



STATE OF LOUISIANA
GOVERNOR JOHN BEL EDWARDS

LOUISIANA CLIMATE ACTION PLAN



CLIMATE INITIATIVES TASK FORCE
RECOMMENDATIONS TO THE GOVERNOR
February 2022



CLIMATE INITIATIVES TASK FORCE
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Submitted February 1, 2022



STATE OF LOUISIANA
GOVERNOR JOHN BEL EDWARDS

Letter from the Chair

Dear Governor Edwards,

I am proud to submit for your consideration the report of the Climate Initiatives Task Force, entitled the Louisiana Climate Action Plan. As directed in Executive Order JBE 2020-18, the Climate Action Plan offers a balanced suite of recommendations that can lead Louisiana to achieve net zero greenhouse gas emissions by 2050 and thereby do our part to avoid the worst impacts of climate change.

For the first time in Louisiana's history, state government collaborated with stakeholders and the public to jointly focus on the long-term, statewide reduction of greenhouse gas emissions. This Plan embodies a transparent and science-driven process that will continue as the Plan is implemented and adapted over time. The result of this collaboration is a Climate Action Plan that boldly recognizes that the status quo is unacceptable. Climate action not only avoids ever-increasing hardship for our communities and cultural heritage; it can also create a more prosperous and equitable society for generations to come.

The state's Climate Action Plan will complement ongoing efforts to implement the state's Coastal Master Plan, which serves as a model around the world for comprehensively adapting to the impacts of climate change, and other ongoing efforts of the state. In her cover letter submitting the state's first Coastal Master Plan to the Louisiana Legislature in 2007, former Governor Kathleen Blanco said that, "The completion of this plan is an historic step in a journey which promises safer communities, a more sustainable coastal landscape, and a brighter future for Louisiana."

Fifteen years later, with the completion of the Louisiana Climate Action Plan, we now embark on an equally historic journey to do our part to avoid the worst impacts of climate change. Implementation of this Climate Action Plan is critical if we are to truly deliver on the promise of safer communities, a more sustainable coastal landscape, and a brighter future for Louisiana.

Sincerely,



Kyle "Chip" R. Kline, Jr.

Executive Assistant to the Governor for Coastal Activities

Chair of the Climate Initiatives Task Force

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Introduction

The risks posed by climate change to the people of Louisiana are high. The evidence reveals that these impacts have been worsening and will continue to increase in the future. Addressing the root cause of climate change, however, presents an opportunity for Louisiana to build on existing strengths and to maintain competitiveness in various sectors such as energy, manufacturing, and maritime transportation in the midst of a global energy transition. Taking action to address climate change is also an opportunity to improve the health, equity, and quality of life of Louisiana residents, conserve the environment and cultural heritage, and grow and diversify the economy, while offering safe, meaningful employment for Louisiana's workforce.

In August 2020, Governor John Bel Edwards signed an Executive Order that created the Climate Initiatives Task Force to develop strategies and actions to address the causes of climate change and seize the opportunities presented by the energy transition. Like many other states around the nation, and nearly one fifth of the world's 2,000 largest companies, the Governor's Executive Order committed Louisiana to achieving net zero greenhouse gas (GHG) emissions by 2050. The order also established immediate goals and interim goals in accordance with the Paris Climate Agreement.

The work of the Climate Initiatives Task Force has been intensive over the 15 months from the signing of the Executive Order to the completion of this report. The Task Force is made up of government, private sector, academic, environmental, and community voices. It is supported by six sector committees focused on solutions from different aspects of the economy and by four advisory groups including equity, science, law, and economics. Over 140 experts participated as members of the Task Force, its committees, or its advisory groups and engaged across nearly 50 public meetings held since November 2020. **Throughout this work, the Governor and the Task Force have prioritized broad engagement from multiple stakeholder voices, transparency with the public, and a reliance on the best available science and information in order to arrive at a set of balanced actions to address this complex and enormous challenge.**

The plan recommends strategies (high-level approaches) and actions (practical and implementable policy steps) to reduce GHG emissions to net zero by 2050 and avert the worst impacts of climate change while making our current adaptation efforts more successful and reducing risks for future generations. The plan also offers strategies and actions that can improve health outcomes and the quality of life of Louisiana residents immediately by reducing the amount of fossil fuel combustion in the production of electricity and manufactured goods and from buildings and transportation while helping to slow the warming of the atmosphere that causes other climate impacts harming health, safety, and quality of life. The Task Force also developed objectives around creating a more equitable society. By prioritizing equity in the design of policies, this plan seeks to ensure that the costs of mitigation or adaptation actions do not fall unequally on people currently and historically disadvantaged in Louisiana. This plan is an opportunity to implement climate mitigation and adaptation measures which also address long-standing inequities while promoting new opportunities for a more inclusive, low-carbon economy in the future.

Louisiana's economy and workforce can also benefit from many of the actions and strategies in this plan. New investments in renewable power and distributed energy, re-investment in facilities and infrastructure to adapt

existing industries for success in the low-carbon economy, cleaning up orphaned wells and methane leaks, and other activities that expand access to economic opportunity more broadly are all supported by this plan. In addition, the state can maintain or increase its ability to naturally sequester carbon dioxide (CO₂) while promoting resilience for communities and ecosystems by implementing this plan. Other benefits, like more sustainable soils, better water quality, and natural protection for communities and major economic engines, are also possible with action to address climate change. Louisiana is already a leader in coastal adaptation and is creating new systems to address flooding statewide. As implementers adopt measures in this Climate Action Plan to reduce GHG emissions, they can also support community adaptation measures and extensive co-benefits. Distributed solar with storage, energy efficiency improvements, and land use planning can all support emissions reductions and bolster adaptation as well.

While an understanding of the issues and opportunities facing Louisiana related to the impacts of climate change is critically important, it is all the more important to begin taking action to address the root cause of climate change. The Task Force's adopted set of strategies and actions herein identifies needed steps across every sector of the economy for reducing GHG emissions and forging a better future for all Louisianans.

The plan provides numerous actions and strategies which are interdependent and interconnected. Net zero is attainable through this set of strategies and actions, but whether Louisiana achieves net zero by 2050, on the other hand, depends on full-scale and timely implementation, as well as support from the federal government. In addition, achieving co-benefits and successful implementation will depend not just on what is done, but how action is taken. **This plan charts a path for climate action in Louisiana in ways that effectively reduce GHG emissions and meet the target of net zero by 2050, while also improving equity, public health and quality of life, preserves and protects the environment, builds confidence and awareness among the public, and makes us more resilient and adaptable to changing environmental conditions.**

Vision, Goals, and Objectives

Governor Edwards charged the Task Force with developing actionable recommendations to achieve the following Vision and GHG Emissions Reduction Goals. The Task Force, committees, and advisory groups established a set of objectives to further guide their planning and evaluation of strategies and actions.

VISION

Reduce GHG emissions to limit the impacts of climate change that harm the state's natural and cultural heritage while adapting to maintain Louisiana's position as a world leader in energy, industry, agriculture, and transportation.

Executive Order JBE 2020-18

GHG EMISSIONS REDUCTION GOALS

The GHG emissions reduction goals (Figure 1) are derived in part from the declaration by the Intergovernmental Panel on Climate Change (IPCC) that “global net human-caused emissions of carbon dioxide [CO₂]...would need to fall by about 45 percent from 2010 levels by 2030, reaching ‘net zero’ around 2050.”¹ These goals also align with the U.S.’ Nationally Determined Contributions (NDCs) which represent its commitment in the Paris Climate Agreement to limit global warming to 1.5°C,² and are calibrated to 2005 to correspond to Louisiana’s 2010 Greenhouse Gas Inventory (GHG Inventory). Additionally, Governor Edwards’ goals put Louisiana in line with commitments made by dozens of other states as well as businesses operating in multiple sectors internationally, nationally, and within Louisiana. These businesses span a variety of industrial sectors including energy producers, public utilities, chemical manufacturers, technology firms, and finance.

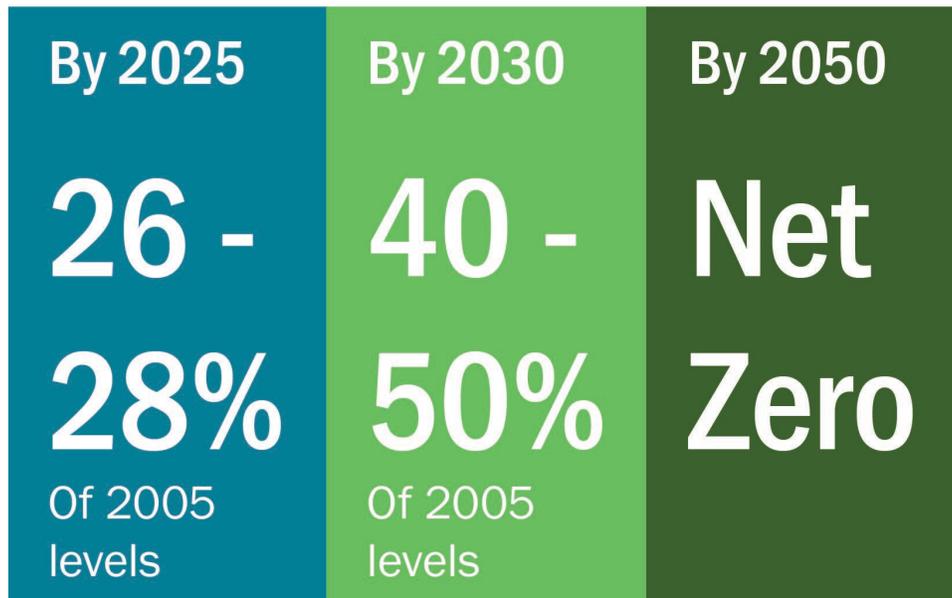


FIGURE 1. LOUISIANA'S GHG EMISSIONS REDUCTION GOALS.

OBJECTIVES

Fundamental objectives are the essential goals of this effort and served to guide the development and evaluation of climate mitigation actions and strategies considered in this plan. The fundamental objectives represent strongly held values that helped to identify co-benefits and potential negative consequences of action. The seventeen fundamental objectives of this plan are grouped in Table 1 by theme.

TABLE 1. FUNDAMENTAL OBJECTIVES USED TO GUIDE DEVELOPMENT AND EVALUATION OF ACTIONS AND STRATEGIES WITHIN THE CLIMATE ACTION PLAN.

	Reducing Net Greenhouse Gas (GHG) Emissions	<ul style="list-style-type: none">• Minimize net GHG emissions.
	Improving Health and Quality of Life for Residents and Communities	<ul style="list-style-type: none">• Maximize quality of and access to essential goods, services, and infrastructure for residents.• Maximize positive public health outcomes and public safety.• Maximize the preservation of cultural heritage.
	Creating a More Equitable Society	<ul style="list-style-type: none">• Reduce socioeconomic, demographic, and geographic disparities in future opportunities and outcomes.• Maximize reduction and mitigation of historical and structural inequities and their impacts for underserved and marginalized communities, including communities of color and Indigenous peoples.• Maximize engagement with and participation of communities in decision-making and implementation.
	Strengthening the Economy and Workforce	<ul style="list-style-type: none">• Maximize employment, economic opportunity, and support for Louisiana workers.• Maximize economic growth.
	Conserving Natural Resources	<ul style="list-style-type: none">• Maximize preservation of natural resources and ecosystem services.• Maximize environmental stewardship and support of healthy ecosystems.
	Adapting to a Changing Climate	<ul style="list-style-type: none">• Increase resilience of the built and natural environment to climate change.• Increase the resilience of communities to climate change.
	Managing for Short- and Long-Term Success	<ul style="list-style-type: none">• Maximize confidence of the public and stakeholders in the outcome of emissions-reduction strategies to increase support for their implementation.• Maximize the efficiency and effectiveness of emissions-reduction strategies.• Maximize timely implementation of emissions-reduction strategies.• Maximize the durability of emissions-reduction strategies in an uncertain future.

Planning Process and Methodology

Governor Edwards called on the Task Force to produce a Climate Action Plan that outlines actions to reduce net GHG emissions from all sectors of the economy and to set Louisiana on a path to meet its short-, medium-, and long-term emission reduction goals. Actions and strategies reduce GHG emissions while achieving other co-benefits for Louisiana's communities, environment, and economy. Achieving this vision and the state's emission reduction goals in a manner that is inclusive and balanced requires a deliberate and transparent planning process.

STRUCTURE

The Task Force, its sector committees, and advisory groups comprise over 140 experts and stakeholders from state government, colleges and universities, the private sector, and civil society that advised and contributed to the strategies and actions contained in this Climate Action Plan (Figure 2). See full membership at the end of this report.

Membership across these bodies is reflective of the Governor's vision to achieve balance through their broad-based composition with representatives from corporate entities, advocacy organizations, regulators, academics, and community representatives. Bringing together a variety of stakeholders with varying interests and values allowed for robust and challenging discussions that ensured an end result of comprehensive actions that set Louisiana on a path to net zero GHG emissions by 2050.

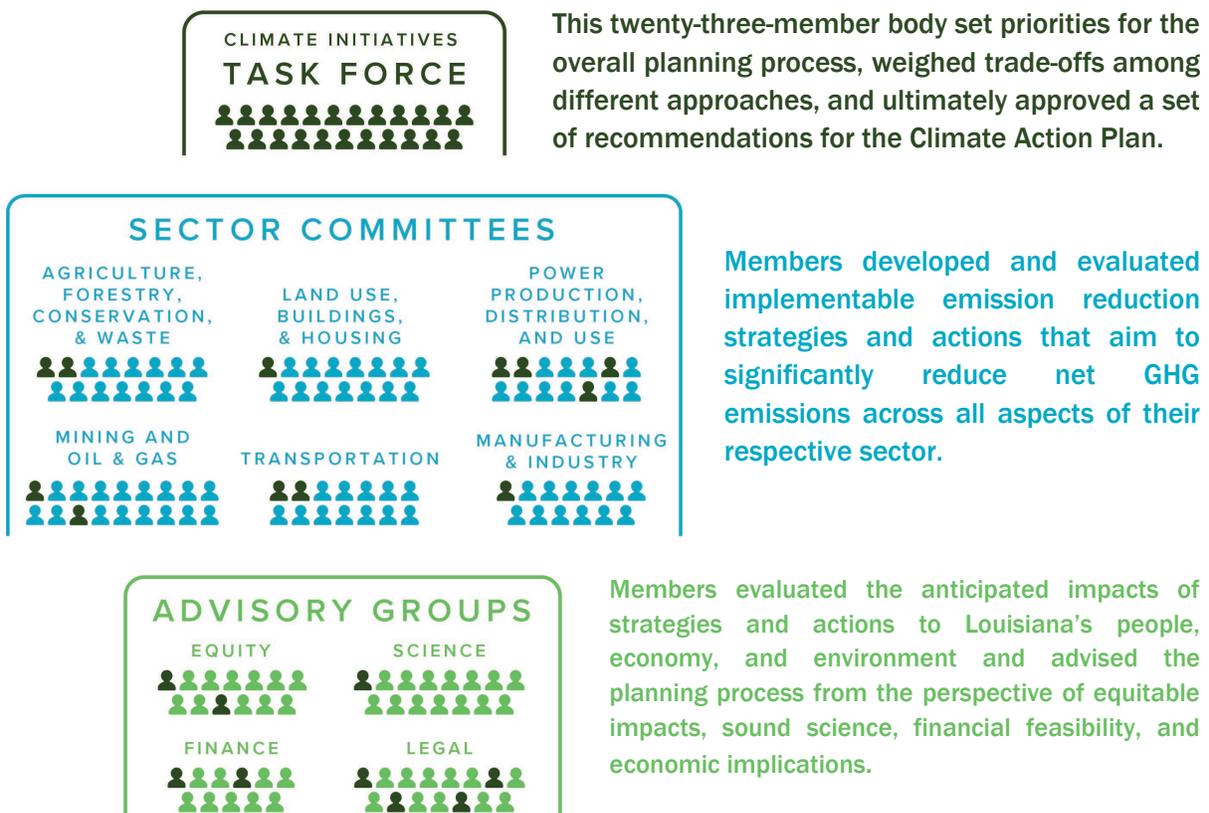


FIGURE 2. THE PLANNING PROCESS STRUCTURE USED TO DEVELOP LOUISIANA'S CLIMATE ACTION PLAN.

The Task Force is chaired and staffed by the Office of the Governor, Coastal Activities (GOCA). Under leadership of the Governor’s Executive Assistant for Coastal Activities, GOCA serves as the staff and managers of the Task Force, advisory groups, and sector committees in coordination with advisory and committee chairs. As staff of this effort, GOCA also works alongside all members, state agencies, outside stakeholders, and the public to increase engagement in the process, expand partnerships, and coordinate among all entities. As Louisiana’s Innovation and Collaboration Hub, the Water Institute of the Gulf (the Water Institute) assisted GOCA as it led the planning process for and development of the Climate Action Plan. This Planning Team, comprised of GOCA and the Water Institute, ensured the Task Force remained on track to complete the deliverables within the timelines.

STRUCTURED DECISION MAKING

The planning process for developing this Climate Action Plan was grounded in a Structured Decision Making approach (Figure 3). In basic terms, this six-step framework is “a formalization of common sense for decision problems which are too complex for informal use of common sense”.^{3, 4} This approach combined science and policy to break down complex decisions and identify solutions that meet the goals and objectives of the Task Force in a manner that is explicit and transparent.

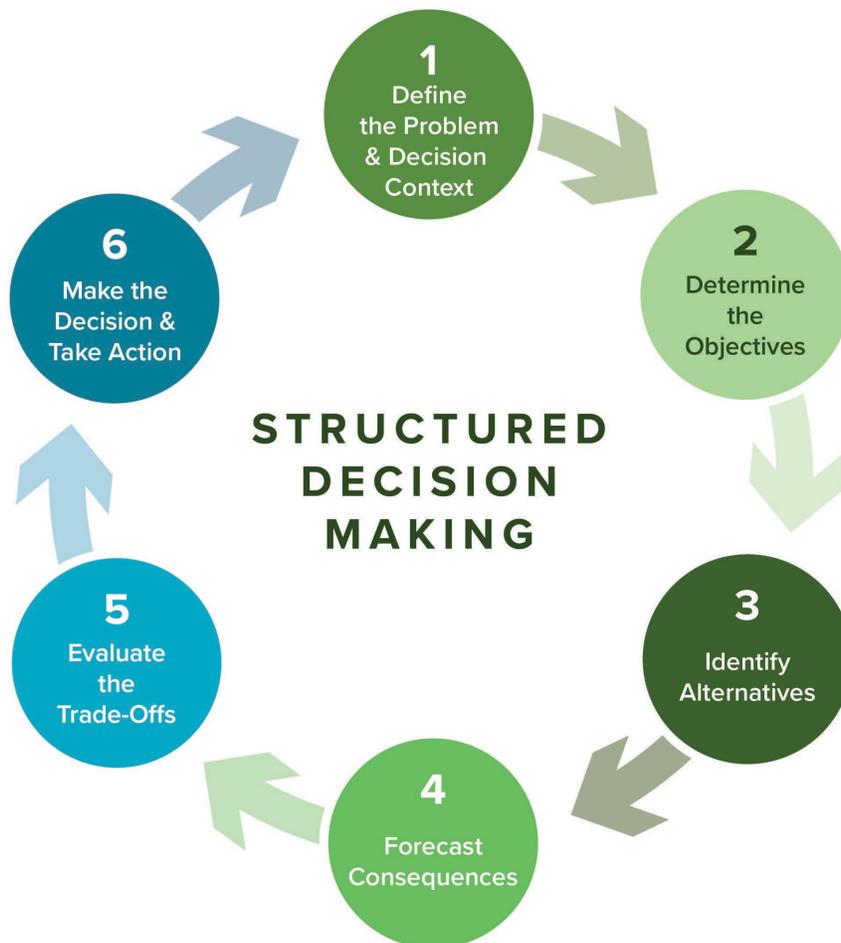


FIGURE 3. THE SIX-STEP STRUCTURED DECISION MAKING PROCESS.

PLANNING TIMELINE

This plan was developed, evaluated, and refined over an intensive 16-month collaborative process that included **49 public meetings** of the Task Force, sector committees, and advisory groups as well as opportunities for the public to share their ideas for climate actions and provide feedback on the draft plan components. The following timeline includes the phases of this planning process, tagged to their corresponding Structured Decision Making step.

EXECUTIVE ORDER ESTABLISHES TASK FORCE: August 2020

Governor Edwards signed Executive Order JBE 2020-18, establishing a 23-member Task Force, supported by six sector committees and four advisory groups, and calling for an updated GHG Inventory, an interim report in February of 2021, and a final climate strategy by February of 2022.

Referencing the value of Louisiana's coast and the projections for an additional 2,250 to 4,120 square miles of coastal land loss over the next fifty years, Executive Order JBE 2020-18 connects Louisiana's coastal crisis, the catastrophic human costs of natural disasters, and the international scientific consensus that GHG emissions are causing unprecedented global warming. "To improve our resilience, sustain our coast, and help avoid the worst impacts of climate change," the order states, "Louisiana must proactively work to reduce the GHG emissions that are driving up global temperatures, raising sea levels, and increasing risks that threaten our health and safety, quality of life, economic growth, and vital habitats and ecosystems." Governor Edwards also clearly articulated his desire for solutions to this problem to be developed in partnership with multiple stakeholders with the ultimate goal of reaching a "balanced" set of strategies that would both help "limit the impacts of climate change that harm our state's natural and cultural heritage," and provide ways for us to adapt "to maintain [our] position as a world leader in energy, industry, agriculture, and transportation."

KICK-OFF AND OBJECTIVE SETTING: November 2020 – February 2021

The Task Force met for the first time in November 2020, kicking off a 15-month planning process to develop this strategy. The Task Force and each of the sector committees and advisory groups met in December to discuss and identify objectives important to Louisiana in how the state approaches reducing its GHG emissions. Objectives included measures of health and quality of life, equity, economy and jobs, the environment, resilience, and effectiveness and durability. These fundamental objectives served as the backbone of this planning process and were directly considered in the development of climate actions and strategies and in evaluating and refining solutions.

WORKSHOPPING HIGH-LEVEL STRATEGIES: March 2021

Each of the sector committees met in March to begin brainstorming strategies – high-level paths to reducing GHG emissions within their sector. This focus on bigger picture vision helped to ensure a comprehensive approach to the development of practical actions.

PUBLIC CALL FOR ACTION PROPOSALS: February – April 2021

Sector committee, advisory group, and Task Force members as well as the public were invited to submit proposals for actions to be considered in this plan. Actions are based around a specific and directly implementable policy, program, or project that will result in a net reduction in GHG emissions and/or comprehensively address a cross-cutting

1
Define
the Problem
& Decision
Context

2
Determine
the
Objectives

3
Identify
Alternatives

3
Identify
Alternatives

implementation priority (climate equity, economic transition, scientific advancement, or governance). Actions were developed using a common Action Proposal Template that included a title, description, impact on net GHG emissions, co-benefits, consequences, timeframe, lead and partners, climate equity priorities, and other implementation and feasibility considerations.

In addition to individual sector committee and advisory group working sessions, six Cross-Sector Action Workshops were held in April to improve draft action proposals and identify new Action proposals through a cross-disciplinary discussion of key technical, tactical, and implementation issues that cut across sectors. The cross-sector themes included: siting of new power generation and energy infrastructure; state and local codes, procurement and contracting policies; advancing research and supporting new technology; carbon pricing; increasing participation in climate action; and combining climate mitigation goals with adaptation and resilience goals.

In total, **171 action proposals** were received by the April 30, 2021, deadline. All raw action proposals are publicly available on the Climate Initiatives Task Force website.

ASSESSING ALTERNATIVE APPROACHES: March – June 2021

Two rounds of evaluation were conducted to investigate the impacts of climate action in Louisiana on the state’s GHG emissions and on the people, economy, and environment. An initial analysis of potential positive and negative impacts, called the “consequence analysis,” of high-level hypothetical emission reduction scenarios was undertaken in Spring 2021. This analysis was intended to better understand the magnitude of Louisiana’s GHG emissions challenge, the maximum benefits or limitations of particular approaches, and the various impacts on the people, environment, and economy of Louisiana. This consequence analysis focused on evaluating the impacts of a “business-as-usual” case (no targeted effort to reduce net GHG emissions for Louisiana) as well as a set of four hypothetical strategy portfolios (“what-if” scenarios) designed to evaluate what the outcomes for different types of GHG-reduction strategies might be. Scenarios included intensive electrification through zero-carbon renewable energy; reduced energy demand, consumption, and waste intensive; industrial carbon removal, capture, use, and storage intensive; and natural sequestration and sinks intensive.

The hypothetical portfolios were evaluated against each of the 17 fundamental objectives of this planning process. The net-GHG emission reduction potential of each portfolio was evaluated using a beta version of the Louisiana Energy Policy Simulator (EPS) modeling tool (developed for Louisiana by Energy Innovation) as well as through referencing additional research, including national net zero pathway studies. Impacts to the other 16 fundamental objectives were evaluated using a survey to elicit the expertise of advisory group members.

Key take-aways from this first consequence analysis included an acknowledgement that no single strategy or approach is the solution and that aggressive action across multiple approaches will be necessary to meet Louisiana’s emission reduction targets. Strategies will also require intentional action to ensure co-benefits and positive outcomes for all people and across all of the fundamental objectives.

The full results of this consequence analysis are detailed in a Technical Memorandum developed by the Water Institute, available [online](#).



DEVELOPING A PORTFOLIO OF DRAFT STRATEGIES & ACTIONS: May – August 2021

Action proposals received through the public call were posted to the Climate Initiatives website, sorted into sectors and themes, and discussed by the relevant sector committees. The Planning Team reviewed all proposals and worked to organize, refine, combine, gap-fill, and group actions under high-level strategies. A comprehensive Draft Portfolio of Climate Strategies and Actions was shared with the Task Force, sector committees, advisory groups, state agencies, and the public in August 2021 for review and feedback.



EVALUATING CONSEQUENCES OF STRATEGIES & ACTIONS: September – October 2021

A second round of consequence analysis considered the likely outcomes and impacts of the Draft Portfolio of Climate Strategies and Actions. As with the first consequence analysis in the Spring, the draft portfolio was evaluated against each of the 17 fundamental objectives of this planning process. The net-GHG emission reduction potential of the portfolio was evaluated by the Water Institute using a now-public version of the Louisiana EPS modeling tool. Impacts to the other 16 fundamental objectives were evaluated using a survey to elicit the expertise of advisory group members. Results of the consequence analysis were shared and discussed with the Task Force in October 2021. The full results of this consequence analysis are detailed in a second Technical Memorandum developed by the Water Institute, available [online](#).



In addition to a second consequence analysis, GOCA also encouraged technical feedback on strategy and action details from sector committee members, discussed implementation considerations with state agencies, and received public comments on the draft portfolio and draft report sections during this phase in the planning process.

GHG INVENTORY UPDATE: October 2021

The LSU Center for Energy Studies (CES) conducted an update to Louisiana’s GHG Inventory, which was released as a public report in October 2021. This inventory estimates and assesses the state’s GHG emissions from all major sources, activity types, economic sectors, and pollutant types and provides an important updated snapshot in time of Louisiana’s GHG baseline. The report also provides trends in data from 2000-2018. LSU CES last conducted a statewide GHG inventory in 2010 using 2005 data. This 2021 update using 2018 data provides valuable insight into the nature of Louisiana’s GHG emissions profile and how that has changed.



The Science Advisory Group provided oversight and direction to guide the GHG Inventory update process, including two rounds of comments. A presentation of draft findings was shared with the Task Force in its July 2021 meeting.

WEIGHING TRADE-OFFS AND REFINING THE PLAN: October 2021 – January 2022

GOCA reviewed all points of feedback and evaluation, considered diverging priorities and perspectives, carefully weighed trade-offs, sought ways to improve anticipated outcomes, and clarified implementation details in revising the Draft Portfolio of Climate Strategies and Actions. The updated portfolio also set specific targets and goals, identified and strengthened in the portfolio to provide specificity and direction for individual actions. These goals were established based on their ability to drive down emissions towards net zero, determined through research and utilization of the Louisiana EPS tool



and best practices from other states pursuing similar ambitions. This revised draft portfolio represented a further effort at striking the balance between the needs and perspectives of different stakeholders, meeting the urgent need to address the root causes of climate change, while also supporting values related to a more equitable society, quality of life, the environment, resilience, and the economy. This draft was discussed by the Task Force in their December meeting and shared again with the public. A round of final edits to the portfolio was made and presented to the Task Force again in early January.

TASK FORCE RECOMMENDATIONS SHARED WITH GOVERNOR: *February 2022*

The Task Force had the opportunity to submit formal dissent to individual climate actions in mid-January, where members could articulate grave concern with an action or its implementation. Dissent is formalized and summarized under individual actions with names of dissenters and a brief description of dissent. The Task Force then met in late January 2022 to review dissent and approve this final plan before it was sent to the Governor on February 1, 2022, for his consideration.

IMPLEMENTATION: *February 2022 - Ongoing*

Realizing the full benefits of this Climate Action Plan will require concerted effort by state government, in coordination with federal and local government, industry, academia, civic organizations, and the public, to implement actions and adaptively manage the plan over the years to come.



Accounting for Louisiana’s Greenhouse Gas Emissions

The GHG reduction goals identified in Executive Order JBE 2020-18 were based on the GHG emissions reduction pathways in the 2018 IPCC *Special Report: Global Warming of 1.5°C*, as the most effective way to limit global warming to 1.5°C. To ensure that Task Force recommendations are informed by the best available science, a trajectory of emissions from the 2005 baseline alongside a projection of future GHG emissions without climate action in Louisiana was needed. This section details Louisiana’s 2021 GHG Inventory Update, containing current and predicted GHG emissions that were used to inform and guide development of climate actions.

2021 INVENTORY

The Louisiana 2021 GHG Inventory,⁵ prepared by the LSU CES using data from 2018, provides information about the GHG emissions across major economic sectors in the state. Using the EPA’s State Inventory Tool (SIT) methodology, with additional analyses, this inventory is consistent with the methodology used to prepare the state’s previous inventory. The prior GHG inventory was completed in 2010, using 2005 data.

Louisiana’s net GHG emissions in 2018 were **216 million metric tons** of CO₂ equivalent (MMT CO_{2e}), compared to 215 net MMT CO_{2e} in 2005. The state’s emissions have been nearly flat across this time period, despite increases in industrial production and decreases in coal-fired power generation, among other changes and trends.

Louisiana’s GHG emissions baseline is unique among states and is significantly different than the nation’s emissions baseline as whole (Figure 4). In the U.S., 17% of overall national emissions come from the industrial sector; **in Louisiana, the industrial sector contributes an overwhelming 66% of overall state emissions.** Though Louisiana’s GHG emissions are most concentrated in the industrial sector, transportation and power generation emissions across the state are also significant. The transportation sector is responsible for 19% of CO_{2e} emissions, and the electric power sector makes up 13% of Louisiana’s CO_{2e} emissions.

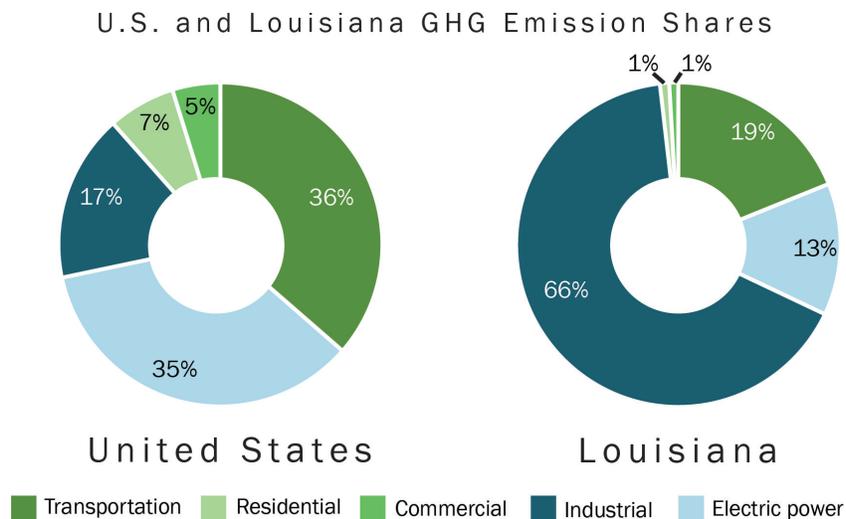


FIGURE 4. SUMMARY OF U.S. AND LOUISIANA GHG EMISSION SHARES. NOTE: FUEL COMBUSTION VALUES ARE FROM FOSSIL FUEL COMBUSTION ONLY. SOURCE: U.S. ENVIRONMENTAL PROTECTION AGENCY, INVENTORY OF U.S. GHG EMISSIONS AND SINKS: 1990-2018; AND STATE CO_{2e} EMISSIONS FROM FOSSIL FUEL COMBUSTION. FIGURE DERIVED FROM FIGURE 4 IN THE [LOUISIANA 2021 GHG INVENTORY](#).

This unique profile represents a significant challenge for reducing Louisiana’s emissions to net zero by 2050.

Unlike other states, or even national strategies, Louisiana cannot rely primarily on transportation or power sector strategies to address the vast majority of GHG emissions. Industrial GHG emissions are widely thought of as the most difficult GHG emissions to abate, and in Louisiana, they account for the significant majority of GHG emissions.

Compared to the United States, Louisiana’s power generation fuel mix distribution is less diverse (Figure 5). Louisiana’s power generation fuel mix is composed of 71% natural gas and 1.6% renewable, compared to the U.S. where 45.3% of power generation is composed of natural gas and 15.3% is renewable. In 2018, industry accounted for 40% of GHG corresponding to electricity consumption in Louisiana, followed by 34% by residential and 26% by commercial.⁶

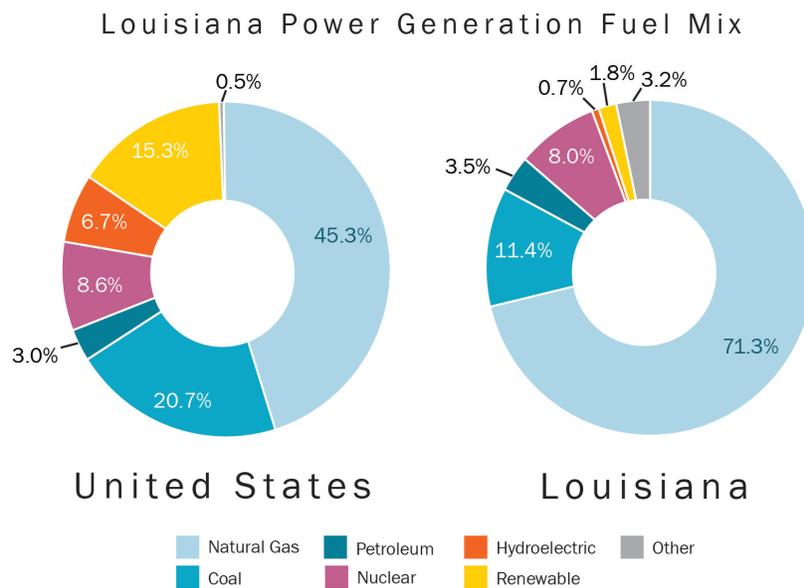


FIGURE 5. COMPARISON OF POWER GENERATION FUEL MIX IN THE U.S. AND LOUISIANA IN 2019. SOURCE: ENERGY INNOVATION ADMINISTRATION. FIGURE REPRODUCED FROM FIGURE 16 OF THE [LOUISIANA 2021 GHG INVENTORY](#).

Louisiana’s leading sectors in industrial CO₂e emissions include chemical manufacturing, petroleum and coal (refining), and natural gas processing (Figure 6). Together, these three sectors make up 94% of the state’s industrial CO₂e emissions. In 2019, Louisiana’s top 20 industrial GHG emissions facilities produced approximately 61 MMT CO₂e, which is up nearly 30% from the GHG emissions of the top 20 industrial facilities in 2012. This increase is primarily due to capital investments and expansions of these facilities.

Louisiana Industrial GHG Emission Shares by Sector (2019)

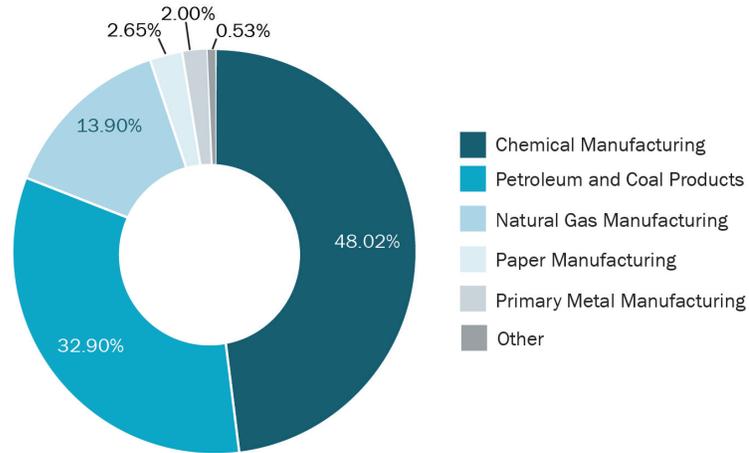


FIGURE 6. LOUISIANA INDUSTRIAL GHG EMISSION SHARES BY SECTOR FOR 2019. DATA SOURCE: U.S. EPA FLIGHT. FIGURE REPRODUCED FROM FIGURE 19 IN THE [LOUISIANA 2021 GHG INVENTORY](#).

In 2019, Louisiana's top 20 GHG emissions facilities (including power generation facilities) produced approximately 72.25 MMT CO₂e, with an average of 3.613 MMT CO₂e, per year. Between 2012 and 2019, total CO₂e emissions within the top 20 emitting facilities increased by 5.725 MMT CO₂e. The top three highest GHG emitting facilities in 2019 included the chemical manufacturing facility CF Industries Nitrogen-Donaldsonville (10.01 MMT CO₂e.), petroleum refining and chemical manufacturing complex ExxonMobil Baton Rouge Complex (6.36 MMT CO₂e.), and the power generation facility Brame Energy Center (5.41 MMT CO₂e).

In addition to Louisiana's current emissions, many industrial expansions or new facilities have been announced across the state. Based on announced projects that have received air permits, cumulative new industrial GHG emissions could reach up to 120 MMT CO₂e per year. The potential GHG impact of these facilities is included in the upper bound of the projected Business As Usual model in the following section.

PROJECTING A BUSINESS AS USUAL FUTURE

The ways in which Louisiana's emissions might increase, particularly from industrial facilities, are important to consider when taking climate action. The Louisiana EPS Tool, used for both rounds of consequence analysis and for informing policy design, includes a Business As Usual scenario that factors in some amount of economic growth, rebounding from a COVID-related recession, and other factors. This Business As Usual scenario represents a future without climate action, continuing on a trajectory of increased emissions (Figure 7). There are some uncertainties with the Business As Usual future as well, such as the approximately 50 announced industrial expansions or new facilities for 2021 or later, noted in the section above.

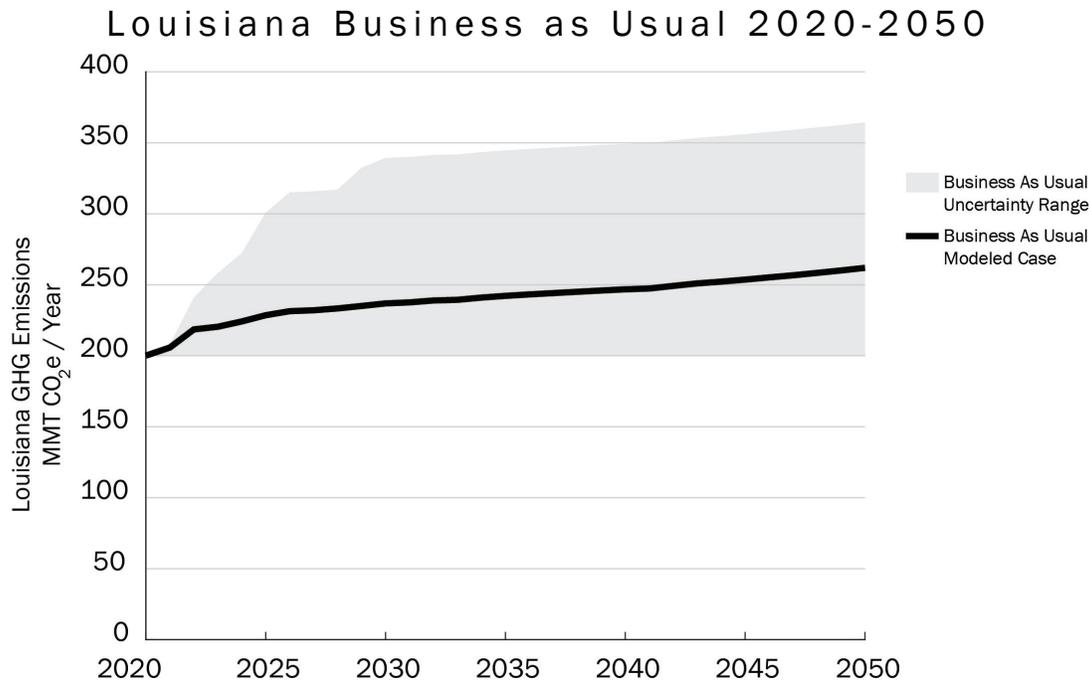


FIGURE 7. BUSINESS AS USUAL SCENARIO AND UNCERTAINTY OF GHG EMISSIONS IN LOUISIANA, 2020-2050.

However, even the Business As Usual scenario is subject to uncertainty. Emissions could continue to increase – especially if new facilities and expansions are permitted and built. Those emissions are in the upper bound of the uncertainty seen in Figure 7 above. Industrial production could continue to increase while efficiency gains are also made, which might lower emissions; given that the state’s emissions were essentially flat from 2005 to 2018, this represents the lower bound of the uncertainty. What is certain is that Business As Usual will not lead to a net zero future for Louisiana, and aggressive action is needed.

The math problem of how Louisiana confronts its emissions is difficult. While this planning process began with 2005 data, it was unclear until the middle of 2021 that statewide emissions were relatively flat from 2005 to 2018. Without the benefit of that information, the goal-setting for 2025 was done without knowing how far Louisiana would have to go to achieve reductions from the 2005 baseline. If Louisiana had taken earlier climate action, those short-term goals may have been achievable. Notably, 2018 GHG emissions from electric power generation were down by 21% from 2005 levels, while industrial emissions (inclusive of natural gas and oil systems) rose by 14% over the same period.⁷

While in some ways Louisiana is catching up to other states that have been taking climate action over the past decades, in other ways Louisiana is charting new ground. No state has ever attempted to tackle industrial emissions at this scale. This aggressive plan offers the opportunity for Louisiana to lead the way in climate action, particularly industrial decarbonization, and set a global example.

The Risks of Inaction: Why Climate Action is Critical for Louisiana

Climate change is a planetary threat being driven by human-induced increases in GHG concentrations in the atmosphere that have raised global temperatures and made extreme weather more common.⁸ In 2019, CO₂e concentrations in the atmosphere were at their highest over the last 2 million years,⁹ and 19 of the 20 warmest years on record have occurred since 2000.¹⁰ Arctic summer sea ice reached its lowest level on record in 2012,¹¹ and global average sea level has risen faster in the past century than at any time in the past 1000 years.¹² The unprecedented fires, droughts, floods, and heatwaves already experienced across the world will intensify as global temperature continue to increase, putting millions of lives and trillions of dollars of assets at risk.¹³ In the midst of these ongoing changes, the most severe impacts have and will continue to fall on the poor and otherwise marginalized communities.¹⁴

Louisiana is among the most vulnerable states in the United States to the impacts of climate change.

Impacts from climate change are significantly affecting the amount of coastal Louisiana that can be preserved and the effectiveness of state and local restoration and protection efforts. Inland from the coast, other climate impacts are making flooding more common and heat more unbearable, and they are straining our best efforts to become more resilient. Most of all, these changes to the environment are translating into hardships for the people who call this state home—hardships that will continue to increase in scope, scale, and intensity unless the world comes together to dramatically reduce global GHG emissions.

The impacts to people being felt today in Louisiana include direct physical, mental, and financial tolls from extreme weather and indirect impacts to social systems and infrastructure that is struggling to cope with the increasing prevalence and severity of natural disasters. As is the case globally, Louisiana's low-income communities, communities of color, Indigenous people, and other marginalized residents are being hit especially hard because they are more likely to live in areas vulnerable to extreme weather and are typically less financially able to take on the economic challenges of recovery or relocation (Figure 8).¹⁵ These groups have been excluded from the opportunity to build wealth for generations, are more likely to live and work in overburdened communities, are more likely to live in areas with higher flood risk, and are more likely to experience insufficient or delayed investments in infrastructure and disaster recovery efforts.

Climate Vulnerable Populations - Health Impacts

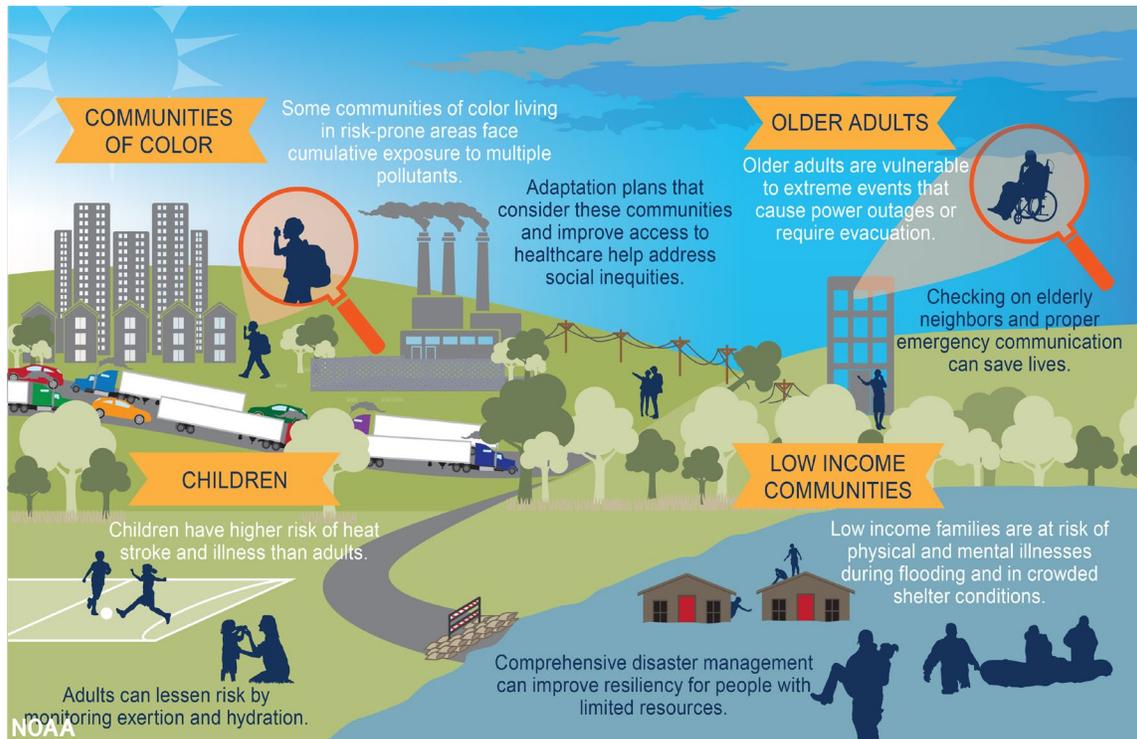


FIGURE 8. EXAMPLES OF POPULATIONS AT HIGHER RISK OF EXPOSURE TO ADVERSE CLIMATE-RELATED HEALTH THREATS ARE SHOWN ALONG WITH ADAPTATION MEASURES THAT CAN HELP ADDRESS DISPROPORTIONATE CLIMATE CHANGE AS WELL AS OTHER ENVIRONMENTAL EXPOSURES, THESE GROUPS ARE AMONG THE MOST EXPOSED, MOST SENSITIVE, AND HAVE THE LEAST INDIVIDUAL AND COMMUNITY RESOURCES TO PREPARE FOR AND RESPOND TO HEALTH THREATS. WHITE TEXT INDICATES THE RISKS FACED BY THOSE COMMUNITIES, WHILE DARK TEXT INDICATES ACTIONS THAT CAN BE TAKEN TO REDUCE THOSE RISKS. FIGURE REPRODUCED FROM FIGURE 14.2 OF THE 2018 NATIONAL CLIMATE ASSESSMENT.

The need for climate action in Louisiana is paramount. Throughout the state, whole communities are being displaced. People regularly risk losing their cars to flooding from abnormal rain events. Some are unable to evacuate from hurricanes because they lack the means or must stay and work in order to keep their jobs. Louisiana is losing its coast and the culture that it supports; inland areas are challenged as well with too much or too little water or extreme heat; and the state's economy is consistently stressed by the disruption and damages of disaster, response, and recovery. This section provides an overview of the scientific underpinnings to the problem of global climate change and more details on how those environmental changes are producing impacts to communities, ecosystems, and the economy in Louisiana.

Since 1988, the IPCC has provided scientific information to governments at all levels for the development of climate policy. The regular reports issued by the IPCC represent contributions from thousands of scientists spanning the globe who assess the latest published works to arrive at a comprehensive summary of what is known about climate change. They report on the drivers of climate change, the impacts and future risks associated with climate change, and how adaptation and mitigation can reduce current and future exposure.¹⁶

In 2018, the IPCC issued its *Special Report: Global Warming of 1.5 °C* to inform the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. This report affirmed that human activities are estimated to have contributed to 1 °C of global warming above pre-industrial levels and that global

warming is anticipated to reach 1.5°C above preindustrial levels between 2032 and 2050 if current rates continue. This rate of global warming, the IPCC concluded, will increase the overall “climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth.” These risks further increase as global temperatures rise to 2°C above pre-industrial levels.

In August of 2021, the IPCC released a working group report on the latest scientific understandings of climate change as well as projections for future warming and its impact on the Earth’s systems. Some of the report’s conclusions include:

- There is no doubt that human-induced climate change is already affecting many weather and climate extremes in every region across the globe.¹⁷
- Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO₂ and other GHG emissions occur in the coming decades.¹⁸
- Many changes in the climate system become larger in direct relation to increasing global warming. They include increases in the frequency and intensity of hot extremes, marine heatwaves, heavy precipitation, agricultural and ecological droughts in some regions, and proportion of intense tropical cyclones, as well as reductions in Arctic Sea ice, snow cover, and permafrost.¹⁹
- With further global warming, every region is projected to increasingly experience concurrent and multiple changes in climatic impact drivers. Changes in several climatic impact drivers would be more widespread at 2°C compared to 1.5°C global warming and even more widespread and pronounced for higher warming levels.²⁰
- From a physical science perspective, limiting human-induced global warming to a specific level requires limiting cumulative CO_{2e} emissions, reaching at least net zero CO_{2e} emissions along with strong reductions in other GHG emissions. Strong, rapid, and sustained reductions in methane emissions would also limit the warming effect resulting from reduced aerosol pollution and improved air quality.²¹

Scientists working across the 13 federal agencies that comprise the U.S. Global Change Research Program produce summary reports detailing the impacts of climate change on the U.S., specifically known as the National Climate Assessment. In 2018, the most recent National Climate Assessment was released with similar findings as the IPCC report, including the conclusion that “climate change creates new risks and exacerbates existing vulnerabilities in communities across the U.S., presenting growing challenges to human health and safety, quality of life, and the rate of economic growth.”²²

Another point made by both the IPCC and the National Climate Assessment is the unequal distribution of climate impacts. The vulnerable, those who are low income, communities of color, children, the elderly, Indigenous populations, and others who are marginalized have a lower capacity to prepare for and cope with extreme weather, climate-related events, and other changes.²³ Vulnerable populations may also be disproportionately affected by actions taken to address the underlying causes and impacts of climate change if those inequities and circumstances are not considered explicitly.

Louisiana is particularly vulnerable to the impacts of climate change. The 2018 National Climate Assessment produced four key messages for the southeastern region of the U.S., and each resonates deeply with Louisiana.

1. **Urban Infrastructure and Health Risks.** Compared to cities in other regions of the country, cities in the southeast are particularly vulnerable to climate change impacts to infrastructure and human health specifically from increased heat, flooding, and vector-borne diseases.²⁴

2. **Increasing Flood Risks in Coastal and Low-Lying Regions.** Home to people, critical industries, cultural resources, and tourism economies, the coastal plain and low-lying regions of the southeast are extremely vulnerable to climate change impacts. Flood frequencies, extreme rainfall events, and sea level rise will affect property values and the viability of infrastructure.²⁵
3. **Natural Ecosystems will be Transformed.** Diverse natural ecosystems that provide multiple social benefits will be transformed by climate change through changing winter temperature extremes, wildfire patterns, sea levels, hurricanes, floods, droughts, and warming oceans. These changes will redistribute species and greatly modify ecosystems. “Future generations can expect to experience and interact with natural systems that are much different than those that we see today.”²⁶
4. **Economic and Health Risks for Rural Communities.** More regular extreme heat and changing seasonal climates are projected to have impacts on exposure-linked health and economic vulnerabilities in agricultural, timber, and manufacturing sectors. Reduced labor hours from extreme heat can also compound existing social stresses.²⁷

With climate risks manifesting every day and all but certain to grow in severity in the future, the need to reduce GHG emissions driving global warming is crucial. Reducing GHG emissions is a viable way to mitigate climate-related risks, increase opportunities for people, and improve or protect quality of life in the long run. As is made clear in national and international scientific reports, the evidence of human-caused climate change is overwhelming, the impacts of climate change are present today and intensifying, and the threats to physical, social, and economic well-being are on the rise.²⁸ In the coming sections, brief glimpses of climate change’s current and future potential impacts on Louisiana will be explored through the lenses of social, health, equity, economic, and environmental outcomes.

HUMAN AND ENVIRONMENTAL IMPACTS TO LOUISIANA

Louisiana’s human and physical geography makes it one of the earliest and hardest hit areas of the U.S. when it comes to experiencing the negative impacts of climate change. The state’s hot and humid climate and location at the mouth of the Mississippi River and the edge of the Gulf of Mexico carry environmental challenges that have direct and indirect impacts on communities. While the widespread risks from climate change are alarming, this troubling fact can be a unifying force across an often fractured political and social spectrum, serving to point us all toward common action. Despite the commonality of risk experienced across Louisiana, it is also true that some communities are feeling more pain, greater disruption, and more severe impacts to their health, quality of life, and economic stability than others. This reality is observed by both the IPCC and the National Climate Assessment and manifests in Louisiana along racial, income, ethnic, and age categories.

During the planning process a potential future scenario was evaluated to help the Task Force and public understand the consequences of inaction for the people, economy, and environment in Louisiana. In this Business As Usual scenario, GHGs were not reduced and climate change was not mitigated beyond what is being achieved through current trends. This scenario was judged by evaluators on the Task Force’s advisory groups to produce negative or very negative outcomes across every one of the fundamental objectives. Specific negative outcomes expected from the strategy of inaction in the Business As Usual scenario included regional and more widespread negative consequences in the near term and established negative trends that would persist for the long term.

This section provides an overview of the ways that climate change today is producing impacts to communities and the environment in Louisiana as well as how those impacts are projected to change in the future.

HEALTH IMPACTS

According to the 2018 National Climate Assessment, climate change is already producing negative health effects for Americans that will worsen as climate change progresses (Figure 9). In addition to the intensification of current health challenges, climate change will also bring new challenges to individual and public health. These challenges will arise as more people are exposed to hazardous conditions like heat waves, floods, droughts, vector-, food-, and water-borne diseases, deterioration of the quality and safety of water, air, and food, and additional strains on mental health and well-being.²⁹ Beyond the direct health effects of extreme weather events, human health can also suffer from the disruption of vital public health, healthcare, and related systems in ways that can be harmful to health long after a weather event. The following sections looks at national and Louisiana-specific ways that human health suffers because of climate change.

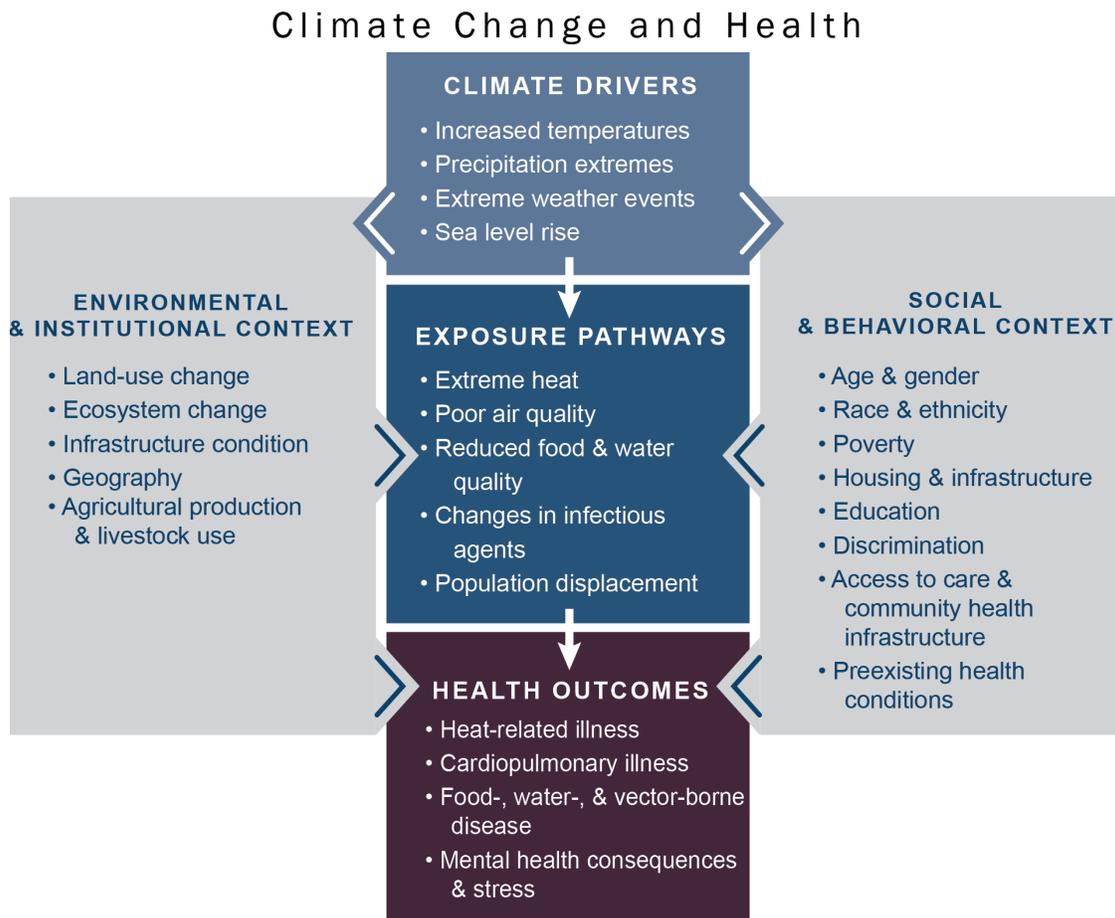


FIGURE 9. THIS CONCEPTUAL DIAGRAM ILLUSTRATES THE KEY PATHWAYS BY WHICH CLIMATE CHANGE INFLUENCES HUMAN HEALTH DURING AN EXTREME HEAT EVENT, AND POTENTIAL RESULTING HEALTH OUTCOMES (CENTER BOXES). THESE EXPOSURE PATHWAYS EXIST WITHIN THE CONTEXT OF OTHER FACTORS THAT POSITIVELY OR NEGATIVELY INFLUENCE HEALTH OUTCOMES (GRAY SIDE BOXES). KEY FACTORS THAT INFLUENCE VULNERABILITY FOR INDIVIDUALS ARE SHOWN IN THE RIGHT BOX, AND INCLUDE SOCIAL DETERMINANTS OF HEALTH AND BEHAVIORAL CHOICES. KEY FACTORS THAT INFLUENCE VULNERABILITY AT LARGER SCALES, SUCH AS NATURAL AND BUILT ENVIRONMENTS, GOVERNANCE AND MANAGEMENT, AND INSTITUTIONS, ARE SHOWN IN THE LEFT BOX. ALL OF THESE INFLUENCING FACTORS CAN AFFECT AN INDIVIDUAL'S OR A COMMUNITY'S VULNERABILITY THROUGH CHANGES IN EXPOSURE, SENSITIVITY, AND ADAPTIVE CAPACITY AND MAY ALSO BE AFFECTED BY CLIMATE CHANGE. REPRODUCED FROM FIGURE 1, IMPACTS OF CLIMATE CHANGE ON HUMAN HEALTH IN THE UNITED STATES (2016).

HEAT

Globally, more than 1/3 of heat-related deaths can be attributed to the extra warming associated with climate change which, in many locations, adds up to dozens to hundreds of deaths each year.³⁰ In the U.S., more deaths are caused by extreme heat than by any other severe weather event.³¹ As the climate continues to change, the dangers of heat exposure will increase as extreme heat becomes more frequent with both higher summer temperatures overall and the onset of high temperatures earlier in the spring and lasting longer into the fall. The effects of warmer temperatures are of particular concern in Louisiana because the state experiences some of the highest average summer temperatures in the nation and because high humidity further compounds the impact of high heat on the body by impairing its ability to cool the body through evaporation of sweat.

Heat is particularly dangerous to human health because core body temperature must be maintained within a very narrow range. Normally, when the body's internal temperature increases above the range, mechanisms such as sweating and increased blood flow work to emit excess body heat. In situations of extreme internal heat, the body's coping mechanisms are compromised, resulting in a cascade of heat-related illnesses ranging from mild effects like dehydration to severe health effects such as heat exhaustion or heat stroke which can result in multi-organ failure and possibly death.³² Even when heat is not deadly, exposure to excessive heat can exacerbate chronic conditions, increase injuries, and diminish productivity and labor capacity.

The extreme heat and humidity that increasingly characterize Louisiana's summers pose important health risks to everyone, but the most vulnerable are the young, elderly, people with chronic health conditions, and outdoor workers.³³ Infants and young children (ages 0-9) and the elderly (> 80 years) have lower rates of heat-related illness than other age groups but more severe health outcomes. Immature thermoregulation in the systems of young children cause rapid increases in core body temperature compared to adults, and they are also vulnerable to the actions of others because they rely on parents or caretakers to protect them from overexposure. Infant and child vulnerability to high heat can have severe consequences; for example, hyperthermia is the leading cause of non-crash-related vehicle deaths for children younger than 14 years of age, with an average of 38 deaths per year in the U.S.³⁴ Individuals over eighty are more susceptible to heat due to a number of factors including less efficient sweat cooling mechanisms, reduced capacity for pumping blood than younger adults, decreases in overall fitness, and exacerbation of pre-existing health conditions. Co-morbidities, such as heart conditions, can also impair the heart's ability to properly circulate blood and cool the body, and high blood pressure and diabetes impair the blood vessels' ability to dilate properly, which also restricts blood flow.

Extreme heat is already on the rise in Louisiana, first shown statewide in Figure 10 but particularly in urban areas that experience higher air temperatures associated with the urban heat island effect. The National Oceanic and Atmospheric Administration's (NOAA) National Center for Environmental Information released state climate summaries in January of 2022, concluding temperatures in Louisiana have risen by 0.5°F since the beginning of the 20th century with the warmest consecutive 5-year interval most recent from 2016-2020. In Figure 10, NOAA predicts a potential 12°F warming by the end of the century. Specific to urban areas, Baton Rouge, Lake Charles, and Monroe each saw 22 more days above 95° F, Lafayette had 20 additional days, New Orleans 15, and Alexandria had 13 additional days over 95°F compared to 1970.³⁵ Climate Central published another study of the urban heat island effect in U.S. cities and ranked New Orleans the worst of 159 cities nationwide. This study found that temperatures in New Orleans could be as much as 9° warmer inside the city than in areas outside of developed areas. Lafayette, Louisiana, ranked 19th.³⁶ Looking to the future, a study by the Union of Concerned Scientists estimated that Louisianans will experience three full months where the heat index is over 105 by the end of the century.³⁷

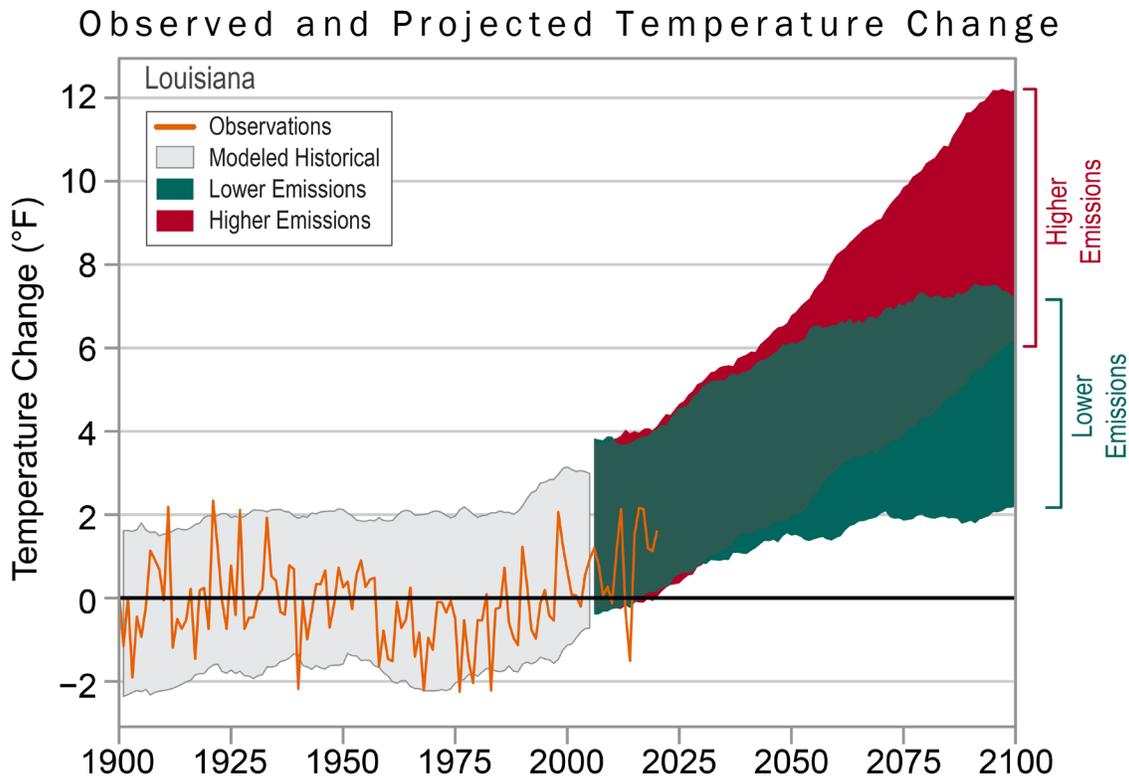


FIGURE 10. OBSERVED AND PROJECTED CHANGES (COMPARED TO THE 1901-1960 AVERAGE) IN NEAR-SURFACE AIR TEMPERATURE FOR LOUISIANA. OBSERVED DATA ARE FOR 1900-2020. PROJECTED CHANGES FOR 2006-2100 ARE FROM GLOBAL CLIMATE MODELS FOR TWO POSSIBLE FUTURES: ONE IN WHICH GHG EMISSIONS CONTINUE TO INCREASE (HIGHER EMISSIONS) AND ANOTHER IN WHICH GHG EMISSIONS INCREASE AT A SLOWER RATE (LOWER EMISSIONS). SHADING INDICATES THE RANGE OF ANNUAL TEMPERATURES FROM THE SET OF MODELS. OBSERVED TEMPERATURES ARE GENERALLY WITHIN THE ENVELOPE OF MODEL SIMULATIONS OF THE HISTORICAL PERIOD (GRAY SHADING). HISTORICALLY UNPRECEDENTED WARMING IS PROJECTED DURING THIS CENTURY. LESS WARMING IS EXPECTED UNDER A LOWER EMISSIONS FUTURE (THE COLDEST END-OF-CENTURY PROJECTED YEARS BEING ABOUT AS WARM AS THE HOTTEST YEAR IN THE HISTORICAL RECORD; GREEN SHADING) AND MORE WARMING UNDER A HIGHER EMISSIONS FUTURE (THE HOTTEST END-OF-CENTURY PROJECTED YEARS BEING ABOUT 10°F WARMER THAN THE HOTTEST YEAR IN THE HISTORICAL RECORD; RED SHADING). REPRODUCED FROM FIGURE 1 OF THE NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION LOUISIANA STATE CLIMATE SUMMARY, 2022.

Within a city, factors like the amount of green space and tree canopy; the amount of heat absorbed and radiating from surfaces like asphalt, highways, and parking lots; architectural choices; and surface reflectivity can create a “heat gap” between neighborhoods that can be disproportionately experienced along racial and economic lines. National studies have documented a lack of tree canopy and a greater instance of impervious surfaces in low-income communities relative to high-income communities,³⁸ and parts of cities that are poorer and with higher concentrations of residents of color can be 5°F to 20°F hotter in the summer than wealthier and whiter areas of the same city.³⁹ According to a 2021 study in the journal *Nature Communications*, the average person of color lives in a census tract with a higher surface urban heat island intensity than non-Hispanic whites in all but 6 of the 175 largest urbanized areas in the continental U.S. A similar pattern was found for people living in households below the poverty line relative to households more than two times the poverty line.⁴⁰

In 2016, a study by the University of Richmond found that this heat gap was a reflection of redlining practices perpetrated throughout the 1900s. Beginning in the 1930s, the federal Home Owners’ Loan Corporation (HOLC) created racially-biased “residential security” maps in hundreds of cities that fueled the practice of denying access to federally backed mortgages and credit to racial minorities. Within New Orleans, the only Louisiana city

included in the University of Richmond study, a 4.6-degree heat gap was observed between the “most desirable” neighborhoods in New Orleans and those labeled “hazardous” by HOLC maps.⁴¹

Vulnerability to heat is also influenced by a number of socio-economic and community factors that can amplify health threats, such as poor housing, social isolation, and limited commercial infrastructure.⁴² About 20% of Louisianans live in poverty with sharp racial disparities: 34% poverty among African-Americans compared with 12% among whites. Housing factors, particularly older buildings and mobile homes, can increase susceptibility to HRI as they may not be able to effectively cool their homes and, in some cases, may have no air conditioning or are unable to afford the cost of using their air conditioner. Access to air-conditioned environments is particularly important during periods of high heat and humidity when there is minimal variation between the daily maximum and minimum temperature.

High heat also carries environmental and economic implications for Louisiana. Seasonal changes to temperature caused by climate change are disrupting the natural system and the ability for people to make a living from those systems. Heat is a well-recognized occupational hazard and workers may be one of the highest at-risk populations for HRI and are often among the first to be exposed to the impacts of climate change.⁴³ Unlike other vulnerable groups who may be at a greater liberty to respond, workers’ exposure and responses are largely controlled by their job requirements and employer. About one-quarter of Louisiana’s workforce is at risk of HRI due to outdoor and physically demanding work: agriculture, construction, oil and gas, transportation, utilities, and some manufacturing. Indoor workers who work in non-climate-controlled environments, such as warehouses and factories, are also at risk. Accordingly, the highest rates of hospitalization or emergency room visits for heat-related illness in Louisiana are among working-age men. Studies have also documented that Louisiana has a higher rate of occupational heat-related illness than other southeastern states, and one of the highest rates of all U.S. states.⁴⁴ By the end of the century, it is estimated that health concerns from increased heat could result in a reduction of labor hours by more than five hundred million in the Southeast for high-risk industries, such as agriculture, forestry, fishing, mining, manufacturing, transportation, and utilities (Figure 11).⁴⁵ All of these factors contribute to worker vulnerability and reduced work capacity and productivity resulting in negative economic impacts for LA workers and employers.

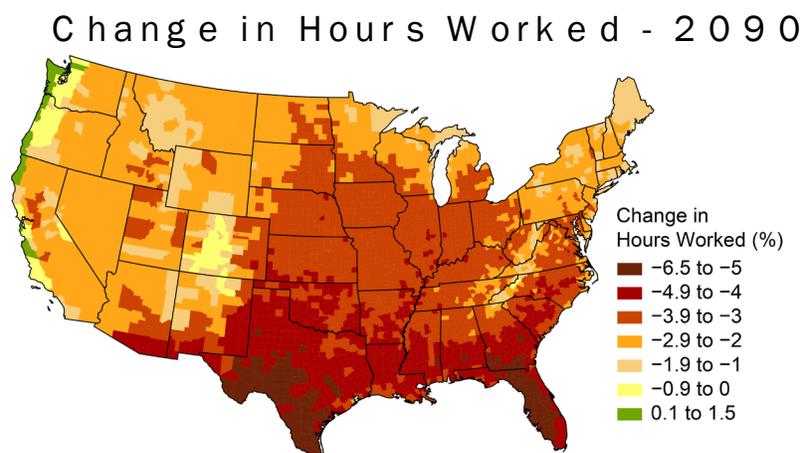


FIGURE 11. THIS MAP SHOWS THE ESTIMATED PERCENT CHANGE IN HOURS WORKED IN 2090 UNDER A HIGHER SCENARIO (RCP8.5). PROJECTIONS INDICATE AN ANNUAL AVERAGE OF 570 MILLION LABOR HOURS LOST PER YEAR IN THE SOUTHEAST BY 2090 (WITH MODELS RANGING FROM 340 MILLION TO 820 MILLION LABOR HOURS). ESTIMATES REPRESENT A CHANGE IN HOURS WORKED AS COMPARED TO A 2003-2007 AVERAGE BASELINE FOR HIGH-RISK INDUSTRIES ONLY. THESE INDUSTRIES ARE DEFINED AS AGRICULTURE, FORESTRY, AND FISHING; HUNTING, MINING, AND CONSTRUCTION; MANUFACTURING, TRANSPORTATION, AND UTILITIES. SOURCE: ADAPTED FROM EPA 2017. REPRODUCED FROM FIGURE 19.21 OF THE 2018 NATIONAL CLIMATE ASSESSMENT REPORT.

Hurricanes and other weather events also have multiple heat-health impacts as response and recovery work involve long and strenuous work during very hot temperatures and frequently without access to air conditioning. Additionally, many non-acclimated volunteers and residents engage in physically demanding work or operation.⁴⁶ There were five heat-related fatalities due to Hurricane Laura including two men who died while removing storm debris.⁴⁷

AIR QUALITY

According to the 2018 National Climate Assessment, “more than 100 million people in the U.S. live in communities where air pollution exceeds health-based air quality standards,” and unless specific action to improve air quality is taken, “climate change will worsen existing air pollution levels.”⁴⁸ “This worsened air pollution,” the National Climate Assessment reports, “would increase the incidence of adverse respiratory and cardiovascular health effects, including premature death.”⁴⁹ As the climate continues to change, heat-related health risks will intensify, and progress toward clean air will become even more difficult.⁵⁰

Many of the factors that contribute to air quality are connected to weather. For example, higher temperatures promote the increased formation of ozone and stagnant weather conditions can produce higher concentrations of particulate matter. Both carry their own deleterious health effects like triggering asthma attacks and increased risk of premature death from heart or lung disease.⁵¹ Particulate matter concentrations are affected by wildfire emissions and air stagnation episodes, among other factors. By increasing these different factors, climate change is projected to lead to increased concentrations of ozone and particulate matter in some regions. Increases in global temperatures could cause associated increases in premature deaths related to worsened ozone and particle pollution.⁵²

Estimates that assume no change in regulatory controls or population characteristics range from 1,000 to 4,300 additional premature deaths nationally per year by 2050 from combined ozone and particle health effects. The response of airborne particles to climate change is less certain than the response of ozone. The current effect of ozone air pollution that exceed national standards has been estimated at \$6.5 billion (in 2008 U.S. dollars) in health-related costs nationwide, based on a U.S. assessment of health impacts from ozone levels from 2000–2002.⁵³ A more recent study estimated that ozone pollution could account for approximately \$580 billion in annual global health and economic costs by 2050.⁵⁴

Even with population and economic growth, ozone air quality in the U.S. has improved dramatically due to pollution control efforts for specific emissions, leading to a drop by 22% between 1990 and 2016. Louisiana has also shared in this positive trend but not to the degree of the rest of the country.⁵⁵ In a 2021 analysis of EPA data, the Louisiana Legislative Auditor found a 20.9% increase in good air quality days in Louisiana and a 75% decrease in unhealthy air quality days between 2008 and 2018. Among the state’s top four air pollutants, nitrogen oxides declined by 25.2%, sulfur dioxide by 43%, carbon monoxide by 27.8%, and volatile organic compounds by 16.3%. However, 2018 National Climate Assessment warns that “the prevailing evidence strongly suggests” climate change will partially counteract the progress made in reducing ozone precursors.⁵⁶

The 2018 National Climate Assessment clearly documents that impacts to air quality, particularly ozone and particulate matter-related effects, will harm certain groups more than others: the elderly, children, and those with chronic illnesses.⁵⁷ Impacts from climate change on outdoor air quality will affect urban areas where larger proportions of minority, low-income, and immigrant populations reside. People of color are particularly affected by air pollution because of disproportionate exposure in urban areas and higher prevalence of underlying diseases, such as asthma and COPD, that makes them more sensitive.⁵⁸

A recent study by researchers at the EPA-funded Center for Air, Climate, and Energy Solutions found that people of color are largely exposed to more particulate air pollution on average across income level, within individual states, and within individual urban and rural areas.⁵⁹ These findings were reinforced by a November 2021 EPA report on Climate Change and Social Vulnerability in the United States. In the report, the EPA found that - among the social vulnerability factors of income, race, education, and age - people of color are most likely to currently live in areas that are projected to have the highest levels of climate change impacts with 2° Celsius of warming or 50 cm of global sea level rise. Citing its most recent Particulate Matter Integrated Science Assessment, EPA acknowledged that “race and ethnicity are important factors in determining PM2.5 related risk and that Black individuals, in particular, are at increased risk for health effects, in part due to disparities in exposure.”⁶⁰ For example, Black individuals are 41-60% more likely than others to currently live in areas with the highest projected increases in premature mortality from climate-driven changes in PM2.5. Black individuals are also 34% more likely to live in areas with the highest projected increases in childhood asthma diagnoses due to climate-driven changes in particulate air pollution.⁶⁰

The final “key message” in the 2018 National Climate Assessment related to air quality, human health, and climate change points to the potential for co-benefits across these three categories as a result of mitigating GHG emissions. “Many emission sources of greenhouse gases also emit air pollutants that harm human health. Controlling these common emission sources would both mitigate climate change and have immediate benefits for air quality and human health. 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.”⁶¹

WILDFIRES

While not a natural disaster that gets a tremendous amount of attention in the state of Louisiana, climate change is projected to increase the risk of wildfire. This increased likelihood of wildfires carries associated risks from air emissions with harmful health impacts. According to the Department of Agriculture and Forestry (LDAF), there are 18.9 million acres of land under fire protection by LDAF and the state’s wildfire occurrence is “high” by regional and national standards.⁶² Between 2007 and 2016, an average of 1,413 wildfires burned almost 15,000 acres of forestland each year in Louisiana.⁶³

Long periods of record high temperatures are also associated with droughts that contribute to dry conditions and lengthen the wildfire season in some areas.⁶⁴ Wildfire smoke contains particulate matter, carbon monoxide, nitrogen oxides, and various volatile organic compounds (ozone precursors), which can significantly reduce local air quality and air quality in areas downwind of fires. Smoke exposure increases respiratory and cardiovascular hospitalizations; emergency department visits; medication dispensations for asthma, bronchitis, chest pain, chronic obstructive pulmonary disease (COPD), and respiratory infections; and medical visits for lung illnesses.

DISEASE

Climate change is affecting the transmission of many different diseases by directly altering the pathogens’ biology and the organisms that carry the pathogens, as well as by indirectly altering transmission due to changes to ecosystems or human behavior.⁶⁵ Mosquitos, ticks, and other disease-carrying animals - known as “vectors” - can be expected to have altered ranges, seasonal distributions, or abundance as climate change continues to impact weather patterns, ecosystems, and human land use and demographics. These changes can also lead to new interactions between species which can heighten the likelihood of disease spread from animals to humans.⁶⁶ For example, the southeastern region of the U.S. already has the most favorable conditions for the *Aedes aegypti* mosquito, which can carry diseases such as dengue fever and the Zika virus. Warming temperatures associated with climate change has potential to expand mosquito habitat and increase risk of

disease.⁶⁷ Climate change can also affect life cycle traits of disease-carrying mosquitos like biting rate, lifespan, population size, distribution, and egg laying.⁶⁸

Prime conditions for bacterial and fungal diseases can also be expected to expand under a changing climate. As these pathogens evolve to be more heat tolerant than other related species, they may be more capable of moving between habitats, across species, and into humans.⁶⁹ Respiratory pathogens, such as the influenza virus, persist year-round in tropical locations while being more seasonal in temperate environments. As tropical conditions expand with climate change, there is the potential for the evolution of these types of viruses.⁷⁰ For individuals, respiratory infections from viruses can also be heightened by air pollution which is a risk for urbanizing areas and can carry disproportionate impacts for low-income communities and communities of color.⁷¹

As water temperatures increase, it can change the seasonality and range of pathogens and harmful algae. As rainfall events become more frequent and intense, runoff can create negative impacts for recreational bodies of water and drinking water sources and cause additional problems for inadequate water and sewer infrastructure that can in turn lead to bacterial and viral contamination of water that can be harmful to public health.⁷²

MENTAL HEALTH

A number of mental health impacts can be attributed to the stress caused by climate change-related circumstances. These mental health effects interact with other health, social, and environmental stressors in ways that can compound and negatively affect an individual's mental well-being. As with so many other impacts of climate change, some groups are more likely than others to be at risk to the negative mental health effects, including those with preexisting mental illness, first responders, the elderly, pregnant women, the economically disadvantaged, and Indigenous peoples.⁷³ Experiencing a flood, even flood risk, has been documented to produce higher levels of depression and anxiety that can persist for years after the event.⁷⁴ Disasters and droughts are also linked to increased use of alcohol and tobacco, and higher temperatures can lead to an increase in aggressive behaviors.

IMPACTS TO INDIGENOUS PEOPLES

In addition to the ways that everyone is affected by climate change, Indigenous peoples are also uniquely and disproportionately impacted because of the compounding health issues related to the loss of traditional foods, practices, and the mental stress of adaptation alongside the damage to ecosystems, species, and land that carry cultural, economic, and historical significance.⁷⁵ The 2018 National Climate Assessment contains an entire chapter dedicated to the challenges posed by an ever-changing climate on Indigenous peoples nationwide and the contributions Indigenous peoples have made to the understanding of local and national climate change risks in earlier assessments. The ability of Indigenous peoples to adapt to climate-change-induced changes can also be thwarted by limitations to self-determination that arise differently for federally or state-recognized tribes and non-federally or non-state recognized tribes.⁷⁶

In matters of health, Indigenous peoples can be even more vulnerable to the physical challenges brought on by climate change because of historical and ongoing social, political, and economic factors with tangible impacts on human health, called "social determinants of health." While health outcomes vary regionally, Indigenous peoples are disproportionately more likely to suffer from asthma, cardiovascular disease, Alzheimer's disease or dementia, diabetes, and obesity alongside increased disparities exacerbated by climate-induced changes to pollen, air quality, and extreme weather events.⁷⁷

Indigenous peoples are 48% more likely than others to currently live in areas where the highest percentage of land is projected to be inundated due to sea level rise (Figure 12).⁷⁸ They are also 37% more likely to live in

areas with the highest projected labor hours lost due to increased high-temperature days from employment in weather-exposed industries.⁷⁹ In coastal Louisiana, hurricanes, saltwater intrusion, erosion, subsidence, sea level rise, and manmade challenges - like the creation of canals and oil spills - fracture wetlands and have all undermined the ability of Indigenous people to carry on traditional activities. In 2020, four non-federally recognized tribes from coastal Louisiana joined with another tribe from Alaska in a protest to the United Nations, arguing that sea level rise and coastal erosion had overcome burial sites and that continued land loss threatens food sources. Protestors also brought attention to how the federal and state governments have done too little to address these changes.⁸⁰ Indigenous peoples in coastal Louisiana are also working toward or actively pursuing relocation as an adaptation strategy to environmental risk.⁸¹ In 2021, Hurricane Ida was particularly devastating for many of Louisiana's Indigenous peoples who live in the southeastern portion of the state. The category four storm destroyed 68 of 80 homes in the Pointe-Au-Chien community and all of the homes on Isle de Jean Charles.⁸² Almost every member of the Grand Caillou/Dulac Band of the Biloxi-Chitimacha-Choctaw suffered the complete or near complete loss of their homes,⁸³ and as many as 15,000 members of the United Houma Nation, the largest tribe in Louisiana, also lost their homes.⁸⁴ The lack of federal recognition has hampered the ability of many of Louisiana's Indigenous peoples from qualifying for direct disaster assistance. The United Houma Nation, for example, have been advocating for federal recognition for forty years, but the rigorous process of obtaining recognition is further being challenged by climate change. Required documentation becomes more difficult to attain, as communities continue to be displaced by land loss and natural disasters.⁸⁵



FIGURE 12. A FEDERAL GRANT IS BEING USED TO RELOCATE THE TRIBAL COMMUNITY OF ISLE DE JEAN CHARLES, LOUISIANA, IN RESPONSE TO SEVERE LAND LOSS, SEA LEVEL RISE, AND COASTAL FLOODING. LEFT/MIDDLE IMAGES FROM FIGURE 15. 3, CH. 15: TRIBES (PHOTO CREDIT: RONALD STINE). AS PART OF THE RESETTLEMENT OF THE TRIBAL COMMUNITY OF ISLE DE JEAN CHARLES, RESIDENTS ARE WORKING WITH THE LOWLANDER CENTER AND THE STATE OF LOUISIANA TO FINALIZE A PLAN THAT REFLECTS THE DESIRES OF THE COMMUNITY (RIGHT). FROM FIGURE 15. 4, CH. 15: TRIBES (PHOTO PROVIDED BY LOUISIANA OFFICE OF COMMUNITY DEVELOPMENT). REPRODUCED FROM FIGURE 1.17 OF THE 2018 NATIONAL CLIMATE ASSESSMENT REPORT.

ENVIRONMENTAL IMPACTS

Louisiana's coastal plain has been slowly sinking for nearly a century with approximately 2,000 square miles of land lost since the 1930s. As climate change-driven global warming increases sea levels, coastal Louisiana's challenge to staying above water will also increase. According to the 2018 National Climate Assessment, relative to the year 2000, global average sea level rise is predicted to increase by 1 to 4.3 feet by 2100 with the western Gulf of Mexico likely to experience relative sea level rise greater than the global average.⁸⁶ As sea levels rise, some coastal ecosystems will be submerged and converted to open water; saltwater penetration will move further inland and displace inland ecosystems; and hurricane impacts will stretch further onshore and cause additional ecological changes.⁸⁷

Louisiana's coastal land loss crisis has already exposed nearly two million people to the dangers of storm surge-based flooding with some communities threatened to be completely submerged three or four decades into the future. Projections in the 2017 Coastal Master Plan indicate that, without significant investment in coastal restoration and protection projects, southern Louisiana could lose between 2,254 and 4,123 square miles of

Total Hurricane Events in Louisiana

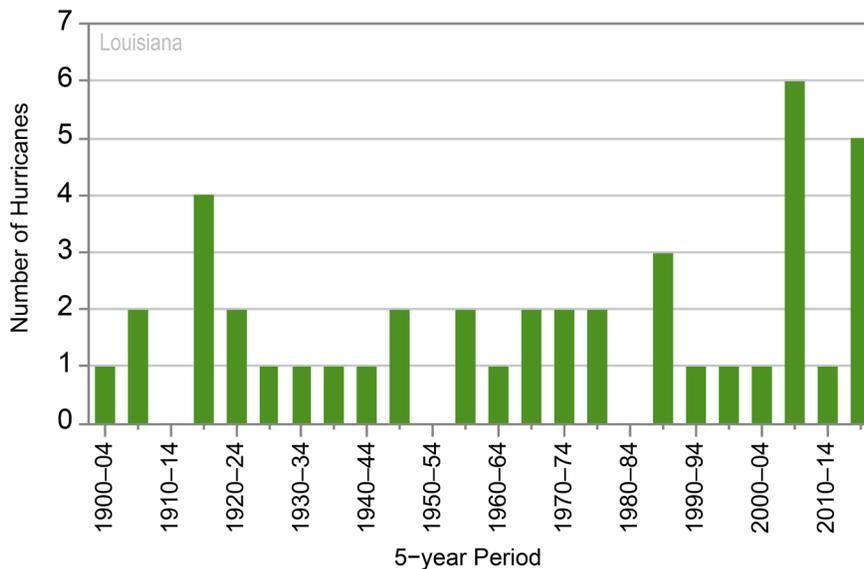


FIGURE 14. TOTAL NUMBER OF HURRICANE EVENTS (WIND SPEEDS REACHING HURRICANE STRENGTH SOMEWHERE IN THE STATE) FOR LOUISIANA FROM 1900 TO 2020. BARS SHOW 5-YEAR TOTALS (LAST BAR IS A 6-YEAR TOTAL). ON AVERAGE, LOUISIANA IS STRUCK BY A HURRICANE ABOUT ONCE EVERY THREE YEARS. FROM 2005 TO 2009, LOUISIANA WAS STRUCK BY 6 HURRICANES, THE LARGEST NUMBER DURING A 5-YEAR PERIOD SINCE THE BEGINNING OF THE 20TH CENTURY. SOURCE: NOAA HURRICANE RESEARCH DIVISION. REPRODUCED FROM FIGURE 5 OF THE NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION LOUISIANA STATE CLIMATE SUMMARY, 2022.

Other implications of environmental change are also affecting fishing and seafood harvesting. According to the 2018 National Climate Assessment, fishing and oyster harvesting activities along the coast will face “substantial challenges” (p 777). Challenges such as increased ocean temperature, acidification, and sea level rise translate to a decline in oyster harvests by between 20% and 46%.⁹³

All across Louisiana, people and ecosystems must adjust to the extremes of too much or too little water. Flooding – be it from storm surge, persistent high tides, increasingly heavy downpours, or rivers swollen from up-basin precipitation patterns – affects populations throughout the state. Even floods that do not force people from their homes disrupt lives, add financial and emotional stress to individuals and families, and strain resources that could be invested elsewhere. Moreover, temperature and rainfall impact livestock as well. While some crops may become newly viable alternatives under changing conditions, climate change creates challenges for existing crops and overall impact will be negative. Decreasing productivity in cotton, corn, soybeans, and rice is expected with higher temperatures as are increased stresses on livestock. Changes in precipitation patterns can also be expected to impact forestry (Figure 15).⁹⁴

Agricultural Productivity

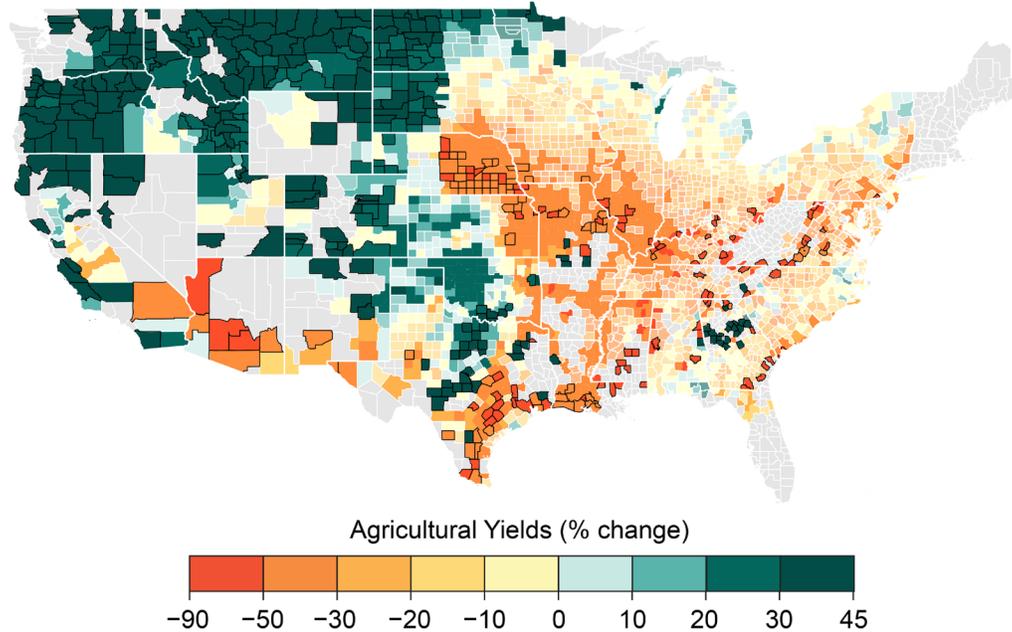


FIGURE 15. THE PROJECTED PERCENT CHANGE IN THE YIELD OF CORN, WHEAT, SOYBEANS, AND COTTON THROUGH THE YEAR 2100. UNITS REPRESENT AVERAGE PERCENT CHANGE IN YIELDS UNDER A MODELLED SCENARIO OF HIGH CLIMATE CHANGE COMPARED TO A SCENARIO OF NO ADDITIONAL CLIMATE CHANGE. WARMER COLORS (NEGATIVE PERCENT CHANGE) INDICATE LARGE PROJECTED DECLINES IN YIELDS; COOLER COLORS (GREEN) INDICATE MODERATE PROJECTED INCREASES IN YIELDS. SOURCE: ADAPTED FROM HSIANG ET AL. (2017). DATA WERE NOT AVAILABLE FOR THE U.S. CARIBBEAN, ALASKA, OR HAWAI'I AND U.S.-AFFILIATED PACIFIC ISLANDS REGIONS. REPRODUCED FROM FIGURE 7.6 OF [THE NATIONAL CLIMATE ASSESSMENT REPORT, 2018](#)

ECONOMIC IMPACTS TO LOUISIANA

The impacts of climate change are exceedingly costly. These costs strain individual households, cities, states, and countries and can even threaten the health of the global financial system.⁹⁵ According to NOAA's National Centers for Environmental Information, in 2020 "[t]here were 22 separate billion-dollar weather or climate related disaster events, shattering the previous annual record of 16 events, which occurred in 2017 and 2011."⁹⁶ It was also the sixth year in a row with 10 or more billion-dollar natural disasters.⁹⁷ Further, Hurricane Laura's \$19 billion in damage was the costliest event of 2020.⁹⁸ According to the 2018 National Climate Assessment, without sustained and substantial mitigation and adaptation efforts, "climate change is expected to cause growing losses to American infrastructure and property and impede the rate of economic growth over this century" (p 25). In combination with other losses caused from impacts to human health and the environment, annual economic losses have the potential to reach hundreds of billions of dollars by the end of the century, which is more than the gross domestic product of many states.⁹⁹

Estimates of future risk to Louisiana include two prominent examples from the coast. As noted in the 2017 Coastal Master Plan, economic costs to Louisiana from coast-wide annual damages from a 100-year storm event are estimated to reach \$12.1 billion dollars within 50 years.¹⁰⁰ Further, an economic study by LSU estimated that a storm with a similar track to Hurricane Katrina could cause \$138 billion in damages to the New Orleans region in a future without coastal investments, even with the existing \$14.5 billion Hurricane Storm Damage Risk Reduction System that protects the city with levees.¹⁰¹

Climate change also increases the frequency and likelihood of chronic conditions that also pose high economic costs for states like Louisiana. Rainfall events that do not rise to the level of a federal disaster, nuisance flooding, and saltwater intrusion also bring financial costs to homeowners and municipalities, weakening infrastructure and leading to costly repairs, replacement, or redesign. Damages to the economy also occur as transportation and commodity networks are interrupted by major and minor climate-related events. Existing federal flood insurance rate maps that do not account for the future flood risk anticipated as a result of climate change or new development also create considerable unknown risk in the built environment. The nonprofit First Street Foundation created a tool that estimates and communicates a property's flood risk from riverine, rainfall, tidal, and storm surge sources as well as an estimate of how environmental factors change over time due climate change. According to their calculations, 14.6 million properties across the country are at substantial risk including 5.9 million who are currently not identified as being within a FEMA special flood hazard area. Louisiana, already one of the most at-risk states, is estimated to see an increase in flood risk of 69.7% by 2050.¹⁰²

Additionally, as global demand gradually shifts away from carbon-based fuels, some refineries may close because of reduced demand or because the cost of continued operations is too high to remain profitable. Louisiana is currently home to 20% of U.S. refining capacity,¹⁰³ so large changes in this sector is particularly concerning for the state in a variety of ways. Large facilities are major, if not the largest, employers in the communities in which they reside and often among the largest taxpayers. If and when they decide to close, local communities are at risk from the direct job losses, and indirect effects from the loss of wages and taxes flowing into the local economy. A final community risk linked to the economics of the energy transition is related to underperforming or unsold facilities that may experience damages from hurricanes or other extreme weather events. Natural disasters can further reduce the economic viability of a facility and potentially expose their communities to hazards after a disaster.

A Reuters report linked refinery sales in the U.S. to a pandemic-related reduction in demand for gasoline and jet fuel alongside an accelerated shift among top auto makers to electric vehicles.¹⁰⁴ These assertions were supported by comments from the CEO of Phillips 66 who indicated that he believed, "the U.S. refining business in the future is going to be smaller, not bigger."¹⁰⁵ In the past two years, Louisiana has experienced two examples of this trend. In one case, a refinery in St. James Parish closed as "part of the company's global strategy to invest in a core set of uniquely integrated manufacturing sites that are strategically positioned for the transition to a low-carbon future."¹⁰⁶ And in the second case, a decision was made to convert a refinery in Plaquemines Parish to an oil terminal after a brief attempt to sell the facility and damages from Hurricane Ida.¹⁰⁷

Other types of future economic losses are possible as markets and investors make decisions about community capacity to address climate risk and about the ability of existing industrial facilities to minimize their carbon footprint. Investors, large financial institutions, and bond ratings agencies are beginning to consider risks posed by climate change in their decisions today. These determinations could have real impacts on a community's ability to finance infrastructure or a business's cost of raising capital.

CONCLUSION OF IMPACTS

Whether drawing from the 2018 National Climate Assessment, the IPCC, or other research around climate impacts, it is clear why the Task Force's advisory groups evaluated the Business As Usual scenario as unacceptable for Louisiana. According to their analysis, the risks of inaction were too high and maintaining the status quo was synonymous with falling behind. In their estimation, inaction would lead to worsening conditions for infrastructure, public health, cultural preservation, and the environment, and marginalized populations would continue to experience a disproportionate share of the damages. Additionally, the necessity of adapting to our changing environment would become more difficult with communities and ecosystems becoming less resilient. On the economic front, market pressures to reduce carbon in the

economy would continue to put pressure on the energy sector, capital markets, banking, and insurance, which would also be expected to produce long-term negative economic implications for the state.

Without special attention from policymakers, social and economic factors – such as community access to safe housing and transportation; experiences of racism, discrimination, and violence; or access to resources like educational and workforce opportunities – will invariably exacerbate climatic conditions and impacts.¹⁰⁸ Today's existing vulnerabilities and inequities need to remain in focus as the state copes with the consequences of a changing climate and implements this Action Plan to avert the worst impacts of climate change and grow an inclusive, low-carbon economy.

Not only were negative or very negative outcomes predicted by the Task Force's advisory groups along social, economic, and environmental objectives from a strategy of inaction, but these consequences were also expected to be accompanied by steadily rising GHG emissions. Modeling results from the Business As Usual scenario in the EPS tool indicate that Louisiana's GHG emissions would grow through 2050 with the 200 million metric tons of CO₂e emissions produced in 2020 growing to 261.9 million metric tons in 2050. This path of inaction can be predicted to perpetuate and worsen Louisiana's human, ecological, and economic vulnerabilities to climate change while increasing GHG emissions that will drive even more disasters. This downward spiral of impacts has potential to damage the state while simultaneously decreasing Louisiana's capacity to cope and adapt.

Realizing the Benefits of this Climate Action Plan

The dangers of inaction in the face of climate change in Louisiana are staggering. They threaten tremendous harm to our people, natural environment, and economy. The silver lining is that the state is joining a growing chorus of countries, subnational governments, and private corporations that are endeavoring to do their part to lower the GHG emissions that are driving these catastrophic changes to the Earth's atmosphere. While dangerous consequences from climate change are already manifesting here and around the world, these risks can be mitigated, and adaptation efforts can be more successful if the global community is successful in keeping global warming below 1.5°, or even 2°C, by the end of this century.¹⁰⁹ Every actor at every level has a role to play in achieving this global goal, including Louisiana.

To achieve the level of GHG mitigation needed to avert the worst impacts of climate change, an unprecedented investment of time, resources, and labor will be required across every sector of the economy. The International Energy Agency estimated that annual investments in clean energy alone would need to reach \$4 trillion by 2030 to meet next zero emissions targets.¹¹⁰ These investments will help avoid some of the negative impacts of climate change detailed in the previous section and also create an opportunity to reshape our state: to preserve and care for our abundant natural resources, to create thousands of good-paying jobs in an inclusive clean energy economy, to share more equitably the opportunities to create wealth in adaptation, and to lead by example for other states and communities.

This section will identify a few key areas of opportunity for Louisiana as it begins to take action to reduce the GHG emissions fueling global climate change.

REDUCING NET GHG EMISSIONS

Governor Edwards' Executive Order sets specific, ambitious goals for GHG emissions reduction for Louisiana. As seen in Figure 16 below, ***the strategies and actions in this plan can reach net zero by 2050 with aggressive and timely implementation, as well as support from the federal government.***

The short-term goals set by Governor Edwards are more challenging to meet. Achieving 26-28% reduction of 2005 GHG emissions by 2025 may have required past action. Similarly, while reaching the interim 2030 goal of 40-50% reduction will be difficult, accelerated effort in implementing strategies and actions, combined with near-term federal support, can get Louisiana close to this goal.

Louisiana's modeled pathway (Figure 16) shows the relative emissions reduction potential by EPS policies. Some policies are grouped together, such as in "Other Industry and Electricity Policies," which includes industrial energy efficiency standards, for example. The categories of "Buildings and Vehicles," "Methane Capture and Destruction," and "Forestry Policies" are similarly groupings of EPS tool policies. A full breakdown is available in the Water Institute's Technical Memorandum, available [online](#).

Louisiana's Modeled Pathway to Net Zero by 2050

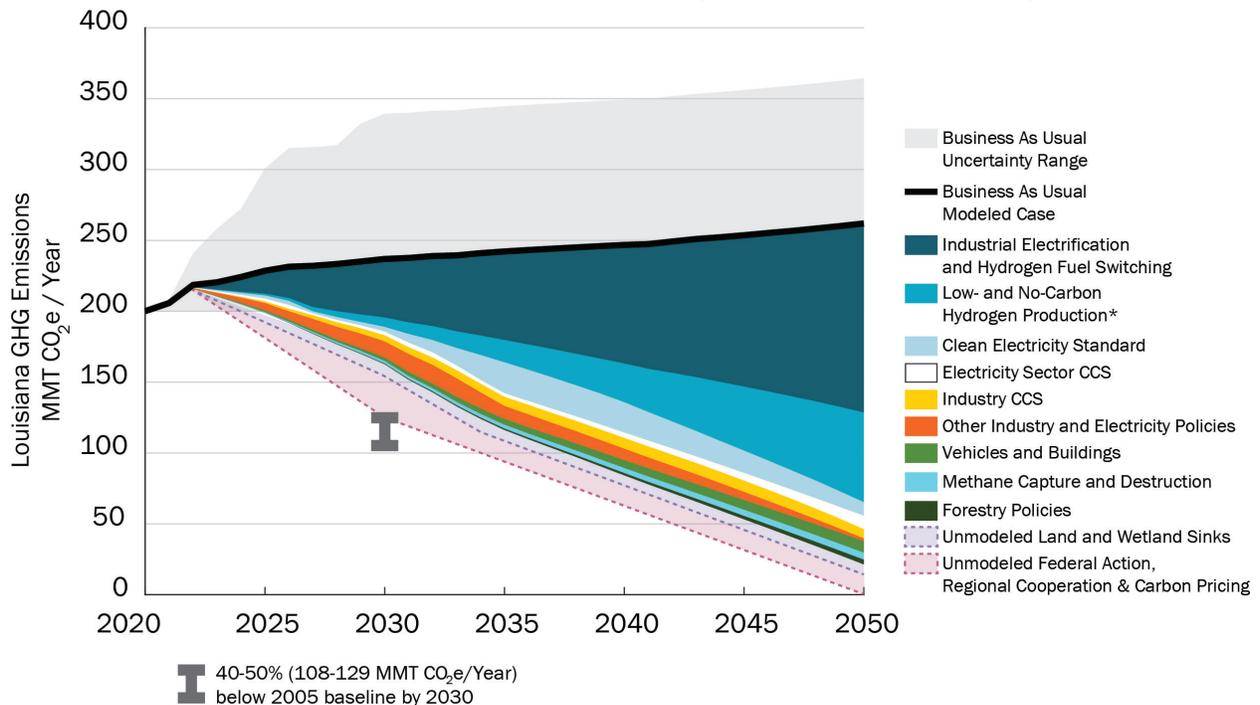


FIGURE 16. GHG EMISSIONS FOR LOUISIANA, 2020-2050. THE MODELLED GHG EMISSIONS REDUCTIONS ARE BASED ON THE STRATEGIES AND ACTIONS WITHIN THIS PLAN. TWO AREAS OF GHG EMISSION REDUCTION OUTSIDE THE MODEL ARE ALSO PROVIDED. INTERIM (2030) AND NET ZERO (2050) GOALS ARE INDICATED. THE BUSINESS AS USUAL UNCERTAINTY RANGE (GREY) IS ALSO PROVIDED FOR COMPARISON.

Three key policy pillars are needed for Louisiana to achieve net zero by 2050: renewable electricity generation, industrial electrification, and industrial fuel switching to low- and no-carbon hydrogen (Figure 17). Because two thirds of the state's emissions come from the industrial sector, abating these emissions through electrification is one of the strongest and most necessary actions for Louisiana. However, industrial facilities use enormous amounts of energy, and switching to electricity will increase the demand for electricity accordingly. If that electricity provided to newly electrified facilities is produced using fossil fuels, then the overall emissions are unchanged. Similarly, if industrial facilities can move their high-heat processes to hydrogen fuel, that hydrogen should be produced with no or minimal carbon emissions for the best chance at achieving net zero. If low- and no-carbon hydrogen is produced with electrolysis, the source of the electricity powering the production must be considered. All three of these challenge areas must be addressed in coordination with each other for maximum benefit, utilizing multiple policy mechanisms to accelerate implementation. If fully implemented, actions and strategies in this plan will set up the environment where Louisiana can pursue and coordinate implementation in all three areas, with potential to utilize federal policy pushes as well, such as the U.S. Department of Energy's Hydrogen Earthshot, aiming to achieve \$1 per kilogram low- and no-carbon hydrogen in one decade.¹¹¹

Louisiana's Key Climate Policy Pillars

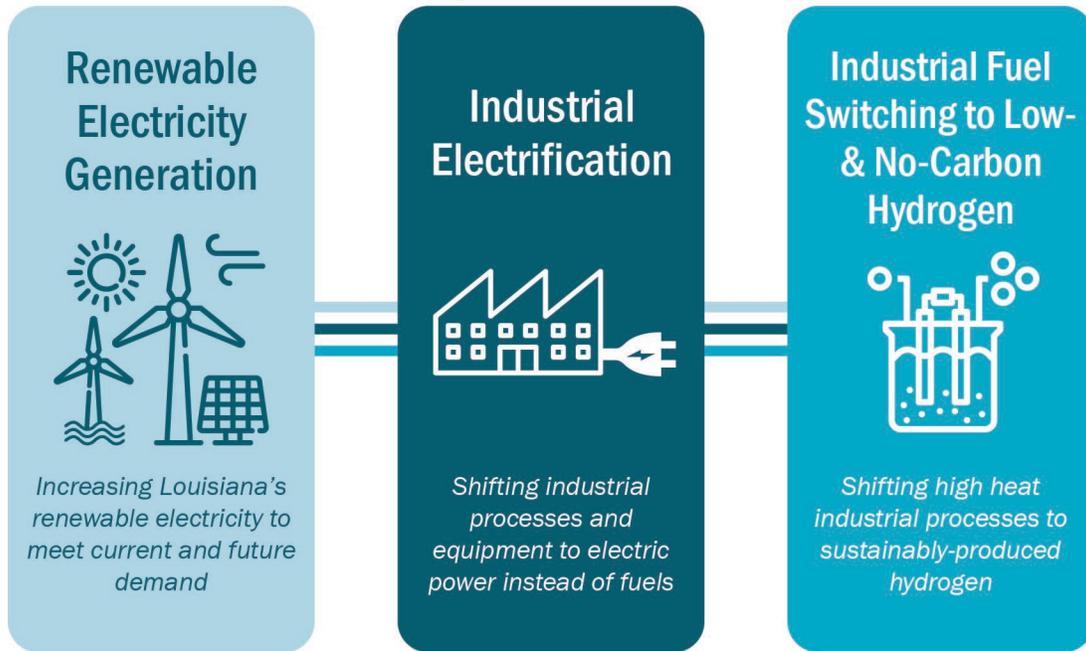


FIGURE 17: LOUISIANA'S THREE CLIMATE POLICY PILLARS MUST BE IMPLEMENTED TOGETHER TO REACH NET ZERO.

MODELING APPROACH AND LIMITATIONS

In the fall and winter of 2021, draft versions of the set of strategies and actions (called a “portfolio”) in this plan were modeled using the Louisiana EPS tool. While many policy-specific actions were either not able to be modeled or were not exact matches for the policies available in EPS, this tool provided insights into gaps in the portfolio and the timing of when high impact actions need to be pursued over the next 30 years. While the EPS tool, like any policy model, is inherently limited and cannot dictate how to implement these policies in a local context, it can and did help test approaches to emissions reduction. Through these modeling insights and other inputs mentioned in the Planning Process, the portfolio was revised and remodeled in an iterative process of policymaking. This finalized portfolio of strategies and actions embodies the lessons learned from two rounds of analysis in the EPS tool and two comment periods. For a full accounting of the consequence analyses and model settings used, please see the [technical memoranda](#) published by the Water Institute.

While no modeling can predict the future, particularly as far out as 2050, there are several specific uncertainties worth noting. First, the EPS tool treats Louisiana like an island for modeling purposes. In reality, there will be federal action on regulatory standards and other climate action, global changes in supply and demand of GHG-intensive products, regional changes in electricity production and transmission partnerships, and more. There are many ways in which these shifts alone could result in a much more aggressive trajectory for Louisiana's emissions than what is possible to be modeled in the Louisiana EPS. The potential for reduced emissions from these federal actions is represented in Figure 16 by the dotted pink line.

Second, the EPS tool does not provide the needed granularity to determine the capacity of natural lands and wetlands to serve as carbon sinks, as it is primarily an energy demand model. Louisiana's abundant natural lands and wetlands are important not only for carbon sequestration, but also for maintaining cultural heritage, coastal and agricultural economies, and reducing flood risk. These wetlands and natural lands have a strong

potential to sequester more carbon than can be modeled in the EPS tool, and are represented by the dotted purple line.

Finally, implementation of the strategies and actions of this plan can provide variable results for Louisiana and determine the state's ability to attain net zero by 2050. Louisiana must act aggressively to realize the emissions reduction potential shown in Figure 16 above and must quickly accelerate high-impact actions that can be implemented immediately. If coordination and cooperation are high, emissions could be reduced faster and more effectively. But if timelines are extended, standards are weakened, or enforcement is lacking, Louisiana's emissions trajectory will differ from the modeling presented above.

As technological advances are made and research gaps are closed with actionable science, Louisiana will be able to adaptively manage this plan to further pursue actions that are working to reduce emissions. The uncertainty found in the modeling should not be a deterrent, but rather a call to action, to cooperatively and aggressively implement the actions and strategies in this plan, and adaptively manage the plan for future reductions in emissions.



IMPROVING HEALTH AND QUALITY OF LIFE FOR RESIDENTS AND COMMUNITIES

The public health impacts associated with GHG emissions are tremendously costly for Louisiana in terms of lives and dollars, but addressing emissions can have short- and long-term benefits for human health and reduce risks brought on by climate change.¹¹² Similarly, the previous section discussed other detrimental factors of climate change on public health, but mitigation action can reduce those detrimental outcomes while producing new opportunities to improve people's lives. These issues were captured by the Task Force in three fundamental objectives related to maximizing the quality of and access to essential goods, services and infrastructure; improving health and safety; and preserving cultural heritage.

Multiple strategies and actions in Louisiana's Climate Plan contribute to neutral, positive, or very positive outcomes for public health and quality of life. As the modeling results from the Louisiana EPS tool show, **the Climate Action Plan can be expected to prevent over 1,800 premature deaths and nearly 55,000 asthma attacks per year.** These estimated improvements to public health can be attributed to actions in this plan related to pollution reduction, such as reducing the combustion of fossil fuels in the generation of electricity, at manufacturing facilities, and in transportation. As activities relying on the combustion of fossil fuels decrease, overall air quality improves, but the improvements are most pronounced in communities nearest to where the emissions originate. Addressing methane emissions can produce its own benefits to health, and utilizing CCUS requires the use of systems that are designed to remove sulfur dioxide, particulate matter, nitrogen dioxide, sulfur trioxide, and many metals from the CO₂e stream.¹¹³ These findings are supported by the 2018 National Climate Assessment that found many of the processes that produce GHG emissions also release hundreds of other air pollutants that can cause serious illness and premature death. Because of this relationship, **cutting GHG emissions to reduce the impacts of climate change can also mitigate other harmful impacts on human health.**¹¹⁴

Other climate actions can indirectly benefit public health and quality of life. For example, monitoring programs for GHG emissions can be used to track other types of pollutants; enhancing the safe access to transportation options promotes exercise and improved health; and both rural and urban users have greater access to goods and services when public transport services improve. Further, reducing electric utility costs through energy

efficiency improvements can have measurable benefits to a family's bottom line as can the successful development of a more inclusive and resilient economy.



CREATING A MORE EQUITABLE SOCIETY

In Louisiana and around the world, **climate change and GHG emissions disproportionately impact low-income, Black, and Indigenous communities.** These communities are the least responsible for emissions but bear the highest costs in health and environmental degradation. In addition to their own inherent value as people of the state of Louisiana and the price they have paid through past inequities, these communities hold tremendous knowledge of the state's lands, waters, wildlife, and environment and are needed leaders in the implementation of GHG-reducing actions. Representation and process integration are the foundation for equitable opportunity and outcomes. From the start of the Climate Action Plan development process, the Task Force and supporting members were chosen with this reality in mind, and open discussion of equity considerations were fostered during public meetings. In addition, an equity advisory group was formed to specifically consider the potential outcomes of policy proposals for advancing or negating progress toward a more equitable society. The equity advisory group developed a definition of climate equity and evaluated the potential impact of climate actions on the three equity-centered fundamental objectives aimed at reducing disparities, addressing historic and structural inequities, and increasing participation for Black, low-income, historically marginalized, and Indigenous peoples across Louisiana.

With these objectives as guideposts, the Task Force developed strategies and actions with climate equity at the forefront. Representation and transparent processes must be continued to help inform, design, and implement climate actions that offer tangible benefits to under-resourced communities and lead the vision and work of repairing our environment and building an equitable and sustainable clean energy future. Importantly, this work also produces positive benefits for everyone, including communities that have been historically marginalized. For example, modernizing public transit and providing greater access to broadband internet can provide particular tangible benefits to underserved communities. Further, utilizing traditional ecological knowledge to conserve and restore the environment is an avenue for shared knowledge and benefit across communities.

Without intentional policy design, however, Louisiana's actions to build a new, low-carbon economy will reinforce and replicate the stratification and divisions present today. Addressing these present and future burdens experienced by people of color, particularly Black and Indigenous peoples, must recognize the historical systems of discrimination and oppression that directly and indirectly contribute to these social vulnerabilities, to environmental hazards, and climate change. For example, addressing industrial GHG emissions in Louisiana's industrial corridor along the Mississippi River should recognize the history of enslavement and disenfranchisement of Black people and the prior land use serving as plantations. Effective policymaking should further seek opportunities to remedy disproportionate impacts of environmental and climate hazards on historically marginalized peoples and communities.

While reducing GHG emissions can create positive co-benefits for historically marginalized communities, access to these technologies or programs is of critical importance. Vastly expanding distributed solar energy or building the infrastructure for alternative vehicles presents a tremendous opportunity to utilize local, minority-owned businesses and employ disadvantaged workers, but these goals must be established and tracked in implementation. Similarly, distributed renewable energy generation provides customers with greater control over their energy supply, can reduce energy costs, and can promote opportunities to establish community solar access. Further, careful design and execution of energy efficiency, urban green space, and increased outdoor access can provide relief from the urban heat island effect. This intentionality can also ensure other actions reach the most in-need and historically marginalized residents first.

By deliberately considering climate equity at the forefront, Louisiana's Climate Action Plan **aims to ensure that the costs of mitigation or adaptation actions do not to fall unequally on the already disadvantaged, and that the opportunity to advance climate mitigation and adaptation addresses long-standing inequities while promoting new opportunities for a more inclusive, low-carbon economy in the future.**



STRENGTHENING THE ECONOMY AND WORKFORCE

Much of the United States and the world are moving towards carbon neutrality, which will affect Louisiana's economy. This transition to a low-carbon economy creates the need for rapid new developments in technology and carbon-reduction solutions, but there is clear demand and willingness to make significant investments in low- and no-carbon energy and industry. Although the global transition to a low-carbon economy will be challenging for Louisiana given the large role carbon-intensive industries have played historically for the state, careful action now can position Louisiana to capitalize on these new investment and economic opportunities. **The Climate Action Plan recognizes this reality and gives Louisiana the chance to address challenges and opportunities of a changing economy head on, while growing new businesses and industries to meet the needs of a global low-carbon economy.**

The Task Force has held up economic growth and support for Louisiana workers as two fundamental objectives in reducing Louisiana GHG emissions. In recent decades, Louisiana has found economic benefits from aggressively taking action against the coastal crisis.¹¹⁵ Just as investment in the state's coastal program has created expertise for Louisiana businesses to share around the world, state investment and leadership in the work of climate mitigation could also provide significant economic opportunities for the people of the state. Prestigious international studies have indicated that creating and mobilizing new technologies in clean energy, batteries, hydrogen electrolysis, carbon capture, and direct air capture will create millions of new jobs globally.¹¹⁶ And when assessing policies associated with attaining net zero for Louisiana in the EPS tool, **significant investments in new hydrogen equipment, solar projects, electric vehicle chargers, and other infrastructure are estimated to produce around 111,000 jobs in 2030 and 263,000 jobs in 2050.**¹¹⁷

One area of considerable job growth and economic opportunity is renewable energy, which the Climate Action Plan is designed to catalyze with actions that promote job training and investment that can overall benefit the workforce. A dramatic drop in costs for solar energy and onshore wind has urged investment in renewable power across the country. Interest in solar development is growing inside the state¹¹⁸ and Louisiana is working with the Bureau of Ocean Energy Management (BOEM) to complete the necessary steps to hold a lease sale in the Gulf of Mexico for offshore wind power production. According to the National Renewable Energy Laboratory, Louisiana ranks as the fourth highest state in the nation for offshore wind technical potential,¹¹⁹ with potential for a single offshore wind project to create 4,470 construction jobs and 150 full-time operations jobs.¹²⁰ 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.¹²¹

The Climate Action Plan is also designed to build on and expand its traditional industrial and manufacturing strengths while providing lower-carbon products and processes that can better meet changing demands of the market. In 2021 alone, major investments have been planned for the state that consist of new or expanded facilities for production of biofuels, renewable diesel, and hydrogen and liquefied natural gas with carbon capture.¹²²

This slate of announcements verifies studies and models showing the economic potential associated with this type of investment for Louisiana. EPS tool analysis indicates that the highest potential for job creation in Louisiana will be driven by industrial fuel switching.¹²³ A study by the Rhodium Group estimates that jobs in Louisiana associated with capital investments in carbon capture could produce between 2,700 and 4,000 total jobs per year on average over the next fifteen years and an additional 1,700 to 2,500 jobs per year to operate and complete retrofits.¹²⁴ Not only do these actions create jobs through retrofitting and new facilities construction, but they also help pilot technologies and approaches that can be used on similar facilities around the country and the world with Louisiana experience at the center.

The Climate Action Plan also supports activities like the plugging of orphaned wells and addressing methane leakage that can reduce economic losses for companies while creating jobs and preventing the release of GHGs.¹²⁵ Procurement changes in Louisiana to preference low-carbon materials also create demand for low-carbon products that encourage and reward changes to manufacturing processes and create a market for emerging products. Procurement changes also support the production of Louisiana agriculture and forestry products.

Other actions also encourage investment and economic opportunities more broadly. Improvements to public transportation for urban and rural residents, rail connections between major cities, and the expansion of broadband internet access across the state all reduce GHG emissions while connecting workers to opportunities, promoting economic activity and commerce, and bringing greater access to goods and services.

Leaders and new partnerships are already laying the groundwork for an inclusive, low-carbon economy. In December, 2021, The Greater New Orleans Development Foundation received a competitive \$500,000 grant from the U.S. Economic Development Administration's Build Back Better Regional Challenge to develop a green hydrogen energy cluster to decarbonize the south Louisiana industrial corridor. Partnering across government, academic institutions, businesses, nonprofits, and economic development organizations, the H₂theFuture plan includes specialized worker training, infrastructure investment in green hydrogen, CCUS, naval engineering, and the creation of a clean energy research center and startup incubator. This proposal also seeks to provide benefits to energy workers, rural communities, and historically marginalized populations while protecting the environment and transforming the economy.¹²⁶

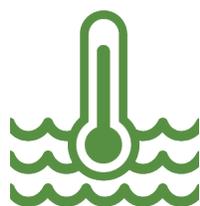


CONSERVING NATURAL RESOURCES & PROTECTING THE ENVIRONMENT

Reduction of net GHG emissions can provide numerous environmental benefits, including both direct benefits through natural areas that sequester carbon and indirect benefits realized through air quality improvement. According to the 2021 GHG Inventory, **Louisiana's forested areas "are a considerable carbon sink"** with wetlands – assessed for the first time in this inventory – also supporting carbon sequestration. Despite severe losses to wetland areas caused by the 2005 hurricane season, **Louisiana's land-based carbon sequestration has increased since 2012, contributing to an annual reduction of 35 MMT CO₂e, which is comparable to the entire power generation sector.**¹²⁷

Natural lands and wetlands are much more than a carbon sink. They are part of the state's cultural heritage, particularly for Indigenous communities, so efforts to preserve natural lands produce benefits across the Task Force's fundamental objectives. Broad support for the conservation of Louisiana's natural resources and environmental protection was expressed across the wide array of stakeholders in Louisiana's climate planning process.

Strategies and actions addressing land use and development can preserve habitats and open spaces while also supporting floodplain management, water quality improvements, healthier lifestyles, and higher quality of life. Agricultural best practices can reduce nutrient runoff, improve water quality, and lead to lower incidences of harmful algal blooms. They can yield healthier soils, greater sustainability, and higher productivity for local ecosystems and provide additional benefits to public health and safety. Protecting and restoring coastal ecosystems can further support adaptation efforts by enhancing community resilience to the threats of sea level rise and severe storms. Preserving the coast also helps protect many significant economic engines for Louisiana including waterborne commerce, commercial fishing, energy production and distribution, and more. Healthy ecosystems also support fishing and hunting resources that are available to all but can be particularly important for some Indigenous communities. Lastly, when strategic investments in green infrastructure and the urban tree canopy are deployed, the urban heat island effect can be reduced, providing access to green space and lowering energy demand.



ADAPTING TO A CHANGING CLIMATE

Climate adaptation is an immediate need in Louisiana. Impacts from climate change are already being felt across our state with the most dramatic occurring along our coast. According to the 2021 IPCC report, many of these changes are already irreversible for the foreseeable future.¹²⁸ Taking immediate steps to reduce GHG emissions is a crucial step to avoiding even more severe adaptation challenges in the coming decades. When possible, these mitigation steps can also be used to build resilience against current and future challenges. Two fundamental objectives of the Task Force focus on adapting to a changing climate by increasing the resilience of the built and the natural environments, as well as communities, to the impacts of climate change.

In many cases, **efforts to reduce GHG emissions in this plan and adaptation measures go hand-in-hand.** This plan supports enhanced access to distributed solar resources, energy storage, the development of microgrids, and improvements to energy efficiency that can all promote community resilience. Improving energy efficiency reduces energy demand and emissions and can also make way for other gains that improve resilience to extreme weather events. In New Orleans, the state's first net-zero apartment complex features energy efficiency and solar power that help offset costs for the building's residents and battery storage that provided power during Hurricane Zeta, winter storm Uri, and in the aftermath of Hurricane Ida.¹²⁹ Hurricane Ida has also spawned other efforts to provide renewable energy and storage to communities most impacted by the hurricane specifically in ways that also support culture, quality of life, and community.¹³⁰

The Climate Action Plan also calls for coordinated land use planning to reduce sprawl and support healthy and resilient communities. Smart land use planning, compact development, and model ordinances, supported by a statewide, coordinating authority, can help communities anticipate and reduce the potential for negative impacts from extreme weather events. Finally, as seen in the previous section, restoring and protecting Louisiana's coastal wetlands both preserve valuable carbon sinks and maintain a natural buffer between the Gulf of Mexico, tropical weather events, and communities.



MANAGING FOR SHORT- AND LONG-TERM SUCCESS

For GHG emissions reductions to occur – and for any of the other benefits to the people of Louisiana to be realized – the Climate Action Plan must be successful in the short- and long-term. In practice, that means that the **strategies and actions must be implemented in a timely fashion, effective at reducing GHG emissions, adaptable to new technologies and approaches as they become available, and rooted in public trust for sustained buy-in and support.** In addition to integrating short- and long-term success into actions, two sections of the portfolio, *Collaboration and Partnerships to Ensure Successful Implementation* and *Accountability and Adaptability to Ensure Lasting Success*, are explicitly designed to advance these fundamental objectives.

Though this set of strategies and actions outlines a pathway to net zero, this effort requires decades of action and is highly dependent on maximizing these short- and long-term objectives. The portfolio includes immediate actions to build public trust and address sectors that account for a large fraction of Louisiana’s emissions, such as energy efficiency and conservation. These actions are paired with longer-term actions, such as at-scale deployment of green hydrogen, to set long-term ambition.

Accountability and transparency, alongside long-term durability and effectiveness, are also vital for building public confidence in the Climate Action Plan. For this reason, GHG monitoring actions and regular plan updates are explicitly called out to ensure that actions and strategies can be adjusted as needed if they are not producing the expected outcomes or as new technology is understood to catalyze further success.

Finally, the Climate Action Plan was developed recognizing that partnerships and collaboration are critical for short- and long-term success as well as for enabling positive change for the people, economy, and environment of Louisiana. For example, some actions enable education, research, and private sector innovation to attain strategies that require new technology development and deployment at scale. Additionally, where possible, actions highlight opportunities for federal partnerships and funding, particularly through the Infrastructure Investment and Jobs Act of 2021. Deliberate alignment across state agencies, local governments, and communities can ensure new policies, incentives, and regulations work together and are as effective as possible at reducing net GHGs and at providing co-benefits.

Climate Strategies and Actions

Meeting the scale of the challenge to reduce Louisiana’s GHG emissions to net zero by 2050, avoid the worst impacts of climate change, and realize social, economic, environmental, equity, and resilience co-benefits for the state requires immediate, aggressive, and comprehensive action. This plan consists of **28 strategies** (high-level approaches) and **84 actions** (practical and implementable policy steps) focused on the following areas critical to a decarbonized future for Louisiana:

- Clean Energy Transition
- Industrial Decarbonization
- Actively Managed Methane Emissions
- Transportation, Development, and the Built Environment
- Natural and Working Lands and Wetlands
- An Inclusive, Low-Carbon Economy
- Collaboration and Partnership to Ensure Successful Implementation
- Accountability and Adaptability to Ensure Lasting Success



The strategies and actions detailed in the following section were developed with expert guidance from sector committees, as well as ideas and recommendations shared by Task Force and advisory group members and the public. This portfolio of strategies and actions has undergone rigorous evaluation and iterative improvement – including two-rounds of analysis of anticipated GHG emissions reductions using the EPS tool, a survey to elicit the expertise of advisory group members in forecasting the anticipated impacts to the other fundamental objectives, and multiple opportunities for review and comment by the Task Force and the public. (See “Planning Timeline” for more detail.)

Reaching net zero will require concrete action to reduce GHG emissions across all sectors of Louisiana’s economy. However, the overwhelming contribution of emissions from the industrial sector, which accounts for 66% of overall state emissions, provides a unique challenge and requires Louisiana to chart a path forward that looks different in many ways from other states.

Louisiana’s ultimate success will hinge upon a holistic and coordinated approach to these three interconnected policy pillars: **renewable electricity generation, industrial electrification, and industrial fuel switching to low- and no-carbon hydrogen** (Figure 17). Effectively reducing industrial emissions will require collaboration, investment, appropriate sequencing, and expedient implementation of Clean Energy Transition and Industrial Decarbonization actions. The imperative of implementing those high-impact actions does not take away from actions in other sections of the plan, which also require immediate implementation to realize emission reductions and other benefits for Louisiana.

Louisiana can attain net zero GHG emissions by 2050 by fully and aggressively implementing the strategies and actions set forth in this plan. Actions focused on accountability will ensure responsible, transparent, and timely implementation. Actions focused on adaptive management will ensure that ongoing implementation of this Climate Action Plan and subsequent iterations of the plan are well-informed by emerging data and technologies, forthcoming understanding of impacts, and innovation in and implementation of monitoring. An implementation matrix (Table 2) is included following the full list of strategies and actions.

The strategies and actions in this plan have been iteratively crafted and improved upon in an effort to balance the sometimes-diverging priorities and perspective of Task Force members and stakeholders while also achieving the scale and ambition to reach net-zero GHG emissions by 2050 in a manner that provides benefits for Louisiana’s people, economy, and environment. Reaching consensus of Task Force members on an achieve the vision and goals set forth by Governor Edwards was a sought-after priority. However, the Task Force has also recognized the need to enable an individual member to state their formal dissent to a specific action within this plan, while still supporting the plan overall. Where there is formal dissent to a specific action, the reason(s) for dissent along with the name(s) of dissenting Task Force members are included below the action.



Clean Energy Transition

Electricity is the backbone of the economy and a requirement for high quality of life – powering, heating, and cooling homes, businesses, information systems, infrastructure, and industrial facilities of every size. As the world moves to reduce GHG emissions from the economy, clean and reliable electricity will become even more important as the built environment, transportation systems, and large industrial users all move away from the combustion of fossil fuels and onto the electric grid. To make the most of this transition while meeting GHG reduction goals and the fundamental objectives, Louisiana should support this transition by working to ensure that the electricity supplying all of these activities is clean. This section contains two major strategies: one targeting the grid and the utilities and the other targeting end users.

- **STRATEGY 1: Shift towards a clean, renewable, and resilient power grid**
- **STRATEGY 2: Increase access to and deployment of distributed energy resources**

STRATEGY 1. Shift towards a clean, renewable, and resilient power grid

The transformation of our electric grid to clean and renewable energy sources is a fundamental building block for meeting Louisiana’s climate action goals. Here, “clean” is defined as energy generation that results in emission of little to zero GHGs (e.g., nuclear, biowaste, and natural gas with carbon capture) and “renewable” is defined as naturally replenishing energy sources with zero GHG emissions (e.g., solar, wind, hydropower, and geothermal). As we shift energy sources to electricity used by Louisiana’s industries, vehicles, buildings, and more, overall demand for electricity will increase, and the source of that electricity becomes increasingly important. Actions under this strategy are directed at the electric grid and power generation facilities, including the utilities that aim to reliably meet the rapidly increasing demands of an electrified economy. Here, actions are aimed at increasing clean and renewable sources of power generation, while also increasing the reliability and resilience of the electric grid.

Highlights of how this strategy can realize benefits for Louisiana:

- *Public Health:* Generating electricity from increasingly renewable sources can improve air quality and reduce negative public health impacts to communities living near power plants.
- *Economy and Jobs:* Investment in local renewable power production can lead to the creation of new jobs and economic opportunity for Louisianans, particularly with accompanying strategies to support local job training and economic development.
- *Community Resilience:* Updating and modernizing the electric grid may reduce downtime due to weather or other disruptions, thus supporting communities by improving electric grid dependability.

ACTION 1.1 Adopt a Renewable and Clean Portfolio Standard and create a statewide market for Renewable Energy Certificates

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities	Establish a RCPS	100% renewable or clean by 2035, at least 80% from renewable sources

A Renewable and Clean Portfolio Standard (RCPS) is a law or regulation that reduces the GHG emissions associated with electricity generation. Louisiana’s RCPS would require electricity used in the state to be generated from an increasing percentage of renewable or clean sources with clear guidelines for how combined heat and power generation should be considered. To qualify as clean energy, power generation facilities reliant on carbon capture technology should capture at least 90% of facility emissions, which is currently a typical target for CCS projects, but the capture efficiency requirement should increase as the technology improves and costs decline over time. Louisiana’s RCPS should align with proposed federal requirements that 100% of electricity generation be derived from renewable or clean resources by 2035, with at least 80% of total generation from renewable sources by 2050. The RCPS should also encourage improvements in efficiency, be flexible enough to account for disruptions like major hurricanes, and not overburden customers with additional costs or reduced reliability, while still aggressively pursuing reductions in GHG emissions. To reduce generation from unabated natural gas peaker plants, demand response should also be included as a mechanism to achieve targets.

To support the RCPS, Louisiana should also establish a statewide market or join an existing market for Renewable Energy Certificates (RECs) available to electric utilities, which are market-based instruments that represent the property rights to the environmental, social, and other non-power attributes of renewable electricity generation. RECs play an important role in accounting, tracking, and assigning ownership to renewable electricity generation and use. The REC value and market would be underpinned by requiring utilities to purchase RECs as an alternate mechanism for meeting the RCPS. This action proposes engagement of the Louisiana Public Service Commission (PSC), utilities, and stakeholders to develop and implement a RCPS and a statewide market for RECs. **(Associated Submitted Action Proposals: 16, 56, 119, 145, 152, 162, 172)**

DISSENTING VIEWS: Two members objected to this action, with one opposition to the inclusion of 20% non-renewable clean power in the RCPS and one opposition to the 20% limitation of non-renewable clean power in the RCPS. DISSENTERS: Pichon Battle, Bowser.

ACTION 1.2 Improve electric generation resource planning and procurement to streamline the retirement and replacement of energy resources

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / Governor’s Office	Engage in Entergy Louisiana, LLC and Cleco Power LLC IRP Process in 2022	Encourage generation of renewable power

Integrated Resource Plans, or IRPs, are how utilities plan for future electric generation needs. IRPs identify future needs and different types of resources a utility can use to reliably serve customers in Louisiana. Over the next decade, Louisiana’s electric utilities will be undergoing a rapid transition from predominantly fossil fuel generation to a low-carbon power generation mix driven in large part by deploying more renewable resources, while making other investments to ensure grid reliability. Resource management and planning should also consider that all assets, some of which have 30-year lifespans, will likely need to be low- or no-carbon by 2050, further emphasizing the importance of planning now. Where appropriate, the electric utility industry should also complement planning for large base load power stations with smaller, more distributed generation facilities strategically located to enhance grid reliability and achieve emissions reductions.* This action proposes working with the PSC to evolve the IRP and regulatory process to: 1) accommodate the dynamic nature of the energy transition; 2) evaluate the costs and benefits of operating older generation facilities (including impacts to affordability); 3) examine the risk of early retirement or substantial retrofitting of new fossil fuel-based generation facilities due to future federal climate action; 4) expedite renewable energy procurement in a way that will improve competition, reduce ratepayer costs, and improve Louisiana’s air quality, and (5) better incorporate distributed energy resources. **(Associated Submitted Action Proposals: 112, 114, 116, 117)**

**Retirement of the Dolet Hills Power Station*
 When the **Dolet Hills power station**, Louisiana’s first coal-fired power plant, was closed five years ahead of schedule in December 2021. The retirement was projected to save utility customers between \$9 and \$15 each month because of the lower cost of more efficient and cleaner power generation that would take its place.

DISSENTING VIEW: One member objected to this action, citing disagreement with the inclusion of “low-carbon power generation” and subsequent perpetuation of fossil fuel use and deployment of CCUS. DISSENTER: Pichon Battle.

ACTION 1.3 Strategically plan for the development of offshore wind power

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / industry / LED / DNR / universities	Prioritize offshore wind strategic planning for outreach, workforce, and impacts assessments	5 gigawatts of offshore wind generation by 2035

Given the availability of wind power as a potential energy resource from the Gulf of Mexico, Louisiana’s advantage as a strong offshore energy producing state, and the economic development opportunity that wind power presents, Louisiana should continue collaboration across sectors and develop plans for the accelerated implementation of offshore wind power generation. This action proposes enactment of an offshore wind power generation goal of 5 gigawatts by 2035. This goal requires strategic collaboration across Louisiana state agencies and the federal government, transmission planning agencies, energy regulators, utilities, and the private sector to take additional steps to advance the development of offshore wind power generation. To spur large-scale, responsible development of this energy resource, efforts should prioritize early and repeated stakeholder outreach, strategic planning for anticipated transmission and workforce needs, and improving the understanding of potential environmental and social impacts and opportunities to avoid, address, or capitalize on them. **(Associated Submitted Action Proposals: 61, 101)**

ACTION 1.4 Establish utility green tariffs

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities	Establish tariff offerings for renewable and clean power	Encourage purchasing of renewable power

Green tariffs are optional programs offered by utilities that allow customers to purchase renewable or clean power from specific projects through a special utility tariff rate (fee structure). Opting to pay a green tariff for renewable or clean energy helps customers meet sustainability targets and helps promote the development of additional renewable or clean energy generation projects sooner. To maximize market participation and consumer choice, a green tariff program should provide separate renewable power and clean power tariff options. This action would include utilities working with the PSC to establish tariff offerings for renewable and/or clean power for residential, commercial, industrial, non-profit, and governmental customers through a Utility Green Tariffs program. **(Associated Submitted Action Proposals: 111, 118, 175)**

DISSENTING VIEW: One member objected to this action, citing concern over the inclusion of non-renewable clean energy and subsequent perpetuation of fossil fuel use and deployment of CCUS. DISSENTER: Pichon Battle.

ACTION 1.5 Explore the role of Power Purchase Agreements and deregulating power generation in the energy transition

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / industry	Understand implications of deregulated power generation	Encourage generation of renewable power

Power Purchase Agreements (PPAs) are long-term contracts between customers and renewable energy developers that allow the purchase of renewable energy at certain volumes and prices. PPAs connect renewable energy developers, who design, permit, finance, install, operate, maintain, and own a renewable energy project with an electricity customer(s). Basic co-benefits of PPAs are two-fold: 1) customers that enter PPAs can avoid the up-front capital costs of installing a renewable energy system while still increasing access to renewable power; and 2) developers get revenue certainty that helps to finance the renewable energy project. This action requests the PSC to further review the benefits and costs of allowing PPAs and deregulated power generation as mechanisms to efficiently and expeditiously add renewable energy generation to the grid and make no-carbon electricity more accessible to industrial facilities. Following this review, the PSC should understand and consider potential market-based mechanisms for effective competition in a deregulated environment. **(Associated Submitted Action Proposals: 11, 47, 144)**

DISSENTING VIEWS: Two members objected to this action. One member cited concerns about electric grid reliability in a deregulated environment. The other member supported this action but objected to limiting PPAs to renewable power and not including non-renewable clean power generation. DISSENTERS: Bourg, Bowser.

ACTION 1.6 Develop a regional long-range transmission infrastructure plan to meet Louisiana's transmission goal

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / MISO / SPP / DNR	Assess infrastructure needs across the state to plan for renewable connectivity	30% increase in grid infrastructure by 2030 and 100% increase by 2050

Long-range transmission planning, which seeks to optimize regional transmission infrastructure investments over a 20- to-30-year planning horizon, ensures that the electric grid can accommodate the changes occurring in the energy sector as Louisiana transitions to lower GHG-emitting sources (e.g., electrification, the growth of distributed generation, the retirement of aging or inefficient generation, addition of offshore wind, development of reliable and affordable energy storage) and strives to maintain affordability and reliable service during extreme weather events. Stronger regional transmission networks also allow for the optimized flow of power to and from producers within regions. The gap between today's renewable electricity generation and availability and targets for 2035 highlights the importance of regional transmission infrastructure and planning. This action recommends the Department of Natural Resources (DNR) Energy Office join with the PSC, MISO, and SPP* to develop a strategic plan for the buildout of Louisiana's grid and transmission infrastructure to meet a near-term goal of a 30% increase of capacity in MW-miles by 2030 and a long-term goal of 100% increase of capacity in MW-miles by 2050. This action should begin in the short-term with an understanding

**Regional Transmission Mechanisms*

*Louisiana is an active participant in two regional transmission organizations, the **Midcontinent Independent System Operator (MISO)** and the **Southwest Power Pool (SPP)**, through the PSC, where states collaborate on and share infrastructure to support regional transmission.*

of where and how much electricity is most needed across the state, with particular attention to industrial clusters and power facilities. From this baseline, the PSC, MISO, and SPP can plan for and ensure connectivity across the MISO and SPP infrastructure that supports Louisiana’s renewable power needs, emphasized in the “Clean Energy Transition” and “Industrial Decarbonization” Sections. **(Associated Submitted Action Proposals: 122, 123, 165)**

DISSENTING VIEW: One member objected to this action, expressing concern that a specific transmission expansion goal is a premature and should be set after further study. DISSENTER: Bowser.

ACTION 1.7 Adopt and develop measures to meet an energy storage target

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / DNR Office of Energy	Solicit funds for energy storage pilot projects	1000 megawatts of energy storage by 2030

Energy storage is a necessary component of Louisiana’s energy transition infrastructure to ensure grid reliability and resilience and to help meet energy demand. Storage enables larger quantities of and greater reliance on renewable energy sources by reducing the intermittency problems of solar and wind power generation. Storage reserves electricity generated by renewables when the sun is shining or wind is blowing to be “dispatched” later when those sources are not producing. Many states, including Virginia and Nevada, have enacted energy storage targets and a streamlined regulatory environment that incentivize energy storage. This action proposes the PSC evaluate the role that energy storage can play in increasing reliability and resilience and enabling the deployment of renewable energy. This action proposes working with utilities and DNR’s State Energy Office to develop energy storage pilot projects and consider a goal of 1000 megawatts by 2030 and setting a higher target for 2050 to ensure continued progress towards a reliable, clean power grid. **(Associated Submitted Action Proposals: 174)**

ACTION 1.8 Publish “climate rankings” for electric utilities within the statewide GHG monitoring program to increase public awareness, transparency, and accountability

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / utilities / DEQ	Assess gaps and synthesize existing data on generation	Encourage generation of renewable power

Customers of electric utilities should have easy, understandable access to information about where and how their electricity is produced and how the mixture of energy production sources changes over time. This action proposes engaging with the PSC, regional transmission organizations, the Department of Environmental Quality (DEQ), and utilities to develop a regularly updated “report card” that produces valid data on the diversity of a utility’s generation portfolio. This should include load, mixture of energy production sources, and renewables forecasting, as well as carbon dioxide (CO₂) and other emissions, to incorporate into DEQ’s statewide GHG monitoring program. Much of this data is available, so actions to compile and synthesize data should begin immediately, noting any gaps in monitoring data and capacity. DEQ should work with utilities to fill data gaps and ensure the report card is comprehensive. Updates to this report card should be completed every year to incentivize, track, and recognize decarbonization progress by utilities. In the medium and long term, a climate scorecard should be developed to compare data and trends across utilities around the state and the nation, develop decarbonization challenges across utilities, and promote leadership within the state. **(Associated Submitted Action Proposals: 108, 115)**

STRATEGY 2. Increase access to and deployment of distributed energy resources

In addition to utility-scale actions, investments in distributed renewable resources—local generation of electricity at or near where it will be used—can accelerate the deployment of renewable technologies and projects in Louisiana. Actions under this strategy provide a range of mechanisms to support more affordable access to and financing for distributed renewable resources for residential, community-based, commercial, institutional, and industrial consumers.

Highlights of how this strategy can realize benefits for Louisiana:

- *Economy and Jobs:* Investments in distributed renewable projects can support the growth of local businesses and jobs within the solar, wind, and other renewable industries in Louisiana.
- *Energy Affordability:* Distributed renewable generation provides an opportunity for energy customers to control their energy supply, reduce their energy costs, and in some cases profit from their surplus energy production. Additional attention in policy design and implementation of actions will be necessary to ensure that programs are accessible to low-income residents, including renters. Models like community-owned solar can expand access to the benefits of distributed renewable projects for all users.
- *Community Resilience:* Local renewable electricity generation, when combined with storage, can provide backup power to local businesses, residents, and community facilities during a grid outage, such as after a storm. This can ensure the continued provision of essential services to communities.
- *Protecting the Environment:* Distributed energy generation reduces the power generation needed from large-scale solar or wind farms, potentially reducing the amount of land (or offshore acreage) that would need to be converted from natural areas.

ACTION 2.1 Authorize tax incentives for residential, commercial, and community-based renewable energy installation and storage

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature	Reinstate incentives for renewable installation and storage	Encourage purchasing of renewable power

Financial incentives for renewable energy installation and storage at household and commercial scales, particularly solar (electricity and water heating), are important for ensuring equitable access to renewable energy across Louisiana. Similar tax incentives have been employed in the past, and this action would reinstate and update that program to provide a tax rebate (e.g., 30% or number of kW installed) based on the cost of installation with a cap per household/project and an annual budget limit for the state. The program would prioritize low-income households. This action would also work to implement tax incentives or credits to promote and support community-owned solar installations. Community solar refers to local solar facilities shared by multiple community subscribers who receive credit on their electricity bills for their share of the power produced. The primary purpose of community solar is to allow members of a community the opportunity to share the benefits of solar power even if they cannot or prefer not to install solar panels on their property (e.g., renters or those with homes or roofs unsuitable for solar). If this action is implemented, it will be important to ensure that this program is accessible for low- and moderate-income homeowners through mechanisms such as “carve-outs,” availability for community solar and other non-ownership models, pairing with other incentives, targeted messaging, and outreach. **(Associated Submitted Action Proposals: 113, 147, 126)**

ACTION 2.2 Review net metering and crediting policies for on-site and community solar energy system owners and participants

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC	Review net metering policies	Account for value of distributed solar energy generation

Many on-site (e.g., rooftop) solar energy system owners produce more electricity than they consume. Billing mechanisms can provide these customers with credit for the energy they generate or add to the grid. Virtual net metering applies similarly to the electricity bills of subscribers of community solar projects. Net metering helps financially justify the cost of solar energy system installation thereby increasing demand for solar energy and creating jobs for those in the solar industry. In PSC jurisdictions, owners of systems installed prior to 2020 are grandfathered into a full retail credit net-metering schedule until the end of 2034, while owners of systems installed in or after 2020 only receive credit for the utility’s “avoided cost” when selling excess energy back to the grid. This action proposes working with the PSC to review its prior ruling on net metering for solar energy system owners and community solar participants to ensure customer rate schedules are equitable while fully accounting for the value of the distributed solar energy generation. **(Associated Submitted Action Proposals: 57, 126, 164)**

ACTION 2.3 Strategically foster the development of resilient microgrids and dispatchable batteries

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
FEMA / GOHSEP / Louisiana National Guard	Plan and implement microgrids and dispatchable battery units	Speed post-disaster recovery and resilience

Microgrids are localized “islands” of electricity generation that can be isolated from the larger macrogrid to supply power. Dispatchable battery units can likewise supply power in response to outages. With the ability to disconnect and operate independently, microgrid systems can provide for grid resilience, mitigate disturbances by disasters, and allow for faster system response and recovery. This action requires collaboration across the U.S. Federal Emergency Management Agency (FEMA), the Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP), Louisiana National Guard, the PSC, and local stakeholders to plan for the deployment and implementation of microgrids and dispatchable battery units for businesses and communities in order to build resilience against increasingly frequent disasters. With near-term federal funding available through the Infrastructure Investment and Jobs Act, this action recommends immediate implementation through pilot projects for strategic assets with a goal of broader deployment of microgrids and dispatchable batteries or other energy storage devices to improve the resilience of at-risk communities over the long-term. **(Associated Submitted Action Proposals: 176)**

ACTION 2.4 Evaluate an Emission Reduction Generation and Supply (ERGS) program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC	Determine best mechanisms for third-party generation to sell energy back to the grid	Encourage generation of renewable power

Maximizing the simultaneous cogeneration of electricity and heat from renewable sources at industrial facilities can encourage more efficient onsite energy generation for large consumers, reduce energy waste, and lower the demand on the electric grid. This cogeneration also has potential to provide energy for additional uses or users. This action requests that the PSC evaluate the creation of an Emission Reduction Generation and Supply (ERGS) program to further incentivize cogeneration. The proposed program would allow industry or other third-party energy generation created from emission-reducing sources (e.g., CHP, battery storage, on-site renewable energy generation, waste-heat generation) to be automatically sold back to the grid at retail rates on an as available basis without classifying the energy resource owner as a regulated electric public utility. The program should evaluate making this cogenerated power available to non-adjacent locations that are under common or affiliate ownership with the purchase of transmission or distribution services from local utilities. This action would evaluate the benefits and costs of incentivizing industrial customers to build or utilize larger-scale reduced-emissions energy resources by allowing them to share the electricity produced. **(Associated Submitted Action Proposals: 43, 52, 89, 124, 160)**

DISSENTING VIEWS: Two members objected to this action. One member cited concerns about electric grid reliability in a deregulated environment. The other member supports the concept of an ERGS program but objects to the possible exclusion of non-renewable clean power generation. DISSENTERS: Bourg, Bowser.



Industrial Decarbonization

Industrial decarbonization refers to avoiding the combustion of fossil fuels to reduce emissions from the industrial process chain. Industry is Louisiana's largest sector of emissions, and facilities that have been permitted but not yet built could potentially add 100MMT CO₂e to industrial emissions if no action is taken, making it critical to develop concrete steps towards a less energy-intensive industry that partners with industry in this transition. The industrial sector accounts for a disproportionately large share of GHG emissions in Louisiana, as compared to other states, due to demand for products produced in Louisiana that are then exported and sold to the rest of the nation and world. Many opportunities exist to decarbonize this sector, which are possible through efficiency, electrification, fuel switching, CCUS, and reduced carbon intensity of materials, which is shown across all four strategies of this section.

- **STRATEGY 3: Monitor, inventory, certify, and support industrial decarbonization**
- **STRATEGY 4: Improve efficiencies in and modernization of industrial processes and facilities**
- **STRATEGY 5: Accelerate industrial electrification, switching to low- or no-carbon fuels and low- or no-carbon feedstocks**
- **STRATEGY 6: Promote reduced-carbon materials**

STRATEGY 3. Monitor, inventory, certify, and support industrial decarbonization

Industrial sector emissions are Louisiana’s largest contributing source of GHG emissions, accounting for over 65% of total state GHG emissions in 2018 based on the [2021 Greenhouse Gas Inventory](#). An accurate baseline understanding of Louisiana’s industrial emissions is a critical first step towards measuring, certifying, supporting, and accounting for reductions from the industrial sector. Baseline information, with robust and reliable monitoring efforts, will allow for comprehensive tracking of Louisiana’s emissions across a diverse and complex industrial profile and ensure accountability and enforcement for all reductions.

Highlights of how this strategy can realize benefits for Louisiana:

- *Public Confidence:* Tracking and monitoring industrial emissions alongside transparent communication of emissions reductions to the people of Louisiana are critical for ensuring confidence in this climate action plan.
- *Human and Environmental Health:* Monitoring programs that track GHG emissions can also be used to monitor other toxic and potentially hazardous emissions. Improving Louisiana’s understanding of all industrial emissions will help inform and mitigate potential impacts to communities and the natural environment.
- *Maximizing Future Success:* Monitoring and inventorying industrial emissions allows the efficacy and impacts of all actions to reduce these emissions to be evaluated and improved as the plan is implemented over time.

ACTION 3.1 Require carbon intensity audits and bolster emissions reporting from industrial facilities to be incorporated into the statewide GHG monitoring program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / EPA / Industry	Accurately account for facility-level emissions and product carbon intensity	Provide facility-specific accountability in emission reduction

The U.S. Environmental Protection Agency (EPA) currently administers a Greenhouse Gas Reporting Program, which generally requires facilities that emit 25,000 tons of GHGs per year to report their emissions. To expand the baseline reporting of current emissions on a facility-by-facility basis, this action proposes that DEQ work with EPA to identify opportunities to obtain GHG emissions data from smaller facilities while not unduly burdening those facilities. In order to effectuate this action, the Louisiana DEQ may also need to compile, calibrate, and verify self-reported emissions data from smaller facilities not currently required to report emissions to the EPA under its Greenhouse Gas Reporting Program. This data should be made publicly available as a component of the broader DEQ GHG Monitoring Program, as described in Action 28.1.

Alongside emissions reporting, DEQ should utilize nationally and internationally recognized methodologies to identify and establish a baseline of carbon intensity values for energy intensive products that are manufactured in Louisiana. Carbon intensity is frequently measured through [life-cycle assessments](#) (LCAs), which assess environmental impacts associated with all the stages of a product’s life cycle. With Louisiana’s large manufacturing industry, manufacturers would be able to track carbon intensity according to metrics established by DEQ, based on lifecycle assessments of their products. Carbon intensity audits will allow for and encourage Louisiana manufacturers to produce and validate lower-carbon products and to remain competitive in global markets and upon implementation of the Buy Clean Louisiana policy (Action

6.1). Immediate implementation is recommended so that the Governor’s Office, state agencies, federal partners, industry, utilities, and environmental stakeholders are able to ensure continual progress towards emission reduction in this sector. **(Associated Submitted Action Proposals: 51, 108, 140)**

ACTION 3.2 Develop an Industry Certification Program for GHG emission reduction activities

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / EPA / Industry	Develop framework for facility-level GHG reducing plans	Provide facility-specific support in emission reduction

With a sufficient baseline of industrial emissions and a monitoring program to track reduction, Louisiana can creatively develop approaches that mitigate emissions and accommodate varying types, sizes, and operations of industries. To offer such flexibility in implementation and reward decarbonization, this action establishes a voluntary Industry Certification Program* in DEQ that incentivize industries to implement GHG reduction measures. This program would require participating industries to propose and implement site-specific GHG emission reduction plans, tailored to their industry and locational needs on an achievable timeline towards net zero by 2050. Plans should then be evaluated and certified by DEQ using a common metric to evaluate and track success, updated by annual site visits and certification renewals.

***Successful Industry Certification Programs Implemented in Other States**

Similar programs have been successfully implemented in California and Texas alongside the [EPA Natural Gas STAR Program](#).

Industries will only be required to pay a small participation fee, but they can benefit in many ways: recognition in emission reduction, use of the program’s promotional material and monitoring capability, advantages in government procurement, potential grants for GHG-reducing facility improvements, and information sharing across industry peers. The participation fee Industry Certification Program would cover costs to increase agency capacity, allowing the program to become self-funding and income-generating. Medium-term implementation of this action is most beneficial, to ensure a firm baseline of emissions is established first and drives the certification program. **(Associated Submitted Action Proposals: 62)**

ACTION 3.3 Advocate for a national carbon price and explore joining a multi-state carbon pricing system to advance GHG emissions reduction and direct proceeds toward the advancement of strategies in the Louisiana Climate Action Plan

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / Legislature / Governor’s Office	Identify carbon pricing mechanism best suited for Louisiana	Provide facility-specific accountability in emission reduction

As inherent in its name, a carbon price applies the external cost of GHG emissions (e.g., public or social costs for damage to crops from drought, community loss from flooding, etc.) to the source of emissions through a price, intended to shift the burden for damage of GHG emissions back to those who are responsible for it and who can avoid it. Carbon price can

either encourage emitters to shift activities to lower emissions or continue emitting and pay for it. This action tasks Louisiana’s DEQ to explore joining a multi-state carbon pricing system.* Alongside exploring and joining a regional system, this action tasks state leaders to continue advocating for a national carbon pricing system, where the federal government sets a national price on carbon to avoid carbon leakage across states. Regardless of the system pursued, this action directs proceeds from the sales of emissions allowances be used to support incentive programs for the safe and responsible expansion of renewable and clean energy deployment, alongside providing funds to reduce barriers to low-income electric vehicle adoption, weatherization and energy efficiency programs, workforce transition, climate change adaptation, and other goals established by the Louisiana Climate Action Plan. **(Associated Submitted Action Proposals: 8, 48, 53, 173)**

***Carbon Pricing Mechanisms**

Multiple mechanisms can be used for carbon pricing, with cap-and-trade and carbon tax as leading methods, applied economy-wide or to a specific emissions sector. These mechanisms are used by states, regions, and nations, designed to support and incentivize GHG reductions.

Cap-and-trade programs establish a declining limit on major sources of GHG emissions (a mandated “cap”) and creates a powerful economic incentive for investment in cleaner, more efficient technologies. Under these programs, emissions allowances are purchased and sold by emitting entities (creating a market to “trade” allowances).

Alternatively, a **carbon tax** is a more straightforward system, where government sets a price that emitters pay for each ton of GHG emissions emitted.

DISSENTING VIEW: While supporting a cap on GHG emissions, one member objected to this action, citing concerns that trading regimes can allow for continued emissions and potential double counting. DISSENTER: Pichon Battle.

ACTION 3.4 Develop and enforce a Net Zero Industry Standard

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / DNR	Develop a Net Zero Industry Standard	Ensure net zero for industry by 2050

Industrial sector actions require intentional engagement and support to ensure GHG-reducing regulations, incentives, and programs are implementable for a wide range of facility sizes, types, and operations. With many actions and approaches set forth in this section, this action tasks DEQ and DNR jointly to develop a Net Zero Industry Standard, a statewide strategy to achieve net zero emissions for industry by 2050 to implement actions of this section, to realize industrial emissions reductions from new and existing sources, to align permitting (Action 26.3, Action 26.4) with net zero, and to attract clean energy industry to the state. DEQ, with its monitoring and regulatory authority, and DNR, with its permitting authority and energy office, are central implementers of monitoring, inventorying, certifying, and supporting industrial decarbonization. This cooperative endeavor should outline a strategic path forward to implement actions of Louisiana’s Climate Action Plan and to monitor and reduce industrial emissions. Alongside ensuring agency collaboration and role in implementation, this framework should create opportunities for engagement with other state agencies, federal partners, industry, and environmental advocates to ensure a comprehensive approach is developed, safely implemented, and provides a tool for accountability and clear mechanism of enforcement. Particularly, this effort should also include specific outreach and engagement with Louisiana’s top emitters to develop targeted measures to decarbonize their facilities. DEQ and DNR should provide updates to and receive feedback from the Task Force on development, implementation, and efficacy of this framework to attain net zero by 2050. DEQ and DNR should also identify any additional statutory authority needed to accomplish a Net Zero Industry Standard. Alongside the GHG monitoring program, this framework would benefit the Climate Action Plan most through immediate implementation to set Louisiana on a trajectory to address its largest emission sector and to best support major emitters of the sector. **(Associated Submitted Action Proposals: N/A)**

DISSENTING VIEWS: Two members objected to this action, opposing increased regulation that could outsource GHG emissions to states with fewer restrictions. DISSENTERS: Bowser, Gray.

STRATEGY 4. Improve efficiencies in and modernization of industrial processes and facilities

Improving the efficiency of industrial processes is the quickest, simplest way to reduce industrial energy demand and corresponding GHG emissions. Efficiency can also lower energy cost, mitigate risk, increase competitiveness, and make electrification more feasible. Efficiency approaches can encompass internal operations, supply chains, products and services, and cross-cutting issues across a variety of types and sizes of industry. Actions under this strategy are directed at increasing efficiency in modernizing existing and in designing new facilities via implementation of standards and direct engagement with energy users and manufacturers.

Highlights of how this strategy can realize benefits for Louisiana:

- *Timely Implementation:* Increasing industrial efficiency can occur now. Technologies are currently available to increase efficiencies in the near-term.
- *Quality Improvements:* Increasing energy efficiency can improve other important aspects of industrial operation including product quality, worker health and safety, and environmental performance.
- *Economy and Jobs:* Investment in the development and deployment of new technologies to improve efficiency creates jobs in research and development (R&D) and installation. The implementation of energy efficiency projects and good energy management practices can save energy and reduce costs for companies, thereby increasing industrial competitiveness.

ACTION 4.1 Set Industry Efficiency Standards

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR	Pursue rulemaking for implementation of standard	Reduce energy intensity of industry

Mandatory standards are necessary to signal a commitment to efficiency. This action proposes that the state further energy efficiency through Industry Efficiency Standards. To ensure that the benefits of efficiency are realized, DNR should immediately pursue Industry Efficiency Standards through rulemaking, based on total building or structure performance. Near- and long-term standards will ensure efficiency remains a priority even after appropriate phase-in measures and near-term goals are met. Agency resources must be allocated to ensure accountability that standards are followed and goals are met across facilities. **(Associated Submitted Action Proposals: N/A. Referenced Resources: 1)**

DISSENTING VIEWS: Two members objected to this action, citing preference for market forces, rather than regulation, to drive industrial efficiency. DISSENTERS: Bowser, Gray.

ACTION 4.2 Develop and implement a Strategic Energy Management Program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / LSU-IAC	Assess needed support for implementation of Action 4.1	Support reduced energy intensity of industry

Education, technical assistance, and financial incentives must accompany mandatory standards to ensure their widespread adoption and success. Strategic Energy Management (SEM) encourages efficiency through direct engagement with manufacturers to identify sources of significant energy use, implement efficiency measures, and track progress toward implementing energy efficiency standards. This action proposes the establishment of an SEM Program in Louisiana’s DNR Energy Office that would ensure continual energy improvement is integrated into the culture of facility management. The SEM should partner closely with and expand upon existing work of Industrial Assessment Centers (IACs), federally funded partnerships with local universities to identify energy efficiency improvements for small and medium-sized manufacturers. Louisiana’s IAC is a team of Louisiana State University (LSU) faculty and students that provide no-cost assessments to small and medium-sized U.S. manufacturers to identify potential cost savings from energy efficiency improvements, waste minimization, pollution prevention, and productivity improvement. Through an SEM Program, state agencies, industries, and universities should discuss and address concerns, limitations, and feasibility of various methods to improve efficiencies, building on experience and knowledge of the LSU IAC. The SEM program may fund pilot projects and conduct studies on carbon intensity, life cycle accounting, competitiveness, resilience, and the impacts of energy-intensive industry for various processes to guide decisions, track progress, and set further standards. Alongside efficiency standards, the SEM is immediately implementable and would ensure successful adoption of efficiency standards. **(Associated Submitted Action Proposals: N/A. Referenced Resources: [1](#), [2](#))**

STRATEGY 5. Accelerate industrial electrification, switching to low- or no-carbon fuels and low- or no-carbon feedstocks

The fossil-derived energy used to power Louisiana’s industrial sector is the state’s largest source of GHG emissions. Moving this energy demand to no-carbon electricity and fuels is the most powerful action that can be taken to mitigate Louisiana’s emissions and ensure Louisiana remains a global industry leader in a net-zero future. Some electrification technology is readily available and deployable across various industrial processes, particularly for those of low- and medium-heat and for green hydrogen in high-heat processes. However, decarbonizing industrial processes is a newer challenge with few blueprints to follow. Several actions under this strategy highlight the importance of research and development and pilot projects to better understand how electrification, low- and no-carbon fuels, and carbon capture, use, and storage (CCUS) can best be deployed in Louisiana’s industrial facilities.

Highlights of how this strategy can realize benefits for Louisiana:

- *Public Confidence:* Tackling Louisiana’s largest emissions sources head-on will inspire additional action at the local and facility levels. Leadership from the state and industry, showing that Louisiana is serious about mitigating its hardest-to-abate emissions, will increase confidence in the state’s industrial future and commitment to the clean energy transition.
- *Economy and Jobs:* Investments in electrification and industrial fuel-switching will create jobs in retrofit and new facility projects, piloting technology and approaches that can be used on industrial facilities around the world with Louisiana leading the way.
- *Human and Environmental Health:* Reducing fossil energy combustion in and near industrial facilities can reduce not just GHG emissions, but other pollutants as well, improving the health of fenceline communities and benefitting the environment.

ACTION 5.1 Accelerate electrification of industrial processes and equipment through pilot projects, incentives, and requirements

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LED / DNR / PSC / Governor’s Office / Industry	Invest in mechanisms to accelerate industrial electrification	Abate industry emissions through electrification to the extent practicable

Technology currently exists to electrify many types of systems and processes within industrial facilities, but the economic and feasibility and scalability of this technology has not been widely demonstrated in Louisiana. This action proposes the development of pilot projects to electrify systems within Louisiana industrial facilities (e.g., building systems and motors) to demonstrate the potential for more widespread implementation. Electric furnaces for temperatures above 350 °C are also ripe for pilot projects, as they are in development but not yet technologically mature for industrial use.

Alongside demonstration projects, incentives will meaningfully drive changes in industrial investment. This action tasks Louisiana to advocate for a federal industrial-scale electrification incentive, similar to the 45Q tax credit for carbon capture and storage (CCS). Such large-scale, near-term federal and state investment will drive demand for electrification,

facilitating accelerated progress towards industrial decarbonization and grid transformation. Any incentives should be based on criteria that prioritize communities most closely impacted by industry and where explicit reduction co-benefits of replacement technology have been identified and will be most quickly realized. Alongside federal and state investment, this action tasks Louisiana Economic Development (LED) to work with DNR and PSC to begin developing regulatory requirements for industrial transformation to electrification by 2050. Demonstration projects and incentives, alongside new regulation and enforcement, are all meaningful drivers of innovation for industrial-scale electrification. **(Associated Submitted Action Proposals: 29, 63)**

DISSENTING VIEWS: Two members objected to this action, citing preference for market forces, rather than regulation, to drive industrial electrification. DISSENTERS: Bowser, Gray.

ACTION 5.2 Promote low-carbon alternative fuels and feedstocks for petrochemical industrial processes

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / U.S.-DOE / Industry	Invest in research and demonstration projects to accelerate fuel- and feedstock-switching	Abate heavy industry emissions through alternative feedstocks and fuels to the extent practicable

Industrial feedstocks (raw materials used to supply a manufacturing process) have traditionally been petroleum, natural gas, and their derivatives. Natural gas is also widely combusted in Louisiana to achieve high temperatures for chemical manufacturing and petroleum refining. Louisiana is one of the largest producers of bulk chemicals, like ammonia, in the country, and chemical manufacturing accounts for over half of Louisiana’s industrial GHG emissions. As well as being a large producer of bulk chemicals, Louisiana also utilizes bulk chemicals as intermediate products to create end products like plastic containers and fertilizers. To reduce emissions from chemicals production and petroleum manufacturing, low- and no-carbon hydrogen* as well as captured CO₂ can replace carbon-intensive feedstocks. Low-carbon fuels can also replace carbon intensive fuels that manufacturers currently rely on to achieve the high temperatures needed in many industrial processes. This action proposes investment in research, development, and demonstration of low- and no-carbon fuels and feedstocks, such as low- and no-carbon hydrogen, to complement industrial electrification for a comprehensive decarbonization strategy for Louisiana’s heavy chemical industry. To ensure near- and long-term ambition to abate emissions along the entire fuel production chain, this action sets a target of producing 100% low- and no-carbon hydrogen for use in industrial processes by 2050. The DNR Energy Office should partner with the U.S. Department of Energy (DOE) to solicit funding for Louisiana to lead research, development, and demonstration in this area and become a low- and no-carbon hydrogen hub for the nation. As electrified equipment becomes more available in the coming years, this action also proposes Louisiana lead in piloting and deploying low- and no-carbon technologies. **(Associated Submitted Action Proposals: 6, 12, 51, 107, 125. Referenced Resources: 1)**

**Low-Carbon Hydrogen*

Low-carbon hydrogen is hydrogen produced with a carbon intensity equal to or less than 2 kilograms of CO₂-equivalent produced at the site of production per kilogram of hydrogen produced, and in includes hydrogen produced from any fuel source (see Infrastructure and Jobs Act, 2021).

DISSENTING VIEWS: Three members objected to this action, dissenting to the inclusion of “low-carbon hydrogen” and its subsequent perpetuation of fossil fuel use and deployment of CCUS. DISSENTERS: Pichon Battle, Daniels, and Verchick.

ACTION 5.3 Support the safe and responsible deployment of carbon capture, utilization, and storage for high-intensity and hard-to-abate emissions

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / U.S.-DOE / Industry / Communities	Invest in research for siting and impact assessments of CCUS buildout	Abate remaining high-intensity emissions through carbon capture and storage

CCUS* is anticipated to play a critical role in decarbonizing the global economy by addressing high-intensity and hard-to-abate emissions that will be necessary to reach net zero. With expansive geologic storage potential, highly concentrated industrial corridors, and a trained workforce, Louisiana has potential for deployment of this technology and infrastructure. This is particularly true in the industrial sector, where high temperature processes cannot be readily transitioned to electrification or low-carbon alternatives and where process emissions from chemical reactions are unavoidable except with CCUS. However, Louisiana also needs to be assured that the deployment of CCUS technologies in the state be pursued in a safe and responsible manner that does not negatively impact communities, ecosystems, and cultural resources.

*CCUS

CCUS is a suite of technologies that can play a significant role in GHG emission reduction in combination with other industrial decarbonization strategies. Carbon capture can use a variety of techniques to remove emissions from industrial and power production operations pre- and post-combustion.

This action proposes that the state continue to work with federal and state partners, industry, and communities to determine the feasibility and impacts of carbon capture and transport infrastructure and buildout (see Action 26.2 for more detail), to identify potential sites for safe and responsible carbon capture storage, and to establish a regulatory and legal framework that supports responsible deployment of CCUS technologies. While the overall impacts of CCUS deployment are expected to be positive as they relate to air quality, further assessment, quantification, and engagement of local communities is needed to fully understand potential impacts of CCUS on local criteria air pollutants and other emissions resulting from carbon capture retrofits at industrial facilities. These efforts should result in responsible CCUS projects that address cumulative pollution and incorporate environmental justice and equity concerns into siting and decision making. Further actions under Strategy 26 outline specific areas for impact analysis needed in the near-term prior to permitting and deployment of infrastructure. **(Associated Submitted Action Proposals: 7, 45, 49, 74, 155)**

DISSENTING VIEWS: Five members objected to this action, citing concerns over high project costs, low project success rates, perpetuation of community harm and injustices, and perpetuation of environmental degradation. DISSENTERS: Pichon Battle, Daniels, Verchick, Parfait-Dardar, Manning-Broome.

ACTION 5.4 Invest in research for utilizations of captured carbon and life cycle analyses to understand their overall impact

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Universities	Solicit funding to understand utilization techniques	Recycle emissions through utilization of captured carbon

The capture and use of CO₂ to create valuable products (CCUS) has potential to lower the net costs of reducing emissions while removing CO₂ from the atmosphere. This process of utilization refers to the use of CO₂ directly or as a feedstock in industrial or chemical processes to produce carbon-containing products that generate economic value. Utilization

technologies of CCUS are still nascent in form and barriers to implementation remain, so more funding is needed to research and pilot various techniques. This action proposes that Louisiana universities solicit funding for studies that more comprehensively understand various utilization techniques and their applicability and feasibility to reduce emissions from Louisiana industries. Research should begin in the short-term to influence and inform medium- and long-term implementation. **(Associated Submitted Action Proposals: N/A)**

DISSENTING VIEWS: Three members objected to this action, citing opposition to new markets that incentivize CCUS and subsequently perpetuate fossil fuel use. DISSENTERS: Pichon Battle, Daniels, and Verchick.

Action 5.5 Develop Industrial Cluster Decarbonization Plans to plan for and direct facility-level investment

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
U.S.-DOE / DEQ / DNR / PSC / Utilities / Industry / Communities	Strategically plan decarbonization of industrial clusters	Provide cluster-specific support in emission reduction

Louisiana is home to three major “industrial clusters,” geographic areas where industries are co-located and share resources. Though they are major emission sources, clusters provide opportunities for deployment of decarbonization technologies at scale, sharing of risks and resources of their location, and aggregation and optimization of energy demand. This action proposes the U.S. DOE, DEQ, and DNR Energy Office partner with utilities, the PSC, industrial clusters, and nearby communities to develop site-specific Industrial Cluster Decarbonization Plans (“Cluster Plans”) that utilize industry co-location to develop facility-level decarbonization measures. Cluster Plans should be led by companies in the respective clusters with leadership from the U.S. DOE, DEQ, DNR Energy Office, and neighboring communities to focus on transmission buildout, grid updates, and storage capacity to facilitate industrial-scale electrification; to develop and utilize hydrogen and CCS hubs; and to meaningfully consider concerns of nearby communities. State leadership should build upon initiative taken by state agencies in Action 3.4, with federal engagement regarding funding opportunities and pilot projects. Since success is dependent upon collaboration and unified action across all stakeholders, development and adoption of Cluster Plans should allow industry to tailor action to their specific needs and locations, while also meaningfully engaging and addressing the needs of surrounding communities. Action by facilities in major industrial clusters is central in meaningful reduction of industrial emissions and grid transformation, so results of this action should further those of this strategy and of the “Clean Energy Transition” section. **(Associated Submitted Action Proposals: 29, 71, 73, 139)**

DISSENTING VIEWS: Three members objected to this action. One member raised opposition to the perpetuation of industrial clusters due to pollution concerns for neighboring communities. Two other members oppose the promotion of CCUS hubs in these industrial clusters and do not believe such hubs can be developed in a way that meaningfully considers concerns of nearby communities. DISSENTERS: Pichon Battle, Verchick, and Manning-Broome.

STRATEGY 6. Promote reduced-carbon materials

The lifecycle emissions and embodied carbon in fuels, construction materials, and other products are an easily overlooked source of GHG emissions that can be mitigated. Using the government’s power of the purse to encourage and incentivize selection of materials and products created through low-carbon intensity processes is a powerful tool for building cleaner while creating a stronger market for low-carbon products. Actions under this strategy aim to address material sourcing in a systematic approach, from public construction projects to household recycling, to reduce Louisiana’s reliance on the use of higher carbon intensity products.

Highlights of how this strategy can realize benefits for Louisiana:

- *Economy and Jobs:* An understanding of the GHG emissions from materials production and supply chains can help state and federal entities make better choices when investing in construction projects. Increased government demand for lower carbon alternatives, with requirements to source from within the U.S., will spur economic growth and innovation to meet new requirements.
- *Community Engagement and Environmental Stewardship:* State and local programs that consider the life cycle of products can serve as an entry point for greater public engagement in climate action. Commitment from the state and private sector to identify reuse opportunities for waste streams can inspire individual action to continue waste reduction.

ACTION 6.1 Develop a “Buy Clean Louisiana” policy for procurement of materials with lower carbon footprints for use in public construction projects

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Secure low-carbon product through procurement practices and laws	Reduce GHG footprint of state government while growing market for clean and green products

Adoption of a “Buy Clean Louisiana” policy utilizes procurement to create market shifts and incentivize the use of building materials (e.g., concrete and steel) manufactured through less carbon intensive processes to reduce the GHG emission footprint of construction. This action, spurred by Louisiana’s Division of Administration (DOA), would require all state agencies to consider embodied carbon emissions (all CO₂ emitted in producing materials) of industrial products when contracting for state infrastructure and non-infrastructure projects, which would be assisted through carbon intensity audits of Action 3.1. Securing green vendors through procurement is immediately implementable through adjusting procurement procedures of DOA. However, incentivizing use of green vendors through weighted scoring criteria will require legislative action that should be expedited. Buy Clean has been pursued by other states, with programs in development for Texas, Colorado, New York, Oregon, Minnesota, Connecticut, New Jersey, and Washington, and one established in California. **(Associated Submitted Action Proposals: 135)**

ACTION 6.2 Explore how circular economy principles can be applied to lifecycles of products created and used in Louisiana

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / Waste Management Entities / NGOs / Universities	Invest in pilot projects to reduce lifecycle emissions of products	Minimize wasted energy through circular principles

A circular economy is a systemic approach to economic development based on understanding of product lifecycles. Circular economies are designed to benefit businesses, society, and the environment while promoting zero waste – where every material, after use, becomes the feedstock for another use. Reducing GHG emissions by implementing material waste reduction programs, providing incentives for recycling, and investing in new technologies that consider the “lifecycle” of material products (e.g., plastics) are important actions to consider when reducing overall wasted energy. This action, coordinated across DEQ, waste management entities, non-governmental organizations (NGOs), and private industry, tasks university partners with reviewing opportunities to increase efficiency in recycling practices, exploring possible incentives for industrial use of recycled materials, and identifying other opportunities for the productive reuse of waste materials in Louisiana. Louisiana universities should then work with state agencies and manufacturers involved in the promotion of exports of goods and materials manufactured in Louisiana to develop specific supply chain opportunities for the application of circular economy principles. **(Associated Submitted Action Proposals: 72, 82, 85)**

DISSENTING VIEW: One member objected to this action, rejecting the promotion of recycling plastics and instead calling for an end to production of unnecessary plastic production. DISSENTER: Pichon Battle.



Actively Managed Methane Emissions

Methane is more than twenty-five times as potent as carbon dioxide at trapping heat in the atmosphere, which makes it important to actively mitigate the highest sources of methane. Though methane is present in many sectors and throughout other sections, methane is addressed separately here to emphasize potential to mitigate oil and gas infrastructure emissions through short-term action. Increased resources for decommissioning legacy infrastructure paired with monitoring and regulation on oil and gas infrastructure are significant strategies required to manage methane emissions.

- **STRATEGY 7: Increase and mobilize resources for decommissioning legacy oil and gas infrastructure**
- **STRATEGY 8: Monitor and regulate methane emissions**

STRATEGY 7. Increase and mobilize resources for decommissioning legacy oil and gas infrastructure

Charting a course for Louisiana’s clean energy transition must address the persistent and complex challenge of methane emitted from oil and gas infrastructure, particularly orphaned wells. Orphaned wells are abandoned oil and gas wells for which no one can be identified as a responsible party or where the responsible party has failed to maintain the infrastructure. Management of this legacy and inactive infrastructure presents a unique challenge since legal responsibility and potential safety may shift over time. Without steps that tighten active enforcement and make available additional resources to adequately manage these sites, methane leakage from legacy infrastructure will continue to impose an economic, environmental, and public health toll on surrounding communities. Actions under this strategy aim to address legacy infrastructure through tightening regulations and enforcement at the state level while aligning with near-term federal funding opportunities.

Highlights of how this strategy can realize benefits for Louisiana:

- *Economy, Jobs, and Education:* Investment of funds specifically for worker training and retraining in plugging leaks of legacy and abandoned wells can position Louisiana’s residents for increased employment opportunities and additional career pathways. Engagement with community colleges across the state should be central in implementation.
- *Public Health:* Addressing legacy infrastructure can reduce potential negative environmental and public health impacts of these sites to surrounding communities.
- *Environmental Protection:* Legacy site remediation reduces potential harm of orphaned and abandoned wells to surrounding ecosystems and can even improve ecosystem functioning through restoration practices.

ACTION 7.1 Hold former well operators accountable for orphaned wells

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / Legislature	Pursue rulemaking to tighten the definition of “responsible party” and establish a companion database	Provide clarity and accountability for responsible parties

Leaks from orphaned wells create a large source of methane emissions where operators are not legally held responsible after wells are plugged and abandoned. This action recommends legislative and regulatory measures to ensure that former operators are held responsible for abandoned wells. This action recommends that definition of “responsible party” be amended through legislation, rulemaking by DNR, or a combination thereof to include all former operators. This proposed definition of “responsible party” will help to ensure that the responsibility for abandoned infrastructure does not shift to the state over time. DNR should also collect and publish a database of orphaned wells that indicates the responsible parties to clearly identify the location and ownership of infrastructure in the event leaks are detected and need to be repaired immediately. Other opportunities should be explored to strengthen accountability through legislation or rulemaking by DNR, like creating or clarifying a right of action for landowners with abandoned wells on their properties

to sue responsible parties to force well plugging and site clearance. This action should be pursued immediately to identify responsible parties and kickstart methane reductions. **(Associated Submitted Action Proposals: 167)**

DISSENTING VIEW: One member objected to this action, dissenting to the language that allows landowners authority to sue responsible parties. DISSENTER: Gray.

ACTION 7.2 Strengthen financial security requirements for plugging wells

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / Legislature	Pursue legislation to raise financial security and remove blanket securities	Incentivize compliance with operator requirements

Financial security requirements are state-required bonds that guarantee compliance of operators with regulations for the issuance of permits for oil and gas exploration, drilling, and plugging. Since 2014, DNR’s Office of Conservation has implemented stronger regulatory practices of requiring financial security from operators and more frequent inspections, which has caused the number of identified orphaned wells to nearly double. However, extensive loopholes* in financial

***Loopholes in Regulation**
Of the **716 wells** that have been orphaned since financial security became a requirement, 55% were exempt from financial security.

security regulation allow operators to avoid meeting financial security requirements, leading to a failure to plug wells. Therefore, this action recommends comprehensive legislative reform to raise the amount of financial security and remove the ability of operators to use blanket securities, a technique which allows the operator to circumvent financial security. Additional financial security should be added to the Oilfield Site Restoration (OSR) Program to fund plugging of abandoned infrastructure, where no responsible party can be identified. Other statutory reforms could include removing the cap on the OSR fund, requiring site-specific trust accounts for all wells involved in an ownership transfer, and increasing the bonding requirement for all wells in the coastal zone. **(Associated Submitted Action Proposals: 166, 168)**

DISSENTING VIEW: One member objected to this action, citing previous legislative action in recent years to address funding, improvements in the law, and the creation of state level committees to review the process. DISSENTER: Gray.

ACTION 7.3 Tighten the “future utility” designation and requirements for inactive wells

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / Legislature	Pursue rulemaking to tighten the definition of “future utility”	Provide clarity and accountability for inactive wells

Under current regulation, operators can classify inactive wells with a “future utility” status if the well has potential for use in the future. However, DNR’s ability to grant indefinite extensions creates a higher risk for “future utility” wells to become orphaned wells and subsequently creates potential negative impacts* on the environment and communities. This action

recommends that DNR’s Office of Conservation develop measures that tighten the definition and requirements of a “future utility” designation in its application and limit the duration a well can remain at “future utility” status. Under this action, current “future utility” wells would be reviewed and added to the list of orphaned wells as appropriate. Similar to other actions in Strategy 7, this action requires, and would benefit from, immediate action. **(Associated Submitted Action Proposals: 169)**

***Loopholes in Regulation**

For example, over 1500 wells have been classified as “future utility” status for more than 25 years, over 400 more than 50 years. Over 7000 wells are currently listed as “future utility” and have had that status more than 5 years.

ACTION 7.4 Provide workforce training to plug legacy wells

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR	Invest in workforce training programs for monitoring and plugging wells	Provide Louisiana workers opportunities to transition

Current Louisiana law limits operator responsibility to initial plugging and abandonment; however, even properly capped and plugged oil and gas wells can weaken and leak over time. This action proposes investment in training Louisiana’s workforce to monitor wells and quickly respond to leaks by plugging or replugging them as needed. This action tasks DNR’s Office of Conservation to establish an Abandoned Well Pilot Program from federal and state funding that provides training, equipment, and jobs for unemployed residents in Louisiana to plug leaking abandoned wells. Pilots of this program should be initiated in underserved communities with the highest concentration of oil and gas infrastructure and leaks. **(Associated Submitted Action Proposals: 131)**

STRATEGY 8. Monitor and regulate methane emissions

Methane, more than twenty-five times more potent than CO₂, is a common and elusive GHG that must be monitored and abated for Louisiana to meet its emissions goals. Alongside leakage from pipeline infrastructure, methane is also intentionally and unintentionally released into the atmosphere during routine industrial practices, including at the wellhead during extraction, during transport and storage, during processing and handling, and in instances of incomplete combustion. Waste management facilities and sites, like landfills, are also sources of methane emissions that require monitoring and regulation. Stopping these leaks and avoiding intentional methane releases both require new techniques for monitoring, measuring, and capturing methane, set forth in actions of this strategy.

Highlights of how this strategy can realize benefits for Louisiana:

- *Economy & Jobs:* Increasing the efficiency of methane extraction, reducing methane leakage, and maximizing methane recapture creates fewer economic losses from waste and leaks. Repairing methane leaks can also create jobs.
- *Effectiveness and Longevity:* Methane leaks and intentional releases are not fully known or tracked, so monitoring programs using existing and emerging technologies can ensure leaks are detected and quickly repaired, increasing the effectiveness of methane reduction.
- *Human and Environmental Health:* Reducing methane leaks can improve air quality and pipeline safety, benefiting Louisiana’s ecosystems and residents. Data freely available to the public can build community support for actions directed at curbing emissions. With transparent access to methane emission information, communities can see realized benefits of investment in methane reduction.

ACTION 8.1 Enact methane waste rules

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / DEQ	Pursue rulemaking to align with methane rules of other states and the EPA	Reduce amount of methane released

This action proposes that, through the Net Zero Standard in Action 3.4, DNR’s Office of Conservation and DEQ collaboratively develop rules that require methane emitters to establish a baseline methane waste capture rate, determined by their quarterly reports, and enact methane waste rules in line with rules of other states. States such as New Mexico and Colorado* have recently enacted methane waste rules with support from industry and environmental groups. Alongside work of states, the EPA drafted federal methane rules in the proposed [Standards of Performance for New, Reconstructed, and Modified Sources and Emissions Guidelines for Existing Sources](#) (hereafter called “Standards for Performance”), published in the Federal Register November 15, 2021. Louisiana should advocate for enactment of federal rules and ensure that rules pursued by the state complement impending federal standards. DEQ and DNR should immediately begin

**Methane Rules in New Mexico and Colorado*

New Mexico requires operators to capture no less than 98% of produced gas by December 31, 2026, starting on April 1, 2022. Although not setting a strict capture limit, *Colorado* requires use of modern, zero-emitting (clean) components at all new and most existing facilities to limit methane emissions.

studying the standard best suited for regulating methane waste in Louisiana and begin the rulemaking process to align with the progress of other states. **(Associated Submitted Action Proposals: 43, 89, CO, NM)**

DISSENTING VIEW: One member objected to this action, citing opposition to its reference and connection to the Net Zero Industry Standard of Action 3.4. DISSENTER: Gray.

ACTION 8.2 Establish methane monitoring stations in the GHG Monitoring Program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ	Incorporate emerging technologies into methane monitoring	Monitor methane releases with more frequency and accuracy

The most effective way to reduce leaks is to require frequent, and where possible, continuous monitoring. This action proposes that DEQ incorporate methane monitoring capabilities into the DEQ GHG Monitoring Program, proposed in Action 28.1 to ensure methane emissions are adequately understood and monitored. DEQ should 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 GHG Monitoring Program should also ensure that data and maps that show regular fluxes in methane emissions are provided freely to the public and are updated on an annual basis. **(Associated Submitted Action Proposals: 76, 151)**

DISSENTING VIEW: One member objected to this action, opposing the premise that constant monitoring, instead of elimination of fossil fuel extraction, is the most effective way to reduce leaks. DISSENTER: Pichon Battle.

ACTION 8.3 Enable an effective Leak Detection and Repair Program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ / DNR / U.S. EPA	Strengthen LDAR best practices to monitor and fix malfunctioning practices	Repair methane releases with more frequency and accuracy

To align with federal rules to curb methane emissions by 30% by 2030, more regularly scheduled inspections, sufficient oversight measures, facility-wide leak rate goals, frequent component monitoring, and other measures are needed to complement federal funding and comprehensive monitoring to ensure leaks throughout the supply chain are swiftly detected and repaired. 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. Leak detection using infrared, flyovers, remote sensing, and other early detection technologies can shorten timelines for reporting and repair compared to technologies utilized by many existing LDAR programs. Alongside reduced emissions, air quality and pipeline safety improvements make LDAR programs very cost-effective for all parties involved. Provided with the proper funds, DNR and

DEQ, through the Net Zero Standard in Action 3.4, should build on and strengthen existing LDAR practices implemented by DEQ for criteria pollutants through early leak detection, and develop comprehensive methane LDAR, consistent with the enacted version of the EPA's proposed Standards of Performance (see Action 8.1). (**Associated Submitted Action Proposals: 91**)



Transportation, Development, and the Built Environment

Five strategies and twenty-three actions encompass broad aspects of three priority areas: transportation, land use planning and development, and the built environment. Transportation addresses decarbonization of passenger, medium-duty, and heavy-duty vehicles alongside freight, aircraft, and waterborne shipping. Development and the built environment strategies seek to reduce emissions and enhance resilience through coordinated comprehensive land use planning and increased efficiencies for homes and buildings.

- **STRATEGY 9:** Accelerate adoption and accessibility of low- and zero-emission vehicles and fuels
- **STRATEGY 10:** Reduce vehicle miles traveled and increase transportation efficiencies
- **STRATEGY 11:** Increase urban, rural, and regional public transit service
- **STRATEGY 12:** Coordinate land use planning to reduce sprawl and support healthy and resilient communities
- **STRATEGY 13:** Improve the efficiency and resilience of homes and non-residential buildings

STRATEGY 9. Accelerate adoption and accessibility of low- and zero-emission vehicles and fuels

Transitioning transportation from fossil fuel combustion to electric vehicles and low-carbon fuels will play a critical role in reducing emissions from this sector. Louisiana can support greater adoption of clean vehicles by expanding the infrastructure to support this transition, including charging and fueling stations that are accessible to more drivers and passengers across income levels. This strategy includes actions focused on light-duty passenger vehicles as well as actions tailored to the additional technological and infrastructural needs to transition medium- and heavy-duty transportation, shipping, and aviation to low or zero-carbon fuels. The state of Louisiana can lead by example through efforts to transition public fleets to low- and zero-emission vehicles.

Highlights of how this strategy can realize benefits for Louisiana:

- *Supporting the Workforce:* Investments enhancing transportation infrastructure, in conjunction with targeted job training, can provide employment opportunities to Louisianans, including those of differing educational backgrounds.
- *Strengthening the Economy:* Global and national trends may lead to broad, increased use of electric vehicles. This shift may alter expectations of residents, tourists, and commercial interests alike, and proactive preparation will enable a smooth transition and mitigate negative economic impacts.
- *Human and Environmental Health:* Increasing use of electric vehicles – which produce limited or no tailpipe emissions – can improve overall air quality with subsequent benefits to public health and the environment.

ACTION 9.1 Shift public fleets to low and zero-emission vehicles

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Update procurement practices to meet public fleet transition goals	Transition 50% public fleets to low- and zero-emission vehicles and fuels by 2035 and 100% by 2050

With over 80,000 public vehicles operating in Louisiana, significant GHG emissions reduction can be realized by transitioning state and local government fleets to low- and zero-emission vehicles and fuels. This action would set a statewide policy and goal for the transition of 50% of public fleet vehicles to low- and zero-emission vehicles and fuels by 2035 and 100% by 2050. Unless agency needs dictate otherwise, passenger, light-duty vehicles should move to zero-emission, electric vehicles, while heavy-duty trucks and vehicles should initially transition to low-carbon alternative fuels, such as renewable diesel, that can be used in existing vehicles. Action should be led by DOA but requires coordination across state agencies, local government, and other public fleet users (e.g., levee boards) to update procurement policies and practices. To ensure successful implementation, training for vehicle maintenance should be made available to fleet managers. In order to meet the fleet transition goal, implementation must begin immediately with DOA prioritizing the transition for passenger and other light-duty vehicles while technology continues to evolve for medium- and heavy-duty vehicles. **(Associated Submitted Action Proposals: 28, 36, 41, 143, 157)**

DISSENTING VIEW: One member objected to this action, dissenting to the use of alternative fuels that rely on industrial grains and harm communities and the environment. DISSENTER: Pichon Battle.

ACTION 9.2 Expand the availability and reduce socio-economic and geographic barriers to low- and zero-emission passenger vehicles and supporting infrastructure

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / NGOs / MPOs / Local Governments	Utilize federal funding to intentionally build out infrastructure	250 electric vehicle charging stations per 100,000 residents by 2050

As low- and zero-emission vehicles become increasingly available for passenger transit, steps need to be taken to ensure strategic and equitable statewide buildout of vehicle electrification infrastructure, with measures to prioritize access for underserved and overburdened communities. Louisiana’s Department of Transportation and Development (DOTD), in partnership with Louisiana Clean Fuels and others with local knowledge, can utilize federal funds to deploy electric vehicle charging infrastructure across the state in a way that is strategic and increases access for all communities. A goal of 250 stations per 100,000 residents by 2050 should be adopted to ensure progress is made towards this action. Alongside charging infrastructure, action must also be taken to ensure access to the vehicles themselves across more income levels. Together, DOTD and partners should also provide community education to increase the demand for and adoption of electric vehicles. To this end, incentives for low- and zero-emission vehicles should be reinstated by the Legislature, either in the form of a targeted incentive program or tax credit according to income, to accelerate adoption and reduce barriers to vehicle access. Incentives need to prioritize up-front grants, over rebates and loans, to provide equitable access and a means by which low-income households can purchase electric vehicles. **(Associated Submitted Action Proposals: 83, 137, 175)**

ACTION 9.3 Prepare for the expanded availability of alternative fuels for waterborne transport, medium- and heavy-duty vehicles, and aviation

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD Transportation Research Center / universities / freight companies / ports / long-haul trucking	Research efficacy of alternative fuels to decarbonize heavy transit	Research and deploy at scale solutions to decarbonize freight

As electrification technologies and alternative fuels continue to improve*, increased availability of existing alternative fuels is critical to reducing GHG emissions now and facilitating a smooth transition to carbon neutral long-haul transportation. However, near-term investment is needed to research, pilot, and deploy effective low- and no-carbon fuels for different facets of long-haul transportation. This action proposes increased access to alternative fuels (particularly for heavy trucks), efficient and sustainable fuels (particularly for aviation), and investments in innovation (particularly for waterborne transportation). To get there, Louisiana’s universities and DOTD’s Transportation Research Center can immediately take the lead in advancing and innovating solutions that will reduce the GHG emissions from medium- and heavy-duty vehicles, waterborne shipping, and aviation. Universities should work with freight companies to tailor decarbonization research for Louisiana-specific needs and industries. Specific to waterborne freight, ports should lead in partnership with shipping companies to identify and ensure availability of low- and no-carbon fuels at the port. Specific to long-haul trucking, trucking companies can lead in partnership with Louisiana’s DOTD to secure interest in and ensure availability of

**Needed Improvements*

*Unlike light-duty vehicles, medium- and heavy-duty vehicles as well as other modes of freight transportation (waterborne and airborne) are **more challenging to decarbonize** with current technology and will rely on alternative fuels in the near-term due to increased weight and inefficiency of electrification technology.*

renewable diesel along interstates. Meanwhile, other successful programs like the Port of New Orleans' Clean Truck Replacement Incentive Program should be implemented across Louisiana ports. **(Associated Submitted Action Proposals: 12, 13, 22, 27, 84, 94, 125)**

DISSENTING VIEW: One member objected to this action, objecting to the use of alternative fuels that rely on natural gas, methane, and biofuels and harms communities and the environment. DISSENTER: Pichon Battle.

ACTION 9.4 Implement targeted pilot projects to accelerate the transition of medium- and heavy-duty vehicles to low- and zero-emission vehicles

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / DNR / DEQ	Identify and pursue pilot projects to decarbonize heavy transit	Research and deploy solutions at scale to decarbonize freight

To accelerate the deployment of electrification technology for medium- and heavy-duty vehicles and freight, targeted pilot programs and demonstration projects can encourage and accelerate a transition to low- emission medium- and heavy-duty vehicles now, while technology advances to become more accessible and deployable at scale in the long-term. This action proposes DOTD, in partnership with DNR and DEQ, identify and implement targeted pilot projects to test emerging technologies in the near term that prepare for deployment at scale of clean medium- and heavy-duty transit and long-haul trucking. With recent federal investment in freight truck electrification, states agencies should maximize near-term funding opportunities and partner with the U.S. DOE to access and serve as a conduit for freight decarbonization across the nation. Similarly, funding to replace diesel-fueled with electric school buses is available at the federal level. These vehicle transitions not only reduce emissions but can also serve as mobile power sources to meet community energy needs post-disaster. **(Associated Submitted Action Proposals: 41, 84, 137)**

STRATEGY 10. Reduce vehicle miles traveled and increase transportation efficiencies

A central approach to reduce GHG emissions from the transportation sector is to reduce total travel demand and overall fuel usage by passenger and freight vehicles. Fewer trips and fewer vehicles on the road also reduce traffic congestion and traffic-related accidents. This strategy pursues efficiency through reduced vehicle idling, lowers the number of trips taken by expanding access to online services and remote work capabilities, and shifts passenger and freight trips to more efficient modes of transportation.

Highlights of how this strategy can realize benefits for Louisiana:

- *Human and Environmental Health:* In addition to reducing GHG emissions, reduction of vehicle miles traveled would reduce the production of other pollutants found in vehicle exhaust that can be harmful to public health and the environment. Furthermore, increasing safe access to active transportation options such as walking and biking provides more opportunities for exercise and is tied to improved public health outcomes.
- *Broader Access to Essential Services and Job Opportunities:* Increasing internet access and teleworking opportunities can provide additional access to essential services and employment opportunities to individuals for whom working or traveling outside the home may be challenging.

ACTION 10.1 Promote opportunities to reduce vehicle miles traveled

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / MPOs / Local Governments	Utilize multiple mechanisms to implement VMT reduction strategize	Double use of alternative modes of transportation by 2035

Vehicle Miles Traveled, or VMT,* are a common measure of transportation demand and can serve as a proxy for reducing GHG emissions associated with the movement of people or goods. This action proposes that Louisiana set a goal of doubling the use of alternative modes of transportation by 2035. To meet this goal, the action tasks DOTD to support regional Metropolitan Planning Organizations (MPOs) and local governments to implement VMT reduction strategies that support, promote, and incentivize: 1) Complete Streets infrastructure (where the safe mobility for all users including pedestrians, bicyclists, public transit users, and automotive users is enabled and supported); and 2) the effective integration of local and regional transit and land use strategies, such as evaluating how project design criteria and scoping can be modified for different outcomes. This action pairs with the transit initiatives in Strategy 13 and the compact development actions in Strategy 14 and should build on existing success stories from partnerships with local government, nonprofits, and advocacy groups. **(Associated Submitted Action Proposals: 69, 70)**

*Reducing VMT

Promoting alternatives to VMT can be accomplished through **transportation mode shifting**, where alternatives to automobile travel like walking or bike riding are encouraged, low-carbon or more fuel-efficient freight options, or where multiple individual trips are consolidated through carpooling or public transit.

ACTION 10.2 Expand broadband internet access

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
BEL Commission	Leverage federal funding for expansion of broadband access	Reduce vehicle miles traveled through at-home resources

The COVID-19 pandemic has accelerated the transition to online services and work from home opportunities, but this transition has not been widespread nor accessible for all Louisianans due to limited access to broadband internet connections. Expanding broadband, particularly for rural communities, can facilitate easier access to e-commerce, telecommuting, employment opportunities, and virtual health while reducing overall transportation demand and GHG emissions. The state established the Broadband for Everyone in Louisiana (BEL) Commission in 2019 to facilitate adoption by private sector providers, public entities, and other stakeholders and availability of broadband for Louisiana residents. This action proposes partnering with the BEL Commission and their [2020 Action Plan](#) to maximize the potential of expanding broadband availability to mitigate GHG emissions and ensure cross-government and collaboration with multiple stakeholders to build out broadband effectively, efficiently, and equitably in public rights of ways and through other means. Specifically, with available federal funds from the 2021 Infrastructure Investment and Jobs Act, this action tasks the BEL Commission to apply for grants that connect Louisiana’s underserved communities to expanded broadband access and deployment. **(Associated Submitted Action Proposals: 25)**

ACTION 10.3 Enact a state policy that allows for hybrid workplaces and telecommuting

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Adopt a statewide hybrid workplace policy	Reduce vehicle miles traveled through at-home resources

DOTD implements a variety of Travel Demand Management (TDM) strategies designed to maximize choice while reducing travel, single occupant trips, and congestion. TDM options are funded by DOTD and MPOs and include biking, walking, ridesharing, public transit, telemedicine, and telecommuting. To further reduce regular travel demand in Louisiana, this action proposes DOA adopt a statewide policy that allows for and encourages hybrid workplaces with reduced or staggered in-office days with telecommuting for public employees. Alongside reducing emissions, this policy eliminates time spent commuting and can cut energy usage in public buildings. **(Associated Submitted Action Proposals: 81)**

ACTION 10.4 Reduce idling of public fleets

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Pursue rulemaking to require telematics for fleets	Maximize efficiency of GHG-producing vehicles

One gallon of fuel can be burned per hour of idling, wasting fuel and producing up to 20 pounds of CO₂. Idle reduction technologies and practices can reduce the time that vehicle engines run while at rest and reduce these unnecessary GHG emissions and fuel waste. This action proposes that DOA require idle reduction telematics be placed on all of Louisiana’s publicly owned GHG emitting vehicles. Implementation of this action would be supported by fleet telematics software, already installed in many state-owned vehicles, to manage fuel usage and set an automatic shutoff for vehicles after prolonged idling. Training for fleet managers and operators in all agencies is necessary to support telematics usage and successful implementation across public fleets. Telematics requirements should be pursued in the short-term to reduce emissions from gasoline-fueled vehicles as the public fleet transitions to zero-emission vehicles. **(Associated Submitted Action Proposals: 33, 100, 161)**

ACTION 10.5 Explore short-term opportunities and incentives to increase efficiency of freight transport

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / DOA / LED	Invest in research of smart transit techniques and best practices	Maximize efficiency of energy-intensive freight transit

Given the disparity between needed investments for freight infrastructure and available funding, DOTD, in partnership with DOA and LED, should work with private freight companies (ground, rail, maritime facilities, and aviation) to elicit, prioritize, and fund project proposals that can improve the efficiency of freight transportation in and through the state. Project examples include targeting emissions reductions for freight transport along highways, at ports, and at airports such as those that optimize traffic, directly reduce emissions and idling such as shore power, reduce carbon intensity, and explore mode shifting in ways that build upon existing DOTD congestion reduction programs. **(Associated Submitted Action Proposals: 1, 33, 106)**

STRATEGY 11. Increase urban, rural, and regional public transit service

Reliable public transit systems are pivotal in the effort to reduce VMT and vehicle emissions. The hallmarks of a successful public transit system include consistent, high rates of ridership and stability of the systems that support both frequency and reliability of public transit service. To meet VMT reduction goals, more funding should be allocated to the State Transportation Plan and transit operations across Louisiana. Additionally, it will be important to coordinate more on-demand rural transit services and improve regional transit connectivity. This has the potential to connect communities to employment opportunities and other essential services across the state that are otherwise inaccessible.

Highlights of how this strategy can realize benefits for Louisiana:

- *Strengthening the Economy and Providing Access to Jobs and Services:* Investing in public transit can provide direct employment opportunities that strengthen the economy in the short-term, while increasing access to jobs more broadly by connecting workers to opportunities and providing long-term increases in workforce productivity.
- *Improving Quality of Life:* Public transportation infrastructure in both rural and urban settings can enable all Louisianans broader regional access to goods and services. It expands access to groceries, health services, and other basic necessities as well as avenues for recreation or entertainment for individuals and families that do not own a private vehicle—including members of historically marginalized communities.

ACTION 11.1 Increase financial support to urban transit operators to increase ridership

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / Regional MPOs / Municipalities / Legislature	Leverage available funding for urban transit deserts and local jurisdictions	Reduce VMT through connectivity within urban areas

More reliable and frequent public transit is necessary to increase ridership and reduce single-vehicle trips. Increased funding for local transit service, particularly in high-population areas of low-wage workers and other areas with limited transit access sometimes known as transit deserts, will also benefit marginalized, transit-dependent populations in urban areas and provide competitive access to economic opportunity. This action proposes that the Legislature allocate more resources through the state budget and the Infrastructure Investment and Jobs Act to increase funding for transit operations in transit deserts and provide greater funding to the State Transportation Plan. The state should work with federal partners to ensure more federal funding moves down to regional MPOs to subsidize annual transit operations, provide resources to urban transit deserts, and allow local jurisdictions to secure funding more easily for transit locally. To serve transit deserts effectively, funding can be prioritized by urban transit providers to add smaller vehicles and demand-responsive operations. **(Associated Submitted Action Proposals: 95, 138)**

ACTION 11.2 Increase financial support for rural transit service including connectivity to urban transit systems

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / Local Governments / Rural Transit Providers	Develop on-demand ridership systems in rural areas	Reduce VMT through connectivity within rural areas

Nearly 750,000 of Louisiana’s 4.6 million residents live in rural areas. Therefore, a necessary measure to reduce passenger vehicles on the road requires expanding access to resources beyond urban centers and greater investment in rural transit service. This action builds on the prior action focused on local transit in urban areas and proposes that DOTD, local governments and rural transit providers take a variety of measures to enable resource access to rural communities including rural bus services, obtaining smaller transit vehicles for more specialized trips, developing an on-demand ridership system, and scheduling planned trips to city centers coordinated and supported by the community. A significant impediment for rural transit is the local match of the cost-share for federal dollars, so with an influx of federal dollars, state allocations and other grants should be utilized and prioritized to support locals in matching federal funds. **(Associated Submitted Action Proposals: 81, 95, 128)**

ACTION 11.3 Invest in regional transit to connect communities to jobs and services across Louisiana

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD / Local MPOs / Rural Governments / Municipalities	Collaborate and plan intentional connectivity between cities	Reduce VMT through connectivity across regions of Louisiana

Alongside local and intra-city transit, regional connectivity can encourage greater use of public transportation across rural and urban areas and transport systems. Dedicated bus lanes, high-occupancy vehicle (HOV) lanes, and Bus Rapid Transit on interstates, state highways, and major arterial roadways encourage transit use and carpooling. The federal Infrastructure Investment and Jobs Act (IIJA) also includes funding to expand passenger rail service to increase travel options between cities and states. This action proposes coordination among applicable federal, state, and local agencies to take advantage of available funding opportunities through the IIJA to advance regional transit initiatives. For example, a portion of the \$66 billion available for passenger rail in the IIJA could be used to support a high-speed rail between New Orleans and Baton Rouge that could help minimize light-duty and bus travel between Louisiana’s largest cities for daily commuters, increase tourism-related economic activity, and participation in cultural or entertainment events. This action proposes federal investment through Louisiana DOTD, local MPOs, rural governments, and municipalities to intentionally begin collaborating on and planning in the short-term to build infrastructure that supports medium- and long-term regional connectivity across Louisiana. **(Associated Submitted Action Proposals: N/A)**

STRATEGY 12. Coordinate land use planning to reduce sprawl and support healthy and resilient communities

Mitigating the emissions causing climate change is interconnected with adapting to the impacts of climate change, particularly as it pertains to land use and land use management. Reducing sprawl and promoting compact development, a practice where land is used efficiently and intentionally, reduces GHG emissions and makes communities more resilient. Compact development promotes risk reduction and open space conservation while encouraging reuse and retrofit of existing structures, energy efficiency, use of public transit and active modes of transportation like walking and biking, and reduced VMT. In order to coordinate across risks, vulnerabilities, relevant ongoing initiatives, and land use objectives throughout Louisiana, a statewide framework is needed to unify and guide holistic land use management. Actions under this strategy aim to improve the coordination of land use practices across the state and to assist local communities in planning for a climate-ready future.

Highlights of how this strategy can realize benefits for Louisiana:

- *Protecting the Environment:* Reducing sprawl slows expansion of new development into natural settings, preventing negative impacts to ecosystems and reducing the destruction of habitats.
- *Strengthening Community Resilience:* Smart land use planning enables communities to anticipate and mitigate the potential negative impacts of forces beyond their control, such as designing transportation systems that can withstand climate-related disasters and formulating proactive solutions to manage population growth.

ACTION 12.1 Create a statewide authority to provide guidance for resilient local land-use practices

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Create an Office of State Planning	Support locals in comprehensive land use, climate mitigation, and adaptation planning

This action proposes the creation of an Office of State Planning housed within DOA. This Office should facilitate coordinated decision making as it relates to comprehensive land use, prioritizing initiatives that support flood risk reduction, maximizes community resilience, and reduces GHGs. The Office of State Planning should build strong partnerships across state agencies and with local and regional officials to demonstrate the potential for land use practices to help meet climate goals and reduce climate risk. The Office should support locals in the development of comprehensive land use plans and climate adaptation and mitigation plans that address the spectrum of relevant community challenges and incorporate the needs of underserved and overburdened populations. This land use authority should also partner with DOTD to promote and implement VMT reduction measures (Action 10.1) and compact development practices (Action 12.2). **(Associated Submitted Action Proposals: 18, 40, 69, 128)**

ACTION 12.2 Encourage climate-conscious land use planning through local trainings, incentives, tools, and model standards and ordinances

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA Office of State Planning / DOTD	Convene stakeholders to plan and design compact development across levels of government	Maximize VMT reduction and utilization of regional transit through land use planning

To encourage climate-conscious development, this action proposes DOTD and the Office of State Planning start in the near-term by convening public, private, and local government bodies to assist in planning and designing compact development, permitting, and regulation to maximize land conservation, community resilience, and reduced VMT. After receiving feedback from local groups, the state, through DOTD and the Office of State Planning, should pilot promising approaches to local planning and design, incentives, or regulatory systems that support compact development, Complete Streets, and equitable transit access. **(Associated Submitted Action Proposals: 65, 69, 70)**

ACTION 12.3 Align statewide transportation planning with land use and compact development planning

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA Office of State Planning /Regional MPOs / Local Government	Develop land use and transportation modeling tools for utilization in decision making	Maximize VMT reduction and utilization of regional transit through land use planning

Transportation infrastructure often dictates how and where land is used and developed in Louisiana. To ensure compact development, regional transit, and other actions set forth in this section are prioritized in the state, this action proposes that transportation planning align with smart land use practices. Land use and transportation modeling tools can test land use scenarios and transportation pricing programs and should be incorporated into how decisions are made in transportation. This alignment would not only reduce VMT, allow for widespread implementation of Complete Streets, facilitate equitable access to public transit, and reduce the need for single-occupancy vehicles, but would also allow for greater implementation of green infrastructure and resilience measures to mitigate against Louisiana’s flood risk. This action proposes empowering local governments and MPOs to develop tools that provide adequate information on alignment of these priorities, led by DOA’s Office of State Planning for land use guidance in partnership with DOTD in transportation guidance. Alignment of transportation planning with smart land use would be led by DOA with support from DOTD in close partnership by MPOs and local jurisdictions. **(Associated Submitted Action Proposals: 65)**

ACTION 12.4 Evaluate the climate impacts of major state-funded transportation projects

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOTD	Incorporate a climate impact analysis into DOTD project planning and design	Mitigate unintentional emissions through large-scale transportation

Major transportation projects, such as the construction of new or expanded roadways, can have multiple cascading impacts on GHG emissions as well as community resilience—from the materials used in construction to the spurring of new areas of development to inducing more VMT and increased congestion. This action should require that proposals for medium- to large-scale state-funded transportation projects include an analysis by DOTD of their climate impacts, including induced GHG emissions as well impacts on community resilience from future weather events. Tools developed by DOTD for this analysis would be made freely available to parish and municipal governments to inform their decisions about locally-funded transportation projects. Transportation spending can also help jump start the “Buy Clean Louisiana” program (Action 6.1), prioritizing lower carbon intensity materials and advancing best practices and standards in road construction. Further, this action prepares Louisiana for policies set forth through the [U.S. Department of Transportation’s Climate Action Plan](#), released in August of 2021. **(Associated Submitted Action Proposals: N/A)**

ACTION 12.5 Develop a model solar ordinance for adoption by local governments

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA Office of State Planning / DNR	Create model solar ordinance policy materials	Encourage purchasing of renewable power

The interest by solar developers in building out infrastructure in Louisiana communities is increasing steadily and will need to continue to grow to meet Louisiana’s clean power needs. Ordinances can be important tools for guiding these developments while achieving community goals and standards. However, many - if not most - local governments lack the capacity and technical expertise to develop ordinances on their own. Furthermore, lack of knowledge or misinformation about solar energy facilities may leave communities unprepared and unprotected from the impact of this type of development. The model solar ordinance developed by this action would be a tool available to local governments and contain the comprehensive policy language needed to protect properties, environments, and people, as well as guide and support solar energy investments locally. This tool would provide context, information, and capacity to local governments, increase predictability of impact, and support current and future solar energy investments that can significantly help the state transition to renewable energy. This action recommends DOA Office of State Planning, in partnership with DNR, be the lead and authorizing entity to provide guidance for local governments and coordination with local land use. **(Associated Submitted Action Proposals: 20)**

STRATEGY 13. Improve the efficiency and resilience of homes and non-residential buildings

Energy efficiency improvements and electrification of building components and appliances can reduce GHG emissions from residential and commercial buildings, while also reducing utility costs and potentially decreasing other air pollutants associated with electricity production. Combining energy efficiency retrofits with storm weatherization and other resilience improvements can ensure Louisiana homes and businesses are prepared for the future. Actions under this strategy support building retrofit programs as well as updates to energy efficiency standards and building codes.

Highlights of how this strategy can realize benefits for Louisiana:

- *Energy Affordability:* Enhancing the efficiency of homes decreases overall energy costs for families through measures like improved insulation, air sealing, and appliance and HVAC efficiency.
- *Economy and Jobs:* Increased demand for building retrofits and energy efficiency upgrades could create a steady pipeline of jobs in the construction trades.
- *Increased Quality of Life:* Retrofitting of homes provides opportunities to enhance the quality of life for residents by mitigating excess energy usage and improving indoor air quality and circulation, while conducting efficiency upgrades, such as remediation of lead and mold.

ACTION 13.1 Accelerate the retrofitting of existing residential and commercial buildings to support comprehensive energy efficiency and resilience upgrades

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
PSC / LHC / DNR / DOA-OCD	Inventory and streamline application to existing efficiency programs	5% retrofit of residential and commercial buildings each year

With multiple residential and commercial efficiency programs in existence, this action proposes that the PSC, in partnership with the Louisiana Housing Corporation, DNR, Office of Community Development, and local governments, streamline existing programs and leverage federal funds to reach a 5% retrofit per year retrofit target. Multiple programs across various governing entities, including DNR’s Home Energy Loan Program (HELP), the expired Home Energy Rebate Option (HERO) program, and the Louisiana Housing Corporation (LHC) Weatherization Assistance Program (WAP), often obfuscate eligibility and requirements for potential applicants. Similar to the New Orleans EnergySmart Program, this action should provide a centralized portal for homeowners or commercial building owners applying to any efficiency program. The portal should contain a building assessment needed for program applications, clarify the intent of various efficiency programs, and direct residents and building owners to the efficiency program best suited to their needs. Lastly, program development through this action should coordinate outreach to encourage homeowners and small businesses to understand their energy usage, identify possible areas for improved efficiency, and develop grants that ease barriers for low-income households to participate. This outreach is necessary to provide assistance for low-income households. Grant funding for existing and future retrofit programs should be prioritized for homeowners and renters who face the greatest energy cost burden – those who pay more than 5% of their income on electricity bills.

As mentioned in prior actions, opportunities for federal funding will flow through existing weatherization programs, which will provide immediately realized benefits upon implementation of this action. Alongside federal funding explicit for

weatherization, federal pre- and post-disaster funding disbursed by the state should be required to incorporate energy efficiency and weatherization best practices into residential and commercial new builds and retrofits of buildings. **(Associated Submitted Action Proposals: 16, 87, 102)**

ACTION 13.2 Redesign and expand property-assessed clean energy (PACE) financing

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / Local Governments	Pursue legislation for redesign of PACE	Encourage effectiveness of existing building efficiency programs

This action provides a voluntary avenue for home and business owners to finance energy efficiency and renewable energy projects for their property through property-assessed clean energy (PACE). The types of projects under PACE tend to include energy efficiency improvements (e.g., insulation, weather sealing, high-efficiency water heaters) as well as solar and other on-site renewable energy systems. Retrofitting low-income homes should also consider roof repairs, which may be a prerequisite for the effective deployment of rooftop solar. This program covers the up-front cost of qualified energy improvements with financing from a local government and then spreads the repayments over a longer period such that the costs of these energy improvements would be distributed over the lifetime of the project. This action proposes working with the Louisiana Legislature and local governments to redesign, enable, and expand PACE in Louisiana with specific provisions to provide access to low-income households, and to provide consumer protections. This includes education and outreach to developers, realtors, mortgage lenders, title companies, appraisers, and homeowners as well as streamlining and consistency of practices among actors. **(Associated Submitted Action Proposals: 146)**

ACTION 13.3 Incentivize the electrification of building components in residential and commercial buildings

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature	Pursue legislation for efficient and electric appliance rebates	Encourage efficiency of building components

Alongside the need to retrofit homes for increased efficiency and weatherization, appliances and systems (e.g., water heaters, HVACs, driers, and stoves) account for a large share of building energy use. Electrifying these building components and systems not only reduce GHG emissions when they are powered by renewable or clean electricity, but they also save the user money due to increased energy efficiency. This action proposes that the Louisiana Legislature develop a grant program to incentivize the purchase of efficient electric appliances and systems by homeowners and small businesses. To improve equitable access, grants should be on a graduated scale based on income. This action would also work with retailers, contractors, and distributors to increase stocking of these appliances, so they are available options for unplanned upgrades (i.e., appliance breaks). It also includes making point-of-purchase materials more widely available to increase awareness. **(Associated Submitted Action Proposals: 29)**

ACTION 13.4 Strengthen minimum energy and lighting efficiency standards for residential, commercial, and public buildings

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / LSUCCC / PSC	Pursue legislation for energy efficiency code updates and standards	Require minimum efficiency of buildings

Minimum efficiency standards can reduce energy demand and the associated GHGs from buildings. Currently, the authority to set energy efficiency standards for buildings and structures is distributed across multiple state entities, including the Louisiana State Uniform Construction Code Council (LSUCCC), the state fire marshal, and DNR. This action proposes that the Louisiana Legislature allow the LSUCCC to update Part IV-Energy Conservation of the International Residential Code beyond the 2009 edition. This action further proposes that the state fire marshal update the Commercial Building Energy Conservation Code to strengthen energy efficiency standards. The state fire marshal, and the LSUCCC should it receive authority to update the Residential Energy Conservation Code, should consult with the DNR Office of Energy, DOA Office of Facility Planning and Control, local governments, the PSC, LHC, residents, and key stakeholders when updating these respective codes. Further opportunity for lighting efficiency comes from transitioning streetlights to LED. LED streetlights require additional action of the PSC to review rate tariffs in order to stimulate statewide adoption of energy-saving streetlights. **(Associated Submitted Action Proposals: 133)**

ACTION 13.5 Lead by example in Louisiana through energy benchmarking in state public buildings

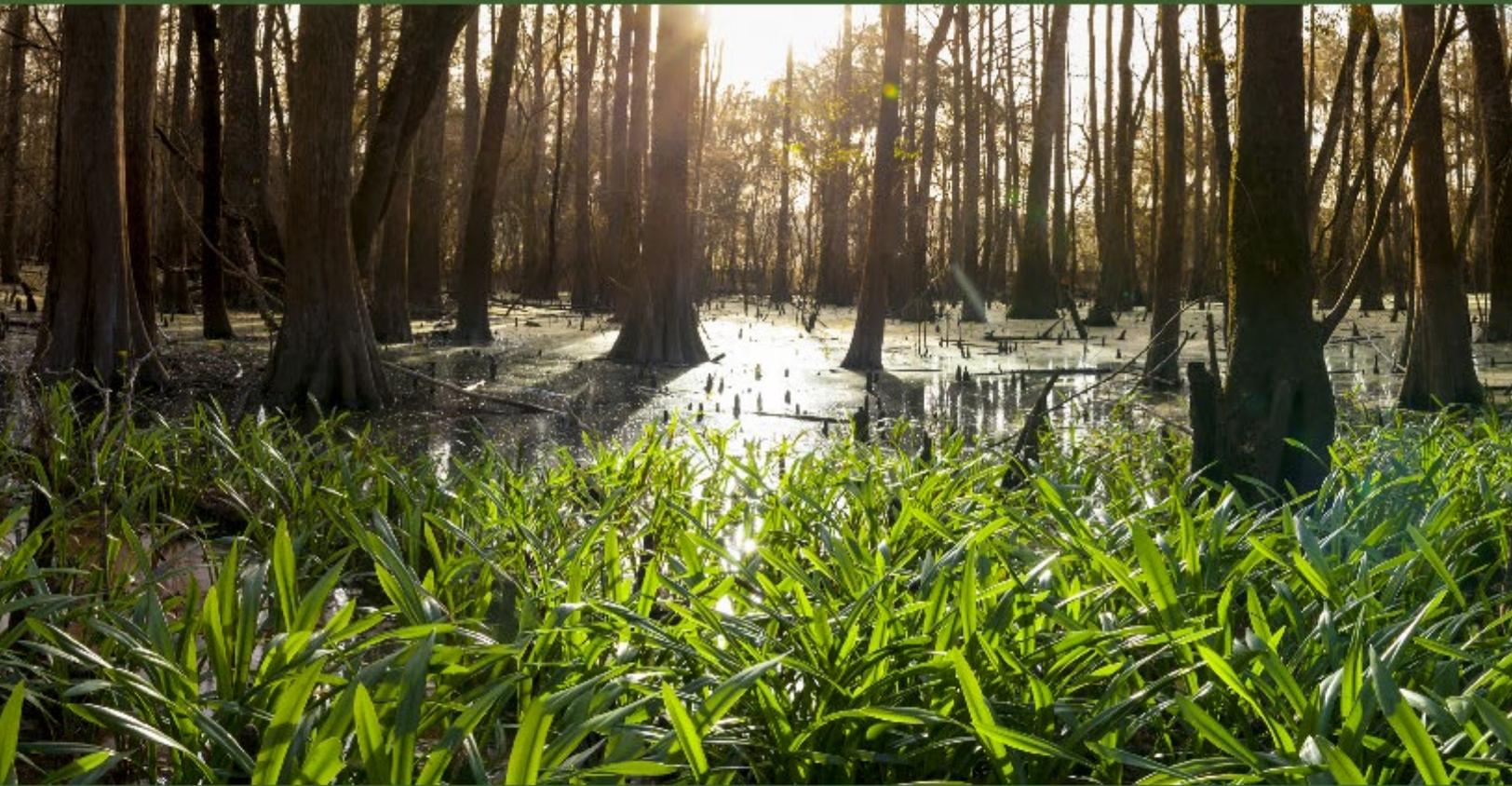
IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DOA	Pursue funding for implementation of energy benchmarking requirements	Monitor carbon impact of buildings and building materials

The Louisiana Legislature passed Act 1184 in 2001, requiring benchmarking and disclosure of energy performance of buildings constructed with state funds. However, funding constraints have impeded implemented by DOA's Office of Facility Planning and Control. With immediate emission reductions that can be actualized, this action proposes that the state allocate funding in the near-term for DOA's implementation of Act 1184 and development of a system for benchmarking the energy performance of public buildings in Louisiana. This benchmarking system would use a life-cycle analysis methodology to calculate the carbon impacts from construction, materials, and operations over time. This system can be used to guide scoping, design, and procurement, but also in evaluating the carbon impacts of retrofits compared to a new build alternative. Once developed, the energy benchmarking system could also be used by state subdivisions, parishes, and municipalities in the medium- and long-term as a guide for developing their own initiatives, such as the St. Tammany Healthy Resilient Buildings Initiative, that can realize energy cost savings and improved air quality. **(Associated Submitted Action Proposals: 50, 87, 104, 134, 161)**

ACTION 13.6 Update statewide building codes

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LSUCCC	Pursue building code updates through the 2021-2022 revision process	Require minimum energy performance standards of buildings

The Louisiana State Uniform Construction Code Council (LSUCCC) is tasked with reviewing and approving updates to the state’s building code. The Louisiana Legislature has, in the past, directed the LSUCCC to review and adopt new codes, such as the plumbing code. In the near-term, this action encourages the LSUCCC to complete the process of code adoption that is underway and adopt stronger minimum energy performance standards and codes for Louisiana by July 1, 2022. If newer building codes were adopted, building projects could take advantage of the latest low-carbon materials such as mass timber. In implementing this action, the Louisiana Legislature should also change the LSUCCC authorization and require them to adopt the latest model codes (such as the residential I-Codes or the ASHRAE 90.1 energy code) automatically as new versions are published, except if overridden by a majority vote of the LSUCCC. **(Associated Submitted Action Proposals: 75, 133, 50)**



Natural Working Lands and Wetlands

This section includes three strategies to promote a comprehensive approach to action for natural sinks. Preservation and conservation of natural lands seek to increase sequestration potential of Louisiana’s lands and forests. Regenerative and sustainable agriculture practices of working lands seeks to reduce emissions and enhance sequestration of farming, ranching, and forestry lands. Wetlands promote efforts of the Coastal Master Plan and increased sequestration capacity of wetlands. Across these three strategies, the section aims to maximize climate mitigation and adaptation goals simultaneously, understanding that resilience and flood risk must be maximized in how Louisiana protects our lands for sequestration potential and comprehensive ecosystem benefits.

- **STRATEGY 14: Preserve and expand natural lands and urban green spaces to maximize climate mitigation and adaptation goals**
- **STRATEGY 15: Restore and conserve Louisiana’s coastal wetlands to maximize climate mitigation and adaptation goals**
- **STRATEGY 16. Support the sustainable management and conservation of working agricultural and forestry lands**

Strategy 14. Preserve and expand natural lands and urban green spaces to maximize climate mitigation and adaptation goals

Louisiana’s natural lands, from bottomland hardwood forests to urban green spaces, sequester carbon while also providing multiple ecosystem services and playing an important role in statewide resilience to the effects of climate change. The continuation and enhancement of these co-benefits hinges on natural land and urban green space preservation, conservation, and expansion. The actions within this strategy emphasize the importance of social equity in conservation planning to ensure that co-benefits can be realized for all Louisianans and ecosystems.

Highlights of how this strategy can realize benefits for Louisiana:

- *Access to Healthy Ecosystems:* Preservation and restoration of natural lands such as riparian buffers can contribute to continued access to clean water and productive ecosystems that also support fishing and hunting resources, both recreational and commercial. Natural lands are central to Louisiana’s cultural heritage, including Indigenous cultures.
- *Reduced Environmental Disparities:* Investments in urban green spaces and natural lands can directly benefit local communities by increasing access to recreational amenities and reducing urban heat island effects through shading building surfaces, deflecting radiation from the sun, and releasing oxygen. Thoughtfully focusing investments in historically underserved communities can narrow existing socioeconomic disparities in access to green space and its benefits.

ACTION 14.1 Assess and conserve Louisiana’s interior natural lands, prioritizing forested lands, grasslands, floodplains, wetlands and riparian areas

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LDAF / land trusts / local government / private landowners	Assess a baseline of areas most in need of conservation	30% conservation of interior natural lands by 2030

This action sets a target for 30% of Louisiana’s interior natural lands be conserved or protected by 2030. This is a reasonably ambitious target based on the data and information that we have to date; however, a comprehensive baseline assessment of existing conserved and protected lands and areas to prioritize for conservation that maximize ecological, hydrologic, and social co-benefits will be a critical first step towards meeting this target and refining it if necessary. Because of the state’s flood risk, action should focus on forested land, floodplains, wetlands, and riparian areas that provide critical hydrologic and watershed function and flood risk mitigation. In particular, preservation and active stewardship of unmanaged, old-growth forested lands and of native or semi-native grasslands, savannas, and woodlands offer a great opportunity for carbon sequestration and better land management in Louisiana. Priority areas should be preserved through voluntary expansion of conservation servitudes and other conservation tools in partnership with landowners, land trusts, conservation organizations, Louisiana Department of Agriculture and Forestry (LDAF), Louisiana Department of Wildlife and Fisheries (LDWF), and local government. This effort should be jumpstarted through existing conservation plans, such as TNC’s Ecoregional Plans, LDWF’s State Wildlife Action Plan, and the White House’s “America the Beautiful” Initiative. Conservation practices should consider and draw upon Traditional Ecological Knowledge, the evolving knowledge acquired by Indigenous and local peoples over hundreds or thousands of years through direct

connection with the environment. This action should also ensure alignment with projects and models of flood risk from the Coastal Master Plan and Louisiana Watershed Initiative. **(Associated Submitted Action Proposals: 40, 68)**

ACTION 14.2 Support the expansion of urban tree canopy and green spaces

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LDAF / parish and municipal governments	Convene stakeholders of major urban areas	30% conservation of interior natural lands by 2030

Activities that reforest public areas in urban environments, increase urban green spaces (e.g., parks, gardens, farms), and provide landscape-based stormwater management through green infrastructure can sequester carbon while also reducing heat island effect, reducing localized flooding, and increasing access to open space. Further co-benefits are reduced energy consumption and ongoing energy use due to a reduced heat island effect. This action proposes the state government, through LDAF, serve as convenor of parish and municipal governments to develop and promote a coherent, statewide approach that supports tree planting programs and maintenance in urban areas, particularly in historically underserved communities. In addition to this statewide approach, this action should empower locals to survey existing tree canopies in urban areas, with progress tracked and reported annually. Near-term deployment of a statewide approach and local surveys of existing canopies should inform longer-term urban transportation projects. Specific focus should be on increasing tree canopy and open space access in low-income, urban areas in both regional and local plans (e.g., State Watershed Plan, Hazard Mitigation Plan, Comprehensive Plans). This action proposes that DOTD review and update, as needed, its guidance for revegetating and planting along state-funded or managed roadways to maximize potential for natural carbon sequestration and landscape-based stormwater runoff management. Guidelines should include measures to improve urban tree canopy where sufficient road rights-of-way exist and where local maintenance sponsors can be identified. **(Associated Submitted Action Proposals: 2, 4, 44, 64, 68, 78)**

STRATEGY 15. Restore and conserve Louisiana’s coastal wetlands to maximize climate mitigation and adaptation goals

As with Louisiana’s inland natural lands, our coastal wetlands sequester carbon and provide important ecosystem services, while also serving a critical role in buffering against rising sea levels and severe storms. Restoring and maintaining coastal wetlands for mitigation against these climate change-related threats can benefit Louisiana’s vulnerable coastal communities and ecosystems, as realized through implementation of Louisiana’s Coastal Master Plan. While sources of GHG emissions are well characterized in the 2021 GHG Inventory, significant knowledge gaps remain related to sequestration of carbon by the diverse ecosystems of Louisiana. Actions in this strategy include mechanisms to fill knowledge gaps and improve the accuracy of our data on natural carbon sinks in Louisiana.

Highlights of how this strategy can realize benefits for Louisiana:

- *Resilience to a Changing Environment:* Investments in restoration and conservation planning can increase community resilience to the threats of sea level rise and severe storms by providing a natural buffer to these threats.
- *Cultural Heritage:* The unique cultural heritage of South Louisiana is intrinsically tied to the natural environment of the coast, highlighting the need to protect environments important to traditional living cultures, including Indigenous cultures and traditional fishing communities. Project-by-project considerations are important for understanding how restoration projects impact cultural heritage.
- *Economy and Jobs:* Louisiana’s coast is a working coast, with 20% of U.S. waterborne commerce coming through our ports and coastal wetlands that provide important habitat for commercially important fish and game species. Conservation and restoration of Louisiana’s coastal habitats is critical to both our local and national economy.

ACTION 15.1 Optimize the carbon sequestration potential of Louisiana’s coastal wetlands through implementation of Coastal Master Plan projects

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
CPRA	Study carbon storage potential of wetland projects	Maximize carbon sequestration of coastal wetland restoration

Implementation of Louisiana’s Coastal Master Plan* includes coastal restoration actions to reduce land loss with a focus on risk reduction to support coastal communities. This action proposes that the Coastal Protection and Restoration Authority (CPRA) incorporate climate mitigation goals and measures (e.g., carbon sequestration potential of wetlands) into future iterations of the Coastal Master Plan as well as into project design and prioritization. Carbon sequestration potential should further make the case for investment in Louisiana’s coastal program and unlock additional resources for project implementation. **(Associated Submitted Action Proposals: 77)**

***Louisiana’s Coastal Master Plan**

Louisiana’s Coastal Master Plan, led by the Coastal Protection and Restoration Authority (CPRA), responds to the loss of the state’s coastal land through setting forth and implementing projects that build or maintain coastal wetlands and reduce flood risk for Louisiana communities.

ACTION 15.2 Quantify and monitor the potential coastal blue carbon in Louisiana habitats and Coastal Master Plan projects

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
CPRA	Invest in assessments of net carbon flux of coastal wetlands	Maximize carbon sequestration of coastal wetland restoration

Quantification and monitoring to assess net carbon flux of Louisiana’s coastal wetland habitats (fresh, intermediate/brackish, saline, and submerged aquatic vegetation; also known as coastal blue carbon) and open water habitats is a crucial step towards building a robust carbon finance framework. Carbon financing presents an opportunity for the state to partner with industry to expand coastal wetland restoration initiatives. Though a comprehensive understanding of blue carbon requires long-term study, existing efforts should continue through: 1) research and development led by the state, non-profits, the private sector, and/or academic institutions to create accurate models that will allow quantification of Louisiana’s coastal blue carbon over time and across variable environmental conditions; and 2) expanded support and monitoring capacity of existing foundational monitoring programs (e.g., System Wide Assessment and Monitoring Program (SWAMP) that includes the Coastwide Reference Monitoring System (CRMS)) to quantify coastal blue carbon across coastal Louisiana over time. **(Associated Submitted Action Proposals: 59, 60, 77)**

ACTION 15.3 Develop crediting mechanism and market specific to blue carbon

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Universities / CPRA / blue carbon experts and verifiers / coastal ecologists	Collaborate with stakeholders to design a carbon credit and market	Maximize investment in carbon sequestration of wetland restoration

Existing carbon markets are designed primarily for terrestrial forests and have not readily accommodated crediting of coastal wetlands. Specifically, standards for additionality and permanency must be tailored for dynamic coastal wetlands to recognize and account for their GHG benefits while being grounded in the realities of those dynamic systems. The natural carbon sequestration potential of Louisiana’s coastal habitats is too valuable to be entirely precluded from market-based systems that can support the conservation and restoration of these important ecosystems. With the assistance of blue carbon experts, carbon verifiers, and coastal ecologists, Louisiana should evaluate the longevity of coastal carbon pools, the design and market interest for the creation of a specialized carbon credit, and the market specific to Louisiana’s coastal wetland habitats. This potential Louisiana credit and market would more directly take into account the sequestration potential of coastal wetland habitats as well as the shorter time scales that conservation or restoration efforts would be expected to offer given the dynamic nature of deltaic systems. This credit and market would attempt to match the local and global demand for natural carbon credits with the urgent need to protect and restore Louisiana’s wetland ecosystems for the preservation of the state’s culture, communities, economy, and environment. **(Associated Submitted Action Proposals: 59, 60, 77)**

DISSENTING VIEW: One member objected to this action, opposing the sale of coastal wetlands as offsets for continued GHG pollution. DISSENTER: Pichon Battle.

STRATEGY 16. Support the sustainable management and conservation of working agricultural and forestry lands

Agriculture and forestry are a large component of Louisiana’s economic prosperity as a state and requires intentional management to curtail and sequester GHG emissions. Best management practices and adoption of new technologies can help Louisiana reduce emissions from land practices while restoring natural ecosystems and biodiversity. Adoption of such practices will benefit from rural and urban focus, where equitable access for all farmers and foresters to such practices and technologies can be continued through conservation implementation programs and enhanced through grants and research programs. Actions within this strategy emphasize collaboration across all stakeholders and agencies to support the transition of Louisiana’s farmers to adopting less GHG-intensive agricultural and forestry practices.

Highlights of how this strategy can realize benefits for Louisiana:

- *Public Health and Safety:* Agricultural best management practices can reduce nutrient runoff and improve water quality leading to lower incidences of harmful algal blooms, higher food and fiber productivity and enhanced local ecosystems.
- *Community Engagement and Participation:* Stakeholder engagement is critical in encouraging voluntary adoption of new practices and technology that better manage and increase the carbon sequestration potential in Louisiana’s agricultural and forestry lands. Implementation of this strategy must consider engagement at multiple scales and through multiple mechanisms to communicate benefits of transitioning toward practices enabling lower GHG emissions and accelerated soil carbon sequestration.
- *Strengthening Louisiana’s Economy:* Sustainable use of working lands leads to healthier soils, which promote long-term management and greater longevity of production. Moreover, encouraging Louisiana’s investment in its own consumption of Louisiana-derived agricultural and forestry products will provide further strength to the state’s economy while reducing GHG emissions.

ACTION 16.1 Establish a Louisiana Conservation Innovation Program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
USDA / LDAF	Leverage USDA investment for innovative practices	Encourage conservation practices that sequester carbon

Founded on the U.S. Department of Agriculture (USDA) Conservation Innovation Grant Program, many states have established Conservation Innovation Programs to incite creativity and promote development of innovative conservation practices uniquely tailored to benefit the state. This action proposes creation of a Louisiana Conservation Innovation Program within the LDAF to stimulate development and adoption of innovative conservation approaches and technologies that curtail and sequester GHG emissions. Research institutions, farmers, agencies, and others will be able to submit innovative conservation approaches in the program. Through partnering with USDA and others, the LDAF will request funding to promote pilot projects, field demonstrations, and on-farm conservation research for the development and testing of innovative practices specific to Louisiana. **(Associated Submitted Action Proposals: 42, 110)**

ACTION 16.2 Support the transition to regenerative agriculture and forestry practices

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
USDA-NRCS / SWCDs / LDAF	Convene farmers, ranchers, and foresters to identify barriers	Increase access to regenerative agriculture and forestry practices

**Regenerative Agriculture*

Regenerative agriculture is a system of farming principles and practices that seeks to rehabilitate and enhance farm ecosystems by emphasizing soil health, water management, fertilizer use, less GHG-intensive equipment, and other best management practices.

Transition to regenerative agriculture* and forestry practices is essential to minimize the agricultural sector’s use of fossil-fuel based equipment, to maximize agricultural sequestration potential of best management practices, and to promote healthy soils and ecosystems. However, many barriers impede widespread transition. This action proposes that, in the short-term, LDAF and local Soil and Water Conservation Districts (SWCDs) continue to convene focus groups of farmers, ranchers, and foresters to identify barriers to adoption of various conservation practices and identify opportunities and solutions to overcome those challenges. As consensus is built around impediments to adoption of regenerative agriculture and forestry conservation practices 18.2 LDAF, SWCDs, and the USDA Natural Resource Conservation Service (NRCS) should collaborate to develop a competitive grant program that offers technical and financial assistance to landowners that guide and support transition and lower barriers to on-farm conservation practices. **(Associated Submitted Action Proposals: 88)**

ACTION 16.3 Expand implementation of on-farm conservation plans

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
USDA-NRCS / SWCDs / Landowners	Advocate for further on-farm conservation funding	Increase access to regenerative agriculture and forestry practices

On-farm conservation plans have had the most success in transitioning farmers, ranchers, and forest landowners to implementing conservation practices. The Louisiana Conservation Delivery Program, a partnership of the USDA NRCS and local SWCDs with individual landowners, is responsible for development of voluntary on-farm conservation plans of sustainable practices through enhancing and conserving soil, water, and related natural resources. This action proposes uplifting this successful collaboration and program through advocating for expansion of federal and state funding. With more funding, the program should incorporate and fund the current backlog of eligible conservation program applications and enable more eligible working land tracts to be enrolled into conservation plans. **(Associated Submitted Action Proposals: 38, 39)**

ACTION 16.4 Measure carbon sequestration potential of conservation farming and forestry best management practices

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Universities / LDAF / DEQ	Study ability of BMPs to reduce and sequester GHG emissions	Encourage conservation practices that sequester carbon

Best management practices (BMPs) are central in the transition to regenerative and conservation farming and forestry, and on-site emission reduction and carbon sequestration quantification technologies must be made widely available and should continuously advance. This action tasks Louisiana’s research institutions to study, monitor, and publish data on the co-benefits and impacts of BMPs to abate GHG emissions, improve soil and water quality, improve natural ecosystems, and sequester carbon. We recommend this study begin immediately so that results can be incorporated into best management practices and on-farm and on-forest conservation programs implemented. **(Associated Submitted Action Proposals: 34)**

ACTION 16.5 Establish an urban agriculture and conservation program in the LDAF

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LDAF / SWCDs	Develop an urban agriculture and conservation program	Increase urban access to regenerative agriculture and forestry practices

As expressed in prior actions, LDAF currently offers a variety of approaches to conservation through partnerships, programs, and projects through its Office of Soil and Water Conservation and SWCDs. To build on this extensive work and bring more stakeholders to the conservation conversation, this action proposes the development of an urban agriculture and conservation program within the LDAF to ensure adoption of regenerative and sustainable practices across all Louisiana landscapes. The proposed program should provide educational resources, workforce development and training, marketing assistance, and grant support for farmers, landowners, foresters, and other stakeholders in urban areas. We recommend near-term creation of this program to ensure a comprehensive and inclusive approach to conservation across Louisiana. **(Associated Submitted Action Proposals: 88)**

ACTION 16.6 Establish regional compost facilities and accompanying local programs

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LDEQ / LDAF	Collaborate on strategic design and locations of compost facilities	Increase access to regenerative agriculture practices

Composting is an effective waste and GHG reduction measure that diverts organic materials from landfills and incinerators and converts those materials into valuable fertilizer to replenish and stabilize the soil. LDAF already implements an Agriculture Solid Waste BMP Program. This action proposes LDEQ and LDAF partner to encourage

backyard composting of yard and food waste for homeowners and restaurants, designate regional compost facilities, promote compost as a solid waste BMP, and partner with parish- and municipal-level compost programs. LDEQ should designate and fund regional compost facilities with methane waste recovery technology in partnership with local entities, and LDAF should work with farmers to promote on-farm compost. Near-term implementation of these actions will increase the viability of local compost programs and community gardens that further promote sustainable and local agriculture, providing resources to underserved and overburdened communities. **(Associated Submitted Action Proposals: 154, 158, 159, 160)**

ACTION 16.7 Encourage sustainable forest management and greater use of Louisiana forest products for construction

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LFA / LDAF / DOA / LED	Convene major foresters for educational sessions	Increase access to regenerative forestry practices

Markets for wood products create incentives for landowners to plant more trees and better manage forests, resulting in more carbon sequestered. Educating landowners on and establishing sustainable forestry practices maximizes carbon sequestration of forested lands, encourages participation in carbon markets, and enhances early succession benefits and realized co-benefits to ecosystems and species. Further, implementation of a Buy Clean Louisiana policy (Action 6.1) will encourage and require manufacturers and end users to purchase sustainably forested products in construction and consumer products, increasing the amount of carbon stored by trees. This action proposes LDAF’s Forestry Protection Program and the Louisiana Forestry Association (LFA) partner to educate major foresters on the sustainable management of forests and the necessary steps to engage in existing carbon markets. DOA and LED should also encourage use of Louisiana forest products – lumber, plywood, paper, wood pellets, and biomass – in state capital projects and other construction projects. Cognizant of Louisiana’s forestry resources and markets, it is recommended that outreach to foresters, manufacturers, and end users begin immediately for this transition to be effective. **(Associated Submitted Action Proposals: 26, 31, 67)**

DISSENTING VIEW: One member objected to this action, opposing the inclusion of wood pellets as a climate solution and raising concern over its environmental and climate impacts. DISSENTER: Pichon Battle.



An Inclusive, Low-Carbon Economy

Three strategies and eight actions detail key components of an inclusive, low-carbon economy that supports and promotes clean energy development and transition. This section focuses on how Louisiana workers and businesses are centered in the transition through accessibility of education and resources to retrain. Education, research, and innovation are another necessary focus of this section and actions take steps to coordinate research, train the next generation of citizens and workers, and enhance partnerships with unions and the private sector.

- **STRATEGY 17: Build a more inclusive and resilient economy for all Louisiana residents**
- **STRATEGY 18: Strengthen climate education, research, and innovation as a focus of Louisiana’s energy transition**
- **STRATEGY 19: Prioritize Louisiana workers and businesses in the transition to a low-carbon economy**

STRATEGY 17. Build a more inclusive and resilient economy for all Louisiana residents

Deliberate action is necessary to ensure that all Louisianans have equitable access to future economic opportunities and that any disruptions to the economy associated with the energy transition do not fall disproportionately on any one community. By prioritizing the success of those who have historically been excluded from the benefits of prior economic transitions and those who are most directly affected by the energy transition, the shift to a low-carbon economy can more broadly, inclusively, and equitably provide benefits throughout the state.

Highlights of how this strategy can realize benefits for Louisiana:

- *Supporting historically marginalized groups:* Targeted effort to address historical and ongoing inequities is more likely to lead to positive outcomes for the clean energy transition and for historically marginalized communities and residents, including communities of color and Indigenous peoples.
- *Strengthening the economy:* By proactively providing training and opportunities, Louisiana can ensure that people and communities historically left out of previous economic booms can be part of building Louisiana’s clean energy future.

ACTION 17.1 Establish a Louisiana Plan for Economic Transition

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LED / LWC / Louisiana Technical and Community College System	Convene stakeholders to develop vision and ambition for the transition plan	Support Louisiana agencies, industries, and workers in energy transition

This action proposes the establishment of a Louisiana Plan for Economic Transition to help provide strategic direction and support to the state, workers, and small businesses as they manage overlapping economic transitions. This planning effort should conduct research and develop a statewide and regional strategies for addressing the transitions resulting from globalization and trade disruptions, rapid technological shifts such as increased automation, changes to fossil fuel prices and demand, global efforts to decarbonize the energy sector, and other challenges resulting from climate change. The Plan for Economic Transition should build upon the state’s existing strengths while considering opportunities for economic development that diversify the Louisiana economy and encourage growth in low-carbon industries like renewable energy. It should identify or propose educational and training opportunities and programs to support and grow Louisiana’s workforce with tailored assistance for current workers in the energy industry and for communities that have been historically marginalized or excluded from participating in economic advancement. This action would be a joint effort by LED, the Board of Regents, regional economic development organizations, the Louisiana Technical and Community College System, and the LWC. Together, these entities would help promote and attract new economic opportunities to the state while also preparing workers for emerging opportunities related to the low-carbon economy of the future.

STRATEGY 18. Strengthen climate education, research, and innovation as a focus of Louisiana’s energy transition

To build climate leadership throughout the state, it is critical that Louisiana allocates the funding and resources necessary to build and coordinate climate education programs across the state, facilitate better collaboration among research institutions that specialize in climate change mitigation and adaptation, and prepare Louisiana for national and international level research opportunities. Education, at all levels, and applied research are the foundation of a more inclusive, low-carbon economy and are critical to ensuring that the next generation is prepared, resilient, and innovative when facing future climate threats.

Highlights of how this strategy can realize benefits for Louisiana:

- *Economy and Jobs:* The national and global focus on climate change and reduction of GHG emissions will present numerous opportunities for researchers, innovators, and practitioners to apply climate-related expertise in locations outside of Louisiana and bring revenue and opportunities to the state.
- *Increasing the Likelihood of Success:* Many promising technologies to reduce net GHG emissions reductions, particularly from industrial sectors that form key parts of the Louisiana economy, have yet to be fully developed or applied at scale. Research and development to advance GHG reduction solutions is vital to achieving success as a low-carbon economy.

ACTION 18.1 Establish a Research Practitioner Partnership (RPP) Program to support climate education

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Department of Education	Develop climate curricula and projects for K-12 education	Center climate education in K-12 classrooms

This action, enabled through the Louisiana Department of Education STEM Team and the LA STEM Council, proposes a Research Practitioner Partnership (RPP) Program*, led by the Louisiana Department of Education, to provide dedicated, yearly funding and support for K-12 climate education projects and development of curricula implemented by educators, researchers, practitioners, industry, and policy makers. Expansion of climate education is a critical step towards ensuring that the next generation is prepared, resilient, and innovative when facing future climate threats. This action recommends the Department of Education begin conversations with the LA STEM Council to build a framework for climate education with long-term ambition to establish the RPP Program followed by schools across Louisiana in K-12 education. **(Associated Submitted Action Proposals: 54)**

***RPP Program**
*A **Research Practitioner Partnership (RPP)** is a long-term and mutually-beneficial partnership between researchers and practitioners in the workforce, intended to better align ongoing research with the needs of surrounding communities.*

ACTION 18.2 Teach, re-train, and employ Louisiana residents in clean energy sectors

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LWC / Universities / Community Colleges	Develop relevant education, training, and re-training courses and curricula	Guarantee job training for workers in energy transition

Training Louisiana workers is a critical step towards transitioning and growing the state’s local clean energy industry. This action, enabled by the Louisiana Board of Regents and the Louisiana Workforce Commission (LWC), would create a Climate Corps Program in the LWC for local community colleges and Louisiana universities to provide education, training, and re-training necessary to support the growth of the renewable energy industry. This action would also encourage the growth of rural jobs that take advantage of natural carbon sequestration, such as encouraging employment of foresters and land managers who understand the best practices for natural carbon sequestration. Near-term leadership from the LWC will enable training and career track transition programs in the form of four-year degrees, two-year degrees, and industry certificate programs to be offered by universities and community colleges in the following areas: information technology, electrical engineering, utility management, and alternative fuel vehicles (manufacturing, operations, maintenance). **(Associated Submitted Action Proposals: 23,99, 137)**

DISSENTING VIEW: One member objected to this action, citing opposition to the inclusion of non-renewable clean energy and subsequent perpetuation of fossil fuel use and deployment of fossil-fuel based technology. DISSENTER: Pichon Battle.

ACTION 18.3 Coordinate climate change mitigation and adaptation research needs across Louisiana’s academic, public, and private institutions

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
The Water Institute of the Gulf	Collaborate with universities to identify existing climate-related work and research gaps	Support Louisiana universities in energy transition

Louisiana’s extensive research institution and university networks offer widespread expertise well-suited to inform climate action. Many research institutions are already investing in and undertaking research related to various aspects of climate action, though this research and development is often not coordinated. This action proposes centralized coordination of climate action across the public, private, and academic networks. Immediate action should be taken by the Water Institute, designated as the state’s Innovation and Collaboration Hub, to inventory interdisciplinary climate research capabilities across the state and provide a broad understanding of existing in-state expertise in climate action to the Governor’s Office. Following completion of this inventory, the Water Institute should launch a partnership program to serve as the coordinating unit that convenes institutions to identify state research needs, discuss emerging work, and partner across universities on grant and project proposals that seek to understand existing emissions and emission reduction measures. Partners of this program would meet semi-annually beginning in 2023 to coordinate ongoing work and identify emerging opportunities for research, development, and demonstration or pilot projects for the state. **(Associated Submitted Action Proposals: N/A)**

STRATEGY 19. Prioritize Louisiana workers and businesses in the transition to a low-carbon economy

For Louisiana to successfully shift to a low-carbon economy, the state must invest in the training and preparation that Louisiana workers need to build and maintain clean energy infrastructure and find opportunities in other industries and sectors as the economy retools. This will require targeted training and re-training initiatives, a strong commitment to the development of renewables industries, and the creation of proactive programs that ensure the successful transition of oil and gas workers to job placements in clean energy and beyond.

Highlights of how this strategy can realize benefits for Louisiana:

- *Supporting the Workforce:* The state of Louisiana is likely to see shifts in the types of industries providing employment opportunities for workers, particularly those with varying educational backgrounds. Workers can benefit from the transition to a low-carbon economy through targeted training that will equip them with the high-demand skill sets needed to deploy the strategies laid out in this plan.
- *Strengthening the Economy:* By ensuring that Louisianans have the knowledge and skill sets needed to support building and maintaining the infrastructure needed to reduce net GHG emissions, this transition can serve as an economic driver and attract future investment into the state.

ACTION 19.1 Promote and invest in Louisiana-based low-carbon industries, including specialized worker training and long-term economic development planning to recruit, develop, and retain firms and workers

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LED / LWC /Louisiana Community and Technical College System	Invest in Louisiana-based low-carbon industry through tax incentives	Support Louisiana industries in energy transition

Louisiana has many programs and investments in place to promote the existing energy industry that could be modeled or retooled to promote and invest in emerging low-carbon opportunities such as renewable energy, coastal blue carbon, low- and no-carbon hydrogen, and low-carbon fuels. For example, the technical needs of solar power generation can be different at the utility scale than the distributed scale. However, with the proper training, a worker could be qualified to work on either installation thereby improving the likelihood of maintaining steady work across utility and distributed projects. This action recommends a combination of legislative and executive actions by LED, regional economic development organizations, the Board of Regents, the Louisiana Community and Technical College System, and the LWC to adjust and propose tax incentives, worker training programs, and determine other ways to speed and smooth the transformation of the state’s energy systems, workforce, and economy. **(Associated Submitted Action Proposals: 23, 61, 93)**

DISSENTING VIEWS: Three members objected to this action, with two members objecting to the inclusion of “low-carbon hydrogen” and one member objecting to agency-focused implementation. DISSENTERS: Pichon Battle, Daniels, Verchick.

ACTION 19.2 Establish and expand entrepreneurial and jobs programs in under-resourced communities to meet the needs of the energy transition

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LED	Prioritize investment in disadvantaged business enterprises and communities	Support underserved communities in energy transition

If the energy transition is to reach communities most impacted by climate change and disinvestment, Louisiana should extend the physical reach of entrepreneurial and workforce training programs specifically to these communities. Implementation of this action includes extending existing offices and programs, like the Small Business Assistance Centers run by the LED, to all communities and expanding new services specific to the energy transition for all communities (e.g., Rapid Response teams, Action 19.3). This action recommends LED identify and plan targeted outreach opportunities to assist disadvantaged business enterprises with state and federal procurement, alongside identifying business development opportunities for small businesses and workers in these communities. A combination of community- and business-based outreach will help ensure access to and widespread benefit from investments in renewable energy and other aspects of the energy transition. **(Associated Submitted Action Proposals: N/A)**

ACTION 19.3 Enhance the Louisiana Workforce Commission’s Rapid Response services to anticipate and provide tailored support to oil and gas and related workers facing job displacement and layoffs

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LWC	Assist transitioning workers through Rapid Response teams	Support displaced workers in energy transition

Louisiana has lost thousands of jobs in oil and gas over the last decade, and as the energy transition accelerates, it is inevitable that additional workers in this industry will face layoffs. To make sure that these workers are supported and assisted, this action proposes the enhancement of the Louisiana Workforce Commission’s Rapid Response* teams to

**Rapid Response Teams*

Rapid Response is an early intervention outplacement service, offered to workers affected by major layoffs and plant closing and intended to inform affected employees on how to access services.

anticipate and provide specific support and services for those facing job losses and facility closures. These Rapid Response teams should partner with the workers and their families, ensuring that the workers receive unemployment benefits, support services, and that relevant training or new job opportunities are identified. Louisiana’s oil and gas workers are skilled and valued, and the state should proactively work to place them in new high-quality jobs where their skills can be used, even if not every worker can transition to the renewable energy industry. This action instructs the LWC to review its existing Rapid Response programming and make improvements so that energy workers

and their families are better served throughout a changing energy and economic landscape. **(Associated Submitted Action Proposals: 153)**

ACTION 19.4 Establish partnerships with Louisiana educational and non-profit institutions, businesses, and unions to better guarantee job placements for workers in low-carbon training programs

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
LWC / non-profits / businesses / unions	Convene stakeholder groups for coordinated job placement	Guarantee job placement in energy transition workforce

Enrolling in a training or educational program can mean lost time, taking on personal expense, and missed wages. Still riskier is the chance that there will be no jobs available at the end of the program. This action creates partnerships between educational and non-profit institutions, businesses, and unions to better guarantee job placements for graduates of training programs in low-carbon sectors so that workers know and see that their investment to gain new skills is worth the risk. Closer coordination and improved job placements will increase the number of workers enrolled and completing training programs in clean energy and other fields needed for the energy transition and necessary for the successful implementation of all actions in this strategy and in Action 17.1. **(Associated Submitted Action Proposals: N/A)**



Collaboration and Partnerships to Ensure Successful Implementation

Partnerships are central in successful implementation of Louisiana’s Climate Action Plan. This section broadly outlines the alignment and coordination necessary for meaningful progress towards emission reduction targets, noting stakeholders and their unique roles in collaboration and implementation. Key stakeholders identified in the portfolio are federal, state, and local governments; the private sector; and communities, particularly those historically disadvantaged, and Indigenous peoples.

- **STRATEGY 20.** Ensure Louisiana is prepared to maximize potential federal funding opportunities
- **STRATEGY 21.** Position Louisiana as a climate leader by engaging in national and regional dialogues and planning
- **STRATEGY 22.** Align climate action approaches across state government
- **STRATEGY 23.** Coordinate action with local government
- **STRATEGY 24.** Call upon the private sector to align their practices and play a leading role in climate action
- **STRATEGY 25.** Improve engagement with and track progress on outcomes for disadvantaged communities and Indigenous peoples

STRATEGY 20. Ensure Louisiana is prepared to maximize potential federal funding opportunities

With passage of the 2021 Infrastructure Investment and Jobs Act, numerous federal opportunities exist in the coming years for increased funding for climate mitigation and resilience initiatives across all sectors of the economy and benefitting all of the Task Force's fundamental objectives. Louisiana's efforts to utilize allocated funding and to compete for available federal resources should be coordinated across agencies to maximize the potential for success and the realization of goals and values established in this Climate Action Plan. This coordination should be led through the Office of the Governor with leadership and input from departments identified as eligible applicants or recipients. Federal funding is imperative for Louisiana's successful transition to a low-carbon economy, so Louisiana must be proactive in advocating for increased federal support, including but not limited to the following priority areas:

- Converting public fleets and heavy-duty vehicles to zero-emission vehicles and the buildout of electric vehicle infrastructure (SA# 158, 162, 29, 27, 36, 137)
- Plugging, remediating, and reclaiming orphaned wells (SA# 166, 167, 168)
- Expanding monitoring of methane and other GHGs (SA# 91, 151)
- Measuring, monitoring, and enhancing natural wetland carbon sequestration (SA# 59, 60)
- Pre-disaster mitigation and community-focused resilience (SA# 152)
- 45Q tax credits for industrial carbon capture and sequestration (SA# 109, 120, 121)
- 45Q-equivalent tax credits for industrial electrification
- Hydrogen Hubs and Direct Air Capture Hubs
- Accelerating offshore wind development in Louisiana (SA# 61, 101)
- Attracting and retaining clean energy industries and investments (SA# 29)
- Investing in energy efficiency improvements and weatherization programs (SA#119, 162, 16, 177)
- Expanding programs that assist workers displaced by climate or energy transitions (SA# 153, 23)
- Advocating for a streamlined federal acknowledgement process for Louisiana tribes
- Investing in statewide broadband (SA# 25)
- Sustainable and regenerative agriculture, forestry, and soil management

Highlights of how this strategy can realize benefits for Louisiana:

- *Reducing the Cost of Transition:* Federal funding can offset some of the costs of a transition to a low carbon economy, reducing the state and private investment needed to implement the strategies and actions contained in this plan.
- *Quality of Life:* Federal programs can help catalyze the broader social, economic, and health benefits associated with the strategies and actions of the Louisiana Climate Plan, such as the reduction of pollution when vehicles are electrified and the capping of orphan methane wells.
- *Ensuring Effectiveness and Durability:* Positioning Louisiana to capitalize on Federal resources expands the resources available to support plan implementation into the future.

STRATEGY 21. Position Louisiana as a climate leader by engaging in national and regional dialogues and planning

Partnerships are essential to make meaningful progress towards Louisiana's targets. Regional partners are necessary to advance carbon pricing systems, electricity transmission planning, offshore wind development, regional transit connectivity, and climate adaptation. This strategy recommends that Louisiana initiate and participate in discussions with other states to: a) establish a regional, if not national, cap-and-trade or carbon tax program, b) intentionally plan for the expansion of electrified transmission infrastructure and offshore wind development, c) strategize transit connectivity between interstate communities, and d) set goals for building climate resilience with states facing similar threats. Regional partnerships are essential to reduce incidence of carbon leakage and to ensure states collaborate in working towards similar goals. However, state-level action is not sufficient alone to lead economy-wide transitions. Local and national partners are also essential to secure funding and ensure support for the state's goals and to pilot nationally significant initiatives that move the country towards carbon neutrality. In addition to federal priorities mentioned in Strategy 20, this strategy also recommends Louisiana pursue interstate and intercity partnerships and the sharing of lessons learned from other states and cities.

Highlights of how this strategy can realize benefits for Louisiana:

- *Ensuring Effectiveness and Durability:* Through proactive engagement with federal and state partners, Louisiana can help shape the discussion on the national stage to support strategies and actions that require federal policy shifts—or infrastructure updates—for successful implementation.
- *Strengthening the Economy:* Louisiana can become a leader in a global transition to a low-carbon economy. Engagement and leadership at the regional and national scale can help ensure that the potential economic benefits of state leadership are realized, such as the development of infrastructure for transmission of renewable energy generated within and offshore of Louisiana.

STRATEGY 22. Align climate action approaches across state government

A whole-of-government approach across Louisiana is necessary to advance state emission reduction actions. The Governor's Office will encourage cross-agency collaboration and alignment, the setting of climate-related goals within individual agencies, and the strengthening of partnerships with local government, communities, and Indigenous peoples to carry out actions that cross and extend beyond agency jurisdictions. As key implementers of this Climate Action Plan, state agencies must maintain alignment and function as a coordinated unit for climate action to be successful. The Governor's Office will also seek to collaborate with other state entities such as the PSC, LDAF, and the Louisiana Legislature.

Highlights of how this strategy can realize benefits for Louisiana:

- *Timely Implementation:* Through close coordination of state agencies, the strategies and actions of the Climate Action Plan can be implemented as quickly and efficiently as possible, resulting in faster realization of benefits for the people of the state.
- *Durability and Long-Term Success:* The net GHG emission reduction strategies and actions in this plan span across sectors that are supported or regulated by multiple state agencies. Close coordination of those agencies ensures that new policies, incentives, and regulations are complementary and effective in reducing net GHG emissions and providing other benefits to Louisiana, while also streamlining implementation.

STRATEGY 23. Coordinate action with local governments

Local governments are significant collaborators and implementers of climate action within their jurisdictions. State partners must work alongside local government to encourage local climate action planning that complements Louisiana's Climate Action Plan, reduces emissions locally, enhances economic activities, and advances equity around local concerns as climate mitigation activities are implemented. Alongside engagement with communities on climate change emissions, parishes and municipalities will work to build community awareness, enhance safety, identify sufficient funding, and collectively implement equitable disaster planning and recovery across the rural to urban gradient.

Highlights of how this strategy can realize benefits for Louisiana:

- *Enhancing the Local Benefits of Climate Action:* Active engagement of local government can help ensure that individual communities fully realize the potential economic, societal, and health co-benefits of a low-carbon economy transition.
- *Increasing Public Trust:* The close ties that local government has within the community provide the most direct connection to the people of Louisiana and therefore the most effective avenues of enhancing community outreach and engagement.

STRATEGY 24. Call upon the private sector to align their practices and play a leading role in climate action

Businesses are crucial partners for developing innovative and technical solutions to reduce emissions and critical sources of resources to meet environmental goals. The Governor's Office and state partners must work with and engage in continuous solution-building with the private sector and regulated utilities to implement the actions set forth in this Climate Action Plan. This should be done through direct engagement with business leaders to support mutually beneficial steps toward climate action and by the establishment of an entity capable of leveraging public and private dollars for the implementation of climate mitigation and adaptation initiatives, such as a Resilience Fund. Similar institutions around the country have been used to provide bridge loans for renewable energy projects and energy efficiency retrofits, direct financing for community solar, and credit enhancement to increase the willingness of private actors to provide capital for resilience projects.

Highlights of how this strategy can realize benefits for Louisiana:

- *Strengthening the Economy:* Louisiana-based technological and industrial solutions necessary for successful implementation of multiple actions within the Climate Action Plan can be marketed and deployed nationally and globally.
- *Enabling Timely Implementation:* Technological innovation is vital for reducing net GHG emissions from the industrial sector. Given the high percentage of emissions that result from industrial processes within the state, the timeliness of success is closely tied to the development of effective solutions by the private sector.
- *Facilitating Implementation:* Leveraging public dollars to attract private investments through a specialized entity, like a Resilience Fund, can expand the number and types of projects that can be implemented and the speed of realized benefits from the implementation of climate mitigation actions.

STRATEGY 25. Improve engagement with and track progress on outcomes for disadvantaged communities and Indigenous peoples

Disadvantaged communities and Indigenous peoples must be at the center of collaboration and partnership in the development and implementation of climate action. In next steps of implementation, this strategy tasks the Task Force with ensuring actions set forth in this Climate Action Plan create new opportunities for and benefits to disadvantaged communities and Indigenous peoples, particularly those historically marginalized, those who face disproportionate climate impacts, and those of low-to-moderate income. While next steps are being implemented, this strategy tasks the Task Force with enabling and encouraging communities and Indigenous peoples to engage in knowledge sharing, solution building, and decision making. This action further tasks the Governor's Office and state agencies with investing in the sustained two-way communication of needs and progress with Indigenous peoples and marginalized communities.

This approach to engagement can be seen specifically in Actions within this plan, such as Actions 13.1 (Retrofitting Buildings and Homes), 18.2 (Clean Energy Job Training), 19.2 and 19.4 (Targeting Job Placements and Energy Transition Opportunities), and 26.3 (Incorporating Environmental Justice into Statewide Siting Planning). The outreach and community consultation within these Actions will be a starting point for engagement that centers these communities in the state's climate plan implementation. Further, all actions should respect tribal treaty rights and similar tribal rights.

Though these actions set forth ambition, tracking outcomes is paramount to make meaningful progress on community-centered approaches and engagement in climate actions. Effective quantitative metrics of the distribution of resources, or the prevalence of inequality – such as the rate of distribution of poverty or of the GINI coefficient – alongside metrics of health, housing, and education must be explored and used as tools to track implementation of climate actions and include in annual progress reports.

Highlights of how this strategy can realize benefits for Louisiana:

- *Supporting Historically Marginalized Groups:* Meaningful engagement of—and leadership by—disadvantaged communities and Indigenous peoples is critical for achieving widespread success and equitable outcomes of a low carbon transition.
- *Preservation of Culture and Cultural Resources:* Indigenous people and communities have the greatest understanding and ties to cultural resources, and incorporating their input into action implementation will help ensure that the rich cultural history of the state is preserved.



Accountability and Adaptability to Ensure Lasting Success

This final section contains two strategies that will ensure the long-term success of the state’s climate mitigation efforts. Through longevity of the Task Force and a dedicated staff, the Climate Action Plan strategies can be effectively and transparently implemented. Long-term monitoring of GHG emissions will be a top priority to ensure the state is on track to meet GHG reduction goals. As investments in new technology become more feasible and models change, the GHG inventory and Climate Action Plan must also be updated so that Louisiana’s climate actions are based on the best available science and are responsive to changes in the marketplace and conditions here on the ground

- **STRATEGY 26.** Advance an equitable, efficient, and sustainable siting and permitting process for new energy and infrastructure projects
- **STRATEGY 27.** Ensure that Climate Action Plan strategies are effectively and transparently implemented
- **STRATEGY 28.** Track progress in reducing net GHG emissions reductions and adapt the approaches taken as needed

STRATEGY 26. Advance an equitable, efficient, and sustainable siting and permitting process for new energy and infrastructure projects

Implementation of this plan will require the modification of existing energy infrastructure and the construction of new energy and infrastructure projects, such as renewable energy generation (e.g., solar farming, offshore wind), expanded electricity transmission infrastructure, vehicle charging stations and energy storage, and CCUS facilities and pipelines. Our state's siting and permitting processes must be updated to ensure that new projects are safely and equitably developed. Meeting our climate goals will also require revisiting Louisiana’s existing practices and regulations that guide the development of new and expanded industrial facilities. This strategy aims to ensure that new projects align with Louisiana’s climate action goals, mitigate adverse impacts to communities and environments now and into the future, and incorporate environmental justice considerations.

Highlights of how this strategy can realize benefits for Louisiana:

- *Human and Environmental Health:* Amending permitting and siting regulations to reflect Louisiana’s emission reduction targets will mitigate impacts to air quality throughout the state. Additionally, the development of new permitting and siting processes that prioritize environmental justice and consider the needs of marginalized communities that have been disproportionately impacted by pollution-related health impacts will improve public health outcomes.
- *Community Engagement:* Community input into revised permitting and siting practices is necessary to ensure the updated processes are equitable and sensitive to the needs of groups who have historically been marginalized.
- *Timely Implementation, Durability, and Long-Term Success.* Updating permitting and siting processes to be more streamlined enables the fastest implementation of actions requiring new infrastructure. At the same time, aligning those processes to support net-GHG emission reductions and other objectives associated increases the likelihood of long-term success.

ACTION 26.1 Increase the resources and staffing capacity of participating state agencies to plan for, oversee, and monitor the deployment of new clean energy technologies and infrastructure

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / DOA	Invest increased resources in agencies implementing the Action Plan	Maximize effective implementation of the Action Plan

DNR’s jurisdiction over utility-scale solar and wind energy on state lands and water bottoms makes the agency central in deployment of clean energy in Louisiana. This action recommends DNR guide the development of a process to assess, monitor, and make regulatory determinations on development of CCS, CCUS, and clean/renewable energy infrastructure technologies (e.g., solar farming, transmission lines, offshore wind). Specifically related to CCS and CCUS, a new and unique set of research and technology needs have been identified for DNR alongside monitoring needs from DEQ. Prior to the permitting of any projects, this action requires an internal audit of the deploying agency to ensure that it is adequately funded and prepared to assess, monitor, and make regulatory determinations for the specific project (e.g.,

related to geologic storage in the development and maintenance of CCS well sites). This action also supports increased capacity of DNR and DEQ to monitor potential air quality impacts, leaks at CCS well sites, complications of underground storage, and others. Since proposed clean and renewable energy infrastructure projects currently are undergoing the permitting process, this action proposes state funding be allocated to DNR and DEQ in the near term. **(Associated Submitted Action Proposals: N/A)**

ACTION 26.2 Solicit a study to more comprehensively understand potential impacts of CCUS technology and infrastructure on communities, ecosystems, and cultural resources to inform siting and permitting deployment

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Universities / DNR	Prioritize federal and state research funding for CCUS impact analysis	Maximize effective implementation of the Climate Action Plan

With Louisiana’s extensive geologic storage potential and federal incentives for near-term investment, Louisiana is seeing significant interest and investment in the deployment of CCUS to address industrial GHG emissions. Members of the Task Force and the public have raised concerns related to the capture process at facilities, transport through pipelines, and geologic storage underground. To address these concerns, this action recommends the state, through leadership of DNR, and its research institutions synthesize existing research on CCUS and disseminate information and materials for public education. The state and its research institutions should also fund a comprehensive understanding of CCUS impacts, including but not limited to siting impacts on cultural characteristics of neighboring populations, air quality impacts on nearby communities, increased energy intensity for different industry processes, pipeline safety implications, environmental and resilience impact of pipeline buildout, potential incidents of geologic storage, and long-term risks and costs. **(Associated Submitted Action Proposals: N/A)**

DISSENTING VIEWS: Two members objected to this action, raising concerns that the deployment of CCUS is a foregone conclusion and opposing the assumption that siting and permitting could have minimal impact. DISSENTERS: Verchick, Manning-Broome.

ACTION 26.3 Collaboratively develop regulatory frameworks and statewide siting plans for new energy technologies with considerations for both climate and environmental justice

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Governor’s Office / State Agencies	Establish an interagency working group to develop pre-permitting environmental siting analysis	Ensure safe and resilient siting of energy infrastructure for the environment and communities

For emerging energy generation and emissions reduction technologies in Louisiana (e.g., solar farming, offshore wind, CCUS), there is opportunity to ground the permitting and siting frameworks around the Fundamental Objectives identified in Louisiana’s Climate Action Plan. In anticipation of the significant investment in and deployment of large-scale low- or no-carbon technologies, this action establishes an interagency working group that, with the benefit of robust public input particularly from those who face disproportionate climate and environmental impacts, will engage in a prospective, pre-

permit siting analysis. One of the primary goals of this action is to ensure that future permitting and siting decisions for the above-mentioned emerging technologies are consistent with the Fundamental Objectives of Louisiana’s Climate Action Plan; address the potential impacts on and preferences of nearby communities, environmental impacts, and environmental justice considerations; and are made with respect for tribal treaty rights. To the extent possible, this effort would seek to identify areas where the necessary conditions (solar, atmospheric, geologic, and economic) for a given technology are highest and the potential for conflicts or adverse impacts (health, environmental, economic) are lowest. **(Associated Submitted Action Proposals: 46, 92, 96)**

DISSENTING VIEW: One member objected to this action because it does not include explicit requirements to follow federal laws or declarations, such as Article VI of the United States Constitution or the American Declaration on the Rights of Indigenous Peoples. DISSENTER: Parfait-Dardar.

ACTION 26.4 Update existing permitting and facility siting practices and regulations to align with Louisiana’s emission reduction goals

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Governor’s Office / State Agencies	Establish an interagency working group to review existing siting and permitting procedures	Ensure safe and resilient siting of energy infrastructure for the environment and communities

Currently, the construction of new and expanded industrial facilities are handled by multiple state agencies with multiple permit guidelines depending on the nature of the technology and the location of the proposed facility. All such decisions must be made in accordance with Article IX, §1 of the Louisiana Constitution, which serves as the basis for what is known as the “Public Trust Doctrine*.” However, varying agency priorities, regulatory nuances, and administrative or judicial decisions have led to a complex and at-times disjointed process. Additionally, siting decisions are made on a permit-by-permit basis without having the benefit of a comprehensive statewide plan or framework, as addressed by Action 26.3. Members of the Task Force and the public have raised concerns about the ability of current permitting regulations to fully integrate the most recent understanding of climate impacts and environmental justice concerns. Via Executive Order, the Governor should mandate that all project, permitting, and facility siting decisions align with goal of net zero GHG emissions by 2050 and consider opportunities to practicably avoid or minimize GHG emissions. This action would include convening an interagency panel (including DOA, DOTD, DEQ, DNR Office of Conservation, DNR Office of Coastal Management (OCM), LDAF, CPRA, Department of Wildlife and Fisheries (LDWF)) with the benefit of robust public input, particularly from those who face disproportionate climate and environmental impacts, to review and update projects, regulations, and permitting practices to ensure that project, permitting, and siting decisions are climate neutral and are not exceeding the cumulative risk burden on vulnerable communities, tribal lands, or the environment. With the ultimate goal to streamline permitting processes, this action ensures efficient and strategic development of energy infrastructure that benefits all participating stakeholders. **(Associated Submitted Action Proposals: 46)**

**Public Trust Doctrine*

The **public trust doctrine** is the broadest legal doctrine in Louisiana from which an agency’s obligation to conserve the state’s natural resources and to protect the environment arises.

STRATEGY 27. Ensure that Climate Action Plan strategies are effectively and transparently implemented

Realizing lasting success in reducing net GHG emissions reductions and ensuring positive overall benefit to the state requires that the actions and strategies outlined here translate to meaningful change. This success must be founded on continued transparency as well as regular monitoring and oversight of plan implementation. Actions under this strategy are designed to maintain that transparency and oversight, ensuring that the people of Louisiana can have confidence that the economy, environment, and their well-being will be maintained and improved while GHG emissions are reduced.

Highlights of how this strategy can realize benefits for Louisiana:

- *Effectiveness and Durability:* Establishing mechanisms for active management and public engagement of Climate Action Plan implementation ensures that actions in the plan are carried out as intended.
- *Public Confidence:* The confidence of the public in the effectiveness and outcomes of the Climate Action Plan – and support for its continued implementation – relies on transparency in execution and clear accountability of the state’s progress towards its GHG emission reduction goals.

ACTION 27.1 Establish a statutory and organizational framework for coordinating and implementing statewide climate resilience

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / Governor’s Office	Develop and workshop a governing framework for climate resilience	Ensure long-standing and adaptive implementation of the Action Plan

Climate change mitigation and adaptation require extensive coordination across multiple stakeholders inside and outside of government. It also requires focus and authority to oversee the implementation of this plan and assess progress toward meeting the Governor’s GHG emission reduction goals. In the near-term this action proposes that the Edwards administration work with the Louisiana Legislature to create a statutory and organizational framework to staff, coordinate, and implement continued management of climate and resilience initiatives and ensure the successful implementation of the actions contained in this Climate Action Plan. Through this organizational framework, the Governor, his staff, and cabinet members and agencies would receive advice on action related to climate mitigation and adaptation to ensure vision and action for decarbonization are threaded across the Administration. This near-term action prepares the Administration to advocate for a permanent office, such as a Governor’s Office of Climate Resilience, that governs and staffs climate change mitigation and adaptation across agencies, levels of government, and external stakeholders.

ACTION 27.2 Ensure that the Climate Initiatives Task Force continues over the short-, medium-, and long-term to steer and oversee efforts to achieve the statewide goal of net zero GHG emissions by 2050

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / Task Force / Governor's Office	Develop a public governing body for effective climate resilience	Ensure long-standing and adaptive implementation of the Action Plan

Alongside a designated office to coordinate and oversee climate and resilience initiatives across the State of Louisiana, the longevity of the Task Force is necessary to ensure public coordination and oversight of climate and resilience actions. Upon adoption of the 2022 Climate Action Plan, the Task Force should convene at least quarterly each year to ensure progress is made towards the implementation of emission reduction strategies and actions; the impacts of these actions on the people, environment, and economy of Louisiana are understood; transparency and accountability are maintained; and the critical issue of climate change in Louisiana remains in focus across changes in executive leadership. Regular meetings of the Task Force are necessary to chart progress on implementation of the climate mitigation efforts, provide a forum for public engagement and oversight, and identify opportunities to increase the effectiveness of action implementation. To ensure longevity of the Task Force beyond administrations, the Task Force should be established in statute with this meeting regularity and with objectives mirroring those of this action. This statute of the Task Force should also legislatively establish the goal of carbon neutrality by 2050.

DISSENTING VIEW: One member objected to this action, expressing concern that codification of the Task Force in statute jeopardizes opportunities to change based on evolving market conditions and that the executive branch currently has the authority to meet the objectives of the action. DISSENTER: Gray.

STRATEGY 28. Track progress in reducing net GHG emissions reductions and adapt the approaches taken as needed

Another vital component to catalyzing the success of the Climate Action Plan is monitoring the progress of the actions and strategies in driving net GHG emissions reductions. In addition, these outcomes must be used as part of a data-driven approach to revisit and update the Climate Action Plan over time through an adaptive management process. Actions that have proven successful can be continued as part of this process, while actions that have not been as impactful in practice as anticipated can be refined or updated. Implementation of actions under this strategy will ensure that there is a framework for making updates to the Climate Action Plan and for collecting the data and information necessary to make adaptive management decisions.

Highlights of how this strategy can realize benefits for Louisiana:

- *Flexibility and Adaptability:* New technologies, processes, approaches, and programs aimed at reducing net GHG emissions can be incorporated into this Climate Action Plan as they become available. Demonstration of new technologies and approaches at an operational scale via pilot projects can serve as an important first step.
- *Continued Success:* By using data to monitor progress in the near-term, the trajectory of Louisiana towards meeting its goals can be objectively tracked. Tracking and evaluation of this Climate Action Plan over time can also identify and strengthen the most effective actions and strategies as part of reaching the state’s long-term goals. As a living plan, adaptive management of all strategies and actions is key for long-term success in an uncertain future.

ACTION 28.1 Establish a Louisiana GHG monitoring program

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DEQ	Create a GHG Monitoring Program	Hold implementers accountable in incremental GHG reductions

Regular collection of GHG data across the state is vital to providing checkpoints on GHG reduction to adaptively manage emission reduction approaches across all sectors. This action directs immediate creation of a GHG Monitoring Program by DEQ to collect GHG data across all emission sectors, which will be used in conjunction with regular updates of the GHG inventory. The GHG Monitoring Program should utilize real-time, continuous data collection technologies that can be directly assessed by DEQ where feasible. As mentioned in prior actions, the GHG monitoring program will incorporate detailed data for specific sectors, including utility climate rankings (Action 1.), carbon intensity product audits and emission reporting from facilities (Action 3.1), and the methane monitoring stations (Action 10.2). Immediate integration of and regular updates to these detailed datasets is essential for tracking progress, ensuring accountability, and repairing leaks across high-intensive emission sectors. In addition, this action would facilitate benchmarking that could be used to determine whether the strategies and actions included in the Louisiana Climate Action Plan are effective once implemented.

DISSENTING VIEW: One member objected to this action, asserting that DEQ already has and currently exercises authority to require monitoring where deemed necessary. DISSENTER: Gray.

ACTION 28.2 Update the state GHG inventory every five years

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Legislature / DEQ	Ensure mandatory, consistent updates to the GHG inventory	Hold implementers accountable in incremental GHG reductions

In conjunction with regular collection of GHG data (Action 28.1), updates to the GHG inventory are necessary to consistently monitor progress and hold the state accountable for progress towards reduction goals. This action tasks the

**U.S. EPA SIT Model*

EPA's State Inventory Tool (SIT) offers a top-down approach to calculate GHG emissions across 11 modules, produced in an interactive spreadsheet model designed to help states develop GHG inventories. The EPA SIT model has known and acknowledged limitations.

Louisiana Legislature to statutorily mandate updates to the GHG inventory every five years with consistent funding to support these efforts, with the ability of the Task Force to request a GHG inventory sooner than five years if the technology has significantly improved. Additionally, this action supports work by the state to continue to increase the accuracy of this assessment as technologies evolve. This action proposes building upon existing methods, as the EPA SIT*, and investing in emerging technologies, such as remote sensing, satellite imagery, carbon storage of natural sinks, and other tools, to provide more accurate and comprehensive monitoring of GHG emissions in Louisiana. This data will allow for more continuous and location-specific data from the GHG monitoring program (Action 28.1) and criteria pollutants

monitored by the existing DEQ Air Quality Monitoring Program into the GHG inventory.

ACTION 28.3 Update the Louisiana Climate Action Plan every five years

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Task Force / Legislature / Governor's Office	Ensure mandatory, consistent updates to the Action Plan	Hold implementers accountable in adaptive management of the Action Plan

The strategies and actions outlined in the Louisiana Climate Action Plan have been selected based on their expected effectiveness in reducing net GHG emissions while also having the best anticipated outcomes for the state and its people. Regular GHG monitoring (Action 28.1) and updated GHG inventories (Action 28.2) will reveal where those actions are effective, while at the same time new strategies or actions may become available due to advances in technology or increased understanding of the most effective approaches in net GHG emission reduction. Therefore, the Climate Action Plan should be updated one-year following each updated GHG inventory (Action 28.2). Through near-term legislation, this action would allow and require updates to Louisiana's Climate Action Plan every five years by the Governor's Office to ensure that climate action continues to be based on the best available science and that the actions taken demonstrate benefits to Louisiana's communities, environment, and economy to the greatest extent possible. Planned updates are necessary to ensure ineffective actions could be modified or replaced, the greatest investment is in the most effective approaches, and new technologies could be incorporated when available.

Next Steps and Adaptive Management of Louisiana's First Climate Action Plan

This Climate Action Plan lays out 28 strategies and 84 actions to meet Louisiana's 2050 goal of carbon neutrality. Strategies set forth provide high-level approaches, intended to be consistent across timescales, while actions represent policy-specific steps towards emission reduction. Actions take a comprehensive approach to mitigate GHG emissions as best determined in 2021, but as technologies, markets, and stakeholder preferences continue to evolve, actions will need to as well.

Through utilizing the EPS Tool, this Action Plan indicates EPS policies with the greatest impact to drive down GHGs, particularly industrial-scale electrification, renewable generation, and industrial fuel switching to low- and no-carbon hydrogen. However, the model lacks granularity where Louisiana's inventory also lacks granularity, leaving a range of uncertainties in certain sectors. Notable gaps are in methane monitoring and reporting, natural carbon sequestration potential by habitat type, source and sink of emissions in agriculture, forestry, and coastal management practices, carbon pricing design, transportation policy modeling, and other forms of low- and no-carbon hydrogen production. These gaps do not infringe on the efficacy of the Action Plan but offer primary areas where modeling needs to be refined and actions made more accurate.

Alongside academic research solicited in individual action descriptions, cross-action information gaps require intentional study to inform deployment at scale. Acknowledging its impact on emission reduction, particularly prevalent is the pairing and sequencing of renewable and clean electricity generation with industrial electrification, together with the need to identify facility-level electrification potential. Other information gaps arise in understanding the current landscape and needed improvements in the regulatory environment, sequencing the energy transition with bolstering the clean energy job pipeline, and timing of industrial fuel-switching to low- and no-carbon hydrogen.

These gaps in understanding, modeling, and sequencing of GHG-reducing actions serve as starting points to bridge gaps of and strengthen the Action Plan. As this information is better understood, in conjunction with more accurate GHG accounting through the GHG monitoring program and GHG inventory updates, the Task Force must review, revise, and amend the Climate Action Plan every five years.

In addition to reviewing and commenting on statewide GHG accounting, the Task Force was created to balance interests and maximize fundamental objectives set forth at the beginning of this effort. Diverging opinions within the Task Force have primarily arisen from how to balance these objectives. Though discussions have begun, more work must be done to continue sharing values, understanding perspectives, and finding balance in policy recommendations. Additional research must be done to account for impacts to fundamental objectives in the implementation of this Action Plan. Relevant to improving quality of life and creating a more equitable society, mechanisms to meaningfully measure improvements in equity, community engagement, public health, and quality of life are essential to accountability. Relevant to the economy and workforce, further understanding of implications on ratepayers and customers must be better accounted for and incorporated into updates of the Action Plan. Similarly, as the impacts of climate change are increasingly felt across Louisiana, conservation of natural resources and climate adaptation must be aggressive but responsive.

In summation, this Action Plan represents a bold step forward for Louisiana to meet its 2050 goal of carbon neutrality but requires continual effort to implement, adaptively manage, and better understand climate solutions. The Governor's Office shall maintain a central role in chairing and staffing the Climate Initiatives Task Force to continue discussions of the Task Force, hold implementers accountable, update the Climate Action Plan,

and urge ambition to meet the Governor’s emission reduction goals. Alongside regular meetings of a long-standing Task Force and updates to the Climate Action Plan every five years, agencies and other implementers should formally report out to the Task Force each year with progress towards near-term action and longer-term goals. This first iteration of Louisiana’s Climate Action Plan is intended to serve as a catalyst for continued bold action by all implementers – current and future – now through 2050.

Implementation Matrix

TABLE 2. IMPLEMENTATION MATRIX OF THE LOUISISANA CLIMATE ACTION PLAN, 2022. TABLE SUMMARIZES IMPLEMENTATION PARTNERS, NEAR-TERM ACTIONS, AND GOALS FOR ACTIONS WITHIN EACH PORTFOLIO SECTION, INCLUDING AN INDICATION OF WHETHER FUNDING IS NEEDED.

ACTION NUMBER	IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	FUNDING NEEDED ☒	GOALS
CLEAN ENERGY TRANSITION				
1.1	PSC / utilities	Establish a Renewable and Clean Portfolio Standard	☒	100% renewable or clean by 2035, at least 80% from renewable sources
1.2	PSC / utilities / Governor's Office	Engage in Entergy Louisiana, LLC and Cleco Power LLC integrated resource planning (IRP) process in 2022	☒	Encourage generation of renewable power
1.3	PSC / utilities / industry / LED / DNR / universities	Prioritize offshore wind strategic planning for outreach, workforce, and impact assessments	☒	5 gigawatts of offshore wind generation by 2035
1.4	PSC / utilities	Establish tariff offerings for renewable and clean power	☐	Encourage purchasing of renewable power
1.5	PSC / utilities / industry	Understand implications of deregulated power (such as Power Purchase Agreements)	☒	Encourages generation of renewable power
1.6	PSC / utilities / MISO / SPP / DNR	Assess infrastructure needs to plan renewable connectivity	☒	30% increased transmission infrastructure by 2030 and 100% by 2050

1.7	PSC / utilities / DNR Office of Energy	Solicit funds for energy storage pilot projects	☒	100 megawatts of energy storage by 2030
1.8	PSC / utilities / DEQ	Assess gaps and synthesize existing data on generation	☒	Encourage generation of renewable power
2.1	Legislature	Reinstate incentives for renewable installation and storage	☒	Encourage purchasing of renewable power
2.2	PSC	Review net metering policies	☒	Account for value of distributed solar generation
2.3	FEMA / GOHSEP / Louisiana National Guard	Plan and implement microgrids and dispatchable battery units	☒	Speed post-disaster recovery and resilience
2.4	PSC	Determine best mechanisms for third-party generation (e.g., industry) to sell energy back to the grid	☒	Encourage generation of renewable power

INDUSTRIAL DECARBONIZATION

3.1	DEQ / EPA / Industry	Accurately account for facility-level emissions and product carbon intensity	☒	Provide facility-specific accountability in emission reduction
3.2	DEQ / Industry	Develop a framework for facility-level GHG reducing plans	☒	Provide facility-specific support in emission reduction
3.3	DEQ / Legislature / Governor's Office	Identify carbon pricing mechanism best suited for Louisiana	☒	Provide facility-specific accountability in emission reduction
3.4	DEQ / DNR	Develop a Net Zero Industry Standard	☒	Ensure net zero for industry by 2050

4.1	DNR	Pursue rulemaking for implementation of efficiency standard	<input type="checkbox"/>	Reduce energy intensity of industry
4.2	DNR / LSU-IAC	Assess needed support for implementation of efficiency standard	<input checked="" type="checkbox"/>	Support reduced energy intensity of industry
5.1	LED / DNR / PSC / Governor's Office / Industry	Invest in mechanisms to accelerate industrial electrification	<input checked="" type="checkbox"/>	Abate industry emissions through electrification to the extent practicable
5.2	DNR / U.S.-DOE / Industry	Invest in research and demonstration projects to accelerate fuel- and feedstock- switching	<input checked="" type="checkbox"/>	Abate heavy industry emissions through alternative feedstocks and fuels to the extent practicable
5.3	DNR / U.S.-DOE / Industry / Communities	Invest in research for siting and impact assessments of CCUS buildout	<input checked="" type="checkbox"/>	Abate remaining high-intensity emissions through carbon capture and storage
5.4	Universities	Solicit funding to understand utilization techniques of captured carbon	<input checked="" type="checkbox"/>	Recycle emissions through utilization of captured carbon
5.5	U.S.-DOE / DEQ / DNR / PSC / Utilities / Industry / Communities	Strategically plan decarbonization of industrial clusters	<input checked="" type="checkbox"/>	Provide cluster-specific support in emission reduction
6.1	DOA	Secure low-carbon products through procurement practices and laws	<input checked="" type="checkbox"/>	Reduce GHG footprint of state government while growing market for clean and green products
6.2	DEQ / Waste Management Entities / NGOs / Universities	Invest in pilot projects to reduce lifecycle emissions of products	<input checked="" type="checkbox"/>	Minimize wasted energy through circular principles

ACTIVELY MANAGE METHANE EMISSIONS

7.1	DNR / Legislature	Pursue rulemaking to tighten the definition of “responsible party” and establish a companion database	<input checked="" type="checkbox"/>	Provide clarity and accountability for responsible parties
7.2	DNR / Legislature	Pursue legislation to raise financial security and remove blanket securities	<input type="checkbox"/>	Incentivize compliance with operator requirements
7.3	DNR / Legislature	Pursue rulemaking to tighten the definition of “future utility”	<input type="checkbox"/>	Provide clarity and accountability for inactive wells
7.4	DNR	Invest in workforce training programs for monitoring and plugging wells	<input checked="" type="checkbox"/>	Provide Louisiana workers opportunities to transition
8.1	DNR / DEQ	Pursue rulemaking to align with methane rules of other states and the EPA	<input checked="" type="checkbox"/>	Reduce amount of methane released
8.2	DEQ	Incorporate emerging technologies into methane monitoring	<input checked="" type="checkbox"/>	Monitor methane releases with more frequency and accuracy
8.3	DEQ / DNR / U.S.-EPA	Strengthen LDAR best practices to monitor and fix malfunctioning practices	<input checked="" type="checkbox"/>	Repair methane releases with more frequency and accuracy

TRANSPORTATION, DEVELOPMENT, AND THE BUILT ENVIRONMENT

9.1	DOA	Update procurement practices to meet public fleet transition goals	<input checked="" type="checkbox"/>	Transition 50% public fleets to low- and zero-emission vehicles and fuels by 2035 and 100% by 2050
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9.2	DOTD / NGOs / MPOs / Local Governments	Utilize federal funding to intentionally build out infrastructure	<input checked="" type="checkbox"/>	250 electric vehicle charging stations per 100,000 residents by 2050
9.3	DOTD Transportation Research Center	Research efficacy of alternative fuels to decarbonize heavy transit	<input checked="" type="checkbox"/>	Research and deploy at scale solutions to decarbonize freight
9.4	DOTD / DNR / DEQ	Identify and pursue pilot projects to decarbonize heavy transit	<input checked="" type="checkbox"/>	Research and deploy solutions at scale to decarbonize freight
10.1	DOTD / MPOs / Local Governments	Utilize multiple mechanisms to implement vehicle miles traveled (VMT) reduction strategies	<input checked="" type="checkbox"/>	Double use of alternative modes of transportation by 2035
10.2	BEL Commission	Leverage federal funding for expansion of broadband access	<input checked="" type="checkbox"/>	Reduce vehicle miles traveled through at-home resources
10.3	DOA	Adopt a statewide hybrid workplace policy	<input type="checkbox"/>	Reduce vehicle miles traveled through at-home resources
10.4	DOA	Pursue rulemaking to require telematics for fleets	<input checked="" type="checkbox"/>	Maximize efficiency of GHG-producing vehicles
10.5	DOTD / DOA / LED	Invest in research of smart transit techniques and best practices	<input checked="" type="checkbox"/>	Maximize efficiency of energy-intensive freight transit
11.1	DOTD / Regional MPOs / Municipalities / Legislature	Leverage available funding for urban transit deserts and local jurisdictions	<input checked="" type="checkbox"/>	Reduce VMT through connectivity within urban areas
11.2	DOTD / Local Governments / Rural Transit Providers	Develop on-demand ridership systems in rural areas	<input checked="" type="checkbox"/>	Reduce VMT through connectivity within rural areas

11.3	DOTD / Local MPOs / Rural Governments / Municipalities	Collaborate and plan intentional connectivity between cities	☒	Reduce VMT through connectivity across regions of Louisiana
12.1	DOA	Create an Office of State Planning in DOA	☒	Support locals in comprehensive land use, climate mitigation, and adaptation planning
12.2	DOA Office of State Planning / DOTD	Convene stakeholders to plan and design compact development across levels of government	☒	Maximize VMT reduction and utilization of regional transit through land use planning
12.3	DOA Office of State Planning / Regional MPOs / Local Government	Develop land use and transportation modeling tools for utilization in decision making	☒	Maximize VMT reduction and utilization of regional transit through land use planning
12.4	DOTD	Incorporate a climate impact analysis into DOTD project planning and design	☒	Mitigation unintentional emissions through large-scale transportation
12.5	DOA Office of State Planning / DNR	Create model solar ordinance policy materials	☒	Encourage purchasing of renewable power
13.1	PSC / LHC / DNR / DOA-OCD	Inventory and streamline application to existing efficiency programs	☒	5% retrofit of residential and commercial buildings each year
13.2	Legislature / Local Governments	Pursue legislation for redesign of Property-Assessed Clean Energy (PACE) financing	☒	Encourage effectiveness of existing building efficiency programs
13.3	Legislature	Pursue legislation for efficient and electric appliance rebates	☒	Encourage efficiency of building components

13.4	Legislature / LSUCCC / PSC	Pursue legislation for energy efficiency code updates and standards	<input type="checkbox"/>	Require minimum efficiency of buildings
13.5	DOA	Pursue funding for implementation of energy benchmarking requirements	<input checked="" type="checkbox"/>	Monitor carbon impact of buildings and building materials
13.6	LSUCCC	Pursue building code updates through the 2021-2022 revision process	<input type="checkbox"/>	Require minimum energy performance standards of buildings

NATURAL AND WORKING LANDS AND WETLANDS

14.1	LDAF / Land Trusts / Local Governments/ Private Landowners	Assess a baseline of areas most in need of conservation	<input checked="" type="checkbox"/>	30% conservation of interior natural lands by 2030
14.2	LDAF / Parish and Municipal Governments	Convene stakeholders in major urban areas to expand urban green space	<input checked="" type="checkbox"/>	30% conservation of interior natural lands by 2030
15.1	CPRA	Study carbon storage potential of wetland projects	<input checked="" type="checkbox"/>	Maximize carbon sequestration of coastal wetland restoration
15.2	CPRA	Invest in assessments of net carbon flux of coastal wetlands	<input type="checkbox"/>	Maximize carbon sequestration of coastal wetland restoration
15.3	Universities / CPRA / blue carbon experts and verifiers / coastal ecologists	Collaborate with stakeholders to design a carbon credit and market	<input checked="" type="checkbox"/>	Maximize investment in carbon sequestration of wetland restoration
16.1	USDA / LDAF	Leverage USDA investment for innovative practices that reduce GHGs	<input checked="" type="checkbox"/>	Encourage conservation practices that sequester carbon

16.2	USDA-NRCS / SWCDs / LDAF	Convene farmers, ranchers, and foresters to identify barriers to regenerative practices	☒	Increase access to regenerative agriculture and forestry practices
16.3	USDA-NRCS / SWCDs / Landowners	Advocate for further on-farming conservation farming	☒	Increase access to regenerative agriculture and forestry practices
16.4	Universities / LDAF / DEQ	Study ability of best management practices (BMPs) to reduce and sequester GHG emissions	☒	Encourage conservation practices that sequester carbon
16.5	LDAF / SWCDs	Develop an urban agriculture and conservation program	☒	Increase urban access to regenerative agriculture and forestry practices
16.6	LDEQ / LDAF	Collaborate on strategic design and locations of compost facilities	☒	Increase access to regenerative agriculture practices
16.7	LFA / LDAF / DOA / LED	Convene major foresters for educational sessions on sustainable forest practices	☒	Increase access to regenerative forestry practices

AN INCLUSIVE, LOW-CARBON ECONOMY

17.1	LED / LWC / Louisiana Technical and Community College System	Convene stakeholders to develop vision and ambition for an economic transition plan	☒	Support Louisiana agencies, industries, and workers in energy transition
18.1	Department of Education	Develop climate curricula projects for K-12 education	☒	Center climate education in K-12 classrooms

18.2	LWC / Universities / Community Colleges	Develop relevant education, training, and re-training courses and curricula	☒	Guarantee job training for workers in energy transition
18.3	The Water Institute of the Gulf	Collaborate with universities to identify existing climate-related work and research gaps	☒	Support Louisiana universities in energy transition
19.1	LED / LWC / Louisiana Community and Technical College System	Invest in Louisiana-based low-carbon industries	☒	Support Louisiana industries in energy transition
19.2	LED	Prioritize investment in disadvantaged business enterprises and communities	☒	Support underserved communities in energy transition
19.3	LWC	Assist transitioning workers through Rapid Response teams	☒	Support displaced workers in energy transition
19.4	LWC / Non-Profits / Businesses / Unions	Convene stakeholder groups for coordinated job placement	☒	Guarantee job placement in energy transition workforce

ACCOUNTABILITY AND ADAPTABILITY TO ENSURE LASTING SUCCESS

26.1	Legislature / DOA	Invest increased resources in agencies implementing the Action Plan	☒	Maximize effective implementation of the Action Plan
26.2	Universities / DNR	Prioritize federal and state research funding for CCUS impact analysis	☒	Maximize effective implementation of the Action Plan
26.3	Governor's Office / State Agencies	Establish an interagency working group to develop pre-permitting environmental siting analysis	☒	Ensure safe and resilient siting of energy infrastructure for the environment and communities

26.4	Governor's Office / State Agencies	Establish an interagency working group to review existing siting and permitting procedures	☒	Ensure safe and resilient siting of energy infrastructure for the environment and communities
27.1	Legislature / Governor's Office	Develop and workshop a governing framework for climate resilience	☒	Ensure long-standing and adaptive implementation of the Action Plan
27.2	Legislature / Task Force / Governor's Office	Develop a public governing body for effective climate resilience	☒	Ensure long-standing and adaptive implementation of the Action Plan
28.1	DEQ	Create a GHG Monitoring Program	☒	Hold implementers accountable in incremental GHG reductions
28.2	Legislature / DEQ	Ensure mandatory, consistent updates to the GHG inventory	☒	Hold implementers accountable in incremental GHG reductions
28.3	Task Force / Legislature / Governor's Office	Ensure mandatory, consistent updates to the Action Plan	☒	Hold implementers accountable in adaptive management of the Action Plan

Acronyms

Acronym	Definition
BMP	Best Management Practice
CCUS	Carbon capture, utilization, and storage
CCS	Carbon capture and storage
CHP	Combined Heat and Power
CO₂	Carbon dioxide
CPRA	Coastal Protection and Restoration Authority
CRMS	Coastwide Reference Monitoring System
DEQ	Department of Environmental Quality
DOA	Division of Administration
DOE	Department of Energy
DOTD	Department of Transportation and Development
DWF	Department of Wildlife and Fisheries
NRCS	Natural Resource Conservation Service
DNR	Louisiana Department of Natural Resources
EPA	U.S. Environmental Protection Agency
ERGS	Emission Reduction Generation and Supply
GHG	Greenhouse Gas
HELP	Home Energy Loan Program
HERO	Home Energy Rebate Option
HOV	High-occupancy vehicle
IAC	Industrial Assessment Center
IRP	Integrated resource plan
LDAF	Louisiana Department of Agriculture and Forestry
LDAR	Leak Detection and Repair
LED	Louisiana Economic Development
LFA	Louisiana Forestry Association

Acronym	Definition
LHC	Louisiana Housing Corporation
LSU	Louisiana State University
LSUCCC	Louisiana State Uniform Construction Code Council
LWC	Louisiana Workforce Commission
MISO	Midcontinent Independent System Operator
MPO	Metropolitan Planning Organization
NGO	Non-governmental organizations
OCM	Office of Coastal Management
OOC	Office of Conservation
OSR	Oilfield Site Restoration
PACE	Property-assessed clean energy
PPA	Power Purchase Agreement
PSC	Louisiana Public Service Commission
RPP	Research Practitioner Partnership
SEM	Strategic Energy Management
SIT	State Inventory Tool
SPP	Southwest Power Pool
SWAMP	System Wide Assessment and Monitoring Program
SWCD	Soil and Water Conservation Districts
TDM	Travel Demand Management
USDA	U.S. Department of Agriculture
VMT	Vehicle miles travelled

Glossary

Term	Definition
Action	A specific policy, program, or project that can be directly implemented to achieve a specific goal or complete a process
Adaptation	Long-term adjustments that can be made to aid in withstanding current and future changes in environmental conditions
Adaptive Governance Initiative	State-led effort to increase the resilience of state agencies to the impacts of the coastal crisis. Working through resilience coordinators at each agency, the adaptive governance initiative seeks to integrate projections from the coastal master plan into decision making and develop and institutionalize resilience actions within and across state government
Alternative Fuel	Also known as non-conventional and advanced fuels, these are any materials or substances that can be used as fuels other than gasoline and fossil fuels for power generation, such as natural gas, methanol, biofuel, or electricity
Blue Carbon	Carbon stored in the sediment and plants of coastal and marine ecosystems, such as mangroves, tidal marshes, and seagrass beds
Cap and Trade Program	Also called “emissions trading, this is a system for controlling carbon emissions and other forms of atmospheric pollution by which an upper limit is set on the amount of carbon a given business or other organization may produce but which allows further capacity to be bought from other organizations that have not used their full allowance, thus providing economic incentives and creating a market
Carbon Capture	The process of pulling CO ₂ from the atmosphere naturally or through engineered methods from a point source emitter
Carbon Sequestration	The long-term capture and storage of carbon in oceans, soils, vegetation, and geologic formations, which can occur either naturally or through anthropogenic (human) mechanisms
Carbon Sink	Any reservoir, natural or otherwise, that accumulates and stores some carbon-containing chemical compound for an indefinite period and thereby lowers the concentration of CO ₂ from the atmosphere by storing more carbon than it emits
Carbon Storage	The containment of captured carbon when it is injected into deep, underground geological formations, where it is stored long-term, rather than being released into the atmosphere. Storage sites used for CO ₂ include former oil and gas reservoirs, deep saline formations, and coal beds
Carbon Dioxide (CO₂) Equivalent (CO₂E)	A measure used in GHG inventories to compare the emissions from various GHGs, by converting amounts of other gases to the equivalent amount of CO ₂ with the same global warming potential
Carbon Intensity	The number of grams of CO ₂ that it takes to make one unit of electricity a kilowatt per hour (kW/hour); the amount of carbon by weight emitted per unit of energy consumed/unit of economic activity
Circular Economy	A model of production and consumption which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible; in this way, the life cycle of products is extended to reduce waste to a minimum which can help tackle major global challenges like climate change, biodiversity loss, waste, and pollution

Term	Definition
Clean Energy	Energy generated from non-renewable sources with little to zero GHGs, includes but is not limited to nuclear, biowaste, and natural gas with carbon capture
Clean Portfolio Standard	Regulations that are intended to reduce GHG emissions through requirements for cleaner energy techniques, where options are expanded beyond renewable energy sources to incorporate efficiency measures and other carbon reduction measures; this includes things like energy efficiency, fuel cells, fuel efficiency improvements, grid improvements, demand-side and direct-load measures, nuclear power, and fossil fuel technologies that include CO ₂ capture and storage equipment
Climate Equity	A people-centered approach to addressing the global climate crisis through action that seeks to achieve long-term equality of outcomes by acknowledging institutionalized harms to historically marginalized people and communities and by holding accountable those who benefit from the root causes of climate change that disproportionately impact the most vulnerable
Coastal Protection and Restoration Authority (CPRA) Board	Group that represents the state's position in policy relative to the protection, conservation, enhancement, and restoration of the coastal area of the state. They do so by overseeing the Coastal Protection and Restoration Trust Fund, developing a master plan for integrated coastal protection, and enforcing compliance with the Coastal Master Plan
Coastal Master Plan	The state's 50-year blueprint for large-scale restoration and protection of Louisiana's critical coastal areas. The plan, authored by the Louisiana Coastal Protection and Restoration Authority (CPRA), is updated every six years as required by law to account for evolving science and changing environmental conditions. It combines projects that restore, build or maintain coastal wetlands with projects that provide enhanced risk reduction for coastal communities from storms and flooding
Community Solar	Any solar project or purchasing program, within a geographic area, in which the benefits of a solar project flow to multiple customers such as individuals, businesses, nonprofits, and other groups; in most cases, customers are benefitting from energy generated by solar panels at an off-site array. The solar power installation accepts capital from and provides output credit and tax benefits to individual and other investors; in some systems, a person or group can buy individual solar panels which are installed in the solar farm after purchase
Complete Streets	A transportation policy and design approach that requires streets to be planned, designed, operated and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation, whether they are pedestrians, bicyclists, motorists or public transportation users
Equity	Fairness or justice in the way people are treated, recognizing that we do not all start from the same place and must acknowledge and make adjustments to imbalances. This can be achieved by expanding access to opportunity, quality of life and prosperity
Emissions Pathway	The modelled trajectories of global anthropogenic emissions over the 21st century based on predictions of how concentrations of GHG in the atmosphere will change in the future as a result of human activities

Term	Definition
Energy Efficiency Resource Standard	A quantitative, long-term energy savings target for utilities; under direction from this policy, utilities must procure a percentage of their future electricity and natural gas needs using energy efficiency measures, typically equal to a specific percentage of their load or projected load growth. Energy savings are typically achieved through customer, end-use efficiency programs run by utilities or third-party program operators, sometimes with the flexibility to achieve the target through a market-based trading system
Fundamental Objectives	In Structured Decision Making (SDM), these are essential goals or solutions of this work that have been informed by the Climate Initiatives Task Force, Advisory Groups, Sector Committees, and public that guide development and evaluation of strategies and actions
Green Hydrogen	Hydrogen is a fuel source that has multiple applications in transportation, electricity generation, industrial uses, and many more. Green hydrogen is produced using renewable energy through electrolysis. This is a process that splits water into its basic elements – hydrogen and oxygen – using an electric current. The electricity used in the process comes from renewable resources
Green Tariffs	Programs in regulated electricity markets offered by utilities that allow large commercial and industrial customers to buy bundled renewable electricity from a specific project through a special utility tariff rate; this allows customers to source up to 100 percent of their electricity from renewable sources located on their local grid. This is done through a price structure, or an electricity rate, that is approved by the state's Public Utility Commission
Greenhouse Gas (GHG)	A gas that contributes to the entrapment of heat in the atmosphere by absorbing infrared radiation. The primary GHGs in Earth's atmosphere are water vapor, CO ₂ , methane, nitrous oxide, and ozone. Many GHGs are naturally occurring, though concentrations can be affected based on human input
Greenhouse Gas Inventory	A list of emission sources, sinks, and the associated emissions over a certain period of time, quantified using standardized methods
High-Occupancy Vehicle (HOV) Lanes	One or more lanes of a roadway that have restrictions on use to encourage ridesharing and can reduce vehicle miles traveled (VMT) by being open to motor vehicles carrying two or more people and sometimes to motorcycles or vehicles that use alternative fuels (hybrid or electric vehicles). The goal of HOV lanes is to provide an incentive to use ridesharing and public transportation, remove congestion from normal lanes of travel, and improve overall traffic operations
Home Energy Loan Program (HELP)	A loan option administered by the Louisiana Department of Natural Resources (DNR) that allows homeowners to get a five-year loan to improve the energy efficiency of their existing home, with the loan functioning as a standard unsecured underwritten residential loan. DNR subsidizes half of the financing for energy efficiency improvements at a low interest rate to participating lenders, up to a maximum DNR subsidy of \$6,000. Each participating lender sets the maximum loan amount offered to homeowners, as well as the interest rate that is charged to the homeowner. A homeowner can qualify for an energy improvement loan in two ways – either through an energy audit in which an Energy Home Rater makes recommendations, or by choosing pre-approved home improvements as designated by the program

Term	Definition
Home Energy Rebate Option (HERO)	An Existing Homes Program offered by the Louisiana Department of Natural Resources (DNR) for residents to receive cash rebates for energy efficient improvements to existing homes that achieve a minimum of 30% energy reduction. The incentive amount is based on two factors – either the Cost of Energy Savings determined by comparing the pre-improved home to the post-improved home over the useful life of the added improvements or the cost of the energy efficiency improvements. The cash rebate is 20% of the lesser of the two amounts up to a maximum rebate of \$2,000
Industrial Assessment Centers (IACs)	In-depth evaluations of a facility funded by the United States Department of Energy to spread ideas relating to industrial energy conservation and conducted by engineering faculty with upper class and graduate students from a participating university. Teams located at 35 universities around the country conduct the energy assessments to identify opportunities to improve productivity and competitiveness, reduce waste, and save energy
Integrated Resource Plans (IRPs)	Comprised of an assessment of the future electric needs and a plan to meet those future needs. It is “integrated” in that it looks at both demand side (conservation, energy efficiency, etc.) resources as well as the more traditional supply side (generation/power plants, transmission lines, etc.) resources in making its recommendations on how best to meet future electric energy needs in the state
Intergovernmental Panel on Climate Change (IPCC)	An intergovernmental body of the United Nations that is dedicated to providing the world with objective, scientific information relevant to understanding the scientific basis of the risk of human-induced climate change, its natural, political, and economic impacts and risks, and possible response options
Louisiana Watershed Initiative	State-led program through which floodplain management responsibilities are coordinated across federal, state, and local agencies, with the goal being to leverage the state’s past and present flood-risk reduction and resilience efforts through a variety of projects
Low- and No-Carbon Hydrogen	Hydrogen produced with a carbon intensity equal to or less than 2 kilograms of CO ₂ e produced at the site of production per kilogram of hydrogen produced, and it includes hydrogen produced from any fuel source (see Infrastructure Investment and Jobs Act (2021))
Metropolitan Planning Organizations (MPOs)	A federally mandated and federally funded transportation policy-making organization in the United States that is made up of representatives from local government and governmental transportation authorities, created and designated to carry out the metropolitan transportation planning process and required to represent localities in all urbanized areas (UZAs) with populations over 50,000, as determined by the U.S. Census
Microgrids	A small network of electricity users connected through a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity, with respect to the grid, via a local source of supply that is usually attached to a centralized national grid but is able to function independently

Term	Definition
Midcontinent Independent System Operator (MISO)	An Independent System Operator (ISO) and Regional Transmission Organizer (RTO) providing open-access transmission service and monitoring of the high-voltage transmission system in the Midwest United States and Canada, including a southern United States region which includes much of Arkansas, Mississippi, and Louisiana
Mitigation	Generally, the reduction of something harmful or the reduction of the severity, seriousness, or painfulness of its harmful effects. In the climate context, mitigation refers to efforts to avoid and reduce the emission of GHG
National Academy of Sciences	A United States nonprofit, non-governmental organization charged with providing independent, objective advice to the nation on matters related to science and technology. The organization is committed to furthering science in America, and its members are active contributors to the international scientific community
National Climate Assessment	Summary reports detailing the impacts of climate change on the U.S. now and in the future. They are updated and released approximately every 5 years, starting in 2000, through the Global Change Research Act of 1990. The reports are extensively reviewed by the public and experts, including federal agencies and a panel of the National Academy of Sciences
Net Metering	A system in which solar panels or other renewable energy generators are connected to a public-utility power grid and surplus power is transferred onto the grid, allowing customers to offset the cost of power drawn from the utility. Through a billing mechanism, consumers who generate some or all of their own electricity are allowed to use that electricity anytime, instead of when it is generated; this is particularly important with renewable energy sources like wind and solar, which are non-dispatchable
Office of the Governor – Coastal Activities (GOCA)	Team within the Governor’s Office that develops and implements policies, plans, and programs relative to the protection and restoration of Louisiana’s unique coastal resources and the flood protection of communities in the state, as well as climate and coastal resiliency
Peak Electricity Loads	A period in which electrical power is expected to be provided for a sustained period at a significantly higher than average supply level, up to a maximum energy consumption on the grid by the consumer, based on demand
Planning Team	Consists of staff from the Office of the Governor—Coastal Activities and the Water Institute of the Gulf tasked with coordinating the planning process for the development of the Climate Action Plan and its timely completion
Portfolio	A comprehensive set of strategies and actions towards achieving the GHG reduction targets and other fundamental objectives
Power Purchase Agreements (PPAs)	A contract between two parties, one which generates electricity (producer) and one which is looking to purchase electricity (consumer), and defines the conditions of the agreement, such as the amount of electricity to be supplied, negotiated prices, accounting, and penalties for non-compliance
Property-Assess Clean Energy (PACE) Financing	A type of loan offered by the U.S. Department of Energy for financing energy efficiency upgrades, disaster resiliency improvements, water conservation measures, or renewable energy installations and improvements of residential, commercial, and industrial property owners

Term	Definition
Relative Sea Level Rise	A combination of the absolute (global) sea level rise, which is the change in the height of the ocean surface above the center of the earth, plus changes (up or down) in land elevation for the relevant coastal area. Sea level rise at specific locations may be more or less than the global average due to many local factors such as subsidence, ocean currents, variations in land height, and whether the land is still rebounding from the compressive weight of Ice Age glaciers
Renewable Energy	Energy generated from naturally replenishing energy sources with zero GHGs, including but not limited to solar, wind, hydropower, and geothermal
Renewable Portfolio Standard	A regulation that requires the increased production of energy from renewable energy sources, such as wind, solar, hydropower, and geothermal, with a requirement that each specified type of utility ensure that at least a specified amount of renewable energy be sold each year
Resilient Louisiana Commission	State entity charged with examining Louisiana’s economy amid the COVID-19 pandemic and making recommendations for more resilient business-related activities and commerce that includes a task force structure dedicated to strengthening specific sectors of Louisiana’s economy. The RLC was specifically created to guide the state through the Covid-19 crisis and expand the economy so that it can cope more easily with any future crises
Social Determinants of Health	Social determinants of health are the conditions in the environments where people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks. These often contribute to wide health disparities and inequities. Examples may include safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; polluted air and water; and language and literacy skills (Healthy People 2030)
Social Vulnerability	The potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks (CDC ATSDR)
Southwest Power Pool (SPP)	A regional transmission organization (RTO) and nonprofit corporation mandated by the Federal Energy Regulatory Commission to ensure reliable supplies of power, adequate transmission infrastructure and competitive wholesale electricity prices on behalf of its members by managing the electric grid and wholesale power market for the central United States
Strategic Energy Management (SEM)	A system of organizational practices, policies, and processes that creates persistent energy savings by integrating energy management into business practices while focusing on changes in daily operations that engage staff at all levels of an organization in energy efficiency activities
Strategy	A high-level path (plan of action or policy) designed to achieve a major or overall aim/ one or more long-term or overall goals under conditions of uncertainty (e.g., GHG emissions reduction)

Term	Definition
Structured Decision Making (SDM)	An explicit and transparent approach that utilizes a broad set of methods for analyzing decisions and identifying solutions that achieve desired outcomes. This approach supports decisions based on clearly articulated fundamental objectives, integrates science and policy, and remains flexible to legal mandates and public preferences (or values) in decision making
Water Institute of the Gulf	The Water Institute of the Gulf is an independent, non-profit applied research organization that works across disciplines to advance science and develop integrated methods used to solve complex environmental and societal challenges. The Water Institute's applied research is rooted in the lessons born from the challenges facing Louisiana and the Gulf Coast. The Water Institute connects researchers across disciplines to support governmental, private sector, and nongovernmental organization (NGO) partners in planning for an uncertain future
Vector-Borne Disease	Human illnesses caused by parasites, viruses and bacteria that are transmitted by vectors, which are living organisms that can transmit infectious pathogens between humans, or from animals to humans

Acknowledgements

We wish to acknowledge and appreciate dedicated contributors to the Louisiana Climate Action Plan for their leadership, expertise, collaborative spirit, and ongoing commitment to support this work. Thank you to members of the Task Force; Agriculture, Forestry, Conservation, and Waste Sector Committee; Land Use, Buildings, and Housing Sector Committee; Manufacturing and Industry Sector Committee; Mining, Oil, and Gas Sector Committee; Power Production, Distribution, and Use Sector Committee; Transportation Sector Committee; Equity Advisory Group; Finance Advisory Group; Legal Advisory Group; and Science Advisory Group.

We express great thanks to residents, organizations, institutions, companies, universities, and state agencies who shared their time, ideas, and continued engagement throughout the creation of the Climate Action Plan. We extend further gratitude to guest speakers who shared expertise with the Climate Initiatives Task Force on industrial decarbonization and on carbon capture, storage, and utilization in October 2021, furthering members' understanding and refinement of related actions. We are also appreciative of the technical support of the LSU Center for Energy Studies for their development of the 2021 Greenhouse Gas Inventory and grateful for Energy Innovation's development of the Louisiana Energy Policy Simulator Tool.

With the technical and planning support of The Water Institute of the Gulf (the Water Institute), the Office of the Governor, Coastal Activities (GOCA) staffed, developed, and led the visioning and planning process for the Climate Action Plan. Core Planning Team Members include Harry Vorhoff, Lindsay Cooper, and Charles Sutcliffe from GOCA and Alyssa Dausman, Colleen McHugh, Soupy Dalyander, Allison DeJong, and Erin Kiskaddon from the Water Institute. We also acknowledge and appreciate additional staff of GOCA and the Water Institute who supported this effort. The integral role of the Water Institute as part of the Planning Team was made possible through the financial support of the U.S. Climate Alliance and the RESTORE Council.

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Appendix A. Dissent

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
1.1	Adopt a Renewable and Clean Portfolio Standard and create a statewide market for Renewable Energy Certificates	Colette Pichon Battle (GCCLP)	A “clean” portfolio standard includes nuclear & fossil fuel technologies that employ CCUS, all of which have serious environmental justice concerns and are incompatible with equity, a stated goal of the plan. CCS would require a new pipeline buildout that would harm Louisiana’s coast and people.
		Greg Bowser (LCA)	LCA is concerned that Action 1.1 may serve to negatively impact investment in projects, which leads to concerns about future reliability of power supply and power generation. To the extent any such standard is adopted, there should be no limitation on the amount of clean power.
1.2	Improve electric generation resource planning and procurement to streamline the retirement and replacement of energy resources	Colette Pichon Battle (GCCLP)	"Low carbon hydrogen" includes blue hydrogen. During the CITF meeting on October 26, 2021, the state's data showed that the inclusion of blue hydrogen actually increased total greenhouse gas emissions. A 2021 Stanford study found that blue hydrogen produced more GHG emissions than coal.
1.4	Establish utility green tariffs	Colette Pichon Battle (GCCLP)	"Clean energy" includes nuclear and fossil fuel technologies that employ CCUS. These energy sources have serious environmental justice concerns and are incompatible with equity, a stated goal of the plan. CCS is unproven and could help lock in existing toxic fossil fuel infrastructure.
1.5	Explore the role of Power Purchase Agreements and deregulating power generation in the energy transition	Greg Bowser (LCA)	LCA supports Action 1.5 but believes it should be clarified to include not just renewable power but also clean power. Power Purchase Agreements (PPAs) for clean power should be included in the request to the LPSC, because such resources will have few, if any, emissions by 2050.
		Jonathan Bourg (Entergy Louisiana)	The LPSC is the appropriate entity to regulate PPAs, industrial access and/or wheeling and compensation for co-generation, and has expressed its views in prior proceedings. This regulation is necessary to maintain electric grid reliability and does not impede reasonable carbon reduction efforts.
1.6	Develop a regional long-range transmission infrastructure plan to meet Louisiana’s transmission goal	Greg Bowser (LCA)	LCA does not believe that specific percentage goals for transmission expansion should be included, as they are premature. Instead, transmission expansion should be based on transmission planning studies, which consider factors such reliability, cost/benefits of the proposed investment, the particular needs of renewable and clean energy projects, resiliency associated with severe weather events, etc.
2.4	Evaluate an Emission Reduction Generation and Supply (ERGS) program	Greg Bowser (LCA)	LCA supports Action 2.4 but believes it should be revised so it is clear that it is not limited only to renewable power. Based on the most recent edits to the Portfolio, the Action now appears to limit its application to renewable power which LCA believes may have been in error.

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
		Jonathan Bourg (Entergy Louisiana)	The LPSC is the appropriate entity to regulate PPAs, industrial access and/or wheeling and compensation for co-generation, and has expressed its views in prior proceedings. This regulation is necessary to maintain electric grid reliability and does not impede reasonable carbon reduction efforts.
3.3	Advocate for a national carbon price and explore joining a multi-state carbon pricing system to advance GHG emissions reduction and direct proceeds toward the advancement of strategies in the Louisiana Climate Action Plan	Colette Pichon Battle (GCCLP)	GCCLP supports a cap on carbon emissions but objects to a trading regime. Trading programs allow companies to buy the right to pollute, potentially allowing for the continued emission of other toxic pollutants in environmental justice communities. Offsets can also allow for double counting.
3.4	Develop and enforce a Net Zero Industry Standard	Greg Bowser (LCA)	Rather than increased regulations, LCA supports a market-based approach. LCA has concerns this Action may lead to the outsourcing of GHG emissions to states that have less restrictions. This would negate any emissions reductions achieved within the State, but it could also harm Louisiana's economy and potential cost the jobs of thousands of Louisianans.
		Tyler Gray (LMOGA)	LMOGA fully supports the efforts and commitments being made by industry to reach Net Zero Emissions by 2050. In this case, LMOGA objects to the changes made to this action after the comment period with little apparent basis in submitted Action Proposals or CTF input. See CTF Dissent Supplement.
4.1	Set Industry Efficiency Standards	Greg Bowser (LCA)	LCA believes that market forces, and not increased regulation, will be the primary driver for achieving greater efficiency. LCA believes that increased regulation may serve to stifle the innovation and creativity necessary to achieve energy efficiency.
		Tyler Gray (LMOGA)	Efficiency enhancements through advancements in technology will be critical to reaching industry's net zero goals. The market (specifically profitability and the will of shareholders) is the most powerful driver for efficiency across industry, as opposed to mandates. See CTF Dissent Supplement.
5.1	Accelerate electrification of industrial processes and equipment through pilot projects, incentives, and requirements	Greg Bowser (LCA)	LCA believes that technology to promote and accelerate gasification should take place through market forces, and not through a regulatory framework. Increased regulation has the potential to stifle creativity, innovation, and competition.
		Tyler Gray (LMOGA)	LMOGA feels better results could be achieved through state support of the development of low-carbon infrastructure, new technologies and market creation. See CTF Dissent Supplement.

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
5.2	Promote low-carbon alternative fuels and feedstocks for petrochemical industrial processes	Colette Pichon Battle (GCCLP)	"Low carbon hydrogen" includes blue hydrogen. During the CITF meeting on October 26, 2021, the state's data showed that the inclusion of blue hydrogen actually increased total greenhouse gas emissions. A 2021 Stanford study found that blue hydrogen produced more GHG emissions than coal.
		Flozell Daniels, Jr. (FFL)	The practice of advancing low-carbon alternatives is unacceptable in the context of necessary emission reductions. "Clean" hydrogen, or blue hydrogen, has been shown to increase greenhouse gas emissions; carbon capture storage and sequestration processes claiming to be "clean" are widely unproven.
		Rob Verchick (Loyola)	Fuel switching must exclude "low-carbon H," a term that includes so-called "blue H," which relies on CCS. Say researchers at Cornell & Stanford: "The greenhouse gas footprint of blue hydrogen is more than 20% greater than burning natural gas or coal for heat." https://bit.ly/3rxNfzo . Do no harm.
5.3	Support the safe and responsible deployment of carbon capture, utilization, and storage for high-intensity and hard-to-abate emissions	Colette Pichon Battle (GCCLP)	CCUS incentives have already cost the Department of Energy \$1.1 billion, despite most of the projects failing. CCUS locks in toxic infrastructure that is harming LA communities. CCUS pipelines would destroy Louisiana's coastal wetlands, one of our most important protections from hurricanes.
		Flozell Daniels, Jr. (FFL)	Carbon capture, utilization, and storage projects are extremely costly with negligible emission reduction benefits. Deployment and expansion of facilities and infrastructure for these technologies within concentrated industrial corridors will increase harm and injustice in Louisiana communities.
		Rob Verchick (Loyola)	The technology is unproven. It would endanger EJ communities, harm wetlands, delay renewables, & require big subsidies. It's reductive effects for LA would be small but would draw imported waste from others. LA must not become the carbon landfill for the rest of the country. https://bit.ly/3tE2NEI
		Shirell Parfait-Dardar (Tribal Chief)	Pipelines pose known environmental and health hazards. Installing additional pipelines for CCUS through fragile coastal wetlands, home of Indigenous communities and estuaries further contributes to historical injustices and genocide. See the American Declaration on the Rights of Indigenous Peoples.
		Camille Manning-Broome (CPEX)	Dissent- Action assumes a safe & responsible CCUS buildout is possible in vulnerable communities/ecosystems without existing supporting evidence or adequate & meaningful public engagement. This is not an action that will benefit the well-being & quality of life for LA's most vulnerable communities.
5.4	Invest in research for utilizations of captured carbon and life cycle	Colette Pichon Battle (GCCLP)	New markets for captured CO2 would create more incentives for companies to continue extracting fossil fuels, which is the cause of the climate crisis and responsible for numerous public health problems in Louisiana communities near petrochemical infrastructure.

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
	analyses to understand their overall impact	Flozell Daniels, Jr. (FFL)	Louisiana has limited resources to invest in tangible, effective emission reduction pathways. Instead of researching ways to subsidize creative carbon accounting, Louisiana universities should advance research on implementing proven renewable technologies across Louisiana’s economy and environment.
		Rob Verchick (Loyola)	CCU seldom cuts carbon permanently. Infrastructure will harm EJ communities. CCU includes enhanced oil recovery, which results in the burning of more oil and emissions. Fuels and feedstocks will someday be burned or deteriorate, sending emissions back into the air. https://bit.ly/3tE2NEI
5.5	Develop Industrial Cluster Decarbonization Plans to plan for and direct facility-level investment	Colette Pichon Battle (GCCLP)	Based on this section and many comments at CITF meetings, the state sees “industrial clusters” as an economic opportunity. But these areas are “sacrifice zones” where Louisiana’s residents are suffering from increased pollution, and the state should look to wind down production in these areas.
		Rob Verchick (Loyola)	For the reasons stated above, the White House EJ Advisory Council voices strong opposition to carbon capture and finds it will not provide any “benefit” to communities. https://bit.ly/3tE2NEI There is no way to “meaningfully consider concerns of nearby communities” and promote CCUS hubs.
		Camille Manning-Broome (CPEX)	Dissent – While seeking economies of scale laudable, I dissent this action because, taken with other actions in this plan, it promotes CCUS hubs. We feel there is no way to “meaningfully consider concerns of nearby communities” and promote CCUS hubs.
6.2	Explore how circular economy principles can be applied to lifecycles of products created and used in Louisiana	Colette Pichon Battle (GCCLP)	This action seems to promote the recycling of plastic, which has mostly been unsuccessful and has led to increased plastic pollution. "Advanced recycling" will increase air pollution. The portfolio should call for an end to the production of unnecessary plastic.
7.1	Hold former well operators accountable for orphaned wells	Tyler Gray (LMOGA)	LMOGA is certainly supportive of addressing orphaned wells, and we actively participate in the OSR Commission and CLEER. However, we object to the inclusion of “creating... a right of action for landowners... to sue” because Louisiana currently has this authority under R.S. 30:29 and 30:80, et seq.
7.2	Strengthen financial security requirements for plugging wells	Tyler Gray (LMOGA)	The rationale for action proposals 166 & 168 references an outdated report. The legislature has superseded several recommendations from that report, addressing funding, needed improvements to the law, and creating state level committees to review the process.
8.1	Enact methane waste rules	Tyler Gray (LMOGA)	LMOGA dissents due to reference and connection to Action 3.4. See CTF Dissent Supplement.

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
8.2	Establish methane monitoring stations in the GHG Monitoring Program	Colette Pichon Battle (GCCLP)	The most effective way to reduce leaks is not constant monitoring. It's to eliminate fossil fuel extraction. This is not a minor disagreement about wording; it indicates that the state may misunderstand what is causing the climate crisis, which is the extraction of fossil fuels.
9.1	Shift public fleets to low and zero-emission vehicles	Colette Pichon Battle (GCCLP)	Renewable diesel is largely made from industrial grains such as corn and soybeans, which generate agricultural pollution that creates harmful algae blooms and hypoxic zones, including the Dead Zone off the coast of Louisiana. These hypoxic zones harm Louisiana fisheries and fisherfolk.
9.3	Prepare for the expanded availability of alternative fuels for waterborne transport, medium- and heavy-duty vehicles, and aviation	Colette Pichon Battle (GCCLP)	Renewable diesel relies on synthetic fertilizers, the production of which harms environmental justice communities. "Alternate fuel" includes natural gas, methane, and biofuels. Natural gas is a major contributor to the climate crisis and biofuels increase agricultural pollution and deforestation.
15.3	Develop crediting mechanism and market specific to blue carbon	Colette Pichon Battle (GCCLP)	Louisiana must conserve its wetlands as a matter of good climate and coastal policy. Selling coastal wetlands for offsetting allows for continued greenhouse gas emissions and other pollution in other places where that pollution should be eliminated.
16.7	Encourage sustainable forest management and greater use of Louisiana forest products for construction	Colette Pichon Battle (GCCLP)	GCCLP objects to the inclusion of wood pellets as a climate solution. The wood pellet industry is increasing deforestation in our region, and burning wood for energy releases more greenhouse gas emissions than coal.
18.2	Teach, re-train, and employ Louisiana residents in clean energy sectors	Colette Pichon Battle (GCCLP)	"Clean energy" includes false solutions such as blue hydrogen and CCS. "Alternative fuels" includes natural gas, methane, and biofuels. Natural gas is a major contributor to the climate crisis and biofuels increase agricultural pollution and deforestation.
19.1	Promote and invest in Louisiana-based low-carbon industries, including specialized worker training and long-term economic development planning to recruit, develop, and retain firms and workers.	Colette Pichon Battle (GCCLP)	GCCLP objects to the inclusion of low-carbon hydrogen, which includes blue hydrogen. Blue hydrogen is worse for the climate than coal.
		Flozell Daniels, Jr. (FFL)	Louisiana has limited staff capacity within agencies and higher learning institutes; workforce development and economic development planning resources should prioritize coastal restoration, water management, and renewable energy sectors, reducing Louisiana's vulnerability to global market shifts.
		Rob Verchick (Loyola)	LA's efforts here must exclude "low-carbon H," a term that includes so-called "blue H," which relies on CCS. See researchers at Cornell & Stanford: "The greenhouse gas footprint of blue hydrogen is more than 20% greater than burning natural gas or coal for heat." https://bit.ly/3rxNfzo . Do no harm.

Action Number	Action Name	Task Force Member Name (Affiliation)	Reason for Dissent
20	Ensure Louisiana is prepared to maximize potential federal funding opportunities	Colette Pichon Battle (GCCLP)	Blue/gray hydrogen and carbon capture are false solutions that will harm Louisiana communities and degrade the environment. The state should not pursue them, regardless of federal incentives.
26.2	Solicit a study to more comprehensively understand potential impacts of CCUS technology and infrastructure on communities, ecosystems, and cultural resources to inform siting and permitting deployment	Rob Verchick (Loyola)	This assumes “siting and permitting” of CCUS, technologies that in the best-case scenario would have minimal effect reducing LA’s footprint, would harm EJ communities and wetlands, and require lg and permanent subsidies. There are so many more, better ways to spend than chasing this “loss leader.”
		Camille Manning-Broome (CPEX)	Dissent – As drafted, the Action assumes CCUS buildout is a foregone conclusion regardless of the impacts incurred on communities, ecosystems, and cultural resources.
26.3	Collaboratively develop regulatory frameworks and statewide siting plans for new energy technologies with considerations for both climate and environmental justice	Shirell Parfait-Dardar (Tribal Chief)	Does not require following Federal Laws or Declarations, such as: United States Constitution - Article VI or the American Declaration on the Rights of Indigenous Peoples. This must be required to ensure responsibility and accountability.
27.2	Ensure that the Climate Initiatives Task Force continues...	Tyler Gray (LMOGA)	The executive branch currently has the authority to meet the objectives of this action, and codifying it via statute jeopardizes opportunities for meaningful change based on evolving market conditions.
28.1	Establish a Louisiana GHG monitoring program	Tyler Gray (LMOGA)	DEQ currently has and exercises the authority to require monitoring where they feel it is necessary.

Appendix B. Meeting List

2020

- November 9: Climate Task Force meeting #1
- December 1: Transportation Sector Committee meeting #1
- December 4: Agriculture, Forestry, Conservation and Waste meeting #1
- December 7: Legal Advisory Group meeting #1
- December 7: Land Use, Buildings, and Housing Sector Committee meeting #1
- December 8: Equity Advisory Group meeting #1
- December 8: Finance Advisory Group meeting #1
- December 11: Science Advisory Group meeting #1
- December 14: Manufacturing and Industry Sector Committee meeting #1
- December 14: Power Production, Distribution, and Use Sector Committee meeting #1
- December 15: Mining, Oil, and Gas Sector Committee meeting #1
- December 21: Climate Task Force meeting #2

2021

- January 25: Climate Task Force meeting #3
- February 24: Climate Task Force meeting #4 – All Hands meeting with AGs and SCs
- March 10: Agriculture, Forestry, Conservation and Waste meeting #2
- March 11: Power Production, Distribution, and Use Sector Committee meeting #2
- March 12: Manufacturing and Industry Sector Committee meeting #2
- March 16: Mining, Oil, and Gas Sector Committee meeting #2
- March 17: Land Use, Buildings, and Housing Sector Committee meeting #2
- March 19: Transportation Sector Committee meeting #2
- March 23: Legal Advisory Group meeting #2
- March 24: Finance Advisory Group meeting #2
- March 26: Equity Advisory Group meeting #2
- March 29: Science Advisory Group meeting #2
- April 14: All Hands Sector Committee sessions 1 & 2
- April 15: All Hands Sector Committee sessions 3 & 4
- April 16: All Hands Sector Committee sessions 5 & 6
- May 4: All AG “Office Hours” meeting #1
- May 17: Agriculture, Forestry, Conservation and Waste meeting #3
- May 21: Transportation Sector Committee meeting #3
- May 24: Power Production, Distribution, and Use Sector Committee meeting #3
- May 26: Land Use, Buildings, and Housing Sector Committee meeting #3
- May 27: Mining, Oil, and Gas Sector Committee meeting #3
- June 2: Manufacturing and Industry Sector Committee meeting #3
- June 8: Climate Task Force meeting #5
- July 20: Science Advisory Group special meeting
- July 29: Climate Task Force meeting #6
- August 27: All Advisory Group “Office Hours” meeting #2
- September 30: Equity Advisory Group special meeting
- October 8: Climate Task Force special meeting #1

- October 19: Climate Task Force special meeting #2
- October 20: LA EPS Tool Launch meeting
- October 26: Climate Task Force meeting #7
- December 16: Climate Task Force meeting #8

2022

- January 11: Climate Task Force meeting #9
- January 31: Climate Task Force meeting #10

Appendix C. Summary of Submitted Action Proposals

Action Number	Action Proposer Name	Action Name
1	Dr. Stephen Barnes	Freight Low Carbon Mode Shift
2	Billie Golan	Soils as a Carbon Sink
3	Benson Langlinais, Ron Harrell	Curtail and capture agricultural GHG emissions through voluntary, market-incentive based strategies
4	Jacob Pohlman	Support Composting and gardening efforts to reduce GHG
5	Eric Smith	Conversion of CO2 into stable, marketable compounds
6	Eric Smith	Conversion of CO2 into green Methane
7	Daniel Dehon	Clearing up regulatory barriers that govern carbon capture and sequestration
8	Amanda Richey	Support a National Carbon Price Policy
9	Michael D. Moffitt	Develop a Plan and Partners for Modular Nuclear Power Pilot Program in Louisiana
10	Bob Murrell	Cover the Superdome roof in solar panels
11	Dr. Terrence Chambers, Gregory Sigue	Equal Opportunity for Landowners of Louisiana and Government Accountability Action Plan
12	Ann Vail, Sam Lehr	Increase the Development and Use of Renewable Natural Gas (RNG)
13	University of Louisiana Monroe	An alternative for reducing climate change emissions for diesel and gas powered vehicles
14	Michael Johnson	Banning Gas powered vehicles to be sold by 2030
15	LA Dept. of Agriculture & Forestry/Office of Soil & Water Conservation	Reduction of Agricultural Methane Emissions through Ruminant Feeding Supplements
16	Linda Baynham	1. Increased energy efficiency programs in state. 2. Example of major project.
17	Robert Desmarais Sullivan	Elimination of tax exemptions for petrochemical industry
18	Camille Manning-Broome, Jeannette Dubinin, Kim Marousek, Rachelle Sanderson	Create a statewide framework and authority to guide land use practices and manage land use and natural systems holistically for coordinated decision-making.
19	Camille Manning-Broome, Jeannette Dubinin, Angie Fyfe	Reduce greenhouse gas (GHG) emissions and create economic activity through capacity-building and development of local governments climate action plans.
20	Camille Manning-Broome, Jeannette Dubinin, Dr. Terrence Chambers, Logan Atkinson-Burke, Simon Mahan	Develop a model solar ordinance for adoption by local governments to support GHG emission reduction goals and increase predictability of local impacts of solar industry investments.

Action Number	Action Proposer Name	Action Name
21	Jasmine Gorowara, Srinee Bajaj	Cargo hold wash water disposal
22	Thomas Parish, Bob Gray, Jake Frank	Fuel Additive: increases efficiency reduces emissions
23	Brian Bond, Dr. Terrence Chambers, Matt White	Provide the Training Necessary to Support the Growth of the Local Clean Energy Industry
24	"American Biocarbon CT, LLC"	Biocarbon Distribution for Increased Crop Yield and Permanent Carbon Sequestration
25	Dr. Eric Kalivoda	Expand Broadband Access to Reduce Travel
26	Kyla Cheynet, Robby Toombs, Buck Vandersteen	Utilization of low-value forest based fiber to effect positive carbon outcomes.
27	Ann Vail, Dr. Eric Kalivoda	Expand Availability of Alternative Fuels
28	Lucien Cutrera	Convert State vehicles to electric
29	Andy Kowalczyk	Decarbonizing Louisiana Through Electrification
30	Ann Elizabeth Maier	Reviewing expansion of extractive industries in the state. Moving to responsibility in corporate tax payment, repair of environmental damage, ending of racial injustice.
31	Buck Vandersteen, Robby Toombs, Kyla Cheynet	Provide market driven strategies to keep forest land forested and encourage greater use of forest products for construction.
33	Greg J. Gasperecz	Reduce Idling and Poor Driving of Publicly Owned Vehicles
34	Robby Toombs, Kyla Cheynet, Buck Vandersteen	Provide outreach and education on GHG mitigation to timberland owners.
35	LA Conservation Partnership	Poultry Litter Distribution
36	Ann Vail, Dr. Eric Kalivoda	Convert Public Fleet to Alternative Fuels
37	Stephen C. Poss	Green Land/lawn care
38	LA Conservation Partnership	Louisiana Irrigation and Dewatering Pump Conversion for Emissions Reduction
39	LA Dept. of Agriculture & Forestry/Office of Soil & Water Conservation	Louisiana Conservation Delivery Program
40	LA Dept. of Agriculture & Forestry/Office of Soil & Water Conservation	State Climate Mitigation Program for landowners
41	Dr. Eric Kalivoda	Promote Transportation-Related Energy Conservation in the Public Sector
42	LA Dept. of Agriculture & Forestry/Office of Soil & Water Conservation, USDA-NRCS,LSU Ag Center	Louisiana State Conservation Innovation Program - Incentive Based Tools
43	Marylee Orr,Dr. Slawo Lomnicki	Industrial Flaring Transition to Energy Recovery

Action Number	Action Proposer Name	Action Name
44	Dr. Eric Kalivoda	Offset Transportation Sector GHG Emissions through Natural Sequestration
45	Dr. Eric Kalivoda	Offset Transportation Sector GHG Emissions through Carbon Capture and Storage
46	"Larry Sorapuru, Jr. ", Victoria Peluso, Dr. Adrienne Katner	Cumulative Assessment of Industry Risks on Vulnerable Communities
47	Tokesha Collins-Wright	Renewable Energy Power Purchase Agreements
48	Tokesha Collins-Wright	Carbon Pricing
49	Tokesha Collins-Wright	Carbon Capture and Storage
50	"Dr. Peng ""Solomon"" Yin"	State-wide building energy code program for energy efficiency and sustainability improvement in building sectors
51	Hunter Johnson	Creating a State Carbon Intensity Database to Measure decarbonization of Industry at the State Level
52	Dr. Anthony Laska	Reducing net grid emissions through efficiencies of Combined Heat & Power and District Heating & Cooling
53	Glen Lyons	Economy-wide Carbon Pricing Consideration
54	Chanda Johnson, Breigh Rhodes, Dr. John Underwood, Claire Anderson	The Louisiana RPP Program: Catalytic Funding and Support for Transdisciplinary, Research-Based K-12 Climate Education Projects
55	Michael Beck	Revenue Decoupling for Utilities
56	Brent Newman, Charles Allen	Renewable Portfolio Standard for the State of Louisiana
57	Brent Newman, Charles Allen	Net energy metering for solar panels in Louisiana
59	Kosmos Energy LLC	Blue Carbon Commercialization: Biogeochemical Model Development Phase II
60	Tierra Foundation	Augmenting State Monitoring Regimes for Blue Carbon
61	Brent Newman, Charles Allen	Promote Offshore Wind as an Economic Engine for Louisiana
62	Margo Moss, Kendra Valerius	An Industry Certification Program for Emissions Reduction Activities by Louisiana Industry
63	Julie Olson	Level Playing Field for Energy and Industrial Investments
64	Water Wise Gulf South Policy and Advocacy Committee	Advancing Green Infrastructure to Combat Greenhouse Gas Emissions and to reduce Flood Risk
65	Dr. Fallon Aidoo, Kim Marousek, Mark Goodson, Rachelle Sanderson, Rachelle Trahan	Linking land use and transportation planning for compact development patterns
66	Chief Shirell Parfait-Dardar	Preservation, Equity and Future Generations

Action Number	Action Proposer Name	Action Name
67	"Winston Wade Riddick, Jr.", "Winston Riddick, Sr."	The Skywood Carbon Economy
68	Justin Kozak	Floodplain, wetland, and riparian corridor conservation, restoration, and expansion of all
69	Jessica Kemp	Reduce Vehicle Miles Traveled (VMTs)
70	Jessica Kemp	Expand implementation of Complete Streets
71	Rhoman Hardy	Renewable Power Choice in Louisiana
72	Rhoman Hardy	Plastics Circular Economy: Plastics Recycling for use in Manufacturing & Industry Sector
73	Nathan McBride	GHG Reduction Property Tax Exemption
74	Nathan McBride	Increase Adoption of CCUS
75	CSRS Inc.	Statewide Energy Efficient Program
76	Nathan McBride	Leveraging Technology for Leak Detection
77	Nathan McBride	Leverage Carbon Offset Potential of Coastal Restoration Projects
78	CSRS Inc.	Incorporate green space and green infrastructure into buildings and developments
79	Alicia Brown	Pay As You Save® (PAYS®)
81	Connie Porter Betts	Continue DOTD Program to Reduce GHG through Carpooling, Telecommuting & Similar Initiatives
82	Dr. E. deEtte Smythe, Sabrina Schenk, Carl Cleland	Coastal Marsh Restoration Using Re-purposed Materials of Opportunity for Carbon Sequestration & Community Resilience
83	Randy Pausina	St Tammany Transportation GHG Mitigation Action
84	Ann Vail, Manies Brooks, Julie Brooks	Implementing a targeted incentive program to accelerate the widespread deployment of electric yard trucks in Louisiana
85	Randy Pausina	Bottles to Beaches
86	Randy Pausina	Living Shorelines for Oxygen Creation
87	Ross Liner	Healthy Resilient Buildings Initiative: Develop Policies, Programs, and Projects to create a healthier & secure work environment for employees and an awareness campaign for the citizens of the Parish
88	Gulf South for a Green New Deal Policy Table	Creating an Office of Sustainable Agriculture within the Louisiana Department of Agriculture and Forestry that will provide workforce development and training, marketing assistance, support for the transition to sustainable and regenerative practices, and access to land and markets for small farmers who use sustainable and regenerative practices to build climate resilience.
89	Dr. Anthony Laska	Purchase of CHP electricity from Industry by Public Utilities

Action Number	Action Proposer Name	Action Name
91	Adam Peltz, Scott Anderson, Dan Grossman	Reducing methane emissions from equipment leaks and malfunctions at oil and gas production and compression facilities throughout Louisiana through leak detection and repair (LDAR)
92	Adam Peltz, Scott Anderson	Including and coordinating Equity/Environmental Justice policy for Carbon Capture and Sequestration (CCS) across regulatory agencies and divisions
93	Flozell Daniels, Liz Williams Russell, Caressa Chester, Asti Davis	Expand inclusive economic opportunity through efforts to reduce Louisiana's emissions, expand and diversify our economy, and build a more just and resilient future
94	Scott Gammel	Renewable Energy and Sustainable Aviation Fuels
95	Flozell Daniels, Asti Davis	Enable Access to Resources Outside Urban Centers
96	CF Industries	Permit Streamlining for Decarbonization Projects
97	CF Industries	Corporate Decarbonization Tax Incentives
98	CF Industries	Hydrogen Investment Income Tax Credit
99	Flozell Daniels, Asti Davis	Outreach and Education Regarding Shifts That Will Occur in the Green Transition of Transportation
100	Ann Vail	Idle Reduction Incentives for State Fleets
101	Jaime Simmons	Accelerating the Offshore Wind Opportunity for Louisiana
102	Nathan Lott	Help property owners improve building energy performance
103	Louisiana Policy Table of Gulf South for a Green New Deal	Create a Louisiana Climate Justice Department.
104	Nathan Lott	Leading by example with public buildings
105	Caressa Chester	Eliminate fossil fuels to the extent practicably possible, by making alternatives more feasible and less expensive
106	Dr. Eric Kalivoda, Connie Porter Betts	Continue Congestion Reduction Programs
107	Tyler Herrmann, Ann Vail	Increase the Development and Use of Biodiesel and Renewable Diesel
108	Bill Robertson	Climate Rankings for Electric Utilities and Large Industrial Facilities
109	Dr. Mehdi Zeidouni	Containment Verification in CO2 Geological Storage Projects via Pressure and Temperature Monitoring
110	LDAF-Office of Soil & Water Conservation, LDEQ Solid Waste Division, LSU Ag Center, LSU SeaGrant	Beneficial Use of Agricultural Wastes
111	Katherine King	Green Power Purchase Tariff (GPPT)
112	Jonathan Bourg	Accelerated decommissioning of generation

Action Number	Action Proposer Name	Action Name
113	Logan Atkinson-Burke	Renewable Tax Incentive
114	Simon Mahan, Logan Atkinson-Burke	Electric Generation Resource Planning Improvements
115	Jonathan Bourg, Bill Robertson, Logan Atkinson-Burke	Climate Score Report for Public Utilities
116	Brian Bond	Retirement of existing resources and addition of new resources
117	Logan Atkinson-Burke	Amend existing Market Based Mechanism to require both all-source competitive solicitation and a loading order requirement.
118	Katherine King	Demand Response – Industrial/Commercial Interruptible Power Tariffs (IPT)
119	Logan Atkinson-Burke	Energy Efficiency Resource Standard
120	Robbie Laborde	CCS Initiative - Streamlined Permitting & Project Advocacy
121	Robbie Laborde	Carbon Capture and Sequestration (CCS) Initiative
122	Simon Mahan, Logan Atkinson-Burke	Long Range Transmission Planning
123	Simon Mahan, Logan Atkinson-Burke	Transmission Planning Seams Coordination
124	Katherine King	Emission Reduction Generation and Supply (“ERGS”)
125	Jonathan Bourg	Advanced Power Generation Technologies
126	Jessica Hendricks, Logan Atkinson-Burke	Community Solar Incentive and Support
127	Logan Atkinson-Burke	Peak Demand Reduction Goal
128	Angelle Bradford	Transit Equity as a Civil Right and Public Good
129	Louisiana Policy Table of Gulf South for a Green New Deal	The Sunshine Project: People’s Assemblies for Economic Development
130	Andrew Mangan	Establish a carbon credit system linked to the existing water quality trading program established in Louisiana.
131	Jane Patton, Logan Atkinson-Burke	Louisiana Abandoned Well Administration Pilot Act: an Abandoned Well Administration Pilot Program
133	Z Smith	Keeping Louisiana up to date on building & energy codes
134	Z Smith	Energy benchmarking for State buildings
135	Z Smith	Buy Clean Louisiana
136	Harriet Tregoning	Position LA for multiple federal funding opportunities
137	Harriet Tregoning	School Bus Electrification
138	Alex Posorske	Increase statewide transit ridership via increased financial support for transit operations
139	Dr. Chao Wang	Industrial facility forklift and manlift electrification

Action Number	Action Proposer Name	Action Name
140	Dr. Chao Wang	Energy auditing of industrial facilities - Requirement and regulation
141	Jane Patton, Logan Atkinson-Burke	Carbon-Free Louisiana: Prioritizing carbon-light opportunities over the myth of carbon capture
143	Louisiana Policy Table of Gulf South for a Green New Deal	Light Duty Vehicle / Vessel Electrification Incentive
144	Stephen Wright	Third Party Power Purchase Agreements
145	Stephen Wright	State-Wide Renewable Portfolio Standard
146	Stephen Wright	Property-assessed clean energy Financing
147	Stephen Wright	Solar Tax Credit
149	Dr. Alex Kolker	Black Carbon: A Particulate-Phase Greenhouse Forcing
150	Dr. Alex Kolker	Monitoring Greenhouse Gas Fluxes With Big Data
151	Dr. Alex Kolker	Monitoring Methane With Remote Sensing And Data Science
152	Louisiana Policy Table of Gulf South for a Green New Deal	Equitable disaster planning (i.e., mitigation and preparedness) and recovery process for parishes and municipalities.
153	Gulf Coast Center for Law & Policy	Just transition for workers
154	Gulf Coast Center for Law & Policy	Funding public compost facilities with a fertilizer tax
155	Gray Stream	Development of carbon storage hubs for the permanent storage of carbon dioxide (CO ₂) from industrial facilities, such as Project Minerva, a carbon storage project in Southwest Louisiana.
156	Hunter Johnson	Pore Space Acquisition Policy for Public Lands Owned by the State of Louisiana
157	Monica Rowand	Zero emission vehicles requirements for state vehicles
158	Monica Rowand	State-wide energy efficiency programs for residential and commercial buildings (like Energy Smart New Orleans or the USDA program)
159	Monica Rowand	Development of organics compost programs and incentives for sustainable and regenerative agriculture practices
160	Monica Rowand	Incentives for waste diversion (or disincentives for landfill)
161	Monica Rowand	Emissions reductions requirements for state entities
162	Monica Rowand	Renewable energy portfolio standards for utilities
163	Gulf States Renewable Energy Industries Association	Energy and Storage Economic Incentives
164	Gulf States Renewable Energy Industries Association	Net Metering

Action Number	Action Proposer Name	Action Name
165	Gulf States Renewable Energy Industries Association	Transmission Infrastructure
166	Adam Peltz, Kristi Trail, Andy Jacoby, Brent Campbell	Improve Oilfield Site Restoration Fund funding to P&A wells
167	Adam Peltz, Kristi Trail, Andy Jacoby, Brent Campbell	Ensure that former operators are held responsible for their orphan wells
168	Adam Peltz, Kristi Trail, Andy Jacoby, Brent Campbell	Improve financial security to ensure legacy sites are plugged and cleaned up
169	Adam Peltz, Kristi Trail, Andy Jacoby, Brent Campbell	Reform "future utility" laws and rules to prevent inactive wells from unduly lingering unplugged
170	Katherine King	Renewable/Zero-Emission Purchase and Utilization Transaction ("RPUT")
171	Katherine King	Virtual Power Purchase Agreement ("VPPA")
172	Logan Atkinson-Burke	Renewable Portfolio Standard
173	Brian Bond	Carbon Cap and Trade
174	Simon Mahan, Logan Atkinson-Burke	Louisiana Energy Storage Target
175	Jonathan Bourg	Utility Customer Additional Facility Offerings
176	Brian Bond	Microgrids
177	Andreanecia Morris	Weatherization and efficiency for residential properties
178	Andreanecia Morris	Emergency housing trust fund for rebuilding after disaster

Appendix D. Executive Order

State of Louisiana



EXECUTIVE DEPARTMENT

EXECUTIVE ORDER NUMBER JBE 2020 – 18

CLIMATE INITIATIVES TASK FORCE

- WHEREAS,** Louisiana’s working coast is a national treasure, exporting over \$120 billion in annual goods, servicing 90% of the oil and gas activity in the Gulf of Mexico, producing 21% of all commercial fisheries landings by weight in the Lower 48 states, and providing winter habitat for five million migratory waterfowl;
- WHEREAS,** coastal Louisiana is also a vital regional asset which serves as residence to 2.5 million people and as a historical foundation to our unique cultural heritage;
- WHEREAS,** Louisiana’s coast continues to experience one of the fastest rates of land loss in the world, and parts of our State remain unprotected from or vulnerable to future hurricane and flood event impacts;
- WHEREAS,** Louisiana and its citizens have suffered catastrophic losses and human, economic, and social harm as a result of increased flood risk due to coastal land loss, and the continued threat of further land loss to Louisiana’s coast endangers its residents, economy, and native fish and wildlife species;
- WHEREAS,** beginning in 2007, Louisiana has adopted, carried out, and updated a comprehensive plan for a sustainable coast (the “master plan”);
- WHEREAS,** the master plan integrates coastal protection strategies and coastal restoration strategies to provide increased flood protection for communities and to maximize the amount of land maintained or restored in coastal Louisiana;
- WHEREAS,** according to the 2017 Coastal Master Plan, without significant action, continued subsidence and sea level rise over the next fifty years could result in the additional loss of between 2,250 and 4,120 square miles of Coastal Louisiana;
- WHEREAS,** rising sea levels will reduce the effectiveness of built and planned investments in coastal protection and restoration, threatening the longevity of coastal protection and restoration projects;
- WHEREAS** as is the case today with natural disasters, impacts from climate change will be disproportionately felt by the residents of our state with the fewest resources;
- WHEREAS,** in the 2018 Special Report Global Warming of 1.5 Degrees Celsius, the Intergovernmental Panel on Climate Change (the “IPCC”) concluded that overall “climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5 degrees and increase further with 2 degrees” above pre-industrial temperatures;
- WHEREAS,** in the same 2018 Special Report, the IPCC further concluded that reducing greenhouse gas emissions can slow global warming and reduce the magnitude and speed of future sea level rise, enabling greater opportunities for adaptation for human and ecological systems in low-lying coastal and deltaic areas;

WHEREAS, limiting global warming to 1.5 degrees Celsius would require global net human-caused emissions of greenhouse gases to fall by about 45% from 2010 levels by 2030, reaching “net zero emissions” around 2050;

WHEREAS, to improve our resilience, sustain our coast, and help avoid the worst impacts of climate change, Louisiana must proactively work to reduce the greenhouse gas emissions that are driving up global temperatures, raising sea levels, and increasing risks that threaten our health and safety, quality of life, economic growth, and vital habitats and ecosystems;

WHEREAS, a significant reduction in greenhouse gas emissions will require a coordinated, intentional, and collaborative state effort;

WHEREAS, Louisiana Revised Statute 49:214.3.1 directs the Governor, through his Executive Assistant for Coastal Activities, to “coordinate the powers, duties, functions, and responsibilities of any state agency relative to integrated coastal protection”;

WHEREAS, Louisiana is committed to working with Louisiana businesses, industries, local communities, and civil society to reduce emissions through a suite of balanced policy solutions;

WHEREAS, by following the science and welcoming all stakeholders, Louisiana can and will reduce greenhouse gas emissions to limit the impacts of climate change that harm the state’s natural and cultural heritage, while adapting to maintain its position as a world leader in energy, industry, agriculture, and transportation;

NOW THEREFORE, I, JOHN BEL EDWARDS, Governor of the State of Louisiana, by virtue of the authority vested in the Constitution and laws of the State of Louisiana do hereby order and direct as follows:

SECTION 1: The Climate Initiatives Task Force (hereafter the “Task Force”) is hereby established within the executive branch, Office of the Governor – Coastal Activities.

SECTION 2: The duties of the Task Force shall include, but are not limited to, the following:

- A. Review and comment on ongoing efforts to update the state’s greenhouse gas emissions inventory;
- B. Investigate and make recommendations for the reduction of greenhouse gas emissions originating in Louisiana to achieve the following greenhouse gas emissions reduction goals:
 - 1. By 2025, reduce net greenhouse gas emissions by 26-28% of 2005 levels;
 - 2. By 2030, reduce net greenhouse emissions by 40-50% of 2005 levels; and
 - 3. By 2050, reduce greenhouse gas emissions to net zero;
- C. Develop policies, strategies, and incentives designed to achieve the net emissions reduction targets established in this Order, while improving the health and welfare of the people of Louisiana and advancing Louisiana’s economic and energy profile.

SECTION 3: By February 1, 2021, the Task Force shall submit to the Governor and Coastal Protection & Restoration Board an interim report recommending strategies, policies, and incentives for meeting the goals provided in Section 2 of this Order. The report, in whole or in part, shall also be submitted to the relevant legislative committees.

SECTION 4: By February 1, 2022, the Task Force shall submit to the Governor and Coastal Protection & Restoration Board a detailed plan for meeting the goals provided

in Section 2 of this Order. The plan, in whole or in part, shall also be submitted to the relevant legislative committees.

SECTION 5: After February 1, 2022, the Task Force shall meet at least annually and shall submit to the Governor and Coastal Protection & Restoration Board an annual status report on the implementation of greenhouse gas emission reduction strategies, policies, and incentives.

SECTION 6: The Coastal Protection and Restoration Authority Board shall consider the recommendations of the Task Force for inclusion in the comprehensive plan for a sustainable coast.

SECTION 7: The Task Force shall be composed of a maximum of twenty-three (23) voting members who, unless otherwise specified, shall be appointed by and serve at the pleasure of the Governor and shall include:

1. The Executive Assistant to the Governor for Coastal Activities, or his designee;
2. The Commissioner of Administration, or his designee;
3. The Commissioner of the Louisiana Department of Agriculture and Forestry, or his designee;
4. The Executive Director of the Coastal Protection and Restoration Authority, or his designee;
5. The Secretary of Louisiana Economic Development, or his designee;
6. The Secretary of the Department of Natural Resources, or his designee;
7. The Secretary of the Department of Environmental Quality, or his designee;
8. The Secretary of the Department of Transportation and Development, or his designee;
9. A member of the Louisiana Public Service Commission, or his designee;
10. The Speaker of the Louisiana State House of Representatives, or his designee;
11. The President of the Louisiana State Senate, or his designee;
12. A person appointed by the Governor from at least three nominations submitted by the Louisiana Mid-Continent Oil and Gas Association;
13. A person appointed by the Governor from at least three nominations submitted by the Louisiana Chemical Association;
14. A representative of an electricity utility;
15. A nonvoting representative of a federal scientific agency;
16. A member of the environmental nonprofit community;
17. A person with experience in community development and engagement;
18. A member of Louisiana's academic community;
19. A member of the environmental justice community;
20. A member of an indigenous tribe, nation, or community;
21. A representative of local government perspectives;
22. A person with qualifications deemed appropriate by the Governor, which shall include experience in climate change policy; and
23. A person appointed at-large.

SECTION 8: The Executive Assistant to the Governor for Coastal Activities, or his designee, shall serve as the Chair of the Task Force.

SECTION 9: The Task Force shall meet at regularly scheduled meetings and at the call of the Governor or the Chair. All meetings of the Task Force shall be subject to the Open Meetings Law as contained in La. R.S. 42:11 et seq. A majority of the serving members of the Task Force shall constitute a quorum. The Task Force shall act by a majority vote of its serving members. The nonvoting representative of a federal scientific agency shall not count as a member for quorum or voting purposes.

SECTION 10: The Task Force shall be supported by committees, including but not limited to the following:

- A. power production, distribution, and use;
- B. land use, buildings, and housing;
- C. transportation;
- D. agriculture, forestry, conservation, and waste management;
- E. manufacturing and industry; and
- F. mining and oil and gas production.

The membership of the committees and their co-chairs shall be determined by the Task Force Chair and may include individuals who do not serve on the Task Force. Each committee shall be co-chaired by at least one member of the Task Force.

SECTION 11: The Task Force and its committees shall be assisted and advised by a scientific advisory group, a finance advisory group, an equity advisory group, and a legal advisory group.

SECTION 12: The Task Force shall be staffed by employees of the Office of the Governor, Office of Coastal Activities. In addition, all executive branch agencies shall cooperate fully with the Task Force and provide any assistance necessary, upon request of the Task Force or its staff.

SECTION 13: All departments, commissions, boards, offices, entities, agencies, and officers of the State of Louisiana, or any political subdivision thereof, are authorized and directed to cooperate with the Task Force in implementing the provisions of this Order and the recommendations of the Task Force.

SECTION 14: The Task Force may collaborate with or seek input from additional local, state, and federal agencies or other stakeholders, including university or not-for-profit research institutions, to develop, implement, and evaluate the necessary components or actions of the Task Force.

SECTION 15: Task Force members shall not receive additional compensation or a per diem from the Office of the Governor for serving on the Task Force.

SECTION 16: This Order is effective upon signature and shall continue in effect until, amended, modified, terminated, or rescinded by the Governor, or terminated by operation of law.



IN WITNESS WHEREOF, I have set my hand officially and caused to be affixed the Great Seal of Louisiana in the City of Baton Rouge, on this 19th day of August, 2020.

GOVERNOR OF LOUISIANA

ATTEST BY THE
SECRETARY OF STATE

SECRETARY OF STATE

Appendix E. Task Force Votes

CLIMATE INITIATIVES TASK FORCE
STATE OF LOUISIANA
January 31, 2022

RESOLUTION NO. 1

A Resolution Approving the Louisiana Climate Action Plan for Submission to Governor Edwards, the Louisiana Coastal Protection and Restoration Authority Board, and the appropriate legislative committees.

WHEREAS, through Executive Order JBE 2020-18, Governor John Bel Edwards created the Climate Initiatives Task Force (the “Task Force”) to bring stakeholders from diverse perspectives together to make recommendations for reducing greenhouse gas emissions originating in Louisiana to net zero by 2050; and

WHEREAS, pursuant to Executive Order JBE 2020-18, by February 1, 2022, the Task Force shall submit a report including its recommendations to Governor Edwards, the Coastal Protection and Restoration Authority Board, and the appropriate legislative committees.

THEREFORE, BE IT RESOLVED, that on January 31, 2022, to comply with the directives in Executive Order JBE 2020-18, the Climate Initiatives Task Force approved by a majority roll-call vote the Louisiana Climate Action Plan circulated prior to and discussed at the January 31, 2022, Task Force meeting; and

THEREFORE, BE IT FURTHER RESOLVED, that pursuant to Executive Order JBE 2020-18, the Louisiana Climate Action Plan approved at the January 31, 2022, Climate Initiatives Task Force meeting be submitted to Governor John Bel Edwards, the Coastal Protection and Restoration Authority Board, and the appropriate legislative committees.

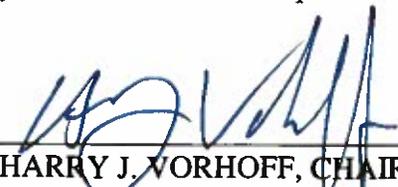
This Resolution was declared adopted this 31st day of January, 2022, pursuant to the following roll call vote.

Task Force Member	Aye	Nay	Abstention	Absent
Harry Vorhoff	X			
Mark Moses	X			

**CLIMATE INITIATIVES TASK FORCE
 TASK FORCE MEETING – JANURARY 31, 2022
 Resolution No. 1**

Bren Haase	X			
Brad Lambert	X			
Jason Lanclos	X			
Chuck Brown	X			
Joey Breaux	X			
Eric Kalivoda	X			
Selby Bush	X			
Timothy Hardy	X			
Bill Robertson	X			
Tyler Gray	X			
Greg Bowser	X			
Johnathan Bourg	X			
Karen Gautreaux	X			
Flozell Daniels	X			
Terrence Chambers	X			
Jeff Schwartz	X			
Colette Pichon Battle	X			
Chief Shirell Parfait Dardar	X			
Robert Verchick	X			
Camille Manning-Broome	X			

I hereby certify that the above is a true and correct copy of a resolution duly adopted by the Climate Initiatives Task Force at its meeting of January 31, 2022, at which a quorum was present.


 HARRY J. VORHOFF, CHAIR
 CLIMATE INITIATIVES TASK FORCE

This 31 day of January, 2022 at Baton Rouge, Louisiana.

References

- ¹ IPCC. (2018). Summary for Policymakers. In: *Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global GHG emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Portner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. *World Meteorological Organization, Geneva, Switzerland*. <https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/>
- ² National Archives and Records Administration. (2015, March 31). FACT sheet: U.S. reports its 2025 Emissions target to the UNFCCC. National Archives and Records Administration. <https://obamawhitehouse.archives.gov/the-press-office/2015/03/31/fact-sheet-us-reports-its-2025-emissions-target-unfccc>; The United States Government. (2021, April 22). FACT sheet: President Biden Sets 2030 GHG pollution reduction TARGET aimed at Creating GOOD-PAYING union jobs and Securing U.S. leadership on clean energy technologies. The White House. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/04/22/fact-sheet-president-biden-sets-2030-greenhouse-gas-pollution-reduction-target-aimed-at-creating-good-paying-union-jobs-and-securing-u-s-leadership-on-clean-energy-technologies/>.
- ³ Keeney, R. L. (1982). Decision Analysis: An Overview. *Operations Research*, 30(5), 803–838.
- ⁴ Keeney, R. L. (2004). Making Better Decision Makers. *Decision Analysis*, 1(4), 193–204. <https://doi.org/10.1287/deca.1040.0009>
- ⁵ LSU Center for Energy Studies (2021). *Louisiana 2021 GHG Inventory*. <https://www.lsu.edu/ces/research/greenhousegasreport2021.php>
- ⁶ LSU Center for Energy Studies (2021), Appendix 4.
- ⁷ LSU Center for Energy Studies (2021), Table 1.
- ⁸ IPCC. (2021a). Summary for Policymakers. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf
- ⁹ NASA. (2021). “Climate Change: Vital Signs of the Planet.” Retrieved August 4, 2021. <https://climate.nasa.gov/>
- ¹⁰ NASA. (2021)
- ¹¹ NASA. (2021)
- ¹² IPCC. (2021)
- ¹³ The Economist. (2019). “Global economy will be 3 percent smaller by 2050 due to lack of climate resilience.” Retrieved August 13, 2021. <https://www.eiu.com/n/global-economy-will-be-3-percent-smaller-by-2050-due-to-lack-of-climate-resilience/>
- ¹⁴ U.S. Global Change Research Program. (2018). *Summary Findings*. Washington D.C.: U.S. Global Change Research Program. https://nca2018.globalchange.gov/downloads/NCA4_Ch01_Summary-Findings.pdf
- ¹⁵ National Academies of Sciences, engineering, and Medicine. (2019). *Framing the Challenge of Urban Flooding in the United States*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25381>; Substance Abuse and Mental Health Services Administration. (2017).

“Greater Impact: How disasters Affect People of Low Socioeconomic Status.” Disaster Technical Assistance Center Supplemental Research Bulletin. https://www.samhsa.gov/sites/default/files/dtac/srb-low-ses_2.pdf

¹⁶ IPCC. *About the IPCC*. <https://www.ipcc.ch/about/>

¹⁷ IPCC. (2021a)

¹⁸ IPCC. (2021a)

¹⁹ IPCC. (2021a)

²⁰ IPCC. (2021a)

²¹ IPCC. (2021b). Headline Statements from the Summary for Policymakers. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Retrieved from https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Headline_Statements.pdf

²² U.S. Global Change Research Program. (2018)

²³ U.S. Global Change Research Program. (2018)

²⁴ Carter, L., A. Terando, K. Dow, K. Hiers, K.E. Kunkel, A. Lascurain ... P. Schramm. (2018a). Southeast. In *Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II* [Reidmiller, D.R., C.W. Avery, D.R. Easterlig, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, B.C. Stewart (eds.)]. U.G. Global Change Research Program, Washington, DC, USA, pp. 743-808. Doi: 10.7930/NCA4.2018.CH19

²⁵ Carter et al. (2018a)

²⁶ Carter et al. (2018a)

²⁷ Carter et al. (2018a)

²⁸ Lempert, R. J., J. R. Arnold, R. S. Pulwarty, K. Gordon, K. Greig, C. Hawkins-Hoffman ... C. Werrell. (2018). *Chapter 28: Adaptation Response* (pp. 1309–1345). Washington D.C.: U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH28>

²⁹ Ebi, K. L., J. Balbus, G. Luber, A. Bole, A. R. Crimmins, G. E. Glass ... J. L. White-Newsome. (2018). *Chapter 14: Human Health*. Washington D.C.: U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH14>

³⁰ Schwartz, J. (2021). “More Than a Third of Heat Deaths Are Tied to Climate Change, Study Says.” *The New York Times*. <https://www.nytimes.com/2021/05/31/climate/heat-deaths-climate-change.html>

³¹ Hsu, A., G. Sheriff, T. Chakraborty, D. Manya. (2021). Disproportionate exposure to urban heat island intensity across major US cities. *Nature Communications*. 12: 2721. <https://doi.org/10.1038/s41467-021-22799-5>

³² Kochanek, K. D., S. L. Murphy, J. Xu, E. Arias. (2017). *Mortality in the United States, 2016*. NCHS Data Brief No. 293. Hyattsville, MD. National Center for Health Statistics

³³ Hajat, S., M. O'Connor, T. Kosatsky. (2010). “Health effects of hot weather: From awareness of risk factors to effective health protection.” *The Lancet*. 375: 856–863. [https://doi.org/10.1016/S0140-6736\(09\)61711-6](https://doi.org/10.1016/S0140-6736(09)61711-6)

³⁴ National Safety Council. (2021). “Hot Car Deaths.” <https://injuryfacts.nsc.org/motor-vehicle/motor-vehicle-safety-issues/hotcars/>

³⁵ Baurick, T. (2020). “These Louisiana cities are getting more weeks of “extreme heat” than 50 years ago.” Retrieved August 13, 2021. https://www.nola.com/news/environment/article_62d2f2c0-d68b-11ea-b380-47e14569dcf6.html

³⁶ Climate Central. (2021). “Hot Zones: Urban Heat Islands.” Research Brief, Climate Central. https://medialibrary.climatecentral.org/uploads/general/2021_UHI_Report.pdf

³⁷ Dahl, K., E. Spanger-Siegfried, R. Licker, A. Caldas, R. Cleetus, S. Udvardy ... P. Worth. (2019). “Killer Heat in the United States.” Retrieved August 13, 2021. <https://www.ucsusa.org/resources/killer-heat-united-states-0>

-
- ³⁸ ,Nowak, D. J., E. J. Greenfield. (2018). Declining urban and community tree cover in the United States. *Urban Forestry & Urban Greening*. 32: 32–55. <https://doi.org/10.1016/j.ufug.2018.03.006>
- ³⁹ Plumer, B., N. Popovich, B. Palmer. (2020). “How Decades of Racist Housing Policy Left Neighborhoods Sweltering.” *The New York Times*. <https://www.nytimes.com/interactive/2020/08/24/climate/racism-redlining-cities-global-warming.html>
- ⁴⁰ Hsu et al. (2021)
- ⁴¹ Hoffman, J. S., V. Shandas, N. Pendleton. (2020). The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 US Urban Areas. *Climate*. 8: 12. <https://doi.org/10.3390/cli8010012>
- ⁴² Gamble, J.L., M. Balbus, K. Berger, V. Bouye, K. chief Campbell, A. Conlon ... A. F. Wolkin. (2016). Ch. 9: Populations of Concern. In *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, Washington, DC, 247-286. <http://dx.dor.org/10.7930/J0Q81BOT>
- ⁴³ Gamble et al. (2016)
- ⁴⁴ Morano, L. H., T. L. Bunn, M. Lackovic, A. Lavender, G. T. T. Dang, J. J. Chalmers ... D. D. Flammia. (2015). Occupational heat-related illness emergency department visits and inpatient hospitalizations in the southeast region, 2007-2011. *American Journal of Industrial Medicine*. 58: 1114-25. Doi: 10.1002/ajim.22504
- ⁴⁵ Carter, L. M., A. Terando, K. Dow, K. Hiers, K. E. Kunkel, A. Lascurain ... P. J. Schramm. (2018b). *Chapter 19: Southeast* (pp. 743–808). Washington D.C.: U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH19>
- ⁴⁶ LDH 2020
- ⁴⁷ Louisiana Department of Health. (2021). “LDH: Hurricane Ida storm-related death toll rises to 26.” <https://ldh.la.gov/news/6308>
- ⁴⁸ Nolte, C. G., P. Dolwick, N. Fann, L. W. Horowitz, V. Naik, R. W. Pinder ... L. H. Ziska. (2018). *Chapter 13: Air Quality* (pp. 512–538). Washington D.C.: U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH13>
- ⁴⁹ Nolte et al. (2018)
- ⁵⁰ USEPA. (2016). *What Climate Change Means for Louisiana* (No. EPA 430-F-16-020; p. 2). U.S. Environmental Protection Agency. <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-la.pdf>
- ⁵¹ Nolte et al. (2018)
- ⁵² Centers for Disease Control and Prevention. (2020a). “Air Pollution”. https://www.cdc.gov/climateandhealth/effects/air_pollution.htm
- ⁵³ CDC. (2020a)
- ⁵⁴ Selin, N.E., S. Wu, K.-M. Nam, J.M. Reilly, S. Paltsev, R.G. Prinn, M.D. Webster. (2009). Global Health and Economic Impacts of Future Ozone Pollution. *Environmental Research Letters*, 4: 1-9 (<http://dx.doi.org/10.1088/1748-9326/4/4/044014>)
- ⁵⁵ Baurick, T. (2019). “Welcome to “Cancer Alley,” Where Toxic Air Is About to Get Worse.” Retrieved August 13, 2021. https://www.propublica.org/article/welcome-to-cancer-alley-where-toxic-air-is-about-to-get-worse?token=D-hB2_00QLMHW5KI6il0gvvvLf5CcyUj
- ⁵⁶ Novak, R., L. Jantarasami, R. Delgado, E. Marino, S. McNeeley, C. Narducci ... L. Singletary. (2018). *Ch 13: State of the Sector, Ozone Air Quality*. Washington D.C.: U.S. Global Change Research Program. <https://nca2018.globalchange.gov/chapter/13/>
- ⁵⁷ Nolte et al. (2018)

-
- 58 Gamble et al. (2016)
- 59 Gamble et al. (2016)
- 60 EPA (2021)
- 61 Nolte et al. (2018)
- 62 Louisiana Department of Agriculture and Forestry. (2013). "Forestry Protection Programs".
<https://www.ldaf.state.la.us/forestry/protection/>
- 63 Louisiana Department of Agriculture and Forestry. (2013)
- 64 Nolte et al. (2018)
- 65 The Lancet Microbe. (2021). Climate change: fires, floods, and infectious diseases. 2(9): e415. Doi:
[https://doi.org/10.1016/S2666-5247\(21\)00220-2](https://doi.org/10.1016/S2666-5247(21)00220-2)
- 66 Baker, R. E., A. S. Mahmud, I. F. Miller, M. Rajeev, F. Rasambainarivo, B. L. Rice ...C. J. E. Metcalf. (2021).
Infectious disease in an era of global change. *Nature Reviews Microbiology*. <https://doi.org/10.1038/s41579-021-00639-z>
- 67 CDC. (2020b). *Preparing for the Regional Health Impacts of Climate Change in the United States: A summary of health effects, resources, and adaptation examples from health departments funded by CDC's Climate and Health Program* (p. 38). Centers for Disease Control and Prevention, National Center for Environmental Health.
- 68 Baker et al. (2021)
- 69 Baker et al. (2021)
- 70 Baker et al. (2021)
- 71 Baker et al. (2021)
- 72 Ebi et al. (2018)
- 73 Ebi et al. (2018)
- 74 Ebi et al. (2018)
- 75 Novak, R., L. Jantarasami, R. Delgado, E. Marino, S. McNeeley, C. Narducci ... L. Singletary. (2018). *Chapter 15: Tribes and Indigenous Peoples* (pp. 572–603). Washington D.C.: U.S. Global Change Research Program.
https://nca2018.globalchange.gov/downloads/NCA4_Ch15_Tribes-and-Indigenous-Peoples_Full.pdf
- 76 Novak et al. (2018)
- 77 Novak et al. (2018)
- 78 EPA (2021).
- 79 EPA (2021).
- 80 AP NEWS. (2020). "Louisiana, Alaskan tribes file UN climate change complaint." Retrieved August 13, 2021.
<https://apnews.com/article/b324677e542281b23d811554dba6cd79>
- 81 Carter et al. (2018)
- 82 Tu, D. L. (2021). "This Louisiana Tribe Lost Most of its Homes to Hurricane Ida. 'This was the Big One.'".
<https://pulitzercenter.org/stories/louisiana-tribe-lost-most-its-homes-hurricane-ida-was-big-one>
- 83 Parker, H. (2021). "For Louisiana's coastal tribes, 'being at the end of the earth is a dangerous place.'"
https://www.nola.com/news/environment/article_8751e728-0d8a-11ec-9fa1-cb44d2a508a1.html
- 84 Chavez, R. (2021). "Why some Indigenous tribes are being left behind in Louisiana's Ida recovery."
<https://www.pbs.org/newshour/nation/why-some-indigenous-tribes-are-being-left-behind-in-louisianas-ida-recovery>
- 85 Chavez. (2021).
- 86 Carter et al. (2018)

-
- ⁸⁷ Duplican, T. (n.d.). “An Update on Addressing Saltwater Intrusion in the “2,000-ft” Sand in the Baton Rouge Area: Looking Toward the Future.” Retrieved August 13, 2021.
<https://www.lsu.edu/lwri/conferences/2016/saltwater-intrusion.php>
- ⁸⁸ CPRA. (2017). *Louisiana’s comprehensive master plan for a sustainable coast: Committed to our coast* (p. 392). Coastal Protection and Restoration Authority.
<http://www.icevirtuallibrary.com/doi/abs/10.1680/cmsb.41301.0034>
- ⁸⁹ Jervis, R. (2014). Louisiana bays and bayous vanish from nautical maps. Retrieved August 13, 2021.
<https://www.usatoday.com/story/news/nation/2014/02/12/noaa-maps-disappear-coastal-erosion/5259611/>
- ⁹⁰ Carter et al. (2018)
- ⁹¹ Bhatia, K. T., G. A. Vecchi, T. R. Knutson, H. Murakami, J. Kossin, K. W. Dixon, C. E. Whitlock. (2019). Recent increases in tropical cyclone intensification rates. *Nature Communications*. 10: 635.
<https://doi.org/10.1038/s41467-019-08471-z>
- ⁹² Erdman, J. (2020). “Hurricane Delta Fastest on Record to Rapidly Intensify from Tropical Depression to Category 4 in Atlantic Basin.” Retrieved August 13, 2021. <https://weather.com/storms/hurricane/news/2020-10-06-hurricane-delta-rapid-intensification-among-most-intense>
- ⁹³ Carter et al. (2018)
- ⁹⁴ Carter et al. (2018)
- ⁹⁵ USCFTC. (2020). *Managing Climate Risk in the U.S. Financial System* (p. 196). Market Risk Advisory Committee of the U.S. Commodity Futures Trading Commission.
<https://www.cftc.gov/sites/default/files/2020-09/9-9-20%20Report%20of%20the%20Subcommittee%20on%20Climate-Related%20Market%20Risk%20-%20Managing%20Climate%20Risk%20in%20the%20U.S.%20Financial%20System%20for%20posting.pdf>
- ⁹⁶ Smith, A. B. (2021). “2020 U.S. billion-dollar weather and climate disasters in historical context.” Retrieved August 13, 2021. <https://www.climate.gov/news-features/blogs/beyond-data/2020-us-billion-dollar-weather-and-climate-disasters-historical>
- ⁹⁷ NOAA. (2020). “Billion-Dollar Weather and Climate Disasters: Overview.” Retrieved August 13, 2021.
<https://www.ncdc.noaa.gov/billions/>
- ⁹⁸ Smith (2021)
- ⁹⁹ U.S. Global Change Research Program (2018)
- ¹⁰⁰ CPRA (2017)
- ¹⁰¹ Barnes, S, S. Virgets. (2017). “Regional Impacts of Coastal Land Loss and Louisiana’s Opportunity for Growth. LSU Economics & Policy Research Group.” Retrieved December 10, 2021.
<https://www.edf.org/sites/default/files/LSU-EPRG-Regional-Economic-Land-Loss-Risks-and-Opportunities-2017.pdf>
- ¹⁰² First Street Foundation. (2020). *The First National Flood Risk Assessment: Defining America’s Growing Risk* (p. 163). First Street Foundation.
https://assets.firststreet.org/uploads/2020/06/first_street_foundation_first_national_flood_risk_assessment.pdf
- ¹⁰³ U.S. Energy Information Administration. (2021). “Louisiana State Energy Profile.”
<https://www.eia.gov/state/print.php?sid=LA>
- ¹⁰⁴ Wood, M. (2021). “Oil refining’s four big challenges: profitability, rationalization, decarbonization and EVs.”
<https://www.woodmac.com/news/the-edge/oil-refining-four-big-challenges/>

-
- ¹⁰⁵ Seba, E. (2021). “Phillips 66 puts Alliance, Louisiana refinery up for sale.” <https://www.nasdaq.com/articles/phillips-66-puts-alliance-louisiana-refinery-up-for-sale-2021-08-25>
- ¹⁰⁶ Shell. (n.d.). “Shell Convent Refinery.” Retrieved August 13, 2021. <https://www.shell.us/about-us/projects-and-locations/shell-convent-refinery.html>
- ¹⁰⁷ Seba (2021)
- ¹⁰⁸ Office of Disease Prevention and Health Promotion. (n.d.). “Healthy People 2030. Social Determinants of Health.” <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>.
- ¹⁰⁹ IPCC. (2018). *Summary for Policymakers* (p. 24). IPCC. Retrieved from IPCC website: https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf
- ¹¹⁰ IEA. (2021). *Net Zero by 2050: A Roadmap for the Global Energy Sector* (p. 224). International Energy Agency. Retrieved from International Energy Agency website: https://iea.blob.core.windows.net/assets/beceb956-0dcf-4d73-89fe-1310e3046d68/NetZeroBy2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
- ¹¹¹ US Department of Energy (2021). *Secretary Granholm Launches Hydrogen Energy Earthshot to Accelerate Breakthroughs Toward a Net-Zero Economy*. Retrieved from website: <https://www.energy.gov/articles/secretary-granholm-launches-hydrogen-energy-earthshot-accelerate-breakthroughs-toward-net>
- ¹¹² Ebi et al. (2018)
- ¹¹³ Thompson, John. Clean Air Task Force. Overview the process of capture, transport, and storage. October 2021. Presentation to the Louisiana Climate Initiatives Task Force, October 2021. https://gov.louisiana.gov/assets/docs/CCI-Task-force/October21/CTF8_JohnThompson_REVISED.pdf
- ¹¹⁴ Nolte, C. G., Dolwick, P., Fann, N., Horowitz, L. W., Naik, V., Pinder, R. W., ... Ziska, L. H. (2018). *Chapter 13: Air Quality* (pp. 512–538). Washington D.C.: U.S. Global Change Research Program. <https://doi.org/10.7930/NCA4.2018.CH13>
- ¹¹⁵ Making Waves. (2017). Retrieved August 13, 2021, from OpportunityLouisiana.com website: <https://www.opportunitylouisiana.com/eq/q2-2017/making-waves?v>
- ¹¹⁶ IEA (2021)
- ¹¹⁷ Ashmoore, Olivia, Robbie Orvis, Zack Subin, Nathan Iyer, Lainie Rowland, Kyle Clark-Sutton, and Jun Shepard. November 2021. “Louisiana Energy Policy Simulator Insights: Current Emissions Trajectory, NDC Scenario. Energy Innovation. <https://energyinnovation.org/wp-content/uploads/2021/11/Louisiana-Energy-Policy-Simulator-Insights-Current-Emissions-Trajectory-NDC-Scenario.pdf>
- ¹¹⁸ AP NEWS. (2021, July 2). 7 big solar farms proposed in rural Louisiana by 2024. Retrieved August 13, 2021, from AP NEWS website: <https://apnews.com/article/la-state-wire-louisiana-business-5312f82aeb16abcaceb1116e412a9905>
- ¹¹⁹ Musial, W., Tegen, S., Driscoll, R., Spitsen, P., Roberts, O., Kilcher, L., ... Beiter, P. (2019). *Survey and assessment of the ocean renewable resources in the US Gulf of Mexico* (No. OCS Study BOEM 2020-017; p. 82). New Orleans, LA: Bureau of Ocean Energy Management, Contract No.: M17PG00012. Retrieved from Bureau of Ocean Energy Management, Contract No.: M17PG00012 website: https://espis.boem.gov/final%20reports/BOEM_2020-017.pdf
- ¹²⁰ NREL.gov. (2020, May 6). Two NREL Studies Find Gulf of Mexico Well Positioned for Offshore Wind Development. Retrieved August 13, 2021, from NREL.gov website: <https://www.nrel.gov/news/program/2020/studies-find-gulf-of-mexico-well-positioned-for-offshore-wind-development.html>

¹²¹ Thompson, R. (2015, September 19). Two Louisiana firms playing important roles in creation, construction of offshore wind farm. Retrieved August 13, 2021, from NOLA.com website: https://www.nola.com/news/business/article_0d0bf749-63cf-56a0-86d5-c448cc9fe035.html

¹²² Louisiana Economic Development. Delta Biofuel Proposes \$70 Million Renewable Fuel Plant in Jeanerette. June 28, 2021. [https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/06/28/delta-biofuel-proposes-\\$70-million-renewable-fuel-plant-in-jeanerette](https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/06/28/delta-biofuel-proposes-$70-million-renewable-fuel-plant-in-jeanerette)

Louisiana Economic Development. Louisiana Green Fuels Plans \$700 Million Renewable Diesel Refinery in Caldwell Parish. April 23, 2021. [https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/04/23/louisiana-green-fuels-plans-\\$700-million-renewable-diesel-refinery-in-caldwell-parish](https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/04/23/louisiana-green-fuels-plans-$700-million-renewable-diesel-refinery-in-caldwell-parish)

Louisiana Economic Development. Grön Fuels in Louisiana Names Nation's No. 2 Deal by Business Facilities. January 7, 2021. <https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/01/07/gr%C3%B6n-fuels-in-louisiana-named-nation-s-no.-2-deal-by-business-facilities>

Louisiana Economic Development. Air Products Announces \$4.5 Billion Blue Hydrogen Clean Energy Complex. October 14, 2021. [https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/10/14/air-products-announces-\\$4.5-billion-blue-hydrogen-clean-energy-complex](https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/10/14/air-products-announces-$4.5-billion-blue-hydrogen-clean-energy-complex)

Louisiana Economic Development. Venture Global to Invest Over \$10 Billion to Develop LNG Facility in Cameron. December 2, 2021. [https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/12/02/venture-global-to-invest-over-\\$10-billion-to-develop-lng-facility-in-cameron](https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/12/02/venture-global-to-invest-over-$10-billion-to-develop-lng-facility-in-cameron)

¹²³ Ashmoore, et al (2021)

¹²⁴ Larson, John, Whitney Herndon, Galen Hiltbrand, and Ben King. The Economic Benefits of Carbon Capture: Investment and Employment Estimates for Regional Carbon Capture Deployment Initiative States. Rhodium Group. October 2020. https://rhg.com/wp-content/uploads/2020/10/The-Economic-Benefits-of-Carbon-Capture-State-Investment-and-Employment-Estimates_Phase-I.pdf

¹²⁵ Baurick, Tristan. "A Win-win": Plugging Louisiana's 4,300 'orphaned' wells could boost industry, cut emissions. The Advocate. July 22, 2020. https://www.nola.com/news/environment/article_6209ccc2-cc33-11ea-98b3-6ff39d64c7c1.html

¹²⁶ LED. Two Louisiana Projects Among Finalists in EDA's \$1 Billion 'Build Back Better' Challenge. December 13, 2021. <https://www.opportunitylouisiana.com/led-news/news-releases/news/2021/12/13/two-louisiana-projects-among-finalists-in-eda-build-back-better-challenge>

¹²⁷ Dismukes, David. Louisiana 2021 GHG Inventory. LSU Center for Energy Studies. 2021. https://www.lsu.edu/ces/publications/2021/louisiana-2021-greenhouse-gas-inventory-df-rev_reduced.pdf

¹²⁸ IPCC 2021

¹²⁹ Peters, Adele. In New Orleans, a solar microgrid is keeping lights on in this affordable apartment building. Fast Company. September 2, 2021. <https://www.fastcompany.com/90671663/in-new-orleans-a-solar-microgrid-is-keeping-lights-on-in-this-affordable-apartment-building>

¹³⁰ Horowitz, Andy. Can This Cajun-Punk Musician Protect His Culture from Climate Change? Rolling Stone. September 16, 2021. <https://www.rollingstone.com/music/music-features/can-this-cajun-punk-musician-protect-his-culture-from-climate-change-1226895/>.

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