Wise Response Society Inc.

Oral Submission on Energy, Infrastructure and Transport of the Proposed Regional Policy Statement for Otago

16 March, 2023

Presented by Nathan Surendran[1] and Dugald MacTavish on behalf of the Society.

Scope of this Oral Submission

1. You might recall that in our first Oral presentation to you on SRMR, Interpretation, Integrated Management we set out a biophysical limits perspective to the challenge of sustainable resource management with a series of graphs covering limits to growth, global overshoot, the remaining emissions budget, tipping points, fossil fuel mitigation and approaching fossil fuel constraints.

2. To provide the basis of our policy recommendations in this EIT section, Nathan will further develop this perspective with a particular focus on energy and its relationship with economic activity. This then has direct implications for how we manage our infrastructure and transport systems.

3. This EIT section of our original submission did not have the benefit of Planning input. This may partly explain why virtually all of our submission points were dismissed in the S42 report. We therefore ask that with your combined expertise, you consider the merit of the intent of our submission points and whether that might still be given valuable effect with adjusted wording or with a shift to another part of the statement.

A Biophysical Limits Perspective - Energy

4. Oil is a finite resource, and as it becomes harder and more expensive to find and extract the remaining reserves, the cost of using oil will continue to rise. Cf Appendix A, EXAMPLE - Resource Pyramid. However, there is another issue with our reliance on oil that is less well-known: the declining net energy of our energy system.

5. Net energy is the energy we get from our energy sources minus the energy required to extract, transport, and process those sources. As we use up the easy-to-access oil, we have to rely on lower-quality and harder-to-extract sources, which require more energy to extract. This reduces the net energy available to us[2] and means that we have less energy available to power everything else in our economy, such as manufacturing, agriculture, and transportation. This net energy at the global level is trending toward zero much faster than is commonly understood. Cf Appendix A, EXAMPLE 1 - Net Energy.

6. Tim Garrett's research[3] has shown that there is a direct link between energy consumption and economic activity. Cf Appendix A, EXAMPLE 2 - Garrett Constant. In other words, our economy requires energy to function, and as the net energy available declines, so too will

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[2] https://surplusenergyeconomics.wordpress.com/2022/05/21/229-in-the-eye-of-the-perfect-storm-2/ or, more colourfully, https://www.feasta.org/2018/09/20/end-of-the-oilocene-the-roar-of-the-oil-fizzle-dragon-king/

[3] https://www.inscc.utah.edu/~tgarrett/economics.html

our economic output. Steve Keen's work[4] has thoroughly rebutted the flaws in the prevailing neoclassical economic analysis which assesses energy's contribution to GDP as relating to the percentage of GDP expenditure on energy, and points to the 1:1 relationship that the Garrett Constant has revealed.

7. The fact of an over-leveraged, fiat money based, economic and financial system that is showing signs of increasing embrittlement as the headwinds of climate, geopolitics and logistics challenges, alongside the net energy decline we are highlighting, continue to bear down, and cannot be ignored. The paper 'Trade Off: Financial system supply-chain cross contagion – a study in global systemic collapse'[5] outlines the very real risk that widespread systemic dysfunction and a significant collapse in globalised commerce is a very possible, even probable outcome of current challenges. This is all the more probable when you start to understand the Psychology of Contraction[6], and the self-reinforcing negative feedback that events such as the current USA banking failures initiate in the system.

8. This means that we cannot continue to rely on economic growth and consumption-based lifestyles, nor in fact the continuation of industrial society in anything like its current form, in the medium term (5-25 years). We must grapple urgently with how to adapt to live within the declining net energy of our energy system.

9. This will require adopting far less energy intense systems (ie plan for an energy budget of perhaps 20% of current rate of throughput by 2050), conserving resources (as we won't have the energy supply to continue and expand industrial extraction at the scale we've seen), and a radical simplification of our economic arrangements needs to be planned for if we are to avoid a calamity.

10. Common objections to this line of reasoning, such as technology will save us (a faith not reason-based appeal), or we can decouple resource and energy demand from growth[7] are factually flawed, and must not be considered seriously in this context.

11. It is essentially a binary choice: retaining weak and poorly directed policy, and awaiting the inevitable, uncontrolled collapse in national GDP, living standards, public health and so forth. Or, adopting clear-sighted policy now, to drive the necessary change before it is too late. The graphs we presented at our first hearing make it clear that time is now of the essence both from the environmental perspective and the biophysical energy and resource perspective.

12. If the RPS is to address these issues, policy must be framed within these energy and atmospheric limits. Because a high proportion of our emissions are due to the burning of fossil fuels, cutting them back and moving toward renewable energy will simultaneously reduce our vulnerability to the Net Energy trend. That is another reason why ensuring that policy throughout the RPS is consistent with our national emissions reduction goals and the Zero Carbon Act.

13. Given the dire consequences of failing to meet these goals, it appears this may be a legal requirement under the RMA s61(2)(a)(iii) i.e., "to have regard to regulations relating to

4 https://energyandresilience.substack.com/p/energys-role-in-economic-production

5 https://www.feasta.org/2012/06/17/trade-off-financial-system-supply-chain-cross-contagion-a-study-in-global-systemic-collapse/

6 https://www.theautomaticearth.com/2015/08/the-boundaries-and-future-of-solution-space-part-2/

7 https://energyandresilience.substack.com/p/the-decoupling-canard-wont-die

ensuring sustainability".

Summary recommendations for specific provisions

14. In summary, we submit that this RPS must:

    i. Clearly signal the declining net energy of our energy system and that we must prepare for a lower energy world.
    ii. Ensure that policy requires all activity to transition to and operate within the biophysical constraints of our planet, (including those imposed by energy resource depletion), and is thus aligned with evolving national goals and international emissions agreements.
    iii. Build precautionary timeframes and milestones into EIT outcomes, recognizing that action must be taken in a timely and measurable manner to avoid the worst consequences of ignoring the implications of current energy trends.

Review of s42 responses to our submission points for Energy and Transport Policy

15. Refer to Appendix B

16. Thank you again for the opportunity to be heard.

17. As another member of Wise Response, Prof Robert McLachlan, said in his recent article on Hydrogen in aviation "the pathway towards lower emissions must be followed, easy or hard. We know now that every year of delay makes the job harder and the damage worse"[8].

18. This RPS is Otago's opportunity to lead the energy/emissions transition. The crucial question is do we have the empathy, wisdom and courage to take that step while we have the chance?

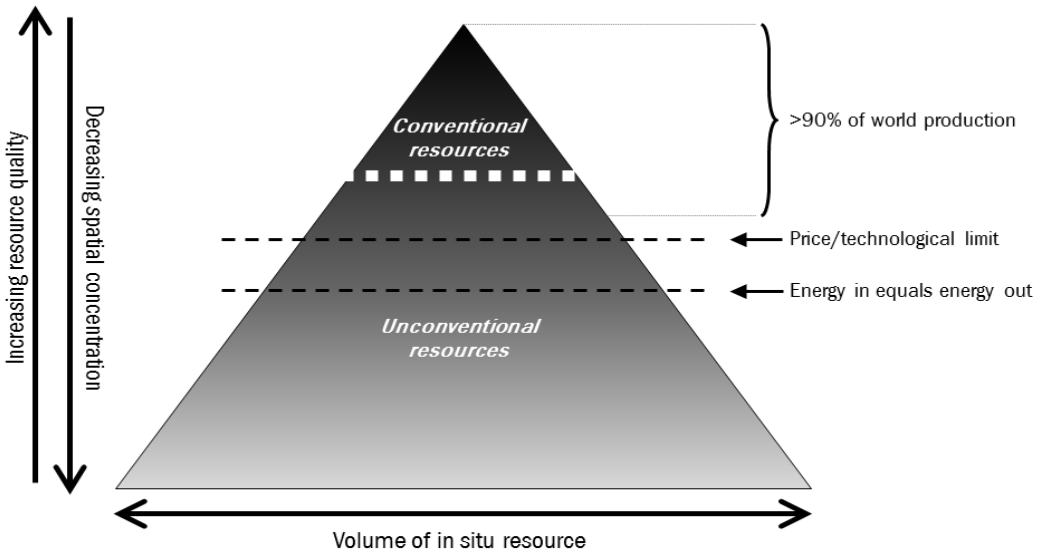
8 https://blog.planetaryecology.org/2023/03/11/hydrogen-aircraft-fool-me-once/

Appendix A: Key Energy Concepts behind Wise Response

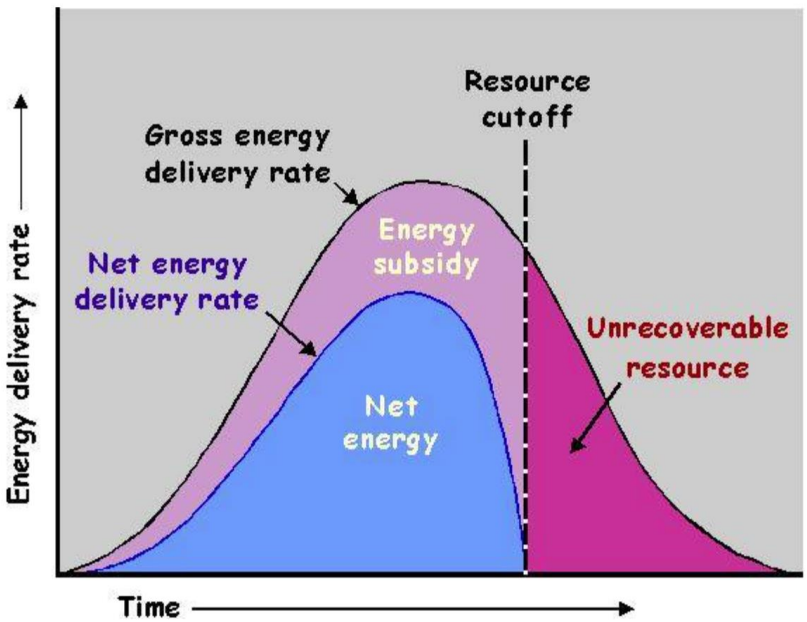
These are selected examples of trends that our Society is trying to bring to wider public attention.

On the basis of these trends alone, as a matter of national security, all nations, including New Zealand, should take the fact that we are massively in biophysical overshoot and the high probability of these global trends into account in their local planning instruments.

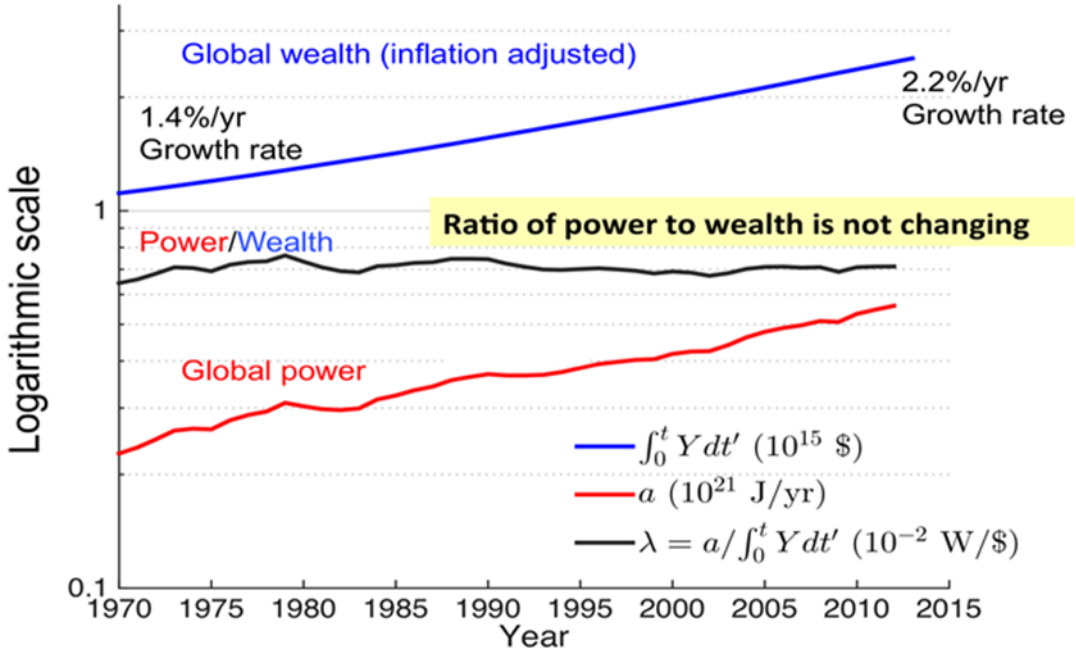
Example 1 - Resource Pyramid



Example 2 - Net Energy



Example 3 - Garrett Constant[9]



"In the case of the constant of proportionality that relates civilization's economic wealth to its rate of energy consumption, it tells us not just where we are today but it dramatically simplifies and constrains long-term estimates of where the global economy is headed. The constant ties economics to physics, so with physics, more robust economic forecasts become possible.

"The most easily appreciated implication of the constant value is that sustaining the GDP will require that we constantly grow global power production capacity; or, sustaining long-run global GDP growth will require constantly accelerating growth of global power capacity, i.e., that the rate of increase must itself increase.

"The question of growing wealth shifts from the traditional approach of looking to economic policy to one that is largely a matter of assessing the geological availability of fossil reserves: will we uncover new reserves faster than we deplete them or switch to renewables? If we can't, what then? And if we can, what does growing fossil fuel consumption imply for our climate?"

9 https://www.inscc.utah.edu/~tgarrett/economics.html

Appendix B: Review of s42 responses to our submission points for Energy and Transport Policy

Specific Provision	Support/Oppose/ Amend	Responses to s42	Updated decision requested
EIT- Energy, infrastructure and transport			
EIT–EN–O1 – Energy and social and economic wellbeing	Amend	(S42A para's 95-123) The ORC reviewer notes our recommendation (aligned with Trustpower's) but fails to make direct comment against it in subsequent paras, then ignores it in the recommended amendment.	It is critical that energy is designed and managed to meet wellbeing and not just GDP growth. In this context we note for example that the Welsh National Transport Delivery Plan is based in achieving their four well beings. We so wish to see the same approach for energy and transport in this RPS. https://www.gov.wales/national-transport-delivery-plan-2022-2027 Pp 11 **Original submission point is sustained** (possibly with slightly altered wording but which achieves the same link) AMEND: Otago's communities and economy are supported by renewable energy generation within the region that is safe, secure, and resilient, supporting the realisation of the four wellbeings.
EIT–EN–O2 – Renewable electricity generation (REG)	Amend	(S42A para's 81-94) The ORC notes our recommendation but fails to make direct comment against it in subsequent paras, then ignores it in the recommended amendment (para 94).	Based on the global energy situation a distributed REG system, where communities are given maximum agency, best meets both efficiency and resilience goals and thus the wellbeing framework. This has been clearly demonstrated by the recent cyclones and that Great Barrier Island (with local systems) came through without significant supply disruption. The

			importance of distributed energy is also acknowledged in EIT–EN–P8. **Original submission point is sustained** (possibly with slightly altered wording or location but which achieves the same intent) ADD: Provides a significant contribution to the four wellbeings and manages climate and natural environment related risk for the community, through community-owned REG assets.
EIT–EN–O3 – Energy use	Amend	(S42A para's 124-134) ORC disagrees with Wise Response in para 130, citing it as framed as a method and being beyond the remit of the RMA	The intent here is to promote decentralization (as indicated for EIT-EN-02) and reduced energy demand from a full cycle (systems) perspective. While these attributes should be signalled at a policy level, the ORC may be correct that the details should be reflected in a method. **Original submission point is sustained** (possibly with slightly altered wording or location but which achieves the same intent) AMEND: Development is located, ~~and~~ designed and managed to facilitate and incentivise minimum demand and ~~the~~ efficient use of energy by giving individual consumers the option to manage their demand, to generate their own electricity and potentially rebate it to the grid, so that ~~and to reduce~~ per capita demand ~~if possible~~ is reduced, ~~and minimising~~ along with the full cycle contribution that Otago makes to total greenhouse gas emissions.

EIT–EN–P8 – Small and community scale distributed electricity generation Provide for small and community scale distributed electricity generation activities that increase the local community's resilience and security of energy supply	Amend	(S42A para's 291-300) ORC disagrees with Wise Response in para 297, funding and coverage of mechanisms, as beyond the scope of an RPS.	We accept this is not the appropriate place to request proper resourcing but resourcing for community scale generation is a challenge given the powerful vested interests in the current centralized system. Please consider if there are ways the RPS could help ease initiatives. The failed attempt by Waitati residents to set up a local windfarm is a case in point. By contrast, the Danish government decreed that new wind farms must be at least 20% community-owned. Wind accounted for 47% of its power usage in 2019. Household PV panels or micro grids that have feedback tariffs are more feasible options currently. AMEND: Funding will be budgeted and allocated, in line with the acknowledged urgency of the climate emergency, to enable a better understanding of the potential for small and community scale distributed electricity generation activities that increase the local community's resilience and security of energy supply. All mechanisms to enable this will be explored, including the creation of a new CCO with this specific strategic objective.

TRAN – Transport	Amend	(S42A para's 917-979) ORC disagrees in para 930, considering the current title reflects the content of the chapter adequately, and would not align with the National Planning Standards. In addition, matters relating to spatial	Amend heading to **TRAN – Transport, Access and Spatial Planning** We submitted: It opens the way for planning to minimise the need for transport which will be so important in a low carbon economy. This reflects integrated management policy much better.

		planning are addressed through the UFD chapter. .	We consider this ORC response speaks to a total lack of systems thinking - need to address the reality that spatial planning is the foundation on which requirements for transport arise, and the issues are therefore logically inseparable if integrated management (s59) is to be achieved**.** Regarding reference to the UFD Chapter, transport planning extends beyond the Urban context. **If it is legally possible then we confirm the importance of this proposed amendment.**
Objectives EIT–TRAN–O7 – Effective, efficient, and safe transport	Amend	(s42A para's 933 – 949) ORC reviewer dismisses submission point stating we seek to change the focus from "transport" to "transport access" which limits the provision.	Our intent is to create more opportunity for low carbon lifestyle. The ORC has misinterpreted us as we are attempting to shift the focus to "access", not "transport access". They fail to recognise that people travel in order to access some provision or need. In the interests of a low carbon lifestyle, the changes we propose are intended to prioritize "access" (with spatial planning) that avoids the need for transport. The second priority should be to enable access without emissions. The Welsh Transport plan sets the following "sustainable transport hierarchy" The ORC's recommended change to EIT-TRAN-07 (3) is inadequate in this respect, as it only addresses adaptation and not mitigation. **We therefore confirm the importance of achieving the intent of this submission point by adopting a hierarchy of infrastructure provision that prioritises access (this could be in this objective or EIT-TRAN-08). We propose a revision of the EIT–TRAN–O7 heading to:**

			Objectives EIT–TRAN–O7 – Effective, efficient, safe, <u>low-carbon access</u> <u>to social needs</u> **Where we need new infrastructure, we will prioritise** 
EIT–TRAN–O8 – Transport system	Amend	(S42A 951 – 966) ORC Reviewer disagrees with Wise Response in para 965 on the basis not relevant in the context of the RMA, and would be better placed in a Transport Plan.	If that proposition is accepted then we at least need sufficient provision in the RPS that ensures such outcomes are achieved through a Transport Plan. If a hierarchy is set for low carbon transport with good public transport service, then it needs good bus shelters not just in town, but in rural centres and junctions to make it a practical proposition year-round. Contrary to the ORC assertion, the operative RPS has such a provision. **We confirm the importance of achieving the intent of these two submission points which are:**

			Schedules low carbon modes and options for public transport that are designed to synchronize and integrate efficiently as a seamless and low-cost system to encourage use. Provides high quality bus shelters throughout the region and public transport options that are timed for convenience and travelling flexibility
EIT–TRAN–O9 – Effects of the transport system		(S42A 967 – 979) ORC Reviewer disagrees with Wise Response in para 978 on the basis not clear which goals are being referred to, greenhouse gas emission targets are not specific to regional transport, and further that this kind of approach would be considered more appropriate for an AER.	We do not agree. This submission point is entirely consistent with our overarching submission that all policies need to align with and action the national GHG emission reduction goals and ensure that change starts now. Moreover, we know we need to reduce our radiative forcing by about 8% year on year. This needs to be done in all sectors and all parts of the country and we understand that the ORC is developing action plans for this purpose. **We confirm the importance of achieving the intent of this submission point which is** The contribution of transport to Otago's greenhouse gas emissions is reduced in line with national and regional goals and communities are less reliant on fossil fuels for transportation.

Transport	New Policy	As far as we can see this proposal is not addressed in the s42A report. Again, its intent is to encourage and enable low carbon living with regard to access and transport.	Minimise the need for transport buy promoting and facilitating the following: 1. Promoting citizens living and working in place 2. Excellent internet facilities that enable virtual communication 3. Essential public services available locally in suburbs and villages 4. A principle of decentralization and subsidiarity to encourage locals to run and manage their own affairs 5. Compact urban design that enables pedestrian and cycling access 6. Cheap or free public transport with bus shelters throughout the region 7. Local and private food production and supply
Transport	General	As almost all policy recommendations have been rejected this submission has not been given effect in the pRPS.	**Reflect the above polices changes to in the ORC and District Council responsibilities**
HAZ – Hazards and risks			
HAZ–NH–P2 – Risk assessments		We will not appear for this one recommendation but wish to reaffirm the importance having the information to set objective priorities in managing hazards	**Confirm submission point** Assess and compare the level of natural hazard risk by determining the probability of a range of natural hazard event scenarios and their potential consequences in accordance with the criteria set out within APP6. so that rational priorities can be set.