Simply Energy
powered by contact

Dr Roderick Carr
Chair, Climate Change Commission
Wellington

26 March 2021

Dear Rod

Climate Change Commission 2021 Draft Advice

First, we'd like to acknowledge the thinking and enormous effort that has gone into the analysis and recommendations outlined in the Climate Change Commission's draft advice. Whilst the plans are ambitious; we support the direction the Commission is proposing for the heat, industry and power sectors, and believe it is necessary if we are to address and adapt to climate change, meet New Zealand's targets, align with global commitments, and move forward together faster.

As big as the challenge is, it is also a huge opportunity and one we are proud to be part of. Targets and commitments aside, we are all ultimately working towards creating a better New Zealand and making the world a safer, healthier and more prosperous place to be enjoyed for generations to come.

As a company working alongside large energy users every day, we engage in many conversations about reducing emissions from industrial processes. In particular, the efficient electrification of process heat has brought us face-to-face with both the opportunities and challenges that exist.

In our submission, we focus on opportunities to solve two market structure challenges. We believe addressing these will significantly reduce the barriers to an orderly, and economically sustainable, transition to a low-carbon future.

We believe we can all go further and faster together, and look forward to providing leadership to support big energy users electrify their industrial processes.

Yours sincerely

A K Sibley

Andy Sibley

Chief Business Officer

PO Box 10609, The Terrace, Wellington 6143
service@simplyenergy.co.nz | 0508 474 674
simplyenergy.co.nz

Simply Energy
powered by contact

#change matters

He Pou a Rangi Climate Change Commission

2021 Draft Advice for Consultation

Simply Energy Submission

March 2021

We believe there are two key opportunities:

Opportunity 1:

The first opportunity involves addressing structural issues that make the cost of delivered electricity for process heat much higher than the cost of process heat from fossil fuels.

Unless structural issues are addressed, the marginal cost of high-grade process heat, from delivered electricity, will be more expensive than from coal until the cost of carbon emissions is between $100 per Ton CO2e and $200 per Ton CO2e, as illustrated in the chart on the next page.

Opportunity 2:

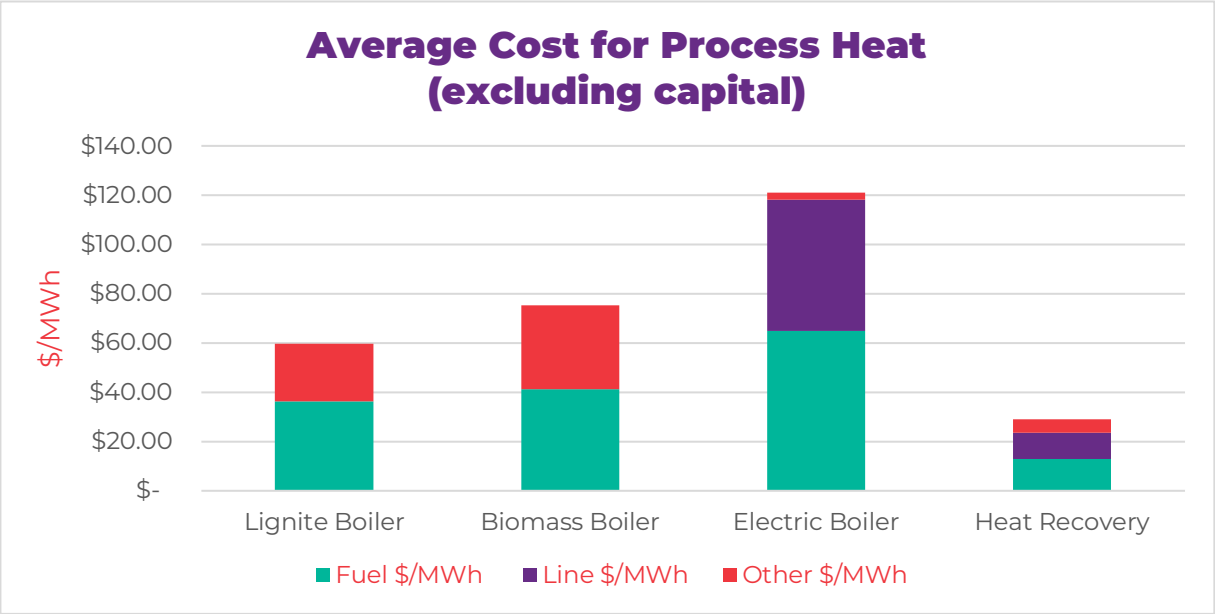
The second opportunity involves factoring equipment lifecycle costs and benefits into government energy procurement processes.

Current processes neither encourage nor incentivise optimisation of costs and benefits over the lifecycle of equipment required for electrification.

Context for process heat

Simply is often asked by businesses for help with electrification options. These businesses are looking to balance what's commercially viable with sustainability, and are trying to decide what makes sense for them, their customers and their business.

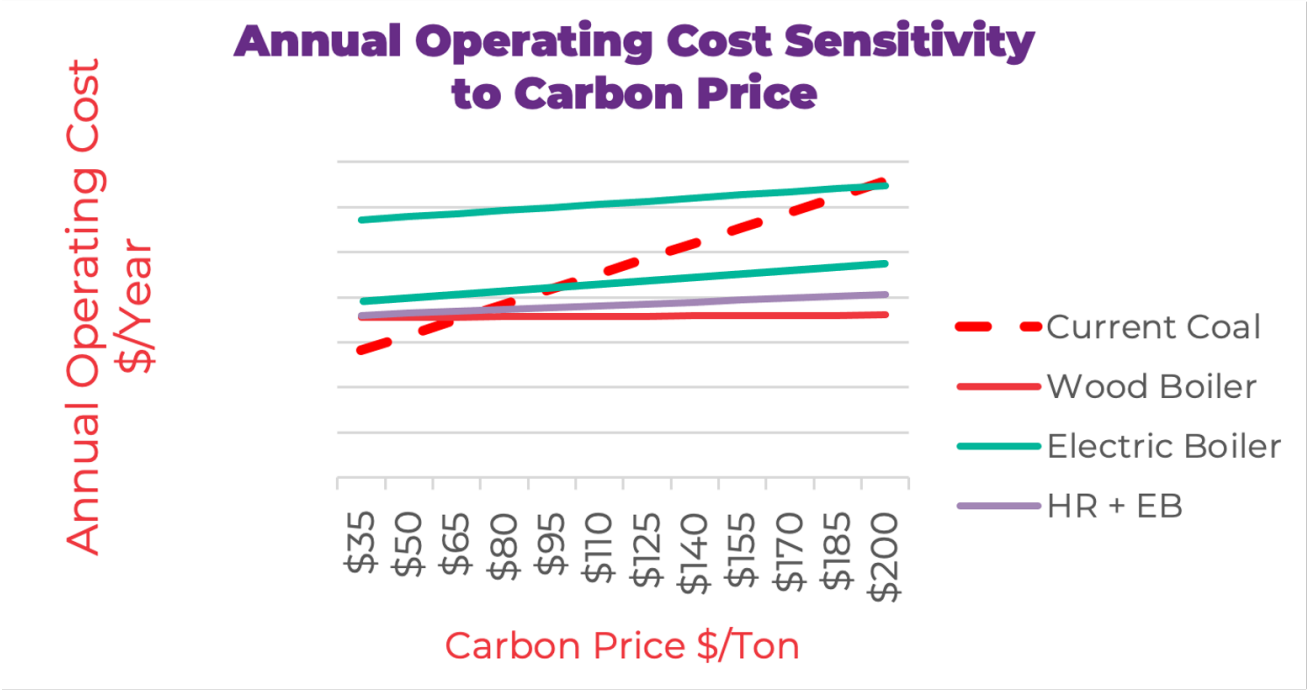
Part of the work we do is gaining an understanding of their existing process heat costs and the likely costs under each of the decarbonisation options available to them. The following chart illustrates an assessment of a typical site at today's carbon prices.



The chart shows that:

- network costs are as significant as energy costs in determining the delivered cost of electricity,
- at today's carbon prices, it costs less to power the site with lignite than biomass or electricity; and,
- heat recovery is the lowest cost source of process heat; noting that heat pumps, while only able to supply part of the site's process heat requirements, can provide a cost effective solution for lower temperature hot water provision.

The following chart illustrates how annual operating costs vary with the price of carbon. The carbon price and economics are dependent on individual projects, but in our experience the carbon price would need to sit anywhere between $100/Ton CO2e and, in some cases, as high as $200/Ton CO2e to be competitive.



Making delivered electricity more competitive

By working with several sites, we have identified recurring themes that can improve electricity's comparative economics versus fossil fuels, including:

- **reducing heat load through efficiency,** which is typically the most economical step in a decarbonisation journey,
- **moving large baseload hot water requirements from fossil fuels to heat pumps** that can produce multiple kW of heat for each kW of electricity input, and where heat pump utilisation (at 16 hours/day instead of 1 hour, for example) is high enough to justify capital costs,
- **meeting the remaining load (often for steam production) with biomass or electric boilers**, noting that electricity becomes more competitive the smaller the heat load, because of its lower capital plant and operator costs,
- **maintaining existing fossil fuel assets in working condition for fuel switching (as a transition measure).** Process heat that can be fueled by either electricity, or an alternative fuel source, can

benefit from using electricity when there's more renewable energy in the system, and prices are lower. During periods of higher fossil fuel electricity generation (and equally higher price switching) using the alternative fuel source reduces costs. It also results in fewer emissions for a local site with 70% boiler efficiency than burning coal at Huntley (~40% efficiency) to make electricity for process heat. This is a way of using existing fossil fuel assets as a key, commercially viable way of energy transition.

This approach also provides cost-effective energy storage, greater operational flexibility, reduces demand and prices in dry years (when prices are high), increases demand and prices in wet years (when prices are low) and supports the business case for bringing on new renewable generation.

– **managing process heat demand to increase the utilisation of existing network assets.** For example, by smartly controlling heat pump load, spare electrical capacity at the site can be utilised in a manner that doesn't increase overall network charges.

  Options to switch fuels, and manage load shape, help to reduce the cost of electrical energy and better utilise existing network capacity.

  Because process heat loads are typically large (of a similar magnitude to existing electricity loads on site), the spare electrical capacity to sites is usually insufficient, meaning additional network capacity is still required.

  Current regulatory and legislative settings do not incentivise, and in some cases, actively discourage the design, investment, delivery and pricing of network capacity that is both technically and economically fit-for-purpose for process heat.

The challenges with process heat

Growing network capacity in commercially viable ways

Increasing network capacity and how we achieve it is essential to decarbonising process heat. It must be commercially viable for both customers and networks. Unless a customer has a large enough load to build their own line to a Transpower GXP, he current environment provides little direct incentive for networks to take on risk and encourage the use of electricity for process heat. The costs to consumers are, in many cases, prohibitive. There are four key areas where we see challenges for both networks and consumers:

1. **Capacity allocation management**

   In situations where networks are approaching their physical capacity limits, they have to choose how to balance the allocation of spare capacity between explicit individual customer requests and the future capacity needs of other customers in the network. Holding back spare capacity to ensure they can meet average customer loads is a decision some are having to make.

2. **Commercial risk on new infrastructure**

   When there is planned material increase in electrical load, and networks approach capacity limits, additional infrastructure is generally required. This raises the question of who pays. Networks need to balance not just the requirements of the immediate customer demand but consider future capacity required. They are naturally concerned, however, about investing in assets that may end up stranded or under-utilised for significant periods of time.

   In the face of uncertainty, some network companies look to customers, with an immediate need for extra capacity, to take most of the commercial risk on its costs. This makes customer

investment decisions on electrification harder to commercially justify if the total cost of electrification also includes network supply infrastructure.

3. **Pricing models**

   Networks base their pricing models on average cost recovery across groups of customers. However, supplying electricity for process heat can cost less than supplying consumer load due to the shape, flexibility, and interruptability of the load. Using an average cost recovery model means costs are often over-allocated to process heat.

4. **Regulatory frameworks**

   Asset Utilisation

   Regulation fails to incentivise and actively dis-incentivises non-firm connection agreements that can utilise spare network assets.

   A regulated return on assets constrains network revenue. Using existing spare assets to deliver power to a customer doesn't increase the network's asset base or revenue cap. This means there is no incentive within Part 4 of the Commerce Act to incentivise higher network utilisation.

   Networks' quality of service is regulated (in part) through SADI and SAFI measures. Network connections without spare capacity can lead to increases in these measures. Part 4 of the Commerce Act doesn't differentiate between reporting on firm and non-firm connections. This means that networks face a regulatory dis-incentive to trade off the cost of security of supply and risk of outages.

The opportunities for process heat

We believe there are opportunities to adjust the environment in which networks operate to:

- support lower cost delivered electricity for organisations with large process heat requirements; and,
- incentivise networks to increase the utilisation of their assets, create additional value, and share this with customers and shareholders.

We suggest:

- **to provide greater consistency, ask the Electricity Authority to develop the equivalent of the Distributed Generation regulations within Part 6 of the Electricity Industry Code for users of process heat to provide a commercial basis for negotiating with networks.** We think that some networks are really good at this. Aurora, for example, provides transparent schedules of costs and shows how these are built up into network charges using regulated rates of return and recovery.
- **asking the Commerce Commission together with the Electricity Authority to review Part 4 of the Commerce Act in respect of:**
  - paying networks more where they can increase the utilisation of their network assets including spare assets that are currently used for resilience; and,
  - removing dis-incentives for providing access to non-firm capacity. For example, the application of SADI and SAFI measures to non-firm load.
- **encourage Transpower to support direct connection options to end users by:**

- introducing end users, that are seeking capacity upgrades, where they may be able to share infrastructure to achieve economics of scale and therefore lower costs for process heat,
- continuing to actively support new direct connection scoping and costing to Transpower's network as an alternative to local network connections; and,
- extending the term of asset recovery on large process heat users to 20 years, so assets can be paid for in line with their life and business revenues.

- **asking the New Zealand Infrastructure Fund to invite networks to provide proposals for the Fund to support building-out local network capacity that anticipates demand for process heat, by taking on some commercial risk of timing on asset usage and asset stranding. This will:**

- ensure that the lead time on upgrading network capacity doesn't constrain New Zealand's speed of transition to electricity; and,
- help mitigate the problems of capacity allocation and commercial risk allocated to individual customers with a step-change in upgrading assets. The recent precedent is the Government support of the rollout of Ultra-Fast Broadband to underpin long term economic growth.

The context for Government Procurement

Together, Simply and Contact have worked on several co-funded decarbonisation projects (primarily coal boiler replacements with electrode boilers and heat pumps) for commercial and industrial clients.

These projects have been provided as packages of fuel, capital and operating expense over the asset's life. This approach to asset funding and long-term flexi-energy supply deals works well for commercial customers as they can assess and commit to asset-based projects alongside fuel supply arrangements.

We have also tried this approach as part of government procurement processes. We have selectively submitted responses to RFQs that included options and structures to deliver long term decarbonisation benefits. Our approaches, however, don't fit State Sector Government Procurement Rules for energy fuels.

The procurement rules constrain agencies, Ministries and Councils in the following ways:

- Capital plant is generally run as a separate public tender process (which we understand is required from a probity perspective). This doesn't allow for the entire life of the project (asset, fuels, operation and maintenance) to be evaluated and contracted.
- The fuel price is often part of an All of Government (AoG) tender process which tends to be a 2–3-year standard tariff (the lowest common denominator). It neither provides the payback term to compete against coal, nor allow for more innovative electricity supply structures to be competitive against coal. Additionally, wood waste decisions are sometimes made without taking into account full operation and maintenance costs.

  We appreciate and endorse the requirements to have a transparent and competitive process but would like to see it evolve to support more innovative solutions, and meaningful decarbonisation.

  The separate funding mechanisms for capital and operating costs, across government agencies further exacerbates the situation. We understand that many agencies can seek separate capital funding from government, but must fund operating costs, eg fuel costs, from existing baseline budgets. This pushes agencies towards more capital intensive and higher emission solutions.

Government Procurement Opportunities

We recommend a review of the Government's Procurement Charter and Rules, including:

- expanding Rule 16 'Broader Outcomes' to enable structured deals involving capital costs, funding and fuel supply, along with operation and maintenance that achieve the government's decarbonisation objectives,
- helping more innovative fuel supply arrangements under the Government Procurement Rules Commodity Market Goods clause. Some mechanisms can support pricing indexed to a competitive market price. A transparent variation formula can be added against these commodity price indexes to support deal structuring that can compete with coal and truly decarbonise; and,
- utilising government agencies' access to credit to extend procurement terms out to 10 years and allow for balanced consideration of capital and operating costs that support the acceleration of new generation projects, giving generators bankable high-quality, long term sales.

  We also recommend exploring ways to better connect the procurement processes with broader organisational decarbonisation objectives.

Consultation question responses

The following aligns our submission to relevant questions in the Draft Report.

15. Do you support the package of recommendations and actions for the heat, industry and power sectors? Is there anything we should change and why?

We support the direction the Commission is proposing for the heat, industry and power sectors, and believe it is necessary if we are to address and adapt to climate change, meet New Zealand's targets, align with global commitments, and move forward, faster, together.

Our response suggests changes to the recommendations outlined below that we think will facilitate positive change to market structures and arrangements.

Necessary Action 5 – maximise the use of electricity as a low emissions fuel

5d. Assess whether electricity distributors are equipped, resourced and incentivised to innovate and support the adoption on their networks of new technologies, platforms and business models, including the successful integration of EVs.

In respect to incentives, we suggest:

- **asking the Commerce Commission together with the Electricity Authority to review Part 4 in respect of:**
  - incentivising networks to increase the utilisation of their networks (ahead of building more assets); and,
  - removing dis-incentives for maximising network asset utilisation and providing non-firm capacity with higher levels of outages.

    This review can ensure that Part 4 of the Commerce Act both incentivises networks and removes disincentives to finding innovative ways to reduce electricity delivery costs for process heat.

5f. Monitor and review to ensure electricity remains affordable and accessible, and measures are in place to keep system costs down, such as demand response management.

To ensure affordability, we suggest creating a specific focus on the electricity network costs for process heat by:

- **asking the Electricity Authority to develop the equivalent of the Distributed Generation regulations within Part 6 of the Electricity Industry Code for users of process heat that would provide a commercial basis for negotiating with networks by mandating access to default connection terms.** This would give process heat users access to a default commercial framework in which to engage with networks in a transparent and commercially fair way. It would also incentivise network prices that reflect the special nature of process heat. Transparency will foster greater collaboration, provide process heat users with more options, and incentivise networks to reduce electricity's delivered cost.

Necessary Action 7 - Reduce emissions from process heat

7d. Helping people to access capital to reduce barriers to the uptake of technology or infrastructure upgrades such as boiler conversions, energy efficiency technologies, and electricity network upgrades.

To reduce barriers to electricity network upgrades, we suggest:

- **encouraging Transpower to support and aggregate** new direct connections and extend the term of asset recovery to 20 years for load. This would support competition and innovation in respect of new capacity upgrades and reduce the barriers to accessing capital to fund capacity upgrades,
- **asking the New Zealand Infrastructure Fund to invite networks to provide proposals for the Fund to support building-out local network capacity to anticipate demand for process heat.** This will:
  - ensure that network capacity doesn't constrain New Zealand's speed of transition to electricity; and,
  - avoid individual end-users facing the costs associated with a step change in upgrading assets. The recent precedent is the government support of the rollout of Ultra-Fast Broadband to underpin long term economic growth.

    Upgrading networks in anticipation of network demand would take the burden of cost away from the marginal customer and remove a barrier to customers' decarbonisation decisions.

19. Do you support the package of recommendations and actions to create a multisector strategy, and is there anything we should change?

We support any change that creates a positive incentive to better connect procurement processes with broader organisational decarbonisation objectives and removes rules that inhibit optimising asset lifecycle costs, including emissions.

Necessary Action 15: Integrate government policy making across climate change and other domains.

15d. Requiring government procurement policies to include climate change considerations, in order to leverage purchasing power to support low emissions products and practices, particularly with regard to third party funding and financing transactions.

In respect of 15d:

We recommend a review of the Government's Procurement Charter and Rules, including:

- expanding Rule 16 'Broader Outcomes' to enable structured deals involving capital costs, funding and fuel supply, along with operation and maintenance that achieve the government's decarbonisation objectives,
- enabling more innovative fuel supply arrangements to be structured under the Government Procurement Rules Commodity Market Goods clause. Some mechanisms can support pricing indexed to a competitive and transparent market price, but with a transparent variation formula against these transparent commodity price indexes to support deal structuring that can compete with coal and truly decarbonise,
- utilising government agencies' access to credit to extend procurement terms out to 10 years and allow for a balanced consideration of capital and operating costs that support the acceleration of new energy projects that combine capital plant, fuel and operating cost to reduce emissions cost-effectively over the life of an energy asset.