



# Environmental Responsibility: Greenhouse Gas Emissions

Frontier will incorporate industry-leading technologies to achieve Greenhouse Gas (GHG) emissions intensity of approximately one half of the oil sands industry average.

Frontier will be among the lowest GHG-intensity oil sands operations and will have a lower carbon intensity than about half of the oil currently refined in the United States.<sup>1</sup> It will use leading engineering design and best practices to ensure best in class performance in energy efficiency and GHG reduction. Some examples include:

#### Cogeneration power

A cogeneration plant will provide 100% of Frontier's power needs. The system will capture waste heat and re-use it as energy for other areas of the project, improving efficiency and lowering overall emissions.

#### Treatment plant

Frontier will use a paraffinic froth treatment process which is much less energy intensive and reduces the carbon intensity of the oil produced. The treatment facility will also maximize efficiency through use of heat exchangers.

#### Haul truck efficiency

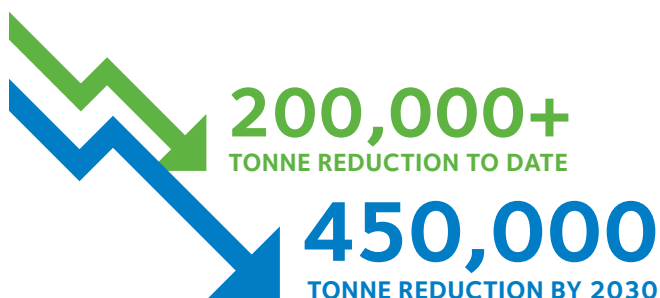
Enhanced haul truck fleet maintenance and dispatch systems will optimize fleet efficiency, reducing fuel consumption and emissions, similar to what Teck has done successfully at other operations.

#### Plant footprint

Frontier's efficient design results in a smaller footprint, which means less piping, reduced heat loss and fewer fugitive emissions during operations.

#### Evolving technologies promise further improvements

As a member of Canada's Oil Sands Innovation Alliance (COSIA), Teck is partnering in a wide range of joint industry projects to identify additional GHG reduction technologies that may be appropriate for Frontier. Improvements from these emerging technologies could contribute to further reducing GHGs at Frontier.



#### Teck's global commitment to GHG reduction

Teck is already among the lowest GHG-intensity miners globally and we will be applying that experience to Frontier. To date, we have reduced total GHG emissions across our mines by over 200,000 tonnes and we are working towards a 450,000-tonne reduction target by 2030.

*1: Based on Government of Alberta 2015 total oil sands production and greenhouse gas emissions; and data from IHS Energy for US production.*