



METHANE  
GUIDING  
PRINCIPLES

# Methane Guiding Principles Signatory

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Woodside Energy  
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**Company:** Woodside Energy

**Year of Joining Methane Guiding Principles:** 2018

**Senior Representatives:** Tony Cudmore, EVP Strategy and Climate,  
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**Principle One:**

Continually reduce methane emissions.

2023 Completed Activity	2024 Intended Activity
<p>During 2023, Woodside continued to prioritise methane reduction activities in conjunction with our asset decarbonisation and methane reduction activity plan processes. Activities delivered are in line with commitment to the Oil and Gas Climate Initiative (OGCI) Aiming for Zero Methane Emissions Initiative.</p> <p>Methane inventories were completed for all operating assets (including those under the merger BHP Petroleum portfolio), utilising top down and bottom-up measurements. Material methane emissions sources and corresponding emissions reduction activities were identified. Methane emission reductions achieved in 2023 aggregate to roughly 2,005tpa of methane (equivalent to 168ktCO<sub>2</sub>e based on a global warming potential of 84tCO<sub>2</sub>/tCH<sub>4</sub>).</p> <p>Delivered emissions reduction activities including:</p> <ul style="list-style-type: none"> <li>• Performance optimisation of wet gas seals on two Boil Off Gas (BOG) compressors which were not operating as per design.</li> <li>• Rectification of a trunkline onshore terminal fugitive leak. This included deployment of an acoustic methane emissions detection technique to identify passing valves.</li> <li>• Automation of a manual venting procedure on three Acid Gas Removal (AGRU) units to recover vented gas.</li> <li>• Progressing a project to detailed engineering to convert boil off gas compressor wet gas seals to dry gas seals.</li> <li>• Detailed engineering for a flare tower major design upgrade. This included upgrades to improve methane combustion efficiency and real time monitoring to enable operational optimisation.</li> </ul>	<p>Woodside will continue to review and prioritise methane reduction activities across our operated facilities.</p> <p>2024 focus activities include:</p> <ul style="list-style-type: none"> <li>• Continue to deliver reductions through methane action plans.</li> <li>• Develop plans for all operated assets to strive for 'near zero' methane by 2030 or sooner utilising top down and bottom-up measured data obtained during 2023 (in accordance with the Oil and Gas Climate, OGCI, near zero methane initiative Woodside joined in 2022).</li> <li>• Continue to progress flare upgrades and dry seal installation projects to reduce methane emissions.</li> <li>• Continue to pilot and deploy new technologies to support sustainable and cost-effective ongoing methane measurements.</li> </ul>



## **Principle Two:**

Advance strong performance across the gas supply chain

2023 Completed Activity	2024 Intended Activity
<p>According to the IEA, methane emissions account for nearly half the oil and gas sectors current scope 1 and 2 emissions.</p> <p>Woodside's methane emissions are roughly 0.1% of production by volume (<a href="#">2022 Climate Report</a>), less than the Oil and Gas Climate Initiative (OGCI) Aiming for Zero Methane Emissions Initiative target of 0.2%. That said, Woodside continues to work with others to reduce methane emissions in their operations.</p> <p>Woodside participated in both methane research and outreach with other organisations including joint venture partners, industry bodies, research groups, <b>the gas value chain, and the Australian government.</b></p> <p>Research was conducted via the Future Energy Exports (FEnEx) partnership with the University of Western Australia (UWA) for testing and development of novel methane sensors.</p> <p>Significant outreach was undertaken to engage industry members across the gas value chain, including global leadership of the Methane Guiding Principles (MGP) flagship Mid-Stream initiative (Refer to Taskforces on MGP website: <a href="#">How It Works   The Methane Guiding Principles Partnership</a>).</p> <p>Key highlights include:</p> <ul style="list-style-type: none"> <li>• Leadership of the Midstream Initiative for MGP, with 20 global members and more than 50 organisations engaged during 2023. Woodside advocacy supported additional Australian organisations to join MGP.</li> <li>• Membership of the Associated of Southeast Asian Nations (ASEAN)Methane Leadership Partnership (MLP) which supports effective methane emission management in the ASEAN energy industry.</li> <li>• Supporting reinvigoration of the Australian Energy Producers (AEP, formerly APPEA) Methane Taskforce to collaborate and advocate on sound regulation and policy.</li> <li>• Working with other operators and joint venture partners in Australia to explore ways to reduce methane emissions, including best practices.</li> <li>• Woodside shared methane measurement and reduction learnings via several forums including, publishing and presenting a technical journal article at the 2023 AEP conference and participating in global panels at the Global Methane Summit in Houston.</li> <li>• Engagement via a panel discussion relating to methane emissions at the International Gas Union conference.</li> </ul>	<p>Activities planned for 2024 include:</p> <ul style="list-style-type: none"> <li>• Continuation of research projects with UWA via FEnEx including the development of continuous monitoring methane sensors.</li> <li>• Continued leadership of the MGP Midstream Initiative.</li> <li>• Continue to grow and embed our 2023 gas value chain outreach activities in Australia through AEP.</li> <li>• Support ASEAN MLP outreach activities.</li> <li>• Publish a technical journal article relating to methane measurement including presentation at the 2024 AEP conference.</li> <li>• Continue to seek out opportunities to collaborate and share knowledge with our joint venture partners and other value chain industry partners.</li> </ul>

## Principle Three:

### Improve accuracy of methane emissions data.

2023 Completed Activity	2024 Intended Activity
<p>In 2023, Woodside trialled a variety of measurement technologies for their first use within Woodside. In addition, Woodside also supported several Australian technology pilots.</p> <p>Trials and pilots included:</p> <ul style="list-style-type: none"> <li>• Two onshore trials of high-fidelity satellite measurements to quantify source level methane emissions. Woodside continues to work with the respective vendors on validation of satellite detection against ground-based quantification methods. This work supports ongoing development of technology for top-down methane measurements.</li> <li>• The Airborne Visible InfraRed Imaging Spectrometer (AVIRIS) technology trial involved airborne visible and infrared spectroscopy for methane detection and measurement. This work was conducted at Woodside’s Pluto, Karratha, and Macedon onshore facilities and supports ongoing development of technology for top-down methane measurements.</li> <li>• Trialling of different handheld leak detection and quantification tools. This work improves understanding of the tools themselves and the techniques required for improved leak detection and management.</li> <li>• Multi-sensor drone trial to support differentiation and allocation of methane emissions to sources.</li> </ul>	<p>Activities planned for 2024 include:</p> <ul style="list-style-type: none"> <li>• Continue to evaluate measurement technology application and accuracy to facilitate sustainable deployment. Techniques under evaluation and assessment include gas mapping Light Detection and Ranging (LIDAR), multi-sensor drones, satellites, and fugitive detection.</li> </ul> <p>This work supports application of a practical and representative bottom-up and top-down measurement approach and facilitates improved measurement accuracy in emissions accounting.</p>

## Principle Four: Advocate sound policy and regulations on methane emissions

2023 Completed Activity	2024 Intended Activity
<ul style="list-style-type: none"> <li>• Woodside submitted a paper as a part of the Australian Climate Change Authority (CCA) consultation on methane emissions reporting frameworks and participated in one-to-one discussions.</li> <li>• Through membership with the Australian Energy Producers (AEP, formerly APPEA) Woodside has supported reinvigoration of the Methane Taskforce, to promote regular dialogue and encourage joint advocacy to support methane emissions reductions.</li> </ul> <p>Woodside has sponsored two workshops which brought together the AEP and other industry operators from across the value chain.</p> <ul style="list-style-type: none"> <li>• Woodside supported Future Energy Exports (FEnEx) in drafting their report titled “Improving fugitive emissions management in the Australian LNG industry”. The report provided several regulatory recommendations for improving the National Greenhouse and Energy Reporting (NGER) scheme, introducing industry segmentation in emissions calculations and updating regulations to incorporate new measurement technologies.</li> <li>• Woodside collaborated with the Environmental Defence Fund (EDF) through the UNEP Methane Science Studies research program with the aim to improve understanding of methane emission impacts.</li> </ul> <p>Positive feedback was received by the EDF regarding Woodside’s participation to maximize the potential of the science and useful interpretation of data.</p>	<p>Activities planned for 2024 include:</p> <ul style="list-style-type: none"> <li>• Continue to work with other Australian organisations, industry bodies, and government agencies to promote advancement of methane reductions in Australia, including measurement and reporting.</li> <li>• Continue to work with and support the CCA to improve Australia’s methane reporting framework.</li> <li>• Investigate potential for collaboration opportunities between participants in various outreach programs such as the Associated of Southeast Asian Nations (ASEAN) Methane Leadership Partnership (MLP) and Methane Guiding Principles (MGP).</li> </ul>



## Principle Five: Increase transparency:

2023 Completed Activity	2024 Intended Activity
<ul style="list-style-type: none"> <li>• The emphasis Woodside places on minimising methane leaks has resulted in methane emissions being roughly 0.1% of production by volume (<a href="#">2022 Climate Report</a>).</li> <li>• Woodside reviewed several methane reporting frameworks including: GTI Veritas and OGMP2.0.</li> <li>• Woodside worked with the Australian Energy Producers (AEP) via the Stakeholder Representative Group to support the development of the International Green House Gas (GHG) Supply Chain Emissions Measurement, Reporting and Verification (MMRV) framework of which methane is an important consideration.</li> <li>• Woodside maintained bottom-up inventories of methane emissions and updated these with site based top-down measurements. This supports transparent reporting of both estimated and measured methane emissions measurements.</li> </ul>	<p>Activities planned for 2024 include:</p> <ul style="list-style-type: none"> <li>• Woodside plans to join a global methane reporting framework.</li> <li>• Woodside will continue to support the technical working via the AEP in the development of the International GHG Supply Chain Emissions MMRV framework.</li> </ul>

## Methane Emissions

<p>Do you report absolute methane emissions within your sustainability report? <i>If so, provide link.</i></p>	<p><a href="#">2022 Climate Report</a></p>
<p>Do you report a methane intensity within your sustainability report? <i>If so, provide link.</i></p>	<p><a href="#">2022 Climate Report</a></p>
<p>What is your organization's total absolute methane emissions? Provide a figure in tons. Provide latest data publicly available.</p>	<p>Operated: 9,750 tCH<sub>4</sub>. Equity: 7,900 tCH<sub>4</sub>. Reporting period: 1 Jan 2022 to 31 Dec 2022.</p>
<p>State your methodology.</p>	<p>National Greenhouse Energy Reporting Act</p>
<p>State your reporting boundary.</p>	<p>Includes Production and Processing within operational control</p>
<p>What are your organization's methane intensity? Provide latest data publicly available.</p>	<p>Operated: 0.054% Equity: 0.072%</p>
<p>State your methodology.</p>	<p>(Sm<sup>3</sup> methane / Sm<sup>3</sup> marketed gas)</p>
<p>State your reporting boundary.</p>	<p>National Greenhouse Energy Reporting</p>
<p>Do you have a methane emission target? If yes, please state what it is, including the boundaries and methodology. If no, are you developing such a target? Please state your intended timeline.</p>	<p>Woodside methane target is aligned with the philosophy of the Oil and Gas Climate Initiative's 'Aiming for Zero' methane emissions initiative which seek to achieve near zero methane emissions from operated assets by 2030.</p>