



London 2023

From hydrogen to green iron in South Australia





PERTH

SOUTH AUSTRALIA

ADELAIDE

MELBOURNE

SYDNEY

BRISBANE

Ideally positioned to produce green hydrogen

Optimal location for:

SOLAR FARM

DNI greater than 23.5 MJ/m²

SOLAR FARM

DNI greater than 20.5 MJ/m²

WIND FARM

Predicted wind speed above 7.31 m/sec

WIND FARM AND/OR SOLAR FARM

Predicted wind speed above 7.31 m/sec

DNI greater than 23.5 MJ/m²

WIND FARM AND/OR SOLAR FARM

Predicted wind speed above 7.31 m/sec

DNI greater than 20.5 MJ/m²

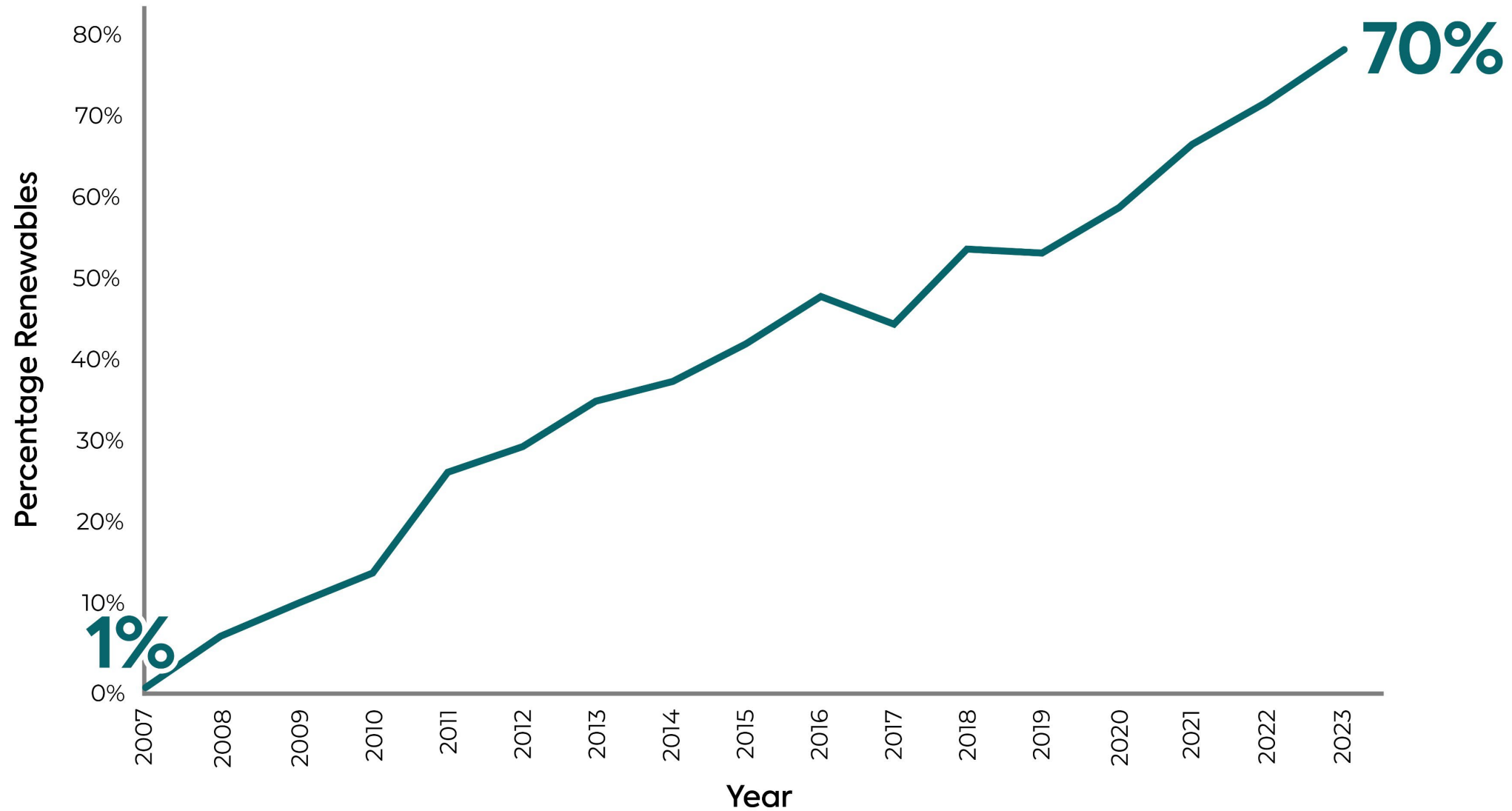


Why hydrogen is critical for South Australia

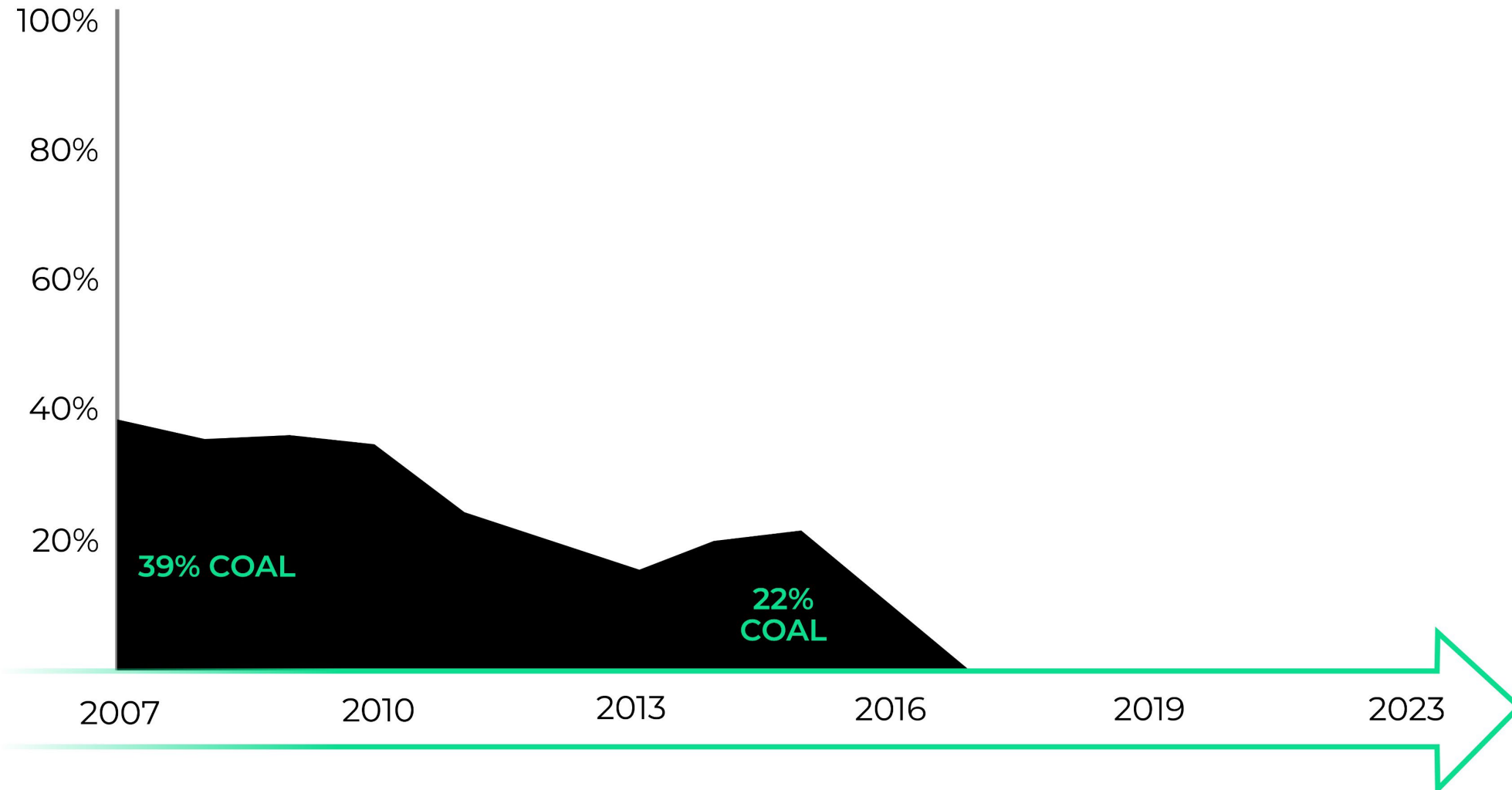
A stylized map of South Australia is positioned in the background of the slide. The map is filled with a light blue color and is set against a dark blue background. The map shows the coastline and major islands of the state.

- ✓ Continue path to low carbon future and climate resilience
- ✓ Enhance grid security – smooth peaks and troughs
- ✓ Unlock gigawatt scale development
- ✓ New source of flexible power
- ✓ Power heavy industries to make greener metals and reduce emissions
- ✓ Attract energy intensive industries and manufacturing opportunities
- ✓ Grow exports

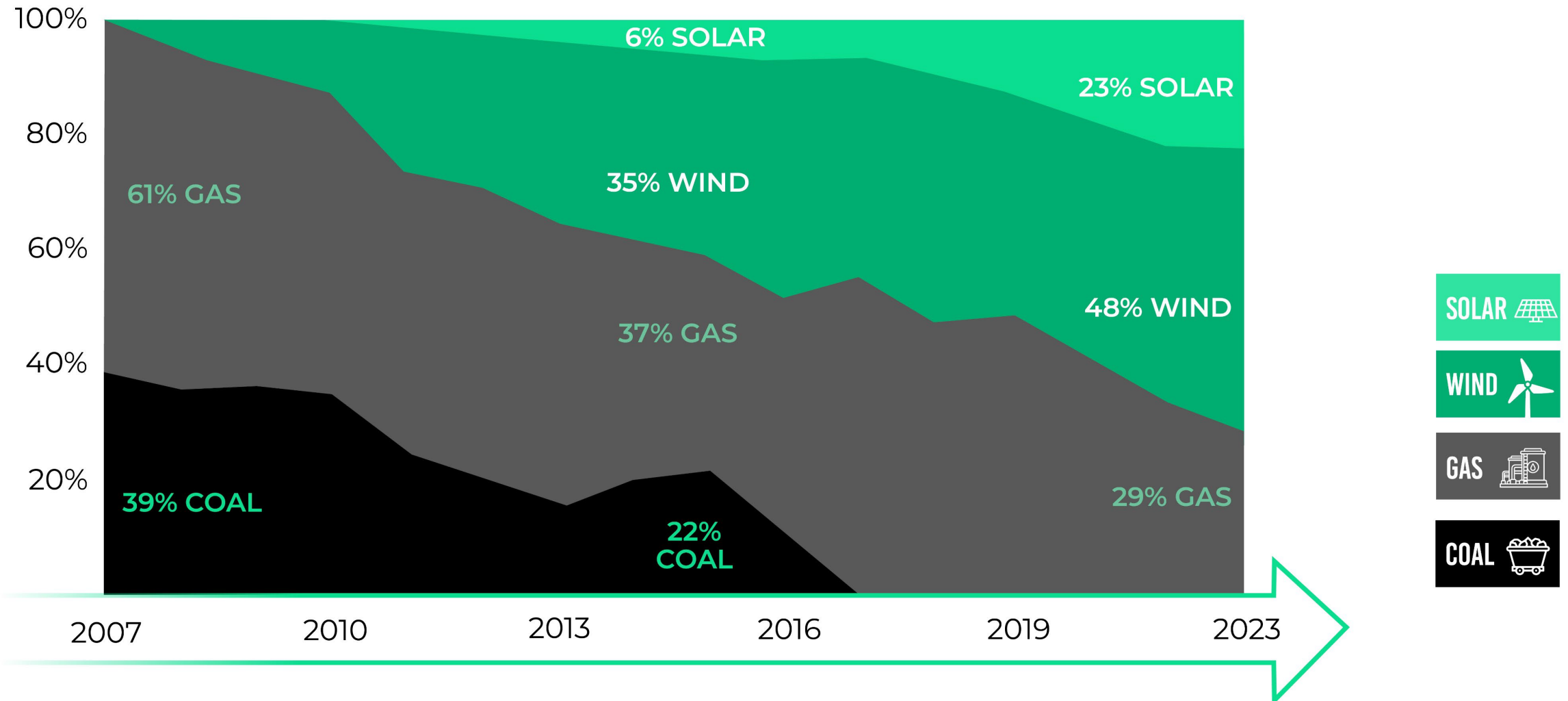
Our road to 100% renewables



South Australia: a global leader in renewable energy



South Australia: a global leader in renewable energy



Ideally positioned to produce clean hydrogen



Wind



Storage



Solar

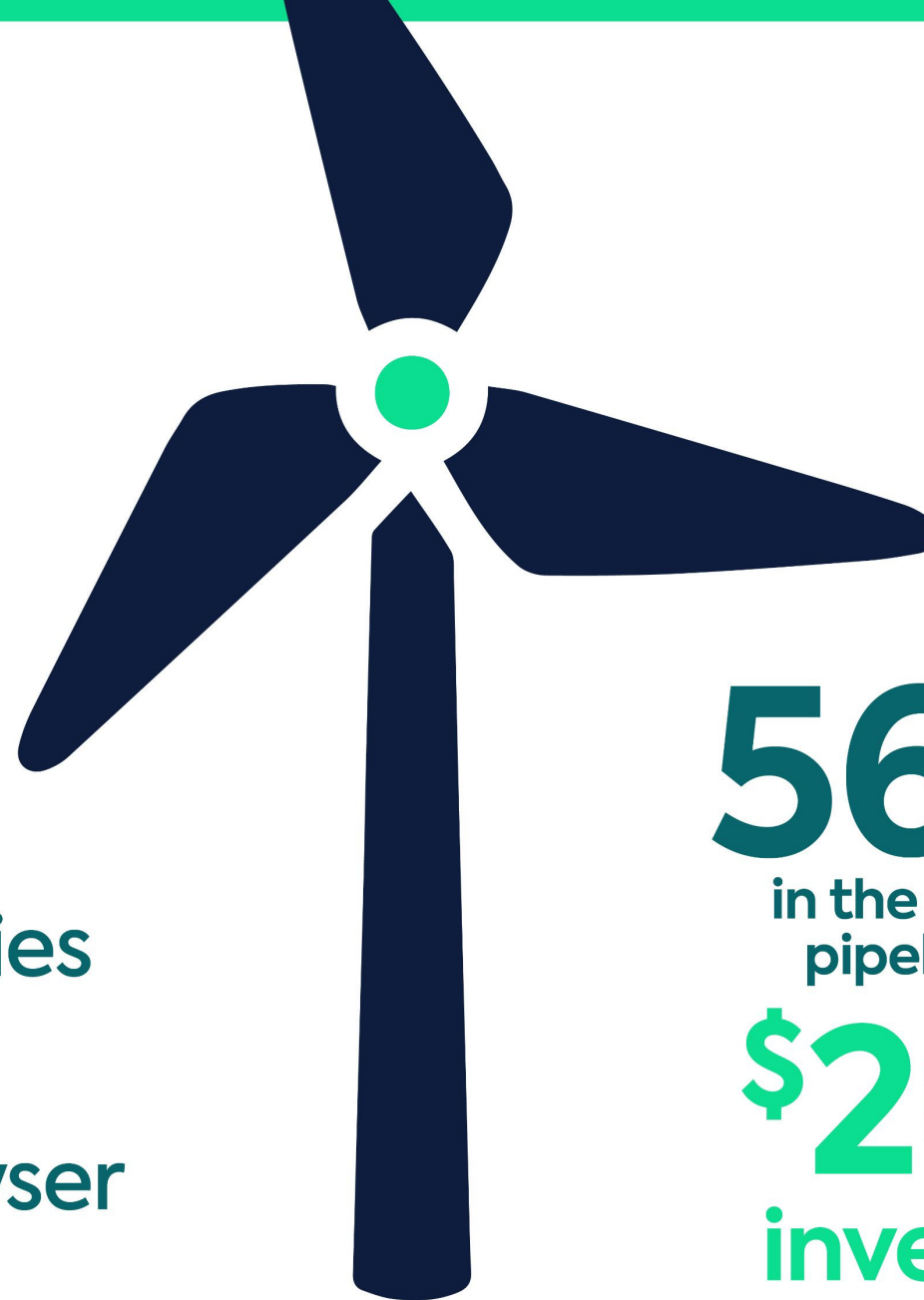


**Wind
& Solar**



Projects in operation

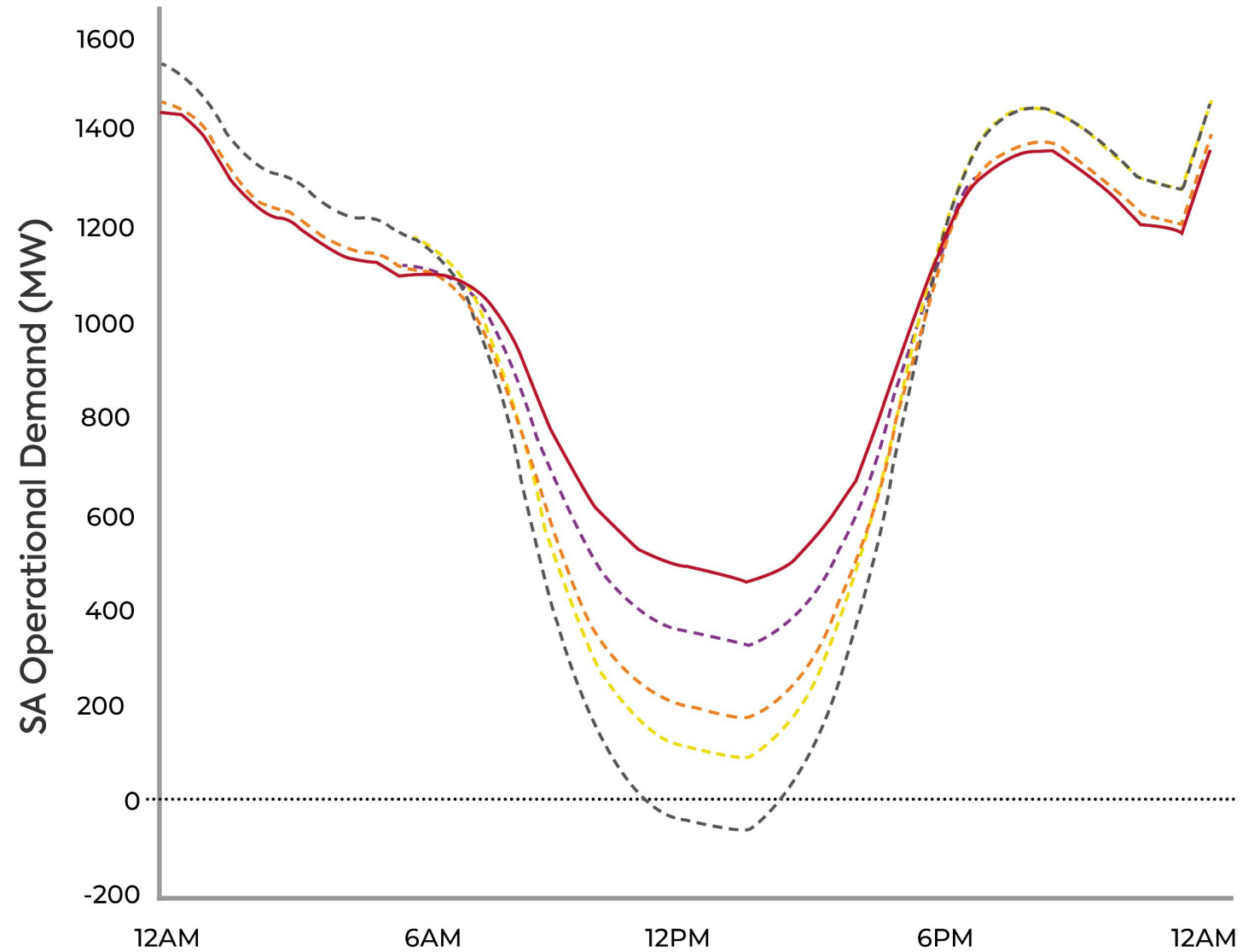
- ⚡ 24 wind farms
- ⚡ 5 solar farms
- ⚡ 5 grid scale batteries
- ⚡ Australia's largest hydrogen electrolyser



56 Renewable Energy Projects
in the development pipeline totalling
\$20bn investment

Net Negative Demand

- 2019
- - - 2020
- - - 2021
- - - 2022
- - - 2023








South Australia leading in hydrogen









Hydrogen Jobs Plan

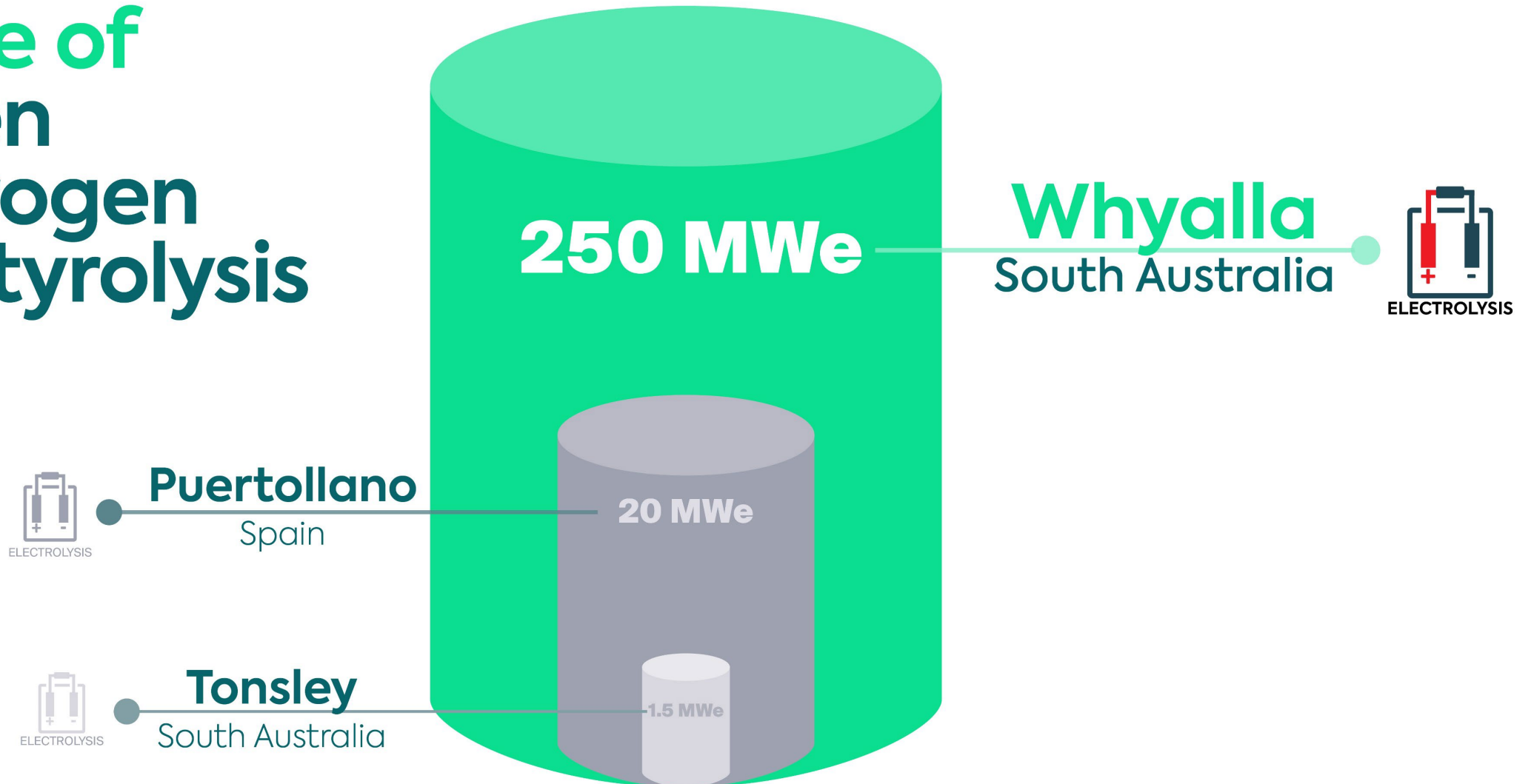
Government of South Australia's
commitment:

-  \$593 million (AUD) in capital funding
 -  250MWe electrolyser
 -  200 MW hydrogen fuelled power plant
 -  Hydrogen storage facility
 -  Land identified in the Whyalla area
-  Operational by December 2025

Benefits of Hydrogen Jobs Plan

-  Enhance grid security – soak up abundant renewable energy | consistent output of supply
-  Flexible, dispatchable generation
-  Prove hydrogen production and generation at scale
-  Activate other hydrogen projects
-  Jobs for the future
-  Support South Australia’s continued clean energy transition.

Scale of green hydrogen electrolysis



**Working
with Port
Bonython's
existing
industrial
capacity.**



Port Bonython Hydrogen Hub

- ⚡ State Government and industry are working together to create a hydrogen export hub
- ⚡ This will enable South Australia to become an early exporter of clean hydrogen.
- ⚡ Six EOI respondents propose to deliver hydrogen projects within a 2000ha footprint at Port Bonython.
- ⚡ Port Bonython has an existing deep-water liquid hydrocarbon export terminal
- ⚡ World-class wind and solar resources and gas reserves located nearby
- ⚡ The proposed projects at Port Bonython represent a \$13 billion investment and could generate up to 1.8 million tonnes of hydrogen by 2030.



Spencer Gulf primed to become clean energy powerhouse

- ✓ \$20 billion pipeline of renewable energy projects
- ✓ Home to some of world's largest mineral deposits and Australia's largest multi-metals smelter
- ✓ Uniquely placed to meet world's demand for green minerals, metals and fuels.
- ✓ Secure large-scale hydrogen production at Port Bonython
- ✓ Green ammonia and minerals hub at Port Pirie
- ✓ Multiple export potential Ports – Cape Hardy
- ✓ Prefeasibility studies show South Australia one of most competitive locations



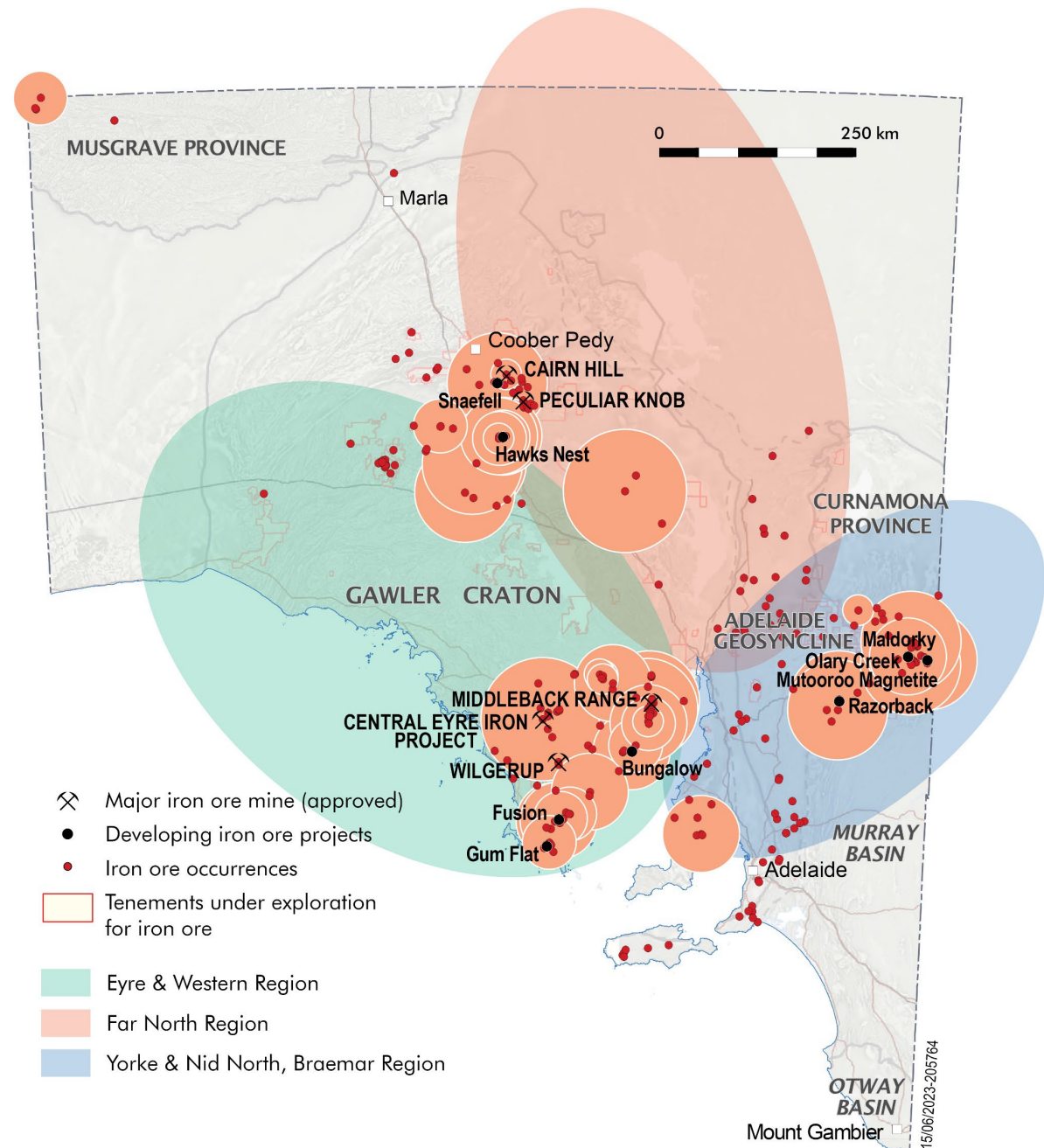
Cape Hardy Hydrogen Precinct

- ⚡ Cape Hardy will be a hub of green industry, cementing South Australia as a leader in green hydrogen and ammonia production.
- ⚡ In April 2023 Amp Energy was announced as developer of the project, to develop and build up to 5GW of electrolyser capacity.
- ⚡ Estimated to deliver more than five million tonnes of green ammonia each year.
- ⚡ The Federal Government is committed to the development of a deep-sea port, benefiting the hub and also our mineral and grain exports.



Magnetite

- ⚡ economically demonstrated resource of 6 billion tonnes
- ⚡ resource base of at least 17 billion tonnes
- ⚡ high grade magnetite
 - low in impurities
 - easy to process
 - low emissions steel-making.



Hydrogen cuts steelmaking emissions

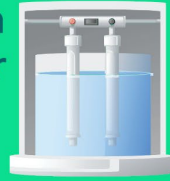
IRONMAKING

Reduce CO₂ emissions by

95%

Iron Ore
Magnetite

Hydrogen power

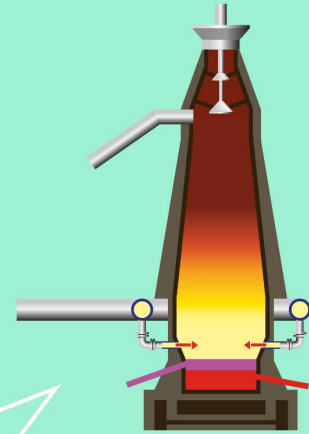


DRI process



HBI

STEELMAKING

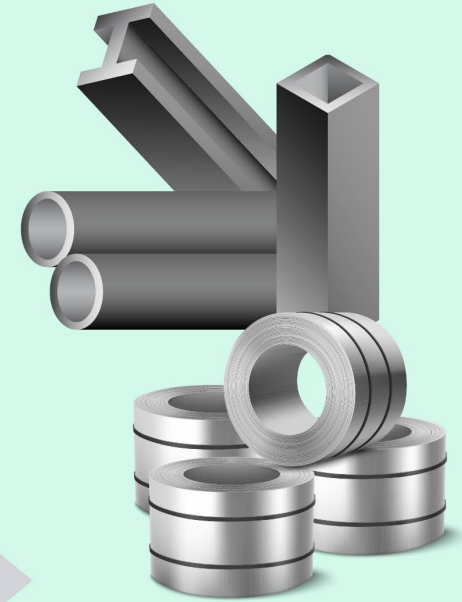


Electric arc furnace



Scrap metal

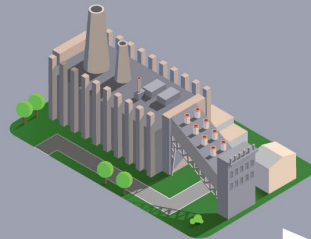
FINISHING



NEW WAY

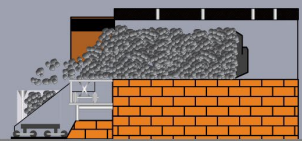
OLD WAY

Iron Ore
Haematite

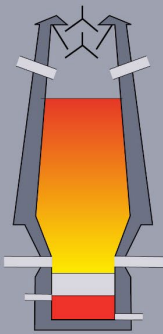


Sintering

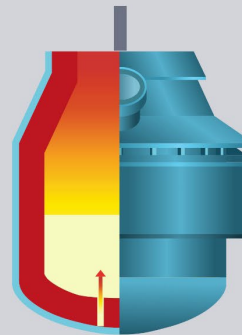
Metallurgical
coal



Coke oven



Blast furnace



Blast oxygen furnace

Whyalla Steelworks

- ⚡ Produces 1 million tonnes of raw steel every year
- ⚡ Phasing out coal-based steel making
- ⚡ Building low carbon Electric Arc Furnace
- ⚡ Lifting capacity to 1.5 million tonnes



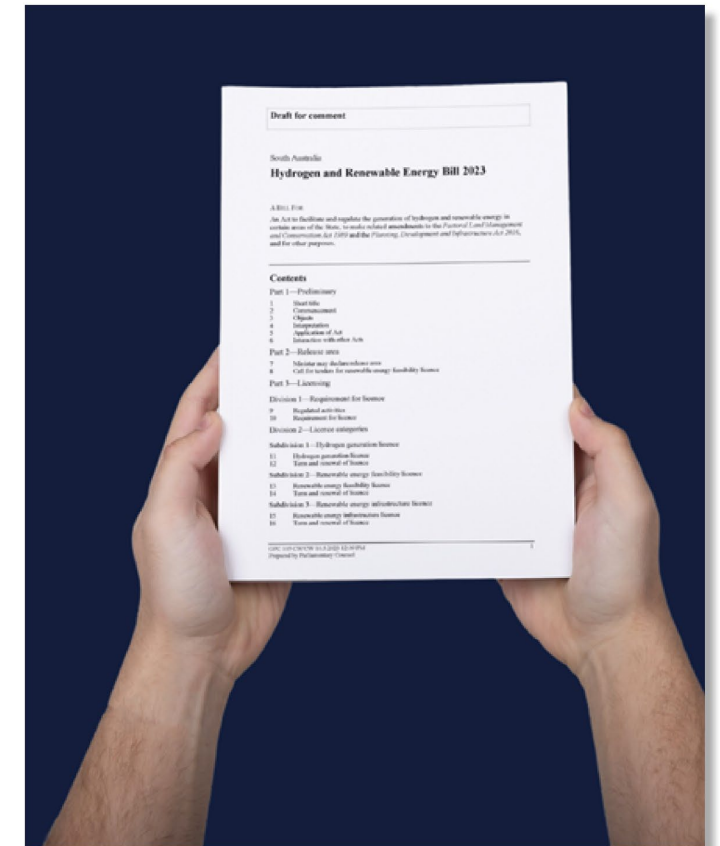
Copper

- ⚡ SA has 69% of Australia's economically demonstrated resource of copper
- ⚡ SA's copper reserves at 13 Mega Tonnes
- ⚡ SA is home to the largest copper mine in Australia – Olympic Dam
- ⚡ SA produces more than 300,000 tonnes of copper per year

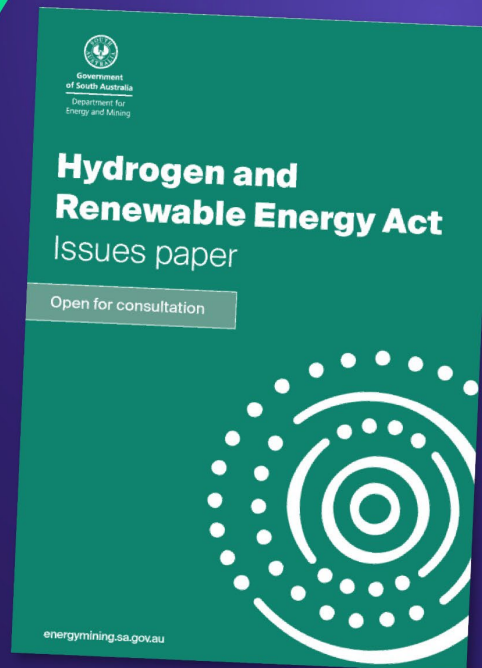


Hydrogen and Renewable Energy Act

- ⚡ A new Act to slash red tape, streamline processes, and build on South Australia's global leadership in decarbonisation.
- ⚡ Government owned land and waters where renewable energy projects can be hosted will be identified by the South Australian Government
- ⚡ Government will have the ability to go to market and companies will compete for licences to access government owned land and waters to deliver these projects
- ⚡ New, fit for purpose licensing arrangements will be established for projects across all land types, enabling regulation of the whole project life cycle



- ✓ Wind
- ✓ Solar
- ✓ Storage
- ✓ Hydrogen Power Plant
- ✓ Steelworks
- ✓ Magnetite
- ✓ Copper
- ✓ Desalination Plant
- ✓ Port Bonython hydrogen hub
- ✓ Cape Hardy hydrogen hub



Acknowledgement of Country

We acknowledge and respect Aboriginal peoples as the state's first peoples and nations, and recognise them as traditional owners and occupants of land and waters in South Australia. Further, we acknowledge that the spiritual, social, cultural and economic practices of Aboriginal peoples come from their traditional lands and waters, that they maintain their cultural and heritage beliefs, languages and laws which are of ongoing importance, and that they have made and continue to make a unique and irreplaceable contribution to the state.

We acknowledge that Aboriginal peoples have endured past injustice and dispossession of their traditional lands and waters.



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