NEWS RELEASE

Renewable Diesel “Early Mover” Approach at Copper Mountain Helps Hudbay Pursue Emissions Reduction Goals

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The Province of British Columbia has been advancing its vision for a low-carbon future since 2010. To achieve a 30% reduction in carbon intensity by 2030, the province passed the Low Carbon Fuels Act in 2022, which took effect on January 1, 2024. The Act together with its regulations is known as British Columbia’s Low Carbon Fuel Standard (LCFS).

Evaluations at Copper Mountain mine in BC showed that emissions from diesel fuel usage at the mine’s operations have consistently accounted for more than 90% of Scope 1 emissions. These emissions are attributable to the non-electrified pieces of our mining fleet – a fleet that includes a combination of electric and diesel-powered haul trucks, shovels and drills, as well as several dozers, loaders and excavators.

Using low-emissions fuels, such as Hydrogenation-Derived Renewable Diesel (HDRD), most commonly known as renewable diesel, has shown evidence of greatly reducing greenhouse gas emissions, contributing to the province’s carbon goals.

As part of Copper Mountain’s GHG reduction strategy, an operational field test of HDRD was conducted for one year on two haul trucks, initiated in 2022 and concluded in 2023. A total of 5,000 hours of controlled and measured testing and technical evaluations was completed in co-operation with Cummins and Komatsu SMS Equipment. This groundbreaking HDRD trial achieved the following results:

- 1%–2% power output reduction (not detectable in the truck);
- 3%–5% increase in fuel consumption by volume (due to HDRD being a lower density);
- 5% reduction in diesel exhaust fluid consumption; and

- 20%–60% reduction in particulate matter (engine soot).

Use of HDRD reduces the non-biogenic, or fossil-based, CO2 that is released to the atmosphere. The CO2 released from the on-site combustion of HDRD fuel that is biogenic in nature is reported separately as “biogenic CO2” in both the Environment and Climate Change Canada and BC GHG reporting programs and is excluded from BC’s carbon pricing model, known as the BC Output-Based Pricing System (OBPS), which came into effect April 1, 2024. Under the BC OBPS, the use of HDRD reduces total compliance emissions, or taxable emissions, which results in significant industrial carbon tax savings at Copper Mountain mine.

The HDRD used at Copper Mountain is a hydrotreated oil made from raw materials, such as vegetable oil, used cooking oil and animal fat sourced from the food industry. The fuel is a viable drop-in replacement that reduces fossil-based non-biogenic CO2 emissions released to the atmosphere, with no changes required to diesel engine hardware or calibration.

While in 2024 HDRD was more expensive than regular ultra-low sulphur diesel, LCFS financially supports the use of low-carbon fuels as a market transformation policy. It does this by issuing carbon credits in proportion to the amounts of measurable greenhouse gas reductions achieved when alternative fuels such as HDRD and low-carbon renewable hydroelectricity are substituted for conventional carbon-based fossil fuels.

A Dual Renewable Approach: Electric Hybrid and Renewable Diesel Integration
Informed by the HDRD trial, Copper Mountain’s decarbonization strategy evolved to include the implementation of HDRD as an alternative fuel source in addition to the electrification of key mining equipment. Copper Mountain took the trial one step further by using HDRD in an Electric Hybrid Komatsu 830E-5 Trolley Assist–equipped haul truck, creating an even cleaner production haul truck. The two alternative fuel sources to power the haul truck were BC Hydro–produced low-carbon hydroelectricity while on the trolley ramp, and low-emissions renewable diesel fuel while off the ramp.

In August 2023, after successful tests at Copper Mountain, Cummins approved the use of HDRD for all its diesel high-horsepower engines. Hudbay subsequently authorized its fleetwide use in 2024.

Hudbay’s sustainability and procurement team, in partnership with PetroValue, developed a strategy to secure favourable fuel pricing and carbon credits for the 2024 HDRD supply while establishing a logistics supply chain for HDRD from the refinery in the US to the Copper Mountain mine site. 2024 results from fleetwide use of HDRD at Copper Mountain:

- Complete reduction of non-biogenic CO2 emissions (biogenic CO2 emissions are still released with HDRD) vs. regular diesel

- Under the BC OBPS, total compliance emissions subject to carbon pricing reduced by 64,700 tonnes of CO_2 equivalent as compared to total emissions (due to the exclusion of biogenic CO_2)

Lower-Carbon Mining Needs Continued Innovation, Streamlining and Support

Major haulage truck manufacturers for open pit mines are actively designing systems to replace diesel power with low-carbon alternatives.

A wide range of government policy measures are available to support early movers in applying low-carbon technology in the challenging mining sector. Incentives, investments and partnerships – such as those with Hudbay, Komatsu SMS Equipment, Cummins Power Systems and PetroValue Fuel Products, along with government and research institutions such as CleanBC and BC LCFS – are key to supporting the mining industry's emissions reduction goals while maintaining business competitiveness.