

Via internet upload

10 August 2021

**Re: Jemena submission to Infrastructure Victoria interim report
*Towards 2050: Gas infrastructure in a zero emissions economy***

www.jemena.com.au

Jemena welcomes the opportunity to provide input into the Infrastructure Victoria (“IV”) interim report *Towards 2050: Gas infrastructure in a zero emissions economy* (“the Interim Report”).

Jemena owns and operates a diverse portfolio of energy assets across the east coast of Australia, including some critical gas and electricity assets as part of Victoria’s energy system. We own the Eastern Gas Pipeline, which has historically delivered gas from Victoria’s Gippsland basin to Sydney, the ACT, and regional NSW, but which will become increasingly important in bringing gas into Victoria from NSW in the coming years as reserves in Bass Strait decline. We also own the Jemena Electricity Network in Melbourne’s north-west, and 34 per cent of United Energy, which covers south-east Melbourne and the Mornington Peninsula. Outside of Victoria, we also own the Jemena Gas Network, which serves more than 1.4 million customers in New South Wales, and a range of other gas assets.

We understand that the role of gas in Australia’s—and Victoria’s—energy transition is contested, with many polarised views. IV’s process should aim to deliver greater policy certainty to allow for the energy sector to deliver the private investment required to deliver the energy transition.

The IV process is running alongside the Victorian Department of Environment, Land, Water and Planning (DELWP) Gas Substitution Roadmap (GSR) under its Climate Change Strategy. The IV process appears to duplicate key parts of the GSR process, creating the potential to deliver mixed messages in this contested space.

In particular, we question IV’s modelling exercise, which appears to duplicate the GSR’s scenario analysis, without the benefit of the in-depth consultation process that DELWP undertook to inform their exercise. As an illustration, we have accepted invitations to participate in several group workshops and one-on-one engagements with DELWP and their consultants to inform their GSR, alongside many other important stakeholders with detailed knowledge about this complex topic. By contrast, we have only been asked to fill in a form for IV, and have had no further follow up.

We were heartened to see that the interim results of IV’s modelling exercise identify the use of zero emissions hydrogen and biomethane as unlocking the least cost zero carbon future for Victoria. However, we believe the benefits of full-utilisation of gas infrastructure in a zero carbon future compared with electrification are likely to be an order of magnitude larger than those identified in IV’s modelling exercise and more in line with those presented in Gas Vision 2050 (further detail below).

Our specific concerns with the IV modelling exercise are summarised in the GPA Engineering *Review of Infrastructure Victoria’s Gas Infrastructure Interim Report*, included as an attachment to Energy Networks Australia’s submission into this process.

We firmly believe in the role of gas and gas infrastructure in Victoria’s least-cost, fastest, and most stable transition to net zero emissions. This belief is based on the following facts:

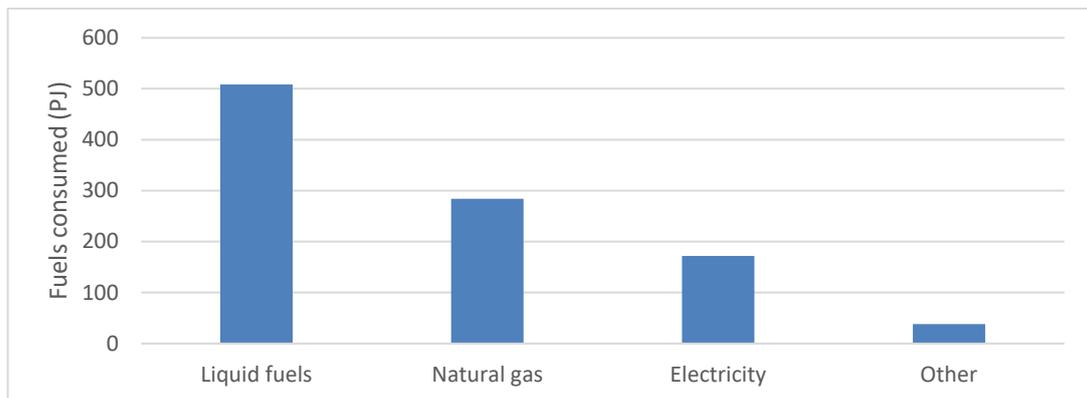
- **Gas is a flexible, low carbon fuel that supports decarbonisation in Victoria today.** Gas currently delivers more energy than electricity in Victoria, at a lower carbon intensity, and will do so beyond 2030.
- **Gas is a fuel in transition, not just a transition fuel.** Our customers value gas, and want to see it transition, while balancing affordability. We are investing to deliver this future.
- **Net zero emissions with gas infrastructure is achievable at half the cost of electrification.** Gas industry modelling suggests that gas infrastructure unlocks least-cost decarbonisation pathways, and this is now being independently verified.
- **Simplified modelling exercises do not value the full benefits that gas infrastructure provides.** Gas infrastructure can deliver enormous sector coupling benefits to Victoria, facilitating circular economies and laying groundwork for zero-carbon export industries.
- **Consideration of pathways is critical, and policies must enable the futures we want to see.** Victoria should adopt a renewable gas target, and ensure that policies to deliver decarbonisation and efficiency are technology neutral.
- **We understand that we need to do our part to enable Victoria's transition to net-zero emissions.** We, and the broader gas transmission and distribution sector are working to deliver net zero emissions for ourselves, and the networks we operate.

Gas is a flexible, low carbon fuel that supports decarbonisation in Victoria today

Today in Victoria, gas provides a flexible, low carbon fuel to households, businesses and industry, while providing critical system strength and supporting renewable penetration in electricity generation.

Gas currently delivers around 1.7 times the energy that the electricity system delivers in Victoria (see Figure 1)

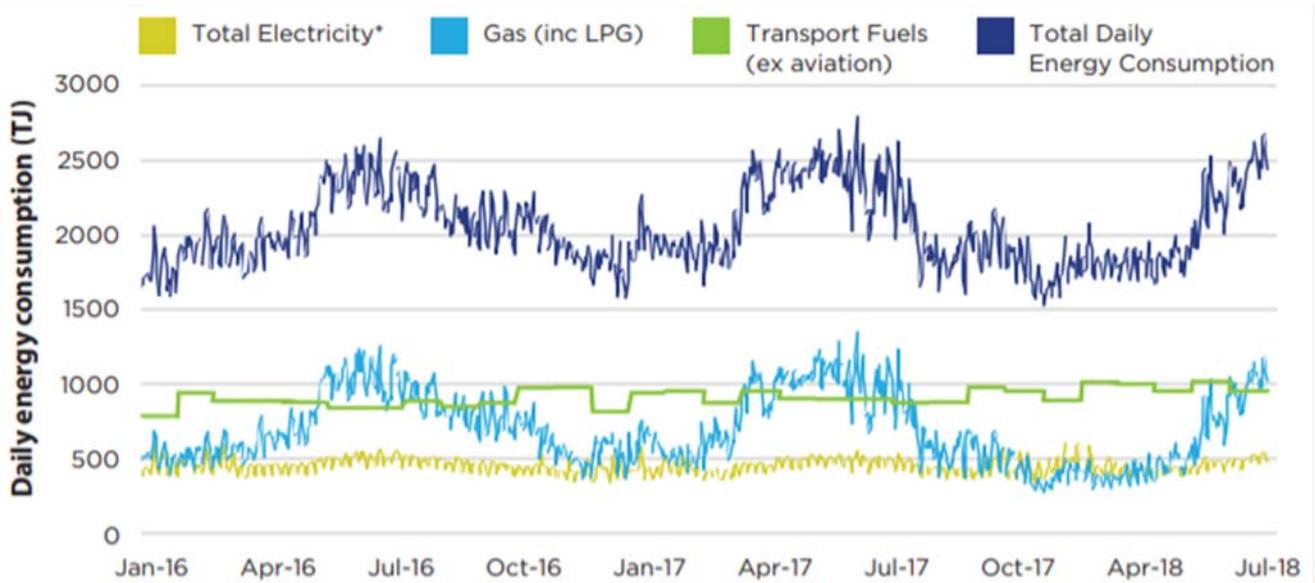
Figure 1:Victorian fuels consumed 2018-19



Source: Department of Industry, Science, Energy and Resources, Australian Energy Statistics, Table F, September 2020

During the peak winter months, gas delivers over two times the energy per day that electricity delivers (see Figure 2), largely in the early mornings and evenings when solar is not producing, and wind may not be.

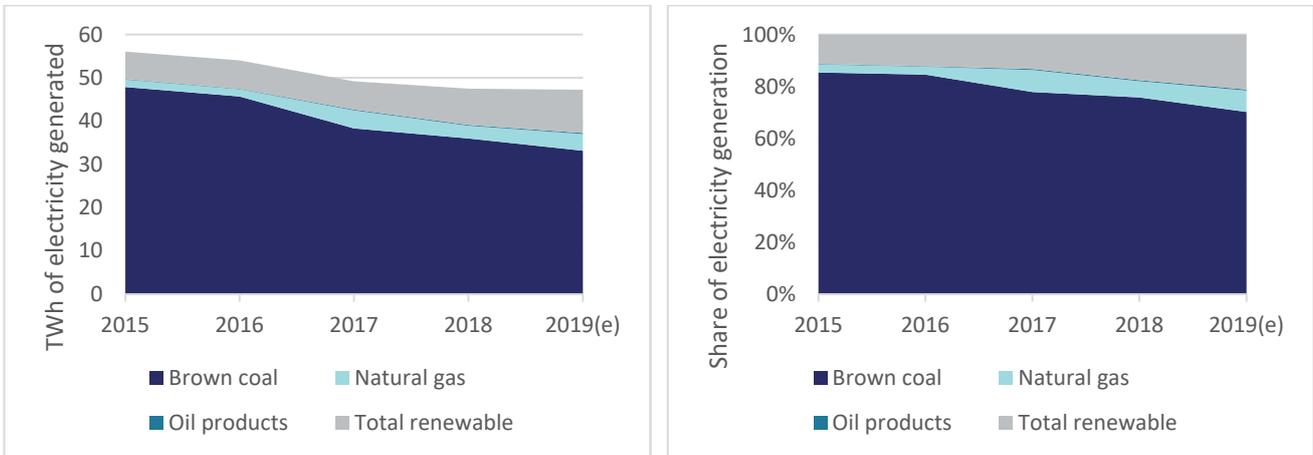
Figure 2: Victorian fuel consumed 2018-19



Source: Energy Networks Australia (2020), [Gas Vision 2050](#). * Total electricity includes electricity generated from all sources, including gas and renewables, total gas includes gas used for power generation. Total consumption removes this double count.

Victoria’s electricity system is currently dominated by brown coal, which generated 70% of Victoria’s electricity in 2019. While renewables are growing strongly, at almost 10% per year from 2015-2019, this is off a low base, making Victoria’s electricity the most carbon intensive in the National Electricity Market (see Figure 3), and at a higher carbon intensity than gas use—particularly at the abovementioned times of day that gas is used.

Figure 3: Victorian electricity generation by fuel type (2015-2019)



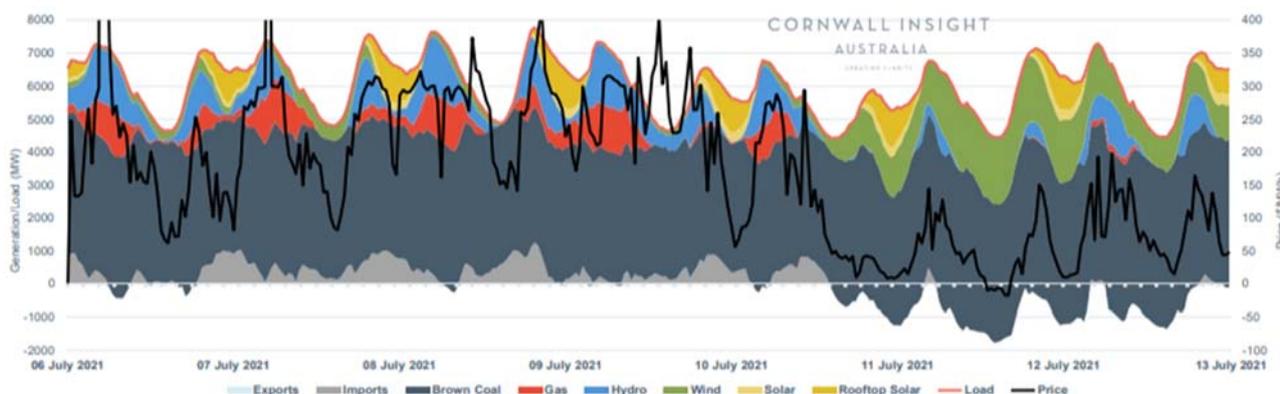
Source: Department of the Industry, Science, Energy and Resources, [Australian Energy Statistics](#), Table O, May 2020

Natural gas provides critical flex and insurance in Victoria’s electricity system at the minute-by-minute, day-by-day, and year-by-year time-scales by being able to ramp up to deliver large amounts of energy in short time periods, then ramp down again. As there are no base-load gas plants in Victoria, gas-powered generation plays this critical firming role while consuming relatively little gas.

Every day in Victoria gas plants stand ready to provide system strength and resilience, and critical peaking capacity as renewables fluctuate and other forms of generation or transmission may be interrupted. Used in this way as a part of Victoria’s overall generation portfolio, gas generation is currently the cheapest way to provide these services, and research indicates that it will remain so in a net zero future (see further detail on this topic below).

In recent weeks, we can see an example of this with the wind drought that the Victorian system experienced from 6-10 July, with Victorian wind farms experiencing a capacity factor of 7%.

Figure 4: Generation by technology and electricity price in Victoria, July 2021



Source: Cornwall Insight Australia (2021). Chart of the week, Issue 92.

Gas-powered generation was able to ramp up to help meet the load over a several-day period, then ramp down again as wind returned.

A little further back, and over a several-month period, we can see in Figure 3 how gas generation was able to step up to maintain reliability in 2017 as Hazelwood power station closed down. Gas generation then ramped down as more low-cost renewables entered the system to replace it. We expect to see this same dynamic play out in the coming years with gas powered generation enabling more of Victoria’s coal plants exit the system safely and reliably.

Gas is a fuel in transition, not just a transition fuel

At Jemena, we see gas as a fuel in transition, not just a transition fuel. Today we use Australia’s abundant reserves of natural gas, but in the future gas will be primarily renewable sources such as biomethane or hydrogen from electrolysis. We firmly believe that gaseous fuels and gas infrastructure will play a critical role in Victoria’s transition to net zero emissions, and will continue to do so once we arrive at the destination.

Our customers tell us that they prefer to use gas, and that they expect it to transition so that they can continue to use it in the longer term as we move to a lower carbon future—while balancing affordability.

Australia’s gas transition is well underway, with increasing numbers of renewable gas projects delivering decarbonised fuels to customers in Australia. Jemena’s own Malabar biomethane project with Sydney water will begin delivering Greenpower accredited zero-carbon biomethane this year, and our Western Sydney Green Gas Project will shortly be doing the same with hydrogen.

Beyond immediate investment in projects, the gas industry is also actively investing in research and development through the Future Fuels Cooperative Research Centre (FFCRC) to better understand and enable this future. The FFCRC brings together industry and government to co-invest \$90 million in funding in collaboration with universities such as the University of Melbourne, RMIT, Deakin University, and other critical stakeholders such as Energy Safe Victoria. The workstreams of the FFCRC and their focus include:

- **Future Fuel Technologies, Systems and Markets:** Understanding the technical, commercial, market barriers and opportunities for the use of future fuels
- **Social Acceptance, Public Safety and Security of Supply:** Studying the social and policy context of the technology and infrastructure associated with future fuels, including public acceptance and safety

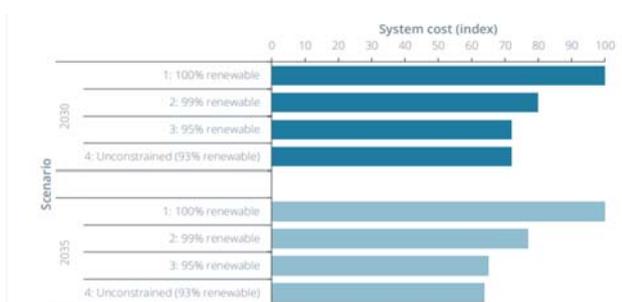
- **Network Lifecycle Management:** Vital components of the energy transfer infrastructure are studied from concept to end of life to safely introduce low carbon fuels

Net zero emissions with gas infrastructure is achievable at half the cost of electrification

The gas industry has commissioned a range of research to understand the least-cost pathways to net zero emissions including [Potential for Gas-Powered Generation to support renewables](#) prepared for the Australian Pipeline and Gas Association (APGA), and [Gas Vision 2050](#).

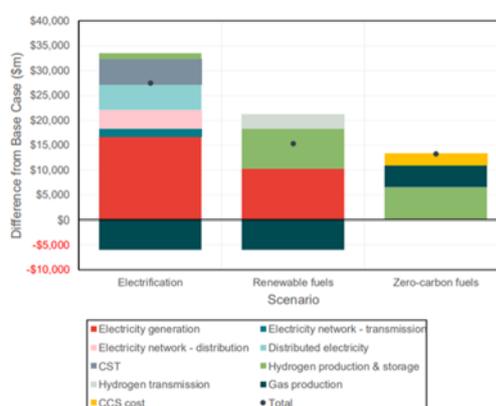
The APGA report showed how gas-powered generation can deliver a net-zero emissions electricity system at dramatically lower cost than a 100% renewable system, while Gas Vision 2050 found that decarbonising gas supply can be done at half the cost of full electrification (see Figure 5 and Figure 6 below). Together, these studies suggest that continued utilisation of gas infrastructure unlocks least-cost and fastest pathways to net zero emissions across Australia's economy.

Figure 5: Indexed electricity system costs for South Australia in 2030 and 2035



Source: APGA (2021), [Potential for Gas-Powered Generation to support renewables](#)

Figure 6: Cost benefit analysis of Australian net zero energy futures enabled by electrification gas versus zero carbon gas pathways



Source: Energy Networks Australia (2020), [Gas Vision 2050](#)

Further breakdown of the Gas Vision 2050 analysis showed that the benefits to the renewable gas pathway are larger in Victoria than Australia as a whole, with electrification costing 2.4 times more. The estimated \$3.7 billion difference in annual costs would be equivalent to around \$350 per Victorian per year in 2050 (in 2020 dollars).

We were pleased to see the findings of the APGA report independently verified by the Grattan Institute in their [Go for net zero: A practical plan for reliable, affordable, low-emissions electricity](#) report published in April 2021.

Given the importance of gas in meeting Victoria's energy needs outlined above, we expect that the GSR and IV scenario analysis modelling exercise will validate the findings of Gas Vision 2050 and find that decarbonisation of infrastructure creates more value to society than electrification of gas load.

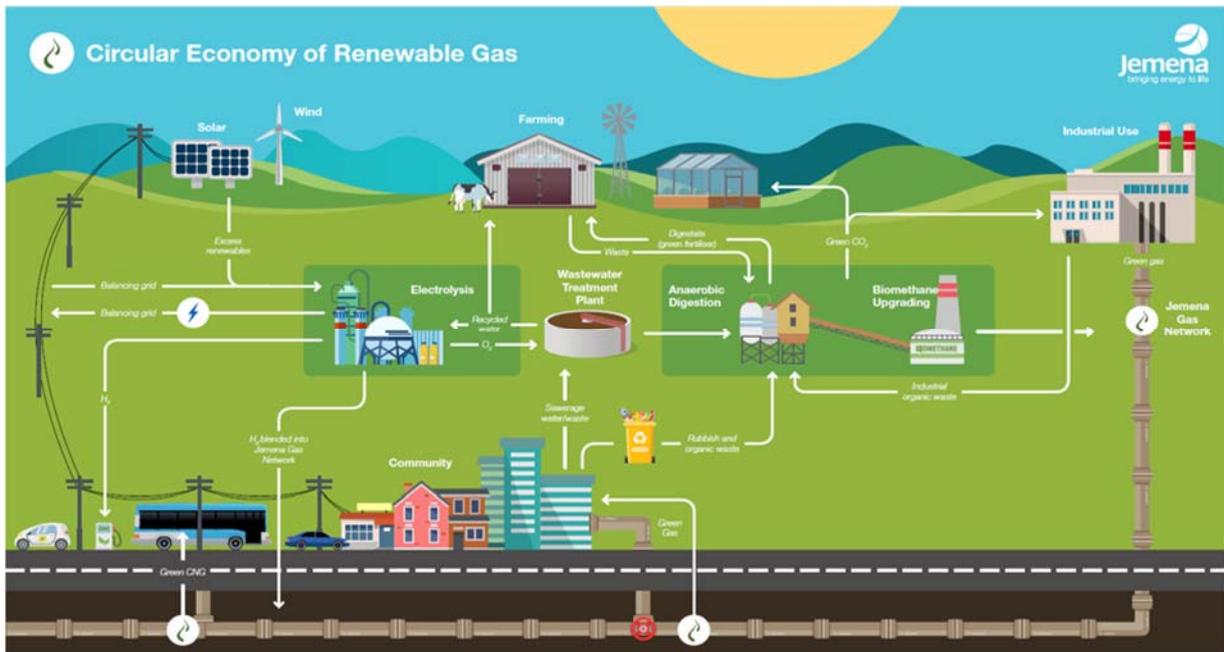
Simplified modelling exercises do not value the full benefits that gas infrastructure provides

The GSR and IV modelling exercises and the Gas Vision 2050 modelling that preceded them are necessarily simplified, focusing only on decarbonisation of existing gas supply. This is understandable, as the modelling exercise already has enough moving parts; however, it excludes large categories of sector coupling benefits and opportunities for Victoria that gas infrastructure provides.

Gas infrastructure, and the zero-carbon future fuels they will transport—such as hydrogen, biomethane, and renewable methane—will unlock least-cost decarbonisation pathways throughout Victoria’s economy.

Beyond the household heating, and industrial load that the modelling exercises will value, future fuels provide decarbonisation pathways, and scope for circular economies in heavy transport, waste and sewage management, chemicals, heavy manufacturing, and many others.

Figure 7: A vision for gas infrastructure in a decarbonised world



We further agree with such policy thinkers as the [Grattan Institute](#), and [Ross Garnaut](#) that Australia has the opportunity to become a renewable energy exporting superpower, and that Victoria can play its part. We believe that these zero-carbon export industries of the 21st century industries will be built on full utilisation of Victoria’s gas infrastructure in its energy transition.

Finally, while we understand the desire to model sensible, achievable scenarios in the GSR modelling exercise, we would encourage the inclusion of a true full-electrification future, to provide genuine understanding of the reliability, affordability and sustainability of an energy system where gas infrastructure is not available. We believe that all options should be on the table, and that further analysis is required before adopting any policies that promote electrification.

Consideration of pathways is critical, and policies must enable the futures we want to see

We recognise that there are unresolved questions on how to best decarbonise gas. However, there are equally difficult unresolved questions on how to fully decarbonise the electricity network; for instance, how to match supply with demand, and how to economically store sufficient quantities of energy to meet peak demand and manage renewable droughts and seasonal fluctuations.

If, as we suspect, Victoria’s least-cost zero carbon future does fully utilise gaseous fuels and gas infrastructure, we must ensure that we have in place policies that will enable this future. We believe that the following are no-regrets policy options for Victoria:

- **Adopt a renewable gas target (RGT):** An RGT could be the jump-start the gas sector needs to truly commercialise zero-emission gases such as hydrogen and biomethane and make them available to Australian homes and businesses at scale. An RGT targeting 10% renewable gas by 2030 would come at modest cost, compared to the magnitude of the benefits it would unlock.

- **Ensure decarbonisation and energy efficiency programs focus on desired outcomes:** Lowering carbon emissions and costs are valid outcomes of government programs. Policies to achieve these aims should be designed in a technology neutral manner that consider the value that gas provides today, and its decarbonisation pathway. Policies that promote electrification of gas load in the near term are likely to be counterproductive given gas is currently the lowest carbon option for energy usage at peak times in Victoria, and is likely to retain this lead well beyond 2030.

We understand that we need to do our part to enable Victoria's transition to net-zero emissions

We understand that the gas sector, and the energy sector more broadly, will have to do a lot of the heavy lifting to achieve our collective goal of net zero emissions. This is why Jemena has adopted our own net zero ambition, and we are working with our gas industry colleagues to deliver a fully decarbonised gas system as well. This plan is detailed in our forthcoming National Gas Decarbonisation Plan, prepared by Energy Networks Australia and APGA, and endorsed by all of our fellow members. Under this plan, we will outline our plan to deliver the following three objectives:

1. Enable blending of up to 10% by volume of renewable and decarbonised gases by 2030.
2. Enable 100% renewable and decarbonised gas supply to new residential developments before 2030.
3. De-risk a full network conversion to 100% renewable and decarbonised gases by 2050.

If you would like further information on Jemena's views on this topic, please contact [REDACTED]

Sincerely,

[REDACTED]