Bluecurrent
Level 2,
101 Carlton Gore Road
Newmarket
Auckland 1023

2 November 2023

Energy Resources Markets Branch
Ministry of Business, Innovation & Employment
15 Stout Street
Wellington 6140

By email: gastransition@mbie.govt.nz

Submission on the Gas Transition Plan Issues Paper

Introduction

1. Bluecurrent (formerly Vector Metering) welcomes the Ministry of Business, Innovation & Employment's (MBIE) consultation on the *Gas Transition Plan Issues Paper* (GTP Issues Paper), dated August 2023. We appreciate MBIE's engagement with stakeholders on the Issues Paper and other papers on energy transition issues during the consultation period.

2. The GTP Issues Paper is a step forward in 'bringing to the surface' the issues that need to be considered in developing pathways for the gas sector as New Zealand transitions to a net zero emissions economy by 2050. The rapid evolution of energy technologies in the context of projected long-term decline in natural gas supply and demand will continue to present ongoing and new challenges and opportunities for the sector.

3. We share the expectations of other gas industry stakeholders that the outcome of this consultation will help shape a regulatory framework that will ensure an orderly, rather than a disruptive, gas sector transition. In our view, such a framework is one that ensures the risk of stranding long-lived assets is avoided, and incentivises the delivery of affordable energy to consumers, particularly small consumers, throughout the transition.

4. As a metering service provider, Bluecurrent deploys long-lived advanced (or 'smart') gas and electricity meters, which help enable an orderly energy transition. The benefits of advanced gas meters to retailers and consumers are widely recognised, and their value for gas pipeline network management purposes is increasingly being sought. We describe these benefits further below.

5. This submission broadly responds to the issues raised in Chapters 2 and 3 of the GTP Issues Paper, focusing on gas delivered through the existing natural gas pipeline networks. We highlight the need for ongoing and new investment in advanced gas metering infrastructure to support the delivery of affordable gas into the transition.

6. This submission further includes our comments on the potential blending of biomethane (from biogas) with natural gas in the pipeline networks in the near term, and the potential for hydrogen blending in the longer term. The injection of renewable gas into the existing pipeline networks could have significant implications for advanced gas metering.

7. Bluecurrent is making a separate submission on MBIE's consultation paper on *Measures for Transition to an Expanded and Highly Renewable Electricity System*, which was released alongside the GTP Issues Paper.

Bluecurrent

8. Bluecurrent provides a cost-effective end-to-end suite of energy metering and control services to energy retailers, distributors, and customers in New Zealand and Australia. Our solutions enable customers to manage energy more efficiently. We provide tools and information to retailers and network companies to allow them to operate their business effectively and help their customers

manage their energy needs. We provide future proofed advanced metering infrastructure that is flexible enough to enable customisation and meet customers' future requirements.

9. While the majority of the advanced meters we have deployed in New Zealand are in the electricity sector, we have deployed approximately 60,000 advanced gas meters on behalf of retailers as at September 2023. Our ongoing deployment of advanced gas meters enables end-use consumers who have advanced meters, and where retailers provide this service, to see detailed information about their gas usage. This enables them to make decisions about their gas consumption long before their bill arrives.

The benefits of advanced gas meters

10. The benefits of advanced gas meters to retailers and end-use consumers are now widely acknowledged. While the benefits of advanced meters for gas pipeline network management purposes have not gained as much prominence as the benefits for electricity networks, the benefits for the former are starting to be recognised and sought.

11. For gas retailers, advanced gas metering removes the need for onsite meter readings as gas usage information is sent wirelessly and securely, avoiding the costs, health and safety hazards, and emissions associated with manual meter reading. More frequent/timely reading of customers' gas consumption, enabled by advanced gas meters, means there is less need to estimate consumption data, i.e. it allows actual monthly reading/billing instead of every two months. A reduced amount of estimated data also means fewer consumer complaints.

12. For end-use consumers, the timely delivery of consumption data and gas bills, enabled by advanced gas meters, allows them to make timely and more informed energy consumption and investment decisions. This also enhances end-use consumers' ability to switch to retailers who could provide better market offerings – enhancing consumer choice.

13. More timely consumption data generated by advanced gas meters enables the gas industry to better support industry resilience, e.g. during a pandemic. It allows service providers to better target their support measures to end-use consumers in hardship, helping ensure energy affordability and the delivery of support for those consumers in a timely manner. The ability of end-use consumers to switch to more frequent billing/payment, enabled by advanced gas meters, will also help those in hardship better manage their gas bills and finances.

14. For gas distribution network businesses, advanced gas meter data enables them to more efficiently manage their pipeline network, respond to emergencies in a timely manner, and optimise their investment for the energy transition. The network benefits of advanced gas meter data are described by Vector in its September 2023 submission to the Gas Industry Company (Gas Industry Co) on advanced gas metering infrastructure priorities:

> ...Access to data is critical to unlocking value across the energy industry and for gas distributors to have a better line of sight across their network to inform their operational plans so that investments are optimised, response to emergencies and failures is swifter, interruptions are reduced, and modelling and forecasting can be verified. All of this is critical to the new gas future that we envisage.[1]
>
> ...Smart gas meter data can provide a much-needed line of sight for gas distributors to better understand this unprecedented change, through valuable data insights and visibility of usage patterns and levels across household, street and network levels, at a much more granular level than has ever been the case.[2]

---

[1] https://www.gasindustry.co.nz/assets/CoverDocument/Vector-submission-Advanced-Gas-Metering-Infrastructure-Consultation-Paper.pdf, page 1

[2] *Ibid.*

> ...Smart gas meter data would give gas distribution businesses granular visibility of usage on their network, so that assets and the network itself can be planned and managed through their long-lived cycle. By analysing historical consumption trends and understanding peak usage periods, distributors can optimise their distribution systems to meet customer needs efficiently. This aids the industry in avoiding supply shortages or excess capacity, leading to more effective resource allocation and cost savings. Smart meter data can also deliver the following, more specific material benefits, as it has for the electricity industry:
>
> a. optimised infrastructure spending and planning;
> b. improved network operations practices;
> c. increased reliability and resilience, including the ability to act more swiftly in network failures and emergencies; and
> d. verified modelling and forecasting for network operations, including for connection applications.[3]

15. More broadly, advanced gas meters contribute to more efficient market processes and better gas network management, reducing costs and instilling consumer confidence in the transitioning gas sector.

Advanced gas metering infrastructure and the gas transition

16. The gas sector has an ongoing role in the energy transition. As noted by MBIE:

> ...In addition to providing heating for homes, fossil gas is currently essential for many industrial processes, and for reliably generating electricity when other sources are not available.[4]
>
> ...It is almost certain New Zealand will need a level of reliable gas supply for years to come.[5]

17. Gas remains a fuel of choice for many consumers, most of whom are supplied by the existing natural gas pipeline networks. Statistics published by Gas Industry Co indicates that the number of gas connections continues to increase month on month.[6] The long-term replacement of gas therefore requires careful consideration to ensure an orderly transition – where gas end-use consumers are not disadvantaged, and energy is affordable throughout the transition period.

18. An orderly gas transition will require demand and supply side solutions, and ongoing and new investment.

> There are many ways the fossil gas sector could achieve our emissions reduction goals and maintain its critical role...All require investment from the sector, both in maintaining gas supply and in projects that deliver tangible emissions reduction benefits.[7]

19. An orderly gas transition will require ongoing investment to maintain gas supply to meet energy needs.

> ...one of the key challenges of the gas sector is ensuring that investment in gas supply continues for an appropriate period of time so that the needs of the gas industry, and the electricity system continue to be met for as long as we need them.[8]
>
> ...Private sector investment will be needed to make the most of the opportunities presented by the transition. This investment will require confidence in regulatory and policy settings.[9]

---

[3] https://www.gasindustry.co.nz/assets/CoverDocument/Vector-submission-Advanced-Gas-Metering-Infrastructure-Consultation-Paper.pdf, page 2
[4] https://www.mbie.govt.nz/dmsdocument/26910-advancing-new-zealands-energy-transition-pdf, page 12
[5] GTP Issues Paper, page 5
[6] https://www.gasindustry.co.nz/data/switching/
[7] GTP Issues Paper, page 48
[8] *Ibid.*, page 5
[9] *Ibid.*, page 6

> Underinvestment in…maintaining gas infrastructure could undermine security of supply for both the gas industry and the wider energy system.[10]

20. We note the GTP Issues Paper's statement that the (previous) government had not proposed phasing out existing residential gas connections.[11]

21. An orderly gas transition would also require new investment to support emissions reduction in the gas sector, and "not lock…in older and poorly performing assets":[12] In an orderly transition:

> …investment is enabled, and…the sector meets emissions reductions objectives in an economically efficient way.[13]
>
> …Switching involves not just an ongoing operational cost, but also capital investment in appliances, and can involve substantial renovation costs where re-modelling is required.[14]
>
> …There is a risk if consumers rapidly switch away from fossil gas that [*residential consumers*]… particularly low-income users and renters, will be burdened with a rapidly increasing share of pipeline costs.[15]

22. In an orderly gas transition, there is greater certainty and confidence in regulatory and market settings that help provide greater certainty for continued and new investment in the sector.

> Without greater certainty, capital investment in the gas sector will get harder to attract because of…increasing risk profiles and uncertainties about returns on investment…[16]

23. We believe that the right regulatory and market settings that facilitate an orderly gas transition are those that reduce risks that can chill investment, and avoid asset stranding, particularly long-lived assets. The right settings are those that ensure that unintended consequences (e.g. inefficient/unfair allocation of costs) and harm to end-use consumers (e.g. unaffordable energy) are avoided.

24. Advanced gas meters form part of the gas sector infrastructure that will help facilitate an orderly transition of the gas sector. Ongoing investment in advanced gas metering deployment helps ensure that old technology is not locked in and innovation in the gas sector is not stymied. This ensures that the benefits of advanced meters – which enable greater market efficiency and provide end-use consumers greater control over their energy costs – are delivered in a timely manner. As such, advanced gas metering infrastructure should be captured as an important component of any proposed gas transition strategy or plan.

25. We broadly support the 'Priority A' issues identified by Gas Industry Co for advanced gas metering infrastructure which are intended to be addressed through a non-regulatory 'minimum standard' guidelines approach. These issues include: access to, use and security of gas consumer data; minimum data standards and file formats; gas registry and switching process changes; and downstream reconciliation and D+1 (daily allocation). These issues were considered by the Advanced Gas Metering Infrastructure working group and had been subject to stakeholder consultations. In our view, focusing on these priority issues will help ensure an efficient, competitive market for advanced gas metering services into the transition period.

---

[10] GTP Issues Paper, page 23
[11] *Ibid.*, page 21
[12] https://www.mbie.govt.nz/dmsdocument/26910-advancing-new-zealands-energy-transition-pdf, page 2
[13] GTP Issues Paper, page 48
[14] *Ibid.*, page 21
[15] *Ibid.*, page 26
[16] *Ibid.*, page 23

Advanced gas meters and renewable gases

26. The GTP Issues Paper indicates that "the challenge for the fossil gas sector is not just about reducing emissions, it is about the evolving role of fossil gas in supporting the wider energy transition and the New Zealand economy".[17]

27. As far as the evolution of the role of gas delivered via the pipeline networks is concerned, the blending of biomethane (from biogas) and hydrogen into the pipeline networks appear to show the most promise, albeit with different timeframes and challenges. According to Gas Industry Co:

> Our research has shown that biomethane is a viable option for the future of residential and small commercial consumers. There is a limit to the volume of biomethane that can be supplied at feasible prices with existing technology, but sufficient biomethane exists in New Zealand today to begin blending it in local networks.[18]
>
> ...Economic analysis concluded that hydrogen is likely to fill some specific niches in [*the*] economy, but it is unlikely to play a significant role in gas pipelines before 2035. Biogas is available and economic for a role immediately. Sufficient biogas is available today to blend the equivalent of about 20% of residential consumption in natural gas networks at feasible prices for consumers. More biogas could be available when less mature technology becomes commercial if it can make prices more feasible.[19]
>
> ...there is work underway both within government and the private sector to prepare for the possibility of hydrogen blending in the reticulated network.[20]

28. According to MBIE:

> There may be an opportunity to reduce reliance on fossil gas through expanding the use of biogas blends in existing fossil gas infrastructure. The timing and scale of this opportunity to offset fossil gas use is uncertain but promising.[21]
>
> ...Biogas blending into distribution networks for use by residential and commercial consumers could be feasible in the short term because of the small relative cost of gas as a component of final energy bills.[22]

29. As for the potential emergence of hydrogen for blending into the pipeline network, MBIE notes that:

> There may be opportunities to reuse parts of existing fossil gas infrastructure for large scale hydrogen use, but this depends greatly on future decisions on the existing gas network, such as whether biogas will be used in the system in the long term.[23]
>
> Although hydrogen is unlikely to be a complete gas transition solution...it may have a role to play as part of the transition. Blended hydrogen may be viable to decarbonise fossil gas in blend of up to 20 per cent...[24]
>
> We do not see an explicit role for hydrogen in the reticulated network until at least the mid-2030s. This is because the main alternative, biomethane, is expected to be cheaper and more readily compatible with the existing network in the medium term.[25]

---

[17] GTP Issues Paper, page 7
[18] https://www.gasindustry.co.nz/assets/DMSDocumentsOld/annual-reports/2023-Gas-Industry-Company-Annual-Report.pdf, page 14
[19] *Ibid.*, page 24
[20] https://www.mbie.govt.nz/dmsdocument/26911-interim-hydrogen-roadmap-pdf, page 34
[21] GTP Issues paper, page 10
[22] *Ibid.*, page 31
[23] https://www.mbie.govt.nz/dmsdocument/26911-interim-hydrogen-roadmap-pdf, page 51
[24] GTP Issue Paper, page 35
[25] https://www.mbie.govt.nz/dmsdocument/26911-interim-hydrogen-roadmap-pdf, page 34

Biogas and biomethane

30. The GTP Issues Paper considers the potential for blending biomethane with natural gas in the pipeline:

> ...There is...potential to make use of existing fossil gas assets through upgrading biogas to biomethane and blending it into gas pipelines.[26]
>
> Some biogas can be upgraded to biomethane, and injected into the fossil gas network at relatively low cost.[27]
>
> ...upgrading of biogas to biomethane are well understood technologies...[28]
>
> Smaller quantities of biogas can be produced at much more economic cost and play an important role in decarbonising key areas of the fossil gas sector.[29]
>
> ...Biogas blending in pipelines could provide a low emissions option for consumers who are willing to pay a small premium and could smooth the rate of change and associated impacts on the electricity network.[30]

31. The GTP Issues Paper suggests the blending of biomethane with piped natural gas in the immediate future to be promising:

> ...The total accessible and economic size of biogas potential before 2035 is estimated to be about seven PJ/yr. This volume is about the same size of the current residential and small commercial fossil gas market.[31]
>
> Biogas blending in distribution pipelines could be viewed as an interim measure which would provide more choices for consumers and could facilitate the development of a biogas market in the short term out to 2035.[32]

Hydrogen

32. The GTP Issues Paper and the *Interim Hydrogen Roadmap* (that was also released as part of the consultation package) explore the multiple existing and potential uses of hydrogen, including its potential injection into the gas pipeline system:

> Hydrogen...has the potential to be blended with fossil gas in concentrations of up to 20 per cent while being compatible [*with*] existing piping, valves, fittings and appliances. Hydrogen blending is being explored internationally and in New Zealand through pilot schemes for real world testing.[33]
>
> In its current state, the existing gas pipeline system could carry up to 20 per cent hydrogen blended with fossil gas throughout the North Island without modification. To transport a greater proportion of hydrogen, capital investment would be required to upgrade the gas pipeline system. Transmission and distribution networks would need to be updated to account for the change in fuel consumption and deal with practical issues like embrittlement and potential cracking of steel pipes when exposed to high pressure hydrogen.[34]

---

[26] GTP Issues Paper, page 30
[27] *Ibid.*, page 29
[28] *Ibid.*
[29] *Ibid.*
[30] *Ibid.*, page 9
[31] *Ibid.*, page 30
[32] *Ibid.*, page 32
[33] https://www.mbie.govt.nz/dmsdocument/26911-interim-hydrogen-roadmap-pdf, page 34
[34] GTP Issues Paper, page 35

> ...there is work underway to update standards for the reticulated gas network to accommodate hydrogen blends, as well as biogas.[35]

33. The above papers indicate a greater degree of uncertainty around the potential use of hydrogen for blending into gas pipelines, including timeframe (compared to biomethane):

> Blended hydrogen may be viable in the gas network, but it is likely to be much more expensive than other emissions reduction options at least until the mid-2030s.[36]
>
> Hydrogen could also be used in the existing gas network blended with fossil gas and biogas, and potentially as a complete replacement in the network in the future. However, these uses are uncertain due to high costs compared to alternatives, the need to adapt existing gas infrastructure and appliances in higher hydrogen concentrations and how a future hydrogen market might develop.[37]
>
> ...Depending on the shape of a future hydrogen market in New Zealand, the gas network could be completely repurposed over time to carry 100 per cent green hydrogen for distribution to end uses. However, this is uncertain as unlike the current fossil gas system, production of green hydrogen may be more decentralised as the required inputs, electricity and water, are far less geographically concentrated than fossil gas deposits.[38]

34. The above uncertainties around hydrogen blending for gas pipeline use has led MBIE to adopt the following view in the GTP Issues Paper:

> Given...uncertainties, we do not currently consider hydrogen should be the focus for complete replacement of fossil gas as a transition strategy before 2035.[39]

35. The blending of natural gas with biomethane or hydrogen for pipeline networks is likely to require changes to the Gas Act 1992. It may further require changes to the New Zealand standard and/or quality requirements; for example, requirements around gas composition and odorisation to ensure that hydrogen is detected. This could involve changes to specifications that fall outside of the current acceptable range, which may raise issues around the efficient and safe operation of equipment and appliances. In this regard, we note that:

> ...Standards New Zealand has recently announced it is starting work to review NZS 5442:2008, which is the New Zealand specification for reticulated gas. The work will consider changes to update the standard to be appropriate for biogas and hydrogen blends of fossil-based methane gas in the reticulated network.[40]

36. The blending of renewable gas with piped natural gas may pose a risk associated with ultrasonic meters[41] due to variations in gas composition. It could have an impact on the accuracy of meters, e.g. meters could become inaccurate as they are 'tuned' for New Zealand natural gas composition.

37. The hydrogen blending limit is also constrained by the Wobbe index moving outside its acceptable range. The index needs to be within range; otherwise, there is a risk of adverse impact on appliances, resulting in health and safety risk, e.g. combustion.

38. To our knowledge, currently used ultrasonic meters can accommodate a blend of up to 23% hydrogen. Anything above this level would require the installation of new ultrasonic meters at significant cost, which can have implications for the lives of these long-lived assets and future investment.

---

[35] GTP Issues Paper, page 35
[36] *Ibid.*, page 33
[37] *Ibid.*, page 11
[38] *Ibid.*, page 36
[39] *Ibid.*
[40] https://www.mbie.govt.nz/dmsdocument/26911-interim-hydrogen-roadmap-pdf, page 34
[41] Ultrasonic meters measure the flow rate of gases without the need for moving parts or contact with the gas.

39. The potential adverse impact of injecting hydrogen into the gas pipeline system, where certain thresholds are breached, could have implications for the accuracy of gas market transactions. The setting of new thresholds, including changes to the Gas Specification, are likely to have implications for compliance with gas regulations and rules, including the Gas Safety and Measurement Regulations 2010. More broadly, this could require changes to gas governance arrangements, pipeline codes, and other relevant regulatory and industry and market arrangements.

40. Furthermore, we understand that introducing hydrogen to the market could have implications for the use of meters across different types of gases, such as LPG.

Markets for renewable gases

41. The GTP Issues Paper further considers the development of markets for renewable gases and how this can be facilitated. This is intended to increase transparency around the availability and value of renewable gases and help inform investment decisions.

> ...To encourage development of a biogas market, it will be important to have a system through which consumers can choose to "virtually" purchase gas from biogas producers at a premium price, so that even though they are physically consuming a mixture of biomethane and fossil gas, they are in effect only paying for biomethane.[42]
>
> Renewable gas certification provides a way for gas suppliers and gas consumers to buy and sell the renewable attributes of gases. Such schemes are designed to grow the use of renewable gases and transition away from fossil gas, by allowing consumers to choose to pay for renewable options.[43]
>
> We have heard from stakeholders that a certification scheme for renewable gases like biomethane and green hydrogen could improve their availability and facilitate investment in the sector.[44]

42. The GTP Issues Paper indicates that "Gas Industry Co is currently considering work to develop a regulatory framework and monitoring regime for renewable gas certification providers" which "would be part of a broader renewable gas workstream...[45]

43. We would, in principle, support measures that would facilitate the trading of renewable gases. This will promote greater transparency on the commercial availability and value of these gases as the gas sector transitions.

Greater certainty through clearer and timely signals and information

44. While the GTP Issues Paper identifies many of the issues that need to be considered to inform near-term policy and the strategic direction of the gas sector, "the pace of demand change is uncertain".[46] The projected long-term decline in supply and demand will result in higher levels of variability in demand and reduced supply side flexibility. This will necessitate more timely signals to gas industry participants and consumers to enable them to better navigate the gas transition.

45. In addition to ensuring that stranding of long-lived assets is avoided, we suggest that the government and MBIE consider undertaking the following measures/actions to further provide greater certainty to gas industry participants and consumers:

- ***Providing timely signals around future changes to the Gas Act 1992*** (the Act) – While amending the Act to accommodate renewable gases in the regulatory framework has been

---

[42] GTP Issues Paper, page 31
[43] *Ibid.*, page 38
[44] *Ibid.*
[45] *Ibid.*
[46] *Ibid.*, page 8

mooted for a few years now, future strategic documents could provide more definitive timeframes for this process and what future legislative changes, and consequential regulatory and rule changes, could look like. For example, it could signal what provisions could be introduced or amended to ensure gas blending ratios are within the acceptable limit.

- ***Refreshing the Government Policy Statement on Gas Governance*** (GPS) – The GPS has not been amended since its publication in 2008 – a testament to its robustness. The rapid evolution of the energy sector, however, necessitates a regular refresh of the GPS to reflect the changing role of gas in the energy transition.

- ***Providing regular updates on renewable gas supply and demand, and renewable gas trials*** – We would support Gas Industry Co expanding its annual long-term gas supply and demand scenarios report to include renewable gases. This annual report could also provide updates on recently concluded and ongoing biomethane and hydrogen trials, and the emergence of markets for renewable gases. We suggest that participation in any publicly funded renewable gas trials be open to potentially affected parties on a contestable basis. We further suggest that insights from such trials be published for the benefit of all industry participants and consumers.

- ***Capturing advanced gas metering infrastructure as part of any gas transition plan*** – We suggest that any plan for the transition of the gas sector explicitly include advanced gas meters as part of the infrastructure enabling an orderly transition. As an initial step, the development of such a plan could integrate Gas Industry Co's advanced gas metering infrastructure priorities into, or link them to, the plan. Addressing these priorities, which will be enabled by advanced gas meters, will help industry participants and consumers make more informed gas transition decisions.

- ***Allowing metering service providers to provide advanced gas meter data directly to gas distribution networks via commercial arrangements*** – This would be akin to the approach being proposed for the provision of power quality data (or network operational data) in the electricity sector. This will enable gas distribution businesses to manage their network more efficiently, in support of an orderly gas transition. We believe any such measure would require changes to the relevant gas regulations and/or rules.

Concluding comments

46. Bluecurrent would be happy to further discuss gas metering issues related to the gas sector transition with MBIE officials or share our experience in deploying advanced gas meters in New Zealand. Please contact Luz Rose (Senior Regulatory and Policy Partner) at Luz.Rose@vectormetering.com in the first instance.

47. No part of this submission is confidential, and we are happy for MBIE to publish it in its entirety.

Yours sincerely

Neil Williams
Chief Executive