

# ALBERTA INNOVATES CLEAN RESOURCES

## ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION – DIGITAL OILFIELD

### Energy Unmanned Traffic Management Trials (Energy UTM)

The Energy UTM Trials (EUT) will pilot (TSRL 7) a technology to allow safe and regulated drone flights beyond visual line of sight (BVLOS). Drones are an advantageous technology with countless applications. However, in Canada, as in most countries, regulations are not yet in place for full long-range deployment at scale. Robust and reliable technologies are required to permit, approve, monitor and regulate drone flights to ensure public safety and the safety of piloted aircrafts. AIRmarket and PTAC member oil and gas companies are collaborating for the piloting of the necessary UTM and connectivity technology in the context of national trials supervised by Transport Canada and NAV Canada.



**RECIPIENT:**  
PTAC Petroleum  
Technology  
Alliance Canada



**PARTNERS:**  
AIRmarket,  
TELUS, TC Energy



**TOTAL BUDGET:**  
\$3,293,558



**AI FUNDING:**  
\$506,000



**PROJECT DATES:**  
APR 2020 –  
MAR 2022



**PROJECT TRL:**  
Start: 6  
End: 7

### APPLICATION

The EUT will, in the short term, allow BVLOS in specific sites in the oil sands / remote region(s), and in the longer term contribute to the development of the BVLOS regulatory framework and create Alberta jobs in this emerging sector of the digital economy. The UTM technology is based on software in service in Dubai (United Arab Emirates) / New Zealand / Italy. To provide highly reliable telecommunications coverage, TELUS and AIRmarket have built a mobile “UTM in a Box” solution, for remote areas requiring UTM services.

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## PROJECT GOALS

The project will establish 4G UTM services using:

- Existing TELUS fixed telecommunications
- Mobile “UTM in a Box” infrastructure, for the purpose of conducting trials in the oil sands region.

The outcome will be reduced environmental impact (reduced GHG emissions and land disturbance), substantial operating cost reductions, improved worker safety, and the progression of a technology and service that could be deployed in other industries and other regions, and open the door to automation, machine learning and artificial intelligence application in resource industries.

## BENEFITS TO ALBERTA

**Reduced GHG Emissions** – Development, piloting, demonstration and regulatory approval of UTM technology is critical to allow the deployment of Remotely Piloted Aircrafts, or drones. Drones will replace piloted aircrafts, trucks and off terrain vehicles; they are more energy and fuel-efficient than heavier and slower vehicles thereby reducing GHG emissions. Reduced helicopter and truck rolls for inspection of oilfield sites and for pipeline monitoring will reduce environmental footprint, and positively impact land and vegetation.

**Improved Oil Sands Efficiency** - Drones will dramatically reduce costs and improve efficiencies in oil sands operations. Oil sands sites are remote and often difficult to access. Helicopters, trucks, and off terrain vehicles are expensive, labor-intensive, and energy-intensive. By contrast, drones are fit for purpose efficient vehicles that can carry multiple Internet of Things sensors providing real-time digital data that will allow for machine learning, automation and artificial intelligence to improve the efficiency of operations.

**Digital Economy** – The EUT is directed at oil sands operations as the first area to pilot the new technology. However, UTM technology is scalable to other oil and gas operating areas and other resource industries such as forestry and agriculture. The proposed project will pilot the technology and the digital infrastructure to allow drones to be operated remotely and collect and transmit data directly to end-users. This will create substantial technology business and employment opportunities for Albertans in a growing and highly prospective field.



**AIRmarket 3 and  
TELUS 2 New  
Products/Services**



**Enables Future GHG  
Emissions**



**10 Project Jobs**



**40 Future Jobs**

## AUG 2022

Project completed. One of AIRmarket’s anchor clients is interested in using computer vision and anomaly detection to monitor pipeline rights-of-way. The trials supported by Alberta Innovates have demonstrated command-and-control of the aircraft and integration into the air space, as well as the capability to detect the anomaly of interest to pipeline companies. AIRmarket is also continuing work with an oil sands company to create updates to elevation models that guide production. Artificial intelligence is used to detect anomalies such as standing water and vegetation.