

Bakken Production Optimization Program 3.0

Submitted by:

Energy & Environmental Research Center (EERC)

- ❑ Funding Request - \$6,000,000**
- ❑ Total Project Costs - \$12,000,000**
- ❑ Project Duration: 3 years**

PROJECT DESCRIPTION

Continuing Bakken Production Optimization Program (BPOP) offers an opportunity for North Dakota to continue its investment in the future of the state. The success of BPOP to date suggests a high likelihood of significant return on investment.

Throughout the first 6 years of the program, the EERC has demonstrated that the strength of BPOP rests in its ability to rapidly address ever-changing technical priorities. It is envisioned that there will be an ongoing need to adapt and meet those challenges, both anticipated and unanticipated. Key questions that will be addressed during the next 3 years of BPOP include:

- How do we move Bakken enhanced oil recovery (EOR) from pilot to commercial scale?
- What is the best development strategy for Bakken and Three Forks resources over the next decade?
- How do we manage long-term, large-volume water and rich gas coproduction?
- How can recent technology advances (e.g., artificial intelligence, machine learning [ML], big data analytics [BDA]) be applied to oil and gas resource development in North Dakota?

PARTICIPANTS

- U.S. Department of Energy (DOE) National Energy Technology Laboratory and Liberty Resources, LLC have committed to provide initial cost share. The EERC anticipates the ongoing support of at least six companies, such as ConocoPhillips; Equinor; Hess Corporation; Oasis Petroleum, Inc.; Petro-Hunt; WPX Energy; and/or XTO Energy, which have engaged in co-financing BPOP during previous project activities. Additional partners are anticipated to join as BPOP continues.

TECHNICAL REVIEWERS' RATING SUMMARY

		Technical Reviewer			
Statement	Weighting Factor	<u>G-51-07A</u>	<u>G-51-07B</u>	<u>G-51-07C</u>	<u>Average Weighted Score</u>
Objectives	9	5	3	3	27
Achievability	7	4	3	3	21
Methodology	8	5	3	5	32
Contribution	8	5	3	5	32
Awareness / Background	5	5	4	5	20
Project Management	3	4	3	3	9
Equipment / Facilities	2	5	3	4	8
Value / Industry-Budget	4	4	4	5	16
Financial Match – Budget	4	5	3	3	12
Average Weighted Score		236	159	202	199
Maximum Weighted Score				250 possible points	

TECHNICAL REVIEWER TOTALS

G-51-07A

Average Weighted Score: **236 out of 250**

FUND

G-51-07B

Average Weighted Score: **159 out of 250**

FUNDING TO BE CONSIDERED

G-51-07C

Average Weighted Score: **202 out of 250**

FUND

TECHNICAL REVIEWER COMMENTS

Reviewer G-51-07A

The proposed work will help to ensure the continued development of the oil and gas resources of the Bakken formation in ND in a responsible manner for the benefit of North Dakota and the country. The development of this resource has had an enormous impact on North Dakota and this work will help to ensure that benefit will continue well into the future.

Recommendation: Fund

Reviewer G-51-07B

The goals for the proposed project are quite broad in nature and constitute a general consulting agreement with industry, the ND Industrial Commission, and DOE as opposed to specific project goals being outlined. The project goals, while very high level, are well directed at informing the major opportunities and needs regarding future development and operation of the Bakken and Three Forks resource in North Dakota.

Recommendation: Funding to be Considered

Reviewer G-51-07C

This BPOP 3.0 extension is the logical continuation of previous research the ND Oil and Gas Research Program has funded and is very likely to produce valuable information to extend and even expand the value and producing lifetime of the huge Bakken/Three Forks unconventional resource, with obvious economic benefits to the state of North Dakota. Developing an effective EOR method is an important factor in meeting Governor Burgum's goal of 2.0 million barrels of oil per day (BOPD) for North Dakota. Using an existing low value gas fraction for EOR potentially allows operators and mid-stream gas companies an opportunity to use this resource to the benefit of North Dakota, while offsetting losses for storage or below cost sales.

Recommendation: Fund

Director's Recommendation:

Recommend funding the total \$6,000,000 with the condition that \$3,000,000 would come from the current biennium 2019-2021 and \$3,000,000 coming from the next biennium 2021-2023 appropriations.