MBIE and EECA Consultation Technical Paper January 2019
Process Heat in New Zealand: Opportunities and barriers to lowering emissions.

Contact Energy General Comments:

1. Contact acknowledges that a joint approach of both fuel switching and energy efficiency (para 4) is necessary for New Zealand to reach its climate change goals however we consider fuel switching will provide the vast majority of gains to reduce emissions because:
   - many efficiency gains are achieved through fuel switching (e.g. moving to heat pumps, or mechanical vapour recompression)
   - focusing on efficiency may lock in fossil fuel technology for longer (e.g. buying a more efficient fossil fuel fired boiler)
   - fuel switching has greater potential gains i.e. 100% emission reduction whereas efficiency savings are typically 10% or less.

2. Contact notes there are many generalisations throughout the paper and recommends a more balanced perspective is preferable. To outline a few, international emissions leakage should be site specific because each large emitter is different (para 32), in some cases renewable fuels are less expensive than fossil fuels (para 38) and the upfront capital costs of low emission technologies can be less expensive than fossil fuel technologies for example electric boilers are often lower cost than comparable coal boilers (para 39).

3. The high prices faced for electrical transmission and distribution interconnections (which are typically not allocated[1] on a cost-reflective basis) can be significant and there may be a case for changing the allocation to reduce barriers to emission reductions.

Contact Energy Response to specific questions and paras.

Q1: To what extent has the NZ ETS influenced process heat investments in your business? Q2: To what extent do you agree that businesses are accounting for the price (and future price) of emissions, but face other barriers to reducing process heat related emissions? Q3: To what extent do you agree that businesses are accounting for emissions prices but are unresponsive to changes in the emissions price? Q4: Does the NZ ETS provide an incentive to significantly reduce emissions beyond current levels for business who receive industrial allocation?

Q1-4. Contact is pleased to see the Government's intention to strengthen the ETS and improve its stability and predictability. In particular, removal of the $25/t$CO_2$e Fixed Price Option will improve the effectiveness of the NZ ETS and ultimately reduce process heat emissions by incentivizing fuel switching. Contact is committed to maintaining affordable, sustainable and reliable access to energy. Contact is reducing greenhouse gas emissions from thermal and geothermal plant operations in line with the Paris Agreement's goal of limiting the global temperature increase to 2 degrees Celsius.

[1] See the following Electricity Authority consultation document outlining the problems with the current transmission system cost allocation. https://www.ea.govt.nz/dmsdocument/20716-consultation-paper-transmission-pricing-methodology-issues-and-proposal-second-issues-paper

Contact has developed a climate change position statement and established science-based emissions reduction targets as part of its decarbonisation strategy. In addition, Contact provides low carbon solutions to its customers and supports their efforts to reduce their emissions.

We agree that businesses are starting to account for emissions prices and think that carbon price increases will eventually drive decarbonisation over time. However, an important point that the technical consultation paper does not address is how businesses should reconcile an emission price today, with long term investments in emission reduction technologies. It's difficult for businesses to assess how emission prices will change over the investment's life. Regulation that is stable and predictable will make it easier for business to make this assessment.

Barriers to improving energy efficiency, update of renewables.

Q5: To what extent does your business ring-fence capital for energy related projects?

Q6: To what extent are objectives such as sustainability incorporated into your organisations investments, i.e. is sustainability included in your KPIs?

Q7: Are these objectives considered secondary to risk and return?

Q8: Do you agree that energy efficiency or renewable projects are often not implemented as they are not core business investments?

Q9: Is your business limited by access to capital for energy related investments? Is this due to lender appetite or are these limits self-imposed?

Q10: To what extent do hidden costs or co-benefits (as described above) hinder or progress process heat investments?

Q6. Sustainability objectives are incorporated into Contact's business structure. Contact is committed to a sustainable energy future and is very aware that it can only operate commercially if it ensures the sustainability of the resources it relies on. Contact is developing renewable energy, while also maintaining reliable access to energy for our customers.

Q11: Does your organisation actively monitor its energy use and/or its emissions?

Q12: Do you think that there would be benefits from publishing individual emissions data reported by NZ ETS participants and/or large process heat users?

Q13: Do any of the informational barriers described above have an impact on your organisation's decision to invest in process heat technologies, and if so, to what extent?

Q14: Could you please rank the three informational barriers as listed directly above this box in order of impact on your organisation?

Q11. Contact actively monitors its energy emissions and since 2012 has reduced its emissions by 51%, removing the equivalent of 1.24 megatonnes of CO_2e. Contact has committed to reduce its 2018 emissions by 30% by 2030 and is in the process of verifying this through the Science Based Targets initiative.

Barriers to the electrification of production

Q15: Has your organisation considered electrifying part or all of a given site's heating process? Q16: If so, to what extent do you agree with the barriers I to K listed above? Q17: What does your organisation consider are the largest barriers to the electrification of its production? Q18: Are there any costs or co-benefits of electrification that we have not included that your organisation has identified?

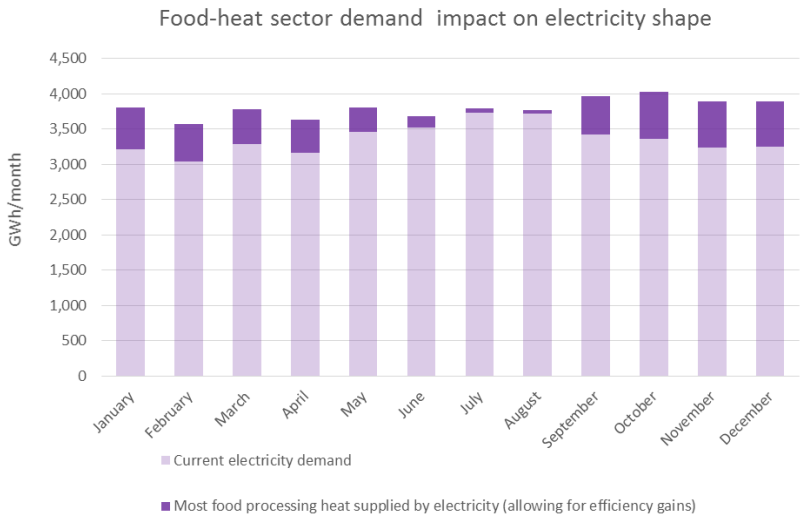
Barrier I (high cost of electricity vs fossil fuels)

Q16, Para 71-72 - Contact disagrees that the high cost of 'electrical energy' is a barrier to the electrification process and believes that paras 71-72 are misleading as the analysis conflates electricity generation (i.e. energy costs) and network costs (transmission and distribution).

Electrical heat plant can have a lower economic cost, and be more efficient, than a fossil fuel heat plant. The paper represents electricity generation as a high cost option, however it is often the price charged for using the transmission or distribution network that makes the electrical option unviable. And transmission and distribution network charges typically don't reflect the costs involved.

In many cases sufficient network capacity already exists and the electrification of a heat plant is often possible with no electrical network upgrade and provides a very low cost abatement opportunity for organisations (and NZ Inc.). However, currently the network cost allocation (distribution and transmission) makes the investment prohibitively expensive and hence Contact supports a more cost reflective transmission (and distribution) allocation.

Electrification of a heat plant does not always increase network costs, as spare capacity exists in some networks. Further, electrification reduces costs in a $/MWh sense (more energy conveyed but the same network costs) and also reduces the seasonality of electricity demand. Smoothing out peak flows reduces the need for lower-capacity factor fossil-fuel plants and allows a higher proportion of renewable generation to be integrated into the power system (see chart below).



Barrier J – Electricity supply is more complex

Q16, Para 73, Contact disagrees that electricity supply is more complex than other fuels. Electricity supply can be provided for in a simple, single bilateral contract similar to fossil fuel supply arrangements as outlined in para 73. The forward price of electricity is far more transparent compared with the forward price of fossil fuels. Further, there is greater regulatory certainty in the electricity sector.

Heat plant owners can contract for electricity (by volume and price) within any timeframe and level of service (quality and security) desired. The owner can also choose what level of involvement they would like in the real-time management of the power system. The consultation paper confuses the issues of real time power system operation (primarily[2] the purview of supply side sector participants, regulators, and network operators) with the role of demand.[3]

Para 77. The length of electricity supply contracts is misleading. Fixed price contracts longer than five years can be used to provide an electricity supply but it is due to a lack of customer interest that longer term contracts are uncommon. Generators typically prefer to have longer term supply contracts to under-write the generation investments which are long-term commitments.

Para 78, Contact disagrees that 'many other barriers stem from participation in the electricity system" and there are a record number of electricity retailers. There are readily available solutions for all of the supposed barriers reported, however the one main barrier we consider contributes the largest to electricity costs is the network cost allocation.

Barrier J1 – Connection costs and the TPM

Para 80. Contact disagrees with para 80, which suggests customers are mandated to comply with Transpower or distribution companies design and connection requirements. Plant owners can develop, design, and build their own connection assets or contract this out to a third party if they choose. Only in the situation where the connection assets are owned by Transpower would Transpower specify equipment and configuration.[4]

Para 82. Contact agrees with para 82 that grid users pay for assets that do not benefit them. The transmission and distribution network charges can be several times higher than the capital costs of the heat plant itself (e.g. an electric boiler) and prohibit the uptake of electrification or production.

Para 84, 85. Contact disagrees that the time and cost for developing new connections are prohibitive. Connection services are available from several different providers and 'lead-times' should be factored into business decisions and be an integral part of successful project management.

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[2] The demand side, particularly large industrial users, may choose to be involved in the sector as active participants, but they do not need to – they only do so to the extent that it benefits their business.

[3] The demand side of the electricity sector can increasingly have a role in helping to manage the power system, but this can be made very simple for customers through developments such as Contact's demand flexibility platform.

[4] Transpower may have input into assets such as protection equipment at the point of connection, but the route choice, conductor sizing, voltage and configuration etc. are not necessarily within their remit.

Para 86. There is the potential for complexities to arise on shared connection assets, however parties are usually willing to accept compromises in lieu of lower connection costs. However if the compromises are deemed unacceptable, then any heat plant owner can build their own dedicated connection assets and decide who shares the connection.

The use of direct heat from Geothermal

Q25: Does your organisation have the potential to use direct heat from geothermal? Q26: If so, what are the key barriers that hinder your organisation from using direct heat from geothermal? Q27: Has your organisation identified any other barriers to, or co-benefits from, the direct use of geothermal heat that we have not included above?

Para 108. Contact strongly agrees that direct heat from geothermal is a highly economic renewable resource, generally low emission and a unique opportunity for New Zealand industry. Contact advises that the main barrier to the uptake of New Zealand's geothermal heat resource is the ability to attract existing and new industries to the region where the resource is located.

Para 110. Contact disagrees that high upfront costs of direct use of geothermal heat is a barrier to the uptake of this under-utilised and economic renewable resource. Contact makes efforts to facilitate and expand the direct use of geothermal heat through providing geothermal heat at a competitive rate on a $/GJ basis for a given contract period; and by making land available at competitive rates and funding any required well drilling and associated development costs.