



Risky Business: Carbon Capture and Storage

Briefing Materials
5/2/2022



Risky Business: A Fact Sheet on Carbon Capture & Storage

“Carbon capture and storage” or “CCS” refers to unproven technologies intended to prevent carbon dioxide (CO₂) from reaching the atmosphere where it can trap heat on Earth and contribute to climate change. Plans for CCS involve either collecting CO₂ from industrial facilities or removing it from the air. Once collected or removed, the CO₂ is either injected underground for disposal or used in the production of more fossil fuels. CCS entails massive pipeline buildout for the transport of CO₂.

The burning of coal, oil, and natural gas produces CO₂. Industrial releases of CO₂ are part of a massive output of pollution that is disproportionately located in Black, Indigenous, Latino, Asian American and Pacific Islander communities. The coal, oil, and gas industry touts CCS as a “solution” to climate change, which it can profit from with massive tax breaks. The industry ignores the blatant racial inequity and seeks to minimize the significant environmental, health and safety risks of CCS. Each risk is an unjust burden on communities and a pathway for the release of CO₂ to the atmosphere which would worsen the climate crisis.

EQUITY & HUMAN RIGHTS CONCERNS

- Industries built on the extraction and production of coal, oil, or natural gas have chosen to operate near Black and Indigenous communities. Under this inequity, an oil or gas facility is twice as likely to be located within two miles of the members of the Navajo nation than any other population in New Mexico. Nationally, oil and gas facilities operate on the borders of communities where residents are 75 percent more likely to be Black than White.
- With CCS, a wave of new polluting energy facilities are being proposed that increases toxic emissions and expands to more communities the risks of CO₂ pipeline leaks and ruptures, as well as the potential for sinkholes, earthquakes, and groundwater contamination from the underground injection of CO₂.

VIABILITY CONCERNS

- CCS projects have consistently overpromised and under-delivered; the technology has not been proven to work at scale.
- CCS is significantly expensive to implement. Even with profuse subsidies, the technologies have shown not to be economically viable.
- The potential disasters induced by CCS, such as pipeline leaks and ruptures, sinkholes, groundwater contamination, and earthquakes would be extremely costly to remedy.

SAFETY CONCERNS

- Pipeline transport of CO₂ requires that it be shipped at very high pressure and extremely low temperatures.
- Condensed CO₂ is corrosive to the steel used to build pipelines, and pipeline structural integrity risks increase even more when water, a contaminant or other chemical impurity is present in the CO₂ stream.
- CO₂ streams can cause a leak, rupture, or a running fracture in a pipeline with the potential for catastrophic results that include deaths and severe injuries.
- Because of the intense pressures involved in CO₂ pipeline

transport, there is an inherent risk of explosive decompression that releases more CO₂ more quickly than an equivalent of a gas pipeline.

HEALTH CONCERNS

- CO₂ is a dangerous asphyxiant. Unplanned or uncontrolled releases immediate physical risks to nearby people and property. The CO₂ pipeline rupture in Sartoria, Mississippi on February 22, 2020 forced the evacuation of 300 residents and caused 45 people to be hospitalized.
- High levels of CO₂ exposure can result in rapid breathing, confusion, increased cardiac output, elevated blood pressure and increased arrhythmias. Breathing oxygen depleted air caused by extreme CO₂ concentrations can lead to death by suffocation.
- Collecting CO₂ from industrial facilities, as part of a CCS project, is unregulated and has the risk of adding other toxic chemicals to the CO₂ stream.
- Health-damaging pollutants, such as particulate matter (PM), nitrogen oxide, and ammonia, are all expected to increase with CCS as an add-on to proposed industrial facilities. These pollutants are not captured through the CCS process.
- CCS perpetuates our dependence on coal, oil, and gas, which exacerbate public health hazards. The extraction, refinement, transport, use, manufacture, and disposal of these fossil fuels releases a wide array of pollutants, at every stage of the life cycle.

ENVIRONMENTAL & CLIMATE CONCERNS

- CCS poses significant environmental risks from CO₂ pipeline corrosion and the failure of underground wells that include:
 - Oxygen depletion
 - Groundwater contamination
 - Earthquakes
 - Subsidence and sinkholes
- CCS does not solve climate change because the technologies involve numerous pathways for potential releases of CO₂ to the atmosphere where it can trap heat on Earth and worsen the climate crisis.



**Proposed Carbon Capture and Storage Projects in Louisiana
(4/30/2022)**

Project Name/Company	Location	Announcement Date	Planned Start Date
Air Products Inc.	Burnside, LA Ascension Parish	October 14, 2021	2026
CF Industries	Donaldsonville, LA Ascension Parish	October 19, 2020	2023
CP2 - Venture Global LNG	Cameron, LA Cameron Parish	December 2, 2021	
Plaquemines - Venture Global LNG	Plaquemines Parish		2024
Gron Fuels / Capio Sequestration	West Baton Rouge Parish	April 22, 2021	
Hackberry Sequestration LLC - Sempra LNG, LLC	Black Lake / West Hackberry, LA Cameron Parish	na	na
Gulf Coast Sequestration	Lake Charles, LA Calcasieu Parish		
Lake Charles Methanol, LLC	Calcasieu Parish	2009 (as Leucadia); 2016	2025
River Bend CCS - Talos Energy, Enlink Midstream, Storegga UK	Iberville, St. James, Assumption, Lafourche Parishes	February 16, 2022	
Shell	St James Parish	October 2021	na
Diamond Vault - Cleco	Lena, LA Rapides Parish	April 2022	2028
Denbury Inc.	Donaldsonville, LA Ascension Parish <i>down to lower</i> Plaquemines Parish		

ENDNOTES

1. Mark Z. Jacobson, *Evaluation of Coal and Natural Gas With Carbon Capture as Proposed Solutions to Global Warming, Air Pollution, and Energy Security, 100% Clean, Renewable Energy and Storage for Everything* (2020), <https://web.stanford.edu/group/efmh/jacobson/Articles/I/NatGasVsWWS&coal.pdf>.
2. K. Permentier, S. Vercammen, S. Soetaert & C. Schellemans, *Carbon dioxide poisoning: a literature review of an often forgotten cause of intoxication in the emergency department*. *International Journal of Emergency Medicine* (2017), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5380556>.
3. NAACP, *Fumes Across the Fenceline* (2017), <https://naacp.org/resources/fumes-across-fence-line-health-impacts-air-pollution-oil-gas-facilities-african-american>
4. UCLA Institute of the Environment and Sustainability for WildEarth Guardians, *Impacts of Oil and Gas Drilling on Indigenous Communities in New Mexico's Greater Chaco Landscape* (2020), <https://www.ioes.ucla.edu/wp-content/uploads/2020/09/ucla-ioes-practicum-impacts-of-oil-and-gas-on-indigenous-communities-in-new-mexico-final-report-9-2020.pdf>
5. Dan Zegart, *The Gassing of Satartia*, HuffPost (2021), https://www.huffpost.com/entry/gassing-satartia-mississippi-co2-pipeline_n_60ddea9fe4b0ddef8b0ddc8f.
6. European Environment Agency, *Air Pollution Impacts from Carbon Capture and Storage* (2011), <https://www.eea.europa.eu/highlights/carbon-capture-and-storage-could>.
7. Lena Groeger, *Pipelines Explained: How Safe are America's 2.5 Million Miles of Pipelines?* ProPublica (2012), <https://www.propublica.org/article/pipelines-explained-how-safe-are-americas-2.5-million-miles-of-pipelines>.
8. S. Li, Z. Zeng, M. Harris, L. Sánchez & H. Cong, *CO2 Corrosion of Low Carbon Steel Under the Joint Effects of Time-Temperature-Salt Concentration*. *Frontiers in Materials* (2019), <https://www.frontiersin.org/articles/10.3389/fmats.2019.00010/full>.
9. Clark Butler, *Carbon Capture and Storage Is About Reputation, Not Economics*. Institute for Energy Economics and Financial Analysis (2020), https://ieefa.org/wp-content/uploads/2020/07/CCS-Is-About-Reputation-Not-Economics_July-2020.pdf.
10. D. Schlissel & D. Wamsted, *Holy Grail of Carbon Capture Continues to Elude Coal Industry*. Institute for Energy Economics and Financial Analysis (2018), https://ieefa.org/wp-content/uploads/2018/11/Holy-Grail-of-Carbon-Capture-Continues-to-Elude-Coal-Industry_November-2018.pdf.
11. United States Government Accountability Office, *ADVANCED FOSSIL ENERGY: Information on DOE-Provided Funding for Research and Development Projects Started from Fiscal Years 2010 through 2017* (2018), <https://www.gao.gov/assets/gao-18-619.pdf>.
12. Adam Morton, *A shocking failure': Chevron criticised for missing carbon capture target at WA gas project*. *The Guardian* (2021), <https://www.theguardian.com/environment/2021/jul/20/a-shocking-failure-chevron-criticised-for-missing-carbon-capture-target-at-wa-gas-project>.

13. Joe Smyth, *Petra Nova Carbon Capture Project Stalls with Cheap Oil*. Energy and Policy Institute (2020), <https://www.energyandpolicy.org/petra-nova/>.
14. Nichola Groom, *Problems plagued U.S. CO2 capture project before shutdown: document*. Reuters (2020), <https://www.reuters.com/article/us-usa-energy-carbon-capture/problems-plagued-u-s-co2-capture-project-before-shutdown-document-idUSKCN2523K8>.
15. D. Drugmand & C. Muffett, *Confronting the Myth of Carbon-Free Fossil Fuels: Why Carbon Capture is Not a Climate Solution*. Center for International Environmental Law (2021), <https://www.ciel.org/wp-content/uploads/2021/07/Confronting-the-Myth-of-Carbon-Free-Fossil-Fuels.pdf>.
16. Intergovernmental Panel on Climate Change, *Carbon Dioxide Capture and Storage* (2005), https://www.ipcc.ch/site/assets/uploads/2018/03/srccs_wholereport-1.pdf.



STATE OF LOUISIANA
GOVERNOR JOHN BEL EDWARDS

LOUISIANA CLIMATE ACTION PLAN



CLIMATE INITIATIVES TASK FORCE
RECOMMENDATIONS TO THE GOVERNOR
February 2022



Table of Contents

INTRODUCTION.....	1
VISION, GOALS, AND OBJECTIVES	3
PLANNING PROCESS AND METHODOLOGY	5
ACCOUNTING FOR LOUISIANA'S GREENHOUSE GAS EMISSIONS	11
THE RISKS OF INACTION: WHY CLIMATE ACTION IS CRITICAL FOR LOUISIANA	15
REALIZING THE BENEFITS OF THIS CLIMATE ACTION PLAN.....	32
CLIMATE STRATEGIES AND ACTIONS	41
<i>Clean Energy Transition</i>	43
<i>Industrial Decarbonization</i>	52
<i>Actively Manage Methane Emissions</i>	64
<i>Transportation, Development, and the Built Environment</i>	71
<i>Natural Working Lands and Wetlands</i>	87
<i>An Inclusive, Low-Carbon Economy</i>	96
<i>Collaboration and Partnership to Ensure Successful Implementation</i>	103
<i>Accountability and Adaptability to Ensure Lasting Success</i>	108
NEXT STEPS AND ADAPTIVE MANAGEMENT OF LOUISIANA'S FIRST CLIMATE ACTION PLAN	116
IMPLEMENTATION MATRIX	118
ACRONYMS	128
GLOSSARY.....	130
ACKNOWLEDGEMENTS	137
APPENDIX A. DISSENT.....	143
APPENDIX B. MEETING LIST.....	149
APPENDIX C. SUMMARY OF SUBMITTED ACTION PROPOSALS.....	151
APPENDIX D. EXECUTIVE ORDER	159
APPENDIX E. TASK FORCE VOTES	164
REFERENCES.....	166

ACTION 5.3 Support the safe and responsible deployment of carbon capture, utilization, and storage for high-intensity and hard-to-abate emissions

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
DNR / U.S.-DOE / Industry / Communities	Invest in research for siting and impact assessments of CCUS buildout	Abate remaining high-intensity emissions through carbon capture and storage

CCUS* is anticipated to play a critical role in decarbonizing the global economy by addressing high-intensity and hard-to-abate emissions that will be necessary to reach net zero. With expansive geologic storage potential, highly concentrated industrial corridors, and a trained workforce, Louisiana has potential for deployment of this technology and infrastructure. This is particularly true in the industrial sector, where high temperature processes cannot be readily transitioned to electrification or low-carbon alternatives and where process emissions from chemical reactions are unavoidable except with CCUS. However, Louisiana also needs to be assured that the deployment of CCUS technologies in the state be pursued in a safe and responsible manner that does not negatively impact communities, ecosystems, and cultural resources.

*CCUS

CCUS is a suite of technologies that can play a significant role in GHG emission reduction in combination with other industrial decarbonization strategies. Carbon capture can use a variety of techniques to remove emissions from industrial and power production operations pre- and post-combustion.

This action proposes that the state continue to work with federal and state partners, industry, and communities to determine the feasibility and impacts of carbon capture and transport infrastructure and buildout (see Action 26.2 for more detail), to identify potential sites for safe and responsible carbon capture storage, and to establish a regulatory and legal framework that supports responsible deployment of CCUS technologies. While the overall impacts of CCUS deployment are expected to be positive as they relate to air quality, further assessment, quantification, and engagement of local communities is needed to fully understand potential impacts of CCUS on local criteria air pollutants and other emissions resulting from carbon capture retrofits at industrial facilities. These efforts should result in responsible CCUS projects that address cumulative pollution and incorporate environmental justice and equity concerns into siting and decision making. Further actions under Strategy 26 outline specific areas for impact analysis needed in the near-term prior to permitting and deployment of infrastructure. **(Associated Submitted Action Proposals: 7, 45, 49, 74, 155)**

DISSENTING VIEWS: Five members objected to this action, citing concerns over high project costs, low project success rates, perpetuation of community harm and injustices, and perpetuation of environmental degradation. DISSENTERS: Pichon Battle, Daniels, Verchick, Parfait-Dardar, Manning-Broome.

ACTION 5.4 Invest in research for utilizations of captured carbon and life cycle analyses to understand their overall impact

IMPLEMENTATION PARTNERS	NEAR-TERM ACTION	GOALS
Universities	Solicit funding to understand utilization techniques	Recycle emissions through utilization of captured carbon

The capture and use of CO₂ to create valuable products (CCUS) has potential to lower the net costs of reducing emissions while removing CO₂ from the atmosphere. This process of utilization refers to the use of CO₂ directly or as a feedstock in industrial or chemical processes to produce carbon-containing products that generate economic value. Utilization

Proposed New Orleans City Council Resolution (revised)

**RESOLUTION PROHIBITING UNDERGROUND STORAGE OF CARBON DIOXIDE
AND FACILITIES FOR THIS PURPOSE**

WHEREAS, the people and environment of New Orleans are threatened by climate change, the effects of which include rising sea level, stronger storms, extended periods of extreme heat, and forceful tornadoes; and

WHEREAS, Section 2-202(10) of the City of New Orleans Home Rule Charter establishes a Bill of Rights which affirms “the natural resources of the City and the healthful, scenic, historic, and aesthetic quality of the municipal environment shall be protected, conserved, and replenished insofar as possible consistent with the health, safety, and welfare of the people”; and

WHEREAS, in furtherance of this protection, the City Council and mayoral administrations have enacted legal requirements and directed funds to strengthen the climate resilience of neighborhoods and critical assets, as well as mitigate the impacts of climate change by reducing greenhouse gas emissions from the energy, transportation, and waste management sectors; and

WHEREAS, the City Council established the first Renewable and Clean Portfolio Standard in the Southeast Region of the United States, which requires 100 percent of the electricity supplied to New Orleans to be generated from solar, wind, and non-carbon sources of energy by 2050; and

WHEREAS, Governor John Bel Edwards and members of the Climate Initiative Task Force are to be commended for developing the “Louisiana Climate Action Plan” to achieve net zero greenhouse gas emissions in Louisiana by 2050 based on the level of emissions in 2005; and

WHEREAS, the “Louisiana Climate Action Plan” recommends the deployment of projects to collect, transport, and dispose underground carbon dioxide waste streams from power plants and other industries, which are referred to as “carbon capture and storage (CCS)” and “carbon capture, utilization, and storage (CCUS)”; but this plan cautions that “Louisiana also needs to be assured that the deployment of CCUS technologies in the state be pursued in a safe and responsible manner that does not negatively impact communities, ecosystems, and cultural resources” and proposes “to establish a regulatory and legal framework that supports responsible deployment of CCUS technologies” that includes “further assessment . . . to fully understand potential impacts of CCUS”; and

WHEREAS, the caution set forth in the “Louisiana Climate Action Plan” is warranted as scientific studies have identified the risks of groundwater contamination and seismic activity from the underground injection and disposal of carbon dioxide, as well as the potential for pipeline leaks and ruptures in the transport of carbon dioxide; and

WHEREAS, at present, a growing number of companies are proposing CCUS and CCS projects in Louisiana in the absence of assuring community safety, assessing the risks, or establishing a regulatory framework as recommended in the “Louisiana Climate Action Plan”; and

WHEREAS, CCUS and CCS are technologies that are not proven to mitigate climate change by effectively removing carbon dioxide emissions from power plants and other industrial facilities; and

WHEREAS, the White House Environmental Justice Advisory Council concluded that CCUS and CCS projects will not benefit communities; and

WHEREAS, it is widely known and of deep concern that industrial wells in Louisiana remain poorly managed and ineffectively regulated with damaging effects on nearby communities and the environment, and there is no guarantee that introducing a new category of underground wells to store millions of tons of carbon dioxide waste can be safely managed;

NOW THEREFORE BE IT RESOLVED BY THE COUNCIL OF THE CITY OF NEW ORLEANS that the Council hereby takes action to preserve our environment, natural resources, and public health by prohibiting the deployment of any carbon capture and storage (CCS) project or any carbon capture, utilization, and storage (CCUS) project in the City of New Orleans; and

BE IT FURTHER RESOLVED, that the City Council prohibits the buildout of any CCS or CCUS infrastructure, including any pipeline to transport carbon dioxide streams, in the City of New Orleans;

BE IT FURTHER RESOLVED, that the City Council prohibits the use of any municipal fund or municipal tax incentive to financially support any CCS or CCUS project; and

BE IT FURTHER RESOLVED, that the City Council encourages Governor John Bel Edwards to diligently pursue efforts to transition Louisiana to a renewable energy economy that includes expanding access, usage and development of renewable energy with battery storage technologies for the benefit of the people of Louisiana and the protection of our environment.

BE IT FURTHER RESOLVED, that a certified copy of this resolution be sent by the Clerk of Council to Governor John Bel Edwards, Thomas Harris, Secretary of the Louisiana Department of Natural Resources, Dr. Chuck Carr Brown, Secretary of the Louisiana Department of Environmental Quality, Jennifer Granholm, Secretary of the US Department of Energy, Michael Regan, Administrator of the US Environmental Protection Agency, Dr. Earthea Nance, Region 6 Administrator of the US Environmental Protection Agency, Richard Glick, Chair of the Federal Energy Regulatory Commission, Brenda Mallory, Chair of the White House Council on Environmental Quality, and Gina McCarthy, National Climate Advisor of the White House Office of Domestic Climate Policy.