



(<https://www.beg.utexas.edu/gccc/blog/>)

Mitigating Keystone Emissions Via CCS

Posted on May 28, 2014 (<https://www.beg.utexas.edu/gccc/blog/mitigating-keystone-emissions-via-ccs-2/>) | Leave a reply (<https://www.beg.utexas.edu/gccc/blog/mitigating-keystone-emissions-via-ccs-2/#respond>)

By Tip Meckel and Susan Hovorka



CO₂ sources (red), EOR reservoirs (green), Keystone pipeline (blue line), CO₂ pipeline (green line) and state offshore lands available for CO₂ storage landward of red line converge near Port Arthur.

The potential to increase imports of hydrocarbons from Canada remains attractive. One resource of current interest is the heavy oil typically referred to as the 'oil sands' in Alberta. The transport of these oils for upgrading (refining) is being considered via the proposed **Keystone XL pipeline**, linking Alberta with east Texas.

Environmental aspects of heavy crude production, transportation, and refining have been discussed in Congress and the media, with the current U.S. administration indicating that approval of the pipeline would only come if it would not 'significantly exacerbate' associated greenhouse gas emissions. Debate in Canada related to the production of heavy crude resulted in **Shell's Quest carbon capture and storage (CCS) project** (<http://www.shell.ca/en/aboutshell/our-business-tpkg/upstream/oil-sands/quest.html>) associated with production in Alberta.

Large-scale replication of a Quest-type project in the Port Arthur region could integrate the interests of a wide variety of stakeholders in CO₂ emissions:

INDUSTRY: refiners and exporters (oil, liquid natural gas);

STATE GOVERNMENT: Texas General Land Office, Texas Railroad Commission;

FEDERAL GOVERNMENT: Department of Energy, National Energy Technology Laboratory; and

ACADEMIC RESEARCH: State research institutions including the Jackson School of Geosciences at UT-Austin; Gulf Coast Carbon Center at the Texas Bureau of Economic Geology; Local institutions including Lamar University Commercialization & Innovation Center Entrepreneurship (CICE).

Similar deployments of CCS in the Gulf Coast could advance U.S. interests in three associated energy-related sectors:

1) refining related to heavy oil imports from Canada via the Keystone pipeline, 2) Gulf Coast Enhanced Oil Recovery (EOR), and 3) Liquefied Natural Gas (LNG) exports. These interests are all currently aligned in the Port Arthur region of east Texas. **Port Arthur** is already a carbon-handling hub that has all the right elements to justify additional investment in CCS capture and storage technologies. A first successful capture project leveraged by **U.S. Department of Energy CCS research program** (<http://www.netl.doe.gov/research/coal/carbon-storage/research-and-development>) funding captures one million tons per year of CO₂ at the **Air Products** (<http://www.airproducts.com/company/news-center/2013/05/0510-air-products-celebrates-texas-carbon-capture-demonstration-project-achievement.aspx>) hydrogen plant. That CO₂ is transported via the **Denbury Resources Green Pipeline** (<http://www.denbury.com/operations/gulf-coast-region/co2-sources-and-pipelines/default.aspx>) and successfully used for enhanced oil recovery at Hastings Field near Houston.

Large-scale expansion of the Air Products type project in the Port Arthur region is feasible because it hosts the largest oil refining capacity in North America (e.g. Exxon, Motiva, Valero, Total), which are envisioned as the recipient of Keystone oil imports. CO₂ capture, utilization, and storage in the Texas Gulf Coast would significantly increase the environmental acceptability of these oil imports by offsetting emissions. Interests in **LNG** export (e.g. Golden Pass, Cheniere) also add to the CO₂ footprint of the area. An offshore CCS demonstration project in that region would simultaneously serve multiple National interests by demonstrating the sustainability of and minimizing the environmental impacts of a suite of energy-related activities that play a major role in the **future National energy supply chain**.

The **Texas General Land Office** (GLO) has already invested in research of the CO₂ storage potential of the Texas offshore State lands, including the area offshore Port Arthur. A GLO and **DOE/NETL**-funded three-year project (<http://www.beg.utexas.edu/gccc/research/miocene>) characterizing this storage potential currently being conducted by the **Texas Bureau of Economic Geology** (Gulf Coast Carbon Center (<http://www.beg.utexas.edu/gccc/>)) is nearing completion (September 2014), and these efforts have identified attractive storage prospects in the State-owned lands of the near offshore of the Port Arthur region. Lease revenue from GLO lands funds the State's Permanent School Fund (<http://www.glo.texas.gov/what-we-do/state-lands/permanent-school-fund/index.html>). The logical next phase of that study is a CCS demonstration project involving injection in that near offshore geologic setting.

Posted in Susan Hovorka (https://www.beg.utexas.edu/gccc/blog/category/susan_hovorka/), Tip Meckel (https://www.beg.utexas.edu/gccc/blog/category/tip_meckel/).

Tagged Capacity (<https://www.beg.utexas.edu/gccc/blog/tag/capacity/>), Field study (<https://www.beg.utexas.edu/gccc/blog/tag/field-study/>), Policy (<https://www.beg.utexas.edu/gccc/blog/tag/policy/>).

Leave a reply

You must be logged in (https://www.beg.utexas.edu/gccc/blog/wp-login.php?redirect_to=https%3A%2F%2Fwww.beg.utexas.edu%2Fgccc%2Fblog%2Fmitigating-keystone-emissions-via-ccs-2%2F) to post a comment.

Next Post → (<https://www.beg.utexas.edu/gccc/blog/gccc-side-event-at-unfccc-cop20-in-lima-builds-on-ccs-momentum/>)

← Previous Post (<https://www.beg.utexas.edu/gccc/blog/interested-in-an-international-program-for-offshore-co2-storage-you-should-be/>)

Recent Articles

- GCCC at GHGT-15 (<https://www.beg.utexas.edu/gccc/blog/gccc-at-ghgt-15/>) March 10, 2021
- Injection and Geologic Storage Regulation of Anthropogenic Carbon Dioxide (<https://www.beg.utexas.edu/gccc/blog/injection-and-geologic-storage-regulation-of-anthropogenic-carbon-dioxide/>) February 10, 2021
- CT Scans Reveal Factors Affecting CO₂ Storage Efficiency (<https://www.beg.utexas.edu/gccc/blog/ct-scans-reveal-factors-affecting-co2-storage-efficiency/>) November 5, 2020
- GCCC Hosts Virtual Sponsor Meeting (<https://www.beg.utexas.edu/gccc/blog/summer-2020-sponsor-meeting/>) September 3, 2020
- Pore-Scale Modeling of CO₂ Storage (<https://www.beg.utexas.edu/gccc/blog/pore-scale-modeling-of-co2-storage/>) June 22, 2020

Archives

- March 2021 (<https://www.beg.utexas.edu/gccc/blog/2021/03/>)
- February 2021 (<https://www.beg.utexas.edu/gccc/blog/2021/02/>)
- November 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/11/>)
- September 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/09/>)
- June 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/06/>)
- April 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/04/>)
- February 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/02/>)
- January 2020 (<https://www.beg.utexas.edu/gccc/blog/2020/01/>)
- December 2019 (<https://www.beg.utexas.edu/gccc/blog/2019/12/>)
- October 2019 (<https://www.beg.utexas.edu/gccc/blog/2019/10/>)
- April 2019 (<https://www.beg.utexas.edu/gccc/blog/2019/04/>)
- March 2019 (<https://www.beg.utexas.edu/gccc/blog/2019/03/>)
- December 2018 (<https://www.beg.utexas.edu/gccc/blog/2018/12/>)
- November 2018 (<https://www.beg.utexas.edu/gccc/blog/2018/11/>)
- July 2018 (<https://www.beg.utexas.edu/gccc/blog/2018/07/>)
- February 2018 (<https://www.beg.utexas.edu/gccc/blog/2018/02/>)
- January 2018 (<https://www.beg.utexas.edu/gccc/blog/2018/01/>)
- July 2017 (<https://www.beg.utexas.edu/gccc/blog/2017/07/>)
- April 2017 (<https://www.beg.utexas.edu/gccc/blog/2017/04/>)
- October 2016 (<https://www.beg.utexas.edu/gccc/blog/2016/10/>)
- August 2016 (<https://www.beg.utexas.edu/gccc/blog/2016/08/>)
- April 2016 (<https://www.beg.utexas.edu/gccc/blog/2016/04/>)
- February 2016 (<https://www.beg.utexas.edu/gccc/blog/2016/02/>)
- December 2015 (<https://www.beg.utexas.edu/gccc/blog/2015/12/>)
- November 2015 (<https://www.beg.utexas.edu/gccc/blog/2015/11/>)
- October 2015 (<https://www.beg.utexas.edu/gccc/blog/2015/10/>)
- December 2014 (<https://www.beg.utexas.edu/gccc/blog/2014/12/>)
- May 2014 (<https://www.beg.utexas.edu/gccc/blog/2014/05/>)
- March 2014 (<https://www.beg.utexas.edu/gccc/blog/2014/03/>)
- February 2014 (<https://www.beg.utexas.edu/gccc/blog/2014/02/>)

- January 2014 (<https://www.beg.utexas.edu/gccc/blog/2014/01/>)

Authors

- Emily Moskal (<https://www.beg.utexas.edu/gccc/blog/category/emily-moskal/>)
- Hilary Olson (<https://www.beg.utexas.edu/gccc/blog/category/hilary-olson/>)
- Juli Berwald (https://www.beg.utexas.edu/gccc/blog/category/juli_berwald/)
- Katherine Romanak (https://www.beg.utexas.edu/gccc/blog/category/katherine_romanak/)
- Staviana Strutz (https://www.beg.utexas.edu/gccc/blog/category/staviana_strutz/)
- Susan Hovorka (https://www.beg.utexas.edu/gccc/blog/category/susan_hovorka/)
- Tip Meckel (https://www.beg.utexas.edu/gccc/blog/category/tip_meckel/)

- The Gulf Coast Carbon Center (<http://www.gulfcoastcarbon.org/>)
- Clean Air Task Force (<http://www.catf.us/blogs/ahead/>)
- co2facts.org (<http://www.co2facts.org>)

Tags

Analogues (<https://www.beg.utexas.edu/gccc/blog/tag/analogues/>) award (<https://www.beg.utexas.edu/gccc/blog/tag/award/>)
 beach (<https://www.beg.utexas.edu/gccc/blog/tag/beach/>) Capacity
 (<https://www.beg.utexas.edu/gccc/blog/tag/capacity/>) Carbon
 Capture
 (<https://www.beg.utexas.edu/gccc/blog/tag/carbon-capture/>) carbon capture and storage (<https://www.beg.utexas.edu/gccc/blog/tag/carbon-capture-and-storage/>) carbon dioxide
 (<https://www.beg.utexas.edu/gccc/blog/tag/carbon-dioxide/>) carbon sequestration (<https://www.beg.utexas.edu/gccc/blog/tag/carbon-sequestration/>)
 carbon storage (<https://www.beg.utexas.edu/gccc/blog/tag/carbon-storage/>) CCS
 (<https://www.beg.utexas.edu/gccc/blog/tag/ccs/>)
 Characterization
 (<https://www.beg.utexas.edu/gccc/blog/tag/characterization/>) climate change partnership
 (<https://www.beg.utexas.edu/gccc/blog/tag/climate-change-partnership/>) CO2 storage capacity (<https://www.beg.utexas.edu/gccc/blog/tag/co2-storage-capacity/>) conservation (<https://www.beg.utexas.edu/gccc/blog/tag/conservation/>) developing countries
 (<https://www.beg.utexas.edu/gccc/blog/tag/developing-countries/>) emissions reduction (<https://www.beg.utexas.edu/gccc/blog/tag/emissions-reduction/>) Field study
 (<https://www.beg.utexas.edu/gccc/blog/tag/field-study/>) GCCC
 (<https://www.beg.utexas.edu/gccc/blog/tag/gccc/>) Geochemistry
 (<https://www.beg.utexas.edu/gccc/blog/tag/geochemistry/>) GoMCarb (<https://www.beg.utexas.edu/gccc/blog/tag/gomcarb/>)
 greenhouse gas emission (<https://www.beg.utexas.edu/gccc/blog/tag/greenhouse-gas-emission/>) greenhouse gas mitigation
 (<https://www.beg.utexas.edu/gccc/blog/tag/greenhouse-gas-mitigation/>) gulf of mexico (<https://www.beg.utexas.edu/gccc/blog/tag/gulf-of-mexico/>)

Knowledge transfer
(<https://www.beg.utexas.edu/gccc/blog/tag/knowledge-transfer/>) Leakage (<https://www.beg.utexas.edu/gccc/blog/tag/leakage/>) media coverage

(<https://www.beg.utexas.edu/gccc/blog/tag/media-coverage/>) miocene (<https://www.beg.utexas.edu/gccc/blog/tag/miocene/>) Monitoring
(<https://www.beg.utexas.edu/gccc/blog/tag/monitoring/>) offshore CO2 storage

(<https://www.beg.utexas.edu/gccc/blog/tag/offshore-co2-storage/>) offshore storage (<https://www.beg.utexas.edu/gccc/blog/tag/offshore-storage/>)

Outreach

(<https://www.beg.utexas.edu/gccc/blog/tag/outreach/>)

Policy (<https://www.beg.utexas.edu/gccc/blog/tag/policy/>)

presentation (<https://www.beg.utexas.edu/gccc/blog/tag/presentation/>) publication (<https://www.beg.utexas.edu/gccc/blog/tag/publication/>) Risk

Assessment (<https://www.beg.utexas.edu/gccc/blog/tag/risk-assessment/>) sea level rise

(<https://www.beg.utexas.edu/gccc/blog/tag/sea-level-rise/>) shoreline (<https://www.beg.utexas.edu/gccc/blog/tag/shoreline/>) Site

selection (<https://www.beg.utexas.edu/gccc/blog/tag/site-selection/>) susan

hovorka (<https://www.beg.utexas.edu/gccc/blog/tag/susan-hovorka/>) texas coast

(<https://www.beg.utexas.edu/gccc/blog/tag/texas-coast/>) texas state waters (<https://www.beg.utexas.edu/gccc/blog/tag/texas-state-waters/>) Tim

Dixon (<https://www.beg.utexas.edu/gccc/blog/tag/tim-dixon/>)

© 2022 Gulf Coast Carbon Center Blog (<https://www.beg.utexas.edu/gccc/blog/>), all rights reserved.

Proudly powered by WordPress (<http://wordpress.org/>)