MEMORANDUM

TO: GTAC Stakeholders

FROM: First Gas

DATE: 3 July 2018

RE: Workstream 3 – 3.1 Mass Market Nomination Scheme

This memo provides an overview of the UK National Grid mass market nomination scheme and explores how a similar scheme could be implemented in New Zealand under the proposed new Gas Transmission Access Code (GTAC). This will be discussed with stakeholders at the GTAC workshop on 12 July 2018, focusing on the following questions:

- Is a scheme like this a good idea for the GTAC? If so, what are the critical design features of the scheme for it to work in New Zealand?
- What further work is needed to finalise the design and who should be involved?
- Should this scheme be incorporated into the GTAC that is resubmitted to the GIC, or should this initiative wait for a subsequent code change process?

Final Assessment Paper (FAP) Findings

The findings of the FAP were as follows:

- The increased nomination workload would largely fall on shippers who ship gas to shared DPs. (46)

The FAP notes that:

> *In the UK shippers enter daily nominations for entry and exit and are responsible for forecasting their daily flows at all entry points cover gas production, LNG terminal, cross border interconnections and storage withdrawals. But for distribution networks supply the mass-market a different set of arrangements apply. There shippers forecast the daily flows to their largest end-users, who will have daily metering (DM) or time-of-use metering. The expected flows to non-daily metered (NDM) end-users are made by the pipeline operator through a top-down estimation and allocation process. The NDM nominations for each shipper are made by the pipeline operator based on the number and class of registered end-users for that shipper. (The network code requires all end-users with annual consumption in excess of 210,000 GJ to have DM and provides for voluntary DM down to 2,600 GJ.*

Such a system would potentially reduce the nomination burden on mass market shippers and First Gas is keen to explore whether implementing a similar approach is by stakeholders.

UK NDM Nominations Scheme

Under the Unified Network Code (UNC) for the UK National Grid (Transmission Operator), demand at NDM supply points is estimated by the Transmission Operator (TO). No nominations for gas are required for these NDM supply points as these are made automatically by the TSO. Shippers do, however, need to book capacity for the flows. Capacity is separated from scheduling in the UK UNC.

- *Who does it apply to?*
  The process applies to any supply points that serve NDM sites. NDM sites could be residential, commercial or light industrial. The determining factor is that the meter is not read daily. The threshold for requiring a daily meter reading is 210 TJ/year.

- *How is the nomination made?*
  The nomination is made by the TO and issued an hour prior to the nomination cut-off. No nomination is made by the shipper and shippers cannot overwrite the nomination.

- *What's the technical basis for the nomination?*
  The nomination is built from sophisticated modelling of based on the type of users served by the point, usage profiles of different types of users, normalised weather patterns, and user responsiveness to weather. These factors are developed by XOserve[1] as a service to the National Grid[2]. The National Grid the combines this with highly granular weather forecast data to create the NDM estimations. These are relatively accurate – generally within 1-2% of actual flows[3].

- *Who administers the scheme?*
  While the TO makes the nominations on behalf of the shipper, the company running the nominations system (XOserve) is responsible for data analysis and technical development of the demand estimation process. The demand estimation methodology is overseen by the Demand Estimation Subcommittee of shippers convened by the Joint Office of Gas Transporters (which oversees the UNC).

- *What are the contractual obligations of the shippers in relation to the nomination?*
  Shippers with NDM nominations are not subject to scheduling charges[4], which are levied on shippers making nominations. These shippers remain subject to capacity, commodity and balancing charges.

[1] Xoserve is a company jointly owned by the UK National Grid and 5 of the major distribution companies
[2] For an overview of the factors considered: https://www.xoserve.com/index.php/demand-estimation-key-parameters/
[3] Joint Office of Gas Transporters, https://www.xoserve.com/index.php/demand-estimation-timetable/, NDM Nomination Accuracy Report
[4] Scheduling charges are levied at a rate of 1% of the system average price for the day in question. The system average price is the weighted average price for balancing gas transactions made by the TSO on that day

- *Who pays for the service?*
  The service is funded 50% by shippers and 50% by distribution companies[5]. The cost for this service in the 2018/19 year is £1.3 million[6] ($2.6 million NZD).

The NDM estimation scheme offers some certainty to mass market shippers over costs of their nominations as the operation of the daily estimation scheme is passed through as a fixed charge per gigajoule of gas. However, the model is costly to run and requires substantial industry oversight to implement (10-person industry committee with monthly meetings). Moreover, as the capacity booking revenue is decoupled from the scheduling revenue (via entry and exit nominations over different time horizons), the incentives on accurate nominations are different from the GTAC where the scheduling and capacity booking are provided as a bundled service.

New Zealand and UK Market Contexts

The table below compares some of the key characteristics of the UK and NZ gas industries.

	NZ	**UK**
Transmission pipeline length	2,505 km	7,660 km
No. of distribution companies	4	8 + Independent Gas Transporters serving local embedded networks
Capacity booking model	Daily capacity booking (under GTAC)	Regular auctions of entry and exit capacity
Daily scheduling model	Combined with capacity booking	Daily nominations for delivery of gas

New Zealand gas demand was 191 PJ in 2016[7] while in the UK demand through the transmission system was 2,939 PJ[8]. Gas demand by sector in the two countries is shown in the next table. This shows that industrial use currently dominates in New Zealand, whereas residential and commercial use accounts for a greater proportion of total gas use in the UK.

[5] Xoserve, Budget and Charging Methodology, https://www.xoserve.com/wp-content/uploads/BUDGET-AND-CHARGING-METHODOLOGY.pdf
[6] Xoserver, Annual Charging Statement, https://www.xoserve.com/wp-content/uploads/CDSP-Annual-Charging-Statement.pdf
[7] Gas Industry Company, Gas Industry Key Facts, http://gasindustry.co.nz/dmsdocument/5457
[8] UK National Grid, Gas Ten Year Statement, Figure 2.5, https://www.nationalgrid.com/uk/publications/gas-ten-year-statement-gtys

	NZ (%)	UK (%)
Electricity generation	26.5	30
Industrial (Total) *Petrochemical feedstock* *Petrochemical process* *Industrial*	65.8 *20.5* *30.5* *14.8*	23
Commercial	4.2	6
Residential	3.5	41

The impact of domestic demand in the UK is best demonstrated by peak usage during the winter months. In the 2015/16 winter, Non-Daily Metered (NDM – domestic and commercial customers) consumption was 87% of total demand[9]. The consumption of these users is heavily dependent on weather patterns in the UK due to space heating needs.

Allocated/shared gates represent around 20% of consumption in NZ, with the remaining 80% of gas consumed at dedicated delivery points (DDPs). Gas demand is largely driven by industrial use that is metered using TOU meters or telemetry, with a much smaller proportion of gas on NDM supply. While residential demand in NZ (like the UK) is driven by weather, given the difference in the uptake of gas for space heating demand is less affected by weather as it is in the UK.

Principles for a Mass Market Nomination Scheme for the GTAC

The discussion above highlights some important differences between the NZ gas transmission system and the UK National Grid, the contracting models and gas markets.

We think that for a mass market auto-nomination system to be implemented in the GTAC:

- The system would need to be cost-effective to implement
- The system would need to achieve a reduction in effort and/or risk for Mass Market Shippers commensurate with the cost imposed
- There would need to be equity in terms of cost with shippers making nominations
- Shippers would have the option of overwriting the nomination.

If a system of similar complexity to that of the UK were to be implemented in NZ, the cost per unit of gas delivered to allocated gates would be around $0.07/GJ NZD. This is based on additional annual opex of $2.6 million (as per the UK), which equates to around a 5% increase in First Gas' annual opex. We believe that any New Zealand scheme should seek to come at a significantly lower cost.

[9] UK National Grid, Winter Outlook 2017/18, p45, https://www.nationalgrid.com/sites/default/files/documents/Winter%20Outlook%20Report%20FINAL.pdf

Moreover, as the allocated gate demand in New Zealand is still largely commercial and industrial, there is only a relatively small proportion of demand that is driven by weather. It is therefore questionable whether sophisticated weather modelling would be as useful as in the UK where space heating is a high proportion of load. It is likely that the cost of the scheme would decrease if the modelling was less sophisticated.

Options for integrating into GTAC

The following outlines some core design elements and options for a mass-market nomination scheme in the GTAC:

- *Core design elements: Who would it apply to?*
  The scheme would apply to loads in allocation groups 5 and 6 under the downstream reconciliation rules for gas delivered to allocated gates. Shippers would need to nominate separately for non-mass market load that they supply in each delivery zone. Congested points would be excluded from the scheme.

- *How would the nomination be made?*
  The nomination would be made by the TSO and issued one hour prior to the ID cycle deadline to allow for review by the shipper. If there was no communication from the shipper, it would be deemed approved.

In addition to these core features, we see some characteristics that could be designed into the scheme, depending on stakeholder preferences and demand. These characteristics are presented in the following table and grouped into two options (although it would be possible to mix and match different rows of the column to form other options). Option 1 provides an illustration of a more sophisticated (and probably higher cost estimation scheme), while Option two is simpler and more mechanistic (but probably less accurate).

	Option 1	Option 2
Technical basis for nomination	Estimate based on ICP data from that area for the load type and time of year.	Average of last 10 deliveries for that point
Who calculates the nomination?	Third party contracted by industry	TSO
Industry Oversight	Committee would be required to oversee the third party contract performance and drive demand research programme to improve modelling accuracy.	None required as simple average
Charging	Premium on DNC (likely to be around $0.05/GJ) to fund contract with third party. This would fund the service, plus research and development of models to underpin the scheme	Net overrun/underrun charge per GJ shipped under the scheme based on the average % net overrun/underrun charge per GJ shipped for all shippers on the network
Funding	GIC levy	Within existing First Gas revenue cap

Initial evaluation of options

We have assessed the scheme against the following criteria which we outlined earlier in this paper:

- The system would need to be cost-effective to implement
- The system would need to achieve a reduction in cost or risk for Mass Market Shippers commensurate with the cost imposed
- There would need to be equity in terms of cost with shippers making nominations
- Shippers would have the option of overwriting the nomination.

Although the last criterion was not in the FAP, we have added this as we consider it is important that our customers can choose how to manage their nominations. The following table set out our assessment of the scheme options against these criteria.

	Option 1	Option 2
Cost effective to implement	May have a significant cost impact and an impost on industry for oversight	Low cost to implement
Reduction in effort	As the nomination is generated for the shipper, the effort required by the shipper is reduced	As the nomination is generated for the shipper, the effort required by the shipper is reduced
Reduction in risk	The cost is a simple pro-rata levy so the risk of cost variability is eliminated	The cost applied would be as if the mass market shipper was an average shipper in terms of accuracy. The averaging is likely to reduce variability of costs year on year and therefore risk. However, there may be slight variations year on year
Equity with other shippers	It would be difficult to know whether there was equity with other shippers until full costs for the year were known	The amount paid would be the same as if the shipper were an average-performing shipper