ALBERTA INNOVATES

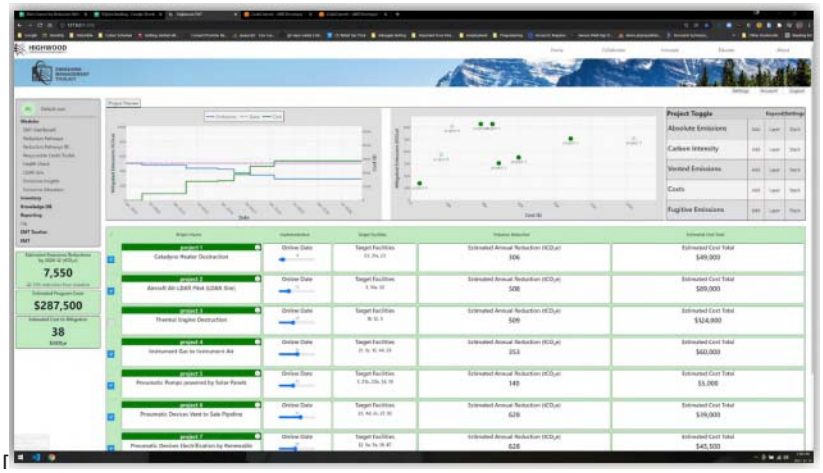
CLEAN RESOURCES

ADVANCED HYDROCARBONS

CLEANER HYDROCARBON PRODUCTION / DIGITAL OILFIELD

Reduction Pathways: A Digital Twin for Optimizing Net-Zero Emissions Roadmapping for Alberta's Energy Sector

Reduction Pathways is a digital twin of the full emissions system that integrates custom operator inventories, a proprietary knowledge database, live project & emissions data from end users, diverse sensors, and various quantification techniques. Reduction Pathways produces an interactive marginal abatement cost curve and emissions profile that helps industry chart a custom pathway to net-zero emissions (or any target) by a given future date. A combination of automated or manual forward and backward scenario analysis can be used to determine solutions to adopt, when to implement projects, and where to focus abatement efforts.



FUNDING DETAILS

RECIPIENT:
Petroleum Technology Alliance Canada

PARTNERS:
Highwood Emissions Management, Lean Minds

TOTAL BUDGET:
$859,500

AI FUNDING:
$350,000

PROJECT DATES:
MAR 2022 – MAR 2023

PROJECT TRL:
Start: 6
End: 9

APPLICATION

The initial target market is comprised of oil & gas companies in Canada, the USA, and globally as they strive to plan their emissions reduction pathways. Reduction Pathways may additionally be adopted by innovators, solution providers, oilfield service companies, investors, non-profits, and think tanks to better understand their commercial strategies, technology adoption, investment opportunities, and product-market fit. Reduction Pathways is also relevant to other carbon-intensive industries such as power generation, heavy industry, and aviation.

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PROJECT GOALS

- Commercialize and enable mass market deployment of Reduction Pathways to help manage existing pressures, risks, and constraints felt by industry today
- Foster critical innovation through consolidation of a complete emissions system digital twin, including live data assimilation from end users and novel emissions measurement technologies
- Discover how to leverage empirical and simulated data for predictive analysis, technology adoption, and multi-scale reconciliation of emissions estimates using novel optimization strategies, scenario analysis, and artificial intelligence
- Build the tools and resources required to enable Alberta's energy sector to remain competitive and sustainable in a future low-carbon economy

BENEFITS TO ALBERTA

- Improve the connectivity between Alberta innovators and end-users to maximize commercial deployment of new technologies that are robust, reliable, cost effective, and easily deployable at thousands of isolated sites in Alberta
- Aligned with Government of Alberta policies to diversify the economy toward a low carbon future and contribute to the creation of high-quality employment in clean technologies that are enabling the oil & gas sector to be more sustainable
- Help preserve thousands of jobs in the oil & gas industry and associated royalty revenues by providing tools to reduce methane emissions

4 Project Jobs

30 Future Jobs

16,000 kt/yr Project GHGs Reduced

1,400,000 kt/yr Future GHGs Reduced

CURRENT STATUS

APR 2022

Project Agreement complete, project initiating