

## Lock the Gate Alliance Submission

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Please accept this submission into the joint advice that is being provided to the Minister for Environment and Energy by the Australia Energy Market Commission and the Climate Change Authority on policies to enhance electricity system security and to reduce electricity prices consistent with achieving Australia's emission reduction targets in the Paris Agreement.

We understand that submissions are being accepted until 4<sup>th</sup> May 2017 and provide this submission on behalf of Lock the Gate Alliance.

This submission contains some additional information that has emerged since we wrote our submission to the Independent Review into the Future Security of the National Electricity Market. We hope that you will consider both that submission and this additional information in your review.

The additional information we are providing relates specifically to unconventional gas as an energy source being inconsistent with achieving Australia's emissions reduction targets.

As the information summarised in this submission makes clear, Australia cannot afford more unconventional gas – neither the cost it imposes on landholders, the environment, electricity users nor the climate. The window for gas as a transition fuel has passed. We encourage your review to make that clear, and to recommend policy settings that promote renewable energy and storage, not gas.

This new information includes:

1. A new report on the risks of migratory methane emissions from CSG by the Melbourne Energy Institute
2. A new report by engineer Tim Forcey on methane emissions detected from Queensland CSG fields using an infrared video camera.
3. A new report by the Climate Council on the impacts of gas on pollution and electricity prices

We provide a very brief summary of each of the reports and their relevance to your work below.

### **1. Melbourne Energy Institute – [The Risks of Migratory Methane Emissions from CSG](#)**

- This report explores the risks of methane gases from a coal seam migrating to the surface as a result of coal seam dewatering and depressurisation for coal seam gas production.
- It identifies that such migratory emissions are a potentially significant source of greenhouse gases from coal seam gas extraction, but concludes that there is very limited data available to assess the full scale of the risk.

- It hypothesizes that in the Surat Basin, dewatering and depressurisation of the Walloon coal measure for CSG extraction, together with continued agricultural water extraction from the Condamine alluvium, could enhance methane gas flow.
- It finds that migration of methane along existing natural faults and fractures is possible and may increase with continued depressurization by coal seam gas mining
- It notes that presence of free methane in water bores can be the direct consequence of depressurisation of the coal seams.
- It finds that due to a lack available data the likelihood of migratory emissions occurring as a result of gas extraction is difficult to assess, and highlights that to date the presence or scale of such emissions has been completely un-measured.
- It finds that there is an urgent need for holistic sedimentary basin management plans and integrated geological-hydrological models to allow for a thorough analysis of the risks of gas migration in regions such as the Surat Basin

## **2. Tim Forcey – Infrared Video Recording Methane Emissions in Qld CSG Fields (attached)**

- This report documents the deployment of a FLIR GF-320 to observe the release of methane into the atmosphere from CSG wells, vents and associated infrastructure near Chinchilla, Queensland.
- During its deployment over two days the camera detected:
  - Continuous releases from "high-point vents" on water-gathering pipelines
  - Intermittent releases from other gas field equipment
  - Methane bubbling from the Condamine River and Wambo Creek.
- The report highlights that, with respect to Australia's national greenhouse-gas reporting to the United Nations, methane emissions from CSG equipment like vents is effectively 'assumed to be zero', which means that reporting is understating actual emissions.
- Based on inspections of CSG fields and reports by affected landholders there are likely to be thousands of such high-point vents continuously venting methane in Queensland.
- Other airborne infrared-sensing equipment is now available to conduct top-down methane-emission measurements, which measure not just the presence of emissions but the amount that is being released from CSG fields.
- Use of airborne-infrared imaging in the "Four Corners" region of the U.S. identified 250 individual methane plumes from CSG fields and infrastructure. Methane emissions rate per plume ranged from two kilograms to 5,000 kilograms per hour.

- The Four Corners region is the largest source of coal seam gas in the United States. One reason the Four Corners region is of interest is because satellite observations across the entire U.S. indicated a unique "hot-spot": a large volume of methane being emitted into the Earth's atmosphere from this area.

### 3. Climate Council - [Pollution and Price: the Cost of Investing in Gas](#)

- Old gas plants in Australia, such as Torrens Island, are as polluting as coal fired power stations.
- New gas power plants are less polluting than coal, however, when the entire supply chain of gas production is considered, gas is not significantly less polluting than coal.
- Current levels of reliance on gas power in Australia must be reduced to play our role in limiting global temperature below 2°C. Expanding gas usage is inconsistent with tackling climate change as it locks in emissions for decades into the future.
- Australia's Liquefied Natural Gas (LNG) exports are pushing up the price of gas power as domestic gas prices are now inextricably linked to world market prices for oil. This will continue into the foreseeable future.
- The most economic and accessible reserves are now being exported. Further gas expansion will drive increased reliance on unconventional gas, which is expensive.
- Reliance on gas power is also driving power price spikes particularly in South Australia, Queensland and increasingly in New South Wales, due to lack of competition among gas power companies.
- New renewable energy is cost competitive with new gas. The cost of renewable power and storage, particularly solar, wind and batteries, continues to fall and has no associated fuel costs. This contrasts with rising and volatile gas prices.
- Technologies such as solar thermal, hydro and biomass plants can meet demand for electricity at all times of the day as well as meeting technical requirements for grid stability. Combining these technologies with wind, solar PV, and large- scale energy storage, can meet electricity demand round-the-clock.

## CONCLUSION

This information adds to the growing body of evidence that more gas-fired power will not enhance energy security, cannot reduce electricity prices and will put our ability to meet Paris targets at risk.

We also reiterate again points made in our submission to the Finkel review that:

1. Much of the proposed unconventional gas in Australia is at the highest end of the cost curve for gas supply globally, and will lead to expensive electricity for Australia.
2. The link between Australia and the international gas market via exports means that prices have risen dramatically and are now very difficult to moderate.
3. The lack of transparency in the east coast gas market, the cartel-like behaviour of the big four gas producers, and the unregulated pipeline monopolies all add to price and reduce security.
4. The boom-bust cycles of an extractive industry like gas mining means that it cannot provide the energy security which Australia needs.
5. Unconventional gas mining in Queensland has actually led to major increases in demand for electricity because the industry is a very large energy user.
6. There have been numerous new gas power plant proposals shelved by industry over the last decade because they are no longer financially viable.
7. New renewable energy and storage is set to be cheaper and more reliable without the climate change impacts of gas, and it can deliver the baseload, dispatchable electricity which is needed.

Finally, we refer you once more to the report released by the Melbourne Energy Institute last year which reviewed current and future methane emissions from unconventional oil and gas in Australia.

It estimated the likely methane leakage from existing unconventional gasfields in Australia. It looked at a range of scenarios, including a 10% leakage rate, which appears likely given it provides evidence of recorded leakage of up to 17% in the US<sup>1</sup>. The report concluded that a 10% leakage rate would lead to fugitive emissions from existing unconventional gas production in Australia of 92MtCO<sub>2</sub>-e/yr<sup>2</sup>.

Australia's Paris commitment is to reduce emissions by 26-28% on 2005 levels by 2030. In a recent fact sheet, the Australian Government estimates this will require 900Mt CO<sub>2</sub>-e of total abatement from 2020 to 2030<sup>3</sup>.

If methane leakage in Australia is approaching 10%, then we have already almost doubled our abatement task to meet Paris Commitment reductions to 2030. If Australia were to increase its production of unconventional gas any further, then our abatement task will become even more unattainable.

These fugitive emissions are of even greater concern when the near-term impacts of methane emissions on climate tipping points are considered.

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<sup>1</sup> Noting that there have still been no direct measurements of methane leakage across an entire CSG field in Australia, no baseline studies and no top-down measurement studies.

<sup>2</sup> Applying a 100-year global warming potential

<sup>3</sup> <https://www.environment.gov.au/system/files/resources/c42c11a8-4df7-4d4f-bf92-4f14735c9baa/files/factsheet-australias-2030-climate-change-target.pdf>

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