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Submission on the replacement energy efficiency and conservation strategy

If appropriate, we will be pleased to discuss this submission.

Introduction

The Sustainable Energy Forum Inc. (SEF) is a New Zealand membership-based organisation with the aim of facilitating the use of energy for economic, environmental, and social sustainability.

SEF agrees with the analysis of the state of energy efficiency in NZ, as summarised in the introduction to the proposed new draft strategy “*Unlocking our Energy productivity and renewable potential*”. Energy Productivity, Energy Efficiency, and CO₂ emissions from fossil fuels do matter.

NZ is falling woefully behind other countries in efforts to raise energy efficiency and energy productivity. NZ is very slow in taking actions to reduce greenhouse gases (GHG). NZ is not aggressively working to implement or adapt to the use of new technologies.

These factors are impacting negatively on NZ’s potential economic growth, whilst they also reveal planning to fail to meet NZ’s climate change obligations.

SEF believes New Zealand must do better. To achieve better results the actions and targets included in the strategy must change. The strategy is not adequate to offer a significant New Zealand contribution to the Paris Agreement. NZ will be severely impacted by: -



- **Sea level rise** – from Antarctic land-based ice sheets collapsing and other factors. NZ’s coastal cities will be flooded to some extent. New Zealander’s coastal lifestyle and tourism potential is under threat. The only uncertainty is how soon will significant change in global sea level eventuate.
- **Acidification of the oceans**, and the demise of many fish species, from coral to many species of fish that many people eat and rely on to survive.
- **More frequent and stronger storms**, destroying houses and other buildings, farm land and crops etc.
- **More droughts and floods** – more extreme weather, affecting lives, and food production.

Whilst these impacts are outside of NZ’s control, New Zealand is obligated to effective participation in global action to minimise these impacts, as set out in the Paris Agreement.

RESPONSES TO SPECIFIC CONSULTATION QUESTIONS

1. **Does the proposed goal capture what you see as the desirable future state from the promotion of energy efficiency, energy productivity, and renewable energy in New Zealand?**

The “Goal” of this strategy is stated as:

Support New Zealand to be an energy efficient, productive, and low emissions economy.

SEF supports this as a **framework statement** – but it is not a measurable and achievable goal.

The goal must, as a minimum, include:

- A statement that New Zealand will achieve compliance with its declared GHG emission reduction obligation of 30% below 2005 levels by 2030;
- Energy efficiency, energy productivity, and renewable energy targets that will be adequate to achieve that framework statement;
- A target to decrease industrial emission intensity much more rapidly than one percent per annum, which would have zero impact on NZ’s GHG inventory if it is accompanied by a 1% per annum growth in industrial activity;
- A target to improve energy efficiency in the domestic sector more rapidly than the increase in population;
- A target to exceed 90% renewable electricity, so that growth in electricity demand, particularly from the transport sector, has a beneficial effect on NZ’s GHG inventory.
- A means to enable people to invest in both efficiency and renewable energy technologies with modest debt burdens in line with their ability to repay.
- A mechanism to ensure that pricing policies reflect the GHG burden of using fossil fuels, including winter peak electricity supply;



- Electricity pricing policies that reflect external benefits of demand-side management;
- Electricity regulation goals that reinforce controls on monopolistic network company charges, to provide delineation of accountability for assertions made by network companies to justify increasing line charges;
- Electricity regulation goals that bring under control the rampant electricity retailing industry, which adds an unnecessarily large administrative overhead to electricity prices.

2. Where do the challenges and opportunities lie for energy efficiency and renewable energy in New Zealand over the next five years?

- The challenges for energy efficiency and renewable energy lie in achieving year on year rates of improvements that substantially outstrip growth in population, GDP, and industrial activity.
- The opportunities to achieve such a turnaround in energy use lie in a new paradigm for energy systems including: -
 - Engagement with householders as responsible citizens, not just consumer units;
 - Engagement with businesses as agents of change;
 - Engagement with Local Government responsibilities for infrastructure and community services design.
- Engagement with the domestic sector must facilitate the development of an energy use culture where: -
 - Energy use minimisation is a virtue and not a vice;
 - Communication technology is used in preference to travel;
 - Good stewardship of communal resources is encouraged;
 - Residential energy use becomes a priority area. The strategy *Warm Up NZ - Clean Heat* was a successful initiative that improved the productivity of working and school-age people. The influence of healthy housing on GDP sits alongside medical cost reduction, as a significant portion of the benefits came from increased worker productivity due to less sick days. Any necessary subsidy should not come from the health sector budget, but should be funded from general taxation.
 - There is a steady increase in embedded energy efficiency gains from the housing stock. The 2006 building energy efficiency law changes have now become operational regulations. A follow-up is needed on the next generation of improvements to produce building standards for net-zero-energy housing.
- Engagement with industry must enable: -
 - Adding product value, rather than just increased production;



- Adding value to primary resources, rather than just exporting them for overseas processing;
- Encouragement of deliberate use of renewable energy in place of fossil energy, especially via efficiency-retrofits and innovative use of forest-residues.
- SEF supports the NZ Bioenergy Association's target of zero fossil CO₂ emissions by 2050.

3. Do the proposed objectives and priority areas capture the key contributions that are needed to achieve the goal?

No. They are woefully inadequate.

- The proposed objectives and priority areas are founded on principles that assume NZ will continue doing what it is already doing and that improved efficiency or use of renewable energy sources or adoption of innovative technology will only occur when it meets short term economic benefit criteria. That is Business-As-Usual, which will not achieve the goal.
- Innovative and efficient energy use will mainly be influenced by pricing methodologies. All sectors need meaningful pricing that rewards GHG reductions.
- The other big influence is the ability to invest with confidence. Capital-constrained households and businesses find it difficult to rationalise investment in technologies that reduce energy consumption and emissions. New businesses that innovate are vulnerable to being suppressed, or even taken over, by bigger financially strong competitors (especially electricity gentailers).

4. Does the focus on what each group can contribute resonate with you? Do you think anyone is missing?

The focus on group contributions is disappointing and does not resonate with SEF.

- By focussing on “individuals” the strategy does not optimise the benefits that could be gained from the residential sector. Residential electricity usage is one third of the overall demand, and residential power bills provide half the electricity industry's revenue. The lack of coordinated focus on the “residential sector” results in many lost opportunities.
- Householders should be encouraged (and not discouraged) from utilising firewood in suitable appliances for most locations to achieve comfortable home heating, whilst also reducing demand for electricity in wintertime peaks.
- Residential energy efficiency requires ongoing research. The HEEP study should be repeated now. Statistics related to the present state of NZ's building stock (houses and apartments) need to be improved, and implementation trials are needed to confirm cost-effective ways of reducing energy waste.



- The Energy Cultures research on demand-side management should continue to be funded, and include investment options for smart and innovative technologies, especially wood burning to reduce the need for investment in fossil fuel peak electricity generation.
- There need to be specific projects which explore pricing options that reduce power bills and GHG emissions, and increase security of electricity supply.
- Smart grid trials need to be documented as applicable for each group.

5. Taken together, do you think the proposed goal, objectives and priority areas will set a clear direction for action to unlock our energy productivity and renewables potential?

No. An energy strategy to prepare NZ for an on-going sustainable energy future in the 21st century will not result from just continuing with 20th century energy philosophies. A change in thinking is required, as noted here, and described many times by others.

6. What specific actions could help us to achieve the goal of the Strategy? What, if any, additional costs would you face if those actions were implemented? Please quantify if possible.

- Residential contributions to the Energy Levy should go mainly to fund residential energy efficiency projects, focusing on insulation, efficient heating, and efficient lighting and appliances. This component of the levy must not fund commercial and industrial energy efficiency.
- Since the electricity sector was restructured, residential power bills have risen to fund not only direct costs of fuel, O&M, and administrative overhead, but to fund the asset-building ambitions of the new corporate entities, the inflated management costs, and above all the ever-inflating financialization of the whole sector, including debt servicing, asset "value" inflation.
- The Energy Levy contribution from residential consumers should be apportioned between the Electricity Authority (EA) and EECA to fund residential energy efficiency improvement projects.
- The EA's portion should fund monitoring of the residential electricity market (This information is currently considered to be the commercial property of retailers). That market should be considered to embrace not only electricity, but all services which can substitute for electricity, including energy efficiency, household wood burning, natural and liquid gases, rooftop solar heat and photovoltaics (these are listed in probable order of importance).
- The monitoring component of the levy should give rise to proposals to encourage, or if necessary require, residential power tariffs to reward demand response to actual wholesale prices by time of day. That would challenge the present ability of generators to create scarcity and thereby jack up wholesale prices. Wood burning and household-scale batteries (e.g. 10 kWh) are the main techniques for this.



- The EA's portion of the Levy should also fund representation of residential consumers on its advisory structures, and the governance board should reflect this. However, The EA's Interpretation of its Statutory Objective precludes that.
- The contribution of the Levy that goes to EECA should go to fund investigation of residential energy efficiency, with a focus on those consumers whose debt overheads preclude their self-investment in the most cost-effective retrofits. Typically, these include insulation and efficient wood burners, and natural gas heating, where that's available.
- A rolling fund, like the Crown Building Loan Fund, would seem the most appropriate means, and the governance of this should be ensured by a significant residential-consumer presence on EECA's governance board.

7. Do you agree that the preferred targets will be measurable and meaningful targets, and support the objectives and actions?

No. SEF concludes that the two targets in the draft strategy are weak and will be ineffective in achieving the change in thinking needed to achieve the goal.

- The target of annual doubling of the size of the NZ electric vehicle fleet to 2% in 5 years is unrealistic because supply will constrain it. For example, the most numerous EV in NZ is the Nissan Leaf, but Nissan have decided not to supply their newer Leaf models in New Zealand.
- Other manufacturers are focussing on large Plug-in Hybrid (PHEV) cars and hydrogen technology vehicles. NZ will be just dependent on second hand Japanese imports for the 100% EV fleet.
- Inclusion of PHEVs in the definition of EV's seriously weakens the EV strategy. For example, the 640-mile range of the Toyota Prime PHEV would be achieved with 25 miles on electricity and 615 miles on petrol.
- Growth in EV's will be inhibited by the plan to introduce a road user charge, when the EV uptake reaches 2%. To capture multi-fuel PHEVs and hydrogen technologies, the road user charge would need to be applied to all vehicles with removal of the anachronistic excise duty on petrol.
- The target of 1% annual reduction in industrial emissions intensity will be offset by growth and will be increasingly difficult to achieve without a radical change in the approach to energy use in businesses.

8. How can we ensure that energy data and research generates knowledge and understanding that can help to unlock our energy productivity and renewables potential?

- By integrating holistic greenhouse gas emissions assessment into energy scheme assessments and infrastructure planning. New Zealand's energy infrastructure needs to be future-proofed to ensure it can fully incorporate 2030 obligations and 2050 aspirational targets.



- Solar Photovoltaics (PV) with electricity storage technologies will inevitably impact electricity industry as equipment prices continue to drop, and these technologies become attractive at small scale over the next 5 years. The electricity industry needs to embrace that reality rather than fight against it.
- NZ has some high sunshine sites, especially in Marlborough, Nelson, the eastern Bay of Plenty and Tauranga, with sunshine hours averaging above 2,500 hours per year. Such locations will provide commercially attractive PV opportunities for electricity customers, energy companies and network companies.
- Solar PV produces more in summer than winter, so for the benefit of NZ an integrated approach is needed to seasonal storage using the electricity grid to link hydro, geothermal and wind resources.
- Innovative technologies, such as wave and tidal energy systems, are beyond the scope of this short-term strategy.
- All of this indicates that NZ should be electrifying a significant proportion of transportation, particularly public transport. Rail systems (heavy and light rail) and passenger buses need to move to all electric systems.
- Retrogressive negative trends like stopping the use of electric railway engines on the North Island Main Trunk railway, and the removal of trolley buses from Wellington must be prevented.
- The NZ Transport Agency needs to be restructured to change its focus from just investing in expensive and fuel-inefficient motorways, to investing in walking, cycling and electric public transport modes. This transition has started in Auckland, with construction of the city rail loop. This change needs to be rapidly replicated to increase fossil-fuel-free, resilience and energy productivity.

Concluding Remarks

New Zealand's wide range of renewable energy resources, its technical expertise, the high education levels of its population, and its capacity to implement change quickly, could all combine to create a rapid transition to an energy-efficient low carbon economy. However, its legal and regulatory systems put shareholder value as the highest priority, and puts social and environmental (including climate change) externalities as low priority, or even exclude them completely, as is the case in the EA's interpretation of its Statutory Objective and the exclusion Climate Change considerations from the RMA.

Any NZEECS strategy will tend, under the present system, to be overridden by shareholder "requirements" to maximise profits and shareholder value – including large-scale investment in further expanding electricity assets. Electricity pricing rules guarantee a generous return on those assets – and encourage expansion of the centralised electricity asset base.

In contrast, small-scale investment in end-use energy efficiency, and in distributed renewable energy including efficient wood burning and solar energy, are limited by



the discretionary spending capability of householders. Most domestic consumers are already saddled with debt. This was the rationale underpinning of the *Warm Up NZ - Clean Heat* subsidies, which enabled some 300,000 houses to be insulated.

There is growing international recognition that the energy industry under the neoliberal economic philosophy has been hijacked by multi-millionaire elites, not only in New Zealand but throughout the western world.

A sustainable energy-efficient future will require a change in governance. The energy strategy needs to be broadened from simple economic efficiency. It needs to be re-defined once again to include consideration of environmental/climate issues and social/cultural impacts. In particular, re-defining energy supply and demand systems, must include reconciling them with the quantified GHG emission targets.

A road map for progressing from the path that NZ is currently following, to the path NZ needs to be on a decade from now, is ill defined. However, the first step towards mending a broken system is to accept that it is broken and needs mending.

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On behalf of the Sustainable Energy Forum Inc