

# **UT Law's 2010 Geologic Storage Policy: Federal Impacts, Commercial Opportunities**

*Evolving Policies at the State Level*

*Highlights of the Louisiana Statute:*

## ***LOUISIANA TAKES A PROACTIVE APPROACH IN ACT 517***

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On July 10, 2009, Louisiana Governor Bobby Jindal signed into law Act 517 (formerly HB 661), establishing the Louisiana Geologic Sequestration of Carbon Dioxide Act. Joining seven other states that passed similar legislation in 2009<sup>1</sup>, Louisiana is on the vanguard of providing a legal and regulatory framework for the geologic storage of carbon dioxide.

Lost in a fiscal session and passed unanimously by both houses of the legislature with little fanfare, many representatives of industry believe that Act 517 may be the most important piece of legislation coming out of Louisiana's 2009 Legislative Session. In an era where hardly a day passes without some comment or article touting the federal regulation of greenhouse gas emissions<sup>2</sup>, Louisiana proactively showed the way on how states can protect both economic viability by easing the way for industry to deal with this coming regulation, while also protecting the environment.

Last year, Louisiana HB 1117 was passed which authorized the leasing of state lands for the storage of CO<sub>2</sub>. With the passage of Act 517, Louisiana provided government and industry the tools necessary to be at the forefront of this new technology. The promise of successful carbon sequestration is on the horizon. While scientific research has revealed avenues for mitigating greenhouse gas problems, recent government policy has focused on sequestration as a means of lowering the atmospheric concentration of greenhouse gases, including carbon dioxide. There is thus a growing interest both within industry and government in the possible opportunities for mitigating

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<sup>1</sup> Similar legislation was passed in the following states: West Virginia, North Dakota, South Dakota, Wyoming, Texas, Mississippi and Oklahoma.

<sup>2</sup> The major components of greenhouse gases are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), chlorofluorocarbons (CFCs), and ozone (O<sub>3</sub>). Of these, carbon dioxide accounts for roughly eighty percent of the greenhouse gases emitted by developed countries.

the release of carbon into our atmosphere, particularly through carbon capture and geologic storage.

In 2002 (the most recent year for which data was reported by Project Vulcan)<sup>3</sup>, Louisiana manufacturing facilities and refineries produced 36.4 million metric tons of CO<sub>2</sub>, slightly more than Texas, where industrial sources generated 35.3 million metric tons of CO<sub>2</sub>, and more than double that generated in California.<sup>4</sup> Combining all sectors, including industrial, residential, transportation and electricity generation, Louisiana's overall carbon dioxide production ranks No. 8 in the nation. This reportedly is due to the high level of influence of the oil industry. As commented by Project Vulcan, "[t]here's a lot of refineries and associated industry that go along with it. That is where the majority of [Louisiana's] emissions are coming from."<sup>5</sup>

Louisiana also leads the nation in CO<sub>2</sub> storage potential.<sup>6</sup> Identified as one of the leading ways for reducing concentrations of anthropogenic<sup>7</sup> greenhouse gases, carbon capture and geological storage is a process whereby CO<sub>2</sub> is captured and stored in geologic formations through underground injection (instead of being released into the atmosphere).<sup>8</sup> To give a sense of scale, the estimated geological storage capacity in the Lower 48 states is equivalent to over 450 years at recent U.S. green house gas emissions rates.<sup>9</sup> Louisiana, both onshore and offshore, leads the way with a combined storage capacity of over 674 billion tons of sequestration potential – i.e., roughly 20% of the Lower 48 states' total potential geologic storage capacity.<sup>10</sup>

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<sup>3</sup> Project Vulcan, funded primarily by NASA and the U.S. Department of Energy, is a team of researchers based at Purdue University who over the past three years have compiled an inventory of CO<sub>2</sub> emissions and sources across the country. See Emilie Bahr, *Louisiana tops in CO<sub>2</sub> emissions* (New Orleans City Business March 9, 2009).

<sup>4</sup> *Id.*

<sup>5</sup> *Id.*

<sup>6</sup> ICF International 2009, *Carbon Sequestration and Storage: Developing a Transportation Infrastructure* at 34 (February 2009).

<sup>7</sup> Anthropogenic is defined in this context as "of, relating to, or influenced by the impact of man on nature." *Webster's New Collegiate Dictionary* 48 (1st ed., G. & C. Merriam Company 1975).

<sup>8</sup> National Energy Tech. Inst., U.S. Dep't of Energy, *Carbon Sequestration Technology Roadmap and Program Plan 2005: Developing the Technology Base and Infrastructure to Enable Sequestration as a Greenhouse Gas Mitigation Option* 4 (2005) [http://www.netl.doe.gov/coal/Carbon SEQUESTRATION/PUBS/2005\\_ROADMAP\\_FOR\\_WEB.PDF](http://www.netl.doe.gov/coal/Carbon%20SEQUESTRATION/PUBS/2005_ROADMAP_FOR_WEB.PDF) (The Department of Energy's Office of Fossil Energy, on behalf of the United States government, has begun an aggressive research program in this regard through its National Energy Technology Laboratory (NETL)).

<sup>9</sup> See ICF International at 2.

<sup>10</sup> *Id.* at 34.

The Department of Energy anticipates that by the year 2030, industry will be capturing and storing between 1,000 and 300 million tons of CO<sub>2</sub> per year. These numbers can be compared against U.S. CO<sub>2</sub> emission from coal power plants, which are approximately 2,000 million tons per year. Hence, the DOE estimates that between 50 and 15 percent of CO<sub>2</sub> emissions from existing U.S. coal plants will be captured and stored by 2030.<sup>11</sup> Louisiana thus has the potential to lead the nation in reducing CO<sub>2</sub> emissions while still providing its citizens with economic energy alternatives.

**Estimated Geologic Storage Capacity (million tons)<sup>12</sup>**

	<b>Lower 48 States</b>	<b>Canada</b>
<b>Enhanced Oil Recovery</b>	<b>17,000</b>	<b>1,000</b>
<b>Depleted Oil and Gas Fields</b>	<b>110,000</b>	<b>2,702</b>
<b>Coal and CBM</b>	<b>51,000</b>	<b>5,000</b>
<b>Shale Formations</b>	<b>107,000</b>	<b>0</b>
<b>Deep Saline-filled Basalt</b>	<b>100,000</b>	<b>0</b>
<b>Deep Saline Reservoirs</b>	<b>2,990,000</b>	<b>60,730</b>
<b>Total</b>	<b>3,375,000</b>	<b>69,432</b>

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<sup>11</sup> See *ICF International* at 5.

<sup>12</sup> *Carbon Sequestration Atlas of the United States and Canada – Second Edition*, U.S. Department of Energy, National Energy Technology Laboratory, Morgantown, WV, November, 2008.

Assessment of US Sequestration Potential by State and Reservoir Type<sup>13</sup>

State	MARKAL Region	EOR <sup>14</sup>	Abnd Oil	Abnd Gas	Sub Total	ECBM Areas <sup>15</sup>	Coal	Sub Total	Shale	Deep Saline Aquifers	Basalt	Total
Alabama	Eastern Gulf Coast	0.066	0.141	0.497	0.704	0.309	0.6	0.909	0	5.5	0	7.153
Arkansas	Midwest	0.081	0.533	0.402	1.016	0.000	0.1	0.1	5	22.9	0	28.986
Louisiana Offshore	Gulf of Mexico	1.463	4.878	6.603	12.943	0	1.2	1.2	0	500	0	512.943
Louisiana Onshore	Midwest	1.355	4.004	6.349	11.708	0.000	1.2	1.2	0	148.3	0	161.248
Mississippi	Midwest	0.135	0.72	0.386	1.241	0.000	0.6	0.6	0	86.9	0	88.721
Texas Onshore	Midwest	7.554	19.025	15.368	41.947	0.000	3.6	3.6	20	288.2	0	353.789
Texas Offshore	Midwest	0.00	0.603	1.781	2.384	0.00	0.00	0.00	0.00	300.	0.00	302.384
Lower 48 Total	Total	16.527	59.535	49.654	125.716	19.692	31.933	51.625	106.71	2,990.6	99.9	3,374.56
L48 Offshore	L48 Offshore	1.463	6.730	8.421	16.614	0.000	0.000	0.000	0.000	1,186.640	0.000	1,203.254
L48 Onshore	L48 Onshore	15.064	52.805	41.233	109.102	19.692	31.933	51.625	106.709	1,804.0	99.900	2,171.306

<sup>13</sup> *Id.*

<sup>14</sup> Enhanced Oil Recovery.

<sup>15</sup> Enhanced Coal Bed Methane Recovery.

## **Act 517: Louisiana’s Regime for Geologic Storage of CO<sub>2</sub>**

Act 517 was based on model legislation proposed by the Interstate Oil and Gas Compact Commission (“IOGCC”), as modified to fit Louisiana’s regulatory structure and other existing legislation. The important facets of the law are:

1. The Act treats CO<sub>2</sub> not as a waste, but as a commodity. It regulates CO<sub>2</sub> under a resource management framework, taking into account the legal complexities of CO<sub>2</sub> storage, including environmental protection, ownership of pore space, long term liability, and maximization of storage capacity.
2. The Act was drafted in broad terms and grants the Commissioner of Conservation (the Louisiana equivalent of the Texas Railroad Commission (“TRRC”)) jurisdiction over “all persons and property necessary to administer and enforce effectively the provisions concerning geologic storage of carbon dioxide.” The Statute grants permitting authority to the Commissioner of Conservation for the purpose of regulating the facility and protecting against CO<sub>2</sub> pollution or migration.
3. The Statute also empowers a storage operator, after obtaining approval from the Commissioner of Conservation, to exercise the right of eminent domain in order to acquire all surface and subsurface rights necessary for the operation of the storage facility.
4. The Act establishes liability limits for operators with transfer of liability for storage operations to the Geologic Storage Trust Fund (run by the state) after a specified time.

Act 517 treats geologically stored CO<sub>2</sub> under a resource management framework as opposed to waste disposal frameworks. A resource management framework allows for the integration of these issues into a unified regulatory framework and proposes a “public and private sector partnership” to address the long-term liability, given that the release of CO<sub>2</sub> into the atmosphere is at least partially a societal problem and the mitigation of that release is likewise at least partially a societal responsibility.<sup>16</sup>

The regulatory program authorizes the Commissioner of Conservation to adopt rules for injection and storage of carbon dioxide, consistent with the anticipated U. S. Environmental Protection Agency rules for Class VI injection wells under the Safe Drinking Water Act. It also extends the Commissioner’s authority over use of carbon dioxide for enhanced oil recovery. The rules are to prevent the escape of carbon dioxide to fresh water and to protect oil, gas, and other mineral resources. The Commissioner is given authority to issue compliance orders and civil penalties of up to \$5,000 per day of violation.

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<sup>16</sup> Regulating the storage of CO<sub>2</sub> under a waste management framework sidesteps the public’s role in both the creation of CO<sub>2</sub> and the mitigation of its release into the atmosphere and places the burden solely on industry to rid itself of “waste” from which the public must be “protected.” Such an approach lacking citizen buy-in with respect to responsibility for the problem as well as the solution could well doom geological storage to failure and diminish significantly the potential of geologic carbon storage to meaningfully mitigate the impact of CO<sub>2</sub> emissions on the global climate.

The legislation transfers liability for long term storage (with a few exceptions) to the State ten years after the completion of injection, thus providing more certainty to encourage storage of carbon dioxide that will in turn assist in combating global warming. The ten year period can be altered by rule. To fund this potential liability, the law creates a Geologic Storage Trust Fund that will be funded by fees to be paid by the injection well operator. Until liability transfers to the state, the operator of the injection well, and only the operator, will be liable for compliance with injection and storage requirements.

The law provides that the injected carbon dioxide will “at all times be deemed the property of the party that owns such carbon dioxide, whether at the time of injection, or pursuant to a change of ownership by agreement while the carbon dioxide is located in the storage facility...and in no event shall such carbon dioxide be subject to the right of the owner of the surface of the lands or of any mineral interest therein....” After the cessation of injection operations, the Commissioner may issue a certificate of completion of injection operations upon a showing by the storage operator that the reservoir is reasonably expected to retain mechanical integrity and the carbon dioxide will reasonably remain emplaced. Upon issuance of the certificate, both liability for, and ownership of, the remaining project, including the stored carbon dioxide, transfers to the state. The liability release does not apply if the owner, operator, or generator intentionally and knowingly concealed or intentionally and knowingly misrepresented material facts related to the mechanical integrity of the storage facility or the chemical composition of any injected carbon dioxide.

The law allows property to be expropriated by private entities for the underground storage of carbon dioxide, “including but not limited to surface and subsurface rights, mineral rights, and other property interests necessary or useful for the purpose of constructing, operating, or modifying a carbon dioxide facility.” However, before any expropriation, the Conservation Commissioner must issue a certificate of public convenience and necessity after a public hearing in the parish where storage operations are located. As a condition precedent, the Commissioner, must have determined that the reservoir sought to be used is suitable and feasible for such use and meets all regulatory requirements. The eminent domain authority is to be exercised pursuant to the procedures found in existing law regarding expropriation, La. R.S. 19:2,

No sequestration operation can adversely affect any reservoir which is producing or is capable of producing oil, gas, condensate, or other commercial minerals in paying quantities, unless all owners in such reservoir have agreed thereto or, if all owners do not agree, then at least three-fourths of the owners must agree and the Commissioner must find that the minerals capable of production in paying quantities have been produced or the reservoir has a greater value as a reservoir for carbon dioxide storage than for the production of the remaining volumes of original oil, gas, condensate, or other commercial minerals.

## **Other Highlights**

### **Section 1. R.S. 19:2(12) Expropriation**

Extends authority to those engaged in the injection of carbon dioxide for the underground storage of carbon dioxide approved by the commissioner of conservation.

Property located in Louisiana may be so expropriated, including surface and subsurface rights, mineral rights, and other property interests necessary or useful for the purpose of constructing, operating, or modifying a carbon dioxide facility.

## **Chapter 11 of Title 30**

### **§ 1102. Policy; jurisdiction**

Carbon dioxide is a valuable commodity to the citizens of the state.

It is the public policy of Louisiana and the purpose of this Chapter to provide for a coordinated statewide program related to the storage of carbon dioxide and to also fulfill the state's primary responsibility for assuring compliance with the federal Safe Drinking Water Act

The commissioner of conservation shall have jurisdiction and authority over all persons and property.

### **§ 1103. Definitions**

**"Carbon dioxide"** means naturally occurring, geologically sourced, or anthropogenically sourced carbon dioxide including its derivatives and all mixtures, combinations, and phases, whether liquid or gaseous, stripped, segregated, or divided from any other fluid stream thereof.

**"Geologic storage"** means the long-or short-term underground storage of carbon dioxide in a reservoir.

**"Reservoir"** means that portion of any underground geologic stratum, formation, aquifer, or cavity or void, whether natural or artificially created, including oil and gas reservoirs, salt domes or other saline formations, and coal and coalbed methane seams, suitable for or capable of being made suitable for the injection and storage of carbon dioxide therein.

### **§ 1104. Duties and powers of the commissioner; rules and regulations; permits**

A. The commissioner shall have authority to:

- (1) Regulate the development and operation of storage facilities and pipelines
- (2) Issue rules, regulations, and orders
- (9) Approve conversion of an existing enhanced oil or gas recovery operation into a storage facility

B. Only a storage operator shall be held or deemed responsible for the performance of any actions required by the commissioner under this Chapter.

C. Prior to the use of any reservoir for the storage and prior to the exercise of eminent domain, the commissioner, after public hearing shall have found all of the following:

- (1) That the reservoir sought to be used is suitable, provided no reservoir, any part of which is producing or is capable of producing oil, gas, condensate, or other commercial mineral in paying quantities, shall be subject to such use, unless all owners in such reservoir have agreed thereto. In addition, no reservoir shall be subject to such use unless either:

(a) The volumes of original reservoir, oil, gas, condensate, salt, or other commercial mineral therein which are capable of being produced in paying quantities have all been produced.

(b) Such reservoir has a greater value or utility as a reservoir for carbon dioxide storage than for the production of the remaining volumes of original reservoir oil, gas, condensate, or other commercial mineral, and at least three-fourths of the owners, in interest, have consented to such use in writing.

(2) That the use of the reservoir for the storage of carbon dioxide will not contaminate other formations containing fresh water, oil, gas, or other commercial mineral deposits.

(3) That the proposed storage will not endanger human lives or cause a hazardous condition to property.

D. The commissioner shall determine whether or not such reservoir is fully depleted of the original commercially recoverable mineral therein. If the commissioner finds that such reservoir has not been fully depleted, the commissioner shall determine the amount of the remaining commercially recoverable mineral.

E. The commissioner may issue any necessary order providing that all carbon dioxide which has previously been reduced to possession and which is subsequently injected into a storage reservoir shall at all times be deemed the property of the party that owns such carbon dioxide.

#### **§ 1107. Certificates of public convenience and necessity; certificate of completion of injection operations**

A. The commissioner shall issue a certificate of public convenience and necessity or a certificate of completion of injection operations to each person applying therefor if, after a public hearing

#### **§ 1108. Eminent domain, expropriation**

A. (1) Any storage operator is hereby authorized, after obtaining any permit and any certificate of public convenience and necessity from the commissioner required by this Chapter, to exercise the power of eminent domain and expropriate needed property to acquire surface and subsurface rights and property interests necessary or useful for the purpose of constructing, operating, or modifying a storage facility and the necessary infrastructure including the laying, maintaining, and operating pipelines for the transportation of carbon dioxide to a storage facility, together with telegraph and telephone lines necessary and incidental to the operation of these storage facilities and pipelines, over private property thus expropriated.

B. The exercise of the right of eminent domain granted in this Chapter shall not prevent persons having the right to do so from drilling through the storage facility in such manner as shall comply with the rules of the commissioner issued for the purpose of protecting the storage facility against pollution or invasion and against the escape or migration of carbon dioxide. Furthermore, the right of eminent domain set out in this Section shall not prejudice the rights of the owners of the lands, minerals, or other rights or interests therein as to all other uses not acquired for the storage facility.

D. The commissioner is neither a necessary nor indispensable party to an eminent domain



proceeding

### **§ 1109. Cessation of storage operations; liability release**

A. (1) Ten years, or any other time frame established by rule, after cessation of injection into a storage facility, the commissioner shall issue a certificate of completion of injection operations, upon a showing by the storage operator that the reservoir is reasonably expected to retain mechanical integrity and the carbon dioxide will reasonably remain emplaced, at which time ownership to the remaining project including the stored carbon dioxide transfers to the state.

Upon the issuance of the certificate of completion of injection operations, the storage operator, all generators of any injected carbon dioxide, all owners of carbon dioxide stored in the storage facility, and all owners otherwise having any interest in the storage facility, shall be released from any and all duties or obligations under this Chapter and any and all liability associated with or related to that storage facility which arises after the issuance of the certificate of completion of injection operations.

(2) Provided the provisions pertaining to site-specific trust accounts are not applicable, such release from liability will not apply to the owner or last operator of record of a storage facility if the Carbon Dioxide Geologic Storage Trust Fund has been depleted of funds such that it contains inadequate funds to address or remediate any duty, obligation, or liability that may arise after issuance of the certificate of completion of injection operations.

(4) It is the intent of this Section that the state shall not assume or have any liability by the mere act of assuming ownership of a storage facility after issuance of a certificate of completion of injection operations.

B. (1) In any civil liability action against the owner or operator of a storage facility, carbon dioxide transmission pipeline, or the generator of the carbon dioxide being handled by either the facility or pipeline, the maximum amount recoverable as compensatory damages for noneconomic loss shall not exceed two hundred fifty thousand dollars per occurrence.

C. Nothing in this Chapter shall establish or create any liability or responsibility on the part of the commissioner or the state to pay any costs associated with site restoration from any source other than the funds or trusts created by this Chapter, nor shall the commissioner or the state of Louisiana have any liability or responsibility to make any payments for costs associated with site restoration if the trusts created herein are insufficient to do so.

E. The commissioner and his agents are not liable for any damages arising from an act or omission if the act or omission is part of a good faith effort to carry out the purpose of this Chapter.

### **§ 1110. Carbon Dioxide Geologic Storage Trust Fund**

A. (1) There is established a special custodial trust fund which shall be administered by the commissioner.

C. The commissioner is hereby authorized to levy on storage operators the following fees or costs for the purpose of funding the fund:

(1) A fee payable to the office of conservation, in a form and schedule prescribed by the office of conservation, for each ton of carbon dioxide injected for storage. This fee is to be determined based upon the following formula:

(a)  $F \times 120 < M$

(b) "F" is a per unit fee in dollars per ton set by the office of conservation.

(c) "120" is the minimum number of months over which a fee is to be collected.

(d) "M" is the Maximum Payment of five million dollars and is the total amount of fees to be collected before the payment of the fee can be suspended as provided in this Section.

(e) The fee cannot exceed five million dollars divided by one hundred twenty divided by the total tonnage of carbon dioxide to be injected,  $((\$5,000,000/120)/ \text{total injection tonnage of carbon dioxide})$ .

(f) Once a storage operator has contributed five million dollars to the trust fund, the fee assessments to that storage operator under this Section shall cease.

E. The fund shall be used solely for the following purposes:

(1) Operational and long-term inspecting, testing, and monitoring of the site, including remaining surface facilities and wells.

(2) Remediation of mechanical problems associated with remaining wells and surface infrastructure.

(3) Repairing mechanical leaks at the site.

(4) Plugging and abandoning remaining wells or conversion for use as observation wells.

(5)(a) Administration of this Chapter by the commissioner in an amount not to exceed seven hundred fifty thousand dollars each fiscal year.

(b) The Oil and Gas Regulatory Fund created by R.S. 30:21 may be used for the administration of this Chapter as authorized by this Paragraph until June 30, 2014. Any such payments from the Oil and Gas Regulatory Fund shall be repaid from the Carbon Dioxide Storage Trust Fund by June 30, 2018.

(6) Payment of fees and costs associated with the administration of the fund or site-specific accounts.

(7) Payment of fees and costs associated with the acquisition of appropriate insurance for future storage facility liability if it should become available, either commercially or through government funding.

**§ 1111. Site-specific trust accounts**

A. If a storage facility site is transferred from one party to another, a site-specific trust account may be established to separately account for each such site for the purpose of providing a source of funds for long-term maintenance, monitoring, and site closure or remediation of that storage facility site at such time in the future when closure or remediation of that storage facility site is required.

B. In the event the parties to a transfer elect to establish a site-specific trust account under this Section, the commissioner shall require a storage facility long-term maintenance, monitoring, and site closure assessment to be made to determine the long-term maintenance, monitoring, and site closure requirements existing at the time of the transfer, or at the time the site-specific trust account is established.

C. The party or parties to the transfer shall, based upon the long-term maintenance and site restoration assessment, propose a funding schedule.

F. Once the commissioner has approved the site-specific trust account, and the account is fully funded, the party transferring the storage facility site and all prior owners, operators, and working interest owners shall not thereafter be held liable by the state for any site closure costs or actions associated with the transferred storage facility site. The party acquiring the storage facility site shall thereafter be the responsible party for the purposes of this Part.

I. After site closure has been completed and approved by the commissioner, funds from a site-specific trust account shall be disbursed as follows:

(1) The balance of the account existing in the site-specific trust account will be remitted to the responsible party.

(2) Such account shall thereafter be closed.