



Office *of the* Governor  
JOHN BEL EDWARDS



# CHALLENGES MET. PROGRESS DELIVERED.

Louisiana Department of Natural Resources, 2016–2023



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# Introduction

## 01

### Message from DNR Secretary Thomas Harris

The Louisiana Department of Natural Resources works to ensure and promote sustainable and responsible use of the natural resources of our state so that they are available for the enjoyment and benefit of our citizens now and in the future. Our goal is to provide a fair, predictable and effective regulatory system that allows opportunities for development and economic growth through the use of our natural resources while at the same time ensuring protection of public safety and the environment. That balance is the focus of our role as stewards of Louisiana's bountiful natural resources that are so critical to our economy and our culture.

At the beginning of Gov. John Bel Edwards' administration, the oil and natural gas industry was struggling with a price collapse that had begun the year previous, and DNR's Office of Conservation was trying to update its processes and regulatory practices following a wide-ranging audit citing numerous regulatory issues in a time of tightening budgets.

The DNR Office of Mineral Resources, having gone several years without long-term stability at the Assistant Secretary heading that division, was trying to create an updated mineral lease form to better reflect modern practices and protect state mineral interests. Energy production and rig counts were slumping sharply, which also meant the funding needed for regulating oil and gas activity was suffering, including the fees that funded plugging orphaned well sites.

By the end of 2022, the Office of Conservation had been the subject of second audit report noting how much more vigorous and effective regulation had become, the State Mineral and Energy Board was using a new and better mineral lease form, and was led by an Assistant Secretary of the Office of Mineral Resources who stayed throughout the administration.

Rig counts and oil-and-gas well drilling permits were up to 8-year highs and natural gas production rose to levels not seen since the mid-1970s.

In the latter years of the term, DNR also moved Louisiana to the national forefront with its efforts to achieve primacy from the U.S. EPA in the regulation of carbon injection wells – a key tool in the state's Climate Action Plan, aiding in the transition to cleaner use of traditional fuels and feedstock – and becoming the lead agency in a three-state coalition bidding for more than \$1 billion to develop the infrastructure to produce clean hydrogen as another alternative fuel source.

DNR also worked with legislators to develop effective rules for leasing offshore acreage for wind energy, and in 2023 began negotiating the first-ever offshore wind leases in state history.

# Progress Delivered

## 02

### Class VI Carbon Sequestration Primacy For Louisiana

Hand-in-hand with the efforts Louisiana has made to set itself up as a hydrogen hub have been its efforts to achieve state primacy from the U.S. EPA for regulating Class VI carbon sequestration wells associated with Carbon Capture, Utilization and Sequestration (CCUS).

Put simply, the concept of CCUS is that carbon-intensive processes, such as those associated with producing, refining, fractionating or burning hydrocarbons such as oil and natural gas can be equipped to capture waste carbon instead of emitting it into the atmosphere and transport that waste carbon to sites where it can be injected underground for permanent storage.

Carbon sequestration has the potential to be a very effective element of the overarching strategy in the transition from the fuels and feedstock that we have always known to what comes next - for instance, CCS will certainly play a critical role in the early part of our efforts to build out a hydrogen hub to promote low-carbon production of hydrogen as an alternative energy source by creating hydrogen from methane and injecting the waste carbon.

Beyond the hydrogen initiatives, Louisiana is a natural fit as a place to both conduct carbon sequestration and effectively regulate it.

For more than a century, Louisiana has been among the nation's leaders in the production of traditional crude oil and natural gas for fuel and manufacturing feedstock, and a significant refining and petrochemical manufacturing footprint has grown in our state because of it. This has provided regular employment for our people and been an economic mainstay for generations. But, as with so many things, there were prices to be paid that we were not aware of until long after we had incurred the debt – in this case being an overreliance on traditional sources for too much of our energy and the dawning realization of the impact to our environment.

In Louisiana, we know very well the impacts of climate change, and the role that lack of carbon management has played in accelerating it. With increasingly powerful hurricane strikes happening more frequently and a coastline that erodes more every day even in good weather, we understand that the threat of climate change is heavily driven by past practices at all levels that did not make management of carbon and other greenhouse gases a priority. This is why we have been working collaboratively with stakeholders, including environmental groups and

the energy industry, to build lasting plans to address the challenges of climate change through the development and implementation of our \$50 billion Coastal Master Plan. And we have expanded on that effort by launching our own Climate Initiatives Task Force, setting ambitious goals for reducing carbon emissions to net zero by 2050.

As we move forward with those efforts, we understand that reaching those climate goals is a process, during which we will still rely a great deal on our traditional energy sources in a measured transition from the energy mix we currently have to what comes next, avoiding as best we can sudden shocks to a domestic and global energy matrix that has shown itself to be highly sensitive to supply and price instability, with undeniable ripple impacts to all sectors of the shared economies.

The EIA regularly ranks Louisiana in or near the top five states in annual carbon emissions, be that total or per capita – we believe that means that we have a great opportunity to take action that can make a real difference in the climate change fight and we want to start making that difference as soon as possible.

That is why Louisiana has made such an effort to set itself up to host potential CCUS operations – because that strategy is the closest to being ready to make a dent in our carbon output and Gov. Edwards does not believe that our state or the nation have time to waste in doing what we can as soon as we can. It represents an opportunity to not only make a big change in Louisiana's carbon footprint, but a noticeable difference in the nation's total carbon emissions.

Louisiana has extraordinarily favorable geology for injection, with strong confining layers of shale and clay; comparatively young geology that is less brittle than other areas of the country; almost no seismic activity; and deep sand layers with the thickness, horizontal extent, porosity and permeability to accept and hold injected carbon dioxide safely.

Our state also has thousands of miles of pipelines already in place and operating, some of which are already transporting CO<sub>2</sub> across our state and to and from other states, and more of which could be upgraded. Beyond that, the established rights-of-way and pipeline routes will make for readily accessible connections between CO<sub>2</sub> emitters and suitable sites for sequestration facilities. In addition to that infrastructure, our state is home to a wealth of companies and workers with generations of expertise in pipeline operations, including decades of lessons learned and best practices.



In addition to pipeline transportation expertise, Louisiana's Office of Conservation has also maintained state primacy of our Underground Injection Control (UIC) program since the early 1980s, under the oversight of the EPA. This gives Louisiana a staff with a deep background in dealing with our state's unique geology and how best to engineer injection wells and facilities to maximize protection of the public and the environment. In anticipation of the potential interest in CCUS, our Office of Conservation submitted an application to the EPA in fall 2021 for state regulatory primacy over carbon sequestration wells, also known as Class VI injection wells. Our staff worked closely with the EPA over the course of several years in crafting a set of Class VI injection rules that not only meet the standards set by the EPA's baseline Class VI rules, but exceed them.

At the most basic level, our Class VI injection rules mostly mirror the EPA's Class VI rules, but our Office of Conservation has made additional requirements and restrictions for prospective operators based on Louisiana's history with injection and specific knowledge of our state's geology. The core tenet of any UIC program is protection of Underground Sources of Drinking Water (USDW), ensuring that sufficient confining layers that do not allow for upward migration of injected gases or fluids to the base of a USDW, ensuring that the injection zone is appropriate for the type and amount of fluid or gas being injected and that the pressure created by injection is not enough to fracture the formation or its upper confining layers.

To start the process of getting a permit to construct a Class VI well, Louisiana's rules require establishment of an Area of Review (AOR) that is bounded not only by the edges of the area the injected CO<sub>2</sub> is expected to permeate, but beyond that to the edges of the area the excess pressure and displaced fluids created by the injection is expected to be felt. In simpler terms, we are not just looking for the splash, but also the ripple.

Within that AOR, the site must be thoroughly characterized in terms of geologic structures, stratigraphy, lithology and faulting in the injection zone and confining layers. This also includes well penetrations assessment, actual core samples of the injection zone and confining layers to verify assumptions on those characteristics. This information must be used by the applicant in generating computer modeling of how the proposed well and geologic formations will respond to the planned rates and amounts of injection. This modeling process must be repeated at least every five years with the latest available data (including injection volumes and pressures), or more often if there are substantive changes to the operation or if the Office of Conservation directs it.

Once an operation is granted permits to construct and to inject, monitoring is required for integrity of the well, analysis of the CO<sub>2</sub> stream, injection rates and pressures, corrosion of the well casing, ground water quality above the injection site and tracking of the CO<sub>2</sub> plume and the overall pressure front.

Generally speaking, these rules are the same as the EPA's, but aspects of Louisiana's Class VI rules also include:

A requirement that all reports, plans, evaluations and other submittals by applicants/operators be prepared, sealed and signed by a licensed Professional Geoscientist, in the case of geoscience work, or a licensed Professional Engineer, in the case of engineering work – not a requirement of EPA

Denial of confidentiality on information that deals with presence of contaminants in ANY formation outside the injection zone – EPA denies confidentiality only on information about contamination in USDW

Not allowing waivers of injection depth requirements for Class VI wells – EPA allows waivers

Not allowing Class VI permitting by rule (i.e. "grandfathering in" wells), area permits for multiple wells or automatic transfers of class VI well permits – EPA allows each of those

When a permit is modified by Office of Conservation, the entire permit may be re-opened and subject to revision – EPA may only re-open specific permit conditions subject to the modification

Office of Conservation may require permit modifications based on information received, whether the information was available to the operator at the time of permitting or not – EPA may only do so if the information was available at the time of permitting

Requiring injection to cease immediately upon Office of Conservation giving notice of lack of mechanical integrity in a well – EPA does not specify course of action

Not allowing CO<sub>2</sub> sequestration in solution-mined salt caverns – EPA does not have this restriction

Requiring tabulation of all wells penetrating USDW for site characterization – EPA only requires wells that penetrate injection or confining zones

The Office of Conservation's Class VI rules also require applicants to conduct and submit an environmental justice review of any communities located within the established AOR, where the EPA does not have an equivalent requirement. The results of that review will be part of the determination as to whether to implement an enhanced public comment period, with a more inclusive public participation process, involving targeted public outreach.

These additional safety and environmental measures are part of the reason that the Office of Conservation has sought primacy from the EPA for Class VI wells. Additionally, Louisiana believes its own Office of Conservation is better positioned to effectively regulate injection and sequestration operations just as a matter of having more subject-matter-specific science and inspection staff to concentrate on operations in our state, than the EPA's Region 6 Office has for our area – where it has 5 states to cover, including Texas. Obviously, when and if Louisiana receives primacy for Class VI wells, the EPA will still have oversight over the program and the Office of Conservation will continue to work closely and communicate regularly with our federal partners.

By the end of 2022, there were more than 20 projects that had either begun the permitting process with EPA or otherwise announced intentions to seek a Class VI permit in the state. And the first two operators also moved to use injection pore space for sequestration operations below state-owned lands and water bottoms in 2021, when Louisiana engaged in the first two operating agreements in the history of the state for use of the state's subsurface for sequestration of CO<sub>2</sub> – one of the agreements for a hydrogen production facility that will sequester its waste carbon and the other for a biofuels facility that will do the same thing.

## Reform Following Office of Conservation Audit

Following a 2014 Legislative Audit report on the Office of Conservation's (OOC) management of orphaned wells, which was widened to consider the overall program of regulation of oil and gas wells in general, the previous administration found itself having to react to numerous findings calling for improvement in the way OOC managed both orphaned wells and its active well population. That administration began laying the foundation of a plan to respond, but the major part of the task of course-correcting the agency fell to the OOC under Gov. John Bel Edwards.

Many of these processes had been little changed or seldom subject to outside analysis for decades prior to the audit report, and the modern OOC had its work cut out in attempting to update old practices or create new approaches for dealing with a population of sites that included operating wells that had been in operation for a century.

The men and women of the OOC had to adjust a great many processes and significantly update processes that had simply not evolved with newer technologies and practices. By the time this administration took office, that effort had just begun, and Conservation staff continually built momentum in seeking to improve and modernize Conservation's approaches.

Over that time, the oil and gas markets fell precipitously and only slowly recovered, which also had an impact on the funding and staffing for the agency over several years. In addition, the combination of a slowing market for oil and gas with greater regulatory and financial security requirements for operators had the effect of swelling the ranks of orphaned wells at a pace that the state has rarely seen in the past.

When the Legislative Auditor's team returned in 2019 to prepare a progress update on the agency's efforts in light of the earlier report, their findings noted the great improvements in processes, use of technology and more vigorous and effective regulation. While the goals the Office of Conservation set for itself to modernize its processes and improve its efficiency were many and varied, it was gratifying to see that aggressive approach to achieving them be so successful over a relatively short time. The end result has been an Office of Conservation that is more capable, more responsive and more effective than it has ever been before.

## Bipartisan Infrastructure Law Orphaned Well Project

At the same time Louisiana has been moving forward with new clean energy opportunities, DNR has also taken advantage of federal funding to accelerate efforts to clean up old well sites from previous generations of energy exploration.

DNR sought out and was awarded an initial \$25 million grant from the U.S. Department of the Interior (DOI) through the Bi-partisan Infrastructure Law (BIL) to address orphaned wells in the state. The BIL funding is being administered by the DOI as part of an overall \$1.15 billion announced in January 2022 for states to plug and remediate orphaned wells, and the Initial Grant was intended to be the first of several phases.

That Initial Grant was more than double the average annual amount of funding the regular state Oilfield Site Restoration program receives from oil and gas operators fees, with which the state Office of Conservation has plugged an average of about 160 wells a year in recent years, depending on weather and well locations/depth and the need to draw from the fund to respond to emergencies.

Typically, orphaned well sites in Louisiana are wells designated by the Office of Conservation as not having a responsive operator, either due to the operator going out of business or being unable or unwilling to maintain their sites in compliance with state regulations. Louisiana's orphaned well count is at about 4,500 sites, accelerated by downturns in the prices of oil and gas in recent years that put financial strains on oil and gas companies and their ability to maintain their sites or their businesses.

DOI announced the funding being awarded to Louisiana in October 2022 and DNR chose its primary contractors in December 2022, with the first well plugged in January 2023 in the Caddo Pine Island Field in Caddo Parish – home to some of the densest well populations in the state, orphaned or operating.

DNR has also used the BIL funding to meet other DOI requirements – including establishing protocols and programs for methane and water quality testing and monitoring; addressing disproportionate impacts to disadvantaged communities from orphaned wells; and creating jobs to restore oilfield sites.

Orphaned well sites the state has addressed with the Initial Grant contracts are primarily located in north Louisiana, a region that has a far greater concentration of orphaned wells than South Louisiana. The Office of Conservation's Shreveport and Monroe districts contain more than 3,100 of the state's roughly 4,500 current orphaned well sites.

Through the first seven months of work, contractors had plugged more than 500 orphaned well sites, easily outpacing the highest number ever plugged by the state Oilfield Site Restoration (OSR) program in a full year – 280 in Fiscal year 1998-99 – and more than tripling the average OSR full-year plugging figures over the past several years. The \$25-million Initial Grant from the BIL helped attract larger-scale contractors who normally do not bid on smaller individual projects.

The work is critical to blocking hundreds of potential pathways for methane, oil and saltwater contamination to reach Louisiana's air, soil and water. DNR is working with the hope that the pace and scope of the work done under the Initial Grant from the BIL will strengthen the case for increasing the amount Louisiana receives in later rounds of funding targeting orphaned wells.

## SSTA Improvement

In coming to grips with the burgeoning problem of orphaned wells in the state, one of the approaches OOC has used has been to find ways to improve measures to provide financial security provided by operators to cover potential plugging costs. While traditional bonding has been found to help defray such costs, in line with federal requirements and most other states financial security rules Louisiana's financial security requirements for bonding generally do not cover the total cost. In 1990, OOC and legislators devised a means to get operators to set aside enough funding to cover those costs in the form of Site-Specific Trust Accounts (SSTAs). Through an SSTA, operators would get a determination of costs of the cost of plugging a wells site, then set aside a percentage of their production to pay into a trust account to bring it to the level established as the plugging cost estimate.

None of those SSTAs was triggered in the state until 2020, when OOC staffers began calling them in for SSTA-covered sites for which operators had gone out of business without plugging the wells and found that the SSTA process was fundamentally flawed. The methods for approving SSTA amounts utilized by previous OOC leadership did not ensure estimates of costs were accurate or that the plugging costs were entirely covered.

Given that OOC was already radically updating its approach and regulatory efforts on many other fronts, it aggressively pursued making changes to the SSTA program to make it the tool it should have been for ensuring wells covered by them had the necessary financial protections in place.

## Growing Local Coastal Programs

Local governance has been a priority for Coastal Management in Louisiana. As such, the OCM encourages local parishes to develop and implement local coastal management programs. The development and implementation of a local coastal management program shows commitment on a local level to protecting coastal resources. During the Edwards administration two parishes completed the process to become approved local management programs. Both St. John the Baptist and St. Charles Parishes joined the ranks of ten previously approved local coastal programs. This exemplifies the integral tie between parishes and the state in the protection and enhancement of our precious coastal resources.

## Coastal Nonpoint Pollution Control

For many years Louisiana has made strides towards obtaining the federal government's approval of the state's management strategies to reduce polluted runoff to coastal waters through the coastal nonpoint pollution control program (CNPCP). At the beginning of 2016 the CNPCP, administered through LDNR and LDEQ, had only received federal approval for 46 out of 54 management measures outlined for the program. Approval of these 54 management measures is required in order for the program to undergo consideration by the USEPA and NOAA for full program approval. Since that time LDNR and LDEQ staff have received approval on each of the eight remaining management measures, and the state underwent a federal review to receive full program approval. The State of Louisiana received final approval from NOAA and USEPA satisfying all conditions for the CNPCP in 2022.

## Tank Battery Rule

The Office of Conservation (OOC) adopted a new regulation in November 2021 to improve safety on and around oilfield tank battery sites, and OOC staff spent nearly a full year afterward working to merge aerial maps with OOC records on well sites to create a listing of operators likely to have tank batteries that are within 500 feet of a home or highway, 1,000 feet of a church or school, or anywhere within the corporate limits of a city, town or village.

Tank batteries are the field storage sites for oil wells that are not otherwise connected by pipeline to a market for sale. The tanks are large metal containers that may hold hundreds or thousands of gallons of crude oil, which in turn, can give off flammable fumes. Tank battery sites are hazardous, as they have the potential to create fires or explosions if a spark or open flame are introduced near a tank opening.

For more than a century of oil and gas exploration and production, these tank battery facilities were not being tracked individually, but treated as an extension of the well site and only noted in inspection reports if there was a specific problem such as a spill.

Following a fatal accident in 2021, OOC leadership recognized that the general public had become less aware of oilfield operations and hazards than it was in previous generations, when oil and gas exploration was more widespread in the state and played a larger part in the total state workforce.

OOC staff had to develop a system for identifying those tank batteries and their locations basically from scratch. OOC had never previously kept records on these facilities directly, so staff had to try and identify them through records in more indirect ways and compare those records to aerial maps, involving a great deal of painstaking work done by staff in addition to their regular inspection and enforcement duties.

OOC staff identified more than 1,400 sites potentially meeting the criteria for the provisions of the rule – sites that are within 500 feet of a home or highway, 1,000 feet of a church or school, or anywhere within the corporate limits of a city, town or village.

Operators with tank battery facilities meeting those criteria are now required to

Directly block access to tank battery sites by constructing fences a minimum of 4 feet high around the sites with the gate locked whenever the site is unmanned.

Securely seal all tank hatches, excluding those that might be part of a pressure relief system, when the site is unmanned.

Post warning signs noting the potential for flammable contents in the tanks.

OOS staff continue the process of refining the list as new information becomes available and continue the longer-term process of creating unique identifiers and a census of all tank battery sites, neither of which has never been done in the history of the state.

## NOAA Review of Office of Coastal Management (OCM)

In 2020 the National Oceanic and Atmospheric Association (NOAA) successfully completed a review the Louisiana Coastal Management Program. The federal review of the state program is largely driven by Louisiana's coastal users and stakeholders. Over fifty stakeholders from federal, state, and local agencies, non-governmental organization, as well as other coastal users provided largely favorable insights into the Louisiana Coastal Program. The cross-walk amongst coastal partners was evident throughout the process. Since that time, OCM has begun to implement additional improvements that came from those conversations.

# 03

## Challenges Met

### COVID-19

LDNR, while not a direct response agency to the issues created by the COVID-19 pandemic, did have to make adjustments to the necessities of lockdowns and social distancing. As many agencies did, LDNR pivoted in Spring of 2020 to leverage remote work to keep in-office populations as low as possible while still providing the same level of service to the public. LDNR participated in enforcing masking and distancing mandates in its offices and set up computer systems and equipment to ensure work could be done remotely.

The State Mineral and Energy board acted to conduct its monthly meetings using video conferencing, and the Office of Mineral Resources staff enacted a statewide suspension of deadlines to respond to the State Mineral and Energy Board's requests for reasonable development for 90 days; a waiver of penalties for underpayment of royalties, other payments, and delinquent reports for 90 days; and received authority from the Board allowing OMR to authorize lease amendments to address other lease maintenance issues to state lessees on a case-by-case basis.

In light of potential direct COVID-19-related issues and the collapse in oil prices that came in Spring 2020, the Office of Conservation informed industry that it would be granting leniencies and extensions on compliance deadlines on a case-by-case basis as requested. In general, the policy was to continue to enforce regulations as before, but to work with operators caught by the price-related cash crunch and/or issues with getting necessary contractors to give more time for the operators to respond, as warranted.

The Office of Coastal Management followed a similar case-by-case protocol for coastal use permittees who needed extra time to meet reporting or monitoring requirements, granting extensions of up to six months for demonstrated need.





# Leaving Louisiana Better Than We Found It

## Putting Wind to Work

While winds coming in from offshore have long been seen as a threat to Louisiana in the form of hurricanes, we have made great progress in harnessing that force to create clean energy as part of the state's effort to make use of all of its natural resources.

On the wind front, we are seeing very encouraging signs of interest from potential producers and project developers after Louisiana passed legislation clarifying and codifying rules on leasing state offshore areas for wind energy projects, giving potential operators a readily understandable set of rules to work by in planning wind projects off our shores. Louisiana offers advantages for a prospective wind energy industry, including the existing infrastructure, support companies, fabricators and engineering expertise associated with the offshore traditional fuels industry – which can be vital resources for a fledgling wind economy.

A robust offshore oil and gas industry is a crucial resource for development of the offshore wind economy. The infrastructure and expertise needed to build out an offshore wind energy economy will depend heavily upon leveraging the overlapping resources and skill sets currently supported by the existing offshore oil and gas industry. That industry and the infrastructure required to support it – including ports, roads, highly specialized vessels, skilled mariners and associated supply chains – is vital to the success of any domestic offshore wind business.

The technologies and services needed to support offshore renewable projects will not be economically viable on their own in the near term – they will need the existing offshore energy economy to sustain them until the fledgling offshore wind industry is more stable and mature. And those equipment, infrastructure and human expertise assets are well established in Louisiana, making a transition to more wind power an immediately obvious choice.

Proving that potential and interest, three project developers began negotiations in Spring and Summer 2023 with the Mineral and Energy Board for Louisiana's first-ever state offshore wind power agreements. The three companies brought five projects covering 10s of thousands of acres to the Mineral and Energy Board for consideration, located off the coasts of Cameron and Vermilion parishes and offshore Jefferson and Lafourche parishes.

# By the Numbers

## During this administration

### Office of Conservation

Permitted **4,844 oil/gas wells**

In 2022, permitted **802 wells** – highest number since 2014

From 2019 to 2022, Louisiana produced more than **3 trillion cubic feet (TCF)** of natural gas in four straight years – the first time the state has had that much sustained production since the mid-1970s

In 2022, production reached **3.7 TCF** for the first time since 1975 – more than double what it was in 2016

### Office of Coastal Management

Issued nearly **6,000 Coastal Use Permits**

Saved nearly **1,600 acres** of wetlands

Contributed **\$9 million** for numerous coastal restoration projects, through funds from the In-Lieu Fee (ILF) Program, Beneficial Use (BU) Program, and OCM's Coastal Mitigation Account (CMA).

### Office of Coastal Management

Collected more than **\$1.4 billion** in royalties for production from state lands/water bottoms

Collected more than **\$45 million** in mineral lease sale bonuses

Executed four operating agreements for carbon sequestration under state-owned water bottoms and Louisiana Department of Wildlife & Fisheries lands which have already brought over **\$18 million** in bonus and rental payments to the State and commitments to build two new low-carbon fuel plants and one additional LNG facility in Louisiana

Reduced the number of open royalty audits from 140 at the beginning of the administration to **40**



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