



METHANE  
GUIDING  
PRINCIPLES

# Methane Guiding Principles Signatory

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Baker Hughes  
February 2024



**Company:** Baker Hughes

**Year of Joining Methane Guiding Principles:** 2020

**Senior Representative:** Ilaria Parrella, Emission Abatement Executive  
Leader



## Principle One:

### Continually reduce methane emissions.

- Please state what specific activities or projects your company has undertaken to reduce methane emissions. Please refer to the previous year's annual MGP reporting where applicable to refer to intended activity. Link to sustainability report where relevant to provide further detail.
- Describe how the reduction was achieved including description of the asset type, technology type, timeframe. What was the end result?
- Provide data to support your description e.g., the actual amount of emissions reduction achieved, or the reduction in methane intensity.

2023 Completed Activity	2024 Intended Activity
<p><u>With customers/partners:</u></p> <ul style="list-style-type: none"> <li>• Baker Hughes offers a range of products and services to help our customers manage and reduce methane emissions including flare optimization, compressor upgrades, flare gas processing solutions, and ‘no bleed’ valves to control fugitives and leakage.</li> <li>• We are actively engaged in helping our customers meet their carbon and methane emissions reduction goals by raising awareness of the benefits of various technologies.</li> <li>• Several collaboration agreements were signed, and activities progressed with major operators for emissions management, including methane. For example, we worked with refineries in North America and Europe to deploy our flare.IQ (flare control version to increase their combustion efficiency (CE) and destruction removal efficiency (DRE)), as well as in Latin America for production operators to undertake “live” monitor and report their CE, DRE and CO<sub>2</sub> and CO<sub>2</sub> equivalent emissions taking into account the methane slip.</li> <li>• We have subsea monitoring technology and have deployed units in several locations in 2023.</li> </ul> <p><u>How we aim to reduce our emissions:</u></p> <ul style="list-style-type: none"> <li>• In 2019, Baker Hughes committed to achieving net-zero Scope 1 and 2 emissions from our operations by 2050. During 2022, we reduced our Scope 1 and 2 GHG emissions by 28% compared to our 2019 base year. Through our Carbon Out program, we are empowering each Baker Hughes employee to take an active role in our goal of achieving net-zero GHG emissions by 2050.</li> <li>• We completed two projects to reduce methane emissions from our testing facilities.</li> <li>• Our Corporate Sustainability Report is available <a href="#">here</a>.</li> </ul>	<p><u>With customers/partners:</u></p> <ul style="list-style-type: none"> <li>• We will continue our engagement with current and potential customers across the world to help them reduce emissions in a cost-efficient way.</li> <li>• Our vision is to accelerate deep emissions reduction through innovative emissions management solutions.</li> <li>• We will continue to cooperate with a number of partners to offer technologies to increase energy efficiency and reduce greenhouse gas emissions, including from flaring activities.</li> </ul> <p><u>How we aim to reduce our emissions:</u></p> <ul style="list-style-type: none"> <li>• Baker Hughes is committed to reducing our GHG emissions by 50% by 2030 and achieve net zero by 2050.</li> <li>• Baker Hughes will continue collaborating with our suppliers and customers to meet our emissions reduction goals.</li> <li>• Baker Hughes will continue partnering with our customers by raising awareness of the quantifiable benefits of our various technologies.</li> </ul>

## Principle Two:

### Advance strong performance across the gas supply chain

Please include answers to the following questions:

1. Did you participate in any methane research or plan to do so?
2. Did you conduct any outreach on methane management?
  - Describe what action you have taken to engage industry players across the value chain to better understand how to achieve robust methane emissions management. Outreach activity could include training sessions, participation in webinars, influencing of NOJV partners, or publication of guidance. Activity could also include commercial incentives or engagement with investors to drive better performance by others.
  - Provide details of any outcomes that resulted from your action.

2023 Completed Activity	2024 Intended Activity
<p>Baker Hughes is an energy technology company, and we engage with our customers on the importance of reducing methane emissions.</p> <p>We organized several conference presentations and webinars including topics such as the Global Methane Pledge, emissions management software, and measurement &amp; abatement approaches.</p> <p>Baker Hughes and bp co-authored and presented a paper at the Global Flow Measurement Workshop in Norway on the use of Baker Hughes' <a href="#">flare.IQ technology</a> "Realtime Methane Emission quantification and reporting with upstream flaring" which included a high-level summary of the testing conducted at John Zink to verify the Combustion Efficiency and Destruction Removal Efficiency measurements of flare.IQ with experimental data. A strong correlation was found between verification of DRE values by John Zink versus flare.IQ. Secondly, an uncertainty analysis was carried out which is essential if reported values are to conform with OGMP2.0 reporting requirements.</p> <p>We have collaborated with companies on mobile recompression unit. These units are used to reduce methane emissions prior to pipeline maintenance phases.</p> <p>Additionally, we published a paper describing the solution to maximize efficiency in a de-flaring project by applying a Dry Gas, Liquefied Petroleum Gas, and Condensate recovery system to a mid-size associated gas source. The paper provides valuable insights for researchers, engineers, and stakeholders interested in addressing climate change and maximizing the efficiency and efficacy of de-flaring projects. (Lucherini, Franco; Bildesheim, Jochen; Gattinoni, Federico; Bergamini, Lorenzo; and Alessio Ricci. "Maximizing Efficacy and Efficiency in a De-Flaring Project: Integrated Gas Processing Solutions for Associated Gas Recovery." Paper presented at the ADIPEC, Abu Dhabi, UAE, October 2023. doi: <a href="https://doi.org/10.2118/216283-MS">https://doi.org/10.2118/216283-MS</a>)</p> <p>At the ADIPEC conference in UAE, Baker Hughes Ganesh Ramaswamy, EVP IET participated in a strategic panel discussion within the plenary conference "Tackling methane emissions: where are we now and where do we need to be".</p>	<p>Baker Hughes will continue to:</p> <ul style="list-style-type: none"> <li>• Raise awareness throughout the supply chain and help to reduce carbon footprints;</li> <li>• Collaborate with our external partners (academia, research institutes) to drive research and development on methane emissions reduction technologies;</li> <li>• Increase industry awareness of solutions for methane measurement and abatement by organizing webinars and workshops;</li> <li>• We will plan the industry engagement sessions on emissions management during our Annual Meeting in Florence gathering global thought leaders.</li> </ul>

## Principle Three:

### Improve accuracy of methane emissions data.

- Describe action taken to improve methane emissions data collection methodologies. This could be application of new technology at an operated site(s), investment and participation in R&D initiatives, development of monitoring/modelling software, or support to research that improves the accuracy of the quantification of methane emissions.
- Where new technology /software has been piloted or adopted, it is helpful to describe how it works, the reasons it was selected, and how it was deployed. Any data that can be shared to demonstrate improvements is useful.
- How these new methods/technologies has been adopted into your accounting process if at all.



2023 Completed Activity	2024 Intended Activity
<p>Our technology <a href="#">flare.IQ</a> provides real-time monitoring of flare combustion efficiency, destruction and removal efficiency (DRE), and automatic control of flare operation for assisted flares and has been used to reduce methane emissions in a number of upstream and downstream sites. This combustion efficiency (CE), DRE, tracking method based on flare process conditions provides accurate emission monitoring, thus reducing methane slip from flaring. Case study with bp described <a href="#">here</a>; video <a href="#">here</a>. flare.IQ was launched in 2017 with an emphasis on the North American market and regulatory compliance with the EPA Refinery Sector Rule 63.670. It has been adopted by flare operators around the globe for improving flaring efficiency and methane quantification and reporting in line with OGMP 2.0 level 4. New outputs from flare.IQ are now available including CO<sub>2</sub> equivalent emissions, CO and VOC.</p> <p>We supported the MGP work stream on masterclass where we outlined the benefits of flare.IQ. Accurate and reliable data on flare flow and flare combustion efficiency are critical in methane emission management. For this reason, Baker Hughes has developed solutions that improve flare flow measurement and flare combustion efficiency monitoring. Accurate 24/7/365 real-time combustion efficiency is key for flare emission calculations, rather than using static emission factors.</p>	<p>New projects with other customers will come on stream.</p> <p>Baker Hughes will continue R&amp;D initiatives, collaborating internally and externally, to further improve our existing offering and develop new technologies to track and reduce emissions.</p>



## Principle Four:

### Advocate sound policy and regulations on methane emissions

Advocacy consists of active participation in legal consultation processes, external policy statements, and direct engagement with government.

- Consider providing details on the region or regulation involved, how you undertook your advocacy, others involved, and the outcome.

2023 Completed Activity	2024 Intended Activity
<p>Baker Hughes developed two policy statements: <a href="#">natural gas flaring</a> and <a href="#">methane venting/fugitives</a>.</p> <p>We submitted our response to the U.S. Environmental Protection Agency consultation on rules targeting methane emissions and shared views on the EU proposed Regulation on methane emissions.</p> <p>We provided inputs to the <a href="#">Best Practices for Methane emissions Management in Exploration and Production Operations</a> (in Spanish) and are actively collaborating in other initiatives of the Argentinian Oil and Gas Institute. We are also looking for opportunities to collaborate in India and Australia, and have engaged in a discussion on differentiated gas in the U.S.</p>	<p>We will continue to engage in the activities of associations and initiatives that we are members of, to promote sound policy and regulations on methane emissions.</p> <p>Additionally, we will continue to contribute to discussions on developing GHG regulations at national levels where we have activities and engage with policymakers as appropriate.</p>

## Principle Five: Increase transparency

Please include answers to the following question:

1. Are you participating in OGMP 2.0, or do you intend to do so? If you are participating in OGMP 2.0 you may provide a link to the website.
  - Describe what activity you have carried out e.g., providing information in relevant external reports on methane emissions data, methodologies, and progress and challenges in methane emissions management.
  - If you have contributed towards the standardization of comparable external methane reporting describe the activity, you have taken.

2023 Completed Activity	2024 Intended Activity
<p>Baker Hughes advises and provides technology solutions to enable operators globally to achieve OGMP 2.0 gold standard.</p> <p>We disclose information on our Scope 1, Scope 2 and Scope 3 emissions in our CSR report <a href="#">here</a>.</p>	<p>Baker Hughes will continue participating in various work streams under Methane Guiding Principles that enable regulatory compliance.</p> <p>In 2024, Baker Hughes will continue to report information within the CDP framework.</p>

## Methane Emissions

<p>Do you report absolute methane emissions within your sustainability report? <i>If so, provide link.</i></p>	<p>Yes.</p> <ul style="list-style-type: none"> <li>Please see page 134 of our Corporate Sustainability Report available <a href="#">here</a>. We are working on our 2023 Corporate Sustainability Report.</li> </ul>
<p>Do you report a methane intensity within your sustainability report? <i>If so, provide link.</i></p>	<p>No Baker Hughes doesn't produce oil or natural gas.</p>
<p>What is your organization's total absolute methane emissions? Provide a figure in tons. Provide latest data publicly available.</p>	<p>2022 Data: Scope 1 – 4,613; Scope 2 – 326 (MTCO<sub>2</sub>e) Please see page 134 of our Corporate Sustainability Report available <a href="#">here</a></p>
<p>State your methodology.</p>	<p>GHG Protocols</p>
<p>State your reporting boundary.</p>	
<p>What are your organization's methane intensity? Provide latest data publicly available.</p>	<p>N/A Baker Hughes doesn't produce oil or gas.</p>
<p>State your methodology.</p>	<p>N/A</p>
<p>State your reporting boundary.</p>	<p>N/A</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>In 2019, Baker Hughes made a commitment to achieve net-zero Scope 1 and 2 emissions from our operations by 2050. During 2022, we reduced our Scope 1 and 2 GHG emissions by 28% compared to the baseline year - 2019.  Our Corporate Sustainability Report available <a href="#">here</a></p>