**Heavy industry input to the Sectoral Emissions Reduction Strategies**

**Questionnaire**

September 2022



**INTRODUCTION**

**The Sectoral Emissions Reduction Strategies**

The Western Australian Government has committed to working with all sectors of the economy to achieve net zero emissions by 2050.

The development of sectoral emissions reduction strategies (SERS) aligned with this goal is a core commitment of the Western Australian Climate Policy.

The SERS process is expected to conclude by the end of 2023.

Objectives of the SERS

* To provide robust and credible emissions reduction pathways for Western Australia with tangible actions for reducing emissions consistent with the Western Australian Government’s target of net zero emissions by 2050.
* To recognise the importance of significant action this decade to reduce emissions, transition emissions‑intensive industries and protect Western Australia’s economy from carbon transition risks.

Supporting heavy industry sectors to decarbonise will be key to achieving significant emission reductions in Western Australia and ensuring the State’s economy benefits from the transition to net-zero by 2050.

Policy options and initiatives to support emissions reduction by industry will be investigated as part of the SERS.

The approach to policy development under the SERS will be compatible with and complementary to the Australian Government's climate change commitments.

Governance

The Department of Water and Environmental Regulation (DWER) is the lead agency for the SERS in collaboration with key State Government agencies.

The Department of Jobs, Tourism, Science and Innovation (JTSI) is responsible for heavy industry consultation and the delivery of the heavy industry component of the SERS.

Energy Policy WA (EPWA) in the Department of Mines, Industry Regulation and Safety is responsible for the delivery of the electricity component of the SERS and the South West Interconnected System Demand Assessment (SDA).

EPWA, DWER and JTSI are working together to align the industry consultation processes as far as practicable and minimise duplication.

**Heavy industry input to the SERS**

The SERS aims to reduce barriers to decarbonisation and support and facilitate the transition of Western Australia’s heavy industries to net-zero, reflecting the importance of Western Australia’s heavy industry sector to the state’s economy.

Collaboration and partnership with heavy industry is critical to the success of the SERS.

In order to understand challenges and opportunities for emissions reduction, the Government is coordinating sectoral and whole of economy modelling to develop a view of projected emissions in Western Australia over the next decade based on industry plans and commitments, and credible emissions pathways to net zero emissions by 2050.

Input by heavy industry is critical to ensure emissions projections and analysis is robust and informed by industry action and expectations. This analysis and the actions arising from the SERS will help to ensure that Western Australian business and industry is adequately prepared for the net zero transition. Consultation and analysis conducted for the SERS will assist the Government to understand: infrastructure requirements; training and workforce requirements; fuel and low emissions technology needs; areas of focus for research and development; and associated enablers and barriers to action.

The net-zero transition will support the diversification of our economy, help attract new investment, boost WA’s competitiveness and strengthen the State’s ESG credentials.

**Heavy industry input to the electricity modelling**

Electricity modelling is being undertaken to inform the SDA and the SERS.

The Western Australian Government is collecting information for:

* The South West Interconnected System (SWIS)
* The North West Interconnected System (NWIS) and the Pilbara, off-grid supply and Horizon Power towns

The electricity modelling will enable the Government to form a consolidated view of future renewable energy needs, network infrastructure, and requirements for a secure and reliable electricity system.

Input to the SWIS Demand Assessment (SDA)

The Western Australian Government has committed to a fast-tracked assessment of future demand for renewable energy on the SWIS.

EPWA will be contacting the largest energy users directly as part of the SDA during September 2022.

Updates on the SDA are available here: <https://www.wa.gov.au/government/announcements/swis-demand-assessment>

Input to the NWIS, Pilbara grids and off-grid electricity modelling

To assess future demand for renewable energy, EPWA will engage in discussions with the heavy industry and other electricity users during September and October 2022.

**questionnaire**

**Objective**

Information sought through this questionnaire, and, where relevant, through follow up interviews with individual businesses, will provide key inputs to Government modelling and deliver insights into important trends, barriers and opportunities for heavy industry decarbonisation in Western Australia.

Input to this questionnaire, alongside information sought through the SDA and the electricity modelling for other parts of the State, will inform the development of possible new policy and initiatives to support industry decarbonisation.

**Scope**

This questionnaire is intended to capture information on current industry decarbonisation plans, as well as barriers to action and future opportunities for Western Australian operations.

For the purpose of the SERS, heavy industry includes:

* mining and mineral processing (e.g. iron ore, alumina, gold)
* petroleum operations (oil and gas production and exploration)
* manufacturing (e.g. cement, ammonia, fertiliser)

**Process**

As a first step, we are seeking heavy industry’s input:

* to understand heavy industry emissions reduction targets and goals
* to investigate the barriers industry is facing to decarbonise
* to identify measures the Western Australian Government could consider to remove these barriers.

The consultation questions are a guide only and not all questions may be applicable to your organisation.

Please note, if you have already been involved in the initial SDA consultation with EPWA or the Pilbara Industry Roundtable, you do not need to complete the electrification section of this survey.

**Confidentiality**

Information provided by entities completing this survey will only be used for the purposes outlined above. Information will be treated confidentially and will be bound by Cabinet in Confidence provisions which protects its use. Data will be aggregated so as not to identify individual companies or facilities.

**Next steps**

Companies with facilities covered under the Australian Government’s safeguard mechanism will be contacted in coming months for one-on-one consultation about the SERS.

Updates on the SERS development will be provided regularly on the Western Australian Government’s website at: <https://www.wa.gov.au/service/environment/environment-information-services/sectoral-emissions-reduction-strategies>

**Other consultation**

A number of key complementary processes relevant to heavy industry decarbonisation are underway, including:

* [Safeguard Mechanism reform: consultation paper](https://consult.industry.gov.au/safeguard-mechanism-reform-consultation-paper) (Australian Government)
* [Consultation on the Draft Revised Environmental Factor Guideline – Greenhouse Gas Emissions (GHG EFG)](https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-%E2%80%93-greenhouse-gas-emissions-0)
* [Greenhouse Gas Storage and Transport Bill](https://www.mediastatements.wa.gov.au/Pages/McGowan/2022/03/Draft-Bill-to-help-WAs-resources-industry-reduce-emissions.aspx)
* [Global Advanced Industries Hub](https://www.investandtrade.wa.gov.au/opportunities/global-advanced-industry-hub)
* [LNG Jobs Taskforce technology and decarbonisation working group](https://www.wa.gov.au/organisation/department-of-jobs-tourism-science-and-innovation/the-western-australian-lng-jobs-taskforce-working-groups#:~:text=The%20Technology%20and%20Decarbonisation%20Working,decarbonisation%20of%20the%20LNG%20sector.)

The Western Australian Government is seeking to reduce duplicative consultation where possible.

Consultation is also underway for other sectors of the SERS. Information on these processes can be found on the Government’s SERS webpage as noted above in Next Steps.

**To provide your input, please complete the questionnaire below (as applicable) and send your response via email by 28 October 2022 to:**

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#

# Your organisation

**Organisation name:**

*\*Mandatory question*

**Key contact details:**

*\*Mandatory question*

## In which sub-sector of the heavy industry do you mostly operate?

[ ]  Mining or mineral processing

[ ]  Petroleum operations

[ ]  Manufacturing

## Do you operate facilities with obligations under the Australian Government’s safeguard mechanism?

[ ]  Yes (Please specify)

[ ]  No

## In what part of the State do you operate? Please specify the Strategic Industrial Area if applicable.

[ ]  Pilbara

[ ]  Port Hedland

[ ]  Burrup Peninsula

[ ]  Karratha

[ ]  Other:

[ ]  Perth and Peel

[ ]  Kwinana industrial area

[ ]  Rockingham Industry Zone

[ ]  Latitude 32

[ ]  The Australian Marine complex

[ ]  Other:

[ ]  South West

[ ]  Collie area

[ ]  Other:

[ ]  Gascoyne

[ ]  Mid West

[ ]  Wheatbelt

[ ]  Great Southern

[ ]  Goldfields-Esperance

[ ]  Kimberley

# Your emissions reduction goals

## Do you have a corporate emissions reduction target(s)?

### Please detail your corporate target year(s), coverage (scope 1, 2 or 3) and baseline year.

### Do you have separate targets for aspects of your operations? If so, please detail.

### Do you have targets for Western Australian facilities or operations? If so, please detail.

## If you have an emission reductions plan to support your targets in Western Australia, please provide details below or a copy in attachment.

## What are the key operations, processes, or supply chains your organisation has identified as the most challenging to decarbonise?

## Are you considering options to encourage or specify emissions requirements for supply chains that support your business? If yes, please detail.

## Are you undertaking or investigating any collaborative activities for decarbonisation including common user infrastructure? Please detail.

## What are your key drivers for emissions reduction?

## What are likely to be your priority options for decarbonisation?

|  |  |
| --- | --- |
| **Estimated contribution (%)** | **Time Horizon** |
| **2025** | **2030** | **2035** | **2040** | **2050** |
| **Electrification** |  |  |  |  |  |
| **Energy efficiency** |  |  |  |  |  |
| **Fuel switching** |  |  |  |  |  |
| **CCS** |  |  |  |  |  |
| **Hydrogen** |  |  |  |  |  |
| **Offsets** |  |  |  |  |  |
| **Other (please specify)** |  |  |  |  |  |
| **TOTAL**  | **100%** | **100%** | **100%** | **100%** | **100%** |

## Do you have any data or modelling you could share in confidence?

## What are the key barriers you have identified to substantially decarbonise your operations (e.g. policy; regulation; partnerships/collaboration; markets; supply chains; technology availability and costs etc.)? Please outline the identified barriers against the topics below (as relevant).

**EMISSIONS REDUCTION**

### Electrification and energy storage

### Energy efficiency

### Gas demand

### Hydrogen

### Transport and fuel

### Carbon capture and storage and/or carbon capture, utilisation and storage (CCS/CCUS)

### Carbon offsets

### New and emerging industry development

**CROSS CUTTING ENABLERS**

### Land access

### Science and technology

### Workforce and skills

### ESG and investment attraction

### Other barriers?

## What measures could Government/s consider to address these barriers?

# EMISSIONS REDUCTION

This section identifies fuels or technologies which *may be* relevant to decarbonising your operations. Please provide information, as appropriate, noting some options may not be relevant to emissions reduction from specific operations.

# Electricity demand and energy storage

## If electrification is a priority option to reduce emissions, what are the main activities that you think will be electrified for your operations? (e.g. ore haulage, train haulage, industrial heat processes)

1.

2.

3.

## What is your estimated electricity requirement for WA projects?

|  |  |
| --- | --- |
| **Total expected electricity consumption (MWh)** | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **SWIS** |  |  |  |  |  |  |
| **NWIS** |  |  |  |  |  |  |
| **Off-grid** |  |  |  |  |  |  |

## How are you planning your new electricity supply? (e.g. grid supply, PPA/retailer, self-supply) Please specify any particular needs (e.g. certified renewables, 24/7 renewables).

## What is your proposed approach to meeting your estimated electricity requirements?

|  |  |
| --- | --- |
| **Electricity capacity (MW) or electricity supplied (MWh)[[1]](#footnote-2)** | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Wind**  |  |  |  |  |  |  |
| **Solar** |  |  |  |  |  |  |
| **Trucked LNG** |  |  |  |  |  |  |
| **Gas** |  |  |  |  |  |  |
| **Coal** |  |  |  |  |  |  |
| **Diesel** |  |  |  |  |  |  |
| **Energy storage[[2]](#footnote-3)** |  |  |  |  |  |  |
| **Average grid supply (MWh)** |  |  |  |  |  |  |
| **Other (Please specify)** |  |  |  |  |  |  |

## If known, what will be the expected share of renewable energy used to meet your electricity requirement?

|  |  |
| --- | --- |
| **Average % renewables** | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Grid PPA supplied** |  |  |  |  |  |  |
| **Off-grid** |  |  |  |  |  |  |

# Energy efficiency

## Are there any key energy efficiency measures undertaken / under consideration to reduce emissions? For example, do you have an ISO Energy Management System in place; do you have targets? Please detail.

# Gas demand

## If switching to gas is a likely option to reduce emissions from your operations, what is your estimated total new / additional gas supply requirement for WA assets?

|  |  |
| --- | --- |
|  | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Total estimated gas supply requirement for WA assets (PJ)** |  |  |  |  |  |  |
| **Proposed usage location (region and town if known)** |  |  |  |  |  |  |

## [Do you currently operate under a Domestic Gas Agreement?](https://www.wa.gov.au/system/files/2021-12/Scarborough%20Domestic%20Gas%20Commitment%20Agreement.pdf)

[ ]  Yes (Please specify)

[ ]  No

# Hydrogen demand

## If hydrogen is anticipated to be a likely option to reduce emissions from your operations, what is your estimated total new / additional hydrogen supply requirement for WA assets?

|  |  |
| --- | --- |
|  | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Total estimated hydrogen supply requirement for WA assets (tonnes)** |  |  |  |  |  |  |
| **Proposed usage location (region and town if known)** |  |  |  |  |  |  |
| **Technology considered[[3]](#footnote-4)** |  |  |  |  |  |  |

# Transport and fuel

## What transport activities and fuels are associated with your business?

## What technologies and fuels are you adopting or considering to reduce your emissions from transport activities? Do you have an implementation timeframe by technology and activity? Please complete table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Vehicle type** | **Technology** | **Current fleet size (no.) and fuel consumption (kL/kWh/t)** | **Time Horizon (% share of vehicle fleet)** |
| **2025** | **2030** | **2035** | **2040** | **2050** |
| **On-road (registered) vehicles** |
| Light duty(<4.5t GVM) | Petrol / Diesel |  |  |  |  |  |  |
| Battery Electric |  |  |  |  |  |  |
| Plug-in Hybrid Electric |  |  |  |  |  |  |
| Other, please specify |  |  |  |  |  |  |
| Heavy duty haulage (>4.5t GVM) | Petrol / Diesel |  |  |  |  |  |  |
| Battery Electric |  |  |  |  |  |  |
| Fuel Cell Electric (FCEV) |  |  |  |  |  |  |
| Biofuels |  |  |  |  |  |  |
| Other, please specify  |  |  |  |  |  |  |
| **Off-road (unregistered) vehicles** |
| Off-road mobile machinery (Haulpacks, trucks) | Petrol / Diesel |  |  |  |  |  |  |
| Battery Electric |  |  |  |  |  |  |
| Hydrogen  |  |  |  |  |  |  |
| Biofuels |  |  |  |  |  |  |
| Other, please specify  |  |  |  |  |  |  |
| Rail | Battery Electric |  |  |  |  |  |  |
| Hydrogen |  |  |  |  |  |  |
| Other, please specify  |  |  |  |  |  |  |
| **Other** |
| Maritime | Please specify |  |  |  |  |  |  |
| Aviation | Please specify |  |  |  |  |  |  |

# Carbon capture and storage and/or carbon capture, utilisation and storage (CCS/CCUS)

## If carbon capture and storage or carbon capture, utilisation and storage are likely options to reduce emissions from your operations, what is your estimated total new / additional carbon storage capacity requirement for WA assets?

|  |  |
| --- | --- |
|  | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Total estimated carbon storage capacity required for WA assets (million tonnes of CO2 per annum)** |  |  |  |  |  |  |
| **Proposed usage location (region and town if known)** |  |  |  |  |  |  |
| **Technology considered[[4]](#footnote-5)** |  |  |  |  |  |  |

# Carbon offsets

## If you are likely to require carbon offsets to meet your emissions targets, what is your estimated total new / additional carbon offset requirement for WA assets?

|  |  |
| --- | --- |
|  | **Time Horizon** |
| **Current** | **2025** | **2030** | **2035** | **2040** | **2050** |
| **Estimated carbon offsets (million tonnes of CO2 per annum)** |  |  |  |  |  |  |
| **Location (WA, national, international)** |  |  |  |  |  |  |

## Are you planning to:

[ ]  Purchase offsets

[ ]  Undertake offsets yourselves under the Emissions Reduction Fund

[ ]  Other (Please specify)

# New and emerging industry development

## What new or emerging industries are critical to your organisation’s emissions reduction goals?

## Do you see any opportunity for local manufacturing to support your organisation’s emissions reduction goals? Please detail.

# CROSS-CUTTING ENABLERS

# Land access

## If access to land is critical to achieving your emissions reduction goals, what is the expected area of land (in hectares) required, land use type, and preferred location of land needed for your current and planned decarbonisation activities (if known)?

|  |  |  |  |
| --- | --- | --- | --- |
| **Estimated total area of land required (hectares)** | **Land use type** | **Preferred location and reason why this location is preferred** | **Timeframe within which access to land is required** |
|  |  |  |  |
|  |  |  |  |

## What are the likely characteristics of the land needed for your planned decarbonisation activities?

[ ]  Exclusive access

[ ]  Co-existing with other land uses

[ ]  Freehold land

[ ]  Crown land

[ ]  Other features of importance:

## If Crown land is desired, have you already engaged with the Department of Planning, Lands and Heritage?

# Science and technology

## What current, new and emerging technologies are key to your emission reduction goals? Please specify, including timeframes.

## Is your organisation conducting or participating in any research and development to support your emissions reduction goals? Please detail.

# Workforce and skills

## What are the workforce and skills requirements you have identified as necessary to support your emissions reduction goals?

# ESG and investment attraction

## Have you identified key market opportunities for your organisation from the global transition to low-carbon economies? Please explain.

# ATTACHMENTS

Please include your emission reduction plan and any relevant analysis you may wish to share with the Western Australian Government in confidence.

Please also include any additional information you would like to provide.

1. Please specify measurement units. [↑](#footnote-ref-2)
2. ##  If your proposed approach includes energy storage, please specify the type of storage being considered. For example: lithium-ion battery, redox battery, pumped hydro, compressed air, gravity energy, thermal – latent heat: liquid air, thermal – sensible heat: molten salts, hydrogen tank, hydrogen geological, ammonia tank, metal hybrid.

 [↑](#footnote-ref-3)
3. ##  For example, electrolysis grid electricity, electrolysis 100% renewable energy, gasification with or without CCS.

 [↑](#footnote-ref-4)
4. ##  For example, CO2 injection and geological sequestration, CO2 injection for enhanced oil recovery, mineral carbonation, direct air capture, biological conversion, bioenergy with CCS.

 [↑](#footnote-ref-5)