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Louisiana and CCS: An Update as of 2022

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Placid Refining Company

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I. INTRODUCTION

To meet the demands of a growing world population of over seven billion people, stakeholders must look for opportunities to capitalize on all energy sources, in addition to energy-dense hydrocarbons. While finding different ways to meet these needs, governments and organizations have set goals to mitigate the potential impacts of climate change, some setting net-zero greenhouse gas (GHG) emissions goals or potentially advocating for wholesale elimination of GHG emissions.[1] Organizations, both public and private, are investigating policies and opportunities to meet energy demands *and* mitigate the impacts of GHG emissions on the climate.[2] Louisiana has a tremendous opportunity to recognize and capitalize on

1. *See* Exec. Order No. 14057, 86 Fed. Reg. 70935 (Dec. 13, 2021). *See also*, Exec. Order No. JBE 2020-18 (Aug. 19, 2020); *see also* STATE OF LOUISIANA., LOUISIANA CLIMATE ACTION PLAN 42 (Feb. 2022), https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/Climate_Action_Plan_FINAL_3.pdf [https://perma.cc/99H3-J3GT].

2. Dimana Doneva, *Exxon, CF Industries, and EnLink Partner on Emissions Reduction in Louisiana*, CARBON HERALD (Oct. 25, 2022), https://carbonherald.com/exxon-cf-industries-and-enlink-partner-on-emissions-reduction-in-lousiana/ [https://perma.cc/8SGS-23NN].

carbon sequestration to grow its economy and establish itself as a global leader in climate solutions.

Louisiana has a long history with the oil, natural gas, and petrochemical industry. This industry currently invests billions of dollars to advance innovative solutions and incorporate new technologies to reduce GHG and other air emissions.[3] Since the risks of climate change are real, the solutions to these risks must be real as well. Now is the time to work together to develop creative solutions to climate change—solutions that leverage natural areas of strength and present opportunities for economic growth. To meet global energy demands, including increased demand for petroleum and liquid fuels into the future, market-driven solutions are critical to GHG reductions, including capturing carbon dioxide (CO_2) and permanently storing CO_2 underground.[4] The leading methodology that emerged is carbon capture and sequestration (CCS).[5]

Although the concept first appeared in 2008, carbon capture and sequestration recently gained traction in Louisiana.[6] First, CCS is the most efficient way to reduce CO_2 in the atmosphere on a large scale, especially for industrial processes producing GHG emissions that are difficult to

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3. *See Louisiana is Investing in the Future of Energy*, LOUISIANA NET ZERO, https://www.louisiananetzero.gov/language/english (last visited Nov. 6, 2022); *see, e.g., CCS in Action,* EXXONMOBIL, https://corporate.exxonmobil.com/climate-solutions/ccs-in-action [https://perma.cc/VE36-HVQ2] (last visited Nov. 6, 2022).

4. The U.S. Department of Energy's Energy Information Administration ("EIA") forecasts that global consumption of petroleum and liquid fuels will average 100.6 million b/d for all of 2022, *up 3.1 million b/d* from 2021. The U.S. further forecasts that consumption will *increase by 1.9 million b/d in 2023* to average 102.6 million b/d. It should be noted that economic forecasts in this outlook were completed before Russia's invasion of Ukraine. The outlook for economic growth and oil consumption in Russia and surrounding countries is highly uncertain. Oil consumption will depend on how economic activity and travel respond to recent events, potential future events, and sanctions. *See Short-Term Energy Outlook: Global Liquid Fuels*, EIA, https://www.eia.gov/outlooks/steo/report/global_oil.php [https://perma.cc/62KG-LWDB] (last visited Nov. 6, 2022).

5. This process is also sometimes referred to as CCUS—Carbon Capture, Utilization, and Sequestration. "CCUS" refers mainly to enhanced oil recovery ("EOR"), where carbon dioxide is captured and injected into oil and gas formations where production has slowed down. The CO_2 is injected to boost production in those formations. CCS, on the other hand, generally refers to capturing carbon dioxide and placing it into an underground well in perpetuity.

6. The Louisiana Geologic Sequestration of Carbon Dioxide Act was first passed in 2009 and later amended in 2020 and 2021.

abate with existing technology.[7] Second, in early 2021, the U.S. Department of Treasury's Internal Revenue Service (IRS) effectuated regulations[8] around a credit for qualified facilities capturing and disposing of CO_2 under section 45Q of the Internal Revenue Code (45Q).[9] Third, Louisiana's stationary sources of GHG emissions interconnect and concentrate near existing infrastructure that is situated to more-conveniently store CO_2.[10] Importantly, from a geological perspective, Louisiana is attractive for CCS projects because Louisiana has an abundance of subsurface reservoirs and formations that are in close proximity to concentrated emissions source-points and can be used as available pore space to handle carbon dioxide produced by emitters. Given these critical factors, Louisiana officials prioritized using CCS as a way to achieve certain climate goals and net-zero emissions by 2050.[11] Not only is CCS a solution for eliminating industrial CO_2 emissions, it can also be used in exploration, production, and coastal restoration.[12] CCS provides multiple opportunities for curbing GHG emissions via Louisiana's naturally abundant resources.

Louisiana is poised to lead the nation in CCS, because it contains the necessary infrastructure for effective CCS: an ample pipeline network;

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7. *See* STATE OF LOUISIANA, *supra* note 1.

8. The regulations became effective on January 13, 2021. Credit for Carbon Oxide Sequestration, 86 Fed. Reg. 4728 (Jan. 15, 2021) (to be codified at 26 C.F.R. pt. 1).

9. *See* 26 U.S.C. § 45Q(d)(1).

10. To store CO_2, it must be in its purest form with all rogue particulates removed. With the interconnected, sophisticated network of petrochemical infrastructure in Louisiana, the process of purifying CO_2 falls into existing work streams. Specifically, the process of liquifying natural gas or making ammonia creates a pure stream of CO_2. Thus, the marginal cost to sequester CO_2 is lowest for companies whose profitable work-flows create pure CO_2 as a byproduct. Combining this with 45Q, the most cost-effective states to attract capital investment for CCS include, but are not limited to, Louisiana, Oklahoma, and Texas.

11. STATE OF LOUISIANA, *supra* note 1, at 1.

12. When considering large-scale, ongoing coastal restoration efforts, land-based sequestration represents an area for potential synergy. All coastal and wetland restoration, as well as reforestation, requires the introduction and cultivation of various plant species. Inherently, plants sequester CO_2 throughout their lifecycle, while Louisiana's Coastal Protection and Restoration Authority can evaluate future restoration projects to maximize the amount of CO_2 sequestered. *See* LOUISIANA GOVERNOR'S OFFICE OF COASTAL ACTIVITIES, LOUISIANA CLIMATE ACTION PLAN 79 (2021), https://gov.louisiana.gov/assets/docs/CCI-Task-force/website/CTFDraftFinalPlan12222021.pdf [https://perma.cc/XMX3-S4K5].

expertise (oil and gas operators/technical and legal professionals); low-cost energy; and a developing legal framework that will encourage the proliferation of CCS projects within the state. Thus, government leaders and participants in the oil and gas industry have turned their focus towards CCS technology, legislation, and regulation. Louisiana has a tremendous opportunity to lead the way globally in the CCS industry by leveraging our workforce, geology, and industrial infrastructure to form one or more major CCS hubs within the state. These hubs would fit into a broader, national (or even global) hub-and-cluster carbon infrastructure model. More specifically, both enhanced recovery and geologic storage projects appear to be natural fits for Louisiana's geology because Louisiana's numerous geological wells can be used for CO_2 storage.[13] Louisiana is also home to several enhanced recovery projects, and is currently poised to host several geologic storage projects in the coming years. In fact, the Louisiana Department of Natural Resources (LDNR) recently completed its final rulemaking process to provide new regulations and a more robust legal framework relating to long-term geologic storage in Class VI wells.[14] Estimates indicate that Louisiana will have as much as 2.3 trillion tons worth of storage resources—ranking Louisiana second to Texas for CO_2 storage potential in the United States.[15]

In an effort to move forward with CCS projects, Louisiana undertook major legislative steps over the past decade to promote CCS project

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13. It should be noted that carbon dioxide is defined more broadly under both federal and Louisiana law. *See, e.g*., Credit for Carbon Oxide Sequestration, 26 U.S.C. § 45Q(c)(1) (includes other carbon oxides); EPA Criteria and Standards Applicable to Class VI Wells, 40 C.F.R. § 146.81(d) (2022) (carbon dioxide streams include incidental associated substances and substances added to the stream to enable or improve the injection process); the Louisiana Geologic Sequestration of Carbon Dioxide Act, LA. REV. STAT. § 30:1103 (includes derivatives and mixtures of carbon dioxide); *see also* David Dismukes, Ph. D., Professor and Executive Director, Center for Energy Studies, Louisiana State University, Presentation at the Carbon Storage and Oil and Natural Gas Technologies Review Meeting: Integrated Carbon Capture and Storage in the Louisiana Chemical Corridor (Aug. 2017).

14. *See* LA. REV. STAT. §§ 30:1101–11.; *see also* LA. ADMIN. CODE tit. 43, pt. XVII, Ch. 6, Statewide Order No. 29-N-6 for Class VI wells. These rules provide a framework for a Class VI well underground injection control program in Louisiana.

15. *See* STATE OF LOUISIANA, supra note 1; *see also Class VI USEPA Primacy Application – Underground Injection Control Program*, STATE OF LA. DEP'T OF NAT. RES. (May 13, 2021), http://www.dnr.louisiana.gov/assets/OC/im_div/uic_sec/ClassVIPrimacyApplicationstamped.pdf [http://perma.cc/LD4U-W9GA].

implementation and create an appropriate legal framework. In 2008, the Louisiana Legislature passed Act 315, which empowered the Commissioner of Conservation ("Commissioner") to approve subsurface storage of CO_2 and authorized the Louisiana State Mineral and Energy Board to lease state-owned property for CO_2 geologic storage.[16] The legislature subsequently enacted Louisiana's Geologic Sequestration of Carbon Dioxide Act (La. GS Act) in 2009, which created a comprehensive legal framework governing geologic storage in Louisiana.[17] Louisiana joined the Governors' Partnership for Carbon Capture in 2018 and has worked to promote CCS initiatives through the State Carbon Capture Work Group and its partners. Louisiana is also one of the most active states participating in the Carbon Capture Coalition. In 2019, Act 297 sought to change Louisiana's statutory authority to match federal regulatory requirements more closely.[18] In 2020, Act 61 revised several portions of La. GS Act, separating CO_2 pipelines from the injection portion of a geologic storage facility for regulatory purposes and setting forth certain parameters with respect to expropriation, among other things.[19]

Governor John Bel Edwards created the Climate Initiatives Task Force to develop a Climate Action Plan for Louisiana.[20] The final recommendations of the Task Force were released in February 2022, which included CCS as a recommendation under multiple action items.[21] To reach this goal, Louisiana is working to secure "primacy" (primary enforcement authority) from the EPA for regulation of injection wells used for geologic storage (Class VI wells). Louisiana submitted its application for primacy to the EPA and currently expects approval in the first quarter of 2023.[22]

16. *See* H.R. 1117, 2008 Leg., Reg. Sess. (La. 2008).
17. *See* H.R. 661, 2009 Leg., Reg. Sess. (La. 2009).
18. *See* H.R. 163, 2019 Leg., Reg. Sess. (La. 2019).
19. *See* S.B. 353, 2020 Leg., Reg. Sess. (La. 2020).
20. *See* Exec. Order No. JBE 2020-18 (2020).
21. *See* STATE OF LOUISIANA, supra note 1.
22. The timeline regarding approval of Louisiana's primacy application remains somewhat fluid. It is unknown exactly when primacy will be granted, but it is believed to be in early 2023. The Office of Conservation, Division of Injection and Mining is authorized to permit and enforce actions, upon application, delegated by the Environmental Protection Agency. See application prepared April 21, 2021, then updated on September 17, 2021. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.

This article addresses the status of Louisiana's pending application to the EPA for primacy.[23] It also discusses the current regulatory/legal framework, including potential permitting requirements and expropriation factors under Act 61, for future CCS projects in Louisiana. Finally, it examines potential risk factors associated with CCS projects and analyzes how environmental justice will be incorporated into CCS projects going forward.

II. CURRENT LEGAL FRAMEWORK – A REGULATORY AND PERMITTING OUTLOOK

A. Primacy-The Status of Louisiana's Application

The threshold issue to resolve before Louisiana businesses begin sequestering CO_2 in Louisiana's pore space is "primacy." Primacy refers to a state's ability to regulate, administer, permit, enforce, and govern the wells located within its borders with minimal interference or oversight from the EPA.[24] The main purpose of primacy is to enable a state to monitor, and be stewards of, its own resources—here, Class VI wells (deep geologic injection wells for carbon sequestration). States should have the ability to perform these administrative and regulatory functions, as a state knows its natural resources best and understands how to marshal those natural resources effectively to protect the environment and generate commerce. It also makes sense for a state to have primacy over its own wells because state regulators usually maintain direct relationships with businesses operating in its state. Currently, the granting of primacy to the State of Louisiana by the EPA remains a primary focus of CCS proponents in Louisiana.

Louisiana submitted its application for primacy on May 13, 2021, pursuant to section 1422 of the federal Safe Water Drinking Act.[25] At present, Louisiana anticipates that the EPA may grant its application sometime in early 2023. Right now, only North Dakota and Wyoming

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23. It is important to note that CCS represents a very new and emerging area of the law. The legal and regulatory landscape is evolving , and many areas of the law have not yet been addressed by law or operational feasibility. As a result, this comment provides a current overview of the state of CCS law in Louisiana as it exists as of the publication of this comment.

24. *See* STATE OF LOUISIANA, supra note 1; *see also Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.

25. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15, at 1; *see* Safe Drinking Water Act, Pub. L. No. 93-523, 88 Stat. 1661 (codified at 42 U.S.C. §§ 300f–300j-27).

have been granted primacy over Class VI wells. In April 1982, the EPA granted Louisiana primacy over its Class I, II, III, IV, and V wells. Class VI wells represent a category of wells created by the EPA in 2010, specifically for carbon capture and sequestration. In anticipation of its primacy application, and in accordance with the provisions of Louisiana's Administrative Procedure Act, Louisiana Revised Statutes sections 49:950–1021, and through the power delegated under the laws of the State of Louisiana,[26] the Department of Natural Resources, Office of Conservation adopted Statewide Order No. 29-N-6 to facilitate the permitting, siting, construction, operation, monitoring, and site closure of Class VI injection wells.[27]

B. The Importance of Underground Injection Control at the Federal and State Levels

Perhaps the most significant environmental regulation directly pertaining to both carbon-enhanced recovery and geologic storage is compliance with the UIC program of the federal Safe Drinking Water Act (SDWA). As discussed below, this federal program[28] envisions state, territorial, and tribal authorities carrying out the purpose of the federal underground injection control (UIC) program and directly regulating underground injection within their territorial boundaries.[29] Enhanced recovery (Class II) and geologic storage (Class VI) wells have different requirements, and injection wells used for each are subject to different regulatory regimes. Permitting these wells can be a major undertaking and the length of time required to receive permit authorization is a concern, given the restrictions as to when construction of a CCS facility must begin in order to take advantage of 45Q tax credits.[30] This section focuses on

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26. LA. REV. STAT. §§ 30:4–4.3, 30:22, and 30:1101–11 (2022).

27. LA. ADMIN. CODE tit. 43, XVII Subpart 6, Ch. 6 ("Class VI program") (2022).

28. 42 U.S.C. §§ 300f–300j-27 (1974). 42 U.S.C. §§ 1421–1423, 1425–1426, 1431, and 1442–1443 address UIC requirements in SDWA.

29. The remainder of this section concerns state and federal regulation under the UIC, but it should be noted that there are four federally recognized Native Tribes whose lands are geographically located within Louisiana. These tribes are: Chitimacha Tribe of Louisiana, Coushatta Tribe of Louisiana, Jena Band of Choctaw, and Tunica-Biloxi Tribe of Louisiana. A full list of both federally and state recognized Native Tribes can be found here: *Federal and State Tribal Contact List - 2018*, LA. OFF. OF THE GOVERNOR, https://gov.louisiana.gov/assets/Programs/IndianAffairs/LouisianaTribes.pdf [https://perma.cc/74MY-SUWH] (last visited Nov. 25, 2022).

30. *See* 26 U.S.C. § 45Q(d)(1).

Class VI wells; it summarizes the applicable requirements, highlights certain portions of these requirements, explains the process by which Louisiana can obtain primacy over its Class VI wells, discusses the timing for obtaining primacy approval, and provides potential pointers for companies receiving permits to construct and/or inject wells.

The primary purpose behind the UIC program is "to prevent underground injection which endangers drinking water sources."[31] Under the SDWA, the "underground injection" is defined as "the subsurface emplacement of fluids by well injection."[32] Excluded from this definition are most hydraulic fracturing operations related to oil, gas, or geothermal production activities, as well as underground injection of hydrocarbons that are not liquid at standard temperature and pressure for purposes of storage.[33] The program, overseen by the EPA, grants state governments the Primary Enforcement Authority in protecting underground sources of drinking water from underground injection within their territorial boundaries. The SDWA mandates EPA rulemaking to provide minimum standards for state UIC programs to be granted primacy, establishing "minimum requirements for effective programs to prevent underground injection which endangers drinking water sources."[34] At a minimum, state underground injection programs must meet certain requirements in order to acquire the EPA's approval, such as prohibiting unauthorized underground injection within the state and only granting permits (or authorizing injection via the rules) when the state is satisfied that the proposed underground injection will not endanger drinking water sources.[35] This approval of a state UIC program by the EPA is commonly referred to as the "granting" of primacy. More specific requirements for a state program to be granted primacy are detailed in the regulations promulgated by the EPA, discussed below. The amount of deviation from EPA regulatory requirements allowed for state UIC programs depends on the specific class of injection well at issue. With the exception of UIC programs for CO_2 geologic storage (Class VI), the EPA wants primary authority approval over all injection well classifications, and not just

31. 42 U.S.C. § 300h(b).

32. *See generally* ELANA H. HUMPHREYS & MARY TIEMANN, CONG. RSCH. SERV., RL31243, SAFE DRINKING WATER ACT (SDWA): A SUMMARY OF THE ACT AND ITS MAJOR REQUIREMENTS (2021).

33. *See* 42 U.S.C. § 300h(d).

34. *See id.* § 300h(b)(1).

35. *See id.*

cherry-pick the lowest costing programs for a state's budget or the particularly popular ones.[36]

The UIC program recognizes six classifications of injection wells: Class I Industrial and Municipal Waste Disposal Wells; Class II Oil and Gas Related Injection Wells; Class III Injection Wells for Solution Mining; Class IV Shallow Hazardous and Radioactive Injection Wells (banned since 1984); Class V Wells for Injection of Non-hazardous Fluids Into or Above Underground Sources of Drinking Water; and Class VI Wells used for geologic storage of CO_2.[37] Although carbon management implicates two well classifications (Class II and Class VI), this Article focuses on Class VI wells (for permanent sequestration) only. As illustrated below, the regulatory and permitting requirements associated with Class VI injection wells are generally more detailed, complex, and restrictive.

C. Class VI – Deep Geologic Storage Wells

Class VI wells inject CO_2 into deep rock formations for long-term or permanent geologic storage. The EPA identified several unique qualities associated with CO_2 geologic storage wells necessitating enhanced requirements for Class VI injection. On December 10, 2010, the Federal Register published the EPA's final Class VI rulemaking decision. The EPA provided the following summary of these qualities:

> It is expected that [geologic storage] projects will inject large volumes of CO_2. These volumes will be much larger than are typically injected in other well classes regulated through the UIC program, and could cause significant pressure increases in the subsurface. Supercritical or gaseous CO_2 in the subsurface is buoyant, and thus would tend to flow upwards if it were to come into contact with a migration pathway, such as a fault, fracture, or improperly constructed or plugged well. However, the pressures induced by injection will also influence CO_2 and mobilized fluids to flow away from the injection well in all directions, including

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36. *See* Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO2) Geologic Sequestration (GS) Wells, 75 Fed. Reg. 77229, 77242 (Dec. 10, 2010) (to be codified at 40 C.F.R. pts. 124, 144, 145, 146, 147).

37. *See Safe Drinking Water Act Underground Injection Control (UIC) Program: Protecting Public Health and Drinking Water Resources,* EPA, https://ndep.nv.gov/uploads/water-wpc-permitting-stormwater-uic-docs/uic-poster-epa04.pdf [https://perma.cc/7Z2J-NVRE] (last visited Nov. 6, 2022).

> laterally, upwards and downwards. When CO_2 mixes with formation fluids, a percentage of it will dissolve. The resulting aqueous mixture of CO_2 and water will sink due to a density differential between the mixture and the surrounding fluids. CO_2 is also highly mobile in the subsurface (*i.e.*, has a very low viscosity), and, in the presence of water, CO_2 can be corrosive. These properties (of CO_2), as well as the large volumes that may be injected for [geologic storage] result in several unique challenges for protection of USDWs in the vicinity of [geologic storage] sites from endangerment.[38]

While CO_2 itself is not a drinking water contaminant, CO_2 can combine with water to form a weak acid, known as carbonic acid, which, in some instances, could cause naturally-occurring metals or other contaminants (e.g., arsenic, lead, and organic compounds) to leak from geologic formations into groundwater.[39] The presence of impurities in the captured CO_2 stream poses another potential risk to USDWs, which may include drinking-water contaminants such as hydrogen, sulfide, or mercury. Additionally, injection pressures may force brine (naturally occurring salty water) into USDWs, degrading water quality and affecting the drinking water treatment processes. Research shows that the potential migration of injected CO_2 or formation fluids into a USDW could cause impairment through one or several of these processes.[40]

These concerns, in part, explain the increased level of information and monitoring required for Class VI wells. Not surprisingly, operators of Class II enhanced recovery wells, which have operated for years in Louisiana, wishing to inject CO_2 for long-term storage must apply for a Class VI permit when an increased risk to USDWs exists, compared to traditional Class II operations using CO_2. The EPA's rules allowed the constructed components of Class II wells to be grandfathered into the

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38. *See* Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO_2) Geologic Sequestration Wells, 75 Fed. Reg. 77230, 77234–35 (Dec. 10, 2010) (to be codified at 40 C.F.R. pts. 124, 144, 145, 146, 147).

39. *See e.g.*, Laura Sorey, PG, Powerpoint Presentation at LDNR: Ad Hoc Committee on Carbon Capture and Storage (March 25, 2021).

40. *See* Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO_2) Geologic Sequestration Wells, 75 Fed. Reg. 77230, 77234–35 (Dec. 10, 2010) (to be codified at 40 C.F.R. pts. 124, 144, 145, 146, 147).

Class VI permitting structure at the discretion of the head of the state program, referred to in the SDWA as the Director.[41]

A Class VI well permit from the EPA (or a state with primacy) will be required prior to the injection of captured CO_2 into deep rock formations for geologic storage. Class VI permits are issued for the life of the facility and continue through the post-injection site care period. The EPA (or a state with primacy) reviews Class VI well permits at least once every five years.[42] Permits can be transferred to a new operator, modified, revoked, or reissued.[43] Prior to issuance of a new Class VI permit and certain permit modifications, public notice must be mailed to interested parties and affected governmental entities, documenting the proposed permit activity and setting a 30-day period for public comment on the proposed permit.[44] A public hearing can be called by the Director *sua sponte* or at the request of a member of the public.[45] Public hearings take oral or written public comments on the proposed permit action, and hearing proceedings shall be transcribed.[46] At the time the Director makes a final permit decision, they shall provide notice to the applicant, applicable governmental agencies, and anyone who submitted a comment on the permit application.[47] Final permit decisions become effective 30 days after service of notice of the decision, unless the final permit decision establishes a later date, or an appeal of the permit decision is made.[48]

The overarching consideration for the Director in deciding whether to issue a Class VI permit is a determination that no injection permit results in the movement of a contaminant into drinking water. In addition to this overarching concern, the permitting process contains many specific elements, some of which may ultimately become permit conditions, such as establishing the well's mechanical integrity prior to the injection,

41. *See* 40 C.F.R. § 146.81(c) (2022). For those states without primacy and regulated directly by EPA, the EPA (or its Regions) takes the place of the State Director, where "Director" is used in the UIC rules. *See* Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO_2) Geologic Sequestration Wells, 75 Fed. Reg. 77230, 77242–43 (Dec. 10, 2010) (to be codified at 40 C.F.R. pts. 124, 144, 145, 146, 147).

42. *See* 40 C.F.R. § 144.36 (2022).

43. *See id.* § 144.39 (2022).

44. *See id.* § 124.10 (2022).

45. *Id.*

46. *Id.*

47. *Id.*

48. *See id.* § 124.15 (2022).

maintaining mechanical integrity throughout the operational life of the well, schedules of compliance, and monitoring.[49]

The Director must consider specific information set forth in section 146.82 in deciding whether to issue a permit.[50] For this reason, a party applying to operate a Class VI well must provide the Director a "map showing the [proposed] injection well . . . and the applicable area of review."[51] The area of review (AOR) is defined as "the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity" and is to be determined using computational modeling that accounts for the physical and chemical properties of the injected carbon dioxide based on "available site characterization, monitoring, and operational data."[52] The map must depict the following surface features located within the AOR: (1) name and location of all wells (active, plugged and/or abandoned); (2) state/EPA approved cleanup sites; and (3) surface bodies of water, springs, mines, quarries, and other pertinent surface features, including structures intended for human occupancy.[53] The map must also show any known and suspected faults, geologic structures, hydrogeologic properties, and subsurface features within the AOR.[54] The application must include maps and stratigraphic cross-sections of the base and location of all USDWs within the injection area.[55] Any geochemical data that is available or known on subsurface formations may help with the analysis of how injected CO_2 may react with the storage area's geology post-injection.[56]

Applications must include proposed operating data for the proposed project. More specifically, the application must list: the average and maximum proposed daily rate and total volume of CO_2 injection; the average and maximum injection pressures; the sources of the injected CO_2 analysis of the chemical and physical makeup of the injected CO_2

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49. *See id.* § 144.1 (2022).
50. *See id.* § 146.82 (2022).
51. *See id.*
52. *See* 40 C.F.R. § 146.48(a) (2022).
53. The type of information on geologic structure and hydrogeologic properties of the proposed site includes: (1) maps and cross sections of the AOR; (2) location, orientation, and properties of known or suspected faults and fractures; (3) data on the injection and confining zones; (4) geomechanical information of the confining zones; (5) seismic history information of the proposed site; and (6) geologic and topographic maps showing the regional and local geology and hydrogeology. *See* 40 C.F.R. § 146.82(a)(3)(i)-(vi) (2022).
54. *Id.*
55. *Id.*
56. *Id.*

proposed pre-operational formation testing information regarding the proposed stimulation program (description of stimulation fluids proposed and that stimulation will not interfere with containment); proposed injection procedure(s); schematics of construction details; well construction procedures; and any necessary corrective action within the AOR prior to the injection.[57]

Proper siting of the well and storage facility is a major component of the Director's permit approval and the applicant's decision to build the well. Unsurprisingly, the EPA's regulations provide minimum criteria for siting. The applicant must demonstrate that the proposed location contains geologic characteristics sufficient for an injection and storage facility. For instance, the applicant must prove that the injection zone is of "sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream."[58] The applicant must also prove "confining zones free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream . . . and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures within the confining zones."[59]

In addition to providing the above-referenced data and performing the necessary data collection to meet these application requirements, an applicant may also need to perform "corrective action" within the AOR to ensure the proposed project poses no threats to USDWs or public health. Section 146.84 sets forth the process for identifying the AOR and determining what, if any, corrective action may be required. Applicants must perform corrective action necessary to "prevent the movement of fluid into or between USDWs' on all wells in the AOR. Corrective action for Class VI projects may entail properly plugging or re-plugging wells within the AOR that pose potential threats to fluid migration. Again, depending on the specific AOR, this corrective action could be a very significant undertaking. The requirement to perform corrective action does not end with issuance of a Class VI permit, but continues for the life of the project, and possibly through post-injection monitoring.[60] This requirement can be based on noted changes throughout the facilities' operational life and during the permit re-evaluations required at least once every five years.

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57. *See id.* § 146.82(a)(7) (2022).
58. *See id.* § 146.83 (2022).
59. *See id.*
60. *See id.* § 146.84(b) (2022).

Other items required at the time of application include drafting an emergency and remedial response plan, a plan for post-injection site care and monitoring, and a demonstration of financial responsibility sufficient to cover the execution of these plans and the cost of site closure, plugging, and clean-up. EPA's Class VI regulations provide several options for acceptable financial security different from those provided in LDNR's Class II regulations.[61] For instance, insurance, self-insurance, and escrow accounts are listed as acceptable financial security under EPA's Class VI program but not under Louisiana's Class II regulations. These plans and financial responsibilities must be maintained and updated throughout the life of the facility until its ultimate closure. Similar to the corrective action requirements above, reconsideration for each of these occurs at least once every five years[62].

Finally, prior to making a decision on a Class VI well application, the EPA will need to undertake environmental surveys pursuant to the National Environmental Policy Act (NEPA).[63] In the event that Louisiana receives primacy, LDNR-OC must evaluate Class VI well proposals under the "rigorous balancing process," known as the "IT" analysis, that includes consideration of alternative methods, sites, and mitigation measures to determine whether economic and other benefits outweigh the environmental harms.[64]

D. Louisiana's Permitting and Regulatory Considerations – Class VI Wells

Geologic storage projects involve a relatively new application of CO_2 injection technology. In Louisiana, specific statutory mention of geologic CO_2 storage first appeared in 2008, around the same time that Congress created the 45Q tax credit. As noted above, in 2009, the Louisiana legislature enacted the La. GS Act, which significantly matched the model legislation recommended by the Interstate Oil & Gas Conservation Commission in 2007.[65] The EPA adopted its UIC regulations for Class VI

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61. *See id.* § 146.85(a)(1) (2022).
62. *Id.* § 146.84 (2022).
63. *See* 42 U.S.C. § 4321.
64. The "IT" analysis is named after the waste disposal company whose permit application was under review in a Louisiana Supreme Court case that first mandated this analysis. *See* Save Ourselves, Inc. v. La. Env't Control Comm'n, 452 So. 2d 1152 (La. 1984).
65. *See generally* Michael B. Donald, *Carbon Sequestration: Resource Management through Storage of Carbon Dioxide in Geologic Structures – A Proposed Legislative Framework for Louisiana, Annual Institute on Mineral Law*,

CO_2 geologic storage wells on December 10, 2010. The enactment of the La. GS Act predates EPA's Class VI regulations.

More recently, the La. GS Act has been amended twice. In 2019, Act 297 clarified that owner/operators of geologic storage facilities, and not CO_2 generators, would be held responsible under regulations adopted by the Commissioner. More significant legislative amendments to the La. GS Act occurred in Act 61 of the 2020 Regular Legislative Session.[66] Among other things, these amendments: removed CO_2 pipelines from the definition of geologic storage facilities; attempted to clarify the requisite percentage of consenting mineral interest owners in order to use productive hydrocarbon-bearing formations for geologic storage; and revised the injection fee calculation to charge geologic storage operators in the State. How the La. GS Act and other Louisiana statutes and rules interact with federal regulations will be discussed briefly below. Working out specific steps for regulating geologic storage in Louisiana, as well as dealing with the increased interest at both the state and federal level with how best to regulate the conversion of CO_2 enhanced recovery projects to geologic storage projects, requires additional state legislation and rulemaking in the years to come.

E. What Permitting Might Look Like in Louisiana After Primacy Is Granted

Louisiana's Class VI well program requires all owners or operators seeking to inject CO_2 (or other oxides) for the purpose of long-term geologic sequestration to: (1) obtain a Class VI permit to construct or convert a well and (2) gain approval to operate prior to injection activities.[67] Based on the number of applications already submitted to the EPA for Class VI projects, LDNR anticipates receiving up to 14 well permit applications in the first two years after the EPA approves its Class VI program. The LDNR expects nine permit applications in the first year and five in the second. Given LDNR's current staffing/resources, and assuming applicants cooperate with the LDNR through the application process, LDNR estimates the review of

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56 ANN. INST. MIN. L. 437 (2009); *see also* Michael. B. Donald, Pre-Workshop Seminar before the University of Texas at Austin School of Law, CLE Conference on Carbon and Climate Change: Evolving Policies at the State Level – Highlights of the Louisiana Statute: Louisiana Takes a Proactive Approach in Act 517 (Feb 16, 2010).

66. *See* S.B. 61 2020 Leg. Reg. Sess. (La. 2020).

67. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.

each Class VI permit application project to take approximately nine to twelve months after submission of a complete permit application.

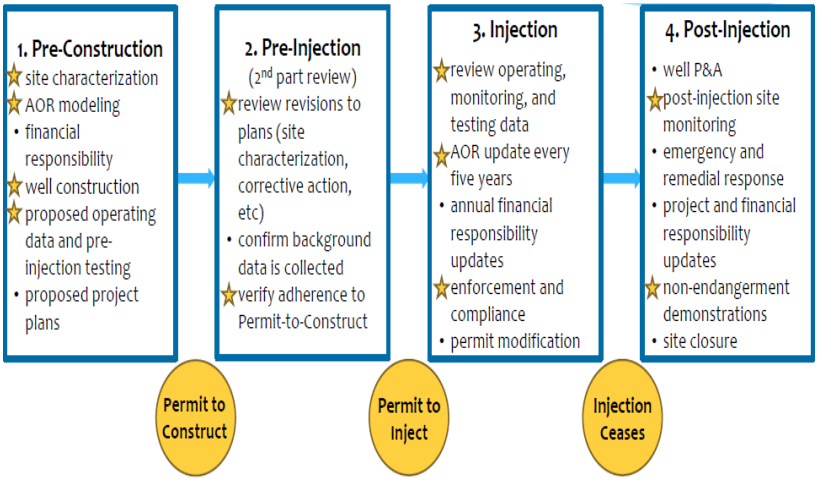
The chart below shows the steps necessary for each phase of a geologic storage project per LDNR regulations. LDNR will follow these phases once the EPA grants Louisiana primacy for Class VI wells.[68] This chart provides a helpful visual for mapping out each step along the way.[69] Before beginning any geologic storage project, a meeting with Stephen Lee, Director of the LDNR's Injection & Mining Division,[70] should be scheduled to discuss the parameters of the project and seek advice from the LDNR as to the best way to proceed through the geologic storage permitting process.[71] In addition, Class VI wells will undergo an environmental justice review, which is still under development by the EPA, as discussed further below.

68. *Id.*

69. *See* Laura Sorey, *supra* note 39.

70. *Injection and Mining Division: New Director Named*, STATE OF LA.: DEP'T NAT. RES (June 2013), http://www.dnr.louisiana.gov/index.cfm?md=pagebuilder&tmp=home&pid=1101 [https://perma.cc/QDZ 9-PJMY]; Stephen Lee Contact: Telephone: 225-342-5569 or E-Mail: Stephen.Lee@la.gov.

71. Because the Commissioner of Conservation (currently Richard P. Ieyoub) must approve any geologic storage projects, he will also be involved in the discussion with LDNR. The Commissioner must determine that the reservoir intended for GS utilization is not capable of producing oil, gas, condensate or other commercial minerals in paying quantities. Alternatively, if it is capable, he must find that a sufficient number of the affected mineral owners approve the use of the relevant reservoirs for GS. In the event the reservoir(s) proposed for GS includes commercial minerals in paying quantities, the percentage of mineral interest owners that must approve such projects is enumerated in two separate state statutes. *See* LA. REV. STAT. §§ 30:1104, 30:22 (2022); *see also Office of Conservation*, STATE OF LA.: DEP'T NAT. RES, http://www.dnr.louisiana.gov/index.cfm/page/46 [https://perma.cc/JUS2-UGYQ] (last visited Nov. 6, 2022).



The permit application form for owners/operators is Form UIC-60 CCS. This form must be used for the initial permit submitted and the permit re-evaluation, which occurs every five years.[72] The LDNR staff will review and issue all Class VI permit applications.[73] When the LDNR receives a permit application, the staff will review it to determine whether it contains all of the information required by Louisiana Administrative Code 43 sections XVII.3605-3611. Any deficiencies in the application will be noted and, if necessary, the LDNR will request additional information from the applicant.[74]

After confirming that the submitted permit application contains all of the required information, the LDNR staff will review the Class VI permit application using a multi-step process. First, the staff performs a technical review to determine the accuracy and quality of the submitted data (e.g., the applicant used appropriate quality assurance procedures), that the data represents the project and the site, and that it is sufficiently complete to support a full technical evaluation. Next, the staff conducts a full technical evaluation of the information submitted to ensure site suitability per the requirements of Louisiana Administrative Code title 43, section XVII.3615. This technical evaluation includes an evaluation of the

72. LA. ADMIN. CODE tit. 43, § XVII.3609.M.1 (2022).
73. *Id.* § XVII, Subpart 6 (Statewide Order 29-N-6) (2022).
74. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.

surrounding geologic system to ensure the project protects drinking water supplies and the health, safety, and welfare of the public.[75]

As needed throughout the permit application review process, the LDNR staff will discuss the application with the owner/operator to ensure the necessary information is provided as expeditiously as possible. Once the LDNR completes this review, it determines whether to prepare a draft permit or deny the application. If the LDNR prepares a draft permit, it also prepares a fact sheet summarizing the project,[76] issues a public notice of the comment period, and holds a public hearing.[77] Public notice of a draft permit must allow at least a 30-day public comment period. During the public comment period, interested persons may submit written comments on the draft permit and request (in writing) a public hearing. Public notice of a hearing shall be given at least 30 days prior. All relevant comments will be considered in making the final decision for the permit and will be addressed when a permit is issued or denied. After completion of the public hearing and review of the public comments, a final permitting decision will be made and, where appropriate, a Class VI permit will be issued. The permit will authorize the applicant to construct the injection well or convert an existing well into a Class VI well. The LDNR will also issue a response to all relevant public comments received.

It is believed that during the first two years after approval of the state Class VI program, the LDNR will issue at least six permits. Priority in the application queue will depend primarily on the date of submission, application completeness, and the project's size and nature. Administrative reviews of Class VI permits take place in accordance with sections 30:6 and 30:1105 of the Louisiana Revised Statutes. Judicial reviews of Class VI permits will be conducted in accordance with sections 30:12 and 30:15 of the Louisiana Revised Statutes.

F. Approval to Inject in a Class VI Well (Post-Permit Issuance) and Well Closure Considerations

Following well drilling/conversion/completion activities, the permit applicant will submit information for the LDNR to consider in determining whether to approve the injection well for operation. If the information provided pursuant to Louisiana Administrative Code title 43, section XVII.3619 warrants it, the agency will authorize the applicant to inject carbon dioxide. After the LDNR issues a permit-to-inject, the operator

75. LA. ADMIN. CODE tit. 43, pt. XVII, §§ 3615, 3617 (2022) (the well); LA. ADMIN. CODE tit. 43, pt. XVII, § 3619 (the proposed operations).

76. LA. ADMIN. CODE 43 § XVII.3611.D (2022).

77. *Id.* § XVII.3611.E (2022).

must submit monitoring data and reports.[78] After injection ceases, the operator must plug its well(s) in accordance with its approved Well Plugging Plan[79] after proper notice.[80] Finally, a Well Closure Report will be submitted to LDNR.[81]

After injection ceases, but prior to well plugging and abandonment, the operator must either: (1) demonstrate that its Post Injection Site Care and Closure plan(s) are applicable or (2) update the plan(s).[82] Prior to authorization of site closure, the operator must monitor the site for at least 50 years, or the duration of the alternative timeframe approved by the Commissioner.[83]

Finally, the operator must publish a notice of intent for closure,[84] may plug all monitoring wells after the Commissioner approves site closure,[85] and must submit a final site closure report.[86]

G. Testing and Monitoring Plans Submitted to LDNR

Before authorizing injection, the LDNR must approve a testing and monitoring plan.[87] The requirements of this plan will report as follows: (1) the operator reports the analysis of the carbon dioxide stream as a summary report with a cover letter and appended analyses;[88] (2) the operator submits pressure, rate, and volume monitoring data in an excel or comma-delineated sheet with a graphical presentation (including raw data as required under Louisiana Administrative Code title 43, section XVII.3629.A.1.a.viii);[89] (3) the operator submits corrosion monitoring data as a report with a cover letter;[90] (4) the operator submits groundwater data for any monitored zones as a summary report with a cover letter and appended analyses;[91] (5) prior to conducting an external or internal mechanical integrity test, casing inspection log, or pressure fall-off test—

78. *Id.* § XVII.3629 (2022).
79. *Id.* § XVII.3631.A.3 (2022).
80. *Id.* § XVII.3631.A.4 (2022).
81. *Id.* § XVII.3631.A.5 (2022).
82. *Id.* § XVII.3633.A.1.c; *Id.* § XVII.3633.A.1.b (2022).
83. *Id.* § XVII.3633.A.3 (2022).
84. *Id.* § XVII.3633.A.4 (2022).
85. *Id.* § XVII.3633.A.5 (2022).
86. *Id.* § XVII.3633.A.6 (2022).
87. *Id.* § XVII.3625.A (2022).
88. *Id.* § XVII.3625.A.1 (2022).
89. *Id.* § XVII.3625.A.2 (2022).
90. *Id.* § XVII.3625.A.3 (2022).
91. *Id.* § XVII.3625.A.4 (2022).

as stipulated in the approved monitoring and testing plan—the operator must first apply for a work permit using Form UIC-17;[92] and (6) other monitoring required in the approved testing and monitoring plan submitted as a summary report with a cover letter, appended analyses, and additional data.[93]

In accordance with the approved plan, monitoring reports must be submitted semi-annually.[94] Reports including mechanical integrity test results must be submitted within 30 days of the test.[95] A report of any non-compliance must be submitted within 24 hours of discovery.[96] Mechanical Integrity tests (MIT) are conducted frequently throughout the life of the well.[97] When the operator submits a Form UIC-17 to the LDNR, staff members review the scope of the work and may request scope revisions prior to issuing an approved work permit. Applicants must include a statement that a Conservation Enforcement Specialist (CES) witnessed the MIT. Upon approval of the work permit by the LDNR, the operator must contact the appropriate CES and give a 48-hour notice before beginning the MIT. After scheduling the MIT based on the CES' availability to witness, the operator may conduct the proposed operation and, upon completion, submit a summary of the work conducted on Form UIC WH-1 (with appended data). Currently, this process for conducting an MIT is the standard procedure for Class I, II, III, and V wells.

At a minimum, compliance monitoring includes on-site inspections conducted by authorized LDNR agents and a review of the operating and monitoring reports submitted[98] to verify that the construction, completion, operation, maintenance, and site closure of CCS projects are performed according to pre-approved plans and specifications and meet all permit and regulatory requirements.[99] Louisiana's compliance monitoring program includes the following activities:

(1) Reviewing plans and reports (e.g., well completion reports, test results, workover reports) submitted by permit applicants, owners, or operators.

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92. *Id.* § XVII.3625.A.5–6 (2022).
93. *Id.* § XVII.3625.A.7–9 (2022).
94. *Id.* § XVII.3629.A.1 (2022).
95. *Id.* § XVII.3629.A.1.b (2022).
96. *Id.* § XVII.3629.A.1.c (2022).
97. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.
98. LA. ADMIN. CODE tit. 43, § XVII.3629 (2022).
99. *Id.* § XVII.3633 (2022).

(2) Conducting site inspections to verify or witness construction, operation and testing/maintenance procedures. Site inspections will be conducted by the agency's authorized agents.
(3) Investigating complaints alleging improper construction, completion, operation or maintenance of a CCS project.
(4) Performing compliance monitoring (e.g., reviewing monitoring, operating, and maintenance data) to verify compliance with permit conditions, regulations, and any other conditions or stipulations.
(5) Conducting annual inspections and compliance follow-up inspections of CCS projects.[100]

Any owner/operator violating Statewide Order 29-N-6, any condition of a Class VI permit, or any LDNR rule or order will be subject to enforcement action. The LDNR is responsible for initiating, pursuing, and resolving enforcement actions. Enforcement proceedings may result in modification, revocation or suspension of any permit issued under the authority of the UIC Program. The LDNR will attempt to handle all minor violations through informal means, such as correspondence between agency staff and the alleged violator. If initial correspondence fails to resolve minor violations, a Notice of Violation (NOV) may be issued. If the violation(s) grows in size or scope, the LDNR may issue a Compliance Order without a civil penalty.[101] In the final enforcement stage, typically reserved for egregious non-compliance or endangering U.S. drinking water, the LDNR will issue a Compliance Order and assess a civil penalty. The LDNR tracks issuances of NOVs, Compliance Orders, and Compliance Orders with civil penalties through SONRIS, a well information and well history database maintained by the LDNR.[102] If a Compliance Order with a civil penalty is required, the State may seek civil penalties up to $5,000 per day per violation under Section 30:1106.D(1) of the Louisiana Revised Statutes.

100. *Class VI USEPA Primacy Application – Underground Injection Control Program*, STATE OF LA. DEP'T OF NAT. RES. (Updated Sept. 17, 2021), http://www.dnr.louisiana.gov/assets/OC/im_div/uic_sec/FinalClassVIUSEPAPrimacyApplication.pdf [https://perma .cc/RV3G-THP9].

101. *See* LA. ADMIN. CODE tit. 43 (2022).

102. SONRIS, https://www.sonris.com [https://perma.cc/W34M-NKUT] (last visited Nov. 16, 2022)

H. The Importance of Mechanical Integrity Tests (MITs) and Financial Responsibility of Owner/Operators

To ensure proper performance of Class VI wells and evaluate the absence of significant leaks, owners/operators of Class VI wells must continuously monitor injection pressure, rate, injected volumes, pressure on the annulus between tubing and long-string casing, and annulus fluid volume following an initial annulus pressure test.[103] Additionally, well operators must test annulus pressure annually and after performing any well workovers that involve unseating the tubing or packer.[104] At least once every 12 months, owners or operators must use an approved tracer survey, temperature log, or noise log to determine the absence of significant fluid movement.[105]

The LDNR may require additional or alternative tests if the results presented by the owner/operator do not sufficiently demonstrate mechanical integrity.[106] The agency expects to review the results of approximately 20 MITs from Class VI well owner/operators each year.

Louisiana's regulatory requirements state that owner/operators of Class VI wells must demonstrate and maintain financial resources necessary to perform all of the required corrective action, plug any injection wells, conduct post-injection site care and site closure, and perform any needed emergency and remedial response.[107] The LDNR financial experts will review cost estimates provided by the owner/operators to verify that the estimates will cover these activities. The LDNR staff will also evaluate the financial instruments submitted by the applicant to determine whether the owner/operator is qualified and whether the instruments are appropriate.[108] Even after approval of the financial instruments, the LDNR staff will continue these ongoing efforts to ensure the owner/operator maintains financial responsibility: (1) updating annual cost to account for inflation; (2) updaing costs following any amendments to the project plans; and (3) oversight of financial instruments to ensure they remain active, sufficient, and meet the criteria required.[109]

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103. LA. ADMIN. CODE tit. 43, § XVII.3621.A.6 (2022).
104. *Id.* § XVII.3627.A.2 (2022).
105. *Id.* § XVII.3627.A.3 (2022).
106. *Id.* § XVII.3627.A.5 (2022).
107. *Id.* §:XVII.3609.C (2022).
108. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.
109. LA. ADMIN. CODE tit. 43, § XVII.3609.C (2022).

The owner/operator must submit all required reports, submittals, and notifications under Louisiana Administrative Code title 43, section XVII.3629 to both the LDNR and the EPA in an electronic format. To ensure that both the State of Louisiana (as the primacy authority) and the EPA (as the oversight authority) have consistent data throughout the program's implementation, the LDNR will submit to the EPA (or allow the EPA to review) all Class VI reports, submittals, and notifications submitted to the State of Louisiana.[110]

III. EXPROPRIATION OF PROPERTY PER THE LOUISIANA GEOLOGIC SEQUESTRATION OF CARBON DIOXIDE ACT

One of the unique features of the La. GS Act (and something that contributes to Louisiana's attractiveness for CCS projects) is its allowance of expropriation of formations and wells in Louisiana.[111] Title 19 of the Louisiana Revised Statutes governs expropriation of property under Louisiana law. Louisiana's current law generally encourages landowners and companies desiring to store CO_2 in pore spaces to negotiate in good faith for a lease (or some other legal agreement conferring real rights) of the pore space.[112] Nevertheless, in the event that an agreement with a private landowner cannot be reached for the property rights necessary for geologic storage (including related pipelines or pipeline transportation of CO_2 for enhanced recovery projects), Louisiana law authorizes private entities following certain steps in accordance with Title 19 to exercise eminent domain over private property.[113]

However, prior to utilizing this expropriation authority, the company proposing the geologic storage project must, among other things, apply for and receive a certificate of public convenience and necessity from the Commissioner of Conservation.[114] This certificate can only be issued upon application, notice, and a public hearing in the proposed geologic storage project's parish.[115] The Commissioner must find that the proposed project meets all of the regulatory requirements and will not "contaminate other formations containing fresh water, oil, gas, or other commercial mineral

110. *See id.*
111. LA. REV. STAT. §§ 30:1101, 30:1108 (2022).
112. *Id.*
113. *Id.* § 30:1108 (2022).
114. *See* LA. REV. STAT. §§ 30:1104(C), 30:1107 (2022). A similar requirement exists for pipeline operators associated with enhanced recovery projects. The rules governing such hearings for enhanced recovery CO2 pipelines can be found at LA. ADMIN. CODE tit. 43, pt. XI, Ch. 7 (2022).
115. *Id.*

deposits," endanger human life or cause a "hazardous condition of property," and that the proposed storage reservoir is suitable for such use.[116] This certification does not classify any operator as a common carrier or subject the operator to any duties, obligations, or liabilities as a common carrier or public utility. Classification as a common carrier or public utility is not required to utilize the eminent domain laws for a geologic storage project in Louisiana.[117]

Prior to filing a lawsuit seeking to expropriate property, a company must "attempt in good faith to reach an agreement as to compensation with the owner."[118] Additionally, the company seeking expropriation rights must provide the property owner with certain information concerning the appraisal or evaluation of the property, including the amount appraised, the name of the person performing the appraisal or evaluation, and their methodology.[119] Additional notices—including the possibility of expropriation, the authority under which expropriation is being claimed and the rights of the property owner to hire their own representation—must also be sent to the owner.[120] If an agreement cannot be reached after at least 30 days from these notices, then a petition for expropriation may be filed in the parish where the property is located, setting forth the authority for expropriation and praying that the property be expropriated for just compensation.[121]

Under Louisiana Revised Statutes section 19:9, valuation must be based on the "value the property possessed prior to the contemplated improvement was proposed." Courts must hear expropriation suits by preference. The trial judge makes all of the decisions, with the exception of compensation, which may be tried by a jury upon the request of either party.[122] Because these provisions have never been utilized for a geologic storage project, it remains unclear how Louisiana's courts will determine a valuation going forward. For example, no practice exists to determine comparable prices. While examples of hydrocarbon storage agreements exist, it remains unclear how the differences in the underlying economics of geologic storage will be taken into consideration in an expropriation

116. *Id.*
117. *Id.* § 30:1107(C) (2022).
118. *Id.* § 19:2 (2022).
119. *Id.* § 19:2.2 (2022).
120. *Id.*
121. *See id.* § 19:2.1 (2022). Note that if the property lies in two or more parishes, then the petition must be filed in the parish where the owner resides. If the owner does not reside in any of the parishes, then the petition may be filed in any of the parishes in which the property is located.
122. *See id.* §§ 19:8–19:9 (2022).

scenario. Thus, further analysis of valuation is recommended for a company considering expropriation for geologic storage.

IV. RISK MITIGATION WHEN IT COMES TO CCS PROJECTS

Risk mitigation is a complex topic when considering geologic storage because it encompasses many different aspects of operations, finance, and other legal obligations. A better understanding of the potential risks associated with geologic storage is important to identify the best way to mitigate risks and address any concerns. Possible risks include: regulatory obligations; monitoring, mitigation, and remediation of any leaks; paying back tax incentives (or other economic incentives) in the event the CO_2 is no longer securely stored; risks of subsurface trespass; and potential litigation for personal or property damage.[123]

This portion of the article primarily discusses different aspects of liability specifically addressed in the La. GS Act.[124] The La. GS Act spells out several limitations on liability associated with CO_2 geologic storage projects, including limitations on both regulatory liability and civil liability under tort, contract, or other liability theories.[125] No similar liability limitations are provided for enhanced recovery projects. This section provides insight on how releases of liability in the La. GS Act may interact with UIC regulatory responsibility, while pointing out other liability questions for further study and consideration. However, this section avoids discussing liability associated with 45Q tax recapture in the event that CO_2 is no longer securely stored, though these topics are certainly worthy of further study.

The La. GS Act creates a state-level trust fund to pay for certain activities, such as long-term inspection, monitoring, and closure costs, which include the plugging and abandonment of any remaining wells, remediation of mechanical problems associated with remaining wells or site infrastructure, repairs for mechanical leaks at the facility, administration of the La. GS Act by the LDNR-OC, and payment for the acquisition of "appropriate insurance for future storage facility

123. *See* Fred Eames & Scott Anderson, *The Layered Approach to Liability for Geologic Sequestration of CO2*, 43 E.L.I. 10653 (Aug. 2013), https://dualchallenge.npc.org/documents/CCUS%20Topic%20Paper%204%20text%20and%20cover.pdf?a=1629788646 [https://perma.cc/J4LQ-GDUK].

124. *See* H.B. 661, 2009 Leg., Reg. Sess. (La. 2009); *see also* LA. REV. STAT. § 30:1101 (2022).

125. *See* LA. REV. STAT. §§ 30:1107, 30:1109 (2022).

liability."[126] So long as the Carbon Dioxide Geologic Trust Fund contains adequate funding and is not defrauded, the law creates a release of "the storage operator, all generators of any injected carbon dioxide, all owners of carbon dioxide stored in the storage facility, and all owners otherwise having any interest in the storage facility" of "all duties or obligations" under the La. GS Act. The act also releases "any and all liability associated with or related to" the geologic storage facility "after issuance of the certificate of completion of injection operations."[127] This release seems relatively broad and clearly intends to release the operator and all owners with an interest in the facility from their duties and obligations under the La. GS Act. Such release from regulatory responsibility can only occur if the Commissioner certifies completion of injection operations based on a showing of a reasonable expectation that the reservoir will maintain mechanical integrity and the stored carbon will remain in place.[128] Upon issuance of the certification of completion of injection operations, the state becomes the owner of the remaining project, including the stored CO_2.

Exactly how this transfer of ownership to the state interacts with EPA Class VI regulatory requirements remains unclear. Federal legislation creates the EPA UIC obligations, which exist separately and apart from the La. GS Act; however, the La. GS Act authorizes the Commissioner to carry out the UIC program at Section 30:1106 of the Louisiana Revised Statutes. It seems likely that the EPA will argue this statute does not, and cannot, release a responsible party from its UIC obligations but merely authorizes the Commissioner as the state authority from whom to seek UIC primacy and set forth the procedures for UIC enforcement, if the Commissioner is granted primacy. This assumption is based on the EPA's response to several comments received during the rulemaking process concerning the transfer of long-term liability to a state entity after GS injection operations conclude.[129] The EPA ultimately responded that under

126. *See* LA. REV. STAT. § 30:1110 (2022) (creates the Carbon Dioxide Geologic Storage Trust Fund or the "Trust Fund"). The Trust Fund will be funded by all fees, penalties, and bond forfeitures collected pursuant to the La. GS Act, private donations, interest earned on the fund, and Site Specific Trust Accounts. Exactly how and the amount of certain fees will be collected for this fund will rely on future rulemaking by the Commissioner.

127. LA. REV. STAT. § 30:1109(A) (2022).

128. *Id.*

129. Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO_2) Geologic Sequestration (GS) Wells, 75 Fed. Reg. 77230–303 (Dec. 10, 2010) (to be codified at 40 C.F.R. pts. 124, 144, 145, 146, 147).

current SDWA provisions, the EPA does not have authority to transfer liability from one entity (that is, owner or operator) to another.[130]

The default 50-year post-injection monitoring and site care plan found in the EPA's Class VI regulations seems to extend the timeframe for post-injection monitoring and closure.[131] During this period, the operator remains responsible for meeting UIC requirements. This exceeds the La. GS Act's authors' expectations, which envisioned the transfer of ownership to the State to occur as early as 10 years after the cessation of injection operations.[132] Regardless, the La. GS Act makes it clear that this release of liability for the owner/operators of the geologic storage facility is not intended to transfer liability to the State. The mere act of the State becoming the remaining project's owner does not impose liability on the state.[133] As previously mentioned, one aspect of a state gaining primacy is being able to prove its ability to ensure compliance with the EPA's regulatory requirements.[134] State policies relieving an operator of regulatory responsibility prior to site closures, pursuant to EPA regulation, may endanger the state's ability to gain or maintain Class VI primacy.[135]

Another issue arises from the fact that the Commissioner is statutorily authorized to perform or contract for long-term site monitoring and undertake final closure of a geologic storage project, following his issuance of a certificate of completion of injection operations for that facility.[136] If the Commissioner's office undertakes both Class VI long-term monitoring responsibility and receives Class VI primacy, then the Commissioner will foreseeably act as both the UIC operator and the UIC regulator, thereby creating a serious conflict of interest. Because the authority associated with issuing a certificate of completion of injection operations and deciding to undertake long-term monitoring both rest with

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130. *Geologic Sequestration of Carbon Dioxide: Underground Injection Control (UIC) Program Class VI Well Plugging, PostInjection Site Care, and Site Closure Guidance*, EPA 56 (Dec. 2016), https://www.epa.gov/sites/default/files/2016-12/documents/wp-pisc-sc_guidance_final_december_clean.pdf [https://perma.cc/YJL3-ZWL9] [hereinafter *Geologic Sequestration of Carbon Dioxide*].

131. *Id.*

132. *Id.*; *see also* LA. REV. STAT. § 30:1109(A)(1) (2022) ("Ten years, or any other time frame established by rule, after cessation of injection into a storage facility, the commissioner shall issue a certificate of completion of injection operations, upon a showing by the storage operator that.").

133. *See* LA. REV. STAT. § 30:1109(A)(4) (2022).

134. *See Class VI USEPA Primacy Application – Underground Injection Control Program*, *supra* note 15.

135. *See Geologic Sequestration of Carbon Dioxide*, *supra* note 130.

136. *See* LA. REV. STAT. §§ 30:1109(A), 30:1110(E) (2022).

the Commissioner, perhaps future rulemaking or other Commissioner decisions will provide a path around these obstacles.[137] Future EPA decisions may also provide guidance as to the potential constraints placed on state statutes by the Class VI post-injection monitoring requirements.

Post-injection concerns about transfers of ownership have been raised by interested non-governmental organizations.[138] A main concern cited by some critics involves the removal of liability post-injection, which negatively alters the incentive for operators to work prudently and safely. Critics also mention the danger in front-loading all of the risk associated with geologic storage operations for operators to the beginning of the project, where challenges with permitting and construction are the most expensive. Conversely, such transfers are said to backload the risk onto the states up to a point where the project no longer earns money for either the operator or the state (through storage right payments or regulatory fees); thus increasing the risk of unfunded liabilities falling to the public. Those supporting such transfers emphasize the fact that the greatest risk of release or leakage occurs during the injection operations. Therefore, the transfer of ownership occurs at a time when such risks are diminished.

Alternative approaches have been proposed, including a layered approach to covering risk. For example, in addition to protections provided by well-functioning state regulation, including acceptable financial assurance, the U.S. Department of Energy (DOE) would be authorized to voluntarily choose which geologic storage projects to grant governmental assurances, covering a certain portion of the risk throughout the project's life and capping the amount the government agrees to cover. This layered approach addresses the concern of incentives for safe operations, while providing concrete advantages in liability reduction for geologic storage operators. One proposal for how to manage post-injection transfers to the state comes from a United Kingdom panel recommendation to create an independent public company to handle all aspects of long-term monitoring, closure, and risk associated with a post-injection well. This proposal provides greater flexibility in managing risks while avoiding potential conflicts of interest created by the same governmental entity being both the regulator and the regulated.

The La. GS Act also authorizes facility operators to further limit their regulatory liability by establishing Site-Specific Trust Accounts (SSTA) to cover site-closure and remediation costs of the facility. The SSTAs

137. *See id.* §§ 30:1107, 30:1109 (2022).

138. *See The Latest on the Federal Bans*, LA. OIL & GAS ASS'N, www.loga.la [https://perma.cc/5GZV-7HHB] (last visited Nov. 6, 2022); *see also Louisiana's Oil & Natural Gas Industry*, LA. MID-CONTINENT OIL & GAS ASS'N, www.lmoga.com [https://perma.cc/9T5N-2VG6] (last visited Nov. 6, 2022).

authorized by the La. GS Act are clearly similar to (and likely modeled after) the SSTAs authorized under Louisiana's Oilfield Site Restoration Act. At the time the geologic storage facility transfers from one party to another (not including transfer to the State pursuant to section 30:1109(A) of the Louisiana Revised Statutes), an SSTA may be established to provide the necessary funds for long-term maintenance, monitoring, and site closure or remediation of the storage facility. A Commissioner-approved third-party assessment contractor will make an assessment of these costs. This cost estimate must be updated routinely every five years. The former operator must also prepare, for the Commissioner's approval, a payment schedule to fully fund the SSTA. Upon approval and funding of the SSTA, "the party transferring the storage facility site and all prior owners, operators, and working interest owners shall not thereafter be held liable by the state for any site closure costs or actions associated with the transferred storage facility site."[139] Many of these provisions depend on future rulemaking by the Commissioner.

Finally, some changes have been made to the La. GS Act since its adoption in 2009. Act 297 of 2019 makes it clear that the owner, shipper, or generator of the CO_2 is not responsible for meeting the regulatory requirements associated with carbon storage unless the owner, shipper, or generator also owns or operates the GS facility. Act 61 of 2020 removes CO_2 pipelines associated with GS operations from the definition of "storage facility" in Section 30:1103 of the Louisiana Revised Statutes in order to ensure regulation as a separate entity under pipeline-specific regulatory requirements. Future amendments to the La. GS Act seem likely, which will provide an opportunity to address some of the potential challenges mentioned herein.

V. OTHER KINDS OF LIABILITY GENERALLY UNDER LOUISIANA LAW

The liability release in section 30:1109(A) of the Louisiana Revised Statutes could be read broadly to cover all other potential liability arising after issuance of the certificate of completion of injection operations. Yet, this statute raises many questions about when the "liability associated with or related to [a] Storage Facility arises."[140] For instance, does the liability arise when an injected CO_2 plume crosses a property line beneath a tract of land that the operator did not obtain storage rights to? Does it apply

139. *Establishing a Site Specific Trust Account (SSTA)*, STATE OF LA. DEP'T OF NAT. RES., http://www.dnr.louisiana.gov/assets/OC/eng_div/OSR/SSTA_ACCT_INSTRUCTIONS.pdf [https://perma.cc/NGE5-JW4M] (last visited Nov. 16, 2022).

140. LA. REV. STAT. 30:1109(A)(1) (2022).

when the neighboring tract owner becomes aware of such unauthorized movement underneath his property? Or, when the operator knew or should have known of this movement? Assuming the potential trespass was discovered long after the certificate of completion was issued, how does a landowner prove the timing of any plume movement? Furthermore, does liability arise when injection operations that subsequently lead to CO_2 plume migration remain ongoing and occur prior to the issuance of the order to cease injection operations?

In the event that any such liability release *is* ultimately found to release the former owner/operators of liability to this hypothetical landowner, are claimant landowners left without recourse? As previously mentioned, the release of liability and transfer of ownership to the state does not by itself make the state liable. The Carbon Dioxide Geologic Trust Fund does not authorize expenditures to cover such claims. Meaning, even if a party has a claim against the state for a geologic storage facility, the party must follow the normal avenues for recovery against the state. Whether contractual obligations could impose obligations beyond this certification and transfer of ownership to the state is another issue that remains unclear, requiring further development in the case law or specific legislation to address this issue.

In addition to the post-injection release of liability, the La. GS Act provides specific caps on damages for non-economic loss alleged in civil suits filed against an owner/operator of a GS "facility, carbon dioxide transmission pipeline, or the generator of the carbon dioxide being handled by either the facility or pipeline." These caps appear to apply for claims arising at any point in a geologic storage facility's operational life. The cap is set at $250,000 per occurrence, except when the occurrence leads to non-economic losses for wrongful death or more serious injuries, in which case the cap on damages is set at $500,000 per occurrence under the La. GS Act.

Another consideration arises from potential constitutional challenges to these liability releases and limits. For example, certain caps on damages for medical malpractice claims led to previous constitutional challenges.[141] Finally, Louisiana tort law is governed by the articles contained in Book III, Title V, Chapter 3, of the Louisiana Civil Code, which includes Articles 2315 through 2324.2. As the law stands now, strict liability in Louisiana's tort law is unlikely to apply to the operation of a CO_2 pipeline and storage facilities in Louisiana. Instead, a plaintiff may need to prove that the owner/operator's conduct of the facility fell below the standard of reasonable conduct.

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141. *See, e.g.*, Oliver v. Magnolia Clinic, 85 So. 3d 39 (La. 2012).

In the event of CO_2 intrusion into adjacent lands, affected parties may also assert a claim for trespass or "obligations of neighborhood[,]" which is essentially the equivalent to a nuisance claim. In each case, the plaintiff must prove that the defendant knew or should have known of the risk of harm and failed to act with reasonable care.

The primary source of the obligations of neighborhood may be found in Article 667 of the Louisiana Civil Code, which imposes limitations on a person's use of the property that he or she owns. The article provides, in pertinent part, that:

> Although a proprietor may do with his estate whatever he pleases, still he cannot make any work on it, which may deprive his neighbor of the liberty of enjoying his own, or which may be the cause of any damage to him. However, if the work he makes on his estate deprives his neighbor of enjoyment or causes damage to him, he is answerable for damages only upon a showing that he knew or, in the exercise of reasonable care, should have known that his works would cause damage, that the damage could have been prevented by the exercise of reasonable care, and that he failed to exercise such reasonable care.[142]

If the factual bases of a plaintiff's claim include allegations that CO_2 stored in the subsurface migrated into the subsurface or airspace of the plaintiff's property without their prior permission, or some other grounds for the right of entry, and the CO_2 caused actual harm, then the plaintiff might assert a claim for trespass. To support liability under Louisiana law, the entry must be intentional or negligent.[143] Whether the plaintiff alleged an intentional trespass or a negligent trespass, Louisiana law would require the plaintiff to show damages in order to recover.

142. LA. CIV. CODE art. 667 (2022).

143. *See, e.g.*, Terre Aux Boeufs Land Co., Inc. v. J.R. Gray Barge Co., 803 So. 2d 86 (La. Ct. App. 2001).

VI. ENVIRONMENTAL JUSTICE CONSIDERATIONS FOR A CLASS VI PERMIT APPLICATION IN LOUISIANA

As part of the Class VI well permit application, the LDNR[144] requires[145] the owner/operator to conduct an environmental justice (EJ) review and submit a report.[146] EJ refers to the kind of analysis[147] regulators

144. Recipients of federal assistance are required to follow certain federal guidelines. If Louisiana's primacy application is granted, the Injection and Mining Division of the Office of Conservation ("IMD") will receive federal funding to permit and regulate Class VI wells, thus subjecting them to the requirements under Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, section 504 of the Rehabilitation Act of 1973, and Age Discrimination Act of 1972. If a state receives funding for primacy of an EPA program, the EPA will reference these laws among others to require an EJ analysis. Class VI permit applications and renewals will require an analysis of the cumulative impacts on overburdened communities. Further, EPA may increase support for community-led action by providing unprecedented investments and benefits directly to communities and influencing federal partners or agencies under National Environmental Policy Act (NEPA) and section 309 of the Clean Air Act. EPA acknowledges that the enforcement challenges will mostly be via state agencies for environmental permitting, contamination clean up, infrastructure investment, facility siting, and transportation. Most, if not all, agencies already consider these acts, but the Biden Administration's "whole of government" approach could lead to a potential overreach.

145. At this time, there is inconsistent EJ authority and no federal laws, albeit some state laws, on the subject. Currently, there are 10 states with active EJ policies or rulemaking in progress, including New Jersey and California. Within these states, 16 policies have some EJ statements or outreach programs, but no rulemaking, and 24 policies have no EJ policy language or plans in development. Thus, the regulator is potentially forced to create state-specific regulatory regimes during the permitting process by looking at existing statutes or regulations, non-binding policy documents, and executive orders. Therefore, the permittee must consider whether EJ driven actions are required or discretionary to assess a course of action.

146. See 42 U.S.C. §§ 2000d, 2000d-4(a); Civil Rights Restoration Act of 1987, Pub. L. No. 100-259, 102 Stat. 28 (1988).

147. The current authority for EJ and enforcement falls under the Civil Rights Act Title VI, sections 601 and 602. Section 601 states, **"**No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." Section 602 authorizes federal agencies "to effectuate the provisions of section 601 by issuing rules, regulations, or orders of general applicability." *See* Guardians Ass'n v. Civ. Serv. Comm'n of the City of N.Y., 463 U.S. 582, 591 (1983). Section 601 requires proof of intentional discrimination. *See* Alexander v. Sandoval, 532 U.S. 275, 280

must use in rulemaking to ensure fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.[148] Although the concept of EJ has existed for several years, it gained traction under the Biden administration.[149] Within the last 12 to 14 months, several events emphasized a high level of scrutiny for EJ during the permitting process.[150] In fact, Michael S. Regan, the EPA's 16th administrator, sworn in on March 11, 2021, was chosen due to his experience[151] mitigating adverse impacts on overburdened communities in North Carolina.[152]

(2001). Section 602 does not provide a right for private people to enforce regulations; as a result, the loss of funding for agencies led EJ communities to file administrative complaints with federal agencies, such as the EPA. The EPA's Office of Civil Rights (OCR) is charged with processing Title VI complaints. *See* 40 C.F.R. pt. 7 (2022).

148. *See* 42 U.S.C. §§ 2000d, 2000d-4(a); Civil Rights Restoration Act of 1987, Pub. L. No. 100-259, 102 Stat. 28 (1988).

149. Anecdotally, the initial plan of the Biden administration was to legislatively reverse *Sandoval* and overhaul the EPA External Civil Rights Compliance Office. Given the gridlock between the Administration and Congress, it is unclear whether this remains a priority.

150. On April 7, 2021, Administrator Regan directed the EPA to strengthen enforcement in overburdened communities, assess and reduce regulatory impacts to overburdened communities, and conduct meaningful and frequent engagement with EJ communities affected by rulemaking, permitting, and enforcement. Subsequently, the EPA issued the following guidance: (1) "Strengthening Enforcement in Communities with Environmental Justice Concerns" (April 30, 2021); (2) "Strengthening Environmental Justice Through Criminal Enforcement" (June 21, 2021); and (3) "Strengthening Environmental Justice Through Cleanup Enforcement Actions" (July 1, 2021). In addition to these directives, the EPA released its strategic plan on October 4, 2021, additional NEPA regulations on October 7, 2021, and cumulative risk guidance in December 2021.

151. Administrator Regan was previously the secretary of North Carolina's Department of Environmental Quality.

152. "Overburdened communities" is defined by the EPA as minority, low-income, tribal, or indigenous populations or geographic locations in the United States that potentially experience disproportionate environmental harms and risks. This disproportionality can be a result of their greater vulnerability to environmental hazards, lack of opportunity for public participation, or other factors. Increased vulnerability may be attributable to an accumulation of negative or lack of positive environmental, health, economic, or social conditions within these populations or places. The term describes situations where multiple factors, including both environmental and socio-economic stressors, may act cumulatively to affect the surrounding community's health and environment

While the Biden administration prioritizes EJ, the underlying analysis driving EJ is not new. In fact, the Bush administration originally floated the *cumulative risk*[153] assessment in 2003, later raised by the Obama administration's 2014 environmental agenda, but it stalled.[154] The Biden administration's prioritization and intent to enforce,[155] via a *whole-of-government*[156] approach, potentially increased the risk since the analysis is not limited directly to an applicant or a permittee's facility.[157]

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while contributing to persistent environmental health disparities. *EJ 2020 Glossary*, EPA, https://www.epa.gov/environmentaljustice/ej-2020-glossary [https://perma.cc/ND69-AQ84] (last updated on Aug. 18, 2022).

153. The cumulative risk assessment looks at risks from overlapping environmental hazards, by analyzing the air quality, water, chemical mixtures, and non-chemical stressors, such as higher at-risk, local populations.

154. Environmental policy was a central piece of President Obama's domestic policy agenda, yet Congressional gridlock forced the Obama Administration to turn to the tools of the Executive Branch to pursue the environmental agenda. In addition to Congress, Obama's administration engendered conflict from industry and some states. This conflict plagued the Obama administration in several areas of environmental policy, including investment in renewable energy, Environmental Protection Agency regulations on air pollution, and executive actions to manage public lands. Ultimately, the President's signature climate change policy, the Clean Power Plan, was overturned by the U.S. Supreme Court. *See* David M. Konisky & Neal D. Woods, *Environmental Policy, Federalism, and the Obama Presidency*, 46 THE J. OF FEDERALISM 366–91 (2016); West Virginia v. EPA, 142 S.Ct. 2587 (2022).

155. Section 303 of the Clean Air Act, Emergency Powers allows regulatory action when there is an imminent and substantial endangerment to public health, welfare, and the environment. This allows for the immediate shutdown of a suspected source of harm, lasting for no more than 60 days. This provision is rarely invoked; however, it was invoked twice in May 2021: (1) on Limetree Bay Terminals, LLC (a petroleum refinery) located in St. Croix, U.S. Virgin Islands; and (2) on New Indy (a paper mill) in Catawba, South Carolina.

156. This appears to be an overarching and unifying objective by creating roles for all agencies and appointing individuals with strong EJ backgrounds. To help coordinate this approach, the White House created its own Environmental Justice Advisory Committee (WEJAC). In addition to WEJAC, the other key committees and offices are the National Environmental Justice Advisory Committee (NEJAC) and the External Civil Rights Compliance Office (ECRCO).

157. Further, the EPA will focus on "[c]ommunities with multiple industrial and energy facilities and are saturated with legacy pollution [that] want to see EPA realign its enforcement in a way that provides action, accountability, and guidance for taking cumulative impacts and risks into account, *even if they cannot be measured with precision.*" *FY 2022-2026 EPA Strategic Plan Draft,* EPA 28 (2021), https://www.epa.gov/system/files/documents/2022-03/fy-2022-2026-epa-strategic-plan.pdf [https://perma.cc/J439-P8FT] (emphasis added).

President William J. Clinton issued Executive Order 12898,[158] creating the EPA's Office of Environmental Justice (OEJ), which coordinates all EJ activities within the agency.[159] Since its creation, OEJ strives to provide guidance and criteria for implementing an EJ analysis by developing a comprehensive analysis guideline; unfortunately, its implementation and application remains unclear and amorphous.[160]

Nonetheless, an EJ review is encouraged in the pre-permitting process and required early in the formal permitting process.[161] At a minimum, Louisiana requires a report to consider the data and factors available in the EPA-developed EJSCREEN tool and identify any portions of the AOR, which encompass EJ areas.[162] Upon the application's submission, the LDNR staff uses the EJSCREEN tool to evaluate the project's location and ensure that it does not disproportionately impact certain demographic areas.[163] The EJ impact report submitted by the applicant will be reviewed to verify that it is thorough, contextualized, and matches the data from the EJSCREEN tool.[164] If a proposed site is found to be located in communities with high EJ risk factors, the Commissioner of Conservation

158. Exec. Order No. 12898, Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations**,** 59 Fed. Reg. 7629 (Feb. 16, 1994).

159. OEJ was created in 1992. Its mission is to coordinate the agency's efforts to address the needs of vulnerable populations by decreasing environmental burdens, increasing environmental benefits, and working collaboratively to build healthy, sustainable communities. OEJ provides financial and technical assistance to communities working constructively and collaboratively to address EJ issues. The Office also works with local, state, and federal governments; tribal governments; community organizations; businesses and industries; and academia to establish partnerships seeking to achieve protection from environmental and health hazards for all people regardless of race, color, national origin, or income.

160. *See* Sylvia F. Liu, *Environmental Justice: An Overview of Legal Issues*, 48 U.S. ATT'Y'S BULL. 1 (2000).

161. *Learn About Environmental Justice*, EPA, https://www.epa.gov/environmentaljustice/learn-about-environmental-justice [https://perma.cc/M6BE-7EMB] (last updated Sept. 6, 2022).

162. *EJScreen: Environmental Justice Screening and Mapping Tool*, EPA, https://www.epa.gov/ejscreen [https://perma.cc/M99J-GYQH] (last updated Apr. 1, 2022).

163. *Id.*

164. On July 6, 2020, the Office of Conservation held a public hearing, relative to the application. A summary of those comments can be found here: DEP'T OF NAT. RES., http://www.dnr.louisiana.gov/assets/OC/im_div/uic_sec/SummaryofClassVIPublicCommentsandResponses.pdf [https://perma.cc/A5P2-ARRU] (last visited Nov. 25, 2022).

may extend the public comment period for the application and require a more inclusive public participation process, including targeted public outreach and the creation of better visual tools and approachable language.[165] If the EJ review proves especially complex or time-consuming, the LDNR may opt to outsource this assessment to a qualified third-party reviewer.[166]

In addition to the site-specific questions of the EJ review, Louisiana regulators weigh the siting, environmental effects, and the results of a cost-benefit analysis as required by the Louisiana Supreme Court in *Save Ourselves, Inc., v. the Louisiana Environmental Control Commission*.[167] In *Save Ourselves, Inc*., the court set forth five areas of inquiry, known colloquially as the "Louisiana Constitutional Considerations." Those questions include:

(1) Have the potential and real adverse environmental effects of the proposed project been avoided to the maximum extent possible?
(2) Does a cost benefit analysis of the environmental impact costs versus the social and economic benefits of the proposed project demonstrate that the latter outweighs the former?
(3) Are there alternative projects which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?
(4) Are there alternative sites which would offer more protection to the environment than the proposed site without unduly curtailing non-environmental benefits?
(5) Are there mitigating measures which would offer more protection to the environment than the proposed project without unduly curtailing non-environmental benefits?[168]

Answers to these questions must provide adequate detail with sufficient justification and supporting data to enable the LDNR to conduct a balanced review of environmental, social, economic, and other factors as required by the Louisiana Constitution.[169]

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165. There is no restriction to the length of time a comment period may be held open, only a minimum. LA. REV. STAT. §§ 49:950–11021 (2022).
166. *Id.*
167. 452 So.2d 1152 (La. 1984).
168. *Id.*
169. *Id.*

VII. CONCLUSION

The development of the regulatory and legal framework around CCS is ongoing and continues to evolve as interest and investment continues to grow. By the fall of 2023, Louisiana will (hopefully) obtain primacy from the EPA and start accepting and reviewing permits for Class VI wells around the State. Only time will tell how robust the program will be. If the recent actions of major and independent oil and gas companies (i.e., investment in technology and leasing of pore space) mean anything, then the future of CCS in the State of Louisiana is bright, benefiting not only the state, but its resident businesses and industries as well.