

Media Release

8 March 2024

Aurizon secures funding to develop next-generation freight trains using renewable energy

Australia's largest rail freight company Aurizon, today received a major boost to its program to develop the next generation of Australian freight trains, aiming to replace diesel fuel with renewable energy sources on its locomotive fleet.

Aurizon has secured a \$9.4 million grant from the Australian Renewable Energy Agency (ARENA) to develop, test and trial a battery electric tender (BET) to be used in conjunction with a modified locomotive. (refer graphic below).



At today's announcement in Townsville: Alta's Managing Director Roy Zou; Les Walker, State Member of Parliament for Mundingburra; Senator Nita Green, Senator for Qld; and David Wright, General Manager, Aurizon

The tender – essentially a big battery-pack on wheels – will couple with the modified locomotive to operate as a hybrid unit using both diesel and battery-electric power sources. The tender's battery will also harness re-generative energy captured as the train travels down grades and brakes as part of normal operation.

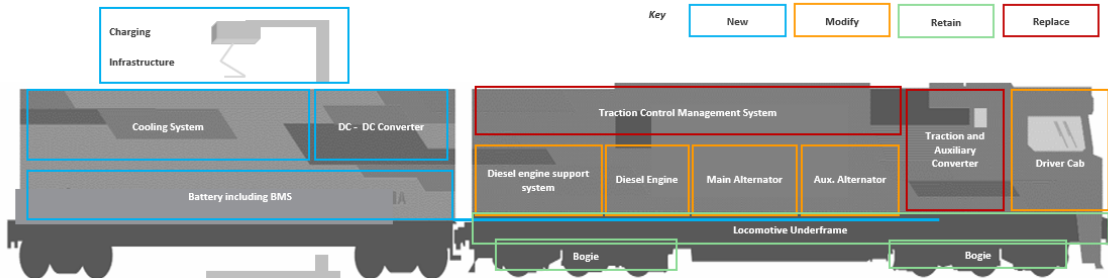
The ARENA grant represents half of the required funding for the 'Battery Powered Tender for Heavy Haul Fleet Decarbonisation' project, with the balance of the investment to be funded by Aurizon. The battery-electric tender and modified locomotive project will be built by Aurizon and technology project partner, Alta Battery Technology (Alta) at a facility in Australia, with design and technology inputs from Alta.

Aurizon appreciates the Federal Government making funding available to support the development of a range of new zero emissions technologies in the transport sector, including technologies that can be developed for application in rail-based freight supply chains that are integral to Australia's export and domestic industries that rely on transport services.

The battery-electric tender is the second key initiative in Aurizon's three-pronged strategy (refer graphic below) to deliver zero-emissions capable freight locomotives for its national portfolio of customers:

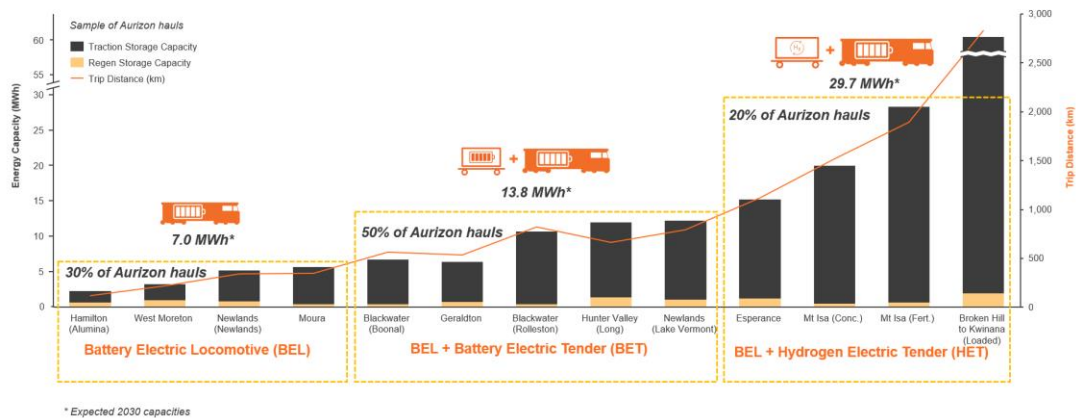
1. In May 2023, Aurizon started work on the [first battery-electric locomotive](#) (BEL) to be constructed in Australia. The prototype is expected to commence on-track trials in late 2025. This technology is expected to deliver freight on hauls of up to 400 kilometres.
2. The battery-electric tender, in the future, when coupled with the battery-electric locomotive, aims to extend the future range for freight hauls up to 850 kilometres. Trials are expected to commence in early 2026.

- In 2021 Aurizon and Anglo American agreed to work together on a feasibility study to assess the introduction of hydrogen-powered trains for bulk freight. This work concluded that a Hydrogen Electric Tender was the preferred configuration to pursue given the lack of space on the locomotive to store the required amount of hydrogen fuel. Aurizon continue to work with First Mode to explore this concept that when coupled to a battery-electric locomotive, aims to cater for freight hauls greater than 850 kilometres.



“

Aurizon aims to use battery and hydrogen power sources, or a combination of both, to deliver decarbonised freight solutions for customers across our national footprint, no matter how heavy or how far the freight needs to move,” said Andrew Harding Aurizon’s Managing Director & CEO.



* Expected 2030 capacities

“We know that Aurizon will need different solutions for different hauls and customers. We are committed to making a transition towards net zero operational emissions based on a locomotive fleet that uses zero emissions technologies, is flexible and suited to the challenging Australian conditions in which we operate.

“By delivering a locomotive fleet that can tap into renewable energy sources, Aurizon and the rail industry can do the heavy-lifting in decarbonising transport supply chains in Australia. We are also working to increase the proportion of freight transported by rail rather than road, which would contribute to reducing overall transport sector emissions.

This is not only good for our customers and the economy, it will also deliver environmental and safety benefits for the broader community.”

ARENA CEO Darren Miller said the project is addressing an emissions challenge in one of Australia’s largest industries.

“Aurizon’s battery electric tender is a world first that hopes to pave the way for the rail freight industry and help the resources on its decarbonisation journey.”

“The resources industry is a pillar of the Australian economy, but also accounts for a significant share of emissions,” Mr Miller said.

Alta’s Managing Director Roy Zou says the collaboration with Aurizon aligns seamlessly with Alta’s mission to power the nation’s transition to a cleaner future.

“We are delighted to be the technology partner on this project, providing innovative solutions that will shape the future of the rail freight industry in Australia and beyond.

“The BET will utilise our innovative DC-to-DC converter which connects diesel assets to electric power sources, specifically for high voltage systems.

“The use of this technology will alleviate the need to replace existing assets with completely electric assets, saving businesses money, and expediting their path to carbon-neutral/net zero.”

About Aurizon:

Aurizon (ASX: AZJ) is Australia’s largest rail freight operator and an ASX-listed company. Each year, the Company transports more than 250 million tonnes of Australian commodities, connecting miners, primary producers and industry with international and domestic markets. It provides customers with integrated freight and logistics solutions across an extensive national rail and road network, traversing Australia. This includes retail goods and groceries in containerised freight to cities and towns across our national footprint; future-facing commodities such as grain, phosphate and critical minerals; and of high-quality Australian coal and iron ore for export. We operate and manage 5,100 kilometres of track infrastructure that supports thriving domestic and export industries. This includes the Tarcoola to Darwin railway, a vital supply chain for central Australia that feeds into the nation’s closest port to Asia; and the Central Queensland Coal Network which includes 2,100 kilometres of electrified corridor that is able to tap into renewable energy sources from the Queensland grid.

About ARENA

ARENA is Australia’s renewable energy innovation agency and since its establishment in 2012 by the Australian Government, it has supported 672 projects with \$2.31 billion in grant funding, unlocking a total investment of almost \$9.93 billion in Australia’s renewable energy industry.

Through these projects, strong stakeholder engagement and knowledge sharing activities, ARENA has been instrumental in building the foundations of the renewable energy ecosystem in Australia.

ARENA has strong expertise and a deep understanding of the renewable energy sector coupled with a willingness to fund innovative and ground-breaking projects. The Agency has provided a pathway to commercialisation for many new technologies and businesses that would otherwise have struggled to get off the ground.

The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.

About Alta Battery Technology:

Alta Battery Technology is enabling the future cycle of energy through innovative battery solutions. Founded in Australia in 2022, and backed by the Huashi group, The Company is working to decarbonise Australia’s freight and heavy machinery industries, powering our transition to a cleaner future. Alta’s wider group has been developing cutting-edge renewables technology for over three decades, allowing Alta to leverage world-leading knowledge for the decarbonisation of Australia’s assets and infrastructure.

At the forefront of battery technology, Alta’s HSG8000 electrical system is an Australian-first innovation that connects heavy machinery to renewables. Our unique DC-to-DC converter connects diesel assets to electric power sources, specifically for high voltage systems.

A turnkey solution for its clients, Alta’s the HSG group’s breadth and depth of experience allows Alta to offer an end-to-end solution tailored to the unique needs of every client and every project.

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