

March 10, 2020

Room 548-S

1:30 PM

Testimony from Eugene Holubnyak, Kansas Geological Survey

Submitted to Rosemary Cubie, Committee Assistant for the Kansas Senate Utilities Committee.

RE: Written Testimony, Hearing on SB 395 Allowing the exercise of eminent domain for the purpose of conducting carbon dioxide in pipes.

My name is Eugene Holubnyak, thank you for the opportunity to appear before you today. I have been the Petroleum Engineer in the Energy Research Section at the Kansas Geological Survey (KGS) for 8 years and I lead my group's Department of Energy (DOE) Projects. The KGS is a research and service division under the University of Kansas. Our statutory mission is to study and report on the state's natural resources. We do not have any regulatory responsibility and we do not take position on policy. I am here to provide scientifically sound information and opinions that can inform your policy decisions. This neutral testimony is an informational briefing on the state of Carbon Dioxide Capture, Utilization, and Storage (CCUS) in Kansas and the broader region, and is provided to help you reach an informed decision on SB 395, which seeks to allow the exercise of eminent domain for the purpose of conducting carbon dioxide in pipes.

KGS has conducted CCUS research the past 25 years to identify risks, feasibility, and opportunities for Kansas. In the past 10 years, the Energy Research Section has led or played a key role in five successful large-scale CCUS projects all funded by the U.S. Department of Energy (~\$26.5 million). As a part of this research program, KGS has been engaging local and regional stakeholders, by running for example, an annual Kansas CCUS Conference where more than seventy individuals from Kansas industries, Kansas government, Kansas public policy organizations, and Kansas universities participated. These CCUS projects have strong bipartisan support because they provide the desirable environmental benefit of reducing greenhouse gas emissions by securely storing CO<sub>2</sub> underground, as well as producing trapped oil more efficiently and improving Kansas oil production.

The International Energy Agency's (IEA) 2015 report, *Storing CO<sub>2</sub> through Enhanced Oil Recovery*, estimates a large potential for geologic storage. They estimated that oil recovered via CO<sub>2</sub> injection reduces the carbon footprint of that oil by more than 30%. When an oil field is flooded with CO<sub>2</sub> to release additional oil, a significant portion of CO<sub>2</sub> remains in the geologic formation. It is estimated that the Kansas potential for storing CO<sub>2</sub> via EOR is up to 750 megatonnes.

The IRS tax incentive known as “45Q”, which was expanded in February 2018, has re-generated interest in CCUS from various industry sectors in Kansas and nationally by offering \$35 to \$50 per ton tax credit for injected CO<sub>2</sub>. Industries interested in these credits include oil and gas, ethanol, electrical power generation, pipelines, and agriculture. Kansas is in a strategic geographic position to take advantage of this growing interest and could become a hub for capture, transportation, and storage much like Oklahoma became a hub for oil pipelines in the early 1900s. The expanded 45Q tax credits could make CO<sub>2</sub> injection economically attractive for investors and operators. Moreover, 45Q is only a part of the Federal agenda for a sustainable energy generation that has bipartisan support and is moving through the U.S. legislature. There are multiple proposals working their way through U.S. Congress that include CCUS infrastructure development, extension of tax incentives, appropriations for various state agencies, etc. These agendas support the Governor’s vision for sustainable energy production and rural economic development.

The interest to invest in CCUS is increasing. Occidental Petroleum (Oxy) has announced its intent to connect CO<sub>2</sub> sources in the northern states and midwest to its oilfields in West Texas. Oxy plans to use this CO<sub>2</sub> to stimulate oil production while securing its storage long-term. They also plan to manufacture products, such as jet fuel and chemical solvents. While advanced development CCUS projects are being pushed nationally, Colorado and Oklahoma have expressed particular interest in also becoming a “CO<sub>2</sub> hub,” so there is urgency to bring local projects online before planned carbon dioxide pipeline routes bypass the state of Kansas.

CO<sub>2</sub> delivered to oil fields in Kansas as a result of improved economics provided by the 45Q tax credit could increase Kansas oil production by 10 million barrels of oil per year (28% increase) (DE-FE0029474 Final Technical Report, Holubnyak et. al, 2018), adding \$600 million in gross revenue annually (\$60/barrel oil price), and could provide additional revenue for Kansas ethanol facilities, which are some of the most economic sources of anthropogenic CO<sub>2</sub>.

The Kansas Geological Survey (KGS) and industry partners have demonstrated in multiple projects over the past 15 years that Kansas oil fields are amenable to CO<sub>2</sub> injection, but lack sources of CO<sub>2</sub> cheap enough for implementation. Additional oil production at these fields could be possible with the newly available CO<sub>2</sub> delivered via pipeline networks. This new production would be a lower-carbon footprint oil than normal oil production.

Kansas statute does not currently allow CO<sub>2</sub> pipelines to be built expeditiously like it does for oil, natural gas and water. Approving SB 395 would help our local economy benefit from this opportunity for a large-scale project that could bolster multiple industries, help development of rural communities, and generate revenues for local school districts in affected counties.

Thank you for your time. I would be happy to answer any questions on this topic.

Eugene Holubnyak

## References

- IEA (2015), "Storing CO<sub>2</sub> through Enhanced Oil Recovery", IEA, Paris  
<https://www.iea.org/reports/storing-co2-through-enhanced-oil-recovery>
- Holubnyak, Eugene, Dubois, Martin, Bidgoli, Tandis, Wreath, Dana, Watney, Lynn, Stover, Susan, Newell, David, Fazelalavi, Fatemeh 'Mina', Hollenbach, Andrew, Jennings, Jeffrey, Steincamp, Christopher, Schremmer, Joseph, Jordan, Brendan, Crabtree, Brad, Christensen, Jennifer, McFarlane, Dane, Doveton, John, Krishnamurthy, Krish, Byron, Makini, and Watts, Kevin. Integrated CCS for Kansas (ICKan) Final Technical Report. United States: N. p., 2018. Web. doi:10.2172/1491482.