5 June 2024

Port Kembla greetings. This **Port Kembla Hydrogen Hub Update #27** contains information on the following key projects and initiatives:

- **H2 Future Mobility Day #6** - Register now for this online virtual event!
- **Embrace Hydrogen** technology with **safety and confidence - TAFE NSW**
- **Renewable energy critical** for 3300 Port Kembla jobs in **green metal shift** - 31 May 2024
- **Offshore wind more expensive** than previously thought: **CSIRO -** 23 May 2024
- **'Massive incentive'** to replace **diesel with hydrogen** - 14 May 2024
- **An Illawarra desalination plant** is still on the cards - 10 May 2024
- **Wollongong green hydrogen** startup Hysata raises **$172 million in Series B funding** - 9 May 2024
- **Gippsland** given the go ahead for **offshore wind, next up Illawarra –** 3 May 2024

Previous editions of the **Port Kembla Hydrogen Hub Update** newsletter are available here.

H2 Future Mobility Day #6 - Register now for this online virtual event!

Port Kembla is at the forefront of Australia's heavy transport decarbonisation journey. Learn more about what is happening with fuel cell electric and hydrogen powered internal combustion engine

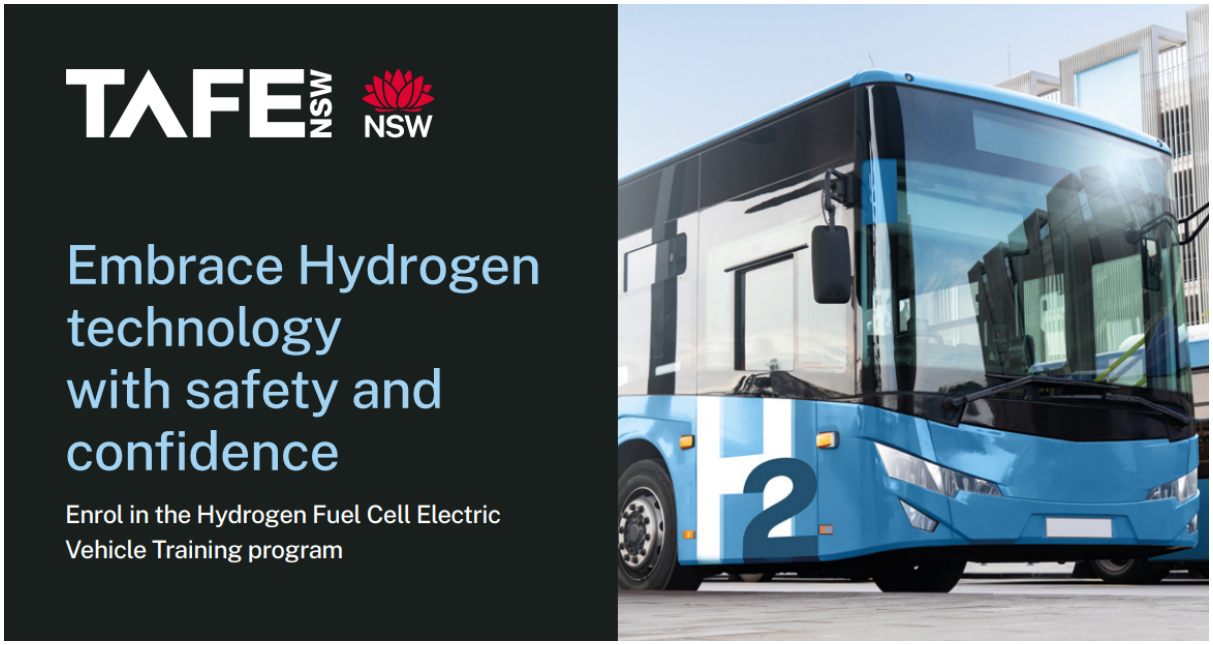
technologies for heavy vehicles. Also learn about the training that is being developed to support the deployment of these hydrogen powered heavy vehicles. This one hour virtual event is online so no need to be at Port Kembla. Register here.

Hyundai has been a global leader in zero emissions passenger vehicles, in both battery electric and hydrogen powered fuel electric technologies. Scott Nargar from Hyundai will give an overview of Hyundai's plans for FCEV heavy vehicles in Australia.

Stuart Pratt from Wasco will give an update on Australia's first diesel=hydrogen hybrid prime mover. Using Hydra Energy conversion technology from Canada, Wasco have converted a Freightliner prime mover and have completed initial testing and certification for the Australian market. This conversion pathway provides an opportunity to decarbonisation existing diesel powered heavy vehicles.

TAFE NSW are supporting the decarbonisation of heavy vehicles with the release of their hydrogen microskill course. Chris Greentree from TAFE NSW will provide details on the package of microskill course they have developed to help industry build the skilled workforce they need to operate hydrogen powered vehicles and equipment.

Embrace Hydrogen technology with safety and confidence - TAFE NSW



Hydrogen energy has the potential to cut Australia's greenhouse gas emissions to one-third of current levels by 2050. Developed in collaboration with industry experts, TAFE NSW offers a suite of future-focused Hydrogen Energy Microskills that pave the way for a greener, more sustainable future. Equip workers with the fundamental knowledge and skills to safely operate and integrate Fuel Cell Electric Vehicles.

Our Microskills focus on three key areas:

1. Hydrogen Energy Fundamentals
build confidence in using Hydrogen as a fuel source. Participants will become better informed of the practical and safe use of Hydrogen. Designed in collaboration with Coregas and Haskel.

2. Introduction to Hydrogen Fuel Cell Electric Vehicles
build awareness of the safe operation of a fuel cell vehicle. Participants will learn to identify risks, safety features and components of a fuel cell vehicle. Designed in collaboration with Foton Mobility.

3. Refuelling of a Hydrogen Fuel Cell Electric Vehicle
understand best practices to refuel fuel cell electric vehicles safely and efficiently. Designed in collaboration with Haskel and ARCC.

Course delivery:

Upskill online, on-demand in less than 2 hours.

Cost:

Hydrogen Energy Fundamentals	$70
Introduction to Hydrogen Fuel Cell Electric Vehicles	$140
Refuelling of a Hydrogen Fuel Cell Electric Vehicle	$70

Scan the QR code to find out more:

In collaboration with: FOTON MOBILITY DISTRIBUTION, Haskel, ARCC, coregas

Renewable energy critical for 3300 Port Kembla jobs in green metal shift

31 May 2024

https://www.illawarramercury.com.au/story/8647137/illawarras-green-steel-future-tied-to-renewable-energy-supply/

The Illawara's chance to secure 3300 steel jobs and take a slice of the $122 billion green metals market is dependent upon access to cheap and reliable renewable energy. This challenge is spelt out in the federal government's new consultation paper on green metals, including green iron and steel. The paper will be launched by Industry minister Ed Husic at the BlueScope steelworks on Friday, where the 3300 people who work at the steelworks will have a direct stake in Australia's ability to tap into global demand for green metals. "The mighty Illawarra has steel in its spine, steel-making know-how running through its veins and 3,300 steelworkers making a vital contribution to the local and national economy," Mr Husic said. "That's 3,300 Illawarra families with a direct stake in green metals and a Future Made in Australia, not to mention their friends and neighbours who indirectly benefit from the operation at Port Kembla."

A BlueScope worker inside the hot strip mill. Picture by Sylvia Liber

By 2040, the global demand for green steel and other green metals is expected to be worth $122 billion to Australia. But even with the Illawarra's nearly 100 year history of steelmaking, there is no guarantee the region will be at the centre of this new industry in Australia, with funds flowing to early green iron demonstration plants in the Pilbara and Gladstone. In the Illawarra, money is instead being directed towards carbon based steelmaking, with BlueScope securing a one year extension to its existing coal supply agreement with the new owner of the Appin and Dendrobium mines, with the potential to extend further. Bluescope is also investing $1.15 billion on relining blast furnace no. 6, which it describes as a "bridge" to low carbon steelmaking.

A BlueScope worker in the blast furnace. Picture by Sylvia Liber

What distinguishes the Pilbara and Gladstone from the Illawarra is ready access to large supplies of renewable energy, a critical component for green metals, the paper sets out. "As large energy users, metals producers rely on long-term energy cost certainty. The high energy intensity of these processes means Australia's future competitiveness and comparative advantage is highly dependent on the long-term costs of renewable energy and hydrogen." To bridge this gap, the government announced in the budget a $2 billion hydrogen production tax incentive, and is exploring whether a similar incentive could be applied to green metals.

BlueScope, BHP and Rio Tinto announced a pilot program for an electric smelting furnace in February. Picture by Adam McLean

"The government is considering whether production or investment incentives would be an appropriate way to unlock private investment at scale in the development of a domestic green metals industry," the report outlines. "A production incentive could be designed as an incentive per tonne of green iron, steel, alumina or aluminium produced, or could subsidise categories of capital or operating expenditure." In addition to these supply incentives, the paper proposes demand-driven alternatives, however these would largely be led by the private sector outside of government procurement decisions. The consultation paper is now open for feedback.

Offshore wind more expensive than previously thought: CSIRO

23 May 2024

www.illawarramercury.com.au/story/8638787/csiro-gencost-report-increases-cost-forecast-for-offshore-wind/

Floating offshore wind farms will provide more expensive electricity than previously thought, the final 2023-24 GenCost report from the CSIRO has found. The price hike is a result of the global offshore wind industry experiencing high costs, leading to a number of projects overseas being scaled back or cancelled. In the "current policies" scenario, the CSIRO calculates floating offshore wind will supply energy at $6533 per kilowatt in 2030. In the more ambitious "global Net Zero by

2050" scenario, the cost comes down to $4536 per kilowatt by the same year. This is about $1000 more expensive across both scenarios than in the draft report, released late last year.

The nascent nature of the floating offshore wind industry could mean that projects are more expensive. Picture supplied.

In a statement accompanying the report, the CSIRO said wind power was more affected by disruptions to global supply chains than other renewable technologies. "Wind power is recovering the slowest from global inflationary pressures and cost projections for both onshore and offshore wind have been revised upwards in the next decade." UOW energy expert Ty Christopher said the relative complexity of wind turbines made the technology more susceptible to inflation than solar, for example. "It comes down to the number of moving parts you've got in the technology," he said. "[Wind turbines] are a far more complex piece of kit on an individual basis, and as a result of that, the number of manufacturers globally is far fewer.
"The fewer manufacturers that you have globally, the more you're impacted by massive uplift in demand, supply chain delays and cost increases." Despite this revision, floating offshore wind remains cheaper than nuclear energy, either produced by large reactors or small modular reactors. Rooftop solar is the cheapest renewable energy technology, while gas is the cheapest technology of those compared by CSIRO. Being a relatively new technology in Australia, the report warns that offshore wind costs could be significantly higher than projected, due to it being the "first of a kind" technology. Technologies such as nuclear, solar thermal, carbon capture and storage projects could attract a similar premium, the report notes.

The report notes that while the upfront cost of offshore wind may be higher, the capacity factor of the technology - i.e. the amount of time in a day the blades will spin, generating electricity - reduces costs associated with storage, such as the batteries needed for large scale solar farms to provide electricity in the evening, for example. Mr Christopher said with Australia's current fleet of coal-fired power stations reaching the end of their life and suffering reliability issues, offshore wind would have a similar capacity factor to existing coal power plants in the near future. "We are five years away from the two of these having almost the same capacity factor." Transmission line approvals have been a major stumbling block in Australia’s race to hit its 82 per cent renewable energy target.

'Massive incentive' to replace diesel with hydrogen

Date: 14 May 2024

www.illawarramercury.com.au/story/8629614/massive-incentive-to-replace-diesel-with-hydrogen/

A budget tax break will help hydrogen cars run at a price equivalent to or probably less than diesel (Jennifer Dudley Nicholson/AAP PHOTOS)

Future drivers and industries could use certified green hydrogen at a pump price the same or less than diesel after production subsidies kick in, a renewable hydrogen developer says. The new tax break in the 2024/25 federal budget was a "massive incentive" for companies and governments to embrace zero-emission hydrogen as a replacement fuel for diesel, according to the founder of Countrywide Hydrogen Geoff Drucker. Almost $7 billion over a decade has been allocated for the production tax credit of $2 per kilogram, starting from 2027/28.

The federal budget also fast-tracked a proof of origin scheme that will force producers to show whether the hydrogen supply is green - using electrolysers and renewable energy for production - and not made from gas. "The Hydrogen Production Tax Incentive will help deliver certified green hydrogen at a price equivalent to or probably less than diesel," Mr Drucker, executive director at ASX-listed ReNu Energy, said.

With projects near Hobart and at Launceston, and a third being considered at Burnie, the projects could create a hydrogen refuelling network across Tasmania for road transport. But critical for the

success of these projects is the delivered cost of hydrogen, because it will compete with traditional fossil fuels. Professor Tim Harcourt, chief economist at the UTS Institute for Public Policy and Governance, said the investment in green hydrogen "could really impact Australia's future as an energy exporter as well as meeting our energy needs at home." Australian Hydrogen Council head Dr Fiona Simon said the support would also spark new high-value exports in green steel, green iron and green ammonia.

The $2 billion extension of the Hydrogen Headstart program was critical for early mover hydrogen projects and the $6.7 billion Hydrogen Production Tax Incentive would support others reach financial investment decisions, she said. Queensland-based Sunshine Hydro chairman Michael Myer said the value of the production incentive for Australia's entire clean hydrogen industry was "enormous" - for the domestic and export markets. "For example, our Djandori and Dumaresq Superhybrids will be producing close to 100,000 kgs per day of green hydrogen by 2030," he said. According to Fortescue's executive chairman Andrew Forrest, the tax break could "trigger full employment and decades of income growth for Australian workers"."It will also lower the cost of energy for every single Australian by making green hydrogen competitive with fossil fuels, spurring massive renewable energy projects in sparsely populated regions where employment is needed most," Dr Forrest said. "Fortescue believes that commercial production of green iron in Australia is now possible and must be pursued," he said.

An Illawarra desalination plant is still on the cards

Date: 10 May 2024

An Illawarra desalination plant is still on the cards | Illawarra Mercury | Wollongong, NSW

A Sydney Water master plan for the Illawarra aims for a reduced reliance on Cordeaux dams and others in the region. File photo by Sylvia Liber.

A desalination plant could be built in the Illawarra under Sydney Water's new master plan for the region. The reason is to look to reduce the region's reliance on water from Avon and Cordeaux dams

as the Illawarra's population rises. "We are looking at a 30 per cent increase in population to 2056," said Kate Miles, Sydney Water's Head of Systems and Asset Planning. "We've also got climate change which is a critical issue for the water industry with the impacts that that does have on our very rainfall-dependent water supplies.

"It seems funny to talk about the risk of drought when it seems like we've been in a period of flooding more frequently than drought recently. "But we know that in Australia the climate is swings and roundabouts. The climate is becoming more extreme though some more extreme floods, but also more extreme droughts." WaterNSW, which looks after the state's dams, had started looking at the Illawarra as a location for the state's second desalination plant in 2020, with a view to making the region more resilient in times of drought.

Later that year, it appeared a site at Port Kembla had been selected for the plant but since then the planning has been taken over by Sydney Water. "The Illawarra desal [plant] is in the plan as something that we would implement in the future as growth continues to occur," Ms Miles said. "We're looking to get it developed all the way up to being effectively something that we can then sit there that's ready to produce so if we do come into another extreme drought, it's something that we can pick up and implement in time." She wasn't able to identify a specific location as there were still several sites in play.

The Sydney Water master plan looked at four options to service the city tagged Traditional, Resource Efficient, Water Resilient and Eco-sensitive - only the last two included the construction of a desalination plant. Of those, Sydney Water has chosen the Water Resilient option which offered, "significant reduced reliance on bulk water supply and improved rainfall-independent supply from desalination to service the Illawarra region".

It stated 39 per cent of the region's water needs would be supplied by the desalination plant, with 28 per cent coming from Avon. The model also includes 25 per cent reused wastewater and 8 per cent reused stormwater. Ms Miles said recycled water systems were already in use, for toilet flushing, irrigation and industry uses. But using what they called "purified recycled water" for drinking was already being done elsewhere. "There's, I think, 35 cities around the world that already implement that kind of technology including in Australia," she said. "In Perth, they put it into aquifers and then and then pump it back out again. "So that is an option and we're also looking at. Probably the higher likelihood option is recycling stormwater as well in the Illawarra."

Wollongong green hydrogen startup Hysata raises $172 million in Series B funding

Date: 9 May 2024

Clean tech startup Hysata raises $172 million in Series B funding (smartcompany.com.au)

Wollongong-based green hydrogen startup Hysata has received backing from heavy-hitting global investors in a $172 million (US$111 million) funding round that is being described as Australia’s largest-ever Series B round by a cleantech startup. Hysata has pioneered a high-efficiency electrolyser that promises to transform how green hydrogen is produced and help accelerate the decarbonisation of sectors like steel making, chemical manufacturing and heavy transport.

Hysata CEO, Paul Barrett. Image Supplied

The massive funding injection comes less than a year after the startup received around $24 million in grant funding from the Commonwealth and Queensland governments to help it undertake a commercialisation project in Rockhampton, Queensland. The venture arm of oil and gas powerhouse bp co-led the round with Hong Kong-based alternative asset management firm Templewater, with each contributing US$10 million. Existing strategic and financial investors also participated, including IP Group Australia, Kiko Ventures (the cleantech platform of IP Group plc), Virescent Ventures on behalf of Clean Energy Finance Corporation, Hostplus, Vestas Ventures and BlueScopeX. Other new investors to back Hysata include POSCO Holdings, POSCO E&C, IMM Investment Hong Kong, Shinhan Financial Group, Twin Towers Ventures, Oman Investment Authority's VC arm IDO and TelstraSuper.

Hysata's "game-changing impact" on hydrogen sector

Hysata plans to use the funding to expand its production capacity to reach gigawatt-scale manufacturing of its electrolyser, which requires much less energy to convert water to hydrogen compared to available alternatives. Armed with this tech, CEO Paul Barrett says Hysata is aiming to "drive down the levelised cost of hydrogen" from its beachside manufacturing facility in Wollongong. "This funding round, backed by a world-class syndicate of investors, demonstrates the game-changing impact Hysata is having on the green hydrogen landscape," Barrett said in a statement on Thursday morning. "It will strengthen our team and enhance our capabilities, as we propel towards widespread commercial availability."

According to Hysata, if its electrolysers are used at scale, they could achieve energy efficiency well above the 2050 efficiency target of the International Renewable Energy Agency. "We know that green hydrogen can play a big role in decarbonisation," said Gareth Burns, vice president of co-led investor, BP Ventures. "This is the first advanced alkaline electrolyser technology that bp Ventures has invested in. It could provide optionality for our hydrogen business as bp aims to become a global leader in low carbon hydrogen production." "Hysata's technology could help save energy and reduce production costs, addressing two challenges of the green hydrogen market. We're excited for Hysata's next steps." Hysata currently employs a team of around 75 staff. It hopes to grow that number to more than 200 employees over the coming years as it also expands outside of Australia.

Gippsland given the go ahead for offshore wind, next up Illawarra

Date: 3 May 2024

https://www.illawarramercury.com.au/story/8612835/after-gippsland-offshore-wind-licenses-awarded-illawarra-is-next/

Emily Scivetti (left) of Oceanex, said the Illawarra offshore wind zone (lower map) was the next region to be determined after minister Chris Bowen (right) granted feasibility licences for the Gippsland offshore wind zone (upper map). Graphic by ACM

After the first licences to pursue offshore wind projects in the Bass Strait off Gippsland were granted, all eyes are now on the waters of the Hunter and the Illawarra as the next stage of the offshore wind pipeline. On Wednesday, energy and climate change minister Chris Bowen announced the six developers that have been granted feasibility licences. Another six have been provisionally selected, but are subject to First Nations consultation. Hopeful Illawarra proponent BlueFloat which had put forward its Greater Gippsland proposal was not selected. BlueFloat is involved in the Gippsland Dawn project, which is subject to Native Title consultation.

The licences will enable successful developers to begin scoping sections of the ocean to produce detailed plans, including environmental studies and management plans. "I've awarded feasibility licences to projects that would bring the most rewards for Gippsland, its workforce and for our energy security," Mr Bowen said. The decision means that now attention will turn to the next most advanced regions, the Hunter and the Illawarra. Emily Scivetti, chief operating officer of Oceanex, which is partnered with Norwegian energy giant Equinor to develop its Illawarra Offshore Wind proposal, said the focus would now turn to the Illawarra. "We are very encouraged by this announcement because it means that the attention now turns to NSW," she said.

While industry had hoped for Mr Bowen to make the call earlier in the year, Ms Scivetti said that approvals were expected to accelerate, now that Gippsland had been announced. "While decisions in government are taking longer than expected, what we are observing is that the government is finding their feet and the regulatory processes are becoming more efficient."

The role of Port Kembla

Prior to the announcement, Port Kembla had been touted for its role in the Gippsland region, following uncertainty about the Port of Hastings, with environment minister Tanya Plibersek ruling out the expansion of the port, due to impacts on a sensitive wetland. NSW Ports CEO Marika Calfas said Port Kembla was the site that was in the best position to support offshore wind projects, including those interstate. "Port Kembla, in our view, is the most progressed in terms of its plans and ability to deliver the infrastructure needed to support those projects, not just on the NSW coast, but in Victoria and Gippsland." NSW Ports has brought forward plans to build a container terminal in Port Kembla's outer harbour to support offshore wind zones, as the container terminal is not expected to be needed until the 2050s.

NSW Ports CEO Marika Calfas has pushed for Port Kembla to support offshore wind projects, including those in Gippsland. Picture supplied

Ms Scivetti said this approved development proposal meant Port Kembla was attractive to offshore wind developers. "Port Kembla has an existing development application which puts it in front of viable ports around the country," she said. "It is likely that Port Kembla will be able to service the offshore wind industry and we would expect a multi-port solution for the east coast of Australia. "While a Victorian port will be necessary for the construction of Gippsland projects ... we would hope to see Port Kembla play a key role in servicing not only NSW projects, but also form an important part of meeting the developers needs in Gippsland." Given the expected role of Port Kembla in future offshore wind projects not only in the Illawarra, Ms Calfas said this would enable suppliers in the Illawarra to support offshore wind projects around the country. "If we can get that up and running in Port Kembla and we take the lead, you get that opportunity to build that skills set, the knowledge base, jobs in the region, and then you become the expert hub for that and you can deploy both to the East Coast projects, but also provide that expertise to other parts of the nation as well."

FURTHER INFORMATION

The Port Kembla Hydrogen Hub is facilitated by the Department of Regional NSW in partnership with the Illawarra Shoalhaven Joint Organisation (ISJO). For further information about the Port Kembla Hydrogen Hub, please visit the webpage or contact Nigel McKinnon, Deputy Director, Department of Regional NSW by email nigel.mckinnon@regional.nsw.gov.au.