Australia's Offshore Wind Revolution: Progress, Potential, and Challenges

Lee Clarke and Ben Dyton

Feb 2025

Australia stands on the cusp of a renewable energy revolution, with offshore wind power emerging as a key player in the nation's transition to a low-carbon future. As the country seeks to diversify its energy portfolio and meet ambitious climate targets, the vast potential of its extensive coastline is coming into focus. This paper explores the current status, recent developments, and future prospects of Australia's burgeoning offshore wind industry.

Historical Context and Current Landscape

Australia's wind power journey began modestly in 1987 with the installation of its first onshore turbines near Esperance, Western Australia. By the end of 2023, the country had achieved an impressive 11.5 GW of installed wind power capacity nationwide. However, it's only recently that Australia has turned its attention to the immense potential of offshore wind.

The Australian government has pledged to reduce national emissions by 43% by 2030 and achieve net-zero emissions by 2050. The establishment of an offshore wind industry in Australia is set to play a crucial role in the decarbonisation of the energy sector.

Advantages of Offshore Wind in Australia

Australia's unique geography and climate offer several advantages for offshore wind development:

1. **Extensive Coastline**: As an island continent, Australia has vast offshore areas suitable for wind farms.
2. **Coastal Population**: Most of Australia's population lives near the coast, reducing transmission costs from offshore turbines to demand centres.
3. **Reliable Wind Patterns**: Offshore locations provide more consistent and stronger winds, resulting in higher efficiency.
4. **Environmental Impact**: Offshore installations may have less impact than onshore assets.

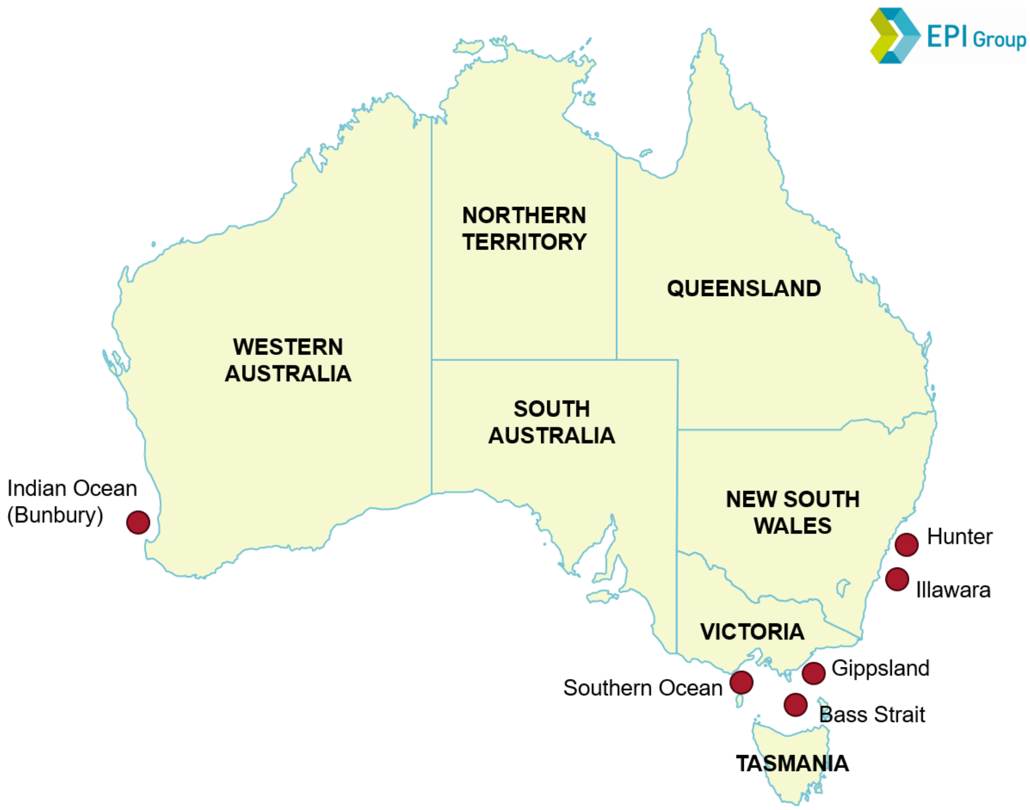
The offshore wind sector in Australia has enormous potential. Australia's offshore wind technical resource potential is ranked sixth globally by the Global Wind Energy Council.

Development Zones

Six areas have been proposed for offshore wind development, with the Gippsland and Hunter zones having received formal declaration.

Once an area is declared, developers can apply for a feasibility licence to advance investigations to inform an individual project proposal within that area.

Exhibit 1: Australia offshore wind farms areas



Area	Declared Area	Date Declared	State	Nominal capacity	Area	Status
Gippsland	OEI-01-2022	19 Dec 2022	Victoria	25 GW	15,000 km^2	Feasibility licenses have been granted.
Hunter	OEI-01-2023	12 Jul 2023	New South Wales	5.2GW	1,854 km^2	Preliminary decision has been made for feasibility licence applications received between 8 Aug 2023 and 14 Nov 2023
Southern Ocean	OEI-01-2024	6 Mar 2024	Victoria	2.9GW	1,030 km^2	Preliminary decision to grant a feasibility licence
Illawarra	OEI-02-2024	15 Jun 2024	New South Wales	2.9 GW	1,022 km^2	Open for feasibility licence applications from 17 Jun 2024 to 15 Aug 2024
Bass Strait	OEI-02-2024	12 Dec 2024	Tasmania	20GW	7,100 km^2	Open for feasibility licence applications from 12 Dec 2024 to 12 Mar 2025
Indian Ocean off the Bunbury region	OEI-03-2024	30 Aug 2024	Western Australia	11.4 GW	3,995 km^2	Open for feasibility licence applications from 3 Sep 2024 to 30 Jan 2025

Data from DCCEW website, Jan 2025

If fully developed, the six designated offshore wind zones could add as much as 75 GW of capacity, more than doubling Australia's current installed generation capacity of 62 GW.

Project Pipeline

In May 2024, the Australian government granted initial licenses to six offshore wind projects with a combined capacity of approximately 12 GW and by July 2024, a further six offshore wind projects were approved, yielding a total capacity of around 25 GW.

As of early 2025, a pipeline of active offshore wind projects are in various stages of development (as detailed in the table below).

Exhibit 2: Australia offshore wind farms currently in development

Project Name	State	Capacity (MW)	Project Company	Developer / Owner
Novocastrian Offshore Wind Farm	New South Wales	2,000	Novocastrian Wind Pty Ltd	Equinor / Oceanex Energy
South Pacific	New South Wales	1,600		BlueFloat Management
Gladstone	Queensland	10,000		Orchid Energy
Bass Strait-TasRex	Tasmania	3,500		TasRex
Bass-1A	Tasmania	500		Nexsphere
Bass-1B	Tasmania	500		Nexsphere
Bass-2	Tasmania	2,000		Nexsphere
GIP01 Orsted	Tasmania	2,820	Ørsted Offshore Australia 1 Pty Ltd	Ørsted
GIP02 Orsted	Tasmania	2,000	Ørsted Offshore Australia 1 Pty Ltd	Ørsted
High Sea Wind	Tasmania	1,280	High Sea Wind Pty Ltd	Ocean Winds
Kent OWF	Tasmania	2,000	Kent Offshore Wind Pty Ltd	RWE
Aurora Green	Victoria	3,000	Iberdrola Australia OW 2 Pty Ltd	Iberdrola
Blue Mackerel North	Victoria	1,000	Blue Mackerel North Pty Ltd	Beach Energy / Parkwind NV
Gippsland Dawn	Victoria	2,100	Gippsland Dawn OWP Project Pty Ltd	BlueFloat Management
Gippsland Skies	Victoria	2,500	Gippsland Skies Pty Ltd	Mainstream Renewable Power / Reventus Power / AGL / DIRECT Infrastructure
Great Eastern Offshore Wind	Victoria	2,500	Great Eastern Offshore Wind Farm Project Co Pty Ltd	Corio Generation Limited
Kut-Wut Brataualung	Victoria	2,200	Kut-Wut Brataualung Pty Ltd	Southerly Ten / Copenhagen Infrastructure Partners
Navigator North	Victoria	1,500	Navigator North Project Pty Ltd	Origin Energy / RES
Portland	Victoria	1,500		Flotation Energy
Spinifex	Victoria	1,200		Alinta Energy / Parkwind
Star of the South	Victoria	2,200	Star of the South Wind Farm Pty Ltd	Southerly Ten / Copenhagen Infrastructure Partners / Cbus
Bunbury Offshore Wind Farm	Western Australia	2,000		Oceanex Energy*
Bunbury - DIRECT	Western Australia	6,000		DIRECT Infrastructure
Catalpa	Western Australia	2,500		Wind With Purpose

Project Name	State	Capacity (MW)	Project Company	Developer / Owner
Leeuwin	Western Australia	3,000	Leeuwin Offshore Wind Pty Ltd	Copenhagen Energy
Midwest Offshore Wind	Western Australia	3,000		Copenhagen Energy / Midwest Offshore Wind
Perth Array	Western Australia	1,500		Flotation Energy
Samphire Offshore Wind	Western Australia	3,000		Copenhagen Energy
Southwest Array	Western Australia	1,500		Flotation Energy
The Myalup Offshore	Western Australia	300		WA Offshore Windfarm / Australis Energy / Skyborn Renewables*
The Myalup Offshore Extension	Western Australia	1,600		WA Offshore Windfarm / Australis Energy / Skyborn Renewables*
Velella Offshore Wind Farm	Western Australia	3,000		Copenhagen Energy
Wannaroo Array	Western Australia	1,500		Flotation Energy
** proponent has signalled it will not progress with project*				

These projects represent a substantial potential contribution to Australia's renewable energy capacity and signal the country's commitment to harnessing its offshore wind resources.

Recent Developments and Government Initiatives

The Australian government has taken decisive steps to accelerate offshore wind development:

Gippsland Offshore Wind Zone

The government has taken significant steps to accelerate offshore wind development in the Gippsland Offshore Wind Zone off the coast of Victoria. In May 2024, the government awarded the first six feasibility licences for offshore wind projects in the Gippsland zone. In July 2024, an additional six licences were granted, bringing the total to twelve projects. The combined potential capacity of these twelve projects is approximately 25 GW and includes projects ranging from 1.3 GW to 2.8 GW in capacity.

Bunbury Offshore Wind Zone

The federal government has also made progress on the Bunbury Offshore Wind Zone in Western Australia. In August 2024, the federal government officially declared the Bunbury Offshore Wind Zone. The declared area covers 4,000 square kilometres. The zone has the potential to generate up to 11.4 GW of renewable wind energy.

The declaration came after extensive consultation with local communities, industries, and First Nations groups, resulting in a scaled-back area from the initial proposal. The consultation process led to several amendments to address concerns raised by various stakeholders. For example, the zone is now at least 30 km from shore at its closest point, excludes over 60% of requested recreational fishing areas (including Naturaliste Reef), and provides further separation from Southern Right Whale breeding areas and migratory paths.

It has been reported that Skyborn Renewables, an early proponent of building offshore wind in Western Australia, has withdrawing from Australia following a review of its global operations and long-term business objectives.

© EPI Group 2025

Oceanex Energy has also signalled that it will delay further west coast developments on order to focus on its Hunter Valley offshore wind project.

Western Australia's Energy Minister, Bill Johnston, has recently expressed scepticism about the federal government's ambitious offshore wind targets for the state. This stance highlights a growing rift between state and federal energy policies. He contends that the state's abundant onshore wind and solar resources are more cost-effective alternatives.

Regulatory Framework

The Offshore Electricity Infrastructure Act 2021 (OEI Act) and associated regulations provide the legal framework for offshore wind development in Australia.

Australia's offshore regulatory framework is divided between the Commonwealth (federal) government and state/territory governments:

- **State/Territory Jurisdiction**: Covers "coastal waters" up to 3 nautical miles from territorial sea baselines.
- **Commonwealth Jurisdiction**: Extends from 3 to 200 nautical miles offshore, known as "offshore areas".

Previously, the Offshore Petroleum and Greenhouse Gas Storage Act 2006 (OPGGSA) regulated petroleum and greenhouse gas activities in Commonwealth waters. However, this framework did not cover offshore electricity generation and transmission.

The OEI Act legislation enables the licensing scheme for constructing, operating, and maintaining offshore renewable energy infrastructure in Commonwealth waters.

There are four types of licences under the OEI Act related to offshore electricity generation and transmission:

1. **Feasibility Licence**
    - Purpose: Assess the feasibility of an offshore infrastructure project
    - Duration: Up to seven years
    - Activities: Allows scoping activities in the licence area
2. **Commercial Licence**
    - Eligibility: Only granted to holders of a feasibility licence
    - Purpose: Authorise the execution of an offshore infrastructure project
    - Activities: Allows exploitation of renewable energy resources
3. **Research and Demonstration Licence**
    - Purpose: For small-scale projects
    - Focus: Research, testing, and demonstration of emerging technologies
    - Examples: Electricity generation from waves, tides, or ocean thermal energy
4. **Transmission and Infrastructure Licence**
    - Purpose: Construction and operation of infrastructure
    - Activities: Storage, transmission, or conveyance of electricity (from any source) or renewable energy products

For all licence types, holders must have in place a management plan for activities that will be carried out under the licence. All activities must comply with the management plan and licence conditions. Licence holders must also provide sufficient financial security to cover decommissioning costs for all proposed infrastructure.

These licences collectively facilitate the development and operation of offshore electricity infrastructure while ensuring proper management and financial responsibility.

Project proponents face a complex regulatory landscape for offshore transmission activities in coastal areas. They must navigate State and Territory laws governing the zone from three (3) nautical miles offshore to the coastline, while also adhering to the OEI Regulatory Framework. The interface between these jurisdictions remains ambiguous, creating potential challenges for developers.

Because of this uncertainty, project proponents need to do careful research, get legal advice, and work closely with all involved parties. They should also be ready to change their plans if the rules change or become clearer. As more offshore energy projects are built, the relationship between federal and State/Territory rules will likely become better defined.

Offshore wind developers will also need to navigate environmental approval under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The EPBC Act is undergoing significant reform, with changes expected to be implemented in stages over the next 12-18 months. Key aspects of the reform process.

Two new independent agencies are set to be established by July 2025:

- **Environment Protection Australia** (EPA): A new federal environmental regulator that will administer and enforce federal environmental laws, including the reformed EPBC Act.
- **Environment Information Australia** (EIA): An agency responsible for housing national environmental data, releasing State of the Environment Reports, and reporting on progress towards national environmental goals.

Challenges and Controversies

Despite the promising outlook, the offshore wind sector in Australia faces several challenges:

Political Opposition

Offshore wind is the subject of strong political debate in Australia ahead of parliamentary elections in 2025.

The National Party, led by David Littleproud, has pledged to scrap offshore wind zones if elected in 2025. Littleproud has been vocal in his opposition to offshore wind projects, particularly in the Illawarra region. During a visit to the area, he stated that a future Coalition government would not allow the proposed offshore wind farms to proceed. This position is based on several concerns:

- **Environmental impact**: Littleproud expressed worries about the project's effects on marine ecosystems and whale migration paths.
- **Community consultation**: He argued that there has been insufficient community engagement regarding the projects.

- **Economic concerns**: The potential negative impact on local tourism and fishing industries was highlighted.

Peter Dutton, leader of the Liberal Party and the Coalition opposition, has taken a strong stance against offshore wind development in Australia, vowing to halt projects and “rip up” existing contracts if his party wins the upcoming elections. This position echoes rhetoric used by former U.S. President Donald Trump during his recent campaign.

On in December 2024, Dutton announced that a Coalition government under his leadership would rescind the Hunter Offshore Wind Zone, citing concerns about the project's impact on the local community, environment, and economy. He argued that the Albanese Government had disregarded serious issues raised by residents, including potential effects on migratory whale populations and tourism operations. Dutton emphasized that the decision was made to prioritise the interests of the local community.

Dutton's opposition extends beyond the Hunter region. In October 2024, he announced at the Liberal Party Conference in Western Australia that a future Coalition Government would also rescind the Indian Ocean Offshore Wind Zone off the coast of Bunbury.

The Liberal leader's stance on offshore wind is part of a broader energy policy that favours nuclear power. Dutton argues that nuclear energy would provide more reliable baseload power for Australia's energy needs. However, critics point out that nuclear power is unlikely to come online before 2045, based on the experience in other developed countries. It is assumed that Dutton's plan would rely on fossil fuels to fill the energy gap in the interim.

This political opposition has created a climate of uncertainty for investors and developers in the offshore wind sector. The Clean Energy Council has warned that such announcements "will send shockwaves through offshore wind investors and risks undermining investment confidence". The outcome of the 2025 election and any subsequent policy changes will be crucial in determining the future of Australia's offshore wind industry.

Regional Rejections

In January 2025, the South Australian government made a significant decision to reject proposals for offshore wind development off its coastline. This decision was primarily driven by concerns about the potential impact on the local fishing industry, with a particular focus on protecting the valuable southern rock lobster fishery.

The South Australian government's decision was influenced by several key factors:

- **Protection of the Southern Rock Lobster Fishery**: The southern rock lobster fishery is a crucial economic asset for South Australia, valued at $160 million annually. The government prioritised safeguarding this established and lucrative industry.
- **Environmental Concerns**: There were worries about the potential impact of offshore wind farms on the marine environment, including important fishing grounds and marine ecosystems.
- **Fisheries and Marine Life**: The government expressed concerns about the effect of wind farm construction on fisheries, biomass, juvenile recruitment, and marine habitats.
- **Economic Considerations**: The decision reflects a desire to protect existing industries and livelihoods that depend on the marine environment, particularly in coastal communities.

Environmental and Social Concerns

The development of offshore wind farms has raised concerns about their impact on marine ecosystems, migratory birds, and local communities. Examples include the risks to birds, particularly migratory species and seabirds, especially albatrosses; and the impact on recreational and commercial fishing activities and more generally tourism.

Offshore wind development in Australia has become a target for misinformation campaigns, mirroring trends seen in other regions, notably the United States. For example, false claims about whale deaths in Australia have caught developers off guard, leading to confusion and uncertainty. The claims have been debunked by scientists from the University of Wollongong. Securing public approval and establishing trust for these initiatives is crucial, yet it frequently faces obstacles due to political manipulation and the proliferation of false information.

Addressing legitimate concerns through thorough environmental impact assessments and community engagement will be crucial for the industry's success.

Economic Challenges

Australia's offshore wind industry faces significant economic challenges as it seeks to establish itself as a viable renewable energy sector.

1. **Inflation and Rising Costs** - The offshore wind industry has been hit hard by recent macroeconomic trends, with project costs inflating significantly:
    - Since 2020, many developers have experienced cost increases of 40-60% for offshore wind projects.
    - Global inflation has pushed wind turbine costs up by 38% since 2021.
    - Rising commodity prices, interest rates, and supply chain bottlenecks have put pressure on developers' profitability.
2. **Supply Chain Constraints** - The offshore wind supply chain faces several challenges in Australia:
    - Equipment suppliers will be reluctant to establish facilities in Australia due to low profit margins and difficulties forecasting demand (unless a clear long-term pipeline of projects emerges).
    - The industry relies heavily on European supply chains, with an emerging alternative from China for wind turbines. This makes it susceptible to changes in foreign policy and diplomacy.
    - There is a lack of domestic manufacturing capability and skilled labour for offshore wind components. Local content requirements may help but tend to push up cost or reduce quality when crudely implemented.
    - Global supply chain issues have led to shortages in key materials and relevant machinery.
3. **Financing and Investment Challenges** - The economic landscape presents several financing hurdles:
    - Increased financing costs due to rising interest rates.
    - Uncertainty around revenue support mechanisms, with details of government schemes yet to be fully announced.

- Complex risk allocation in project financing, particularly for staged development and shared infrastructure.

The global landscape of climate and renewable energy investment has undergone a significant shift following Donald Trump's election, potentially redirecting tens of billions of investor dollars. Australia has been fiercely competing with the United States and other markets for renewable energy investment, particularly in the wake of former President Joe Biden's climate-driven legislation, including the Inflation Reduction Act (IRA).

This international competition prompted Australia to introduce policies such as the Future Made in Australia legislation to attract investment to domestic projects. With the potential scaling back of the IRA and other key Biden reforms, Australian investors are optimistic that funds previously earmarked for US renewable projects may now flow towards Australia. Furthermore, there is confidence that Australian industry will maintain its commitment to climate targets and action, in contrast to some major United States banks that have withdrawn from global climate initiatives.

Government Support and Industry Collaboration

The Australian government is actively supporting the offshore wind sector. Energy Minister Chris Bowen has emphasised the importance of offshore wind in Australia's renewable energy future, stating that it could provide up to 20% of the country's energy needs.

The “Future Made in Australia Package” is a comprehensive economic plan introduced by the Australian Government in 2024 to drive economic growth, create jobs, and secure Australia's position in the changing global landscape. The AUD 22.7 billion initiative, set to be implemented over the next decade, aims to maximise the economic and industrial benefits of the transition to net zero emissions while strengthening Australia's economic resilience.

Renewable energy is a significant component of the package, but it also encompasses a broader range of priorities:

1. **Renewable Energy**: A substantial portion of the package is dedicated to making Australia a "renewable energy superpower". This includes:
   - Unlocking over AUD 65 billion of investment in renewable capacity through the Capacity Investment Scheme by 2030.
   - AUD 27.7 million to integrate consumer energy resources like batteries and solar into the grid.
2. **Clean Energy Technologies**: The package allocates AUD 1.5 billion to support the manufacturing of clean energy technologies, including:
   - AUD 1 billion for the Solar Sunshot program
   - Over AUD 500 million for the Battery Breakthrough Initiative
3. **Green Hydrogen**: The package includes significant support for the hydrogen industry:
   - A Hydrogen Production Tax Incentive, estimated to cost AUD 6.7 billion over a decade
   - AUD 1.3 billion expansion of the Hydrogen Headstart program

4. **Critical Minerals and Green Metals**: The package supports value-adding to Australia's natural resources, including:
   - A Critical Minerals Production Tax Incentive
   - AUD 15.4 million for foundational activities to support green metals production
5. **Innovation and Skills**: The package also invests in innovation and workforce development:
   - AUD 1.7 billion Future Made in Australia Innovation Fund
   - AUD 134.2 million for skills and employment support in key regions

Future Outlook

Despite the challenges, the outlook for offshore wind in Australia remains promising. Key factors that will influence the future of offshore wind in Australia include:

1. Continued government support and clear policy frameworks
2. Technological advancements reducing costs
3. Integration with other renewable energy sources and storage solutions
4. Development of local supply chains and workforce

Conclusion

Australia's offshore wind industry stands at a critical juncture. The sector offers significant opportunities for economic growth, job creation, and clean energy production. However, success will depend on navigating the complex landscape of political support, environmental concerns, and community acceptance.

As the industry evolves, balancing economic opportunities with environmental protection and community interests will be key to ensuring the sustainable development of offshore wind in Australia. With careful planning, stakeholder engagement, and continued government support, offshore wind could play a vital role in Australia's transition to a low-carbon energy future, potentially establishing the country as a global leader in this emerging renewable energy sector.

About EPI Group

EPI Group is a leading provider of specialist geoscience, environmental and technical services for a wide range of industries. Established in 1987, our passionate, practical and highly knowledgeable team has been delivering independent, intelligent, and commercial solutions for clients for decades.

EPI Group operates worldwide, headquartered in the United Kingdom, with representative offices in North America, Europe, and Asia Pacific. Our reach for projects is global.

We deliver specialist technical solutions and serve as a collaborative workforce partner. Our services are locally delivered by a team of highly experienced technical experts, problem solvers and value creators, supplemented by a trusted network of associate consultants.

© EPI Group 2025

EPI Group specialises in supporting both the hydrocarbon and renewable energy sectors, but our experience also extends to mining and capital infrastructure projects.

Contact our team to discuss how we can support your projects in Japan and elsewhere.

Sources:

Australia: Federal budget 2024-25 – Key takeaways for the Energy Transition (Baker McKenzie, May 2024)

Australia's offshore wind areas (DCCEEW, Australian Government, accessed Jan 2025)

Budget 2024-25: Investing in a Future Made in Australia and the skills to make it a reality (Commonwealth of Australia 2024)

Developers abandon applications to build wind farm off coast of WA's South West (McArthur, ABC News, Jan 2025)

Future Made in Australia legislation passes the Senate (Husic, DISR, Australian Government, Nov 2024)

Global Wind Report 2024 (GWEC, Apr 2024)

Joint media release: Reliable renewables to unlock regional jobs and future proof industry, with the Bass Strait offshore wind zone declared (Bowen, DCCEEW, Australian Government, Dec 2024)

Mitigating risks for birds: report provides guidance to Australia's offshore wind farm industry (ACAP, Mar 2023)

Navigating Misinformation in Our Path to Net Zero: A Call for Factual Climate Action (Rogge; UNSW, Dec 2023)

Offshore wind project has Illawarra's future blowing in the wind (NSW Nationals, Jun 2024)

Leader of the Opposition – Transcript – Remarks at the Port Stephens Offshore Wind Zone Community Gathering, Shoal Bay (Dutton, Dec 2024)

Leader of the Opposition – Address to the Liberal Party of Western Australia State Conference, Burswood – Check Against Delivery (Dutton, Oct 2024)

Offshore wind: Strategies for uncertain times (McKinsey, Jul 2024)

Policy change creates offshore wind investment uncertainty (Clean Energy Council, Dec 2024)

South Australian Government opposes southern ocean offshore windfarm zone (Government of South Australia, Sep 2024)

Unlocking the power of offshore wind (Bowen, DCCEEW, Australian Government, Aug 2022)

WA minister splits with Canberra on offshore wind (Macdonald and Rabe, Australian Financial Review, Jan 2025)

© EPI Group 2025

About the authors

Dr Lee Clarke

Managing Director, Sustainable Energy Services

London, United Kingdom

Lee has 25 years of experience in the energy industry, covering various executive management, commercial, operational, strategic, and consulting roles. His experience includes working for major investor-owned utilities and in the consultancy sector, holding numerous leadership positions and leading significant renewable energy development projects. Lee joined EPI Group in 2024 as Managing Director of Sustainable Energy Services, responsible for building and optimizing the firm’s services and solutions for clients in the renewable energy and carbon net-zero sectors.

Ben Dyton

Consulting Director

Perth, Australia

Ben is a veteran in the seismic and energy consulting industry with a career spanning nearly three decades. Starting at Western Geophysical in the late 1990s, he progressed to become Party Chief, working extensively in offshore oil and gas regions worldwide. Currently, Ben has served as VP Asia Pacific at EPI Group since 2015. His focus is on delivering energy consulting services to energy clients across the APAC region. Throughout his career, Ben has accumulated extensive experience in seismic operations, data acquisition, and client relations across various companies in the industry.

Connect with us via LinkedIn or info@epigroup.com

© EPI Group 2025