Project Summary, Milestones, Payment Schedule and Quarterly Update Reports

Report Date (Q3 October 1 – December 31, 2023)

Project Summary

Project Title:	Unlit Flares: Aerial Quantification of a non-Inventoried Emission Source in Western Canada
Lead Investigator:	Scott Seymour, Mary Kang
AUPRF Managed Funds Award Amount:	$200,000
PTAC Technical Champion:	AER Rep: Mark Anderson Industry Rep: Andrea Zabloski
GL #:	23-ARPC-03
Project Total Cost (all years)	$200,000
Leveraged Cash Funding (all years)	$94,000
Leveraged In-Kind Funding (all years)	$94,000
Start Date:	September 25, 2023
Completion Date:	August 31, 2024
Final Report Due Date:	March 31, 2025

Provide a brief description of the challenges this project aims to address and how industry and others will benefit including what the anticipated impact is. (i.e., cost reductions, improved environmental performance, impact on regulation, enhanced access to resources). (Maximum 150 words or less)

Current federal and provincial inventories assume all flares combust with 98% efficiency, without considering the occurrence of unlit flares. This study will establish the frequency with which flares

are unlit, surveying across upstream sites in western Canada. Knowing the unlit flare fraction will allow inventories to be updated for this source of as-yet unquantified methane. This will be particularly important over the next few years as proposed industry regulations will require more vented gas to be combusted, and it will be necessary to determine whether traditional flaring practices are a viable alternative.

List key milestones with invoicing schedule. Include quarterly estimates.

	Milestone	Expenditures[1]	Fiscal Quarter[2]
1	**Selection of Survey Teams**	0	0
2	**Site Selection for Survey**	0	0
3	**Unlit Flare Survey**	123,412.64	123,412.64
4			
5			
	Total	123,412.64	123,412.64

Quarterly Update

Exception Highlight for the Quarter:
(any exceptions to the original project scope, timelines, payment schedule OR early significant findings) – this can be left blank if no changes are needed, and do not include exceptions already reported

1. 5.6% of active flares were seemingly unlit, with most found in Alberta and Saskatchewan.
2. 87% of flaring activity is occurring with traditional flare stacks; another 13% is being done with enclosed combustors.
3.

Update on scope, key questions, gap analysis and work performed this quarter (include any requests for assistance to PTAC or the committees)

The campaign successfully surveyed 322 oil and gas sites across B.C., Alberta, Saskatchewan, and Manitoba, observing 299 flare stacks. Of the active stacks, 5.6% of them were unlit, a seemingly higher rate than has been found in the United States (4.1%). Researchers decided not to notify site operators following unlit flare detection to avoid changing operator reporting practices to Petrinex. We are now exploring how unlit flares are (potentially) related to a number of factors, e.g., high/low flare volumes, oil vs. gas sites, etc. We are also reviewing survey video footage to establish the relative proportion of non-flare combustion equipment, such as cube combustors. Understanding the

[1] All expenditures in Canadian dollars and must exclude GST and other applicable taxes
[2] Quarters are based on fiscal calendar e.g., Q1 Apr 1 – Jun 30, Q2 Jul 1 – Sept 30, Q3 Oct 1 – Dec 31, Q4 Jan 1 – Mar 31.

uptake of alternative flare technologies is another important component to establishing the methane emissions impact from traditional flaring operations.

Budget Summary Update

Revenues and Expenditures	Total Budget	Budget to date	Project charges this quarter	Project charges to date	Variance of budget to actuals to date	Forecasted Total Project (no. of quarters of actual plus	Variance of total budget to forecast
Funds received And from whom	200,000 (PTAC)						
Expenses		123,412.64	123,412.64	123,412.64	0	200,000	0

Variance analysis (includes changes to invoicing schedule)
1. In-kind contributions are not presented here.

TOTAL PROJECT VALUE $ ________________
(Value equals the total funds committed to date for all years)

1st Year Funding $

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$	AUPRF	$
MITAC	$	AMEP	$	Other	$

2nd Year Funding $

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$	AUPRF	$
MITAC	$	AMEP	$	Other	$

3rd Year Funding $

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$	AUPRF	$
MITAC	$	AMEP	$	Other	$

4th Year Funding $

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$	AUPRF	$
MITAC	$	AMEP	$	Other	$

5th Year Funding $

Confirmed Funders:					
NRCan	$	AEP	$	CanERIC	$
NSERC	$	ADOE	$	ERA	$
TIER	$	CRIN	$	AUPRF	$
MITAC	$	AMEP	$	Other	$