

CLEAN RESOURCES

CLEAN TECHNOLOGY

BIOENERGY – WASTE CONVERSION

FUNDING DETAILS

Northstar Clean Technologies Scale Up Expansion Facility – Design Phase

Northstar Clean Technologies Inc. is a Canadian clean technology company focused on the recovery and reprocessing of single-use asphalt shingles. Northstar's Bitumen Extraction and Separation Technology ("BEST") reprocesses asphalt shingles back into its primary components: (1) liquid asphalt (~25%), (2) fibre (~25%), and (3) aggregate (~50%). The reprocessed products are market quality products that would otherwise be sent to landfill. The BEST process produces liquid asphalt with approximately 42% less GHG emissions than sending asphalt shingles to landfill and replacing them with virgin asphalt.

The Calgary Empower Facility will be able to process 150-200 tonnes per day of material thereby allowing Calgary landfills to avoid approximately 30,000 - 40,000 tonnes per year of asphalt shingle deposits. Approximately 1.5 million tonnes of asphalt-based roofing materials are discarded into landfills annually in Canada.



RECIPIENT:
**Northstar Clean
Technologies**



PARTNERS:
N/A



TOTAL BUDGET:
\$1,078,000



AI FUNDING:
\$200,000



PROJECT DATES:
**MAR 2022-
SEP 2022**



PROJECT TRL:
**Start: 8
End: 9**



APPLICATION

This project contributes to the circular economy by diverting between 30,000 and 40,000 tonnes of asphalt shingle waste from Calgary landfills. The Calgary Empower Facility will produce the most sustainable liquid asphalt in the world for its local customers and partners.

ALBERTA INNOVATES CLEAN RESOURCES

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PROJECT GOALS

- The main goal of this project is the completion of engineering design including FEED and detailed design for the Calgary expansion facility.
- Significant challenges remain to take the production from the current 10-20 tpd to the scale up production level of 150-200 tpd. The project includes optimization of existing proved processes and, in some cases, the re-engineering of processes to enable the overall production process to reach the commercial target of over 150tpd.
- Construction of the facility will commence in Q3 2022 after detailed design is completed. Full commercial operation is scheduled for Q2 2023.
- The Calgary Empower Facility will prove to all stakeholders that the BEST process works at a scale suitable for a North America wide roll out.

BENEFITS TO ALBERTA

- The Calgary Empower Facility will become Northstar's official headquarters and will create over 12 high-quality jobs within 2 years, deliver an estimated EBITDA of \$4M - \$5M per annum for the Alberta economy, and help Calgary in reaching its goal to divert waste from landfills, offering a single source for diversion and removal of all asphalt shingles from landfill with no product return.
- Global Reporting Initiative ("GRI") based Life Cycle Analysis of the Calgary Empower Facility found expected environmental benefits to include a diversion of 30,000 - 40,000 tonnes per year of asphalt shingles from Calgary landfills, reduced carbon emissions of 2,500 - 3,200 tonnes per year (a footprint 42% lower than current base case), as well as reduced water consumption and land disturbance.



1 Patents



5-10 Project Jobs



15-20 Future Jobs



1 New
Product/Service



2.5-3.2 kt/yr Project
GHGs Reduced



25 - 32 kt/yr Future
North American
GHGs Reduced

CURRENT STATUS

APR 2022

The project was kicked off in March 2022. The first phase of engineering is in progress.