



Australian Government

Department of the Environment and Energy

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The Hon Justice Rachel Pepper
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Dear Ms Pepper

Thank you for the opportunity to provide further input to the *Scientific Inquiry into Hydraulic Fracturing of Unconventional Reservoirs in the Northern Territory*.

The Secretary, Dr Gordon de Brouwer, has asked me to respond on behalf of the Department of Environment and Energy.

In the Department's view, the draft proposals to regulate the operation of the gas industry in the Northern Territory would be more stringent than previously proposed elsewhere in Australia and, most probably, more stringent than in most other parts of the world.

I have included detailed comments on your queries at Attachment A.

The Department notes that your proposal to apply provisions that require the flaring or capture of methane that would otherwise be vented during a well completion event with hydraulic fracturing have been widely applied with apparent success in the United States.

The costs and benefits of other proposed measures will need to be carefully examined as they seem to go further than measures that are in place in most other parts of the world.

The Department also invites the Inquiry to consider the impact of the Australian Government's Safeguard Mechanism, which places emissions limits (baselines) on facilities. Further information is available: <http://www.environment.gov.au/climate-change/emissions-reduction-fund/about/safeguard-mechanism>.

Thank you again for the opportunity to comment on your draft proposals. I am happy to discuss, if required.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Rob Sturgiss', with a long horizontal flourish extending to the right.

Rob Sturgiss
Assistant Secretary
Department of the Environment and Energy
29 August 2017

An important aspect of the proposal in your letter relates to the United States Environmental Protection Agency's *New Source Performance Standards, Permitting Rules for the Oil and Natural Gas Industry*.

Elements of the *Performance Standard* that have been in place since 2012, and which have been widely implemented across the United States, include provisions that require the flaring or capture of methane that would otherwise be vented during a well completion event with hydraulic fracturing. This measure appears to have been successful in reducing fugitive emissions in the United States. According to the latest Australian national inventory estimates, the benefits of this type of measure, if applied across Australia, could be in the order of a 5 per cent reduction in total fugitive emissions from the gas supply chain.

The *Performance Standard* has been updated since 2012 to include a number of additional measures, although the Department would draw your attention to the uncertain implementation status of these additional elements which are currently subject to review.

Of these additional updates, elements designed to monitor for significant emitters within highly-skewed populations of leaking equipment would need to be carefully considered. Studies in both Australia and in the United States indicate the presence of skewed distributions of emitters – in one CSIRO study, 5 per cent of the wells were responsible for over 70 per cent of the emissions – which indicates that emissions from such a source could be significantly reduced with action by a few operators. The potential benefits of action to lower emissions and enhance product from reductions in gas leakages should be balanced against the costs of leak detection in making final judgements.

Implementation of these types of measures would require monitoring effort that is additional to that required under the National Greenhouse and Energy Reporting Scheme.

In the *Performance Standard*, for some sources of leakages, such as from pneumatic pumps, the rule relies on the implementation of equipment standards rather than on emissions monitoring requirements (presumably reflecting an understanding that measurement costs were too high in these cases).

In the Department's view, the development of baseline estimates of methane levels prior to development should be technically feasible, although subject to uncertainty. CSIRO studies using flux towers are currently underway in the Surat Basin. Tracking changes over time, and attributing these changes to particular sources with confidence, is more complex; for example, discerning responsibility for changes in concentrations is more difficult if fracking has occurred in locations with natural seeps, strong cattle populations or changing wetland conditions. The use of drones or aircraft is not likely to be problematic but, to be done well, particularly given that emission releases are highly variable over space and time, sampling needs to be carefully designed to ensure estimates are sufficiently precise to be meaningful.

The scope, including the location of any emissions monitoring that should occur during the exploration, development and production phases, such as wellheads during completion, liquids unloading, compressor seals and gathering stations should reflect the likelihood of highly skewed distributions of leakage rates from relevant equipment and the relative size of each of these sub-sources. In the data sets that the Department of Environment and Energy

has examined, skewed distributions of leakages rates have been found at well head populations. Against this, well heads are likely to be a relatively small source of emissions overall – about 1 per cent – such that the overall benefits of action at this source might be small.

The Department does not consider that it would be necessary for baseline measurements and on-going monitoring to be undertaken by an independent body. Under the National Greenhouse and Energy Reporting Scheme, for example, emissions estimation is completed with measurements undertaken by every major company in Australia subject to the Clean Energy Regulator's oversight. In some cases, the National Greenhouse and Energy Reporting Scheme estimation rules provide for measurements to be undertaken by an accredited person for the use of the National Greenhouse and Energy Reporting Scheme reporting company in the estimation of its emissions.

In relation to emissions limits (points 3 and 4 of your letter), the Australian Government's Safeguard Mechanism places greenhouse gas emissions limits (baselines) on facilities which emit more than 100,000 tonnes of carbon dioxide equivalence (t CO₂-e) a year. The Safeguard Mechanism commenced on 1 July 2016 and is designed to ensure that emissions reductions purchased by the Government under the Emissions Reduction Fund are not offset by significant increases in emissions above business-as-usual levels elsewhere in the economy. The Safeguard Mechanism is independently administered by the Clean Energy Regulator and applies to around 140 large businesses, including oil and gas producers. Safeguard facilities are required to keep emissions below their baseline on a net basis, through reducing emissions or purchasing offsets.

Baselines are determined by the Clean Energy Regulator in accordance with the National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule 2015. For new investments operational after 2020, the Rule outlines that baselines will be set using benchmarks based on emissions intensity of production. The size of existing oil and gas facilities would indicate that any new facilities in this sector will likely be covered by the Safeguard Mechanism.

Facility operators are responsible for meeting safeguard requirements, including keeping net emissions at or below baseline emissions levels. If a facility exceeds its baseline, it is deemed to be in an excess emissions situation. Facility operators can access flexibility arrangements including multi-year monitoring periods and the emissions intensity test to manage year-to-year emissions variability. If the facility remains in an excess emissions situation it must surrender sufficient eligible carbon units to remain below baseline levels by 1 March following the relevant financial year.

The Clean Energy Regulator has a range of enforcement options available to ensure facilities comply with their Safeguard obligations as outlined in the Rule.

In certain circumstances, the Clean Energy Regulator may seek civil penalties through the courts with the maximum amount set at 100 penalty points per day (currently \$18,000 a day), to a maximum of 10,000 penalty points in total. In addition to paying the penalty, the facility operator remains under an obligation to rectify an excess emissions situation. The Clean Energy Regulator has discretion over which enforcement options are most appropriate, including whether to pursue court action.

To ensure operational and enforcement transparency, the Clean Energy Regulator must publish (and keep up-to-date) certain information on its website for each facility covered by the Safeguard Mechanism. This information includes: the facility operator; baseline emissions number; the covered emissions and surrendered offsets for each monitoring period; and whether the facility's net emissions exceed the baseline for the monitoring period.

The Clean Energy Regulator must publish the covered emissions for each facility by 28 February following the end of the relevant monitoring period. The net emissions, and number of carbon units surrendered for each facility must be published by 1 March following the end of the relevant monitoring period.

In certain situations facility operators may request the Clean Energy Regulator not to publish certain information. Information deemed by the Clean Energy Regulator as commercially sensitive is not published.

For further information regarding the Safeguard Mechanism, visit the Department's website:

<http://www.environment.gov.au/climate-change/emissions-reduction-fund/about/safeguard-mechanism>

and the Clean Energy Regulator's Website:

<http://www.cleanenergyregulator.gov.au/NGER/The-safeguard-mechanism>

In relation to section 9.8 of the Interim Report, the Department would note that it may not be appropriate to conclude that 'low production performance means emission performance is not achieved' or that 'wells that have low ultimate gas recovery can give rise to higher emission rates. Such wells may also be uneconomical'. There would seem to be little logical reason to regulate wells with low absolute emission levels.

Finally, the Department notes that the interim report was not up to date in its reporting on the national greenhouse gas inventory released in May 2017, which was updated to take account of recent Australian and US empirical research. While acknowledging that in some respects mitigation regulations are more stringent in the United States than in Australia, the Department does not share the views expressed in the Interim Report on the extent of the methane emissions generated by fracking activity. In particular, in the Department's view, citing the leakage rate of 17 per cent included in the paper by the Melbourne Energy Institute detracts from the quality of the rest of the Scientific Inquiry's analysis.