



THE ROLE OF A BLUE CARBON MARKET IN LOUISIANA’S RESPONSE TO CLIMATE CHANGE AND COASTAL LAND LOSS

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ABSTRACT

Louisiana’s rapidly disappearing coastal wetlands provide essential wildlife habitat, build community resilience, support economic industries, improve water quality, and sequester atmospheric carbon. However, the State’s ability to protect and restore these vital ecosystems is threatened by the impending depletion of funds from the BP Deepwater Horizon Oil Spill. So far, planned and existing alternatives for what currently serves as the State’s primary coastal funding source are uncertain, unstable, or counterproductive in that they rely on the continued success of industries that inflict direct and indirect harm on coastal environments. In the 2022 Louisiana Climate Action Plan, the State confirmed its interest in financing future coastal projects by developing and selling blue carbon credits. This revenue stream would align with objectives of the State’s coastal program and optimize the myriad benefits that blue carbon ecosystems provide for the local and global communities that rely on coastal Louisiana.

This paper examines key legal barriers the State of Louisiana should anticipate in efforts to utilize blue carbon credits as a meaningful coastal financing mechanism, including satisfying additionality requirements, securing ownership of project lands and carbon rights, and complying with sovereign duties under the public trust doctrine. The discussion draws on models from other state experiences while emphasizing the impacts of Louisiana’s unique culture, politics, and legal system. This paper concludes that the State is unlikely to encounter insurmountable legal barriers to generating coastal funding with blue carbon credits but nevertheless should take actions to make this path clearer and easier.

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I. INTRODUCTION

The world’s wetlands are rapidly disappearing, and with them we are losing one of the strongest nature-based means of combatting climate change. Coastal wetlands are essential for building resilience against floods, storm surges, and rising sea levels. Accordingly, coastal land loss first garnered global attention as a necessary area of adaptation in response to the emergence of “climate refugees” from low-lying coastal communities.² This image was critical in conveying the impacts and severity of climate change; unfortunately, its messaging led to the general understanding of coastal land loss as purely a result of rising greenhouse gas emissions³ instead of a cause or a solution of the same.⁴

However, coastal wetlands serve as incredibly productive carbon sinks; in other words, wetlands destruction emits atmospheric carbon and wetlands restoration sequesters it. The carbon captured in these coastal ecosystems has been termed *blue carbon*. In recent years, blue carbon has become ubiquitous in the worlds of environmental and climate policy. The role of blue carbon in climate mitigation and adaptation plans is increasingly clear at every level of governance.⁵ Several countries, including the United States, have included blue carbon goals in

² See, e.g., Cole Mellino, *Meet the World’s First Climate Refugees*, ECOWATCH (Jan. 5, 2016, 1:40 PM), <https://www.ecowatch.com/meet-the-worlds-first-climate-refugees-1882143026.html> (identifying “the world’s first climate refugees” as residents of low-lying Pacific Island communities); Coral Davenport & Campbell Robertson, *Resettling the First American ‘Climate Refugees’*, NY TIMES (May 2, 2016), <https://www.nytimes.com/2016/05/03/us/resettling-the-first-american-climate-refugees.html> (identifying the “first American climate refugees” as residents of Isle de Jean Charles, Louisiana).

³ Coastal land loss is also caused and accelerated by other natural and anthropogenic forces such as subsidence, erosion, and oil and gas extraction. An Overview of Coastal Land Loss: With Emphasis on the Southeastern United States, USGS, <https://pubs.usgs.gov/of/2003/of03-337/intro.html> (last visited April 20, 2023).

⁴ Ocean Climate Action: Solutions to the Climate Crisis: Legislative Hearing Before the Comm. On Natural Resources, 116 Cong. 41 (2020) (Statement of Jane Lubchenco), available at <https://www.congress.gov/116/chr/CHRG-116hhrg42326/CHRG-116hhrg42326.pdf>.

⁵ See, e.g., Sylvia Troost, et al., *Oregon Climate Plan is First in U.S. to Account for ‘Blue Carbon’ Benefits of Coastal Habitats*, Pew (Aug. 5, 2021), <https://www.pewtrusts.org/en/research-and-analysis/articles/2021/08/05/oregon-climate-plan-is-first-in-us-to-account-for-blue-carbon-benefits-of-coastal-habitats> (describing an example of blue carbon policy implemented at the state level); Andrew Snowwhite, *Blue Carbon and Urban Resilience*, NewCities (Jun. 22, 2022), <https://newcities.org/blue-carbon-and-urban-resilience/> (describing several examples of blue carbon policy implemented at the city level).

their Paris Agreement commitments.⁶ With Louisiana's nearly 8,000 miles of receding shoreline,⁷ blue carbon ecosystems in coastal Louisiana will play an integral role in the state's adaptation and the nation's mitigation plans.

That said, blue carbon as an ecosystem descriptor is distinct from blue carbon as a market mechanism. Blue carbon credit markets allow ecosystem developers to monetarily capitalize on the sequestration value of a project. According to its 2022 State Climate Action Plan, Louisiana foresees blue carbon markets as an element of the state's response to climate change.⁸ But what role could a blue carbon market play, and what barriers stand in the way of implementation or impact?

This paper assesses what role a blue carbon market may have as a revenue stream for the State's efforts to address climate change and coastal land loss in the context of a dwindling supply of funding for coastal restoration. Legal and technical issues relating to project certification and allocation of risk and liability are largely beyond the scope of this paper in so far as they are relevant to all development of coastal blue carbon projects and would not specifically impact the State's ability to use carbon credits for coastal financing. Part II discusses current coastal funding sources and projections for the future. Part III provides an overview of blue carbon credits and markets, especially within the context of the stated goals in the Louisiana Climate Action Plan. Part IV considers opportunities for and legal barriers to a state agency developing and selling blue carbon credits as a means of future coastal financing. Part V explores a method for the state to benefit from blue carbon credits it does not directly produce. Finally,

⁶ Amrit Melissa Dencer-Brown et al., *Integrating blue: How do we make nationally determined contributions work for both blue carbon and local coastal communities?*, 51 *AMBIO* 1978, 1979 (2022).

⁷ NOAA OFF. FOR COASTAL MGMT., *SHORELINE MILEAGE OF THE UNITED STATES* 1 (1975).

⁸ CLIMATE INITIATIVES TASK FORCE, *LOUISIANA CLIMATE ACTION PLAN* 91 (2022) [hereinafter *LOUISIANA CLIMATE ACTION PLAN*].

Part VI offers concluding thoughts on the prospect of state engagement and support of a blue carbon market in Louisiana.

II. COASTAL FINANCING IN LOUISIANA

The 2010 BP Deepwater Horizon oil spill devastated the Gulf of Mexico and Louisiana's coastal ecosystem. It also led to an \$8.7 billion settlement that has served as the backbone of the state's coastal restoration and conservation projects for more than a decade.⁹ Most of the money was allocated to coastal work set to take place between 2017 and 2031, meaning that in less than ten years that funding source will be largely tapped out.¹⁰ Unfortunately, by that time, the \$50 billion Coastal Master Plan would be far from realized, and banking on the next disaster is not a plan.¹¹ Other existing funding sources are unreliable and unavailing in the grand scheme of coastal restoration due to their heavy dependence on the fossil fuel industry. Thus, the state is already looking for alternative coastal financing options that would relieve dependence on fossil fuels and support industries that are less detrimental to coastal restoration efforts.

Deepwater Horizon settlement money is not the exclusive source of existing coastal funding; however, it does compose the largest share, and existing alternatives are unreliable at best and detrimental at worst. Revenue-sharing programs, mineral taxes, and federal legislation all currently contribute to funding coastal restoration and protection projects.¹² However, the vulnerability of these sources to exogenous factors, as well as the futility of relying on industries that contribute to coastal degradation to fund coastal protection, further supports the introduction of a new source of coastal financing.

⁹ THE PUB. AFFS. RSCH. COUNCIL OF LA., COMMENTARY, COASTAL FISCAL CLIFF 1 (Aug. 15, 2022) [hereinafter COASTAL FISCAL CLIFF].

¹⁰ *Id.*

¹¹ See COASTAL PROT. AND RESTORATION AUTH. OF LA., LOUISIANA'S COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST (2017) (repeatedly characterizing the plan as for 50 years).

¹² COASTAL FISCAL CLIFF, *supra* note 9, at 2.

The second largest source of ongoing cash for coastal restoration and protection projects is from the Gulf of Mexico Energy Security Act (GOMESA) federal revenue-sharing program, which entitles Louisiana to a portion of revenue generated by offshore oil and gas production in federal Gulf waters off its shore.¹³ In 2023, this program provided more than \$156 million to Louisiana with almost \$125 million going to the State government and the rest dispersed throughout coastal parishes.¹⁴ Throughout 2022, U.S. Senators Bill Cassidy and John Kennedy unsuccessfully campaigned for a bill that would lift the cap on royalty payments to states for energy production in federal waters.¹⁵ The bipartisan proposal would allocate 37.5 percent of revenue to the states and 12.5 percent to the National Oceans & Coastal Security Fund which distributes grants for coastal projects.¹⁶ So far they have not abandoned their efforts, but ultimately, increasing the amount of money from federal revenue sharing would do little to combat the unreliability and counterproductivity of that money's source.¹⁷ In addition to the GOMESA program, mineral revenues from oil and gas taxes can provide \$12-30 million annually to bolster Louisiana's coastal trust fund.¹⁸ Finally, the federal Coastal Wetland Planning, Protection and Restoration Act (CWPPRA) has historically provided between \$30 and \$80 million, subject to a fifteen percent cost-share requirement.¹⁹ This fund is also supported by fuel taxes as well as fishing and boating purchases and other federal appropriations.

¹³ Gulf of Mexico Energy Security Act, § 105, 43 U.S.C. § 1331 (2006).

¹⁴ U.S. Dep't of Interior, *Gulf of Mexico Energy Security Act (GOMESA)*, <https://revenue.data.doi.gov/how-revenue-works/gomesa/> (last visited Apr. 18, 2023).

¹⁵ RISEE Act of 2022, S. 2130, 117th Cong. (2022).

¹⁶ Press Release, Sen. Bill Cassidy, *Senate Energy Committee Advances Cassidy Bill to Send Louisiana Billions for Coastal Restoration* (Jul. 21, 2022), <https://www.cassidy.senate.gov/newsroom/press-releases/senate-energy-committee-advances-cassidy-bill-to-send-louisiana-billions-for-coastal-restoration#:~:text=Creating%20a%20new%20national%20offshore.formula%20contained%20in%20the%20legislation.>

¹⁷ RISEE Act of 2023, S. 373, 118th Cong. (2023).

¹⁸ Charles Sutcliffe, *Long-term Financial Outlook for Coastal Program* [PowerPoint slides] (Apr. 5, 2023).

¹⁹ *Id.*

These coastal financing options depend on lasting reliability of federal support and the fossil fuel industry. Geopolitical tensions as well as a general and widespread transition to alternative energy sources threaten the long-term stability of fossil fuels. This is evidenced by impacts of the Russia-Ukraine war on the global market and the sporadic legality of offshore oil and gas leasing in the Gulf of Mexico throughout 2022.²⁰

The fossil fuel industry is not only unstable and unreliable, but also directly detrimental to coastal restoration efforts.²¹ The production and consumption of oil and gas emits greenhouse gases that impact global temperatures and consequently raise sea levels. Rising waters only compound the destruction already inflicted on the coast by more than 10,000 miles of canals carved through the Louisiana coast by the oil industry.²² These canals continue to expand without any intervention or accountability on the part of these oil and gas companies.²³ Thus, beyond the unreliability of the industry, the direct influence fossil fuels have had—and continue

²⁰ Muqsit Ashraf et al., *The War in Ukraine: A Moment of Reckoning for the Oil and Gas Industry*, Accenture (May 10, 2022), <https://www.accenture.com/us-en/insights/energy/ukraine-oil-gas> (noting ways the Russian invasion of Ukraine exposed vulnerabilities in the oil and gas industry); Bobby Magill, *Oil Industry Sees Ongoing Leasing Pause in New Biden Gulf Plan*, Bloomberg Law (Jul. 6, 2022), <https://news.bloomberglaw.com/environment-and-energy/oil-industry-sees-ongoing-leasing-pause-in-new-biden-gulf-plan>. (noting a Biden Administration “de facto moratorium” on offshore oil and gas leasing); Alfie Ellis, et al., *Biden Administration Reopens Federal Lands for Oil and Gas Leasing Under Reformed Program*, Brownstein (Apr. 20, 2022) (detailing a district court in Louisiana’s injunction of the Biden Administration’s pause on offshore oil and gas leasing which was subsequently vacated).

²¹ See, e.g., Oliver A. Houck, *Land Loss in Coastal Louisiana: Causes, Consequences, and Remedies*, 58 TUL. L. REV. 3, 24 (1983) (“Evidence on the tens of thousands of access channels, navigation canals, pipeline ditches, spoil banks, borrow pits, levees, and subsurface extractions and their associated pollution indicates with increasing certainty that, while the Mississippi River levees have severely interrupted the flow of life to the Louisiana coast, these individual interferences are having an equally direct and perhaps more destructive effect on the corpus.”)

²² Bob Marshall, *The Gulf of Mexico is Devouring Southeastern Louisiana*, Salon (Sep. 5, 2014, 11:30 AM), https://www.salon.com/2014/09/05/climate_changes_newest_threat_the_gulf_of_mexico_is_devouring_southeastern_louisiana_partner/; John Carey, *Louisiana Wetlands Tattered by Industrial Canals, Not Just River Levees*, Sci. Am. (Dec. 1, 2013), <https://www.scientificamerican.com/article/carey-louisiana-wetlands-tattered-by-industrial-canals/>.

²³ See *Barasich v. Columbia Gulf Transmission Co.*, 467 F. Supp. 2d 676, 692 (E.D. La. 2006) (holding that oil and gas pipeline and exploration companies did not have a duty to restore wetlands); Karen Brooks, *Judge Dismisses Louisiana Wetlands Suit Against Big Oil Firms*, Reuters (Feb. 17, 2015), <https://www.reuters.com/article/usa-louisiana-wetlandslawsuit/judge-dismisses-louisiana-wetlands-suit-against-big-oil-firms-idUSL1N0VR0G120150217>.

to have—in accelerating coastal degradation in Louisiana makes dependence on the success of the industry to fund coastal restoration efforts misguided and counterproductive.²⁴

State leadership is actively pursuing other more reliable funding options to fill the void that will be left by the impending expiration of Deepwater Horizon money. One congressional proposal would amend GOMESA to establish a federal revenue-sharing program for offshore wind energy operations modeled after the oil and gas revenues program.²⁵ Diversifying federal revenue-sharing programs to include alternative energy sources provides more assurance of future coastal funding. Additionally, the production and consumption of wind energy does not inflict the same directly harmful impacts on coastal vitality as fossil fuel use.²⁶ However, this funding source alone could not fully replace Deepwater Horizon settlement funds. Instead, it speaks to the nature of alternative funding sources that the state is pursuing; namely, sources that are (1) more reliable in the face of market forces and geopolitical tensions and (2) more closely aligned with the overarching interests of the state’s coastal restoration program that the money is ultimately supporting. Developing and selling blue carbon credits presents one coastal financing option by which the state could fund future coastal restoration projects *with* coastal restoration projects.

III. BLUE CARBON OVERVIEW

Blue carbon refers to atmospheric carbon that is captured in the soil and vegetation of marine and coastal ecosystems.²⁷ Thus, *blue carbon ecosystems* denote the environments that

²⁴ See Houck, *supra* note 21.

²⁵ H.B. 99, 2023 Leg., Reg. Sess. (La. 2023).

²⁶ Although, the fossil fuel industry is reportedly eyeing offshore wind power as a means for developing green hydrogen to offset carbon emissions. Terry L. Jones & Pam Radtke, *How Ocean Wind Power Could Help the US Fossil Fuel Industry*, The Guardian (Dec. 30, 2022, 6:00 AM), <https://www.theguardian.com/environment/2022/dec/30/how-ocean-wind-power-could-help-the-oil-industry>.

²⁷ Laura Zinke, *The Colours of Carbon*, NATURE REVS. EARTH & ENV'T 141, 141 (2020). Color-based descriptions of carbon can be based on the carbon’s functions (black and brown), attributes (red), or locations (blue, green, and teal). *Id.*

contain blue carbon, such as mangroves, salt marshes, and seagrasses in coastal wetlands.²⁸ Promoting development of coastal blue carbon ecosystems is particularly valuable because they offer many climate adaptation benefits beyond those provided by oceanic blue carbon, teal carbon (stored in inland freshwater wetlands), or green carbon (stored in terrestrial forests).²⁹ For example, estuaries improve water quality and are essential habitats for sustaining biodiversity.³⁰ Additionally, coastal wetlands support tourism, recreation, and aquaculture, and build resilience against storms and rising seas.³¹

Coastal blue carbon is also an incredibly powerful tool for climate mitigation and greenhouse gas reduction efforts. Studies estimate that nearly half of the carbon accumulated each year in marine sediments is located in coastal soil, despite coastal ecosystems representing only 0.2 percent of the ocean surface.³² Furthermore, despite comprising only 0.05 percent of plant biomass on land, these ecosystems store about the same amount of carbon per year as terrestrial forests.³³ These attributes make coastal ecosystems a critical climate change component in both a negative and positive sense; in other words, coastal habitats can serve as both sources and sinks for atmospheric carbon.³⁴ Coastal ecosystems are sources of carbon emissions when they are destroyed and degraded, consequently releasing blue carbon stored in soils and biomass into the atmosphere.³⁵ On the flipside, coastal ecosystems are exceptional

²⁸ JACOBS GROUP (AUSTRALIA) PTY LIMITED, CATCHMENT CARBON OFFSETS TRIAL, GOULBURN BROKEN CATCHMENT MANAGEMENT AUTHORITY: FINAL REPORT 14 (2018).

²⁹ Zinke, *supra* note 27, at 141.

³⁰ Lisa M. Wedding et al., *Embedding the Value of Coastal Ecosystem Services into Climate Change Adaptation Planning*, 10 PEERJ (2022).

³¹ *Id.*

³² Jeffrey J. Kelleway et al., *A National Approach to Greenhouse Gas Abatement Through Blue Carbon Management*, 63 GLOB. ENV'T CHANGE 1, 2 (2020) (internal citations omitted).

³³ C. NELLEMAN ET AL., BLUE CARBON: THE ROLE OF HEALTH OCEANS IN BINDING CARBON 6 (2010).

³⁴ Justine Bell-James, *Developing a Framework for 'Blue Carbon' in Australia: Legal Policy Considerations*, 39 UNSW L Journal 1583 (2016), available at <http://www.austlii.edu.au/au/journals/UNSWLJ/2016/60.html>. See also Rattan Lal & David Pimentel, *Soil Erosion: A Carbon Sink or Source*, 319 SCI. 1040 (2008).

³⁵ Lal & Pimentel, *supra* note 34.

carbon sinks both in the capacity and longevity of their carbon storage potential, capable of storing carbon over millennial timescales.³⁶

The Louisiana 2021 Greenhouse Gas Inventory noted that, “[s]ince 2012, all land uses have annually contributed to around a negative 35 Mt of emissions. To put this into perspective, all of Louisiana’s land use creates a carbon sink comparable to cover all the emissions from the state’s power generation sector.”³⁷ Therefore, while not a replacement for emission reductions, the protection of coastal ecosystems presents an opportunity for states to decrease their net greenhouse gas emissions where making additional cuts to releases is expensive or infeasible in the short-term.³⁸ Ecosystem services markets are an increasingly popular way to incentivize carbon emission reductions.³⁹ Yet, despite scientists and decisionmakers at all levels of governance acknowledging the important potential of blue carbon for years, it has historically been difficult to incorporate blue carbon into markets.⁴⁰ This is likely a consequence of lack of scientific understanding, public mistrust, and political will. However, the tides may be turning.

a. Blue carbon credits

In general, one carbon credit or offset is equal to one metric ton of carbon dioxide.⁴¹ That value is firm, but how much carbon a project is worth depends on the crediting standard and methodology applied. Credit standards provide “quality assurance for carbon offset generation.

³⁶ Restore Am.’s Estuaries, *Carbon Markets and Standards*, <https://estuaries.org/coastal-blue-carbon/carbon-markets-and-standards/> (last visited Apr. 21, 2023).

³⁷ DAVID E. DISMUKES, LOUISIANA 2021 GREENHOUSE GAS INVENTORY 16 (2021).

³⁸ See Steven A. Kennett et al., *Property Rights and the Legal Framework for Carbon Sequestration on Agricultural Land*, 37 OTTAWA L. REV. 171, 172 (2006) (“While carbon sequestration is no substitute for aggressive efforts to reduce total GHG emissions from fossil fuel combustion, sinks-based offsets may offer a cost-effective means to assist . . . countries in bringing their net emissions within prescribed limits during the transition to a less carbon-intensive economy.”).

³⁹ James Salzman et al., *The Global Status and Trends of Payments for Ecosystem Services*, 1 NATURE SUSTAINABILITY 136, 136 (2018).

⁴⁰ See, e.g., JACOBS GROUP (AUSTRALIA) PTY LIMITED, *supra* note 28, at 23 (noting that as of 2018 there were “no valid methodologies for generating certified freshwater/inland blue carbon offsets”).

⁴¹ Restore Am.’s Estuaries, *supra* note 36.

Standards set the requirements for greenhouse gas accounting, project validation, and the development of methodologies (protocols) for specific project activities (e.g., forestation, wetland restoration, etc.).”⁴² Methodologies can range in scope in relation to the ecosystem type, the ecosystem service, or the geographic region. Each variant has advantages and drawbacks depending on the project specifics and intention behind implementation. Instead, the strength of a standard largely depends on the regulations it employs to ensure credit reliability and effectiveness.

i. Credits as market mechanisms

Carbon credits are frequently criticized for providing a false and unverifiable solution to atmospheric emissions by perpetuating a “myth of neutrality.”⁴³ This opposition is most appropriate when credits are viewed as emissions offset mechanisms instead of incentives for optimizing the sequestration potential of restoration projects. Nonetheless, to ensure the integrity of the process, crediting standards employ eligibility criteria for projects. While the standards vary by methodology, one indispensable element of a reliable credit is *additionality*.

Additionality is satisfied only when the ecosystem service would not have occurred in the absence of the incentive created by the credit.⁴⁴ This can be boiled down to a two-part “but-for” assessment: (1) but-for this payment, would this project have occurred? and (2) but-for this project, would this carbon have been sequestered?⁴⁵ For example, additionality would not be satisfied where a company whose business activities inherently result in no carbon emissions sells an offset credit to a company that wants to emit more than it is permitted. There, the first

⁴² *Id.*

⁴³ LAWRENCE BAXTER ET AL., THE MYTH OF CARBON OFFSETS 13 (2021).

⁴⁴ THE INTEGRITY COUNCIL FOR THE VOLUNTARY CARBON MKT., PART 2: CORE CARBON PRINCIPLES (2022).

⁴⁵ See Christine Cadigan & Nathan Truitt, *Determining a True Carbon Benefit Part 1: Additionality*, American Forest Foundation (April 13, 2021), <https://www.forestfoundation.org/why-we-do-it/family-forest-blog/determining-a-true-carbon-benefit-part-1-additionality/>.

company would not have emitted regardless of the credit, so the purchase and exchange of the credit did nothing to reduce emissions. This scenario plainly illustrates additionality because emissions are either withheld or not.

However, additionality can become more muddled in a blue carbon system because these ecosystems retain carbon whether it is compensated with a credit or not. Accordingly, many blue carbon credit models have adopted a formulation of additionality that assesses what project activities or amount of sequestration is “beyond business as usual.”⁴⁶ This allows for an evaluation of what part of the ecosystem health and development can be attributed to a specific credit.

ii. Credits as property

There remains considerable debate about the property classification of carbon rights. An in-depth discussion of this subject is beyond the scope of this paper as it applies generally to carbon markets and is not specific to the Louisiana government’s ability or extent of opportunity to use blue carbon as a coastal financing tool. However, it is important to at least skim the surface because the law’s relative silence on the matter is demonstrative of the complexities of integrating a blue carbon market into existing law and because the characterization could have significant ramifications on the development, ownership, and transfer of rights in naturally sequestered carbon.

One problem is that the term *carbon rights* may seem straightforward, but in fact encompasses a broad array of accounting mechanisms. For example, the relevant inquiry for carbon capture and sequestration through subsurface injection (“CCS”) is over the ownership of

⁴⁶ See, e.g., TerraCarbon, *Evaluating Blue Carbon Potential* [PowerPoint slides] (2018), available at https://estuaries.org/wp-content/uploads/2018/08/SSettelmyer_Evaluating-Blue-Carbon-Potential.pdf.

geologic pore space.⁴⁷ In other words, insofar as the absence of a substance or a void has value, should it be treated in the same way as the presence of a mineral, which is the property of the surface landowner unless the rights are severed?⁴⁸ This differs from carbon allowances in cap-and-trade models which act as tradable permits to release emissions. Implementing regulations for these markets generally strip allowances of property right status.⁴⁹ Neither of these variants of carbon rights accurately reflect what is at issue in the case of blue carbon credits.

Even within the umbrella of natural sequestration, there are several mechanisms and options which each evoke different analogies within existing property law regimes and raise questions of whether blue carbon credits are real property, personal property, public property, mineral rights, or something else entirely.⁵⁰ For example, a baseline distinction exists between credits for sequestration potential of land and credits for the protection or retention of carbon which is already sequestered, as “[t]he former is a potential ‘product’ or value of the land; the latter is an existing attribute or product of the land.”⁵¹ In other words, even as narrow a category as *blue carbon credits*, let alone *natural sequestration credits*, is likely too broad to accurately discuss the property law implications of carbon trading. Nonetheless, in 2006, the U.S. District Court for the Western District of Louisiana addressed the property law status of the right to

⁴⁷ See Keith B. Hall et al., *Issues Pertinent to the Surface, Mineral Leases and Mineral Servitudes* [PowerPoint slides] (Feb. 5, 2021), available at <https://law.lsu.edu/jelrsymposium/files/2021/02/Martin-Ottinger-Hall.pdf>.

⁴⁸ *Id.*

⁴⁹ In California, carbon offsets are legally defined as compliance instruments and therefore “do[] not constitute property or a property right.” Cal. Code Regs. Tit. 17 § 95802(a)(12); § 95820(c). Similarly, the model rules for the Regional Greenhouse Gas Initiative (RGGI), a cooperative, market-based effort between several northeast and mid-Atlantic states, declares that “[a] CO₂ allowance under the CO₂ Budget Trading Program does not constitute a property right.” Reg’l Greenhouse Gas Initiative, Model Rule: CO₂ Budget Trading Program, XX-1.5(c)(9) (2018). Several of the RGGI states have accordingly adopted this provision. These regulations were passed to implement the mandatory cap-and-trade programs in California and the RGGI states; similar guidance does not exist in states that only support voluntary markets, which is likely a more relevant consideration for Louisiana.

⁵⁰ Kennett et al., *supra* note 38, at 181. This paper will not discuss the public property perspective because the widespread emergence and general acceptance of carbon markets eschews the likelihood that this view will obtain meaningful support at this point. *See id.*

⁵¹ *Id.* at 178.

develop credits for naturally sequestered carbon.⁵² In *Roseland Plantation, L.L.C. v. U.S. Fish & Wildlife Service*, the government had a conservation easement over the plaintiff's land and tried to transfer the carbon credits generated from that land to a third party.⁵³ The court held that “the right to report, transfer, or sell carbon credits is a part of the bundle of rights associated with property ownership.”⁵⁴

The inclusion of carbon credits in the bundle of associated property rights distinguishes carbon rights from other tradable rights in natural resources such as water rights under the doctrine of prior appropriation.⁵⁵ However, a closer comparison may exist between carbon rights and groundwater as it is also subsurface and less transitory than surface water. Groundwater management is covered by the Louisiana Mineral Code, which revives the idea that natural carbon sequestration and sequestration potential should be treated as a mineral right, as has been suggested for subsurface pore space targeted for CCS.⁵⁶ However, the Louisiana Mineral Code generally governs “fugitive minerals.”⁵⁷ As the Louisiana Supreme Court accepted in 1913,

“Water and oil, . . . and still more strongly gas, may be classed by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and tendency to escape without the volition of the owner. Their ‘fugitive and wandering existence within the limits of a particular tract is uncertain.’”⁵⁸

⁵² *Roseland Plantation, L.L.C. v. U.S. Fish & Wildlife Serv.*, 2006 WL 8420578 (W.D. La. 2006).

⁵³ *Id.* at *1.

⁵⁴ *Id.* at *3.

⁵⁵ *See, e.g.*, *Hydro Resources Corp. v. Gray*, 173 P.3d 749, 754-55 (2007) (“The central feature of this doctrine is the separate and distinct nature of a water right from ownership of the land. Thus, ‘a water right is not an automatic stick in the bundle of rights a landowner receives upon purchasing even a fee interest in land.’”).

⁵⁶ LA. REV. STAT. § 31:4 (2023); *see, e.g.*, Hall et al., *supra* note 47.

⁵⁷ LA. REV. STAT. § 31:6 (2023).

⁵⁸ *Rives v. Gulf Refining Co. of Louisiana*, 62 So. 623, 625 (La. 1913) (quoting *Westmore & Cambria Nat. Gas Co. v. De Witt*, 130 Pa. 235, 249 (Pa. 1889) (quoting *Brown v. Vandergrift*, 80 Pa. 142, 147 (1875))).

Neither the carbon sequestered in land nor the potential for land to sequester carbon typically evoke characterizations of fugitive or wandering. As such, the significance of this common attribute in determining the jurisdictional scope of the Louisiana Mineral Code would presumably exclude blue carbon credits from classification as mineral rights.

Furthermore, given that blue carbon is naturally sequestered in vegetation and roots that are grown and maintained on property instead of extracted, it may be prudent to align blue carbon credits with the category of “unharvested crops or ungathered fruits of trees.”⁵⁹ Article 453 of the Louisiana Civil Code dictates that such crops and fruits are “component parts of a tract of land when they belong to the owner of the ground.”⁶⁰ Although the analogy may be inexact, if groundwater can be compared to wild animals, blue carbon rights can certainly be compared to ungathered crops.

Finally, there is reason to support categorizing blue carbon rights outside of property law all together. After all, blue carbon as a physical compound is a naturally-occurring biological component of coastal ecosystems; as such, blue carbon credits derive not from the mere existence of the carbon, but from the assurance that a project developer will advance and maintain those ecosystems. Therefore, at least the initial verification of credits more closely resembles a contract or security interest.

Ultimately, the classification of carbon rights, including blue carbon rights, as property or non-property is under-addressed by the legal community and will likely receive increased attention as carbon markets become more commonplace. Several possibilities exist, most of which are approximate and untested. Therefore, despite the failure to distinguish between

⁵⁹ LA. CIV. CODE art. 453 (2023).

⁶⁰ *Id.* Notably, while the fruits themselves are corporeal things, the rights and actions that apply to them, “such as personal servitudes established on immovables, predial servitudes, mineral rights, and petitory or possessory actions,” are incorporeal things. *Id.* art. 470.

sequestered carbon and sequestration potential in *Roseland Plantation, L.L.C.*, and the court’s acknowledgment that the development of those rights was purely speculative at the time of the decision, the inclusion of carbon rights in the bundle of real property rights is the clearest guidance available on how blue carbon credits would be treated in Louisiana.

b. Blue carbon markets

Broadly speaking, there are two types of frameworks for carbon markets: compliance (also called mandatory or compulsory) and voluntary.⁶¹ Compliance markets are governed by mandatory regulations. There are several examples of compliance markets in the United States for varying natural resources, such as conservation banking for threatened and endangered species and water quality trading for water quality.⁶² There is not currently a compliance market within the United States that accepts blue carbon credits. The closest is mitigation banking for wetlands and streams under Section 404 of the Clean Water Act and the greenhouse gas emissions reduction programs in California, Washington, and the northeastern states.⁶³

In contrast, the voluntary market exists to facilitate the exchange of credits between developers and buyers even where it is not required by law. Instead, traders opt-in to the market and are primarily driven by market forces.⁶⁴ There is no centralized voluntary carbon market; instead, project developers use methodologies credited by standard setters to register credits which they then sell directly to buyers or through brokers, retailers, or an exchange.⁶⁵ Blue carbon credits are currently traded under existing methodologies on the voluntary market.

⁶¹ Restore Am.’s Estuaries, *supra* note 36.

⁶² ADAM HARMS, FEASIBILITY STUDY: BLUE CARBON FINANCE IN LOUISIANA’S DELTAIC PLAIN (2018).

⁶³ See 33 U.S.C. § 1344; CAL. CODE REGS. tit. 17, § 95800 et seq. (2019); WASH. REV. CODE § 70A.65 (2021); Memorandum of Understanding Regarding Regional Greenhouse Gas Initiative, CT-DE-ME-NH-NJ-NY-VT-MA-RI, Dec. 20, 2005.

⁶⁴ See McKinsey & Company, *The Path to Net Zero: Investing in Carbon Markets* (Jan. 26, 2022), <https://www.mckinsey.com/featured-insights/future-of-asia/the-path-to-net-zero-investing-in-carbon-markets>.

⁶⁵ Ingrid York & Seth Kerschner, *Voluntary Carbon Markets: A Blueprint*, White & Case (Nov. 13, 2020), <https://www.whitecase.com/insight-alert/voluntary-carbon-markets-blueprint>.

Numerous voluntary standards exist to dictate the rules, procedures, and methodologies for verifying blue carbon projects, such as the Verified Carbon Standard (VCS), American Carbon Registry (ACR), Climate Action Reserve (CAR), and Gold Standard. Some blue carbon methodologies, such as the *VCS Tidal Wetland and Seagrass Restoration Methodology*, are relatively broad in scope.⁶⁶ A broader methodology increases the prospect of a larger and more widespread pool of developers and buyers. Furthermore, utilizing international carbon credit standards may help inspire investor confidence in the adequacy of the credit valuation which otherwise can pose a large challenge.⁶⁷ For this reason, the VCS methodology was selected for a blue carbon project on state-owned land in Virginia.⁶⁸

However, broader methodologies may not account for the regional nuances of unique coastal ecosystems. This is significant because several of coastal Louisiana's most productive blue carbon ecosystems such as cypress tupelo forests and freshwater marshes are not as prevalent around the world and thus insufficiently recognized in broader methodologies.⁶⁹ In some cases, the benefits provided by applying a more regionally-specific methodology are worth limiting the scope of developers and buyers. For example, California operates one of the only mandatory carbon offset programs in the United States.⁷⁰ While blue carbon credits are not currently an available option, California has explored the possibility. After considering three methodologies certified under existing standards, the state determined that the ACR's *Restoration of California Deltaic and Coastal Wetlands Methodology* was most applicable,

⁶⁶ See VERIFIED CARBON STANDARD, VM0033, METHODOLOGY FOR TIDAL WETLAND AND SEAGRASS RESTORATION (2021).

⁶⁷ VA. CARBON SEQUESTRATION TASK FORCE, NATURAL CARBON SEQUESTRATION IN THE COMMONWEALTH 33 (2022).

⁶⁸ *Id.*; VCS, Project 2360, Virginia Coast Reserve Seagrass Restoration Project, <https://registry.verra.org/app/projectDetail/VCS/2360> (last visited Apr. 17, 2023).

⁶⁹ SARAH K. MACK ET AL., CARBON MARKET OPPORTUNITIES FOR LOUISIANA'S COASTAL WETLANDS (2015).

⁷⁰ See discussion *infra* Part V.

selected over methodologies accredited by CAR or VCS.⁷¹ In 2012, the ACR also certified a methodology developed by New Orleans-based Tierra Resources LLC that accounted for unique opportunities of Gulf Coast and Mississippi Delta coastal ecosystems in evaluating blue carbon potential.⁷² However, that methodology—*Restoration of Degraded Deltaic Wetlands of the Mississippi Delta v2.0*—is currently “inactive and ineligible for crediting new projects . . . [as] ACR has determined that the methodology requires updates to measurement, monitoring, reporting and verification requirement to be consistent with the current version of the ACR Standard.”⁷³

There are also methodologies which aim to encapsulate more of the services which blue carbon ecosystems provide.⁷⁴ For example, The Nature Conservancy is developing a Blue Carbon Resilience Credit which “recogni[zes] the benefits of protecting and restoring these habitats to support coastal adaptation to sea level rise through, for example flood reduction.”⁷⁵ Although no markets have certified this credit, it may capture the complete benefits of blue carbon more fully than any others. Not to mention, creating credible ways to evaluate and incentivize different benefits and dimensions of blue carbon ecosystems increases the likelihood of satisfying additionality standards. In other words, a project which is statutorily mandated for

⁷¹ CAL. AIR RES. BD., COMPLIANCE OFFSETS PROTOCOL TASK FORCE INITIAL DRAFT RECOMMENDATIONS (2020).

⁷² Press Release, Tierra Res., LLC, *American Carbon Registry Approves First Carbon Offset Methodology for Emission Reductions from Deltaic Wetland Restoration*, (Sept. 18, 2012), <https://tierraresourcesllc.com/wp-content/uploads/2013/12/Official-American-Carbon-Registry-Release.pdf>.

⁷³ Am. Carbon Registry, *INACTIVE: Restoration of Degraded Wetlands of the Mississippi Delta*, <https://americancarbonregistry.org/carbon-accounting/standards-methodologies/INACTIVE-restoration-of-degraded-deltaic-wetlands-of-the-mississippi-delta> (last visited Apr. 12, 2023).

⁷⁴ See, e.g., BlueCarbon S2C, *Co-Benefit Credits*, <https://www.bluecarbons2c.com/what-we-do/co-benefit-credits/> (last visited Apr. 21, 2023).

⁷⁵ Ocean Risk and Resilience Action All., *Capturing the Value of Coastal Wetlands through Blue Carbon Resilience Credits*, <https://oceanriskalliance.org/project/capturing-the-value-of-coastal-wetlands-through-blue-carbon-resilience-credits/> (last visited Apr. 17, 2023). See also BCARBON, BCARBON LIVING SHORELINE BLUE CARBON PROTOCOL, VERSION 1.0, at 4 (2023) (“The Protocol also introduces important ‘co-benefits’ of Living Shoreline projects such as habitat protection and increased biodiversity. In future updates to this Protocol, BCarbon will continue to assess how best to incorporate co-benefits into the crediting process.”).

carbon sequestration would not meet additionality requirements; however, if actions were taken beyond business-as-usual to optimize benefits such as storm protection, water quality, or wildlife habitat, a developer may be able to verify credits for those extra efforts.

c. Blue carbon objectives in the Louisiana Climate Action Plan

In 2022, Louisiana released the first state-level Climate Action Plan in the Gulf South.⁷⁶ The Louisiana Climate Action Plan (LCAP) outlines twenty-eight strategies and eighty-four specific actions to reduce the state’s contributions to greenhouse gas emissions.⁷⁷ Two of these actions involve blue carbon objectives. First, Action 15.2 sets the intention to “[q]ualify and monitor the potential coastal blue carbon in Louisiana habitats and Coastal Master Plan projects.”⁷⁸ A 2015 study determined that coastal wetland restoration in Louisiana has the potential to produce over 1.8 million offsets per year, or almost ninety-two million offsets over fifty years.⁷⁹ This would equate to between \$400 million and \$1 billion depending on the credit price.⁸⁰ Since that time, methodologies have been verified that also account for conservation of blue carbon ecosystems, not simply restoration, potentially expanding the available capital contained in Louisiana’s coastal soils and vegetation.⁸¹ An updated study is underway to quantify how much carbon is already sequestered by the state’s coastal habitats and to develop a methodology for calculating the carbon sequestration benefits and costs of coastal restoration projects.⁸² This study will include projections of how the coast’s carbon sink capacity will

⁷⁶ Press Release, Off. Of the Governor, *Louisiana Approves First Climate Action Plan in the Gulf South*, (Jan. 31, 2022), <https://gov.louisiana.gov/index.cfm/newsroom/detail/3551>.

⁷⁷ LOUISIANA CLIMATE ACTION PLAN, *supra* note 8.

⁷⁸ *Id.* at 91.

⁷⁹ MACK ET AL., *supra* note 69.

⁸⁰ *Id.*

⁸¹ See BCARBON, BCARBON LIVING SHORELINE BLUE CARBON PROTOCOL, VERSION 1.0, at 4 (2023). Notably, Louisiana Revised Statutes 9:1103, discussed *infra* Part IV, contemplates this option in referencing “prevention of emission of greenhouse gases [] directly related to the avoided conversion or avoided loss” of wetlands. LA. REV. STAT. § 9:1103(b) (2023).

⁸² Halle Parker, *How Much Carbon Can Louisiana’s Wetlands Hold? New Study Aims to Find Out*, Nola.com (Feb. 22, 2021), https://www.nola.com/news/environment/article_de8b98ac-721e-11eb-978e-5fa383005af2.html.

change in 2025, 2030, and 2050 and show different scenarios based on whether restoration projects proposed in the Coastal Master Plan are realized.⁸³

Second, Action 15.3 compels the state to “[d]evelop [a] crediting mechanism and market specific to blue carbon.”⁸⁴ The priority is seemingly to find or create a system that accurately values the unique ecosystem of coastal Louisiana. However, it also mentions that “[t]his credit and market would attempt to match the local *and global* demand for natural carbon credits”⁸⁵ Therefore, the intent does not appear to be to restrict offsets to Louisiana buyers. In that case, the methodology created or selected should comport with markets that reach beyond Louisiana.

As discussed above, Louisiana could opt to implement or join a compliance market or participate in or facilitate a voluntary market. Compliance markets may be better for ensuring the state government receives profits as in the existing compliance markets in the United States, the member states all receive revenue from allowance auctions.⁸⁶ However, a compliance market is likely less attractive to Louisiana because it generally requires capping emissions, a move that would not be well-received by industry in Louisiana.⁸⁷ The LCAP “tasks Louisiana’s DEQ [with] explor[ing] joining a multi-state carbon pricing system,” such as a cap-and-trade program.⁸⁸ Yet, the 2023 LCAP Annual Report did not suggest any progress on this action.⁸⁹

⁸³ *Id.*

⁸⁴ LOUISIANA CLIMATE ACTION PLAN, *supra* note 8, at 91.

⁸⁵ *Id.* (emphasis added).

⁸⁶ Reg’l Greenhouse Gas Initiative, *About Auctions*, <https://www.rggi.org/auctions/about-auctions> (last visited Apr. 17, 2023) (“Proceeds from the auctions are returned to the RGGI states and have been primarily invested in consumer benefit programs: energy efficiency, renewable energy, direct energy bill assistance, and other greenhouse gas reduction programs.”). *See also* discussion *infra* Part V.

⁸⁷ *See, e.g.,* Steve Scalise, *Scalise: Cap-and-Trade Hinders Job Growth*, CQ Roll Call (Feb. 4, 2010, 2:09 PM), <https://rollcall.com/2010/02/04/scalise-cap-and-trade-hinders-job-growth/>; News Release, La. Dep’t of Agric. & Forestry, *Strain Against Obama’s “Cap and Trade” Energy Policy* (Oct. 27, 2009), <https://www.ldaf.state.la.us/news/strain-against-obamas-cap-and-trade-energy-policy/>.

⁸⁸ LOUISIANA CLIMATE ACTION PLAN, *supra* note 8, at 91.

⁸⁹ LA. CLIMATE INITIATIVES TASK FORCE, ANNUAL REPORT (2023).

Otherwise, Louisiana could either utilize existing voluntary market frameworks or develop an entity or program to work as a broker or exchange in order to facilitate the sale of blue carbon credits it develops.

As for developing a crediting mechanism, the innovation of blue carbon credits that value benefits beyond emissions offsets demonstrates that, while many still consider blue carbon to be in its infancy, Louisiana is not entering this domain on the ground floor. Many approaches to evaluating sequestration potential exist that reliably reflect additionality of blue carbon ecosystem development projects. Therefore, Louisiana would not necessarily have to develop a methodology from scratch. Even if it prefers to utilize a regionally-specific methodology, it could use the inactive *Restoration of Degraded Deltaic Wetlands of the Mississippi Delta v2.0* methodology as a blueprint or jumping off point. However, based on additionality issues specific to State development of blue carbon credits, the State may benefit from developing or commissioning the development of a methodology specific to its projects.

IV. BLUE CARBON CREDITS AS COASTAL FINANCING

The 2023 LCAP Annual Report noted that “the blue carbon market could provide a critical source of funding for continued implementation of Coastal Master Plan projects in the future.”⁹⁰ The Coastal Protection and Restoration Authority (CPRA) that administers the Coastal Master Plan expressed its intention to uncover new funding streams, with its eye on the returns of a blue carbon market, even prior to the release of the LCAP.⁹¹ If fully realized, Louisiana’s wetlands may hold up to \$1.6 billion in coastal funding.⁹² However, a blue carbon market could

⁹⁰ *Id.*

⁹¹ Rick Raynie, Guerry Holm, & Brian Perez, *Blue Carbon in Louisiana: Overview of State Efforts* [PowerPoint slides] (Jun. 28, 2016), <https://estuaries.org/wp-content/uploads/2018/08/Raynie-Final-Carbon-Presentation-wo-notes.pdf>.

⁹² MACK ET AL., *supra* note 69, at 5.

only contribute to the replacement of Deepwater Horizon funding if the State can monetarily benefit from blue carbon project development either as a credit seller or as designated beneficiary of market revenues.

In 2010, the Louisiana Legislature passed a law seeking to increase the amount of revenue coastal carbon development could generate for the State. Louisiana Revised Statutes 9:1103 states:

Any monetary compensation derived from the sequestration of carbon on the surface of land or water bottoms through biological processes, including but not limited to the growth of plants or animals or other natural or induced processes, is the property of the owner of the land or water bottom upon which such sequestration occurs, unless (a) contractually assigned to another party; or (b) the sequestration, uptake, or prevention of emission of greenhouse gases is directly related to the avoided conversion or avoided loss attributable to a project carried out or sponsored by the Coastal Protection and Restoration Authority including use of public resources as provided in R.S. 49:214.5.4. In such instance, the monetary compensation is the property of the state.⁹³

Furthermore, as “[r]evenues derived from integrated coastal protection programs, projects, or activities,” this compensation would be reinvested into the coastal program.⁹⁴ While these provisions position Louisiana ahead of most other states in readiness to benefit from carbon market participation, they leave several legal questions unresolved. Principally, not all carbon credits result in monetary compensation. For example, in some instances, corporations or governments generate credits to verify progress towards net-zero goals. Louisiana Revised

⁹³ LA. REV. STAT. § 9:1103 (2023).

⁹⁴ LA. REV. STAT. § 49:214.5.4(F) (2023).

Statutes 3:1221 generally specifies the Louisiana Department of Agriculture and Forestry as the designated state agency for participation in carbon sequestration actions while noting that its provisions “do not affect the authority of the Louisiana Department of Natural Resources or benefits, credits, or offsets derived from projects approved and undertaken by the Coastal Protection and Restoration Authority”; however, it does not identify the origin or extent of that authority.⁹⁵ Therefore, until these uncertainties are addressed, the State’s role as a coastal landowner and manager of public resources remain critically important.

The State’s success as a project developer and credit seller depends on several key determinations, all of which face challenging legal barriers. First, the typical barriers to project accreditation such as additionality could in some respects be more challenging to overcome for State projects on public lands that receive government funding. Additionally, the success of a State as a carbon market participant⁹⁶ hinges on issues of property law and the authorities and duties of a State as sovereign to manage public resources, also known as the public trust doctrine. The first critical determination is whether and how much of the state’s blue carbon potential could be developed through state projects or exists on state-owned property. The second determination is the extent to which that property is owned in trust and whether that impacts the State’s ability to sell credits.

a. Potential barriers for state-funded projects

The State would not be exempt from satisfying the same threshold requirements as every private project developer seeking accreditation, in fact it may even be at a disadvantage. In this regard, the largest barrier to Louisiana’s plan is that State-managed coastal restoration projects are frequently funded by congressional appropriations or other government financing. If this

⁹⁵ LA. REV. STAT. § 3:1221 (2023).

⁹⁶ This is not related to the dormant commerce clause concept of “market participant.”

funding would suffice to materialize the project regardless of revenue from carbon credits, then additionality is ostensibly destroyed.⁹⁷ While this presents a significant barrier, it is not necessarily insuperable.

First, one perspective reported by Restore America’s Estuaries (RAE) contends that, according to standards set by the *VCS Tidal Wetland and Seagrass Restoration Methodology*, “all new tidal wetland restoration in the U.S. that is not otherwise required by law or regulation is additional.”⁹⁸ RAE reasoned “that the opportunity and need for restoration in the U.S. is so much greater than the nation’s ability to fund it, and it is occurring at very low levels compared to restoration goals, that the addition of carbon finance to the funding mix can catalyze new restoration and improve the quantity and quality of restoration.”⁹⁹ Where blue carbon projects serve as coastal financing, credits would certainly “catalyze new restoration” because revenues would be intended to specifically fund future restoration projects. Therefore, Louisiana may be at an advantage in meeting this interpretation of additionality. Nonetheless, to ensure the projects “fall outside of the required participation, any authorizing statutes may have to frame its language in non-mandatory terms, i.e. ‘may’ participate rather than ‘shall’ participate.”¹⁰⁰ Furthermore, RAE’s statement was based on VCS’s threshold standards and an examination of data for tidal wetland restoration throughout the United States. Louisiana would likely need to compile data on state-specific restoration rates (which could likely also include potential

⁹⁷ See, e.g., U.S. Dep’t of Agric. Forest Serv., *Carbon Capital Fund FAQs*, https://www.fs.usda.gov/ecosystems/services/Carbon_Capital_Fund/faqs (last visited Apr. 21, 2023) (“Projects funded by congressional appropriations or other donations do not qualify as carbon offsets”).

⁹⁸ RESTORE AM.’S ESTUARIES, *COASTAL BLUE CARBON IN PRACTICE: A MANUAL FOR USING THE VCS METHODOLOGY FOR TIDAL WETLAND AND SEAGRASS RESTORATION* VM0033 46 (2015).

⁹⁹ *Id.*

¹⁰⁰ MICHAEL JORDAN & IMANI PRICE, *EELGRASS IN VIRGINIA: ASSESSING OPPORTUNITIES AND OBSTACLES FOR BLUE CARBON CREDITS* 13 (2019) (providing recommendations for Virginia state agency involvement in blue carbon markets).

wetlands loss in the absence of funding provided by credit revenues) and take these values into account when developing or adopting a methodology.

Second, the apprehension around applying ecosystem services credits to state-funded projects on publicly-owned land has also been directed towards the compensatory wetlands mitigation program under the CWA.¹⁰¹ However, an Environmental Protection Agency and U.S. Army Corps of Engineers rule refuted this skepticism, specifying that “[a]s long as mitigation banks or in-lieu fee projects established on public lands provide environmental benefits over and above what normal management activities provide, there should be no conflict.”¹⁰² The concept of using the credits to manage land “over and above” what would be done otherwise is referenced throughout the rule and aligns with the business-as-usual standard for blue carbon additionality.¹⁰³ Therefore, because compensatory mitigation systems—particularly mitigation banks—operate similarly to carbon markets, and a concept adjacent to additionality has been satisfied even when siting government-funded projects on public lands, one can deduce that circumstances may also allow government-funded projects to satisfy carbon market requirements.

Finally, government-funded projects present an additionality issue mainly because financial additionality is the primary form utilized by most project developers, but it is not the only form. The Integrity Council for the Voluntary Carbon Market (ICVCM) recommends a two-step process for verifying additionality: (1) assess the overall likelihood of additionality of the type of mitigation activity, and (2) assess the rigor and thoroughness of the carbon-crediting

¹⁰¹ Compensatory Mitigation for Losses of Aquatic Resources, 73 Fed. Reg. 19,594, 19,632 (Apr. 10, 2008).

¹⁰² *Id.* at 19,649.

¹⁰³ *See, e.g., id.* at 19,632:

We believe it is appropriate, in some instances, to site compensatory mitigation projects on public lands, where they are consistent with the use and management of the public land, and the credits are based solely on aquatic resource functions provided by the compensatory mitigation project, over and above those provided by public programs already planned or in place.

program’s approaches to assessing additionality.¹⁰⁴ Furthermore, this assessment is intended to deliver an additionality likelihood assignment of “very high,” “medium,” or “insufficient.” This process illustrates that additionality is not a hard and fast science; even the most prominent bodies molding the proliferation of carbon markets present their findings as recommendations. Nor is additionality a clear black-and-white determination; it is evaluated on a spectrum based on numerous contributing factors. Thus, although the most common method of establishing additionality may be unavailable for State projects, Louisiana could explore other avenues to satisfying standard requirements.

A key stage in ICVCM’s additionality assessment involves identifying barriers—specifically non-financial barriers—to project implementation that could justify credit eligibility.¹⁰⁵ If credits are essential to overcoming any of these barriers, then additionality may be satisfied. Additionality guidance promulgated by BCarbon, a non-profit organized by Rice University’s Baker Institute for Public Policy that has created multiple carbon crediting methodologies and protocols, provides four example non-financial barriers that are relevant to additionality analyses:

1. Technological Barrier – If projects are using new or improved technologies that enhance land management, . . . these projects are considered additional.
2. Knowledge Barrier – The carbon project is providing technical assistance and training that allows a project participant to overcome a knowledge barrier that is widespread in the community.
3. Social Barrier – The carbon project incentivizes the adoption of a practice that has an existing social stigma or social barrier to adoption.

¹⁰⁴ THE INTEGRITY COUNCIL FOR THE VOLUNTARY CARBON MKT., PART 4: ASSESSMENT FRAMEWORK 45, 49 (2022).

¹⁰⁵ *Id.* at 47.

4. Market penetration – Project proponent demonstrates that project activity is not a common practice in the project geography region (<20% adoption rate).¹⁰⁶

Again, these are not provided as a comprehensive or exclusive list of barriers, and project developers are encouraged to submit innovative additionality concepts as they apply for accreditation.¹⁰⁷

Above all else, the essential and unwavering component of additionality is that it is measurable and verifiable.¹⁰⁸ Thus, if the State of Louisiana is willing to develop a reliable system of additionality criteria and ensure it provides measurable and verifiable support that its projects fulfill such requirements, additionality should be viewed as merely another hurdle, not an impassable obstacle, to State participation in a blue carbon market, even where projects receive government funding.

b. Potential barriers for projects on public lands

The billion-dollar tag for blue carbon potential on Louisiana’s coast may misrepresent the total available for state financing because the State would not be entitled to compensation for every blue carbon project in the coastal zone. Although subpart (b) of Louisiana Revised Statutes 9:1103 expands the possibilities for compensable credits, because of previously noted uncertainties regarding the property status of carbon rights and the state’s authority over CPRA-generated carbon credits, the state’s presence as a coastal landowner remains significant. Fortunately, the amount and nature of state-owned lands and the mechanisms available for adding to that collection are adequate to make the pursual of blue carbon credits as a state coastal financing tool a viable endeavor.

¹⁰⁶ BCARBON, BCARBON ADDITIONALITY GUIDANCE VERSION 1, AT 2 (2022).

¹⁰⁷ *Id.*

¹⁰⁸ *Id.*

i. Louisiana property law

Approximately eighty percent of land in coastal Louisiana is privately owned.¹⁰⁹ Of course, with a coastline as sprawling as Louisiana’s, even twenty percent of the land can generate significant profits.¹¹⁰ Moreover, blue carbon restoration or vegetated wetlands creation projects may occur on “land” which is less land than it is water.¹¹¹ In this sense, the state may possess a larger slice of the pie than the former statistic would indicate. Because ownership of the land in question provides the most assurance that credits could generate funds for reinvestment into the coastal program, the State’s ability to financially benefit from a blue carbon market is improved if it has retained ownership, has come into ownership, or has methods of acquiring ownership of property with blue carbon credit potential.

From the time of statehood, Louisiana has held title “to all [its] navigable waters and the soils under them.”¹¹² According to the federal equal footing doctrine, this title was “conferred not by Congress but by the Constitution itself.”¹¹³ As such, submerged bottoms of waterbodies which were navigable-in-fact at the time of statehood—including the sea, arms of the sea, lakes, and rivers—belong to the state, subject to conditions of the public trust doctrine, which is discussed in more detail below.¹¹⁴ Another large conveyance of lands between the federal government and Louisiana occurred courtesy of the Swamp Lands Grant Acts of 1849 and 1850.

¹⁰⁹ Sara Sneath, *A Conundrum: Who Owns Louisiana Land After It Washes Away?*, Nola.com (Feb. 4, 2020), https://www.nola.com/news/environment/article_a9c4d222-4381-11ea-ac9a-ff8b99383e6e.html.

¹¹⁰ Consider, for example, that Virginia’s state government recently decided it was worth it to produce blue carbon credits despite having a shoreline which is less than half of the length of Louisiana’s of which the Commonwealth owns only about 1 percent. *See* discussion *infra* subpart IV.c.; NOAA OFF. FOR COASTAL MGMT., *supra* note 7 (reporting a Virginia shoreline of 3,315 miles compared to Louisiana’s 7,721); Va.’s Coastal Wilds, *Accessing the Virginia Coast*, <https://vacoastalwilds.com/accessing-the-virginia-coast/> (last visited Apr. 21, 2023) (“In the diverse Virginia coastal zone, only one percent of the shoreline is publicly owned.”).

¹¹¹ *See, e.g.*, VCS, Project 2360, Virginia Coast Reserve Seagrass Restoration Project, <https://registry.verra.org/app/projectDetail/VCS/2360> (last visited Apr. 17, 2023); LA. COASTAL WETLANDS CONSERVATION AND RESTORATION TASK FORCE, TE-171, PORT FOURCHON MARSH CREATION (2022).

¹¹² *PPL Mont., LLC v. Mont.*, 565 U.S. 576, 590 (2012).

¹¹³ *Oregon ex rel. State Land Bd. v. Corvallis Sand & Gravel Co.*, 429 U.S. 363, 374 (1977).

¹¹⁴ *See* discussion *infra* subpart IV.b.ii.

As opposed to the water bottoms transferred upon statehood, the lands covered by these acts would be better classified as merely wet.¹¹⁵ These lands were not to be held by the State in trust for the benefit of the public, but sold to private landowners to raise construction costs for works necessary to drain the land and make it suitable for farming.¹¹⁶ The State has transferred most, if not all, of the lands received under the Swamp Lands Grant Acts.¹¹⁷ Furthermore, to the extent there is any such land remaining in state ownership, it is doubtful that it could be used for a purpose other than transfer to private individuals to raise money for drainage.

Article 450 of the Louisiana Civil Code provides that “the waters and bottoms of natural navigable water bodies, the territorial sea, and the seashore” are public things owned by the state.¹¹⁸ Thus, in theory, the State acquires ownership of one acre of land every 100 minutes.¹¹⁹ This value may be diminished through the statutory process of reclamation wherein private landowners may recover rights to property “lost through erosion, compaction, subsidence, or sea level rise”¹²⁰ If private landowners were reclaiming land with blue carbon credit potential, the true amount of property the State acquires for these projects as land transforms into water via sea-level rise, subsidence, and other natural processes would be smaller than the aforementioned figure. However, reclamation likely does not threaten the State’s ability to factor in new navigable water bottoms as property with potential to develop state-owned blue carbon credits because of the conception of carbon rights under property law discussed above and nuances of

¹¹⁵ KRISTEN M. HILFERTY, ET AL., RIGHTS, DUTIES, AND OPPORTUNITIES—COASTAL CONSERVATION, RESTORATION, AND PROTECTION IN A SHAPE-SHIFTING COAST 17-18 (2023) (an issue paper by the Tulane Institute on Water Resources Law & Policy).

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ LA. CIV. CODE art. 450 (2023).

¹¹⁹ Dan Swenson, *These Six Factors Explain Why Louisiana is Rapidly Losing Land; See Graphics*, Nola.com (May 21, 2021), https://www.nola.com/news/these-six-factors-explain-why-louisiana-is-rapidly-losing-land-see-graphics/article_59675b8c-bfbc-11eb-9602-47cf4c0429dc.html. See HILFERTY ET AL., *supra* note 115, at 9-13 for discussion of the definition of “navigable” and the implications of this term in Louisiana property law.

¹²⁰ LA. REV. STAT. § 41:1702(B)(1) (2023).

the statutory process. Louisiana Revised Statutes 41:1702 provides that reclamation may “include[s] all oil, gas, and mineral rights.”¹²¹ Thus, if carbon credits constitute mineral rights, they would presumably be reclaimable. However, as a part of the bundle of rights associated with property ownership, they likely are not subject to this provision.¹²² Furthermore, the statute simply allows landowners to submit an application for reclamation to the Louisiana Department of Natural Resources (DNR), but it is at the state’s discretion whether to grant the application.¹²³ Therefore, if reclamation by a private landowner would disrupt the State’s plans to develop a blue carbon project, it could deny the application.

CPRA projects are typically carried out with voluntary cooperation from landowners. However, if the State intends to fill a significant amount of the Deepwater Horizon-shaped void in its coastal funding with blue carbon credits, and to avoid conflicts over ownership of carbon rights, it may pursue the acquisition of lands additional to those previously discussed. Short of waiting for the sea to capture land thereby converting it to a state-owned navigable water bottom, the State may also be given or take private land. Private landowners may donate property to the state government, although not all state agencies are authorized to receive donations the same way. Which Louisiana agency may assume authority for developing or managing blue carbon credits in will be discussed in greater detail below,¹²⁴ but by way of example, CPRA’s statutorily defined functions and responsibilities allow it to “[a]ccept and use, in accordance with law, gifts, grants, bequests, endowments, or funds from any public or private source for purposes consistent with responsibilities and functions of the authority and take such actions as are

¹²¹ *Id.*

¹²² See discussion *supra* subpart III.a.ii.

¹²³ LA. REV. STAT. § 41:1702(C) (2023).

¹²⁴ See discussion *infra* subpart IV.c.

necessary to comply with any conditions required for such acceptance.”¹²⁵ Coastal restoration is undoubtedly included in the responsibilities and functions of CPRA.¹²⁶ Otherwise, it is notable that there are not further conditions restricting CPRA’s use of donated land or funds.¹²⁷

CPRA also has the ability to acquire land through expropriation where it “cannot amicably acquire property in the coastal zone needed for barrier island preservation, restoration, or creation for coastal wetlands purposes”¹²⁸ Additionally, CPRA may utilize expropriation prior to a judgment in court, equating the ability to “quick-taking” powers.¹²⁹ Expropriation is an exercise of the state’s powers of eminent domain. The Louisiana Constitution specifies that expropriations may not occur “except for public purposes and with just compensation”¹³⁰ Louisiana’s concept of *public purpose* derives from the *public use* required by the Takings Clause of the U.S. Constitution.¹³¹ The Louisiana Supreme Court has noted that “‘public use’ is synonymous with ‘public benefit,’ ‘public utility’ or ‘public advantage.’”¹³² The Court also noted that “[n]o general definition of what degree of public good will meet the constitutional requirements for a ‘public use’ can be framed, as it is in every case a question of public policy. The meaning of the term is flexible and is not confined to what may constitute a public use at any given time”¹³³ Thus, while expropriation has never been used to acquire property ownership to develop a project for blue carbon accreditation, the State may be able to assert a successful argument that the adaptation and mitigation benefits of an individual project in

¹²⁵ LA. REV. STAT. § 49:214.5.2(B)(1) (2023).

¹²⁶ See discussion *infra* subpart IV.c.i. Development of carbon credits and engagement in a blue carbon market are less certain, which will also be covered more expansively below.

¹²⁷ *C.f.* Mass. Gen. Laws ch. 131, § 7 (2023) (requiring governor approval for donations, placing donations in trust for the commonwealth, and limiting the purpose to “aiding in the propagation and protection of any useful fish, birds or mammals[.]”).

¹²⁸ LA. REV. STAT. § 49:214.61(A) (2023).

¹²⁹ *Id.*

¹³⁰ LA. CONST. art. I, § 4(B)(1) (2023).

¹³¹ U.S. CONST. amend. V.

¹³² *City of New Orleans v. New Orleans Land Co.*, 136 So. 91, 92 (1931).

¹³³ *Id.* (quoting *Corpus Juris*, vol. 20, p. 551 et seq.).

conjunction with catalyzing future coastal financing would serve an adequate public purpose. Of course, donation of lands would be preferable to expropriation since the objective of State engagement in blue carbon project development is to generate, not spend, additional funds.

Although the amount of privately-owned land far exceeds that of publicly-owned land in coastal Louisiana, the availability of state lands does not represent a significant barrier to capitalizing on the returns of a blue carbon market. This paper will shortly examine policy developments in Virginia, another State that has pursued developing blue carbon projects and selling credits to fund coastal restoration.¹³⁴ Compared to Virginia, Louisiana has appreciably more publicly-owned land available for development; of course, Louisiana also has appreciably more land in need of restoration. Furthermore, Louisiana law provides adequate mechanisms for acquiring additional lands, either through natural or administrative processes. Given that, especially when considered in conjunction with the provisions of Louisiana Revised Statutes 9:1103, if blue carbon credits are to fail as a coastal financing method as money from the Deepwater Horizon settlement dwindles, it will not likely be due to insufficient ownership of the land.

ii. The public trust doctrine

While Louisiana's sovereign duty to hold certain resources in trust for the public's benefit could present an additional limit on the State's ability to engage in a blue carbon market, the impacts of such engagement—particularly when evaluated against non-engagement—likely comport with Louisiana's conception of that duty. The public trust doctrine is a fundamental principle of state authority which imposes an obligation on a sovereign to protect and conserve certain resources for public use.¹³⁵ Scholars, lawyers, judges, and state officials often disagree on

¹³⁴ See discussion *infra* subpart IV.c.

¹³⁵ William D. Araiza, *The Public Trust Doctrine as an Interpretive Canon*, 45 U.C. DAVIS L. REV. 693, 702 (2012).

the resources and duties encompassed by the doctrine.¹³⁶ Some foundational facets appear in nearly all variants, but ultimately the scope and obligations vary by state.¹³⁷ Traditionally, resources covered by the public trust include “the air, running water, the sea, and consequently the shores of the sea.”¹³⁸ Louisiana’s public trust similarly applies at the least to navigable waters, water bottoms, and certain tidelands that may not be navigable-in-fact—in other words, many of the lands which may hold blue carbon potential.¹³⁹

A key point of debate regarding the public trust is whether it imposes an affirmative duty.¹⁴⁰ For example, the seminal U.S. judicial opinion on the public trust doctrine held that the State could not alienate the bed of Lake Michigan because it is held in trust for the public.¹⁴¹ The Louisiana Supreme Court adopted this theory of the public trust doctrine in *Gulf Oil Corporation v. State Mineral Board* which dealt with the validity of land patents to navigable water bottoms.¹⁴² This may be most accurately characterized as a duty to refrain from dispensing of the land as opposed to a duty to actively protect the land. While common law precedent is informative, each state has conceived of its own version of the doctrine and manifested it in different ways.¹⁴³ Louisiana’s public trust doctrine is first and foremost rooted in Article IX, Section 1 of the State Constitution:

¹³⁶ *Id.* at 696.

¹³⁷ *Id.* at 704.

¹³⁸ Roman Law, Book II, art. I, sec. 1 (“By the law of nature these things are common to mankind—the air, running water, the sea, and consequently the shores of the sea.”).

¹³⁹ James G. Wilkins & Michael Wascom, *The Public Trust Doctrine in Louisiana*, 52 LA. L. REV. 861, 864 (1992) (citing LA. CIV. CODE art. 450).

¹⁴⁰ See Jordan M. Ellis, *The Sky’s the Limit: Applying the Public Trust Doctrine to the Atmosphere*, 86 TEMP. L. REV. 807, 820-21 (2014)

¹⁴¹ Ill. Cent. R.R. Co. v. Ill., 146 U.S. 387 (1892).

¹⁴² 317 So.2d 576 (1974).

¹⁴³ ROBIN KUNDIS CRAIG, A COMPARATIVE GUIDE TO THE WESTERN STATES’ PUBLIC TRUST DOCTRINES: PUBLIC VALUES, PRIVATE RIGHTS, AND THE EVOLUTION TOWARD AN ECOLOGICAL PUBLIC TRUST 55 (2010) (All In-Stream Flows Material. Paper 16).

The natural resources of the state, including air and water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. The legislature shall enact laws to implement this policy.¹⁴⁴

This language ostensibly compels an affirmative duty to protect, conserve, and replenish. However, while embedded in the state’s Constitution, Civil Code, and Revised Statutes, the scope of Louisiana’s public trust doctrine is further refined by judicial precedent that both elaborates on and perhaps complicates the duty.

Save Ourselves, Inc. v. Louisiana Environmental Control Commission is generally regarded as the preeminent case on Louisiana’s public trust doctrine.¹⁴⁵ The court identified an obligation to protect environmental resources in Article IX, Section 1 of the Louisiana Constitution, but it also limited this obligation with a balancing process based in a “rule of reasonableness.”¹⁴⁶ A subsequent case from the Louisiana Court of Appeals for the First Circuit distilled the *Save Ourselves* balancing process into a five-question test:

1. Have the adverse environmental effects been avoided to the maximum extent possible?
2. Do the social and economic benefits outweigh the environmental costs?
3. Have alternative projects been considered?
4. Have alternative sites been considered?
5. Have mitigation measures been considered?¹⁴⁷

¹⁴⁴ LA. CONST. art. IX, § 1 (2023).

¹⁴⁵ *Save Ourselves, Inc. v. La. Env’t Control Comm’n*, 452 So.2d 1152 (La. 1984).

¹⁴⁶ *Id.* at 1157.

¹⁴⁷ *Blackett v. La. Dep’t of Env’t Quality*, 506 So.2d 749, 754 (1987).

These questions mirror the analysis that federal agencies must engage in under the National Environmental Quality Act (NEPA).¹⁴⁸ And like NEPA, the requirement is satisfied by the process, not by the result.¹⁴⁹

The applicability and extent of influence the public trust doctrine may have on State participation in blue carbon markets is impacted by the property classification of blue carbon rights previously discussed.¹⁵⁰ For example, if blue carbon credits are real, public property for which the trust applies, according to *Gulf Oil*, the State may not alienate the property, which may prevent the State from selling the credits.¹⁵¹ However, assuming the State is entitled to trade the credits, the question becomes whether developing blue carbon projects meets its public trust obligations. Restoring a wetlands ecosystem that builds habitat, improves water quality, and sequesters atmospheric carbon (and in turn generates money that can fund similar future projects) likely comports better with the State’s duty under Article IX, Section 1 of the Louisiana Constitution than merely reserving the land and not optimizing its carbon potential.¹⁵² Furthermore, applying the judicial balancing test from *Save Ourselves*, the environmental impacts to public resources that may occur without a blue carbon project, or without engaging in blue carbon credit development in general, are likely more environmentally adverse than the alternative.¹⁵³

In sum, because of Louisiana’s specific conception of the doctrine, State participation in a blue carbon market is unlikely to run afoul of the state’s sovereign duties. Nonetheless, this

¹⁴⁸ 42 U.S.C § 4321 et seq. (2023).

¹⁴⁹ *Id.*

¹⁵⁰ *See* subpart II.a.ii.

¹⁵¹ *Ill. Cent. R.R. Co. v. Ill.*, 146 U.S. 387 (1892).

¹⁵² LA. CONST. art. IX, § 1 (2023).

¹⁵³ *Blackett v. La. Dep’t of Env’t Quality*, 506 So.2d 749, 754 (1987); *see Avenal v. State*, 886 So.2d 1085, 1101 (2004) (applying a balancing test in determining that a “coastal diversion project fit[] precisely within the public trust doctrine” despite adverse economic impacts on oyster farmers).

area is worth careful consideration because of the particular uncertainty of the legal status of both carbon rights as property and the public trust doctrine, let alone the interaction between the two. Both areas of law may see drastic developments in coming years that could affect the viability of a coastal financing plan based on the success of blue carbon credits developed on publicly owned land.

c. Potential barriers to agency participation

Beyond legal barriers which challenge whether the State may participate in a blue carbon market, there are also important questions of which agency can and should take on the task. Louisiana’s distinctive legal regime presents both unique barriers and unique opportunities for agency participation in a blue carbon market. As such, other states’ interventions in markets may only serve as guides as opposed to models. Nonetheless, blue carbon’s inclusion has been proposed without success in even established carbon trading markets, like California’s cap-and-trade system.¹⁵⁴ Thus, it is notable that some states have passed legislation to facilitate the type of blue carbon market participation that could benefit Louisiana.

In 2020, Virginia passed legislation explicitly allowing its Department of Environmental Quality to “participate in any carbon market for which submerged aquatic vegetation restoration qualifies as an activity that generates carbon offset credits.”¹⁵⁵ This section also requires that “[a]ny revenue resulting from the sale of such credits shall be used to implement additional submerged aquatic vegetation monitoring and research or to cover any administrative costs of participation in the credit market.”¹⁵⁶

¹⁵⁴ See COMPLIANCE OFFSETS PROTOCOL TASK FORCE, INITIAL DRAFT RECOMMENDATIONS (2020).

¹⁵⁵ S.B. 783, 2020 Leg., Reg. Sess. (Va. 2020). The bill originally vested authority for the program with the Virginia Marine Resources Commission but this was changed to the Department of Environmental Quality before enrollment. *Id.*

¹⁵⁶ Va. Code § 10.1-1186.6 (2022). Notably, the original proposed legislation would have allowed revenue to be used for “additional submerged aquatic vegetation monitoring, *restoration*, and research,” but the language on restoration was removed from the enrolled version. S.B. 783, 2020 Leg., Reg. Sess. (Va. 2020).

As it stands, Louisiana has not passed nor proposed legislation that would explicitly allow the State to participate in a carbon market, but merely benefit from monetary compensation derived from the sequestration of carbon attributable to CPRA projects.¹⁵⁷ Such legislation could be beneficial, but it also may be superfluous in Louisiana because existing agencies such as CPRA are authorized to perform functions that are more specialized and related to coastal restoration efforts than those of the Virginia Department of Environmental Quality (VDEQ).

i. Coastal Restoration and Protection Authority functions and responsibilities

In general, agencies' actions are confined by delegated statutory authority. CPRA has not received explicit permission from the legislature to conduct blue carbon projects. Instead, CPRA's functions and responsibilities include the mandate to:

Represent the state's position in policy relative to the protection, conservation, enhancement, and restoration of the coastal area of the state through oversight of integrated coastal protection projects and programs and by addressing activities which require a coastal use permit which could significantly affect integrated coastal protection projects and programs, all consistent with the legislative intent as expressed in R.S. 49:214.1.¹⁵⁸

As noted, this mandate parallels blue carbon work more closely than the Virginia DEQ's general powers which "include implementing Virginia's environmental laws and administering regulations adopted under the legal authorities of [V]DEQ, the State Air Pollution Control

¹⁵⁷ LA. REV. STAT. § 9:1103 (2023).

¹⁵⁸ LA. REV. STAT. § 49:214.5.2(A)(1) (2023).

Board, the State Water Control Board and the Virginia Waste Management Board.”¹⁵⁹ Moreover, the corresponding legislative intent for CPRA’s authority includes, *inter alia*, the need “to conserve, restore, create and enhance wetlands and barrier shorelines or reefs in coastal Louisiana while encouraging use of coastal resources and recognizing that it is in the public interest of the people of Louisiana to establish a responsible balance between development and conservation.”¹⁶⁰ Furthermore, blue carbon projects would likely require coastal use permits and therefore also fall within CPRA’s purview. As such, CPRA’s mandates are likely sufficiently broad to allow participation in a blue carbon market.

It is notable though that the language on CPRA’s purpose comes from a statutory section principally dedicated to the responsibility to “develop, implement, and enforce a comprehensive integrated coastal protection plan.”¹⁶¹ Any discussion of CPRA’s duties is incomplete without a mention of the Louisiana Coastal Master Plan, which has served as CPRA’s North Star since its inception. Inclusion of either blue carbon as a project objective or credit development as a funding source in the Coastal Master Plan would likely succeed in concreting CPRA’s ability to engage in a blue carbon market and negate the necessity for legislation akin to Virginia’s.

The Coastal Master Plan is updated every six years in accordance with law, with the latest iteration arriving in early 2023, less than a year after the release of the LCAP outlining blue carbon market goals.¹⁶² Unfortunately, the 2023 Coastal Master Plan makes no mention of blue carbon.¹⁶³ This does not necessarily preclude CPRA from participating in a blue carbon

¹⁵⁹ Va. Dep’t of Env’t Quality, Law & Regulations, <https://www.deq.virginia.gov/permits-regulations/laws-regulations> (last visited Jan. 12, 2023). *See also* Va. Code § 10.1-1186.6 (2022).

¹⁶⁰ LA. REV. STAT. § 49:214.1(C) (2023).

¹⁶¹ LA. REV. STAT. § 49:214.1(C) (2023).

¹⁶² COASTAL PROT. AND RESTORATION AUTH. OF LA., LOUISIANA’S COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST (4th ed. 2023).

¹⁶³ *Id.* Although, CPRA’s 2024 Annual Plan earmarks “\$3M for development of a carbon market for coastal restoration projects to support development of an alternate revenue source for the coastal program.” COASTAL PROT. AND RESTORATION AUTH. OF LA., FISCAL YEAR 2024 ANNUAL PLAN 118 tbl.28 (2023).

market; however, it may represent a missed opportunity for CPRA to confirm its authority and communicate its intentions to the rest of the state. Then again, the Coastal Master Plan is notoriously vague on matters of funding. Nonetheless, blue carbon credits funding further coastal restoration would operate more as a program than traditional funding sources and therefore could have been included while staying true to the tone of the plan.

ii. Other Louisiana agencies

Even if it is within the scope of CPRA’s mandates to develop blue carbon projects and engage in a credit market, that does not necessarily indicate that it is the only state agency that could or should undertake such an effort. Although not as engaged in explicit “restoration,” the Office of Coastal Management (OCM), situated in the Louisiana DNR, may also be well-suited to take on elements of this new role.

The OCM was established by the Louisiana State and Local Coastal Resources Management Act of 1978, which sought to stimulate multiple uses of resources and economic growth with a focus on minimizing environmental impact.¹⁶⁴ Its mission is to maintain, protect, develop, restore, and enhance the coastal regions of Louisiana, which sounds very similar to CPRA’s. However, while CPRA oversees coastal protection projects and programs, OCM regulates development activities and resources management of the coast. This means that the development of projects and registering credits aligns more closely with CPRA’s authorities, but the development and regulation of a carbon credit market is nearer to OCM’s duties. Therefore, which Louisiana agency might develop blue carbon projects or administer a blue carbon market program is more likely to depend on whether the priority is state engagement as a project developer or as a market facilitator.

¹⁶⁴ LA. REV. STAT. § 49:212.21 *et seq.* (2023).

Finally, it is possible that neither CPRA nor OCM would take the lead, and instead the state would create a new agency to oversee blue carbon credit development and/or market management. The 2023 LCAP Annual Report suggests that future steps for implementing the state’s blue carbon goals include additional “[r]esearch . . . to develop the procedures, verification method, and accountability of users in a carbon market as well as establish a managing agency to lead this effort.”¹⁶⁵ However, creating a new agency may delay market implementation, and would be constrained due to a constitutional cap on the number of state agencies.¹⁶⁶

In sum, the State is likely well-situated to participate as a developer and project developer and blue carbon credit seller in a voluntary market. Such an endeavor will not be without legal and logistical obstacles. Even in a perfect system, blue carbon projects take time to develop, and accordingly it may be years before sellers see returns on their investments. Because Louisiana will shortly find itself in desperate need of coastal funding, the state should anticipate these barriers and take active steps to overcome them so that participation itself is not further delayed.

V. THE STATE AS BENEFICIARY

The State of Louisiana may encounter several difficult—though not insurmountable—legal and logistical barriers to participating in a blue carbon market. Nonetheless, the demand for a new coastal funding source may justify embarking on such an endeavor. However, the State could also receive financial benefits from a blue carbon market of which it is not a participant. In this sense, Louisiana may look to other U.S. carbon markets for examples of states as mere beneficiaries of carbon market proceeds.

¹⁶⁵ LA. CLIMATE INITIATIVES TASK FORCE, ANNUAL REPORT (2023).

¹⁶⁶ LA. CONST. art. IV, § 1 (2023).

The same year that Virginia passed the law allowing for blue carbon market participation, the state also joined the Regional Greenhouse Gas Initiative (RGGI).¹⁶⁷ RGGI was the first (and is the only multi-state) mandatory market-based greenhouse gas reduction program in the United States.¹⁶⁸ The program sets an annual cap for carbon dioxide emissions from the electric power sector in the region.¹⁶⁹ Participating power plant owners bid on emission allowances in auctions administered by RGGI, Inc., a nonprofit established to run the program.¹⁷⁰ Proceeds from the auction are distributed to member states, of which at least twenty-five percent must be used for “consumer benefit or strategic energy purpose.”¹⁷¹ California similarly utilizes a cap-and-trade system which applies to more than just power plants, covering about eighty-five percent of the state’s emissions.¹⁷² It allows offsets to supplement allowances for an entity to meet up to eight percent of its compliance obligation.¹⁷³ Proceeds from the allowance auction are returned to utility ratepayers and used to fund the Greenhouse Gas Reduction Fund and the California Climate Investments program.¹⁷⁴

Blue carbon offsets are not currently eligible for inclusion in either system. However, in RGGI, states are beginning to factor blue carbon into how proceeds are utilized. For example, blue carbon was a stakeholder priority and therefore included in New Jersey’s RGGI Strategic Funding Plan for 2020-2022.¹⁷⁵ Based on RGGI auction revenues, the state established the Natural Climate Solutions Grant program which funds blue and green carbon projects from a

¹⁶⁷ Press Release, RGGI, Inc., *RGGI States Welcome Virginia as Its CO2 Regulation Is Finalized* (July 8, 2020), https://www.rggi.org/sites/default/files/Uploads/Press-Releases/2020_07_08_VA_Announcement_Release.pdf. In January 2023, the Virginia State Senate voted down Senate Bill 1001 sponsored by state Sen. Richard Stuart (R) which would have removed Virginia from RGGI. S.B. 1001, 2023 Leg., Reg. Sess. (Va. 2023).

¹⁶⁸ CERES, *THE REGIONAL GREENHOUSE GAS INITIATIVE: A FACT SHEET 1* (2020).

¹⁶⁹ *Id.*

¹⁷⁰ *Id.*

¹⁷¹ *Id.* at 2.

¹⁷² CTR. FOR LAW, ENERGY, & THE ENV’T, *CALIFORNIA CLIMATE POLICY FACT SHEET: CAP-AND-TRADE 1* (2019).

¹⁷³ *Id.*

¹⁷⁴ *Id.* at 2.

¹⁷⁵ N.J. ECON. DEV. AUTH, *RGGI STRATEGIC FUNDING PLAN: YEARS 2020 THROUGH 2022 12-13* (2020).

variety of developers that create, restore, and enhance natural carbon sinks.¹⁷⁶ In this way, a state-supported carbon market finances future restoration, including projects led by various levels of government.

Both RGGI and the California cap-and-trade program provide models for an additional or alternative avenue by which a blue carbon market could provide Louisiana with funds for coastal projects. These programs demonstrate that states may financially benefit from a market even where they are not direct participants. Notably, this option would likely require the development of a compliance market, as opposed to a voluntary market. This aspect of the other U.S. systems likely explains the exclusion of blue carbon credits because voluntary markets are generally more amenable to including blue carbon credits than compliance markets.

As discussed, Louisiana has explored or at least considered the possibility of engaging in a multi-state carbon pricing program.¹⁷⁷ However, because this would likely require imposing mandatory caps on industrial emissions, Louisiana policymakers have historically opposed the idea.¹⁷⁸ Thus, this is an unlikely though not impossible scenario. In such a case, a third-party non-profit such as RGGI, Inc. may be developed or utilized to manage blue carbon credits in the state. Relinquishing this responsibility to a non-state agency may alleviate some administrative burdens of facilitating blue carbon credit development in Louisiana and managing the revenue. Furthermore, removing certain aspects from direct state control may be beneficial in overcoming barriers to meeting additionality requirements. Ultimately, while there are ways for Louisiana to financially benefit from a blue carbon market without developing projects and selling the credits

¹⁷⁶ Press Release, New Jersey Dep't of Env't Prot., *Murphy Administration Awards \$24.3 Million Through Its Natural Climate Solutions Grant Program* (Jan. 18, 2023), https://www.nj.gov/dep/newsrel/2023/23_0003.htm.

¹⁷⁷ See discussion *supra* subpart III.b.

¹⁷⁸ *Id.*

itself, the social and political barriers to implementing the kinds of systems necessary for these alternatives may prove more daunting than the legal barriers of direct market participation.

VI. CONCLUSION

The State has a tremendously expensive task ahead of it if coastal Louisiana is to have a fighting chance. At the same time, historically dependable revenue sources are dwindling. While exact evaluations may vary, the consensus is that the blue carbon potential of the coast itself holds immense financial promise if the State could find a way to unlock it. Louisiana has options to either enter a carbon market as a project developer and credit seller or support private projects and receive benefits. In either case, even with other states as models, Louisiana would face several legal, social, and political barriers. Regardless, State involvement could only contribute to capitalizing on a small portion of coastal Louisiana's blue carbon ecosystem potential. Therefore, whether and in what manner the State directly engages in a blue carbon market, it also could and should promote more private restoration efforts, including blue carbon credit projects, which would decrease the need for the State to expend funds in the first place.