



Submission on NZ Energy Efficiency and Conservation Strategy 2017-2022.

The Gas and LPG Associations fully support reducing both industrial energy intensity and greenhouse gas emissions overall. The Associations believe that gas¹ currently plays a key role in New Zealand's economy and will continue to do so in the transition to the low carbon economy (see attachment) because:

- It complements renewable options in delivering predominantly renewable-sourced electricity.
- In the industrial sector, gas is an important fuel in the processes of many energy-intensive businesses and has a carbon footprint lower than other fossil fuels.
- For many residential consumers, gas-fired water and space heating is likely to have a similar carbon footprint to a house with standard resistance water heating and a heat pump.

We support the NZEECS concentrating on those areas that can produce the most significant and costs effective reductions, as appears to be the intent of the primary new initiative outlined in the NZEECS - the Process Heat Action Plan. The discussion in the NZEECS implies the plan will focus on conversions from fossil fuels (including gas) to renewable sources. We think the plan should include conversions from high emissions fuels (such as coal) to lower emission fuels (such as gas). Conversion to gas will reduce overall energy consumption, further reduce emissions and also improve economics.

The gas industry is keen to engage with MBIE and EECA to explore how it can assist in improving gas energy efficiency and encourage substitution of gas for other fossil fuels where it is efficient to do so.

Regards

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¹ For the purposes of the paper all references to gas include both natural gas and LPG.

Attachment: NZ gas consumption and emissions

There are four main groups of gas demand in New Zealand: electricity generation, industry, petrochemicals and commercial & residential. These are discussed below.

Electricity generation

The electricity sector accounted for around 30% of New Zealand's gas consumption in 2015 in the production of electricity. Concept Consulting notes in its *Long term gas supply and demand scenarios – 2016 update report ("Scenarios 2016")* that gas demand in the sector has been trending down in recent times (particularly with the recent closure of the Southdown and Otahuhu B CCGT stations). The central scenario projection in Scenarios 2016 forecasts gas generation to gradually fall over the long term due to the improved economics of baseload renewable generation and the potential for higher CO₂ prices. However, gas-fired generation plays a key complementary role to renewable generation over both the short and longer terms, augmenting renewable generation production during seasonal and peak periods including periods of low hydro storage. Gas generation is a relatively low GHG emitting fossil fuel that provides a vital role in New Zealand's predominantly renewable electricity generation sector being resilient and secure.

Industrial sector

The major use of gas in the industrial sector (excluding petrochemicals) is for intermediate (100 °C – 300 °C) process heat, mainly in the form of boilers. Electricity is not a practicable option for process heat given the high temperatures that are required and the underlying economics. Renewable fuels (including wood, geothermal and biofuels) are used for process heat but they are location dependent; plants using geothermal or wood for process heat must be located adjacent to the energy resource. Given this location dependency, process heat in New Zealand is fuelled mostly by coal and gas. Concept Consulting notes in its *Consumer Energy Options in New Zealand – 2016 Update ("Consumer Energy Options 2016")* that gas is in a very competitive position, such that it would make sense for consumers with an existing non-gas fired boiler (with a sunk capital cost) to switch to gas and incur the cost of a new boiler. The economics of gas-fired boilers, relative to other fossil-fuelled boilers, improve as CO₂ prices increase.

The draft NZEECS identifies process heat as an area where there is significant potential to reduce carbon emissions and improve energy efficiency. It states that the government will implement a plan to improve the efficiency of existing process heat plant and encourage investment in efficient and renewable plant. Given the previous discussion, gas-fired process heat (has the potential to meet many of the objectives of this plan. As previously noted, gas-fired process heat is a replacement for other fossil fuelled plant, provides the opportunity for improved efficiency while also delivering a lower carbon footprint. Gas is not a renewable option; however, it can displace coal and complement renewable process heat in locations where renewable fuels are unavailable or impractical. This role for gas in process heat is highlighted in the *New Zealand Energy Strategy 2011-2021* which notes that gas "... is an important direct source of energy in industry and homes".

We also note the increasing debate around the world on the zero carbon emission assumptions of using biomass as a substitute for coal, oil or gas. The discussion has been around electricity

generation but reports from the US, which have subsequently been endorsed by the UK Department of Energy and Climate Change, show that depending on how the biomass is procured the carbon outputs can be greater than using coal for electricity generation. This is clearly a very complex area but we believe this should be noted and investigated for NZ conditions, as the belief in zero emissions from wood is deeply ingrained and totally accepted by advocates, advisors and policy makers.

Petrochemical sector

The petrochemical sector currently consumes around 45% of New Zealand's gas supply, with Methanex using over 90% of gas in the sector (when operating at full capacity) to produce methanol. The production of methanol using natural gas creates significant amounts of CO₂, albeit at much lower levels than in situations where coal is used as a feedstock. Furthermore, a significant portion of CO₂ is 'locked in' to products made with petrochemicals such as plastics, rather than emitted to atmosphere. The Government recognises Methanex as an emissions-intensive trade exposed (EITE) business in the NZ ETS, allocating Methanex free NZUs (an 'industrial allocation'). This policy recognises that if Methanex faced a carbon price in New Zealand, it may close local operations and increase production in jurisdictions that do not have an ETS (this is known as 'carbon leakage'). As world carbon markets develop, this form of local support may no longer be required.

Residential sector

Residential consumers use gas for three main purposes: space heating, water heating and cooking, with the first two categories using most of the gas. Consumer Energy Options 2016 finds that the carbon footprint of gas-fired space and water heating options is half that of standard resistance electric heating options, but a gas-fired heater's footprint is greater than high-efficiency electric heat pumps. These results stem from the fact that, during periods of peak energy demand, the marginal form of electricity generation is likely to be fossil-fuelled. Given these findings, a house with gas-fired water and space heating is likely to have a similar carbon footprint to a house with standard resistance water heating and a heat pump.