Contract No. G-049-092
"Underground Storage of Produced Natural Gas –
Conceptual Evaluation and Pilot Project(s) (HB 1014)"
Submitted by: Energy and Environmental Research Center
Principal Investigator: Bethany Kurz

PARTICIPANTS

Sponsor	**Cost Share**
North Dakota Industry	$6,000,000 (In-Kind)
North Dakota Industrial Commission/OGRC Funding	$6,000,000 (Cash)
Total Project Cost	$12,000,000

Project Schedule – 25 months
Contract Date – September 4, 2019
Start Date – June 1, 2019

Project Deliverables:
Status Report: November 1, 2019 ✓
Status Report: February 1, 2020 ✓
Status Report: May 1, 2020
Status Report: August 1, 2020
Status Report: November 1, 2020
Status Report: February 1, 2021
Status Report: May 1, 2021
Final Report: June 30, 2021

OBJECTIVE/STATEMENT OF WORK:
The Energy & Environmental Research Center (EERC) proposes a project to directly address the intent of Section 25 of House Bill 1014. The overall goal of the proposed effort is to demonstrate the techno-economic feasibility of produced natural gas ("produced gas") injection into non-hydrocarbon-producing subsurface formations in the Williston Basin for future recovery and use or for pressure maintenance and/or enhanced oil recovery (EOR) in a conventional or unconventional oil reservoir. To achieve the project goal, the EERC will partner with North Dakota oilfield producers on up to three pilot project efforts to define and assess the key technical, economic, and regulatory components of each approach.

The primary project objectives will be to evaluate the viability of various subsurface formations as storage and/or injection targets, to document the facilities and equipment needs and costs for produced gas injection, to predict the subsurface storage footprint of the injected gas plume over time, to predict gas recovery efficiencies, to develop a monitoring plan, and to summarize the required regulatory considerations for different injection/storage scenarios. The above information will be obtained from a combination of research activities performed at the EERC and from up to three pilot projects performed in partnership with and including substantial financial investment from oil field operating companies.

The results of this effort will provide the state, the oil and gas industry, and other interested parties with the key information needed to assess the techno-economic viability of produced gas storage and/or injection into the subsurface as a means of achieving gas capture requirements, expanding Bakken oil production, and conserving the state's resources. Specifically, one or more pilot projects to demonstrate produced gas injection into subsurface storage or EOR targets would be highly beneficial to assess the details of the concept using real-world data on the technical, economic, and regulatory components of the approach.

Section 25 of House Bill 1014
Pursuant to the continuing appropriation in section 57-51.1-07.3, the industrial commission shall use $6,000,000, or so much of the sum as may be necessary, from the oil and gas research fund to contract with the energy and environmental research center for pilot projects relating to the underground storage of

produced natural gas. The pilot projects may include studies and demonstration projects. During the 2019-20 interim, the energy and environmental research center shall provide quarterly reports to the industrial commission and at least one report to the legislative management regarding the results and recommendations of the pilot project.

STATUS
Contract has been executed.

November 2019
Status report received. The report states in part:
The EERC worked on a contract with an interest project partner, XTO Energy (XTO). It is anticipated that a cost-share agreement for an initial evaluation of potential pilot project locations will be complete with XTO by next quarter. Once in place, activities on this project will commence in full.

More details are available in the full report.

February 2020
Status report received. The report states in part:
The EERC completed a contract with an interest project partner, XTO Energy (XTO). Two pilot project activities have been identified and will be referred to as the Minnelusa gas storage and Bakken enhanced oil recovery projects. Weekly conference calls were initiated and focused on the Minnelusa gas storage project.

The EERC worked with XTO to understand the requirements for gas storage and determined key regulatory and permitting, tax consideration, and pore spacing leasing activity questions.

A geocellular model of the gas storage complex was built. Data needed for developing a simulation model were collected, and preliminary simulations were initiated. The EERC worked closed with XTO on these activities.

More details are available in the full report.

Updated 4/5/2020