Kentucky Law Journal

Volume 98 | Issue 2 Article 7

2009

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INTRODUCTION

RAPID climate change threatens to fundamentally alter modern civilization. The very tools of industry which pulled untold millions out of grinding poverty have also left a legacy of pollution and environmental degradation taking centuries to reverse, at best. The unabated growth in the burning of fossil fuels since the advent of the Industrial Age has flooded the atmosphere with artificially high levels of carbon dioxide ("CO_2").[2] This gas traps heat from the sun within the atmosphere, creating the well-documented "greenhouse effect."[3] Recognizing this effect, the international community adopted the Kyoto Protocol in 1997 to lower global CO_2 emissions.[4] Initially greeted as an unqualified success, the Kyoto Protocol ultimately failed due to the continued inability of signatory countries to meet targeted CO_2 cuts and the United States' formal withdrawal from the treaty in 2001.[5] The failure of the Kyoto Protocol, however, has not stymied the research and development of new technologies and methods to rein in CO_2 emissions.

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1 Juris Doctor expected May 2010, University of Kentucky College of Law; B.A. with honors, *cum laude*, May 2007, Xavier University. The author expresses a special thank you to Professor Michael P. Healy for his help and guidance on this Note.

2 *See generally* CO_2 Now, http://co2now.org (providing historical data, current measurements, and future predictions of atmospheric CO_2) (last visited Nov. 4, 2009).

3 *See* AMANDA STAUDT ET AL., NAT'L ACAD. OF SCIS., UNDERSTANDING AND RESPONDING TO CLIMATE CHANGE: HIGHLIGHTS OF NATIONAL ACADEMIES REPORTS 3 (2008), http://dels.nas.edu/dels/rpt_briefs/climate_change_2008_final.pdf.

4 Kyoto Protocol to the United Nations Framework Convention on Climate Change, *opened for signature* Mar. 16, 1998, 2303 U.N.T.S. 148; *see* United Nations Framework Convention on Climate Change, Kyoto Protocol, http://unfcc.int/kyoto_protocol/items/2830.php (providing an immense amount of information regarding the formation, current status, and enforcement of the Kyoto Protocol) (last visited Nov. 4, 2009).

5 *See Q&A: The Kyoto Protocol*, BBC NEWS, Feb. 16, 2005, http://news.bbc.co.uk/ (search "Q&A: The Kyoto Protocol"; then follow hyperlink "News – Science/Nature – Q&A: The Kyoto Protocol").

One of the most promising methods to lower CO_2 levels is geological carbon sequestration ("GCS").[6] This technology offers a tremendous opportunity for the United States and the state of Kentucky, but legal uncertainty remains regarding its application. In particular, legal questions abound regarding property interests in CO_2. In order to capitalize on the opportunity presented by GCS and foster a friendly and conducive business environment for the GCS industry, it is in the best interest of Kentucky to enact legislation clearly articulating the property interest retained in geologically sequestered CO_2. Furthermore, such legislation should not burden CO_2 sequestration companies with an indefinite ownership interest in the gas.

Since GCS is a relatively new technology, this Note begins by providing background information on CO_2 sequestration generally and *geological* CO_2 sequestration specifically. In Section I, this Note discusses America's need for GCS and Kentucky's opportunity to become a leading state in the GCS movement. Section II examines analogous Kentucky case law involving the storage of natural gas, as well as idiosyncrasies in the Kentucky Supreme Court's ruling in *Texas American Energy Corp. v. Citizens Fidelity Bank & Trust Co.*,[7] the most important and pertinent Kentucky case regarding property interests in stored natural gas. Section II further explores similar case law from other states, emphasizing the alternative views and rationales these states have offered for the variance between their gas storage laws and Kentucky's. This Note ultimately concludes that Kentucky's natural gas law is ambiguous and that Kentucky courts should not extend it to GCS. Section III advocates a legislative response to deal with GCS in Kentucky. This section details GCS–related legislative efforts in other states, articulates the specifics of potential Kentucky legislation on the subject, and ultimately concludes that targeted legislation offers the best opportunity to promote GCS activity within Kentucky while simultaneously providing a legal regimen sufficient to dispense with anticipated disputes. Lack of express legislation would needlessly stymie a potentially useful tool in the fight against global warming and prevent the state of Kentucky from being a pioneer in the burgeoning field of GCS.

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6 *See* Daniel Finderen, *World Needs Big Drive for Carbon Capture: IEA*, http://www.reuters.com/article/GCA-GreenBusiness/idUSTRE59C1ET20091013 (last visited Nov. 5, 2009) (detailing International Energy Agency Chief Nubuo Tanaka articulating the need for "100 major projects for capturing and burying greenhouse gases by 2020 and thousands more by 2050 to help combat climate change"). The article also discusses U.S. Energy Secretary Steven Chu's belief that carbon sequestration could "do more to limit greenhouse gas emissions this century than a shift to renewable energies such as wind or solar power." *Id.; see also* Matthew L. Wald, *A Bid to Cut Emissions Looks Away From Coal*, N.Y. TIMES, Oct. 31, 2009, at A30 (exploring geological carbon sequestration for oil refineries, chemical plants, cement factories and ethanol plants as the easiest and least expensive application of sequestration technology).

7 Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co., 736 S.W.2d 25 (Ky. 1987).

I. CARBON SEQUESTRATION: A TRANSITIONAL WEAPON IN THE BATTLE AGAINST GLOBAL WARMING

Carbon sequestration involves the capture and storage of CO_2 in order to remove the gas from the atmosphere where it contributes to global warming.[8] Storage can take place inside plant life (terrestrial sequestration),[9] which naturally capture CO_2 from the air and store it within the plant structures. Alternatively, storage can occur underground.[10] Sequestering CO_2 in surface plant life lacks the permanence of underground geological sequestration because a plant's death and decomposition releases the captured CO_2 back into the atmosphere.[11] Storage of CO_2 in subsurface structures, such as natural rock formations, abandoned coal seams, or exhausted oil and gas reservoirs, represents a more permanent option for CO_2 storage. This underground sequestration potentially provides containment of CO_2 for thousands of years.[12]

A. Geological Carbon Sequestration: A More Permanent Solution

Recognizing the potential utility of GCS to combat the crisis of global warming, the United States has already begun tentative exploration of the technological, environmental, and economic feasibility of long–term underground GCS.[13] GCS requires the storage of massive amounts of CO_2 to be effective, but such underground storage raises a myriad of legal issues that have yet to be decided by the Kentucky court system or legislature. Due to the high costs currently associated with GCS, Kentucky must establish a framework that clearly resolves the legal issues involved in the sequestration process to provide consistency and predictability for the sequestration companies and third parties involved. Absent such a legal framework, few entities will be encouraged to pursue investment in sequestration projects within Kentucky, needlessly discarding a useful weapon in the fight against global warming.

Kentucky is particularly poised to reap benefits from the development of GCS technology and infrastructure. Kentucky's long history of coal mining has created an abundance of unminable coal seams that could serve

8 *See* MIDWEST REG'L CARBON SEQUESTRATION P'SHIP, CLIMATE CHANGE paras. 1–3, http://216.109.210.162/ClimateChange.aspx (last visited Nov. 4, 2009).

9 *Id.*

10 MIDWEST REG'L CARBON SEQUESTRATION P'SHIP, ABOUT GEOLOGIC CARBON SEQUESTRATION para. 1, http://216.109.210.162/Geologic.aspx (last visited Nov. 4, 2009).

11 MIDWEST REG'L CARBON SEQUESTRATION P'SHIP, ABOUT TERRESTRIAL CARBON SEQUESTRATION paras. 1–2, http://216.109.210.162/Terrestrial.aspx (last visited Nov. 4, 2009).

12 *See* ABOUT GEOLOGIC CARBON SEQUESTRATION, *supra* note 10, at para. 3.

13 *Id.* at paras. 3, 5–6, 8; *see* Matthew L. Wald, *Refitted to Bury Emissions, Plant Draws Attention*, N.Y. TIMES, Sept. 22, 2009, at A1.

as potential storage sites for sequestered CO_2.[14] Additionally, the state has a strong economic incentive to mitigate the environmental concerns associated with CO_2 emissions from coal-fired power plants because Kentucky utilities rely heavily on coal.[15] If the harmful environmental effects of producing electricity from coal cannot be controlled or ameliorated, Kentucky's ability to continue using this form of energy could be threatened. Kentucky has the opportunity to be a pioneer in the field of GCS, with the ultimate goal of turning the state's many coal-fired power plants into more environmentally friendly power producers. Indeed, Kentucky has already taken steps toward this goal through its membership in the Midwest Regional Carbon Sequestration Partnership ("MRCSP").[16]

The United States Department of Energy's National Energy Technology Laboratory[17] created the MRCSP "to assess the technical potential, economic viability, and public acceptability of carbon sequestration" within a region comprising the states of Indiana, West Virginia, Maryland, Michigan, Ohio, New Jersey, Pennsylvania, New York, and Kentucky.[18] The MRCSP concluded its Phase II research activities, which included small scale field tests throughout its covered region, in September 2009, and continues to explore a large-scale injection of one million tons of CO_2 in a single midwestern geologic reservoir.[19] The member states of the MRCSP are particularly well-suited for GCS research because of their current reliance on coal to meet sixty-eight percent of their power needs.[20]

II. KENTUCKY'S NATURAL GAS LAW: THE STARTING PLACE FOR A LEGAL FRAMEWORK FOR GCS

One of the most pressing GCS legal issues left unresolved involves the property status of CO_2 after its injection into underground geological structures. Kentucky case law clearly holds that a surface owner has exclusive rights to exploit subsurface natural gas below his or her property.[21] Such an ability to "reduce[ ]... [the gas] to possession" below one's property exists even when it causes the natural gas to migrate from subsurface areas

14 *See* ABOUT GEOLOGIC CARBON SEQUESTRATION, *supra* note 10, at paras. 2, 5.

15 *See* ENERGY INFO. ADMIN., STATE ENERGY PROFILES: KENTUCKY, http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=KY (last visited Nov. 4, 2009).

16 MIDWEST REG'L CARBON SEQUESTRATION P'SHIP, MIDWEST REGIONAL CARBON SEQUESTRATION PARTNERSHIP para. 1, http://216.109.210.162/Mrcsp.aspx (last visited Nov. 4, 2009) [hereinafter ABOUT MRCSP].

17 NAT'L ENERGY TECH. LAB., NETL: ABOUT NETL, http://www.netl.doe.gov/about/index.html (describing the purpose and projects of the National Energy Technology Laboratory) (last visited Nov. 4, 2009).

18 ABOUT MRCSP, *supra* note 16, at para. 1.

19 *Id.* at paras. 8-9.

20 *Id.* at para. 2.

21 United Carbon Co. v. Campbellsville Gas Co., 18 S.W.2d 1110, 1112 (Ky. 1929).

beneath a third party's land.[22] In all instances, Kentucky limits the right to siphon off such gas by requiring that the gas "be taken for a lawful purpose and in a reasonable manner,"[23] explicitly denying the ability to siphon gas for the mere purpose of denying access to third parties.[24]

GCS represents a different factual situation since the CO_2 gas is produced, rather than naturally occurring, as a by–product of artificial mechanisms such as power production. Also, instead of being extracted for practical use as a fuel, it is stored deep underground as a waste product. Despite the dissimilarities between exploitation of subsurface natural gas deposits and the sequestration of CO_2 in underground geological formations, without statutory authority, Kentucky courts must turn to imperfectly analogous case law to settle disputes. In particular, the state of Kentucky has well–developed case law regarding property interests in the storage of natural gas injected underground.[25]

A. Kentucky Case Law Regarding Ownership of Natural Gas Stored Underground: Then and Now

The fugitive nature of oil and natural gas has historically posed problems for courts and legislatures attempting to develop uniform rules of property ownership.[26] The state of Kentucky originally adopted the law of capture[27] to decide whether an entity pumping natural gas into underground reservoirs retains possession of the gas, even when the reservoir infringes underneath a third party's land.[28] The law of capture grants ownership of oil or natural gas to any entity extracting the resource from the surface of their own land, even if such extraction actually captures resources that migrate from beneath an adjacent property owner's land.[29]

In *Hammonds v. Central Kentucky Natural Gas Co.*, the Central Kentucky Natural Gas Company ("Central Kentucky") imported vast quantities of natural gas to inject into an exhausted underground gas field.[30] Central Kentucky later withdrew this gas to supply local consumers as needed.[31]

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22 *Id.* at 1112.

23 *Id.* at 1111 (quoting Louisville Gas Co. v. Ky. Heating Co., 111 S.W. 374, 376 (Ky. 1908)).

24 Commonwealth v. Trent, 77 S.W. 390, 392–93 (Ky. 1903).

25 *See* Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co., 736 S.W.2d 25 (Ky. 1987).

26 *See, e.g., id.*

27 *See* 38 AM. JUR. 2D *Gas and Oil* § 10 (1999).

28 Hammonds v. Cent. Ky. Natural Gas Co., 75 S.W.2d 204, 205 (Ky. 1934); *overruled by* Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co., 736 S.W.2d 25 (Ky. 1987).

29 *See* 38 AM. JUR. 2D *Gas and Oil* § 10 (1999).

30 *Hammonds*, 75 S.W.2d at 204.

31 *Id.*

The plaintiff in *Hammonds* was a nearby landowner whose property was partially above the underground reservoir into which Central Kentucky pumped their gas.[32] Having never agreed to lease her land to Central Kentucky for any purpose, the appellant brought suit for damages on a theory of trespass, claiming "the gas was placed in or under her property without her knowledge or consent."[33]

Drawing upon Pennsylvania law,[34] the Kentucky Court of Appeals adopted the rule that while fugitive resources such as oil and gas remain under a person's land, that person has absolute ownership of said resources.[35] The court qualified this absolute ownership theory by further holding that when such fugitive resources migrate from underneath a surface landowner's property, that landowner ceases to have a property interest in those resources.[36] Thus, Central Kentucky retained possession of their gas up until the point they injected it into the underground reservoir, which essentially restored the gas "to its original wild and natural status."[37] Because Central Kentucky no longer owned the gas stored underground, the appellant had no basis to bring a suit for trespass.[38] *Hammonds* continued to be the rule of law in Kentucky regarding ownership of fugitive resources stored underground for over the next half-century.[39]

The outright rejection of *Hammonds* by other states like Pennsylvania[40] and Texas,[41] however, guided the Kentucky Supreme Court to later limit the scope of the ruling regarding ownership of underground fugitive resources.[42] In *Texas American Energy Corp. v. Citizens Fidelity Bank & Trust Co.*, Texas American Energy Corporation ("Texas American") sought a declarative judgment to clarify the ownership interest in natural gas they were storing in underground reservoirs.[43] Texas American had entered into a Revolving Loan Agreement valued at twenty-four million dollars with Citizens Fidelity Bank & Trust Company, among others, to provide money for the purchase of natural gas that they would then pipe to Kentucky and distribute to customers during "peak demand."[44] Under this agreement,

32 *Id.*

33 *Id.*

34 *See* Westmoreland & Cambria Natural Gas Co. v. De Witt, 18 A. 724, 725 (Pa. 1889).

35 *Hammonds*, 75 S.W.2d at 205.

36 *Id.*

37 *Id.*

38 *Id.* at 206.

39 *See id.*, *overruled by* Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co., 736 S.W.2d 25, 26 (Ky. 1987).

40 *See* White v. N.Y. State Natural Gas Corp., 190 F. Supp. 342, 349 (W.D. Pa. 1960).

41 Lone Star Gas Co. v. Murchison, 353 S.W.2d 870, 879 (Tex. 1962).

42 *Tex. Am. Energy Corp.*, 736 S.W.2d at 27–28.

43 *Id.* at 25–28.

44 *Id.* at 25.

all parties agreed to convey a security interest in Texas American's gas.[45] Nonetheless, during the process of this arrangement, disagreement arose over whether the stored gas was "personal property," or whether the release of the gas back into nature meant it reverted to "an interest in real estate" only.[46] The resulting ruling partially overruled *Hammonds* and set the stage for contemporary analysis of property interests in natural gas stored underground in Kentucky.[47]

The Kentucky Supreme Court concluded that "natural gas once converted to personal property by extraction remains personal property notwithstanding its subsequent storage in underground reservoirs *with confinement integrity*."[48] In essence, the fact that the gas could only escape if extracted by Western Kentucky Gas Company (which was subsequently purchased by Texas American, the company involved in the suit[49]) distinguished the case from *Hammonds*, where "there was a known 'leak' in the gas storage reservoir" because Mrs. Hammonds' land was "a part of the natural reservoir, though not controlled by the storage company."[50] If a company completely owns the surface over which the gas is being stored, then it retains possession of the gas even post–storage.[51] If an adjacent landowner's property lies above even a small portion of the underground storage facility, then a "known leak" exists and no retention of a property interest in the gas occurs.[52]

The status of precedential law illustrates the need to enact legislation clearly articulating the property interest in stored CO_2. While there are some similarities between sequestered CO_2 and natural gas, sufficient differences exist to mandate the need for a separate statutory regimen applicable to CO_2. Additionally, the Kentucky case law on natural gas ownership is too uncertain to extend it to cover GCS.

B. Current Kentucky Law Regarding Property Rights in Natural Gas Stored Underground, as Outlined in Texas American Energy Corp. v. Citizens Fidelity Bank & Trust Co., *is Contradictory and Should Not Be Extended to Cover GCS*

The Kentucky Supreme Court found the reasoning from the Pennsylvania and Texas courts in *White v. N.Y. State Natural Gas Corp.* and *Lone Star Gas Co. v. Murchison* to be "sound and logical," and based their

45 *Id.*

46 *Id.* at 25–26.

47 *Id.* at 25–28.

48 *Id.* at 28 (emphasis added).

49 *Id.* at 25.

50 *Id.* at 28.

51 *See id.*

52 *See id.*

subsequent limitation of *Hammonds* almost solely upon it.[53] The court, however, refused to apply the *White* and *Lone Star* rulings completely, instead opting to carve out an exception to retention of gas ownership in situations where there is a known "leak" in the underground reservoir.[54] The court refused to exhaustively define "leak," and simply held that "leak" includes situations where at least a section of an underground reservoir lies below the land of a third party who had not given consent for use of their land.[55]

The *Texas American* ruling can be interpreted in different ways, potentially making uniformity of CO_2 geological sequestration regulation in Kentucky difficult to achieve. Absent express legislation on the subject, it could serve to muffle the development of geological sequestration in the state. Difficulty in interpreting this case stems from the Kentucky Supreme Court's adoption of Judge Thomas B. Spain's Amended Opinion of the Hopkins Circuit Court[56] for part of their opinion, and the ensuing variances in the language used by the court to conclude their opinion.[57] The quoted section of the Spain opinion[58] distinguished *Hammonds* on the basis that a leak existed in the underground reservoir simply because it extended underneath an uncooperative third party's land.[59] Because of the "leak" at issue in the case, the underground reservoir did not have "confinement integrity"[60] and possession of the gas was lost upon storage, in line with the *ferae naturae* doctrine.[61] In contrast to the language in Spain's opinion, the court held in its own words in the conclusion of its opinion:

> [W]hen previously extracted oil or gas is subsequently stored in underground reservoirs capable of being defined with certainty and the integrity of said reservoirs is capable of being maintained, title to such oil or gas is not lost and said minerals do not become subject to the rights of the owners of the surface above the storage fields.[62]

53 *Id.* at 27–28.

54 *Id.* at 28.

55 *Id.*

56 *Id.* at 25.

57 *Id.* at 28.

58 *Id.* at 25–28.

59 *Id.* at 28.

60 *Id.*

61 *Id.* at 26 (quoting Hammonds v. Cent. Ky. Natural Gas Co., 75 S.W.2d 204, 205 (Ky. 1934)) ("Commissioner Stanley traced the evolution of judicial thought with regard to oil and gas as distinguished from the 'solid minerals.' He adopted the then popular theory that because of their fugacious nature, oil and gas were 'wild and migratory in nature,' and hence similar to animals *ferae naturae* (i.e. wild by nature). This being so, he reasoned, the law as applied to wild animals ought to be applicable by analogy to oil and gas—minerals *ferae naturae*. Consequently, since a fox until his capture in the forest belonged to all mankind, and if trapped and released in another forest reverted to common property, shouldn't the same logic apply to 'captured' and injected natural gas?").

62 *Id.* at 28.

This conclusion by the court creates the basis for some of the uncertainty with regard to current Kentucky natural gas law.

The court's conclusion contains an apparent contradiction with Judge Spain's opinion, which held that a "leak" occurs anytime a noncooperative third party's land is above the underground storage field.[63] The *Texas American* conclusion makes no mention of such leaks, instead holding that an entity will retain possession of stored gas as long as the underground storage field can be "defined with certainty" and its "integrity . . . is capable of being maintained."[64] The *Texas American* conclusion goes on to say that an entity will still maintain possession of stored gas *even when third parties have land above the underground reservoir.*[65] Under the adopted Spain opinion, once the storage field abuts under the land of a third party, a "leak" has occurred which necessarily means that "confinement integrity" is lost, as is the storing entity's possession of the gas.[66] The inconsistency of the adopted opinion and the Kentucky Supreme Court's own stated conclusion could drastically confuse the status of geologically sequestered CO_2.

Absent express legislation, the strict application of the Spain opinion to the GCS context could result in a situation where companies capturing and subsequently storing CO_2 in underground geological formations retain possession of the gas only when the geological formation lies entirely underneath land owned or operated by the sequestering company.[67] In the more likely situation where the geological formation contains a "known leak," the company would lose possession of the gas.[68] Conversely, strictly applying the actual language of the Kentucky Supreme Court's conclusion in *Texas American* would result in a situation where entities storing previously extracted CO_2 in underground geological formations would retain possession of the gas anytime they could chart the boundaries of the storage field "with certainty" and where the storage field was sufficiently closed off from the surface so that the "integrity of said reservoirs is capable of being maintained."[69] A leak would not necessarily occur simply because the storage field extended underneath the land of a third party. Rather, the conclusion implies that a leak capable of destroying the "integrity" of the storage field exists only when the reservoir is exposed to the surface,

63 *Id.* at 25–28.

64 *Id.* at 28.

65 *See id.* ("It is therefore the opinion of this court that, in those instances when previously extracted oil or gas is subsequently stored in underground reservoirs capable of being defined with certainty and the integrity of said reservoirs is capable of being maintained, title to such oil or gas is not lost and said minerals do not become subject to the rights of the owners of the surface above the storage fields.").

66 *Id.* at 28.

67 *Id.* at 27–28.

68 *See id.*

69 *Id.* at 28.

possibly by natural geological fissures, porous rock and sediment, or pre-existing wells.[70]

The question of whether an entity storing natural gas or CO_2 underground will lose its property interest upon discovery of a leak subsequent to storage also arises. Under the adopted Spain opinion, even a later discovered leak should relieve the gas-storing entity of possession of the gas, in accordance with the "*ferae naturae* analogy."[71] The language of the Kentucky Supreme Court's conclusion, however, would only relieve possession of the stored gas if a subsequently found leak exposed the storage field to the surface.[72]

Because of the inconsistencies in the *Texas American* case, Kentucky lacks definitive case-law precedent for dealing with possessory interests in the underground storage of CO_2. An interpretation along the lines of Judge Spain's opinion would always burden GCS companies with retained possession of increasingly vast quantities of stored CO_2 or subject them to frivolous litigation on the basis of phantom underground trespass claims like that seen in *Hammonds*. A system of possession such as that advocated by Judge Spain would make it easier for companies to sequester CO_2 since a leak would exist anywhere the underground storage field extended under the land of at least one third party. The company would then not be burdened unnecessarily with possession of vast quantities of useless CO_2 or hampered needlessly from sequestering CO_2 by unwilling third-party landowners.

Alternatively, if Kentucky law is interpreted to state that possession is not extinguished by the mere extension of the geological formation beneath a third party's land, carbon sequestering companies would be burdened with possession of an ever-increasing storage field of useless gas. Additionally, because possession of the gas would continue, the company would also be required to satiate the demands of all involved surface landowners prior to initiating gas storage. Such an environment would be less than ideal for the operation of GCS companies. Furthermore, if it were found that a storage field previously thought to only lie under the sequestering company's land actually extended under a third party's land, that third party could bring

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70 *See id.*

71 *Id.* Spain compared the stored gas to a wild fox, indicating that upon being released to the land of another, the storage company would no longer retain sole possession of the gas: "Western has captured the wild fox, hence reducing it to personal property. The fox has not been released in another forest, permitting it to revert to the common property of mankind." *Id.*

72 *See id.* ("[W]hen previously extracted oil or gas is subsequently stored in underground reservoirs capable of being defined with certainty *and the integrity of said reservoirs is capable of being maintained*, title to such oil or gas is not lost and said minerals do not become subject to the rights of the [third-party] owners of the surface above the storage fields.") (emphasis added). Because this language states that the integrity of storage fields can still be maintained despite extending underneath the land of a third party, this logically indicates that integrity will only be broken by undesired exposure of the storage field to the surface.

action for recompense from the storage company for trespass.

C. Relevant Case Law from Other Jurisdictions

As we have seen, Kentucky has distanced itself from the rule of capture originally adopted in *Hammonds*.[73] The Kentucky Supreme Court's decision to move away from *Hammonds* was driven in part by Pennsylvania[74] and Texas[75] case law fully rejecting the "*ferae naturae*" approach towards natural gas storage found in *Hammonds*. The Supreme Court of Kentucky essentially opted for a hybrid approach that treats stored natural gas as *ferae naturae* in some instances, but not so in others.[76] The Pennsylvania case of *White v. New York State Natural Gas Corp.* involved a plaintiff with a partial interest in the proceeds from certain gas wells.[77] Gas production in the plaintiff's severely depleted wells had peaked years prior.[78] Tennessee Gas Transmission Company ("Tennessee") began storing natural gas in a nearby underground reservoir which it thought was independent from the plaintiff's wells.[79] In reality, Tennessee's "independent" reservoir actually connected to the plaintiff's field, and its stored natural gas migrated to the plaintiff's wells where production suddenly spiked.[80] When New York State Natural Gas Corporation ("New York State") realized its production spiked because of gas migration from Tennessee's storage field, it agreed to cut back gas extraction.[81]

Having a partial interest in those wells, the plaintiff brought suit to halt the cutting back of gas production on the basis that Tennessee had lost its property interest in the gas when it stored the gas in an underground reservoir.[82] The *White* court ultimately stated that the stored natural gas had not "escaped from its owners" because it was pumped into a "welldefined [sic] storage field," regardless of the fact that the storage field was geologically connected with the land of a third party.[83] Additionally, the court in *White* felt the storage of natural gas in underground reservoirs far from where the gas was originally extracted meant there was "no return of

73 *Id.* at 28 ("Any language indicating the contrary in *Hammonds v. Central Kentucky Natural Gas Co.* . . . is specifically overruled.").

74 *See, e.g.*, White v. N.Y. State Natural Gas Corp., 190 F. Supp. 342, 347–348 (W.D. Pa. 1960).

75 *See, e.g.*, Lone Star Gas Co. v. Murchison, 353 S.W.2d 870, 875–77, 879 (Tex. 1962).

76 *Tex. Am. Energy Corp.*, 736 S.W.2d at 27–28.

77 *White*, 190 F. Supp. at 343.

78 *Id.* at 344.

79 *Id.*

80 *Id.* at 344–45.

81 *Id.* at 345.

82 *Id.* at 343.

83 *Id.* at 348.

storage gas to its 'natural habitat'" because this new gas would be "differing materially in chemical and physical properties from native . . . gas."[84]

Texas discussed the issue of ownership of stored natural gas in the case of *Lone Star Gas Co. v. Murchison*.[85] *Lone Star* involved a natural gas public utility whose business included the transportation and distribution of natural gas to various consumers.[86] To accommodate the variance between seasonal periods of high and low demand for natural gas, the utility found it effective to store its natural gas in an exhausted underground gas reservoir during periods of low demand and to extract the same gas later during periods of high demand.[87] Parts of the exhausted underground reservoir, however, were located beneath the property of the adjacent defendant landowner, who subsequently opened a gas–extraction well on his property.[88] The plaintiff utility sued to prevent the defendants from continuing to extract and sell the stored natural gas, while the defendants claimed the plaintiff's property interest in the gas was lost when it was stored in the underground reservoir.[89] The lower court relied upon prior Texas case precedent to declare that the property interest in the natural gas was lost once it was stored in the underground reservoir.[90] Particularly, the trial court cited *Brown v. Humble Oil and Refining Co.*, a 1935 Texas case which, under similar factual circumstances, held that the "law of capture" in Texas gave the "right to produce all of the oil and gas that will flow out of the well on one's land . . . [a]nd it is limited only by the physical possibility of the adjoining landowner diminishing the oil and gas under one's land by the exercise of the same right of capture."[91]

The Texas Court of Appeals ultimately reversed the lower court's ruling that the plaintiff had lost title to the natural gas upon storage underground.[92] The court noted that the Kentucky case of *Hammonds* was the primary authority on the issue of property interests retained in stored natural gas, but went further by discussing the history of controversy the *Hammonds*' ruling had engendered.[93] In particular, the *Lone Star* court found the oft–used analogy of oil and natural gas to wild animals unpersuasive due to the "inanimate" and non–reproductive nature of oil and natural gas and the fact that oil and natural gas are "subject to be moved solely by pressure or

84 *Id.*

85 Lone Star Gas Co. v. Murchison, 353 S.W.2d 870, 870–71 (Tex. 1962).

86 *Id.* at 871.

87 *Id.* at 871–72.

88 *Id.* at 873.

89 *Id.* at 871.

90 *Id.*

91 Brown v. Humble Oil & Ref. Co., 83 S.W.2d 935, 940 (Tex. 1935).

92 *Lone Star Gas Co.*, 353 S.W.2d at 879.

93 *Id.* at 876.

mechanical means."[94] Additionally, the *Lone Star* court found persuasive the argument that it is in the public interest to permit the economical storage of natural gas in underground storage areas.[95] Since companies would be hesitant to use such storage methods if doing so would cause them to lose their possessory interest in the natural gas and allow neighboring landowners to siphon such gas unimpeded, it was in the public's best interest to allow a company storing natural gas underground to retain possession of the gas. Also, relying on the contemporary "advanced knowledge and scientific achievement in the oil and gas industry"[96] and the ability of that knowledge and scientific achievement to now show the dissimilarity between the properties of natural gas and wild animals, the *Lone Star* court abandoned the ruling of *Hammonds* in Texas.[97] Instead, it opted to retain a possessory interest in stored natural gas despite subsequent storage in an underground reservoir located below surface property owned by other persons.[98]

III. Supporting a GCS Industry: A Legislative Response

Global CO_2 emissions are massive in scale.[99] In order for GCS to have a marked effect on reducing such emissions, an equally massive amount of CO_2 must be stored underground, which requires huge reservoirs. Examples of potential sequestration sites include "deep saline formations, depleted oil and gas reservoirs, un–minable coal seams and other formations."[100] While such sites are not short in supply, the problem remains that such underground formations can lie beneath a plethora of surface landowners.

Knowing this, surface landowners whose property lies atop even a small fraction of an underground reservoir could halt or seriously increase the cost of GCS, depending upon the property status conferred to the CO_2. Indeed, because of the ambiguity of the *Texas American* decision, different conclusions can be drawn on this issue based upon interpretations of what is meant by "reservoirs capable of being defined with certainty and . . . integrity" and what is meant by reservoirs "capable of being maintained."[101]

Obtaining permission from all landowners before pumping CO_2 into the geological structure would drastically affect the viability of the whole GCS

94 *Id.* at 879.

95 *Id.* at 876.

96 *Id.* at 879.

97 *Id.* at 878.

98 *Id.*

99 *See* EPA, Global Greenhouse Gas Data, http://www.epa.gov/climatechange/emissions/globalghg.html (last visited Nov. 4, 2009).

100 Larry Nettles & Mary Conner, *Carbon Dioxide Sequestration—Transportation, Storage, and Other Infrastructure Issues*, 4 Tex. J. Oil, Gas, & Energy L. 27, 35 (2008).

101 Tex. Am. Energy Corp. v. Citizens Fid. Bank & Trust Co., 736 S.W.2d 25, 28 (Ky. 1987).

scheme. Concessions for property owners could drastically drive up costs under the best case scenario. The worst case scenario involves the outright refusal of property owners to allow GCS under their land. Legislative action offers the best option to deal with such grave obstacles. Ideally, the result would be a situation whereby surface landowners could not unduly delay GCS projects by instituting frivolous suits of trespass or extorting companies for large sums in exchange for concessions.

A. State and Federal Governments Are Best Suited to Assume Possession and Liability for Geologically Sequestered CO_2

Underground geological sequestration can store massive amounts of CO_2 for potentially thousands of years.[102] Under a scheme such as that advocated in this Note, where GCS companies do not retain an indefinite possessory interest in CO_2, the state or federal government must take action to resolve what entity or entities assume liability resulting from any negative GCS consequences. Placing liability with companies storing CO_2 makes little sense, as the chances of these companies existing the entire duration of the CO_2 sequestration are extremely remote. If storage companies cannot be expected to still be operating for the potentially thousands of years of CO_2 sequestration, then having either the federal or state government assume liability for the sequestered CO_2 represents the best option for the long time-frames anticipated.

GCS generally presents a very limited risk of serious negative consequences,[103] but like any process that deals with massive quantities of fugitive materials, there always remains the potential for danger. The particular dangers of storing vast amounts of CO_2 include contamination of underground water sources, contamination of terrestrial plant and animal life, increased pressure on geological fault lines, and negative health effects on humans from a mass CO_2 release.[104] Contact between CO_2 and underground sources of water can result in water acidification, contamination of water with co-contaminants in the CO_2 stream such as hydrogen sulfide and nitrous oxides, or increased water salinization stemming from the pressure required for GCS.[105] Leakage of large amounts of sequestered CO_2 can also result in increased soil acidification and adverse effects on the health of surface dwelling mammals, including humans.[106] These health effects

102 *See* Alexandra B. Klass & Sara E Bergan, *Carbon Sequestration and Sustainability*, 44 TULSA L. REV. 237, 243 (2008).

103 *See* MONT. ENVTL. INFO. CTR., CARBON SEQUESTRATION RISKS ACCORDING TO EPA'S 7/15/08 PROPOSED RULEMAKING (2009), http://www.meic.org/2009-legislature-1/fact-sheets/Carbon%20Sequestration.pdf.

104 *Id.*

105 *Id.*

106 *Id.*

include vision and hearing impairment, and in extreme cases, asphyxiation and death.[107] Additionally, improperly injected CO_2, in sufficient quantities, could result in increased stress on geological fault lines.[108]

These potential risks are severe, but the probability of their occurrence nonetheless remains small.[109] Since the companies storing CO_2 will rarely continue operating for the duration of sequestration, the federal and/or state governments should assume liability for the risks discussed. While it is hard to speculate whether federal or state governments will even exist for the duration of the CO_2 sequestration, their long–term viability is certainly greater than that of private companies. Federal and state governments are also in a much greater position to assume any resultant financial liabilities in the unlikely event of negative consequences arising from the GCS process. Lowering CO_2 emissions must be a central public policy concern if the United States and the world are to successfully combat global warming. With GCS as a potentially valuable tool in this battle, government willingness to assume liability for negative consequences would further public welfare by providing additional incentives for GCS companies.

A similar debate has taken place in Alberta, Canada, featuring proposals for the government to assume liability of geologically sequestered CO_2, possibly after a set amount of years have passed or after the official conclusion of the sequestration operation.[110] Such conscious efforts aim to foster a healthy environment for the GCS industry.[111] Kentucky stands to gain by likewise adopting government assurances on liability for stored CO_2.

B. Legislative Efforts in Other States

Multiple states have already recognized the potential in GCS and have enacted or considered legislation to regulate its application.[112] The legislatures of these states have explicitly acknowledged the necessity of targeted statutes to regulate the novel legal issues of GCS and to place their states in a position to capitalize on future GCS projects. For instance, Illinois passed legislation in 2007 in a successful effort to lure the GCS–

107 *Id.*

108 *Id.*

109 *See* Dan Healing, *Liability Issue Raised Over Carbon Capture*, CALGARY HERALD, July 17, 2008, at E4.

110 *Id.*

111 *Id.*

112 *See generally* UNIV. COLL. LONDON, UCL CARBON CAPTURE LEGAL PROGRAMME, DEDICATED CCS LEGISLATION, http://www.ucl.ac.uk/cclp/ccsdedlegnatoverview.php (compiling and providing links to legislative efforts at carbon capture in the United States and abroad) (last visited Nov. 4, 2009).

oriented FutureGen Project[113] to the state.[114] In passing the "Clean Coal FutureGen for Illinois Act," Illinois agreed to accept all rights, titles, interests, and liabilities associated with post-injected sequestered CO_2 in exchange for locating the FutureGen Project within the state.[115] The state also offered additional incentives to make Illinois the best location for the FutureGen Project.[116] The legislation reiterated that "in order to meet the energy needs of the State of Illinois, keep its economy strong and protect the environment while reducing its contribution to human-induced greenhouse gas emissions, the State of Illinois must be a leader in developing new low-carbon technologies."[117] Illinois, however, did not relieve the FutureGen Project of all liability, but instead specifically limited the state's assumption of liability to not include intentional or willful misconduct by the operators of the FutureGen Project[118] or extend to the "construction, operation, or other pre-injection activity of the Operator."[119] This targeted legislation ultimately resulted in the FutureGen Alliance locating the FutureGen Project in Mattoon, Illinois.[120]

Likewise, Kansas enacted legislation in 2007 anticipating the future potential of GCS.[121] This legislation provided property[122] and income tax[123] incentives for companies sequestering CO_2. Additionally, the legislature established an underground CO_2 storage fund within the state treasury to administer various provisions of the act, including payment of the costs of mitigating adverse environmental impacts, emergency and remedial activities, and program administration costs, among other things.[124] New Mexico has considered offering similar incentives to encourage GCS companies to construct and operate GCS facilities within the state.[125]

Wyoming has taken an alternative approach to the GCS-friendly legislation previously discussed. Rather than limiting the liability of

113 *See* FutureGen Industrial Alliance, Inc., http://www.futuregenalliance.org/ (last visited Nov. 4, 2009).

114 *See* 20 ILL. COMP. STAT. ANN. 1107/5 (West 2008) ("[T]he purpose of this Act is to provide the FutureGen Alliance with adequate liability protection and permitting certainty to facilitate the siting of the FutureGen Project in the State of Illinois.").

115 20 ILL. COMP. STAT. ANN. 1107/20 (West 2008).

116 *Id.* 1107/45.

117 *Id.* 1107/10.

118 *Id.* 1107/30.

119 *Id.* 1107/15.

120 Press Release, U.S. Dep't of Energy, Secretary Chu Announces Agreement on FutureGen Project in Mattoon, IL (June 12, 2009), http://www.futuregenalliance.org/news/doe_pr_06_12_09.pdf.

121 KAN. STAT. ANN. § 55-1637 (2008 Supp.).

122 *Id.* § 79-233.

123 *Id.* § 79-32,256.

124 *Id.* § 55-1638.

125 N.M. STAT. ANN. § 7-2-18.26 (West 2009).

GCS companies, the Wyoming legislature has explicitly articulated that sequestering companies presumptively retain ownership and liability of all injected CO_2.[126] Furthermore, owners of the subsurface pore space used to store sequestered CO_2 are not liable for any effects of the GCS "solely by virtue of their interest or by their having given consent to the injection."[127] Wyoming additionally reiterated that surface landowners retain ownership of all subsurface pore space, though such landowners have the option to sever and convey such ownership.[128] With regard to determining the priority of subsurface uses between severed mineral estates and pore space ownership, severed mineral estates remain the dominant interest, "regardless of whether ownership of the pore space is vested in the several owners of the surface or is owned separately from the surface."[129]

Montana has proposed a hybrid approach which affords several protections to third party surface landowners, but also encourages GCS activity within the state by limiting the liability of sequestering companies and lowering the consent requirements needed from surface landowners.[130] In particular, the proposed Montana legislation reiterates that surface landowners retain ownership of pore space below their property, and also provides for the dominance of the mineral estate over GCS rights.[131] The legislation relieves sequestration companies of title and liability to stored CO_2 after a period of thirty years, pursuant to satisfying certain regulatory requirements.[132] GCS companies failing to satisfy these requirements retain title and liability for the stored CO_2 indefinitely.[133] GCS companies must also notify by mail all persons having an ownership interest in the surface area above the pore space, subsurface storage rights, or subsurface minerals within the proposed storage area.[134] While the bill requires notification of *all* persons having a related ownership interest in the CO_2 storage area, it only requires the consent of sixty percent of the persons owning or holding the pore space capacity of the proposed storage area in order to permit CO_2 injection to occur.[135]

C. The Need for Legislation in Kentucky

Kentucky should also consider legislation designed to clearly establish

126 WYO. STAT. ANN. § 34–1–153 (2009).

127 *Id.*

128 *Id.* § 34–1–152.

129 *Id.*

130 *See* 2009 Mont. Laws Ch. 474, § 4.

131 *Id.* at § 1.

132 *Id.* at § 4.

133 *Id.*

134 *Id.* at § 24.

135 *Id.*

a regulatory framework for GCS–related activities within the state. As mentioned previously, reliance on analogous Kentucky case law has many pitfalls, including ambiguity regarding the property status of natural gas stored underground. Additionally, inherent differences between sequestered CO_2 and stored natural gas exist which cast doubt on whether natural gas case law is even appropriate to guide legal analyses regarding GCS. Legislation offers the best opportunity to clearly articulate and define the GCS property interests and liability issues that Kentucky currently leaves unresolved.

The legislative actions by other states previously discussed provide guidance for Kentucky as to what type of statutory framework is most appropriate. In order to place Kentucky at the forefront of the GCS movement and to entice GCS–related industries to invest and locate within the state, Kentucky must pass legislative incentives indicating a state–wide commitment to providing a stable legal regimen for CO_2 sequestration. Without such incentives, GCS companies will inevitably locate to states such as Illinois, Montana, or Kansas, where friendly legislation assures such companies of generous tax incentives and liability relief.[136] In much the same way that Delaware established itself as an ideal location for companies to incorporate by enacting corporation–friendly legislation, Kentucky can also position itself as an ideal GCS location through smart, pragmatic, and targeted legislation.

The most pressing issues Kentucky must legislatively resolve include property interests in sequestered CO_2 and the resulting liability from such sequestration. Other states have pursued essentially three different legislative directions when addressing these issues. Wyoming has provided that GCS companies retain ownership of, and liability for, sequestered CO_2 indefinitely.[137] Illinois has taken the opposite approach and relieved the GCS FutureGen Project from all ownership and liability resulting from CO_2 sequestration,[138] while Montana has proposed a hybrid approach whereby the state assumes ownership and liability of sequestered CO_2 thirty years after sequestration, so long as the GCS company meets certain conditions.[139] Kentucky should consider the Illinois and Montana approaches to provide an optimal legal climate for GCS companies.

Perhaps the best route for Kentucky would be to emulate the Illinois approach by initially luring a GCS testing or pilot facility to locate within the state by assuming all ownership and liability resulting from CO_2 sequestration at that facility. Kentucky could then follow such targeted and narrow legislation with a broader statute whereby the state assumes

136 *See* 20 ILL. COMP. STAT. ANN. 1107/20 (West 2008); 2009 Mont. Laws Ch. 474; KAN. STAT. ANN. § 79–233 (2008 Supp.); KAN. STAT. ANN. § 79–32,256 (2008 Supp.).

137 WYO. STAT. ANN. § 34–1–153 (2009).

138 20 ILL. COMP. STAT ANN. 1107/20.

139 *See* 2009 Mont. Laws Ch. 474, § 4.

ownership and liability of stored CO_2 after a certain amount of years post-injection, while additionally conditioning the state assumption of ownership and liability on the satisfaction of certain requirements. Specifically, Kentucky should adopt a base period of twenty-five years for non-pilot GCS facilities, beyond which Kentucky and/or the federal government assume possession of stored CO_2. While arbitrary, twenty-five years represents sufficient time to adequately monitor the GCS operation to ensure safe, reliable, and sound storage. Lengthier periods of time proportionately increase the risk that GCS companies will not survive the duration of their liability, resulting in situations where negatively impacted citizens have no entity from which to seek recourse. Additionally, a period of twenty-five years is not so distant as to make the government assumption of ownership and liability essentially meaningless for GCS companies because it is too far in the future. Kentucky should also articulate a clear legislative checklist delineating the benchmarks that GCS companies must satisfy in order to relieve themselves of CO_2 ownership and liability after twenty-five years.

The GCS checklist should include requirements that GCS companies demonstrate the extent of the underground storage field, identify the geological composition of the various areas of the storage field (i.e., limestone, shale, etc.), and empirically illustrate that the storage field contains zero, or minimal, potential weak points. The storage field must have full integrity at the time of ownership and liability exchange, with minimal CO_2 migration and zero evidence of CO_2 seepage or leaks. Additionally, GCS companies must be able to demonstrate retention of storage field integrity in the event of seismic activity equal to the most powerful local earthquake on record. Such a condition ensures against the improper location of GCS activity along vulnerable fault lines. Lastly, GCS companies must show that minimal future government action or expenditures to keep CO_2 securely sequestered is necessary. Kentucky should predicate that the twenty-five year demonstration period resets upon the violation of any of these benchmarks.

Any legislation must draw a fine line between encouraging GCS industries to locate within the state, and unduly infringing on the rights and interests of adjacent landowners. The Montana approach, in particular, achieves these competing goals by predicating approval of a GCS location upon securing consent from at least sixty percent of the pore space owners.[140] Requiring consent from *all* pore space owners would be an extreme obstacle for any potential GCS company and could easily scare GCS companies away from the state. The large size of geological storage formations makes unanimous consent unwieldy, if not impossible. Additionally, the unforeseen migration of sequestered CO_2 beneath non-consenting adjacent landowners could threaten the entire GCS project and

140 *Id.*

open the sequestering company to litigation alleging trespass.

Kentucky could avoid these situations by assuming ownership and liability for stored CO_2 in the same manner as Illinois or Montana have, and also by statutorily removing the viability of underground trespass claims once a certain percentage of pore space owners consent to the GCS project. A target requiring an initial demonstration of consent from at least seventy percent of the pore space owners would be ideal for Kentucky. Again, this represents an arbitrary number, but it also serves the dual government goals of combating global warming and not trampling on landowners' legitimate rights and concerns. This figure sufficiently exceeds a simple majority, lending extra credibility that the GCS operation adheres to the will of the community, while also representing a figure well below unattainable unanimous consent.

Kentucky should also legislatively protect a future GCS industry against potential litigation. This could be done by only requiring a showing in court of *sixty* percent consent from pore space surface landowners affected by a particular project. As long as a GCS company could demonstrate an initial good–faith effort to accurately ascertain all the pore space owners, no trespass claim would lie after showing the requisite percentage of surface owners consented to the sequestration. Such a scheme provides flexibility for GCS companies in the event of disputes regarding pore space ownership or contentions that the storage field is actually larger than claimed, and prevents wasteful and expensive shutdowns in GCS operations when subsequent discoveries reveal actual pore–space consent may fall slightly below seventy percent. Once a GCS operation has begun, Kentucky should weigh heavily against halting the process for any concerns other than the safety of adjacent landowners. Such a legislative regime offers the best compromise between the promotion of a burgeoning and environmentally friendly technology and the legitimate rights, interests, and safety of adjacent landowners.

CONCLUSION

The problems of global warming are immense. Hundreds of years of industrial and population growth have acted to burden our atmosphere with artificially high levels of CO_2, resulting in the climate warming at an unnaturally rapid rate.[141] Without both drastic and immediate action, irreversible harm to our planet and way of life could occur.[142] GCS, though in a stage of infancy, offers to be a major weapon in the growing

141 *See generally* CO_2 Now, *supra* note 2.

142 *See* Larry West, *What is the Greenhouse Effect? After 150 Years of Industrialization, Climate Change is Inevitable*, ABOUT.COM, http://environment.about.com/od/globalwarming/a/greenhouse.htm (last visited Nov. 4, 2009).

arsenal needed to combat global warming.[143] With its potential for storage of CO_2 for possibly thousands of years, GCS could be a vital technology with a large potential for expansion.[144] Kentucky's geography and heavy reliance on coal make the state an ideal location for continued research and development of the technologies and processes of GCS. To foster such growth in the industry, Kentucky must recognize the need to articulate a clear and definite legal framework for every stage of the CO_2 sequestration process to provide potential storage companies a roadmap for dealing with litigation, and to actively seek preventive measures and practices to avoid litigation where possible.

Recent federal legislative activity indicates extreme interest in GCS as a vital tool in the battle to prevent irreversible negative climate change.[145] The passage of the American Clean Energy and Security Act ("Waxman–Markey Bill") by the House of Representatives in June, 2009, represents a ground–breaking legislative event which has the potential to revolutionize energy production in America.[146] The Waxman–Markey Bill requires utilities to provide at least twenty percent of their electricity demand through renewable energy and energy efficiency measures by 2020, and calls for reduction of CO_2 emissions from major sources by seventeen percent by 2020 and over eighty percent by 2050, compared to 2005 levels.[147] Perhaps most importantly, the Waxman–Markey Bill calls for a huge investment in clean energy and energy efficiency technology, including up to sixty–billion dollars in carbon capture and sequestration

143 *See* Edward Wong, *Groups Press U.S. and China on Carbon*, N.Y. TIMES, Nov. 4, 2009, at A12 (discussing how the Asia Society, the Center for American Progress, and the Natural Resources Defense Council advocate increased support from the United States and China for geological carbon sequestration, and stressing that "developing [geological carbon sequestration] technology is critical to alleviating climate change because the Untied States and China, the two largest greenhouse gas emitters in the world, rely heavily on coal for their energy needs"); *see also* Emma Graham–Harrison, *China Pushes CO_2 Capture, Storage Questions Loom*, http://www.reuters.com/article/GCA–GreenBusiness/idUSTRE5A30T920091104?pageNumber=1&vitrualBrandChannel=0 (last visited Nov. 5, 2009) (discussing how China, the world's largest CO_2 producer, is "pushing to complete its first commercial–scale power plant that can capture and store emissions," and how "capturing and storing carbon dioxide—the main greenhouse gas blamed for global warming—in underground reservoirs is likely to be cruical to containing [China's] emissions").

144 *See* John Kemp, *Buffett Uses BNSF to Bet On Coal*, http://blogs.reuters.com/great–debate/2009/11/03/buffet–uses–bsnf–to–bet–on–coal/ (last visited Nov. 5, 2009) (arguing that Warren Buffet's acquisition of Burlington Northern Santa Fe railroad reflects his "strategic bet that America's future energy needs will be met, in large part, through a massive expansion in coal–fired power generation coupled with carbon capture and storage").

145 *See* American Clean Energy and Security Act, H.R. 2454, 111th Cong. (2009).

146 *See* Statement of the U.S. House of Representatives Committee on Energy & Commerce, House Passes Historic Waxman–Markey Clean Energy Bill (June 28, 2009), http://energycommerce.house.gov/index.php?option=com_content&view=article&id=1697:house–passes–historic–waxman–markey–clean–energy–bill&catid=155:statements&Itemid=55.

147 *Id.*

technology.[148] Such activity indicates GCS's potential for explosive growth in the near future.

Adopting targeted legislation could help place Kentucky's legal system in the forefront of the GCS movement, highlight the state's emphasis on combating global warming, and help avoid an *ad hoc* determination of stored CO_2 possessory rights or a flood of litigation over an unresolved legal issue. Failure to enact specific legislation would, at best, create an uncertain climate for companies involved in CO_2 sequestration. At worst, it would create an outright unfavorable climate for GCS companies, resulting in Kentucky needlessly missing out on a burgeoning green-technology field. The Kentucky legislature should limit GCS companies' ownership and liability of stored CO_2 after a specified number of years following completion of clearly articulated and achievable benchmark requirements. To further create a conducive environment for GCS, Kentucky should avoid stringent permission requirements from pore space owners.

Global warming represents the type of problem where inaction may very well be the greatest evil. Fear and uncertainty always surround paradigm-shifting moments in time, and that certainly is true today as the world stands on the cusp of environmental destruction . . . or rebirth. The adoption of the above measures could place Kentucky at the forefront of a burgeoning field aimed at helping America and the world step back from the precipice. The current status of who owns CO_2 in Kentucky may still be up in the air, but the lurking danger of irreversible climate change is a cold, hard fact.[149]

148 *Id.*

149 *See* STAUDT ET AL., *supra* note 3, at 2; *see also* John M. Broder, *E.P.A. Clears Path to Regulate Heat-Trapping Gases for the First Time in the U.S.*, N.Y. TIMES, Apr. 18, 2009, at A15. *See generally* CO_2 Now, *supra* note 2.