



**EERC**



UNIVERSITY OF  
**NORTH DAKOTA**



Critical Challenges. Practical Solutions.



Energy & Environmental Research Center (EERC)

# Breaking New Ground in Flaring Reduction

North Dakota Oil and Gas Research Program  
Clean Natural Gas Capture and Emissions Reduction Program

1/24/2025

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# Request Summary

Funding Requested:	\$2,566,341
Total Value of Project:	\$5,132,682
Duration:	12-months
PI:	Darren Schmidt
Organization:	EERC
Cost Share Partners:	Steffes, LLC Advanced Flow Solutions, Inc.
Industry Support:	Hess Petro Hunt

**Objective:** Conduct a pilot project that accelerates the adoption of new technology for the industry to eliminate flaring.

**Scope:** Deploy 30 gas capture units on well pad facilities.

**Results:** Fulfill SB2089\*, Specifically address the challenges with the remaining volume of flared gas in North Dakota.

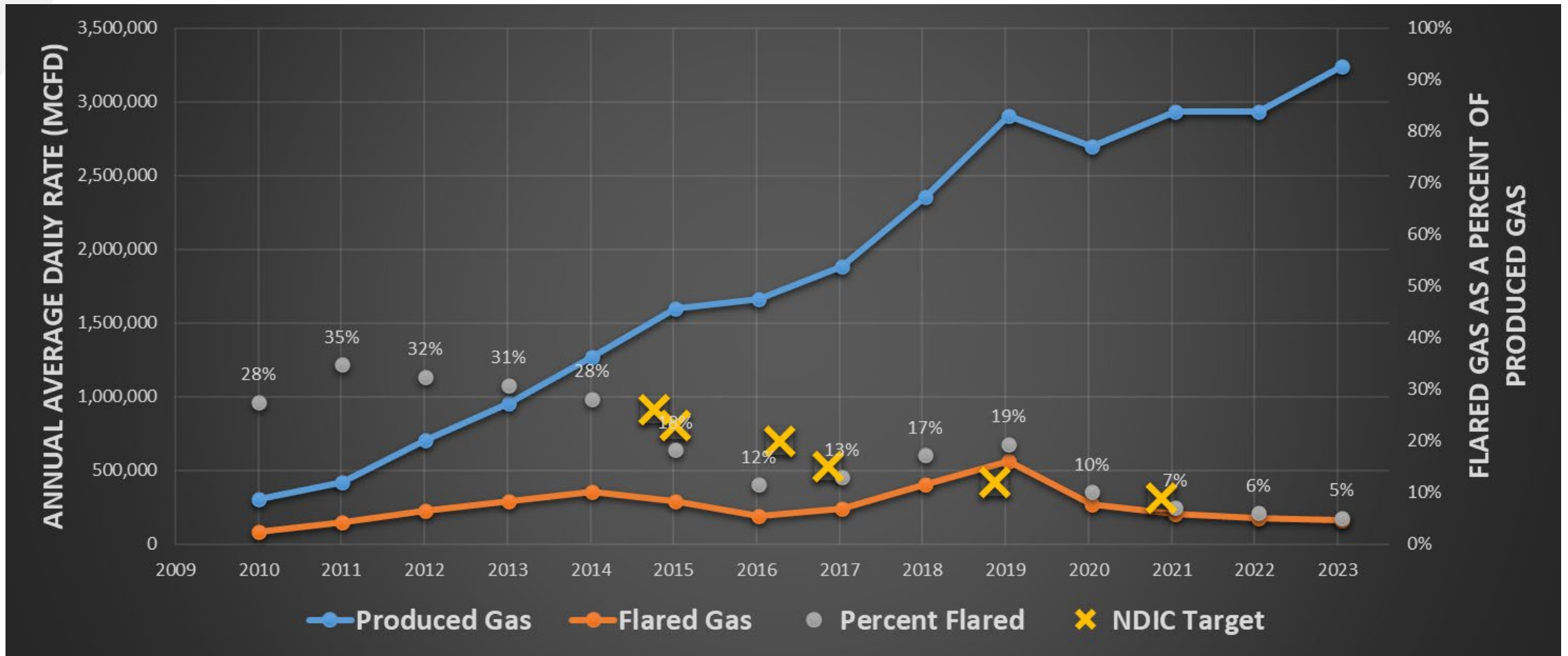
\*SB2089 – Incentive payment for projects that capture or utilize natural gas which would otherwise be flared. SB2089 replaces a prior tax incentive for similar projects.

# Requirements of the Clean Natural Gas Capture and Emissions Reduction Program – Standards of Success

Comprehensive report to the commission to include:

1. Summary of work performed
  2. Photos of installed equipment
  3. Documentation of project costs and matching cost share
  4. Locations of installed equipment
  5. Rates and volumes of gas captured
- Delivery to include interim and final reporting.
  - Success based on completed installation and operation of 30 units and commensurate reporting.

# ND Flaring History

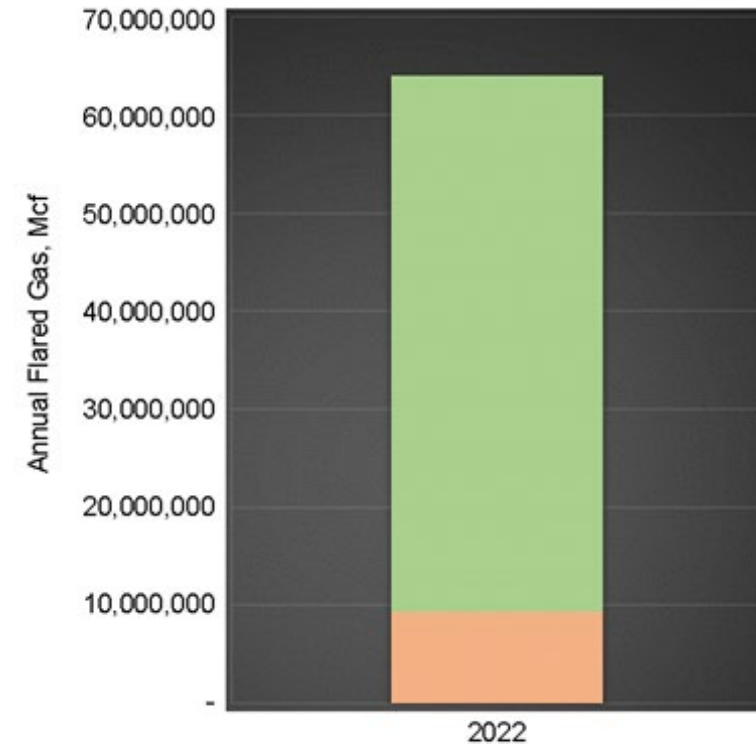
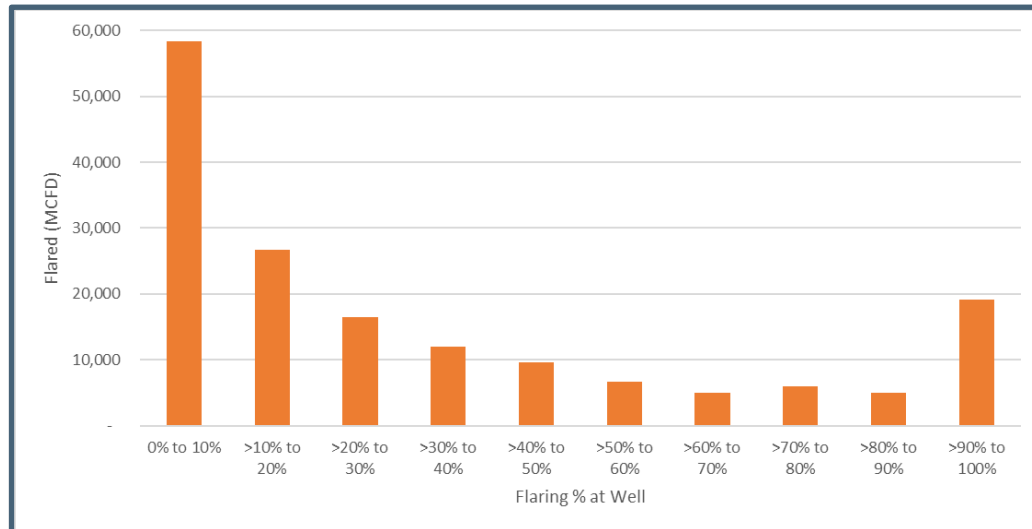
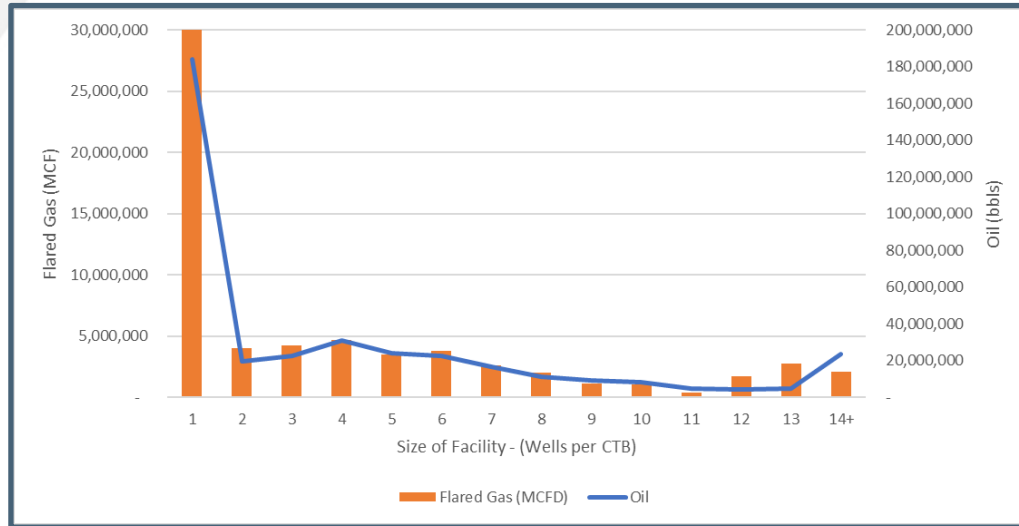




## **MAJORITY OF FLARED GAS IS:**

1. Not stranded.
2. Flared on non-comingled sites.
3. From facilities flaring  $< 10\%$  of produced gas.

# CAPTURING THE REMAINING FLARED GAS IN NORTH DAKOTA REQUIRES NEW TECHNOLOGY



- Flared from Wells Connected to Sales
- Flared from Stranded Wells

EERC DS64927.PSD

# TECHNOLOGY PROGRESS

**2021 Signed  
commercial  
license agreement**

**Eight patents  
issued**

**Joint development  
agreement  
ND OEM**

**Industry  
participation  
(BPOP)**

**2021  
Laboratory testing**

**2022  
First prototype**

**2022-2023  
Early field work**

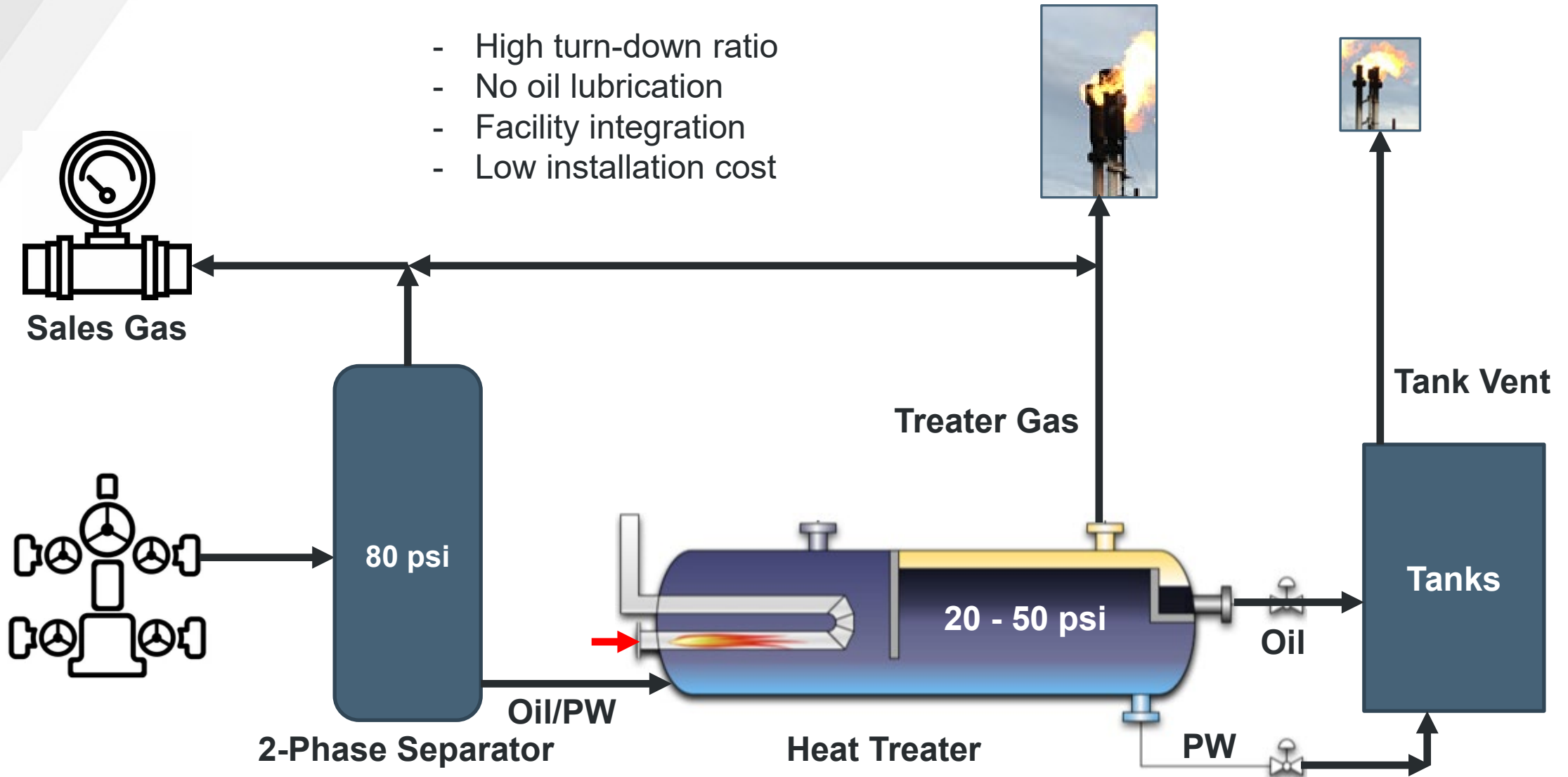
**2023-2024  
DOE support for  
prototype testing**

**2025  
Proposal  
Gas Capture  
Grant – Field Pilot**



# How do we innovate?

- High turn-down ratio
- No oil lubrication
- Facility integration
- Low installation cost

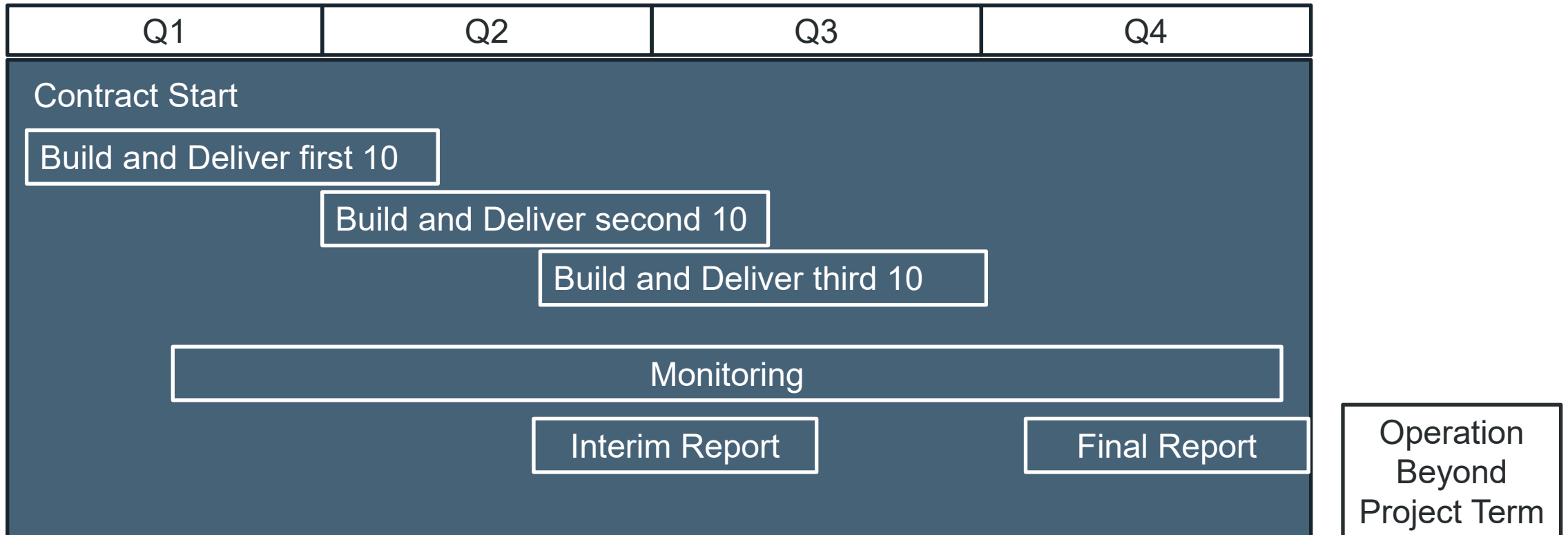


# Present configuration

- 50 MCFD @ pressure ratio of 70 psi
- Treater boost 30 psi to 100 psi
- Max. 120 psi
- Option to capture tank vapors & reuse as fuel.
- Winterized
- C1D1
- PLC control



# Schedule



# Anticipated Results

- Further the grant incentive for projects that capture gas that would otherwise be flared.
- Provide a meaningful implementation pilot to cover a diversity of wellsites and facility types and a variety of operators to demonstrate gas capture.
- Reduce the cost and risk for operators looking to adopt new technology and accelerate commercial deployment.
- Specifically address the remaining gas flaring in ND, especially economically challenged gas.

# Value to North Dakota and Industry

## Monthly Production July 2024

Gas captured 3,245,517 MCFD (94%)

Gas flared 217,343 MCFD (6%)

Flared gas @ \$5.00/MCF = \$33.4 million

Tax rate @ \$0.0646/MCF = \$435,000

## Extrapolated to annual:

Flared gas = \$400 million

Tax = \$5.2 million

## Compliance – 40CFR60, 0000b, 0000c

1. Super emitter program – 100kg/hr
2. Elimination of routine flaring (phase out)
3. Methane fee - \$900/\$1200/\$1500 per ton
4. Advanced leak detection and monitoring
5. Liquid unloading requirements
6. Process controllers and pumps
7. Storage tanks
8. P&A requirements
9. Rules that push c to b

# Why the project is needed.

- ND's gas capture policy has been a success. The industry has responded.
- What's left to capture requires new tools the industry does not have today.
- ND will be highly competitive as a low-carbon producer.
- The present flaring volumes are **geographically dispersed** across **many wells** producing at **low rate** which presents economic challenges for conventional technology.
- This project helps accelerate new flare elimination technology with measurable reductions.

<b>Project Associated Expense</b>	<b>NDIC Share (Cash)</b>	<b>Industry Share (In-kind)</b>	<b>Total Project</b>
Labor	\$421,720	\$0	\$421,720
Travel	\$87,062	\$0	\$87,062
Equipment > \$5000	\$1,500,000	\$0	\$1,500,000
Supplies	\$30,000	\$0	\$30,000
Subcontractor – TBD Site Support	\$80,000	\$0	\$80,000
Communications	\$78	\$0	\$78
Printing & Duplicating	\$100	\$0	\$100
<b>Laboratory Fees &amp; Services</b>			
Document Production Service	\$5,068	\$0	\$5,068
Technical Software Fee	\$17,543	\$0	\$17,543
Engineering Services Fee	\$1,597	\$0	\$1,597
Field Safety Fee	\$61,594	\$0	\$61,594
Outside Lab – Gas Sampling	\$20,000	\$0	\$20,000
<b>Total Direct Costs</b>	<b>\$2,224,762</b>	<b>\$0</b>	<b>\$2,224,762</b>
<b>Facilities &amp; Administration</b>	<b>\$341,579</b>	<b>\$0</b>	<b>\$341,579</b>
<b>Total Cash Requested</b>	<b>\$2,566,341</b>	<b>\$0</b>	<b>\$2,566,341</b>
<b>In-Kind Cost Share</b>			
Advanced Flow Solutions	\$0	\$1,824,500	\$1,824,500
Steffes	\$0	\$741,841	\$741,841
<b>Total In-Kind Cost Share</b>	<b>\$0</b>	<b>\$2,566,341</b>	<b>\$2,566,341</b>
<b>Total Project Costs</b>	<b>\$2,566,341</b>	<b>\$2,566,341</b>	<b>\$5,132,682</b>





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A wide-angle photograph of a university campus at sunset. The sun is low on the horizon, casting a warm glow over the scene. In the foreground, there are large trees with yellowing leaves. In the background, there are several large, multi-story brick buildings, likely university halls or administrative buildings. A parking lot with several cars is visible in the middle ground.

**THANK YOU**

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