Notes to contribution to NT fracking inquiry April 2017

Justin Tutty, Darwin

These notes are based on and support my participation during the public hearings held in Darwin.

I'm pleased that this inquiry is doing good work, and communities around the Territory are engaging well; I have high hopes for the contribution we can make towards better decision making.

I notice that the inquiry has heard a range of detail on various risks to be weighed and managed. I'm interested in exploring just one particular set of unavoidable impacts, that represent an unacceptable level of environmental harm, and stand as an **outright disqualification** to the broadscale exploitation of shale gas in the territory. That is: the contribution to runaway climate chaos from unmanaged carbon emissions at every step of the industrial chain.

I'm confident that detail about the cumulative impacts of greenhouse gas pollution are well described elsewhere. It was hard for anyone to ignore the 'angry summer' we just had: more than 200 temperature records were broken around Australia in 90 days. I appreciate that the inquiry has heard other details about the scope and extent of the challenges climate change presents to the Northern Territory.

Climate change is not a matter of debate in this context, given that the climate imperative is perversely exploited by the frackers as a rationale for broadscale onshore gas exploitation, based on a questionable 'transition' narrative. I want to focus on two specific features of this broad concern: fugitive emissions, and the full life-cycle carbon burden of fracking.

fugitive emissions

I appreciate from the discussion paper that you are already aware of the contention around the consideration given to this unmanaged waste stream

it is particularly significant because of the higher warming potential of methane from unmanaged release vs the CO2 from burning the fuel. The comparative carbon burden of gas as an energy source greatly depends on what fraction is emitted to the atmosphere, versus what fraction is burned as fuel.

Whereas Surface mined coal is dirty because of the direct co2, shale gas, with about 2/3 the direct carbon burden, can be just as dirty in worst case scenario due to methane emissions.

CSIRO assure us that at around 1% leakage, gas is cleaner than coal. But that 1% is a heuristic taken from lng experience, and there are mounting concerns that this rule of thumb is not a comprehensive and adequate estimate for the realities of shale gas fields. CSIRO did some research at well heads, but that doesn't tell the whole story: diffuse or "migratory" emissions from fracking can spread through the geology far and wide.

2011 USA research, initiated by Howarth at Cornell, has suggested that shale's carbon burden is comparable to coal, because fugitive emissions (including unmanaged unintentional leaks, and controlled venting) can significantly exceed that low expectation. In 2016, Turner at Harvard founda large increase inferred from satellite data. *See references below.*

Aussie academics have ground-truthed CSG fields around Qld, and found much higher emissions around gas fields.

Researchers from Southern Cross University, used a **Cavity ring-down spectroscope (CRDS)** to measure methane emissions around Tara and their results indicated higher landscape emissions in gas fields, calling into question the aussie status quo of focussing on well heads.

Tim Forcey, formerly a Gas Principle at the Australian Energy Market Operator, now works as a specialist researcher with the Melbourne Energy Institute at the University of Melbourne, investigating fugitive emissions with a FLIR (Forward Looking Infra Red) camera, identifying a methane emissions burden to fracked gas beyond the well-head.

Richard Dennis, an economist at The Australia institute, reports that:

> *no comprehensive analysis of the extent of these "fugitive emissions" that seep through the soil and water and into the atmosphere has been published. The Australian government has chosen to estimate the level of fugitive emissions from CSG wells based on … the level of fugitive emissions from conventional gas wells in the USA.*

Dr Allen Hawke, who conducted an inquiry and wrote two reports on fracking for the NT Government, acknowledged that this assumption acts as a disincentive to industry to better account for their waste stream. Dr Hawke warned that some fugitive methane emissions in North America have been attributed to leakage from closed wells. The inquiry for the initial Hawke report heard significant concern about fugitive emissions, and the resulting report identified need for accurate accounting, including pre-development baseline measurements. Dr Hawke called it "a significant challenge for government policy and regulation"

But this important responsibility appears to have largely been gifted to a captive body, the Gas Industry Social & Environmental Research Alliance.

This inquiry has already heard some discsussion about long-term integrity of decomissioning. On one hand, the Central Australian Frack Free alliance warned that 'all wells fail' - implying 'all wells leak'. On the other hand, the inquiry heard from Halliburton, who gave unqualified guarantees about the long-term robustness of well head construction.

Halliburton are known locally as major shareholder in the consortium that built the Darwin to Adelaide railway. Elsewhere they are perhaps better recognised for the multi-billion-dollar one-bid contract run out of Vice President (and shareholder) Dick Cheney's office to 'rebuild' Iraq after the illegal invasion.

But there's another qualification that is more relevant for their claims about well head integrity of fracked on-shore gas, and the Territory's fledgling regulatory regime. Halliburton were implicated in Montara, the largest oil spill in Australian history, which remains the subject of an ongoing class action on behalf of thousands of impacted Indonesians. Despite evading legal liability, it was shown that their poor construction of a well head was a causal factor. A grossly inadequate federal regulatory regime was cited in the protracted investigation.

Territorians should consider this track record when assessing Halliburton's assurances about well-head integrity, and question the basis for their confidence in our draft regulations.

These concerns about well-head integrity are go directly to the long term risk of unmanaged leaking of methane. The severity of this risk is compounded by wilfully inadequate regulation. The previous NT CLP government ignored critical advice to include independent inspections of well integrity into the regulations.

Dr Tina Hunter's review of the draft regulations recommended: *"Well inspection by an independent certified third party inspector should be a mandatory component of the regulatory regime for drilling"*

The current Minister for Resources, Ken Vowles MLA, from opposition despaired that this recommendation had been ignored: *"Dr Tina Hunter has stated that all the draft regulations have to be brought in. That is certainly not the case in this legislation and this is why we can't support this."*

The true extent of the burden of fugitive emissions of gas fields is an unacceptable knowledge gap that demands the precautionary principle

- let's remind the resources minister that the existing regulations are inadequate
- let's not pretend that the industry can be relied upon to address this knowledge gap: this isn't just a reporting feature: it's a fundamental go-or-no factor: it's government's responsibility

- let’s disallow the continuation of an onshore shale gas industry while we get a grip on the nature and extent of high warming potential methane waste this industry would inevitably add to the carbon burden we are leaving our children

<u>lifecycle contribution of fracked shale gas to the global carbon burden</u>

The discussion paper acknowledges climate issues under risks to air. But climate chaos from unmanaged greenhouse gas pollution in turn leads to unprecedented impacts on water / land / public health / society.

We’ve discussed how assumptions being held regarding the carbon intensity of fugitive emissions from fracked gas fields appear to be wrong – in fact, some warn, *so wrong* that the touted benefits over coal may not stand up. But In a growth economy, with no reins on carbon, it’s inconsequential whether shale is only 2/3 as dirty as, or in fact more dirty than coal: without a shared plan including active over-arching controls, it’s all additional to existing coal consumption.

‘Transition fuel’ is a capacity, not an inherent attribute. Simply sticking a ‘transitional’ label on the ship does not guarantee a nett environmental benefit. That capacity would hinge on the dubious paradigm of wise use.

To realise the fuel’s capacity to help transition towards a cleaner safer future, we’d want to be able to show that the gas is actually displacing, rather than augmenting, existing coal use. And that there’s a viable plan to continue rapid transition to renewable solutions. We’d want to share an agreed framework with checks that users of our dirty fuels account for the direct pollution, and play their part in a collective plan to move to a clean energy economy.

At one point, 12 yrs ago, that framework was emissions trading. Then, both governments (NT and Commonwealth) and all major parties (liberal, labor and green) supported this approach. But that’s not where we are today. Currently, the federal Liberals have abandoned emissions trading, and NT Labor have no emissions target, which sets us off without a map or compass.

Couple this with the projections of International Energy Agency’s World Energy Outlook. Global primary energy consumption is rising, and despite the unexpected success of renewables, with the strong growth in total demand comes a corresponding growth in global energy fuel demand. More electricity, more gas, more oil, more coal.

Where once we pursued an international protocol to avert climate change, the best hope being offered by world governments to us now is a level of climate disruption that we can somewhat adapt to.

In the absence of domestic or global action, we might look bilaterally: we might consider: who are the customers for the NT’s gas? Maybe the end user can rescue the transition claim.

Not locally: on two counts.

We dont have coal anyway, and our government has decided to overlook local strategic application of domestic resource in favour of large volume / low value, rip & ship / pump & dump export. Someone wants to spend almost a $billion building a pipeline to queensland ports: that sounds like export.

So. Where would fracked nt gas go?

I suspect that the most accurate answer is ‘we don’t know’ - my understanding is that the market for this resource will allow those decisions to be made much later.

That means that right now we have no basis for imagining that the resource is being wisely applied to displace coal.

I do note that investors in the Beetaloo Basin, our most advanced prospective province, include American Energy Partners (AEP) and multi- $billion Texas-based private equity investor Energy & Minerals Group. The inquiry has already heard from the American oil and gas services company, Halliburton.

American participation in the threat to turn over our beautiful landscapes and precious finite water resources to the fossil fuel harvester is significant, given the propensity of the USA to extremes in pursuit of fossil fuel, their significant and dominant role in discouraging effective global action for a safe climate and the tone of the new administration.

Last month, incoming USA EPA chief Scott Pruitt said: *"I would not agree that CO2 is a primary contributor to the global warming that we see."* American President Mr Trump has called climate change a hoax created by China, specifically warned he's determined to undo predecessor's policies restricting greenhouse gas emissions, and stated he wants to defund UN climate change work.

This is the context of the global energy economy we appear to surrender our resource to:

- the Territory has no carbon emissions reduction target target
- Australia has largely abandoned emissions trading
- we appear to be racing to pump it out before regulation catches up, rather than wisely applying the resoure within a scrutable plan to transition to renewables
- customers for our gas may be doing no better than us

If we frack the territory, were not fighting climate change, we're fueling it. There is no nett climate benefit: we'd be feeding the fossil addiction while distracting precious time and capacity from real renewable solutions. By trading gas without accounting for its life cycle carbon burden, and without tying that trade to a credible agreed plan, there is no system that we can interrogate to determine that existing dirtier fuels are being displaced.

I'm calling this out as a knowledge gap. I'm asking you to report that in today's policy environment, no-one can demonstrate just how we might imagine fracked gas would help, rather than hurt, our ambitions for a safe climate.

I urge you to carefully reconsider the extent of harm which has been overlooked due to the glib label of 'transition fuel' - and that must include the local expressions of the global impact from the direct CO2 burden of its end use.

I strongly recommend we recognise the glib 'transition fuel' slogan for what it is, and judge this proposed industry on its significant climate detriments

thankyou,

Justin Tutty

[redacted]

[redacted]

references:

Howarth, R., Santoro, R., Ingraffea, A., 2011. **Methane and the greenhouse-gas footprint of natural gas from shale formations**. Climatic Change 106, 679–690

Hardisty, P. E., Clark, T. S., Hynes, R. G., 2012. **Life Cycle Greenhouse Gas Emissions from Electricity Generation: A Comparative Analysis of Australian Energy Sources**. Energies 5, 872-897

A. J. Turner, D. J. Jacob, J. Benmergui, S. C. Wofsy, J. D. Maasakkers, A. Butz, O. Hasekamp, S. C. Biraud 2016, **A large increase in U.S. methane emissions over the past decade inferred from satellite data and surface observations**

IEA (2016), ***World Energy Outlook 2016***, International Energy Agency, Paris.

links:

http://www.independent.co.uk/environment/gas-power-plants-methane-emissions-120-times-more-study-purdue-edf-greenhouse-global-warming-climate-a7641471.html

http://www.cnbc.com/2017/03/09/epa-chief-scott-pruitt.html

https://www.theguardian.com/environment/2016/dec/07/australia-malcolm-turnbull-rules-out-carbon-tax-or-emissions-trading

http://www.abc.net.au/news/2017-02-28/methane-emissions-from-coal-seam-gas-climate-change/8310932

https://www.themonthly.com.au/issue/2016/november/1477918800/richard-denniss/feeding-beast

http://www.abc.net.au/news/programs/the-business/2017-02-28/the-clean-green-image-of-coal-seam-gas-is-under/8312466