# HRC Thermal Fuel Assumptions

## Decision and Summary of Industry Comments

November 2018

*Keeping the energy flowing*




TRANSPOWER

| Version | Date | Change |
|---|---|---|
| 1.0 | 12/11/2018 | |

## IMPORTANT

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# BACKGROUND

In January and April 2018, Transpower consulted on a proposed change to the process for evaluating restrictions on thermal fuel availability as it relates to the hydro risk curve (HRC) input assumptions. This document summarises submissions to that consultation; provides Transpower's response to those submissions and confirms our decision regarding implementation of the change.

The HRC input assumptions currently state that apart from a known supply restriction for Whirinaki thermal power station, the HRCs will be developed on the basis that there is no operational supply restriction to thermal generation fuel supplies that cannot be overcome through commercial arrangements. Genesis Energy notified Transpower in December 2017 that this assumption may not be correct, and that there is a risk of restricted thermal fuel supplies in some circumstances. Under the Security of Supply Forecasting and Information Policy (SOSFIP), the system operator is required to "review the inputs and assumptions it has used to determine the hydro risk curves when the system operator becomes aware of new information that…may yield a material change to the hydro risk curves"[1].



Following an initial consultation in January 2018 Transpower proposed a change to its process for assessing possible restrictions to thermal fuel supply and how to incorporate this into the derivation of the HRCs. In our April consultation we recommended the underlying assumptions around thermal fuel availability should remain the same, with the addition of a verification step to compare the modelled thermal fuel consumption assumed by the hydro risk curve model and the thermal fuel availability known by the system operator. If the modelled thermal fuel consumption exceeds a known fuel availability, then the inputs to the HRCs will be modified to reflect known fuel availability.

[1] SOSFIP clause 6.3.

# DECISION

We have decided to proceed with developing a process to introduce a validation step in the HRC process to determine any inconsistencies between modelled thermal fuel consumption and known information about thermal fuel supply. We intend to base the process on the process described in the consultation document[2], dependent on the extent and quality of the information we are able to obtain from electricity and gas industry participants. The exact process we will follow is described in more detail below.

The extent of the change is summarised as follows:

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1. We will not change the HRC input assumption which states that (apart from a known limitation in fuelling Whirinaki) thermal fuel will in the most part not constrain the production of electricity, unless there are physical limitations that cannot easily be offset with commercial arrangements.
2. We will include an additional verification step in the process for updating the HRCs which compares assumed thermal fuel consumption with information that we hold about available supply.
3. If this verification shows that there are thermal fuel limitations that are likely to impact HRC modelling, we will, in conjunction with relevant stakeholders, determine appropriate limits to thermal generation. We will then update the HRCs to include these limits.

Our decision to proceed has been based on the largely positive response from submitters to the changes proposed in the April consultation, as well as preliminary discussions with gas industry participants about disclosure of supply information.

# VERIFICATION PROCESS FOR ASSESSING THERMAL FUEL LIMITATIONS

We intend, to include the verification process in the monthly update of the HRCs, with effect from the next update.

At a high level this process will look at coal and gas supply information available from the industry and compare this to the gas and coal consumption modelled in the derivation of the HRCs. Importantly, this will not represent a forecast of expected consumption. Instead it will attempt to forecast what thermal fuel supplies will look like in a security of supply emergency (i.e. at the 10% HRC). This is because the HRCs do not attempt to model market behavior, but instead identify the 10% risk of electricity shortage.[3]

The verification process will include:

1. Determination of the thermal generation used in the historic hydro inflow sequences that set the HRCs, accounting for the length of each sequence before it reaches a minimum storage level.
2. Conversion of this thermal generation to fuel consumption per quarter (or monthly if more granular gas production information becomes available), accounting for the duel-fuel nature of Huntly Rankine units.

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[2] *https://www.transpower.co.nz/sites/default/files/bulk-upload/documents/Consultation%20document%20for%20Thermal%20Fuel%20Limitations%20in%20the%20Hydro%20Risk%20Curves.pdf*

[3] As is required by Clause 9.23 of the Electricity Industry Participation Code

3. Comparison of fuel consumption to expected available gas production and coal supplies, accounting for gas production or coal supply that is capable, but not currently available, of being made available for electricity generation (e.g. methanol production or other industrial uses), and that which is not.
4. If there is insufficient gas production and coal supply available, scale the amount of quarterly (or monthly as described above) thermal generation assumed in the HRCs down until the amount of potentially available gas and coal equals that of that assumed in the HRC derivation.
5. Recalculate the HRCs in the case where thermal generation has been scaled down.

The assumptions that are used in this verification step will be estimated using the best possible information available at the time of verification but may change over time as new information becomes available.

Where participants have specified that technical details around gas and coal supplies are commercially sensitive, we will publish, at minimum, aggregate details sufficient to enable participants to understand the reasons for, and magnitude of any thermal fuel limitations.

# COMMENTS ON THE PROPOSAL TO AMEND THE HRC THERMAL FUEL AVAILABILITY INPUT ASSUMPTIONS



## General Comments

| Submitter Comment | System Operator response |
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| **Contact:** would like to see the effect that planned transmission outages during the dry year period have on the HRCs in order to highlight where improvements can be made in that process | Transmission outages, with the exception of the HVDC, generally only have a minor impact on the HRCs.<br>HRCs reflect known asset availability, generation and transmission, including transmission outages if they are expected to have a material impact on security of supply. |
| **First Gas: s**upports Transpower investigating ways to improve the hydro risk curves (HRC) modelling to better reflect information on thermal fuel supply. | Noted. |
| **Mercury:** supports the proposed changes with two important caveats. First, we would like to understand how the system operator intends to use the additional information about thermal fuel storage (i.e. the weightings and assumptions used in the calculations) that feed into the risk assessment process. In this respect some scenarios could be helpful. Second, we favour the additional information on coal stockpiles and gas storage being made available publicly in the same manner as other fuel storage such as hydro lake levels and snow pack estimates are. This would be consistent with the wholesale market disclosure regime which is managed by the Electricity Authority. | As part of the revised HRC process we will publish more information on thermal fuel availability should there be cause to (i.e. if there are limitations that impact the HRCs).<br>We are continuing to work with energy industry participants and regulators regarding disclosure of information that is relevant to security of supply. |
| **Meridian:** remains of the view that it is inappropriate to incorporate the suggested thermal fuel limitations in the Hydro Risk Curves (HRCs). Doing so would be inconsistent with the fundamental purpose and nature of the HRCs as a simple tool for triggering official conservation campaigns. | The system operator is required to assess the risk of an energy supply shortage, and consequentially declare an OCC at the appropriate risk level under clause 9.23 of the Code. Validating the HRC modelling against known information about thermal fuel supply constitutes part of this risk assessment. |

## Question 1: Do you agree with the proposed treatment of operational limitations to thermal fuel availability in the HRCs, and if not, why not?

| Submitter Comment | System Operator response |
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| **Contact:** Agree, but we recommend that the granularity of the assessment be daily, to highlight shortages based on the fact that gas is made available on a daily basis. | The state of the energy system changes on a daily basis (e.g. hydro storage and gas supply fluctuates), but generally potential supply and expected demand is fairly consistent. As such, the assumptions that are used to determine the HRCs also remain consistent. Therefore, a daily resolution is unlikely to provide any additional insight. |
| **emsTradepoint:** Agree. "We believe that the spot market can facilitate commercial arrangements during a time of physical and operational limitations of fuel supply." | Noted. |
| **First Gas:** N/A | |
| **Genesis:** support the additional validation step the SO outlines and are happy to make information available for it to do so, subject to assurances around commercially sensitive data, where necessary. | Noted. |

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| **Mercury:** Yes. We would like to see both the raw information and the adjusted versions. | Transpower as system operator maintains confidentiality of information supplied for the purposes of security of supply forecasting, per clause 7.3(1)(a)(iv) of the Code. This may limit the amount of raw information able to be made available publicly. |
| **Meridian:** believes there is no reason to believe that commercial arrangements would not be put in place to overcome any operational limitations in thermal fuel supply. | Noted. |
| **MEUG:** Agrees with both aspects of the proposal, subject to the SO providing the information used to make assessment of thermal fuel availability. | Noted. |
| **Nova:** Yes, the principle being applied is relevant. | Noted. |
| **Trustpower:** Yes. Trustpower acknowledges Transpower's expertise as the System Operator in calculating the HRCs. As such, Trustpower agrees with the proposed treatment of operational limitations to thermal fuel availability. | Noted. |



## Question 2: Do you support the relevant electricity and gas market participants giving information to the system operator for the purposes of validating HRC thermal fuel burn assumptions? If not, why not?

| Submitter Comment | System Operator response |
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| **Contact:** Agree. Given the integrated nature of both gas, coal and electricity markets, information of a similar granularity will need to be disclosed from each participant to ensure results are meaningful. Consideration should also be given to requesting information from coal producers on availability of supply. | Noted.<br>We are continuing to work with energy industry participants and regulators regarding disclosure of information that is relevant to security of supply. |
| **emsTradepoint:** strongly advocate greater transparency in the gas market. Quality information on planned and unplanned outages are essential for providing transparent pricing and transactional certainty. In its current state, undisclosed gas outages have resulted in market asymmetry. We support a gas market equivalent of POCP / Red Spider to provide greater visibility and balance the asymmetry of information that exists. | Noted. |
| **Genesis:** yes, subject to responses to Q3 and 4. | Noted. |
| **Mercury:** Yes. We believe this information should be made publicly available so that all market participants can take it into account in the same manner that information on hydro lake storage levels and snowpack analysis is made available using the wholesale market information disclosure principles developed by the Electricity Authority. | It is the responsibility of the participants who hold the information to determine whether the information is Disclosure Information as used in clause 13.2A of the Code.<br>We are continuing to work with energy industry participants and regulators regarding disclosure of information that is relevant to security of supply. |
| **Meridian:** Yes. However all such information should arguably already have been disclosed by the relevant participants in accordance with their Wholesale Market Information Disclosure obligations.<br>Meridian agrees that Transpower should publish, as part of the HRCs, the analysis it has undertaken as part of any 'validation step' along with any underlying information it has relied on. That would mean Transpower publishes: i. Thermal fuel burn it has | Transpower as system operator intends to publish items i – iii as itemised in Meridian's submission. Transpower is bound by confidentiality obligations as detailed in the Code and the associated policies when handling this information.<br>It is the responsibility of the participants who hold the information to determine whether the information is Disclosure Information as used in clause 13.2A of the Code. Again, it is the participant's responsibility to disclose their information according to the obligations of that clause. |

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| assumed ii. Comparison of thermal fuel burn with fuel availability iii. Any proposed adjustment of the HRCs iv. All underlying information to I to iii above (to the extent it hasn't already been published by Transpower in compliance with its wholesale market information disclosure obligations. | We also note that some of the parties we have identified as holding information that would be useful to the process we have proposed are not wholesale electricity market participants. |
| **MEUG: …**are not confident, for gas market information in particular, that information will be forthcoming. If such information is not provided in critical market events [citing the recent Pohokura outage] we are not confident the system operator will be able to source updated gas sector information each month the HRC's are refreshed. | Noted. |
| **Nova:** It is appropriate for the electricity market participants to keep the System Operator informed of their plant performance ratings and firm and prospective fuel supplies. The System Operator does not have the power to require coal, gas, and diesel suppliers to disclose their forward supply commitments. Those parties may also be constrained by confidentiality provisions in contracts with suppliers, customer and joint venture partners. In most cases; and subject to contractual commitments, fuels can be diverted to more valuable use through commercial arrangements, if they are available but allocated elsewhere. However; suppliers cannot automatically assume they can divert fuels from existing consumers to electricity generation. That may require commercial bargains to be reached with their customers whereby they are rewarded for supply interruption; in much the same way that some electricity customers curtail demand in response to price signals when it is in their economic interest to do so. | We are working with gas industry participants and regulatory bodies to determine what information may be available to complete the proposed assessment process. Our interest is establishing operational restrictions to thermal fuel supplies; where commercial arrangements would be able to mitigate a supply risk, these arrangements would not be considered per the HRC input assumption around thermal fuel supply. |
| **Trustpower:** Yes, as long as such disclosures are treated with appropriate care and confidentiality. We acknowledge the good intentions of Transpower to notify planned gas outages to the electricity market but note that the gas market currently does not disclose any production station outage information to either the gas or electricity market. Trustpower has been a strong advocate in the gas industry for the public disclosure of outage information to assist in the operation of the gas and electricity industries, however to date we have come across multiple barriers to facilitate the disclosure of this information. We would welcome the opportunity to discuss this further with Transpower if desired. As noted in our cover letter, the GIC has indicated that it will review whether adequate information is available for the gas industry to efficiently function once the new Gas Transmission Access Code has been finalised. This may lead to a need for regulation to be established to ensure producers disclose outage information | Transpower as system operator maintains confidentiality of information supplied for the purposes of security of supply forecasting, per clause 7.3(1)(a)(iv) of the Code.<br><br>We note with interest the development of regulations in the gas industry that would support disclosure of outage information.<br><br>We are continuing to work with energy industry participants and regulators regarding disclosure of information that is relevant to security of supply. |

## Question 3: Can you identify any practical limitations to supplying this information?

| Submitter Comment | System Operator response |
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| **emsTradepoint:**. Are not currently privy to any of the new information to be gathered. However, we have identified that joint venture (JV) gas fields may have confidentiality issues surrounding planned and unplanned outages. JV alignment and agreement would have to be forthcoming from all JV partners. | Noted. |

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| **First Gas:** The information GSNZ will hold on customers' gas stored in the Ahuroa gas storage facility is commercially sensitive and confidential. We therefore could not provide this information to the System Operator, without the express consent of our customers. We expect those customers would require assurance that the information would remain confidential. | Noted. |
| **Genesis:** We consider it is important that data provided is subject to carefully defined parameters for consistency e.g. there is a range of available data on the frequency of coal deliveries: average number of coal deliveries per quarter versus maximum number of coal deliveries possible in a quarter. | Noted. |
| **MEUG:** as per response to Q2. | Noted. |
| **Nova:** The majority of gas production and consumption is independent from electricity generation. As such, Transpower is limited in what information it can expect gas producers to supply. The other issue with that is ensuring that the parties relying on the information that is provided fully understand the commercial uncertainties and risks associated with the potential fuel supply, whether that is for gas, coal or diesel. For instance, the potential diversion of gas or diesel from their usual markets to electricity generation could lead to changing prices or behaviours in those markets, even if the risk is remote or never comes to pass. | Noted. |



## Question 4: If you hold some of the information described above, are there any reasons why you could not, or would not, supply the information to the system operator? If so, what are these reasons?

| Submitter Comment | System Operator response |
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| **Contact:** No, Contact currently publishes changes in Ahuroa Gas Storage volumes in Contact's Monthly Operating Report's and provides information around the assumptions on Whirinaki already in the Hydro Risk Curves. | Noted. |
| **emsTradepoint:** is working with our gas market participants to provide outage transparency, with a view to making this information publicly available on a tool such as POCP. This information would be made available to the System Operator. | Noted. |
| **First Gas:** First Gas and GSNZ are happy to work with Transpower to determine the level of information we can supply about our gas transmission system and Ahuroa Gas Storage, recognising that commercial constraints apply to some of the information.<br><br>First Gas is required to provide our customers with advanced notification of any scheduled maintenance on the transmission system. This includes work such as compressor upgrades or repairs, pipeline pigging operations, and delivery point maintenance. In these circumstances, First Gas must post a notice on the OATIS1 system not less than 30-days prior to the scheduled maintenance occurring. These notices include details on the nature and expected duration of the scheduled maintenance, as well as any potential | Noted. |

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| impacts on pipeline capacity…We are willing to discuss make this scheduled maintenance information available to the System Operator. However, it would be useful to understand the level of detail required to determine our ability to provide the information. | |
| **Genesis:** We hold some information that is commercially sensitive to Genesis. Where data is commercially sensitive, we would expect the SO to aggregate (either by category and/or quarters where appropriate) or omit data sets, as per the consultation paper. | Transpower as system operator maintains confidentiality of information supplied for the purposes of security of supply forecasting, per clause 7.3(1)(a)(iv) of the Code. |
| **Nova:** Providing the data would be problematic for the following reasons:<br>• Where there are joint venture arrangements in place on gas fields, not only are there restrictions in terms of disclosure of confidential data, but there are conditions on each party's rights to gas that may be significant;<br>• Suppliers need to consider their potential liabilities if parties rely on the information that is disclosed, but the expected fuel supplies are not fulfilled for some reason; and<br>• The information may be commercially sensitive and place a party at a commercial disadvantage in their particular market, especially if some parties they compete with are not similarly required to disclose their information. | We are working with First Gas and the Gas Industry Company to determine what arrangements could be made to facilitate information disclosure from gas industry participants for the purposes of electricity security of supply. |



## Question 5: Do you agree with the proposed process for producing the HRCs, incorporating the validation steps for thermal fuel availability?

| Submitter Comment | System Operator response |
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| **Contact:** Given the role coal plays as a fuel of last resort, we would expect gas to be utilised first in the calculation. We believe step 2 needs to be transposed regarding order of fuel use. | We will consider this suggestion in our analysis. |
| **Mercury:** Yes, however we would like to understand how the changes in fuel supply affect the HRC's. (In particular, the weightings and assumptions used). We would also like the system operator to publish this information so everyone has a shared understanding of how risk is being assessed. | As part of the revised HRC process we will publish more information on thermal fuel availability should there be cause to (i.e. if there are limitations that impact the HRCs). |
| **Meridian:** does not believe there is any need for the validation step. The HRCs should continue to be produced as they are currently. | Noted. |
| **MEUG:** Sufficient information must be published to allow interested parties to replicate the results and undertake sensitivity tests using alternative assumptions. | We will continue to publish sufficient information to allow interested parties to replicate the results as required under the Security of Supply Forecasting and Information Policy. |
| **Nova:** Yes. The proposal to use a two-part process to determine the HRCs seems appropriate and would help highlight the extent, if any, to which thermal fuel constraints may be impacting on the overall supply risk. Determining the HRCs involves applying a statistical process to estimate the probability of hydro shortages for electricity generation. Just as there is no certainty in what rainfall will occur to fill hydro reservoirs, there cannot be any guarantees that thermal fuels will always | Noted. We are working with First Gas and the Gas Industry Company to determine what arrangements could be made to facilitate information disclosure from gas industry participants for the purposes of electricity security of supply. |

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| be available in line with expectations. In conclusion, Nova recommends Transpower should consult further with the thermal fuel providers (such as Shell, OMV, Origin, Greymouth Petroleum, First Gas and the GIC) on this issue. | |

## Question 6: Do you agree with the proposed amendment to the wording of the HRC Input Assumptions document and if not, why not?

| Submitter Comment | System Operator response |
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| **Meridian:** does not think the document should be amended but if it is then the additional underlined wording should be added:<br><br>*Where the HRC modelling assumes a rate of thermal fuel consumption that exceeds, in the reasonable opinion of the system operator, available fuel supply, these HRC input assumptions will be updated to account for the limitation. In determining the available fuel supply Transpower will generally continue to assume that market forces will enable procurement of fuel quantities over and above contracted amounts. This assumption will only be displaced where there is clear and convincing evidence to the contrary.* | We note and share Meridian's concern on ensuring only robust information is used in our risk assessment process. |