

**Introduced by Senator Rubio**December 3, 2012

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An act to amend Section 659 of the Civil Code, to amend Section 51010.5 of the Government Code, to add Section 38572 to the Health and Safety Code, and to add Section 3239 to the Public Resources Code, relating to greenhouse gas, and declaring the urgency thereof, to take effect immediately.

## LEGISLATIVE COUNSEL'S DIGEST

SB 34, as introduced, Rubio. Greenhouse gas: carbon capture and storage.

(1) Existing law requires the Division of Oil, Gas, and Geothermal Resources of the Department of Conservation to regulate the construction and operation of oil, gas, and geothermal wells. Pursuant to existing federal law, the federal Underground Injection Control (UIC) program, the United States Environmental Protection Agency delegated responsibility to the division to regulate class II wells, which are wells that use injections for, among other things, enhanced recovery of oil or natural gas. The federal UIC program implements regulations that apply to class VI wells, which include wells used for geologic sequestration of carbon dioxide under specific circumstances.

This bill would, upon the adoption by the State Air Resources Board of a final methodology for carbon capture and storage projects seeking to demonstrate geologic sequestration of greenhouse gases, specifically require the division to regulate carbon dioxide enhanced oil recovery projects that seek to demonstrate carbon sequestration under various laws providing for the reduction of greenhouse gas emissions.

(2) The California Global Warming Solutions Act of 2006 requires the State Air Resources Board to establish regulations to achieve

specified greenhouse gas emissions reduction goals. The act authorizes the state board to include market-based compliance mechanisms in achieving those reduction goals.

This bill would require the state board, by January 1, 2016, to adopt a final methodology for carbon capture and storage projects seeking to demonstrate sequestration under various laws providing for the reduction of greenhouse gas emissions.

(3) The Elder California Pipeline Safety Act of 1981 vests the State Fire Marshal with the exclusive safety regulatory and enforcement authority over intrastate hazardous liquid pipelines and, to the extent authorized by an agreement between the State Fire Marshal and the United States Department of Transportation, interstate hazardous liquid pipelines.

This bill would additionally vest the State Fire Marshall with the exclusive safety regulatory and enforcement authority over pipelines transporting a fluid consisting of more than 90% carbon dioxide compressed to a supercritical state.

(4) Existing law defines land as a material of earth and includes free or occupied space for an indefinite upward or downward distance for the purpose of prescribing ownership of land.

This bill would specify that free space includes pore space that can be possessed and used for the storage of greenhouse gas.

(5) This bill would declare that it is to take effect immediately as an urgency statute.

Vote:  $\frac{2}{3}$ . Appropriation: no. Fiscal committee: yes.  
 State-mandated local program: no.

*The people of the State of California do enact as follows:*

- 1 SECTION 1. This measure shall be known and may be cited
- 2 as the Carbon Capture and Storage Act of 2013.
- 3 SEC. 2. (a) The Legislature finds and declares all of the
- 4 following:
- 5 (1) California has established stringent short-term and long-term
- 6 greenhouse gas (GHG) reduction goals that are functionally similar
- 7 to the federal and international emission reduction goals. Executive
- 8 Order S-3-05 committed California to reduce the GHG emissions
- 9 to year 2000 levels by 2010 and to year 1990 levels by 2020, and
- 10 to 80 percent below the year 1990 levels by 2050, a level consistent
- 11 with the current scientific evidence regarding emission reductions

1 needed to stabilize the climate. The California Global Warming  
2 Solutions Act of 2006 (Division 25.5 (commencing with Section  
3 38500) of the Health and Safety Code) separately obligates  
4 California to reduce GHG emissions to the year 1990 levels by  
5 2020.

6 (2) The scoping plan adopted pursuant to the California Global  
7 Warming Solutions Act of 2006 recognizes that carbon capture  
8 and storage (CCS) can play a role in helping the state meet its  
9 long-term GHG reduction goals. Cap-and-trade programs  
10 worldwide, including the Kyoto Protocol to the United Nations  
11 Framework Convention on Climate Change (UN Doc.  
12 FCCC/CP/1997/7/Add.1, 37 ILM 22) and the European Union  
13 Emissions Trading Scheme (Directive 2003/87/EC, as amended),  
14 include CCS as a means for compliance. The 2010 Cancun  
15 Agreements under the Kyoto Protocol (UN Doc.  
16 FCCC/CP/2010/7/Add.1) envision that CCS will be able to  
17 generate certified emissions reductions (CERs) under the clean  
18 development mechanism (CDM). The 2011 Durban Platform under  
19 the Kyoto Protocol (UN Doc. FCCC/CP/2011/L.10) provides  
20 modalities and procedures regarding specifically how CCS projects  
21 may generate CERs under the CDM.

22 (3) The geologic storage of carbon dioxide is expected to provide  
23 an effective means of storing carbon dioxide over geologic time  
24 periods. The Intergovernmental Panel on Climate Change (IPCC),  
25 in its 2005 Special Report on Carbon Dioxide Capture and Storage,  
26 states that “[o]bservations from engineered and natural analogues  
27 as well as models suggest that the fraction retained in appropriately  
28 selected and managed geological reservoirs is very likely to exceed  
29 99% over 100 years and is likely to exceed 99% over 1,000 years.”

30 (4) The deployment of CCS can materially help California to  
31 achieve its long term GHG emission reduction goals. The  
32 International Energy Agency’s 2011 World Energy Outlook  
33 describes CCS as a “key abatement option” that accounts for 18  
34 percent of emission savings in a key modeled scenario. The  
35 International Energy Agency further reports that CCS investment  
36 must be made “now” if emission reductions are to be achieved  
37 economically. The August 2010 report of the President’s  
38 Interagency Task Force on CCS describes the technology as one  
39 that can “greatly reduce” GHG emissions while playing an  
40 “important role in achieving national and global” GHG reduction

1 goals. In its December 2010 report, the California Carbon Capture  
2 and Storage Review Panel states that “[t]here is a public benefit  
3 from long-term geologic storage of [carbon dioxide] as a strategy  
4 for reducing GHG emissions to the atmosphere as required by  
5 California laws and policies.”

6 (5) Despite the existence of comprehensive federal CCS  
7 regulations, impediments to the deployment of CCS technology  
8 in California remain, including specific gaps in California laws  
9 and regulation. Many of these gaps are identified and discussed  
10 by the California Carbon Capture and Storage Review Panel’s  
11 December 2010 report. These gaps include clarifying ownership  
12 of the pore space and clarifying regulatory responsibility for  
13 permitting CCS projects.

14 (6) By exercising a leadership role in CCS technology,  
15 California will position its economy, technology centers, financial  
16 institutions, and businesses to benefit from efforts to reduce  
17 emissions of GHGs through CCS.

18 (7) California has ample geologic storage capacity for carbon  
19 dioxide. In a 2005 report, the United States Department of Energy  
20 determined that the state has a “huge potential for geological  
21 sequestration capacity.” The study estimated that the saline  
22 formations have a storage capacity of 146 to 840 gigatons of carbon  
23 dioxide. Moreover, those formations also have large numbers of  
24 oil and gas fields and significant potential for carbon dioxide  
25 enhanced oil recovery (CO<sub>2</sub>-EOR). The CO<sub>2</sub>-EOR technology is  
26 a proven mature technology that can be used to sequester carbon  
27 dioxide given adequate regulatory oversight.

28 (8) In another 2005 study, the United States Department of  
29 Energy documented the potential energy production and GHG  
30 storage potential of CO<sub>2</sub>-EOR technology for California. That  
31 study reached several conclusions, including California has a large  
32 “stranded oil” resource base that will be left in the ground  
33 following the use of today’s oil recovery practices, much of  
34 California’s large “stranded oil” resource base is amenable to  
35 CO<sub>2</sub>-EOR, application of miscible and immiscible CO<sub>2</sub>-EOR  
36 would enable a significant portion of the California’s “stranded  
37 oil” to be recovered, and the successful introduction and wide scale  
38 use of CO<sub>2</sub>-EOR in California would stimulate the economy,  
39 provide new higher paying jobs, and lead to higher tax revenues  
40 for the state.

1 (9) Carbon dioxide capture is subject to federal regulations. The  
2 United States Environmental Protection Agency (USEPA) regulates  
3 air emissions of GHGs through several regulatory programs,  
4 including the Prevention of Significant Deterioration (PSD) and  
5 Title V permitting programs under the federal Clean Air Act (42  
6 U.S.C. Sec. 7401 et seq.). The USEPA’s PSD and Title V  
7 Permitting Guidance for Greenhouse Gases states that permit  
8 writers must consider CCS technology to be “available” as part of  
9 the five-step Best Available Control Technology assessment  
10 process. Subpart PP (commencing with Section 98.420) of, subpart  
11 RR (commencing with Section 98.440) of, and subpart UU  
12 (commencing with Section 98.470) of, Part 98 of Title 40 of the  
13 Code of Federal Regulations prescribing GHG reporting rules  
14 separately require companies engaged in the injection of carbon  
15 dioxide, geological sequestration of carbon dioxide, or other  
16 CCS-related operations to report their atmospheric emission of  
17 GHGs. These regulations apply in California.

18 (10) Carbon dioxide transport is subject to comprehensive  
19 federal regulation by all modes, including pipeline, road, or ground.  
20 These regulations apply in California.

21 (11) The pipeline transport of carbon dioxide is a proven mature  
22 technology. In its 2005 special report of CCS, the IPCC states that  
23 the “[p]ipeline transport of [carbon dioxide] operates as a mature  
24 market technology (in the [United States], over 2,500 [kilometers]  
25 of pipelines transport more than 40 [million metric tons of carbon  
26 dioxide] per year).” Federal government data demonstrate that  
27 carbon dioxide pipelines have been operated safely. Meanwhile,  
28 the trucking industry has safely transported significant quantities  
29 of carbon dioxide for decades for a variety of commercial end  
30 users, including the carbonated beverage industry.

31 (12) Carbon dioxide injection and storage is subject to extensive  
32 federal regulations. In December 2010, the USEPA finalized its  
33 class VI regulations (76 Fed. Reg. 56982) under the Underground  
34 Injection Control (UIC) program, and since that time the USEPA  
35 has issued several detailed implementation guidance documents.  
36 Those regulations do not apply unless carbon dioxide is being  
37 injected for the primary purpose of long-term storage into an oil  
38 and gas reservoir and there is an increased risk to underground  
39 sources of drinking water compared to class II operations. The  
40 UIC class VI well program regulations apply in California and are

1 implemented by the USEPA. The UIC class II well program  
2 regulations apply in California and the USEPA has delegated its  
3 implementation responsibilities to the Division of Oil, Gas, and  
4 Geothermal Resources of the Department of Conservation.

5 (13) The goals of creating a regulatory framework that ensures  
6 the safe deployment of CCS technology in a manner consistent  
7 with the state's goals for GHG reduction can best be accomplished  
8 by clarifying the ownership of the pore space and the regulatory  
9 responsibility of permitting CCS projects.

10 (b) It is the intent of the Legislature to create a clear and  
11 comprehensive permitting regime for CCS projects in California.

12 (c) In enacting this act, the Legislature does not intend to require  
13 the deployment of CCS technology but only to provide a clear and  
14 certain regulatory structure for CCS projects.

15 (d) In enacting this act, the Legislature intends to clarify the  
16 Division of Oil, Gas, and Geothermal Resources' authority to  
17 regulate carbon dioxide injection for enhanced oil recovery  
18 projects, the State Fire Marshal's authority to regulate carbon  
19 dioxide intrastate pipelines, that free space includes pore space  
20 that can be possessed and used for the storage of greenhouse gas,  
21 and that the remaining provision of this measure applies to CCS  
22 projects and carbon dioxide enhanced oil recovery projects seeking  
23 to reduce a compliance obligation pursuant to the California Global  
24 Warming Solutions Act of 2006 (Division 25.5 (commencing with  
25 Section 38500) of the Health and Safety Code) by demonstrating  
26 simultaneous sequestration of injected carbon dioxide. The  
27 Legislature does not intend to limit or supersede the division's  
28 authority as it relates to existing or future carbon dioxide enhanced  
29 oil recovery projects that do not seek to reduce a compliance  
30 obligation pursuant to the California Global Warming Solutions  
31 Act of 2006.

32 SEC. 3. Section 659 of the Civil Code is amended to read:

33 659. (a) Land is the material of the earth, whatever may be  
34 the ingredients of which it is composed, whether soil, rock, or  
35 other substance, and includes free or occupied space for an  
36 indefinite distance upwards as well as downwards, subject to  
37 limitations upon the use of airspace imposed, and rights in the use  
38 of airspace granted, by law.

1 (b) (1) *The free space specified in subdivision (a) includes pore*  
2 *space that can be possessed and used for the storage of greenhouse*  
3 *gas in the state.*

4 (2) *This subdivision does not change or alter the law as it relates*  
5 *to the rights belonging to, and the dominance of, the mineral estate,*  
6 *and does not change or alter the incidents of ownership or other*  
7 *rights of the owners of the mineral estate, including the right to*  
8 *mine, drill, complete, or abandon a well, the right to inject*  
9 *substances to facilitate production, the right to implement enhanced*  
10 *recovery for the purposes of recovery of oil, gas, or other minerals,*  
11 *or the dominance of the mineral estate.*

12 SEC. 4. Section 51010.5 of the Government Code is amended  
13 to read:

14 51010.5. As used in this chapter, the following definitions  
15 apply:

16 (a) “Pipeline” includes every intrastate pipeline used for the  
17 transportation of hazardous liquid ~~substances~~ *substances, carbon*  
18 *dioxide*, or highly volatile liquid substances, including a common  
19 carrier pipeline, and all piping containing those substances located  
20 within a refined products bulk loading facility ~~which~~ *that* is owned  
21 by a common carrier and is served by a pipeline of that common  
22 carrier, and the common carrier owns and serves by pipeline at  
23 least five ~~such~~ *of these* facilities in the state. “Pipeline” does not  
24 include the following:

25 (1) An interstate pipeline subject to Part 195 of Title 49 of the  
26 Code of Federal Regulations.

27 (2) A pipeline for the transportation of a hazardous liquid  
28 substance in a gaseous state.

29 (3) A pipeline for the transportation of crude oil that operates  
30 by gravity or at a stress level of 20 percent or less of the specified  
31 minimum yield strength of the pipe.

32 (4) Transportation of petroleum in onshore gathering lines  
33 located in rural areas.

34 (5) A pipeline for the transportation of a hazardous liquid  
35 substance offshore located upstream from the outlet flange of each  
36 facility on the Outer Continental Shelf where hydrocarbons are  
37 produced or where produced hydrocarbons are first separated,  
38 dehydrated, or otherwise processed, whichever facility is farther  
39 downstream.

40 (6) Transportation of a hazardous liquid by a flow line.

1 (7) A pipeline for the transportation of a hazardous liquid  
2 substance through an onshore production, refining, or  
3 manufacturing facility, including a storage or inplant piping system  
4 associated with that facility.

5 (8) Transportation of a hazardous liquid substance by vessel,  
6 aircraft, tank truck, tank car, or other vehicle or terminal facilities  
7 used exclusively to transfer hazardous liquids between those modes  
8 of transportation.

9 (b) “Flow line” means a pipeline ~~which~~ *that* transports hazardous  
10 liquid substances from the well head to a treating facility or  
11 production storage facility.

12 (c) “Hydrostatic testing” means the application of internal  
13 pressure above the normal or maximum operating pressure to a  
14 segment of pipeline, under no-flow conditions for a fixed period  
15 of time, utilizing a liquid test medium.

16 (d) “Local agency” means a city, county, or fire protection  
17 district.

18 (e) “Rural area” means a location ~~which~~ *that* lies outside the  
19 limits of any incorporated or unincorporated city or city and county,  
20 or other residential or commercial area, such as a subdivision, a  
21 business, a shopping center, or a community development.

22 (f) “Gathering line” means a pipeline eight inches or less in  
23 nominal diameter that transports petroleum from a production  
24 facility.

25 (g) “Production facility” means piping or equipment used in the  
26 production, extraction, recovery, lifting, stabilization, separation,  
27 or treatment of petroleum or associated storage or measurement.  
28 (To be a production facility under this definition, piping or  
29 equipment must be used in the process of extracting petroleum  
30 from the ground and transporting it by pipeline.)

31 (h) “Public drinking water well” means a wellhead that provides  
32 drinking water to a public water system as defined in Section  
33 116275 of the Health and Safety Code, that is regulated by the  
34 State Department of Health Services and that is subject to Section  
35 116455 of the Health and Safety Code.

36 (i) “GIS mapping system” means a geographical information  
37 system that will collect, store, retrieve, analyze, and display  
38 environmental geographical data in a ~~data base~~ *database* that is  
39 accessible to the public.

1 (j) “Motor vehicle fuel” includes gasoline, natural gasoline,  
2 blends of gasoline and alcohol, or gasoline and oxygenates, and  
3 any inflammable liquid, by whatever name the liquid may be  
4 known or sold, which is used or is usable for propelling motor  
5 vehicles operated by the explosion type engine. It does not include  
6 kerosene, liquefied petroleum gas, or natural gas in liquid or  
7 gaseous form.

8 (k) “Oxygenate” means an organic compound containing oxygen  
9 that has been approved by the United States Environmental  
10 Protection Agency as a gasoline additive to meet the requirements  
11 for an “oxygenated fuel” pursuant to Section 7545 of Title 42 of  
12 the United States Code.

13 (l) *“Carbon dioxide” means a fluid consisting of more than 90*  
14 *percent carbon dioxide molecules.*

15 SEC. 5. Section 38572 is added to the Health and Safety Code,  
16 to read:

17 38572. (a) On or before January 1, 2016, the state board shall  
18 adopt a final quantification methodology for carbon capture and  
19 storage projects seeking to demonstrate geologic sequestration.

20 (b) The methodology adopted pursuant to subdivision (a) shall  
21 be used for the quantification of emissions as part of compliance  
22 obligations under any of the following:

23 (1) The mandatory reporting requirements adopted pursuant to  
24 Section 38530 of the Health and Safety Code.

25 (2) The demonstration of sequestration for the purposes of any  
26 regulation implementing a market-based compliance mechanism  
27 pursuant to this part.

28 (3) The demonstration of sequestration under the greenhouse  
29 gas emission performance standard established pursuant to Chapter  
30 3 (commencing with Section 8340) of Division 4.1 of the Public  
31 Utilities Code.

32 (c) The state board shall consult with the Public Utilities  
33 Commission and the State Energy Resources Conservation and  
34 Development Commission on the development of the quantification  
35 methodology, and, to the maximum extent possible, coordinate  
36 the incorporation of the methodology into the emissions  
37 performance standard enforcement processes of those commissions.

38 (d) The quantification methodology shall include a methodology  
39 for carbon dioxide enhanced oil recovery projects seeking to  
40 demonstrate simultaneous sequestration of injected carbon dioxide.

- 1 The methodology shall address multiple modes of carbon dioxide  
2 transportation, including pipeline, rail, and road transportation.  
3 The methodology shall do all of the following:
- 4 (1) Ensure that greenhouse gas emission reductions, achieved  
5 pursuant to the methodology, are real, permanent, quantifiable,  
6 verifiable, and enforceable by the state board.
  - 7 (2) Demonstrate that sites are capable of long-term containment  
8 of carbon dioxide.
  - 9 (3) Identify and characterize potential natural and manmade  
10 leakage pathways, and provide implementation of appropriate risk  
11 management and corrective actions.
  - 12 (4) Provide design, construction, and operation parameters to  
13 prevent, mitigate, and remediate the creation or activation of  
14 leakage pathways and the migration of carbon dioxide or fluids  
15 into any zone in a manner not authorized by the methodology.
  - 16 (5) Minimize fugitive carbon dioxide emissions from carbon  
17 dioxide enhanced oil recovery projects seeking to demonstrate  
18 simultaneous sequestration of injected carbon dioxide.
  - 19 (6) Provide for post injection closure and the long-term  
20 responsibility for carbon dioxide sequestered.
  - 21 (7) Verify, monitor, account for, and report carbon dioxide  
22 quantities sequestered, injected, recycled, leaked, vented, and in  
23 any other categories as deemed appropriate by the state board.
- 24 (e) The state board shall not quantify any carbon dioxide from  
25 an enhanced oil recovery project seeking to demonstrate  
26 simultaneous sequestration of injected carbon dioxide that is  
27 incapable of transitioning to class VI in accordance with applicable  
28 requirements of the federal Safe Drinking Water Act (42 U.S.C.  
29 Sec. 300f et seq.).
- 30 (f) The methodology may, utilizing, to the extent possible,  
31 existing requirements under federal and state law, include those  
32 surface and subsurface characterization, monitoring, operational  
33 requirements, reporting, accounting, and verification requirements,  
34 and conditions.
- 35 (g) In adopting the methodology, the state board shall, to the  
36 maximum extent feasible, harmonize the adopted methodology  
37 with greenhouse gas storage or sequestration quantification  
38 methodologies used by other state, federal, or international  
39 greenhouse gas emission reduction programs if it does not

1 compromise the ability of the methodology to verify sequestration  
2 or accurately quantify emissions.

3 (h) This section does not modify, limit, or supersede the  
4 operation of other laws applicable to carbon dioxide capture,  
5 transportation, or underground injection, or their application by  
6 the State Energy Resources Conservation and Development  
7 Commission, the Public Utilities Commission, the Division of Oil,  
8 Gas, and Geothermal Resources, or the California Environmental  
9 Protection Agency, and its boards, offices, and departments.

10 (i) In adopting the methodology, the state board shall consider  
11 the potential for direct, indirect, and cumulative emission impacts  
12 that may result from carbon capture and storage projects seeking  
13 to demonstrate geologic sequestration.

14 SEC. 6. Section 3239 is added to the Public Resources Code,  
15 to read:

16 3239. (a) Upon the final adoption of a quantification  
17 methodology for carbon capture and storage projects seeking to  
18 demonstrate geologic sequestration of carbon greenhouse gases  
19 by the State Air Resources Board pursuant to Section 38572 of  
20 the Health and Safety Code, the division shall, under its regulatory  
21 authority to permit class II injection wells in the state pursuant to  
22 the authority delegated to the division pursuant to Section 1425  
23 of the federal Safe Drinking Water Act (42 U.S.C. Sec. 300h-4),  
24 and pursuant to Section 38572 of the Health and Safety Code,  
25 regulate the injection of carbon dioxide at an enhanced oil recovery  
26 project seeking to demonstrate simultaneous geologic sequestration  
27 of greenhouse gases pursuant to the greenhouse gas emission  
28 performance standard under Chapter 3 (commencing with Section  
29 8340) of Division 4.1 of the Public Utilities Code, under the  
30 mandatory reporting of greenhouse gas emissions pursuant to  
31 Article 2 (commencing with Section 95100) of Subchapter 10 of  
32 Chapter 1 of Division 3 of Title 7 of the California Code of  
33 Regulations, or for any regulation implementing a cap-and-trade  
34 program or other market-based compliance mechanism that may  
35 be adopted pursuant to the California Global Warming Solutions  
36 Act of 2006 (Division 25.5 (commencing with Section 38500) of  
37 the Health and Safety Code).

38 (b) Pursuant to subdivision (a), the division and the State Air  
39 Resources Board shall execute an agreement using a coordinated  
40 and comprehensive regulatory approach, including oversight and

1 short-term and long-term monitoring requirements and verification,  
2 for geologic sequestration of greenhouse gases during and  
3 following enhanced oil recovery operations.

4 (c) In developing the regulations pursuant to subdivision (a),  
5 the division shall consider, at a minimum, both of the following:

6 (1) Whether long-term successful geologic sequestration may  
7 require adherence to standards and methods exceeding existing  
8 enhanced oil recovery and underground injection control practices  
9 and regulations.

10 (2) Whether all hydrocarbon reservoirs, given the diversity of  
11 California’s geology, well treatment, and production practices,  
12 may not be suitable for long-term successful geologic sequestration.

13 (d) This section does not modify, limit, or supersede any other  
14 law applicable to carbon dioxide capture, transportation, or  
15 underground injection, or its application by the State Energy  
16 Resources Conservation and Development Commission, the Public  
17 Utilities Commission, the division, or the California Environmental  
18 Protection Agency, and its boards, offices, and departments.

19 SEC. 7. This act is an urgency statute necessary for the  
20 immediate preservation of the public peace, health, or safety within  
21 the meaning of Article IV of the Constitution and shall go into  
22 immediate effect. The facts constituting the necessity are:

23 In order to facilitate the sequestration of greenhouse gases as  
24 quickly as possible, it is necessary that this act take effect  
25 immediately.