Speech By

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GAS SUPPLY AND OTHER LEGISLATION (HYDROGEN INDUSTRY DEVELOPMENT) AMENDMENT BILL

Mr ANDREW (Mirani—PHON) (3.47 pm): I rise to speak on the Gas Supply and Other Legislation (Hydrogen Industry Development) Amendment Bill. In Queensland, the Gas Safety Act 2003 and the Petroleum and Gas (Production and Safety) Act 2004, the 'P&G act', provide the regulatory frameworks for proponents seeking to transport petroleum and gas through pipelines. The GS Act covers the licensing of gas and distributors as well as the regulation and distribution of pipelines, including customer connection services, meters and natural gas infrastructure works.

The bill's amendments will extend the remit of the GS Act from processed natural gas to hydrogen and other covered gases. To achieve this, the bill introduces the new term 'covered gases', which is defined as a primary gas process, natural gas, hydrogen, biomethane, synthetic methane, or a gas blend. A regulation-making power is also added to the definition of 'covered gases' to allow for new renewable gases to be captured in the act. This power is envisaged to be engaged in the event of new scientific or technological advances that warrant further gases being added to the definition. The bill includes a range of consequential amendments to extend provisions from processed natural gas to covered gases. This is intended to ensure all existing regulatory requirements under the act apply to distribution, authorities and the pipeline for hydrogen and other renewable gases.

These changes will enable the distribution of hydrogen to consumers in Queensland through the state's distribution pipelines. It will also give proponents the ability to transport and connect customer services to covered gases in addition to processed natural gas. Transitional provisions will ensure existing distribution authority holders are authorised to transport and connect customers to renewable gases such as biomethane and synthetic methane, provided that the substance is suitable for use by consumers. Part of developing a green hydrogen industry is having an established bureaucracy, together with licensing and regulatory bodies, to advise and direct the establishment of the new industry and to administer an appropriate regulatory framework.

The Queensland government is investing heavily in the development of green hydrogen and ammonia through the Queensland Hydrogen Industry Strategy 2019-2024, the $35 million Hydrogen Industry Development Fund and the $4.5 billion Queensland Renewable Energy and Hydrogen Jobs Fund. According to the minister's introductory speech on the bill on 9 May 2023, the Palaszczuk government's Queensland Energy and Jobs Plan commits the government to transforming the state's energy system. He said that to get there it will take a huge effort to build vast amounts of new renewable energy. Recognising the impracticality of battery storage as a replacement for trucks and heavy haulage transport, the government is relying on green hydrogen to power everything from shipping, aviation and large trucks to industrial processes like making green steel and fertiliser. As the minister commented—

> ... Australia cannot meet its international climate targets without decarbonising its heavy haulage transport fleet. Battery powered trucks up and down the Bruce are just not feasible.

According to the minister—

> We are at the dawn of the most significant transformation of our economy since the industrial revolution. By 2040 our green hydrogen industry could support 10,000 jobs and generate over $33 billion in economic activity—that is comparable to Queensland's LNG industry—and contribute nearly as much as mining did to this state in 2019-20 ... delivering on our steadfast commitment to deliver 70 per cent renewable energy by 2032 and 80 per cent by 2035.

The minister even went so far as to claim that Queensland's green hydrogen industry is not a pipedream but a pipeline of real action. This is highly debateable. The practicality and cost issues of hydrogen are such that it is highly unlikely it will ever be the solution to the energy storage conundrum that so many experts are wrestling with today. One only has to look at the facts, starting with the fact that 99 per cent of today's globally produced hydrogen is grey hydrogen, made from fossil fuels.

Green hydrogen, which Australian governments are hyping as the silver bullet for achieving their net zero commitments, accounted for only 0.04 per cent of global hydrogen production in 2021. Despite hundreds of billions of dollars spent worldwide on developing the green hydrogen industry, there has been almost no commercial production of green hydrogen anywhere in the world. Even in the US, where the 2021 Infrastructure Investment and Jobs Act appropriated $9.5 billion for clean hydrogen and the 2022 Inflation Reduction Act provided an even greater level of support through its hydrogen production tax credit, progress has been negligible. At present, there are only 1,500 miles of hydrogen transmission pipelines in operation throughout the country. Furthermore, almost all current hydrogen mileage exists in rural areas and is exclusive to smaller diameter transmission lines. JP Morgan's 2022 annual energy paper states—

> Current green hydrogen production is negligible ...

This means there are almost no prototype green hydrogen systems operational at present, although enough is known about the processes of producing and distributing green hydrogen to know that the problems involved in scaling up the industry are substantial and the costs enormous.

The bill and its objectives reveal a concerning disregard for some of the well-known safety risks relating to the transport of hydrogen by pipeline. The government seems to regard the blending of hydrogen into the gas supply as a quick and easy way to support the development of a local green hydrogen industry by creating guaranteed demand. However, recent network planning in Victoria shows that major work will be needed before blends can be safely added in most parts of the state, with separate issues affecting both distribution and transmission systems. Total costs are still unknown, but it is clear that blending in most places will not be possible until 2030 or later.

Prospective blending projects often propose adding hydrogen directly into distribution rather than transmission lines to avoid the high operating pressures that cause hydrogen embrittlement. According to Energy Safe Victoria, introducing blends to the distribution lines could potentially risk the safety of the transmission system overall. This is partly due to the lower pressure sections of the transmission system where it traverses metro areas. These breach the pressure differential that usually isolates transmission from distribution gases. The VTS is an interconnected network rather than straight pipeline made up of different types of pipelines of different ages. Introducing hydrogen blends might mean parts need to be replaced or operating pressures wound back.

APA, which owns the VTS, has been unable to make an estimate around the scope, cost or time line for what would be required to support hydrogen blends in their assets or confirm whether it might be possible at all. Last year it requested $19 million of additional funds through regulated revenue to answer these questions given the difficulty of this assessment. Funding has so far been declined by the regulator given that hydrogen blending is not currently a requirement in Victoria, but the question of the effects of hydrogen in transmission assets is highly relevant here in Queensland. Evidence from other projects suggests that these costs could be high.

An environmental impact statement released last year for the proposed new gas generator at Kurri Kurri found that building the high-pressure storage to be compatible with hydrogen—at a 30 per cent blend in this case—would be uneconomical, even as a new build. Transmission issues aside, the recent Victorian gas arrangements also discovered that major works need to be completed on distribution lines before blends can be added. Network businesses themselves do not expect blending to be possible until 2030, and they do not expect to be ready to transport pure hydrogen until 2050 or 2040 as a stretch target. Programs already underway to replace legacy low-pressure mains, especially cast-iron lines, would need to be finished before hydrogen blends could safely be injected, with the largest works remaining in the urban Multinet network.

A recent feasibility study completed with Arena for Ballarat confirmed that there was a need to replace these older low-pressure mains before adding hydrogen. It also found that hydrogen's lower energy density reduces the carrying capacity of the network slightly, sometimes requiring the system to be upsized. A similar study completed for Wodonga found capacity to be reduced by 2.5 per cent. In

addition to mains replacement and possible augmentation, incompatible parts across the network would need to be upgraded. Recent regulatory decisions for Victoria's gas networks acknowledge that the increased competition from efficient electric alternatives now present a stranding risk to their assets. These circumstances warrant increased caution around new investment in gas networks. Safe and reliable operation remains essential, but as far as possible unnecessary spending on infrastructure expected to become stranded should be avoided.

Given the early stage of our experience working with hydrogen in Australia, it is important that lessons from the ground are fed back effectively into our planning for developing a hydrogen industry and for the broader energy transition, including projects like the Integrated System Plan. Blending is not cost free, so its promises should be tested. If we cannot reticulate blends until after 2030, we should consider carefully whether the demand boost it might offer will still be useful by then or whether it would compete with real demand from priority applications. It is also important to understand how blending might impact remaining gas users as the household movement to electrify continues to pick up pace. There is no doubt that green hydrogen could be a vital tool for the hard-to-decarbonise sectors like steel, shipping and chemicals manufacturing.