PORT KEMBLA HYDROGEN HUB

NSW GOVERNMENT

UPDATE #19

portkemblahydrogenhub.com.au

29 March 2023

This Port Kembla Hydrogen Hub Update contains information on the following key projects and initiatives:

- BOC Port Kembla hydrogen project receives funding
- Tallawarra A Power Station upgrade project
- NSW Ports lays foundation for offshore wind industry
- H2 Training + Safety Day #2
- Illawarra Regional Energy Zone (REZ) Declared
- ATCO and Hysata secure ARENA HyGATE funding

BOC Port Kembla hydrogen project receives funding

Treasurer Matt Kean (front) with Head of BOC Theo Martin (right) and Member for Heathcote Lee Evans (behind).

https://www.illawarramercury.com.au/story/8107477/port-kembla-hydrogen-hub-project-to-get-285m-funding/

A major new Port Kembla hydrogen project has won funding from the NSW Government, and will aim to develop the industrial centre as a green energy hub. At Cringila on Friday Treasurer and Energy Minister Matt Kean announced BOC Gas was one of the first two "hydrogen hub" projects to win funding, for its plan to build a 10MW electrolyser which would make hydrogen to power heavy vehicles.

Up to $64 million of funding would be available for two green hydrogen hub projects - BOC in the Illawarra, and another in Moree - while applications have opened for $1.5 billion in concessions for large-scale green hydrogen producers. The BOC project in the Illawarra would receive $28.5 million of this provided the project progresses to development.

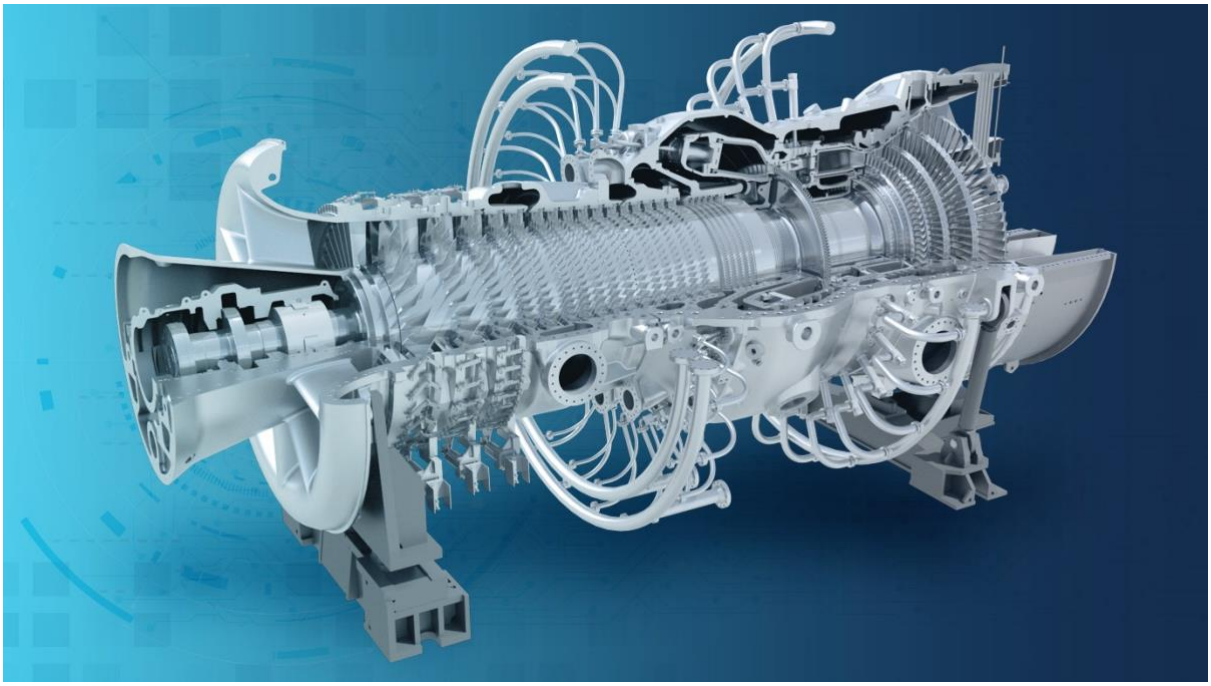
"This funding will see the first green hydrogen produced in the Illawarra, with at least four refuelling stations set to be developed in and around the Illawarra which can power up to 40 trucks and buses in the region," Mr Kean said. "Green hydrogen can help drive deep decarbonisation in hard-to-abate market segments within the transport, industrial and energy sectors which account for around 18 per cent of NSW's annual emissions."

An electrolyser uses an electric current to separate the hydrogen atoms from water.
The *Mercury* understands BOC intends the power for this project will be all renewable energy - not from a generator built on site but from within the region. Buses powered by hydrogen fuel cells have started arriving in Australia and Mr Kean said the hydrogen incentives were internationally competitive and would allow NSW to compete with US Government funding for projects, as the US scheme ends in 2030.

Tallawarra A Power Station upgrade project

https://www.ge.com/news/press-releases/energyaustralia-modernizes-tallawarra-a-power-plant-to-support-energy-transition-in

- Tallawarra A Power Plant Project marks the First HE Upgrade for the GT26 gas turbine ordered in Australia
- GE’s technology is expected to increase performance of the existing GT26 gas turbine aiming to add nearly 40 megawatts (MW) of power, supporting the expected energy demand following the closure of the coal fired 1,680-megawatt Liddell plant in the Hunter Valley region
- The project aims to accelerate the energy transition in Australia using gas that can be further decarbonized by using hydrogen and hydrogen-blended fuels in the future



Illawarra, New South Wales, Australia, March 7, 2023 — GE (NYSE: GE) today announced a new order for its first High-Efficiency (HE) upgrade for the GT26 fleet to be selected in Australia. In 2024, GE will modernize EnergyAustralia's Tallawarra A power plant, powered by a GT26 gas turbine installed nearly thirteen years ago, with the HE upgrade, a proven solution that was first introduced for the GT26 gas turbine in 2019. This solution aims to provide the Tallawarra A power plant, located in Yallah on the western shore of Lake Illawarra in the state of New South Wales (NSW), with a leap forward in efficiency and output, supporting the expected energy demand following the closure of the coal fired 1,680-megawatt Liddell plant in the Hunter Valley region.

NSW requires fast-start gas-fired generation to support renewables growth as coal plants phase out of operations. Before the Tallawarra gas-fired power station commenced operations in January 2009, the site was a 320MW coal-fired power station which operated between 1954 and 1989. Now, it is a combined cycle station with fast-start capability, which produces less carbon emissions than conventional coal-fired power stations. The gas-fired power station's generation capacity is 440 MW – which is the equivalent power to supply up to 200,000 Australian homes.

"We recognize the value of constantly evolving technology. With this innovative upgrade, Tallawarra A will benefit from improved efficiency and reduce carbon emitted per MWh, in line with our goals to accelerate the clean energy transition" said Michael Heazlewood EnergyAustralia project leader for the HE Upgrade. "EnergyAustralia has a great relationship with GE. We are working with GE to construct the adjacent Tallawarra B plant that will operate as Australia's first peaking plant capable of using a blend of natural gas and hydrogen in its operations. In the future, we envisage the modernized asset powering Tallawarra A may also leverage the infrastructure and hydrogen supply powering the Tallawarra B plant and be able to operate on blends of hydrogen and natural gas as we transition to a lower-carbon energy future."

GE's HE upgrade for the GT26 blends cutting-edge technology from GE's industry-leading F and H class fleets with additive manufactured parts and innovations in aerodynamics, material science and combustion dynamics. The significant performance improvement that the HE solution delivers is attributable to technology breakthroughs across every major component of the GT26 frame - turbine, compressor and combustor, that will help decrease fuel costs while increasing full-load output and extend maintenance intervals. In addition, Tallawarra A power plant maintenance intervals will be extended to 32000 weighted operating hours which translates to up to 44000 equivalent operating hours for a typical daily start and stop operating profile, among the longest interval in the industry for this platform.

"We are proud to be building on the strength of our long-standing relationship with EnergyAustralia, to improve and modernize assets to support the energy transition in the country," said Ramesh Singaram, President and CEO of GE Gas Power in Asia. "The upgrade, GE's first order for the HE in Australia, will help produce more power, while reducing CO2 emissions per MW. We are excited by the expected additional efficiency and dispatchable power that this solution will provide to support the growth of intermittent renewables in the country."

The upgrade is expected to be operational by mid-2024. GE has been present in Australia for more than 25 years. GE is committed to supporting Australia achieve its renewable energy goals while maintaining reliable and affordable electricity supply to businesses and households across the country. In Australia GE has more than 140 gas turbines in operation helping to address demanding local requirements with fast start-up, lower total cost of ownership, increased flexibility and a reduced environmental footprint. Existing and future gas power plants can be decarbonized by using hydrogen as a fuel. GE is bringing world-leading technology to Australia with Tallawarra B on the NSW south coast, Australia's first blended-fuel capable natural gas/ hydrogen power plant. GE gas turbines have been running for decades on hydrogen bases and GE is on a pathway towards 100 percent hydrogen capability over the next decade.

NSW Ports lays foundation for offshore wind industry

https://www.nswports.com.au/port-kembla-lays-foundation-offshore-wind-industry

NSW Ports has unveiled concept plans for a large-scale port facility at Port Kembla's Outer Harbour, in the Illawarra, to support offshore wind development projects, as the State transitions to renewable energy. NSW Ports, which holds the long-term leases for Port Kembla and Port Botany, had developed concept plans for port facilities in the Outer Harbour to show how the port can be used to support offshore wind development projects.

Image: One of NSW Ports' concept plans for a port facility in Port Kembla to support the development of offshore wind development projects.

NSW Ports CEO Marika Calfas said Port Kembla will be essential for delivering offshore wind projects to support the State's growing renewable energy demand, due to its ideal location.

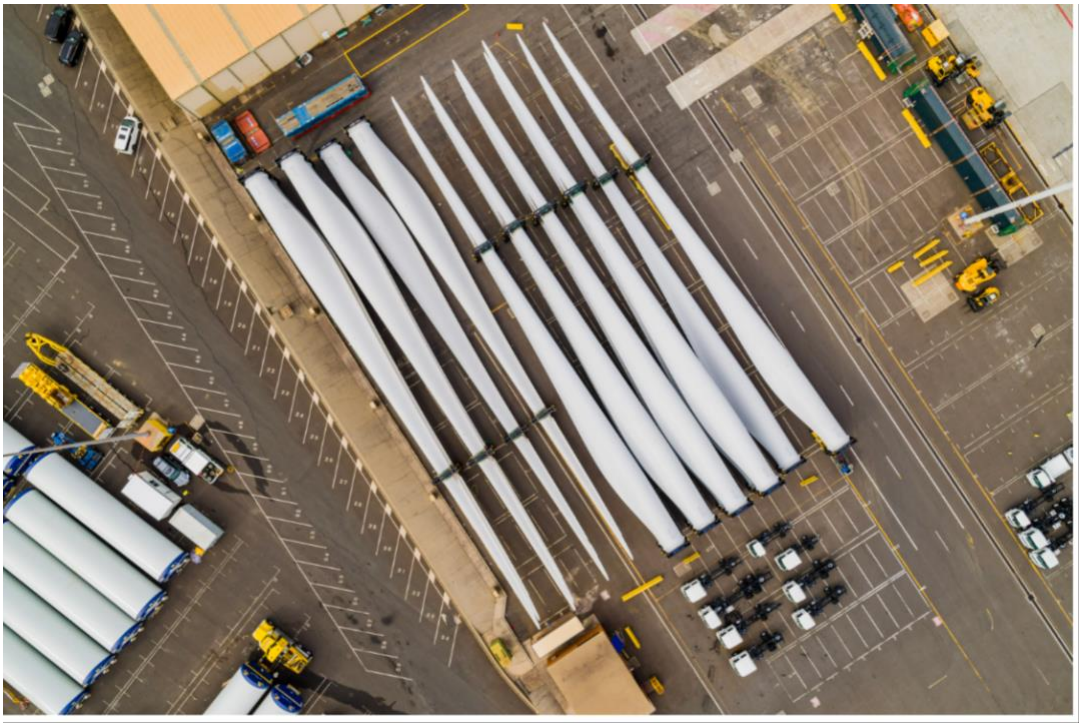


Image: Windfarm components unloaded at Port Kembla's Australian Amalgamated Terminals.

“Port Kembla is close to Greater Sydney’s growing population and surrounded by industrial lands. It is within the NSW Government’s proposed Illawarra Renewable Energy Zone and adjacent to the Federal Government’s proposed Illawarra offshore wind development zone,” she said.

“The proposed Outer Harbour offshore wind port facility provides an opportunity for significant job creation, domestic innovation and carbon emissions reduction. But we need to act now to support the rapidly emerging offshore wind development opportunities.

“Delivering such infrastructure in time requires significant collaboration between Government, private enterprise, industry and the community over the coming years.”

Image: One of NSW Ports' concept plans for a port facility in Port Kembla to support the development of offshore wind development projects.

NSW Ports has been in discussions with offshore wind proponents about Port Kembla's role in supporting this emerging renewable energy industry.

"Today's announcement provides clarity on Port Kembla's potential to support offshore wind projects and NSW Ports' willingness to develop infrastructure to progress renewable generation initiatives," Ms Calfas said.

The port already handles the import and transportation of onshore wind components to support the development of wind farms across NSW and is expected to support hydrogen and critical minerals in the longer term.

H2 Training + Safety Day #2

With the commissioning of the Coregas Hydrogen Refuelling Station getting closer, the focus of this event held on the 28 February 2023 was on hydrogen refuelling safety and training.

H2 Training + Safety Day #2 Program
- 28 Feb 2023

2.00pm	Welcome + Intro	Nigel McKinnon Dept of Regional NSW
2.05pm	Coregas Refuelling Station - Update	Wodek Jakubik Coregas
2.10pm	Refuelling Station - Learnings	Scott Nargar Hyundai Australia
2.30pm	Hydrogen MicroSkills Training - Refuelling Hydrogen Vehicles	Chris Greentree TAFE NSW
2.55pm	Q & A	

The H2 Training + Safety Day #2 event attracted 53 attendees from a broad range of organisations. Hydrogen industry veteran Wodek Jakubik from Coregas gave an update on the Port Kembla refuelling station. The Haskel refuelling system has arrived on site and the facility should be commissioned by mid year.

Scott Nargar from Hyundai gave an overview from his experience in operating Australia's first hydrogen refuelling station since 2014 at their Macquarie Park corporate headquarters and other sites including the Actew AGL site in Canberra. Chris Greentree from TAFE NSW provided details on the development of a range of MicroSkill courses to complement units of competency concerning both battery electric and fuel cell electric vehicles.

FUTURE OF MOBILITY

coregas

Coregas Port Kembla **refuelling station**

CAPACITY

400kg/day

approx. 10 vehicles

BACK TO BACK FILLING

10-15 minutes

DISPENSER

350 bar

Illawarra Renewable Energy Zone (REZ) Declared

https://www.nsw.gov.au/media-releases/illawarra-rez-declared

The Illawarra REZ was formally declared by the Minister for Energy under section 19(1) of the *Electricity Infrastructure Investment Act 2020* (the Act) and published in the NSW Gazette on 27 February 2023. View the Renewable Energy Zone (Illawarra) Declaration Order here.

The REZ declaration is the first step in formalising the REZ under the Act. It sets out the intended network capacity (size), geographical area (location) and infrastructure that will make up the REZ. This enables and sets the scope of key legislative functions under the Act, including access schemes and REZ network solutions.

The declaration also establishes EnergyCo as the Infrastructure Planner responsible for coordinating the development of the REZ. As the Infrastructure Planner for the Illawarra REZ, EnergyCo will work with network operators to deliver any required augmentations to transmission infrastructure to connect renewable generation and storage projects to the grid.

The declaration follows an assessment of feedback received during the draft exhibition held between 23 December 2022 and 6 February 2023. Minor adjustments to the geographical area have been made based on a balanced consideration of feedback.

A stylised map of the draft geographical area of the REZ is included above for reference. It includes the existing 132 kV and 330 kV transmission infrastructure near and in the REZ as a geographical reference. You can download the GIS file of the Illawarra REZ geographical area boundary here.

The Minister may amend the final declaration to expand the specified geographical area of the REZ, increase the intended network capacity, specify additional generation, storage and network infrastructure, provide further details and specifications or correct a minor error.

ATCO and Hysata secure ARENA HyGATE funding

The Australia- Germany Hydrogen Accord announced in June 2021 is managed by ARENA and is known as HyGATE. ATCO has received $0.8m for their ScaleH2 and Hysata $8.98m for their pilot electrolyser project through the HyGATE funding program.

https://arena.gov.au/news/recipients-announced-for-australia-germany-hygate-initiative/

ATCO Project

The ScaleH2 project supported by NSW Powerfuels presents a pathway to the development of a 1 GW electrolyser and 800 ktpa ammonia facility in the Illawarra region of NSW. The Australian and German research component of the project has the potential to deliver valuable advancements in relation to electrolyser efficiency, green steel technologies, enhanced catalysts, coating and plate technologies and underground storage solutions.

“ATCO has set its sights on exports to global markets and the ScaleH2 project will further advance our ambitions to expand our capabilities as a hydrogen leader in Australia and the globe. The ScaleH2 project, with our partners, will accelerate understanding across industry of hydrogen’s economic potential towards a clean energy future.”

Karen Nielsen, Managing Director, Global Renewables at ATCO

Hysata Project

Hysata's 'capillary-fed' electrolyser represents a step change in hydrogen technology that will deliver the most efficient electrolyser in the world. The Hysata electrolyser operates at 95% system efficiency (41.5 kWh/kg), delivering a giant leap in performance and cost over incumbent technologies, which typically operate at 75% or less. This high efficiency, coupled with a simple approach to mass manufacturing and low supply chain risk puts the company on a path to delivering the world's lowest cost green hydrogen at multi-gigawatt scale.

"Australia has a once-in-a-generation opportunity to be a global leader in green hydrogen and we are delighted to see the Government backing Australian innovators. Our technology will enhance sovereign manufacturing capabilities, create high skilled jobs and position Australia as a green hydrogen powerhouse by providing electrolysers for domestic projects and exports."

Paul Barrett, CEO of Hysata

FURTHER INFORMATION

For further information about the Port Kembla Hydrogen Hub, please visit the Hub webpage or contact:

Nigel McKinnon
Deputy Director, Illawarra-Shoalhaven
Regional Development Branch | Department of Regional NSW
M 0418 259 055 | **E** nigel.mckinnon@regional.nsw.gov.au
Level 1, Block F, 84 Crown St, Wollongong NSW 2500
nsw.gov.au/regionalnsw

NSW GOVERNMENT | Regional NSW