warm winters allow insect populations to continue to grow and cause serious disease outbreaks before spring arrives. Changes in the season allow insects and pathogens to expand into other regions that were previously not affected. Changes in rainfall and periods of drought can also make trees more vulnerable to both introduced and endemic pathogens¹⁷

¹⁶ <https://www.treeequityscore.org/methodology>

¹⁷<https://www.birmingham.ac.uk/research/climate/climate-publications/nature/tree-susceptibility-and-resilience-to-pests-and-disease.aspx>

Current Status of Urban and Community

The City of Gonzales formally adopted a Climate Action and Resilience Plan in February 2023. In the plan, there is a goal to increase green spaces by planting more trees, expanding tree canopy cover, and conducting an open space inventory. With accomplishing this goal Gonzales can be recognized as a Tree City, by Tree City USA along with Abita Springs, Alexandria, Brusly, Convington, Gretna, Hammond, Kenner, Lafayette, Mandeville, and New Orleans.

The organization Sustaining Our Urban Landscape (SOUL) developed a New Orleans Reforestation Master Plan that was recognized by the City Council in January 2023. The Plan addresses eight environmental challenges that are experienced in New Orleans from those challenges, benefits that urban forests will provide to New Orleans are listed, and three key goals for the city are discussed in great detail.

Intersection with Federal Funding

Baton Rouge, Lake Charles, and New Orleans have received a combined \$24 million in funding from the USDA Forest Service through the USDA Inflation Reduction Act to plant and maintain trees, combat extreme heat and climate change, and improve access to trees and nature where people live, work, and play.

Implementation is underway by The Nature Conservancy to restore urban forests in 21 parishes that have been impacted by and in FEMA disaster declared areas due to the 2020 and 2021 hurricanes. The grant is funded through the United States Forest Service.

Community-Driven Solutions

Public meeting participants had mixed feelings about planting more trees. On one hand, there is competing land use and land-use conversion for available urban acreage even amongst PCAP priority areas such as community solar. On the other hand, a few participants voiced fears about trees as they have caused repeated damage to properties during storms such as falling on houses.

"Nature based solutions should be used to plant trees in strategic locations to encourage GHG emission reductions"

"Post-hurricane tree devastation, and how trees were needed to replace those lost"

"Urban canopy needed"

Transformative Impact

Increasing tree canopy in urban environments has numerous benefits, including reducing carbon and co-pollutants, managing stormwater, and abating urban heat island effects. As trees become more mature, they can combat the effects of climate change by removing carbon dioxide and other air pollutants, including particulate matter 2.5, nitrogen dioxide, sulfur dioxide, and ozone, from the atmosphere and storing the pollutants in the wood, plant matter, and soil and releasing oxygen as an exchange. On average, a mature tree has the capacity to sequester 48 pounds of carbon dioxide annually. Between 31 and 46 trees have the capability to remove 1 ton of carbon dioxide from the environment annually. Tree canopies can intercept rainwater by capturing and storing the water in their canopy and releasing water into the atmosphere ultimately reducing stormwater runoff and erosion. Although limited by available and suitable space for urban trees, there is potential for scaling urban canopy coverage up, which can also support workforce development to care for and maintain urban forests.

URBAN AND COMMUNITY FORESTRY PRIORITY ACTIONS

Output	GHG emission reductions
Increase urban canopy coverage by 10% in low-income and disadvantaged communities in urban areas by 2030	TBD

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Fund Urban Tree Canopy Assessments

Urban Tree Canopy (UTC) assessments will provide critical baselines on the extent of a community's forest or tree resource. Cities and municipalities should lead in establishing tree inventories that establish a baseline quantity of canopy coverage and improve our geographic understanding of underserved communities that may be most vulnerable to climate change impacts such as heat island effect. The State will support a study to improve understanding of carbon sequestration and climate change mitigation potential from urban forestry.

Support native and climate-resilient tree planting

The State will support the planting of native and climate-resilient trees in communities identified by Urban Tree Canopy assessments as vulnerable to climate change impacts such as heat islands, historically underserved or federally designated disadvantaged, lacking in urban tree canopy, or disproportionately energy burdened. This will include direct funding of comprehensive tree planting efforts on public property supported by local engagement and input, as well as education and access to material for planting on private property. Tree planting programs will be required to be paired with proactive maintenance to ensure strong and healthy urban forestry that does not create community hazards.



SUSTAINABLE AGRICULTURE

Sustainable agriculture is farming techniques that aim to protect the environment, aid and expand natural resources and to make the best use of nonrenewable resources. It is an integrated system that focuses on plant and animal production¹⁸. Sustainable agriculture, over time, should enhance environmental quality and the natural resource base where the agriculture economy depends, food and fiber needs, and the quality of life for farmers and residents. It should also sustain the economic viability of farm operations and integrate natural biological cycles.

According to the 2022 Louisiana GHG Inventory, the agricultural sector has several GHG emissions from livestock and soil management, and other farm activities. However, emissions from enteric fermentation, manure management, AG soil fertilizers, rice cultivation, residue burning, animals, and urea fertilization are relatively small compared to industrial and transportation sector emission contributions. Nevertheless, agricultural practices can have a significant impact on air and soil quality and thus public health.

Sugar cane is produced on slightly more than 500,000 acres of land in 25 of 64 Louisiana parishes. To support carbon emission reduction from agricultural practices in Louisiana, will reduce acres of sugarcane burned each year by 66% (about 300,000 acres) by 2030. The omission of prescribed burns will reduce burn-induced air quality deterioration and may support workforce development as alternatives to soil management are applied.

Current Status of Sustainable Agriculture

SPROUT NOLA, an organization based in New Orleans, trains new farmers through public programs while helping existing farmers transition to more climate-smart agriculture; it also partners with federal agencies to conduct outreach and improve access to conservation programs. In 2022, SPROUT NOLA held 160 hours of farmer technical assistance field days which included offering free cover crop seeds to farmers statewide. In 2023, SPROUT launched a statewide climate-smart agriculture cohort that supported financial assistance and loan procurement for farmers for climate-smart agriculture.

Intersection with Federal Funding

The Louisiana Department of Agriculture and Fisheries (LDAF) connects farmers to conservation formula programs like EQIP (Environmental Quality Incentives Program) and CSP (Conservation Stewardship Program). Though these programs historically have received inadequate funding, the IIJA and IRA reinvigorate sustainable farming and forestry through wide-scale deployment of the EQIP and CSP. There are many active Louisiana landowners and high participation in these programs, with 238,000 contract acres covered and \$42 million obligated by EQIP and CSP combined in 2021.

Louisiana submitted 14 proposals under the first tranche of the Climate Smart Commodities Competition of the U.S. Department of Agriculture (USDA). Louisiana submissions span cotton, timber and forest products, livestock, rice, vegetables, and others, totaling a proposed investment of \$659.5 million in climate-smart agriculture for Louisiana. The USDA will work with applicants to refine and finalize proposals in the coming months. Climate Smart Commodities alongside other recurring and new sources of funding bring a unique opportunity to invest in farmers and support sustainable management of working lands.

¹⁸ <https://www.nal.usda.gov/farms-and-agricultural-production-systems/sustainable-agriculture>

SUSTAINABLE AGRICULTURE PRIORITY ACTIONS

Output	GHG emission reductions
Reduce the need for prescribed burning on 66% of sugarcane acreage in Louisiana by 2030.	TBD
30% of Louisiana’s interior natural lands to be conserved or protected by 2030	

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Coordinate and incentivize transportation for waste streams between industry and agriculture

In order to reduce acreage of sugar cane burned, the State will support increased connectivity between industry and regional agriculture to utilize waste streams in line with principles of circular economy and sustainable agriculture.

- **Sugar cane leaf residue feedstock.** The State will support increased investment in biofuel production that utilizes local plant and crop residue as a renewable feedstock. To prepare for future demand from developers, the State will incentivize handling and transport of sugar cane crop residue intended for beneficial use. Supported alternatives to burning may include row sweeping, combining modifications to redistribute residue into furrows, post-harvest burning, and incorporating organic waste into the soil or terrain. Adaptive harvesting and residue management practices can reduce greenhouse gas emissions and improve floodplain productivity, nutrient retention, moisture retention, and plant productivity and soil health, serving as natural carbon sinks.
- **Gypsum recycling.** The State will support the reuse of flue gas desulfurization gypsum (FGDG) from local industrial processes for distribution to agricultural end users. Applied as a soil amendment, FGDG increases plant nutrient uptake, and reconditions salinated soil. This is particularly valuable in mitigating soil salinity stress from sea-level rise and hurricanes. This practice also promotes circular economy principles and cross-sectoral approaches to resource management.

Lead on Biochar

The State will stand up a framework for converting biomaterials to biochar for agricultural application and utilizing the excess renewable heat byproduct to power industrial processes. This program will require coordination between biomass sources, agricultural biochar users, industrial heat users, and transportation between all parties. Biochar application can improve soil nutrient retention which may reduce the need for synthetic fertilizer application, which can require a carbon-intensive production process. Improved nutrient retention also improved watershed health which can benefit coastal wetlands that serve as important natural carbon sinks.

Support urban agriculture and community gardens

The State will speed the development of local agriculture through support of local food systems, community gardens, and small-scale urban agriculture. Projects will be supported in underserved communities such as food deserts, and create linkages to food procurement, such as grocery stores and restaurants.



COASTAL PROTECTION AND RESTORATION

Natural processes such as hurricanes, sea-level rise, erosion, subsidence, saltwater intrusion and human activities such as cutting of canals, oil spills, and levee construction all contribute to coastal land loss and declines in the deltaic ecosystem health. To date, Louisiana has lost about 1,900 square miles of land.¹⁹ This land loss has resulted in the loss of once productive habitats and ecosystem services, including carbon sequestrations. It also has been leading to shifts in population and economies, a trend predicted to continue as more land is predicted to be lost in the near and long term future. To address these changes, the Coastal Protection and Restoration Authority (CPRA) was created. Since its inception in 2005, the Louisiana Coastal Protection and Restoration Authority has developed and implemented restoration projects that have benefitted 55,807 acres (87.2 sq mi), restored 71.6 mi of barrier islands, improved 369 mi of levees, and placed 193 million cubic yards of sediment.

Current Status of Coastal Protection and Restoration

In its 18th year, coastal protection and restoration activities along Louisiana’s coast have made significant progress in addressing land loss. There are however emerging challenges to continue this trend - namely cost and material availability.

The availability of sediment can limit the design of large-scale projects and location of potential borrow areas can increase the financial costs and emissions of transporting sediment. There are scientific gaps in accurately quantifying the net greenhouse gas impacts of Louisiana’s coastal wetlands. This can hinder the viability of engaging in voluntary carbon markets, and lastly, Louisiana’s coastal area and adjacent wetlands serve local and statewide residents across a variety of sometimes competing uses, including storm and flood risk reduction, fisheries, and navigation.

The Louisiana legislature authorized \$3 Million for the development of a carbon market for coastal restoration projects in 2023 and researchers at local universities, state agencies, the U.S. Geological Survey (USGS) and the National Oceanic and Atmospheric Administration (NOAA), the Water Institute, and other coastal scientists are studying the capacity of wetlands to store carbon, sometimes known as “blue carbon.” This scientific research can demonstrate a defensible methodology for wetland restoration projects to be part of global carbon offset markets since carbon offsets are usually used to construct or preserve forests. Louisiana’s abundant wetlands also have tremendous capacity for natural carbon storage as well as providing multiple co-benefits for surrounding communities and ecosystems. Research is needed to develop the procedures, verification method, and accountability of users in a carbon market as well as establish a managing agency to lead this effort. With the scientific and policy analysis in place, the blue carbon market could provide a critical source of funding for continued implementation of Coastal Master Plan projects in the future.

To mimic natural processes of the Mississippi River, the Mid-Barataria Sediment Diversion is in the planning and design phase of implementation. This diversion will bring sediment and freshwater to the Barataria Bay and aid in the growth and replenishment of eroding marshes and habitats.

In terms of reducing the greenhouse gas footprint of implementing marsh creation projects, fuel switching and electrification are the most promising opportunities. The primary hurdles to reducing the carbon footprint of marsh creations are cost, feasibility, and availability of electric dredges. The cost of biodiesel remains high per gallon, compared to fossil fuel diesel. The electric dredge fleet is also limited and privately owned, and connecting to an electric power source creates feasibility issues for restoration projects that are typically in remote locations.

¹⁹ <https://www.climate.gov/news-features/featured-images/underwater-land-loss-coastal-louisiana-1932>

Intersections with Federal Funding

CPRA was awarded almost \$8 million through the National Fish & Wildlife Foundation’s National Coastal Resilience Fund for the Breton Landbridge Marsh and Living Shoreline Creation. The project will create and nourish tidal marshes in Plaquemines Parish that provide important habitat for fish and wildlife and natural storm buffers for communities. The NFWF Coastal Resilience Fund also awarded more than \$1 million for Louisiana projects from National Audubon Society in Vermilion Parish and Ducks Unlimited in the Barataria Basin.

In August 2023, CPRA submitted three letters of intent for project implementation grants as part of NOAA’s Climate-Ready Coasts and Communities Climate Resilience Regional Challenge. The letters covered a suite of projects—including ecosystem restoration, home elevations, and the creation of community resilience hubs—in Greater New Orleans, Plaquemines Parish, and Terrebonne and Lafourche Parishes. NOAA received proposals for projects totaling around \$16 billion for the \$575 million program. Out of this competitive pool, CPRA’s projects in Greater New Orleans and Terrebonne and Lafourche Parishes were selected to advance to the next round of full applications, due February 2024.

In November 2023, CPRA will apply for a NOAA Transformational Habitat Restoration and Coastal Resilience Grant for a portion of a larger effort to restore the Chandeleur Islands. The Chandeleur Islands are an essential natural barrier between the Gulf of Mexico and parts of St. Bernard and Orleans Parishes and serve as habitat for sea turtles, birds, and other aquatic species.

Community-Driven Solutions

Nature based solutions have been applied in coastal protection and restoration efforts since 2007, with the establishment of the Coastal Protection and Restoration Authority. Community knowledge and support for this agency's efforts have steadily increased and valued. In discussion with community meeting attendees, the impacts of climate change on the natural environment and social aspects such as insurance are well understood and mitigation measures are supported. Strategies such as carbon sequestration by wetlands were especially supported by southern communities, where wetland loss is most prevalent and impacts are most evident. Meeting attendees in all three locations identified the need for outdoor education and restoration and protection of public greenspaces as an important strategy to increase knowledge and carbon sequestration.

“Dying wildlife impacts economy and culture”

“Cannot plan futures when our homes are on land that is disappearing”

“Not able to afford insurance and flooding is increasing even for residents who live further away from the coast”

Transformative Impacts

While restoration and creation of marsh creates carbon sinks, switching dredging equipment to biofuels would further reduce carbon emissions. Scaling the use of biofuels for the state’s restoration projects could create a pathway for the USACE to also reduce the carbon footprint from its dredging activities. Dredging is the largest individual item in the USACE civil works budget, and the USACE spends around \$1.5 billion each year on dredging in hundreds of navigation projects across the country.

The GHG contributions of coastal carbon—both as a source and sink—are much less understood than terrestrial carbon. Investigations in Louisiana could inform efforts to preserve and restore coastal wetlands as key instruments of climate mitigation and adaptation across the globe.

COASTAL PROTECTION AND RESTORATION PRIORITY ACTIONS

Output	GHG emission reductions
By 2030, replace conventional diesel with renewable diesel or electricity for the construction of Coastal Master Plan projects creating or nourishing 30,000 acres.	TBD

These figures are preliminary and may change. A forthcoming technical appendix will detail all assumptions, methodologies, datasets, citations, and tools used to produce these estimates of GHG emissions and co-pollutant reductions.

Collect Data

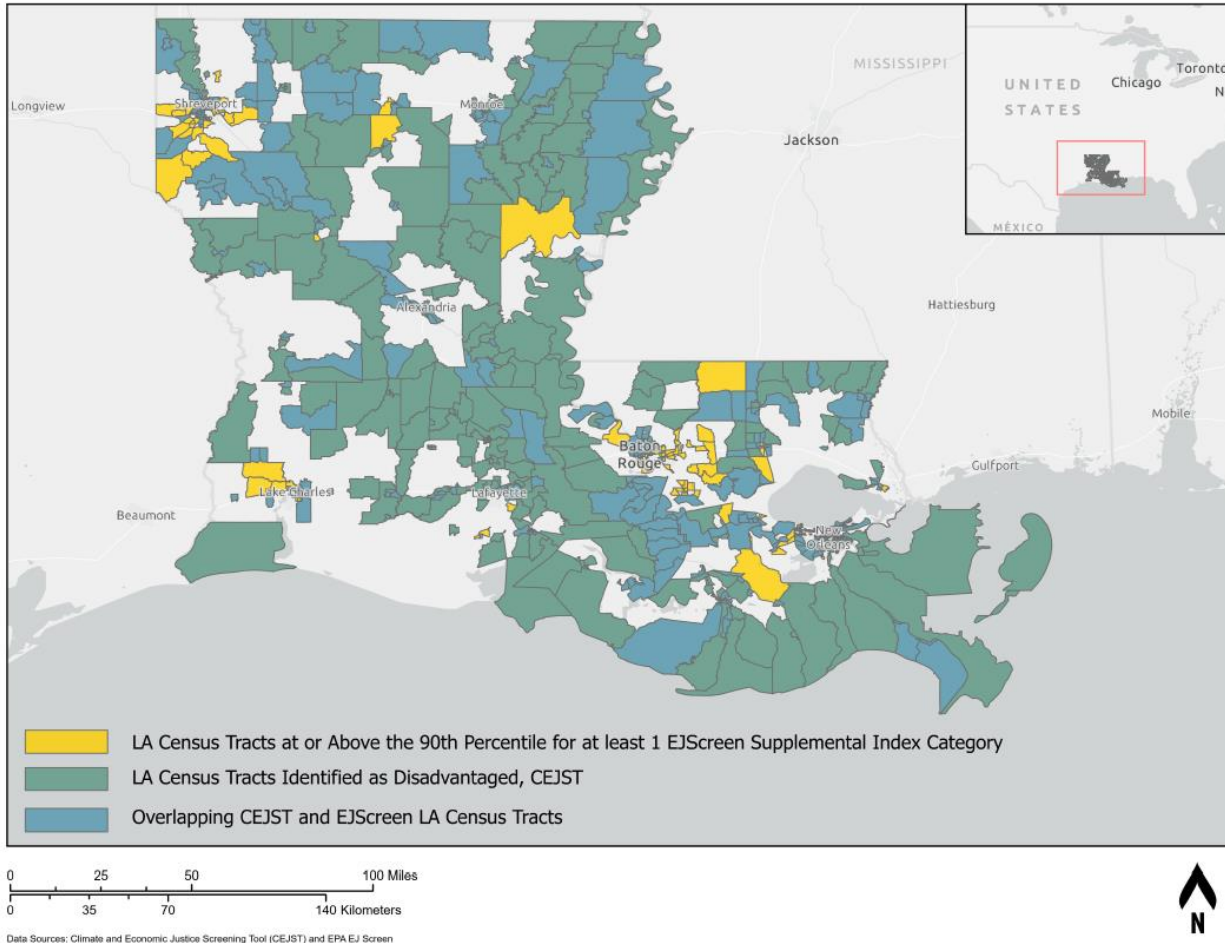
The State will support scientific research, modeling, and data collection to bolster understanding of net GHG impacts of coastal wetlands loss, conservation, and restoration, as well as GHG impacts of conservation and restoration construction activities. This information will help inform strategies to reduce total project emissions, including through equipment efficiencies and material sourcing alternatives.

Assess feasibility of electric or alternative fuels dredges

The State will support a feasibility assessment of utilizing electric or alternative fuels dredges for implementation of Coastal Master Plan projects. This should include an assessment of a near-term or interim option such as funding the incremental cost premium of renewable diesel to replace conventional diesel for dredging projects. The State will work closely with providers of dredging services, as well as other major users of dredging services including the U.S. Army Corps of Engineers, to maximize cost-effectiveness and emissions reductions across the state.

LIDAC Benefits Analysis

Hundreds of Louisiana communities are identified as Low Income and Disadvantaged Communities (LIDAC) through the parameters set by EPA for this analysis. The White House’s CEJST screening tool identifies 642 census tracts in Louisiana as disadvantaged. 587 census tracts are at or above the 90th percentile for at least one of the EJScreen supplemental categories, and 376 census tracts meet both criteria. (These three numbers are not additive.) The map below shows these communities and how widespread they are throughout the state.



Louisiana’s GHG emissions are dominated by the industrial sector, which is predominantly located in three clusters within the state: the River Parishes between New Orleans and Baton Rouge, Southwest Louisiana around Lake Charles, and Northeast Louisiana around Shreveport. The census tracts identified through this analysis include those impacted by industrial emissions, as well as other census tracts in places like the Mississippi Delta (Northeast Louisiana) and many other rural stretches of the state.

Engagement with communities has focused on the benefits of these priority climate actions in the following five categories:

Air Quality and Public Health Improvements. Major improvements to air quality and public health can be realized in these communities by cutting emissions from industrial facilities, electricity generation, methane leaks, medium and heavy-duty trucks, and ships at port. These activities all generate carbon dioxide and associated co-pollutants. Many frontline communities in Louisiana have been advocating for improved action on air quality from neighboring facilities for many decades.

[EPA research](#) from communities immediately adjacent to roadways has shown higher exposure to air pollutants and associated health impacts like increased rates of asthma and heart disease. In Louisiana, much of the state is rural; most of the state's population lives and works near roadways, rivers, coastlines, and other places where they are likely to experience deleterious air quality. Addressing emissions from these facilities and roadways will benefit many Louisianans, including the census tracts identified above, by cutting carbon pollution and associated co-pollutants.

The 2023 drought and wildfire season in Louisiana revealed a new risk to air quality: smoke. Addressing more predictable sources of smoke, such as sugarcane stubble burning, will improve air quality in communities downwind.

Associated focus areas: Industrial Decarbonization, Methane, Regional Transit, Fleet Transition, Ports, Sustainable Agriculture

Secondary impacts from: Offshore Wind, Community Solar, Urban Forestry

Energy Cost Savings. Renewable and clean energy is cheaper than it has ever been, and constructing solar at community or utility scales makes it even more affordable. Some components of Louisiana's path to renewable energy, like offshore wind, are more cost-dependent and are facing financial headwinds because of high interest rates. However, solar continues to grow, and communities that allow net metering and other behind-the-meter strategies that combine solar and storage see cost savings over fossil generated electricity. Louisiana communities face high electricity prices and frequent blackouts, in part because of struggles to rebuild the grid after more frequent storms. The priority actions in this plan are designed to address both the reliability and the cost of energy, through the community solar and community resilience hubs priorities.

Additionally, improved energy efficiency and household appliance electrification can reduce a household's energy costs significantly, particularly if combined with solar and storage. Retrofits are a key need in Louisiana's LIDAC communities, where structural issues (sometimes from previous hurricanes) can prevent needed efficiency upgrades, and deferred maintenance is a common problem. In these communities, housing stock has a slow rate of turnover, and so improved codes are not enough to address the problems. Targeted retrofits improving energy efficiency will reduce energy costs for these communities.

Associated focus areas: Community Solar, Community Resilience Hubs, Building Retrofits

Secondary impacts from: Offshore Wind, Transmission

Increased Climate Resilience. In Louisiana, climate mitigation and adaptation go hand in hand. Louisiana is on the front lines of climate change, and increasing resilience must be a priority along with mitigating emissions. Improving the reliability of energy, especially after disasters, is a key priority for many communities, especially where multiple storms have had devastating impacts. Southwest Louisiana was hit by Hurricanes Laura and Delta in 2020, and then had additional flooding and winter freezes; St. John the Baptist Parish was devastated by Hurricane Ida in 2021. These communities are included in the LIDAC analysis. Priorities in this plan, like community resilience hubs, are targeted to address these resilience needs.

Louisiana has reliability issues relative to electric power, particularly after storms, which are increasing in frequency and severity due to climate change. A recent study in *Nature Communications* showed that Louisiana experiences a dual burden of frequent outages longer than eight hours, high social vulnerability, and prevalence of electricity-dependent durable medical equipment use (Do et al, 2023). The benefits of microgrids in these resilience hubs will directly accrue to these communities with high social vulnerability by reducing mortality after disaster events. Data from previous events in Louisiana show that most deaths happen five to seven days after the actual storm, as carbon monoxide poisoning from generator use, heat stress from lack of air conditioning, and other factors compound. Resilient microgrids combined with a robust network of aid can alleviate these conditions.

Building retrofits, as with the energy costs savings benefits, will also increase community resilience by strengthening community housing. In Louisiana's LIDAC communities, it is critical to increase the number of

buildings and homes that are resilient to extreme heat and high winds. Energy efficiency retrofits, particularly if combined with other features like a FORTIFIED roof, can provide benefits not just for one family, but for adjacent neighbors in times of disaster as well.

Associated focus areas: Community Resilience Hubs, Built Environment Retrofits, Community Solar, Transmission

Secondary impacts from: Regional Transit, Fleet Transition, Methane

Jobs and Workforce Development. Increasing the number of training opportunities, jobs, and small business growth opportunities is a key goal of the PCAP. The focus areas in this plan have been selected in part because of the potential for job growth in LIDAC communities. A selection of these jobs include:

- Driving and maintaining electric vehicles, buses, and heavy duty trucks
- Planning, constructing, and operating increased electricity transmission
- Designing, planning, constructing, installing, and maintaining offshore wind turbines
- Planning, building, and maintaining electric process heaters and boilers in industrial facilities
- Retrofitting thousands of buildings and homes with efficient electric heat pumps
- Working with community organizations to design and build resilient microgrids
- Planting and caring for trees and urban forests
- Installing shore power berths at Louisiana ports
- Monitoring, identifying, and plugging abandoned wellheads to prevent methane leaks

There are many more opportunities listed in each focus area. Many of these focus areas also specify that over 40% of the benefits or installations will be in LIDAC communities, such as in Community Solar, where slightly less than half of the installations will be in New Orleans.

Associated focus areas: All

Improved Access to Services and Amenities. Increasing mobility is a core benefit of the Regional Transit and Fleet Transition focus areas—not just through improved public transportation access, but by making the benefits of the electric vehicle transition more widespread throughout the state. Infrastructure like charging stations must be more widely distributed to be of use to many communities, including Louisiana’s rural LIDAC communities. While not a part of this PCAP, the state’s efforts to improve broadband access also increase access to services and amenities that are increasingly only available online. Keeping electricity affordable and reliable goes hand in hand with broadband, and so the solar and resilience actions also support this increased access.

Associated focus areas: Regional Transit, Fleet Transition, Community Resilience Hubs

Secondary impacts from: Community Solar, Transmission