



Beacon Pathway Limited

Submission to draft New Zealand Energy Strategy – Powering Our Future

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I am happy to be contacted about our submission.

About Beacon

Beacon Pathway Ltd is a collaborative research consortium working to find affordable, attractive ways to make New Zealand's homes more sustainable: warmer, healthier, cheaper to run and kinder to the environment. Beacon aims to drive sustainability outcomes consistent with New Zealand sustainable development requirements.

Beacon is funded by industry, with matched revenue from Government research funds from the Foundation for Research, Science and Technology. There are currently five shareholding partners –

Building Research,

Scion,

New Zealand Steel,

Waitakere City Council,

Fletcher Building.

Beacon's vision of:

Creating homes and neighbourhoods
that work well into the future
and don't cost the Earth

will be realised through the achievement of the following two goals:

1. To bring the vast majority (90%) of New Zealand homes to a high standard of sustainability by 2012 and;

2. That every new subdivision and any redeveloped subdivision or neighbourhood from 2008 onwards be developed with reference to a nationally recognised sustainability framework.

The consortium has been established to bring about significant improvement in the sustainability of the residential built environment in New Zealand, by carrying out research, managing resultant Intellectual Property, and facilitating development and increased availability of products and systems via emergent markets, through working together with like-minded organisations, and by lobbying regulatory authorities.

Beacon intends to develop interventions, which meet sustainability goals in a manner that aligns with consumer lifestyle and choices, achieving home quality and comfort with appropriate affordability.

Beacon is committed to funding research and initiating projects on interventions that will enable a more sustainable residential built environment. This will assist the New Zealand building and construction industry to deliver, and consumers to adopt, more sustainable residential built environment outcomes, ensuring better returns (social, environment, cultural, and economic) for shareholders, stakeholders and the wider public.

Submission

This submission is in two parts, firstly an outline of the key points that Beacon Pathway wishes to make about the draft Energy Strategy and then specific answers to the questions posed in the Ministry's feedback form.

Key Points

1. TARGETS AND GOALS ARE NEEDED

The Energy Strategy needs to set ambitious goals, clear targets and track a path about how they will be met. The current draft has no clear goals, and these are needed. Given the recent strong direction from government about carbon neutrality, energy efficiency, renewable generation and sustainability, this is disappointing. Targets need to be set for each sector of the energy spectrum, and reflect the constraints and opportunities of that sector. For example, some targets might include:

- 100% renewable generation by 2040
- 10% wind energy generation by 2015 (including small, medium and large scale generation)
- Stabilise energy consumption from transport by 2010
- Biofuels provide 10% of transport energy by 2015
- 20% of households using local renewable energy to provide water and space heating by 2010
- Efficiency of New Zealand's vehicle fleet increased by 20% by 2012

2. New Zealand needs a resilient energy system – local solutions deliver this

As understanding in sustainability issues grows, resilience has been identified as a key issue which needs to be addressed. Global energy issues, such as climate change and resource availability (particularly fossil fuel depletion), mean that New Zealand needs to focus on the transition to a more sustainable approach to energy. A key way of achieving this is to allow for far greater decentralisation of energy resources, with local, neighbourhood or even household renewable generation.

This has been recognised widely overseas, for example, in California and Australia with their subsidies for photovoltaic panels, and in many parts of the United Kingdom with the implementation of the Merton Rule which requires generation of 10% of the energy required on site for new developments. The UK Government has recently put in place the planning framework to ensure that small scale wind turbines and photovoltaic panels on individual dwellings do not require planning consent – they have a similar visual impact to a satellite dish, yet in New Zealand frequently require a resource consent.

In New Zealand, solar hot water, photovoltaic, wind and biomass generation are all technically able to be delivered at a dwelling or neighbourhood level. Wind, biomass, hydro and tidal power can all be delivered at a local or regional level.

If New Zealand is to have a sustainable, resilient energy system, then we need bold goals – and effective methodologies put in place to achieve them. For example, Beacon considers that all household energy should be supplied by renewable sources by 2040 and that 50% of these should be locally sited.

The Government must provide a leadership role:

- Leading by doing – all Government buildings should be required to be energy self-sufficient by 2020 – including Housing New Zealand, Defence and other department housing. Schools are a critical element here as they frame our future minds and have sufficient space to be able to become net generators by 2020.
- Incentivising uptake by consumers – subsidies for photovoltaic panels and solar hot water systems are common overseas, and set at a level whereby they achieve a high degree of take-up. As fossil fuels decline in availability, the cost to produce the physical units for renewable generation will increase – we need to get these in use before these costs increase.
- Facilitating others – local government could play a key role in the development of renewable generation, promotion of energy efficiency and reducing greenhouse gas emissions. The recent changes to the RMA are not enough, similarly voluntary programmes such as the ICLEI CCP – NZ programme require regulatory underpinning. Local councils are most New Zealanders' main contact with government – they have an important role to play in ensuring a sustainable energy future and need to be given the powers and the clear directive from central government to do this.

3. Household energy use should be a key focus

There are considerable gains to be made by focusing on New Zealand homes in terms of energy management. Households directly consume 32.4%¹ of energy (including transport energy) in New Zealand. A focus on household energy use will have a significant impact on

- The amount and price of energy available for business use, and hence the competitiveness of New Zealand's industry in the global market;
- The peaks in energy use which result from domestic consumption which result in increased cost / disruption to industry;

4. Low quality and high quality energy

There needs to be consideration of the issues around low quality and high quality energy. Low quality energy can generally be defined as that produced in local, non reticulated ways eg burning of wood, solar systems, small scale wind systems, boilers or mini hydro systems.

High quality energy is that generated centrally in large quantities and is reticulated within tight performance criteria.

High quality energy transmitted by the national grid should be used for purposes that need high quality reticulated energy (running your fridge, microwave, computer, lights etc) not those which can use low quality energy (heating your home, heating your water).

Low quality energy can also be low cost (particularly for rural and small town areas, where access to firewood is easy and cheap or free) and therefore a particularly good option for poorer households. Energy prices are only likely to increase, and already affordability issues around heating impact many households.

5. Wood fires and air quality issues vs heat pumps

Beacon notes that MFE Warm Homes programme is aimed at reducing air quality impacts of home heating (open fires) but generally encourages people to move to using heat pumps rather than efficient low-emitting log burners or pallet burners. Similar programmes in Nelson and Canterbury have this focus also. While heat pumps are efficient, they have three major disadvantages which need to be considered:

- They can be used for cooling in summer. This is already starting to create a problem in wealthy warm areas such as parts of Auckland – we do not need the number of people using air conditioning to increase, as this will then start to drive up demand for power in summer and drive requirements for more generation.
- They are more expensive to run for low income households with access to free or cheap wood – creating an extra heating cost burden. They also often only heat one room – meaning that a well heated home can require a number of heat pumps. For example, one home that Beacon is undertaking research into in Wellington has three heat pumps installed in the home.

¹ EECA Website

- They reduce the resilience and increase the dependence of individual household units upon reticulated energy. This was recently seen with the heavy snows in the South Island – households with wood burners and the like were able to cope significantly better in the face of interrupted electricity supplies. For rural areas and small towns in particular, they are an important component of civil defence planning. If all the homes currently heated by wood in those areas had had heat pumps, then quite possibly deaths and certainly serious illness would have been a result of those power outages.
- The Household End Use Energy Project (HEEP) which BRANZ have run over the last 10 years has identified that homes heated by wood burners are the warmest in New Zealand – this is at least partly because efficient wood burners heat the whole house – not just the room they are in. New Zealand has a woeful record with regard to adequately heating our homes. If homes currently heated by wood burners were converted to using heat pumps or other electric heating methods, and heated their homes adequately, then significant increases in demand for reticulated energy would arise, requiring considerable additional generating capacity.

6. Energy considerations around water use

Any strategy around energy must also consider the energy costs associated with collecting, storing, transporting, treating, use and disposal of water. This can be a significant cost and energy use which is not currently considered in water planning. Decisions to, for example, build a new water supply dam (as is currently proposed in Wellington) instead of introducing measures to promote efficient use of water, will incur significant extra energy costs in:

- Construction
- Operation (eg pumping stations, pipe network)
- Disposal of wastewater

Hot water is a major energy use in households (approximately 30% of household energy consumption), but the majority of households do not have low flow devices. New hot water systems are often high pressure mains systems, and these will exacerbate the problem. Use of flow restrictors on taps and low flow shower heads will therefore have a significant positive benefit in terms of both water and energy efficiency.

7. Use of gas for heating

Many New Zealand homes use unflued gas heaters as a major source of heating. This has many negative impacts and any energy strategy prepared needs to ensure that unflued gas heating is eliminated from New Zealand. Unflued gas heaters are:

- Unhealthy – generating a litre of moisture per hour, carbon monoxide, nitrogen dioxide and other hazardous indoor air pollutants. New Zealand has the highest rates of asthma in the world, and our damp cold homes are a significant contributor to asthma and bronchial diseases.
- Inefficient – because they produce wet heat, it is harder for people to heat their homes as wet air is harder to heat than dry air.

- False economy – many people use unflued gas heaters in conjunction with a dehumidifier because of the significant moisture produced. Dehumidifiers are often poorly located (eg next to external doors and windows) and therefore use significant reticulated energy to compensate for the moisture produced by unflued gas heaters.

There is an argument which has been used in the past that poorer households rely on unflued gas heating as otherwise they could not afford to heat their homes. As discussed above in relation to low grade energy, and below in relation to the Warm Homes scheme, efficient wood burner or pellet burners are an affordable, healthier option for low income homes in terms of operating costs.

8. Energy efficiency can offer significant gains

Beacon has been undertaking research into energy efficiency in both new and retrofitted homes. Regardless of the behaviour of the occupants, Beacon has demonstrated that a well designed, well insulated new home can easily use 30% less energy than a standard home. These improvements in design can be undertaken within an affordable context – with Beacon’s Auckland NOW Home[®] built for \$220,000 (a low-medium price in the Auckland market).

These energy efficient homes contain only readily available technology and design methods, which could be adopted in any new home across New Zealand. The Auckland NOW Home[®] has been designed to require no heating beyond that provided by the sun, the Rotorua NOW Home[®] has, in addition to passive solar design, a low emission pellet burner installed as a heating device.

Retrofitting New Zealand homes for energy efficiency can also be easily achieved. Beacon is currently trialling a range of retrofit options in ten homes in Papakowhai, Wellington. These are standard 1960s/1970s homes, with the normal suite of energy and indoor environment issues- ie. little insulation, high heating costs, use of inefficient electric hot water cylinders, use of unflued gas heaters, high moisture levels, under-heated homes. Beacon has assembled a range of affordable retrofit options for these homes which should result in both significant reduction in energy use and improvements in the indoor environment quality of these homes.

For more information, refer to Beacon’s research which can be found at www.nowhome.co.nz

9. Regulation is required around energy efficiency – incentives are not enough

There appears to be a strange reluctance in New Zealand to regulate for reasonable minimum standards around energy efficiency. As has been demonstrated overseas (eg in most of Australia) introduction of high minimum standards around energy efficiency has a very low additional cost to new homes. For example, the New South Wales Department of Planning identified the following costs for implementation of a 25% reduction in energy use for new homes when compared to a standard new home through the mandatory application of the BASIX model.

BASIX 25 Energy rating & Thermal Comfort – Actions and Cost for single dwelling²

Target for July 2004	Actions	Additional Costs for a Typical Single Dwelling
BASIX 25 rating	Gas hot water system – high efficiency (5 star)	\$757
	Ceiling fans	\$1805
	Well ventilated refrigerator space	\$40
	Outdoor clothes line	\$416
Thermal Comfort	External shading (600mm eaves)	\$860
	Wall insulation	\$1100 *
TOTAL COST		\$3878

Beacon also believes that, in addition to introduction of high minimum standards for NEW Homes, the government needs to consider introduction of regulation requiring retrofitting of existing homes for greater energy efficiency. This could be in conjunction with the introduction of the HERS Scheme, currently under development by EECA. For example, homes could be required to be insulated to meet a minimum standard at time of sale, or at time of rental. BRANZ data would indicate that currently between 700,000 and 900,000 New Zealand homes are not insulated to current, inadequate, Building Code standards.

Beacon believes that minimum standards around energy efficiency of appliances must be introduced. Many households are continuing to purchase cheap low-efficiency appliances without realising the ongoing running cost impacts. Victoria Australia, for example, has introduced a requirement for appliances on sale to meet 4 star energy efficiency standards. New Zealand needs to do the same. It is possible, for example, to buy a 5.5 star energy efficiency fridge, so there are no technological barriers to their production. When on-going running costs are considered, energy efficient appliances for the householder are a “no brainer” yet unfortunately voluntary measures have not been sufficient to eliminate low energy efficient appliances.

19. Education and incentives are also important

Education programmes to date have focused on behaviour (turn off switches etc) and needs to focus also on purchasing decisions. This needs to include working with key industry groups (eg retailers, builders, designers) so that promotion of energy efficiency in choices around purchasing decisions occurs at the point of sale. For example, Beacon has anecdotal evidence that consumers have been actively discouraged from buying higher standard insulation by retailers (“you don’t need to use R4.6 batts – R1.8 will meet the Code requirements”).

² Source NSW Department of Planning. Summary of BASIX Cost Benefit

The recent Electricity Commission funded campaigns around energy efficient lightbulbs is an example of a good programme aimed at householders. Given the increasing prevalence of halogen lighting, a similar campaign aimed at both households and builders around LED lighting as a better option than halogen lights could be useful.

Energy efficiency programmes could work in with existing industry initiatives (eg Future Proof Homes campaign currently underway to ensure that high standards of energy efficiency are included as part of such campaigns).

Incentives provided such as the EECA subsidies for home retrofits have been at the “basic” level of retrofit (draught stopping, underfloor foil, insulation top-ups to code in ceiling and/or underfloor). Beacon research indicates that, while useful improvements in indoor environment quality and therefore health of home occupants arise from basic retrofits, the long term energy savings are minimal. This is because the programmes are both targeted at low income households, who tend to take back the energy savings by increasing the comfort levels in the home, and because the level of retrofit is so low. These programmes are very worthwhile from a health perspective, but programmes aiming to generate energy efficiency need to be both targeted differently (ie at middle and high income households who have higher base level of usage) and promote a much higher standard of retrofit than is currently the case. The different triggers to incentivise such schemes need to be recognised (eg health, warmth, comfort, reduced noise) other than just financial savings, as middle and upper income householders make decisions based on other criteria than just operating cost savings.

Incentive programmes could also be designed which work with existing groups who are engaged with their individual behaviour eg AA motoring group, Consumers’ Institute members and conservation groups such as Forest and Bird. Members of these groups also tend to be in the middle/upper income bracket and therefore are in a better financial position to pick up on incentives and subsidies with their own contributions.

A different model of provision of incentives also needs to be considered with engagement of the Health Insurance and Banking sectors and, to a stronger degree, with the Electricity supply sector. Westpac now offers incentives for energy efficiency retrofits to new mortgage holders; these programmes should be built upon and expanded across the sector. Electricity suppliers could provide for the capital cost of energy efficiency measures to be repaid through power bills. Health insurers could offer lower premiums for houses that offer a “R value” and heating methods which enable a healthy internal environment.

In short, the government needs to engage far more widely with the range of industry players who could assist in promoting energy efficiency outcomes for both public and business benefit.

Response to Specific draft Energy Strategy Questions

Questions on Resilient Low Carbon Transport

On energy security:

How important is it for New Zealand to be more self-reliant for transport fuels, for example, through the development of local biofuels and electricity as a transport fuel?

- Increasing self reliance for transport fuels is supported, particularly electrification of public transport systems.
- However the priority should be placed on increased efficiency in our transport system eg modal shifts from sole car occupancy to passenger transport and use of more efficient transport systems (eg shipping, rail) for long distance freight haulage.

On biofuels:

While the government has agreed to introduce a minimum biofuels sales obligation, should New Zealand aspire to reach a higher level over time? If so, how could this be achieved?

- New Zealand should have more ambitious targets as regards biofuels – however these need to be within the context of wider environmental sustainability.
- Biodiesel is preferred over Bioethanol as local air quality impacts are less (Biodiesel has around 10% less emissions of particulate than diesel, whereas there is significant potential local air quality and water quality issues with Bioethanol).
- In addition, Biofuels targets should not be met through inherently unsustainable mechanisms such as forest clearance for oil palm or sugar cane production (which is self defeating in terms of climate change anyway) or conversion of food crops into biofuels. It should be clear within the regulatory framework around New Zealand Biofuels targets that the fuels MUST be produced in New Zealand and from waste products, such as wood waste and sewage algae.
- Biodiesel should particularly be targeted for use by heavy vehicles already using diesel, as these vehicles have high local air pollution impacts, and the local benefits of biodiesel would be felt greatest if it is used by this sector.

On public transport:

Do you agree government spending on public transport should continue to increase, recognising the wider benefits this brings?

- A substantial increase in public transport funding AND travel demand management funding is required. Other tools such as Road Pricing also need to be implemented. In Auckland alone, current spending will see a 21% increase in greenhouse gas emissions from transport by 2016. The aim should be to stabilise and then ultimately reduce emissions from transport and a targeted, ambitious and comprehensive, well funded programme is required.

On emerging technologies:

How much priority should New Zealand give to monitoring the latest transport technologies? Should we have a role in developing these, or are we better to wait until the technologies become available and then import them?

- New Zealand should promote the quick uptake of more efficient emerging technologies by removing inefficient technologies from the market via regulation. For example, raising fuel efficiency standards (and maximum ages) for new and second hand vehicles will speed up the uptake of more efficient vehicles.

On improving fuel economy:

Should the government take steps to improve the fuel efficiency of the vehicles on our roads? If so, what tools (regulation, incentives, information) should be used? If so, how stringent should these measures be?

- Absolutely. Given that transport is a huge user of energy and emitter of greenhouse gases, surely this is a “no brainer”.
- Underpinning regulation removing the most inefficient vehicles from being imported into NZ is required.
- Emission standards (not just the 20 second look at the exhaust currently used) need to be put in place as poorly tuned/high polluting vehicles are inefficient users of energy as well as being a significant
- In addition, use of incentives, such as Feebates, for vehicles with low energy use and emissions should be put in place. Other mechanisms as proposed by the Business Council for Sustainable Development are supported.

On electric powered vehicles:

Do you agree with a policy to encourage early uptake and use of hybrid plug-in and full electric vehicles? If so, what should these measures be?

- Measures proposed by NZBCSD are supported.

On freight:

A number of factors limit our ability to increase significantly the amount of freight being transported by trains and ships. Should the government be doing more, and, if so, what? Do you agree with the need to develop a New Zealand Shipping Strategy?

- The Shipping Strategy proposals are supported. It should also be recognised that the government is effectively subsidising the road transport sector through road building and maintenance. More funding into rail improvements to facilitate more use of rail freight should occur.

On urban design and kilometres travelled:

Should the government be more active in influencing decision-makers to take into account transport energy and infrastructure cost considerations when making land-use decisions? If so, what tools (regulation, incentives, information) should be used? How can government best encourage individuals and businesses to make sensible changes to the way and distance they travel?

- There is abundant information and education about travel choices available and this has been shown to have a minimal effect on behaviour.
- Incentives (such as removing fringe benefit tax from organisation who provide bus or rail tickets, or bicycles for staff use) have a role to play, however market signals such as Road Pricing are also required.
- Regulatory change and clear direction from government that unsustainable forms of urban development are not acceptable is needed. This could be in the form of changes to the Resource Management Act and/or the development of a National Policy Statement on Transport and Urban Form.
- Changes to the Transport Act are also required - Regional Land Transport Strategies need to think beyond 10 years and specifically address how to reduce greenhouse gas emissions from transport.

On responding to changing vehicle technologies and fuels:

Do you agree that, in the long term, there is merit in changing to a distance-based charging regime in order to ensure adequate land transport funding, irrespective of which fuels vehicles use?

- YES.

Questions on Security of Electricity Supply

The government welcomes feedback on questions raised in this discussion, such as:

On security of supply:

How should New Zealand balance the trade-off between the consequences of supply being interrupted and the consequences of spending slightly more to further reduce the risk of interruption?

- A greater emphasis on local renewable distribution should be a core component of any security of supply programme. This should include clear direction from government that household level photovoltaic and wind powered systems (within set constraints) should not require Resource Consent from local councils. These systems can have less visual impact than a large TV aerial or Sky dish – yet often require resource consents for multiple aspects.
- In addition, consideration of provision of local level (neighbourhood) renewable generation should be made. Local communities are less likely to oppose small scale renewables such as wind generation or micro hydro (not just the small macro hydro schemes we are now seeing come through) which provide energy for their local community. The regulatory framework should allow for local communities to develop their own solutions, not just large scale energy companies.

- Feed in tariffs for those who chose to generate and sell back to the grid need to act as incentives not disincentives to this kind of behaviour and enable people to “wind back the meter” when they generate electricity.
- A recognition that in households (and quite a few industries) heating – or water and space, does not need to be undertaken using high quality reticulated energy. These functions can be provided by household/ building level solar, wind, wood and other biomass systems which are carbon neutral. Incentivisation of this – particularly use of low emission wood and pellet burning technologies would assist in reducing peak winter demand for reticulated energy, and increase the resilience of households to reticulated energy shortages and outages.

On wind generation:

Wind generation cannot guarantee firm capacity to meet loads and is less able than other types of generation technologies to provide contingency services. However, it is a promising technology that offers many benefits. How great a part should wind play in our generation mix?

- Wind should be a core component of the generation mix – but it needs to be at a range of levels, not just the large scale wind farms currently being provided. A supportive regulatory framework for smaller community level, neighbourhood and building-level wind generation should be provided.

On public confidence:

Does more need to be done to improve consumer and investor perceptions of security of supply?

- This is a low priority. Action speaks louder than words. Don’t waste money on “we aren’t going to run out of electricity” campaigns – instead develop resilient distributed energy systems.

On demand-side response:

The level of demand-side response currently provided by the market is thought to be well below its potential. What, if anything, should be done to boost levels of innovation and institutional arrangements to promote demand-side management?

- Regulation to remove energy inefficient technology from the market is required. For example:
 - fixing a date for the removal of incandescent lightbulbs from the market (as has been announced in Australia) would undoubtedly increase the speed of availability and lowering of the price of LED lighting technologies. New Zealand should be able to piggy back on the Australian market in this respect.
 - Putting in place minimum water heating standards would remove inefficient electric hot water cylinders from the market and promote greater uptake of efficient technologies such as solar and heat pump hot water systems.
 - Requiring all refrigeration systems to be at least 3 stars for energy efficiency would remove inefficient imported systems – including those

made in China which still include CFCs (both a major greenhouse gas AND an ozone depleting substance no longer allowed in New Zealand refrigerants).

- These are proven policies which have been widely used in Australia. New Zealand should identify other “low hanging fruit” in the efficiency area and ensure that increasing minimum efficiencies occur. We could look across the Tasman pretty easily for other examples if there is not sufficient knowledge within New Zealand.
- Significant incentives need to be provided in the area of demand side management. These need to be **real** incentives targeted at the likely invention opportunity points and where they are likely to get the best energy efficiency gains. A good example of a successful incentive programme is the Clean Heat programme offered by Environment Canterbury – incentives are targeted, with different incentives for different household and ownership types and are set at a level that encourages uptake. The recent CFL campaign run by the Electricity Commission is also a well targeted and thought through effective programme.
- Demand side management programmes need to be targeted at **high** energy users. For example, HEEP tells us that 20% of households consume 36% of the energy – yet EECA insulation retrofit programmes, which are targeted at the lowest income households, will mostly reach people who are low energy users already. In addition, BRANZ and Beacon research (as well as overseas research looking at similar programmes) tells us that, with these programmes, significant take-back in comfort occurs. This is largely because the level of insulation retrofit is so low (to meet 1977 not 2007 standards), that average temperatures in the home post-retrofit are still well below World Health Organisation minimums – let alone a comfortable temperature. The energy benefits of such programmes as currently undertaken are low – though they achieve excellent health outcomes, they shouldn’t be passed off as making significant energy efficiency improvements. Particularly if it then enables policy makers to claim that the homes are now performing well from a thermal perspective, when clearly they are not.

On the gas market and availability:

Are any more measures needed to encourage more exploration for domestic gas supplies? Are any new initiatives required to minimise the impact of a potential national gas outage?

Questions on Low Emissions Power and Heat

The government welcomes feedback on this issue through its consultation on two climate change discussion papers presently out for consultation (*Discussion Paper on Measures to Reduce Greenhouse Gas Emissions in New Zealand Post-2012* and *Transitional Measures: Options to Move towards a Low Carbon Stationary Energy Supply and Transition to Greenhouse Gas Pricing in the Future*), as well as the replacement National Energy Efficiency and Conservation Strategy.

The government also welcomes comments on questions raised in this draft, such as:

On meeting future electricity requirements:

What are the key drivers for deciding which energy resources New Zealand should use to meet its future electricity generation requirements? What sort of electricity generation mix do we want over the next five, 10, 15, 20 and 30 years? What is the future role of fossil-fuel-based electricity generation over the same time period? Is it possible to meet future annual electricity load growth with renewables only?

- A focus on increasing the resilience of local communities and reducing greenhouse gas emissions should be the driver for electricity generation. Targets around 100% renewable generation by a fixed date (eg 2020) should be made and then the mechanisms put in place to deliver on this. The policy and regulatory context – and effective incentives - should promote development of local distributed renewable systems, including at the individual building level.

On the Resource Management Act:

Does the RMA have a role to play in providing national guidance to help meet the strategy's objective of maximising renewable generation? How should greater use of renewable energy and reducing greenhouse gas emissions be reconciled against local environmental effects?

- There are already provisions in the RMA, which are largely not being acted upon. Instead those Councils who are developing their local or regional energy strategies, are doing so under the LGA. This is because the Environment Court process for Plan Changes to promote renewable energy are so expensive and long winded. A National Policy Statement on these provisions (and Energy Efficiency) would be very useful. Local opposition to new renewable energy generation is also likely to be lower if more, smaller scale, systems are promoted, rather than the large scale proposals we are currently seeing. Thresholds could be set nationally, under which public notification would not be required for resource consents for local energy generation. Resource consents should not be required for small-scale wind/solar/biomass generation which meets air quality/visual impact standards set nationally.

On regulatory issues:

What are the main regulatory barriers faced by renewable electricity and heat generation now? What barriers are likely to emerge in the short term? What could the government do, over and above the actions in this plan, to address this?

- Many councils treat even small-scale renewable generation as requiring a resource consent. Below a certain scale (determined nationally), resource consents should not be required as this is a significant barrier – both in terms of cost (the consent costs being larger than the cost of some systems) and time. In addition, Building Consent requirements for even simple matters such as Solar hot water systems and photovoltaic panels are onerous. Priority should be placed on developing Acceptable Solutions for these measures.

On distributed and small-scale generation:

- *How important is distributed generation to achieving a low emissions energy future? What can the government do to reduce barriers to distributed generation? To what degree should 'smart meters' be supported by government? How do you see the future role of small-scale generation in the electricity and heat sectors? What are the main barriers to the greater uptake of small-scale generation? Are current incentives for small-scale generation sufficient?*
- Distributed generation is a critical component of New Zealand's Energy future. Incentives should be provided. Regulatory barriers should be removed. Smart Meters should be supported strongly (or even required by regulation). Small-scale generation is a critical component of a low carbon, resilient future. There are significant regulatory barriers (as discussed above). There are insufficient targeted, worthwhile incentives.

On energy prices:

Should energy prices reflect costs and include environmental externalities? How should cost-reflective pricing be balanced against the issues of affordability and fairness?

- Environmental externalities should be reflected in energy prices. The taxpayer will be paying the Kyoto compliance costs otherwise. Those costs associated with energy generation should be passed onto the generator. Greater differentiation between low user tariffs and high user tariffs should occur to address affordability issues.

Questions on Using Energy More Efficiently

The government welcomes feedback on this issue through its consultation on the replacement National Energy Efficiency and Conservation Strategy. It also welcomes comments on questions raised in this draft, such as:

On priorities:

How should energy efficiency measures be evaluated and compared, both against other energy and climate change actions and against other types of energy efficiency measures? Specifically, do you agree there is a need to compare different forms of energy in terms of their potential to reduce greenhouse gas emissions?

- Energy efficiency measures should be far more widely considered with a lower discount rate given and a TBL analysis – not just direct economic cost benefit used.
- In particular, measures which fundamentally improve the performance of a sector over time (such as increased standards for thermal performance of buildings, water heating, HVAC and lighting systems, appliances, vehicles etc) should be put in place. The cost benefit considerations need to specifically include co-benefits such as greenhouse gas emissions and health benefits – the cost of which is able to be calculated but is currently an uncoded externality. Yet the environmental and health costs are being transferred to the taxpayer.

On capital stock:

What actions should be taken to increase energy efficiency in capital stock (buildings and appliances)? How urgent and stringent should these actions be? What barriers exist presently to further measures to increase energy efficiency in capital stock? How could these be removed?

- Urgent and stringent measures are needed. The Building Code could require renovated buildings (where a % of floor area is modified for example) to meet current building code energy efficiency standards. Commercial Buildings should be required to upgrade to meet energy standards when they get their annual building warrant of fitness. The HER Scheme should become mandatory at point of sale and rental, with homes performing below a certain standard given specific incentives and assistance to upgrade within a certain time period.
- There are significant capability barriers within the Building Industry to address energy efficiency in buildings. Providing significant incentives would assist in the development of commercial energy retrofit operations, which are needed for large-scale improvement in this sector.

On institutional issues:

Should energy suppliers have an obligation to carry out energy efficiency activities with their customers? If so, how should the obligation be implemented and targeted at customer groups?

- YES. Energy Suppliers should be required to achieve minimum annual energy efficiency targets with their customers. This should be targeted, in the first instance, at high energy users and activities.

Questions on Sustainable Technologies and Innovation

The government welcomes feedback on questions raised in this discussion, such as:

On private and public sector leadership:

How could private/public working groups best be structured to provide ongoing sustainable energy leadership and direction? Are there any particular areas of work the taskforce needs to address?

- Energy efficiency research should be a priority, particularly in identifying the easy wins in terms of energy efficiency. Piloting and demonstration projects need to be given greater emphasis in funding. In particular, existing efficient technologies not in wide use need to be prioritised in terms of piloting, with a view to ironing out issues to enable mass uptake.
- Research into local, renewable, distributed systems, particularly piloting and demonstration of these needs to be undertaken
- More research into non-renewable energy sources should be put at the bottom of the priority list.

On increasing capabilities and improving coordination:

How can capabilities and coordination be improved? What would encourage non-government partners to contribute to research activities led by government?

- Government could partner with research organisations over the piloting and demonstration of new technologies. For example, Housing New Zealand has been working with Beacon Pathway Limited in the NOW Home® research projects.

Questions on Affordability and Wellbeing

The government welcomes feedback on this issue through its consultation on the replacement National Energy Efficiency and Conservation Strategy as well as comments on questions raised in this discussion, such as:

On underlying causes:

Do you agree that further initiatives are required to help low-income households by targeting underlying causes of high spending on electricity, such as inadequate house insulation? If so, what should these be?

- This should be fundamental. However programmes need to deliver a high standard of thermal performance, not the current “one size fits all minimum” approach. Beacon and BRANZ research indicates that the low level thermal retrofits, undertaken and part subsidised by EECA, deliver low benefits in terms of energy efficiency. Retrofits should be to a high level – ideally “best practice” – not the acknowledged inadequate 1977 standards provided for in the current programmes. The retrofits should include the provision of an efficient, low cost, renewable heating device (such as low emission log burners or pellet burners) in parts of the country where this is needed (Climate Zones 2 and 3).

On mobility:

What kind of measures are required to achieve greater mobility through improved urban form and transport infrastructure? Is there any further work needed in this area?

- A focus on demand management and passing on the true cost of transport energy emissions to the road user through pricing signals is required. In addition, direction around efficient urban form should be provided – which is not then able to be undermined by Environment Court processes.

On the provision of information:

Do consumers have adequate access to comparable information about energy options? If not, what further measures should be taken?

- Programmes such as “Wasted” (on TV3 not our publicly funded broadcaster) are reaching 200,000 people. This is considerably more effective than a national leaflet campaign (destined for the bin without reading – and think of the energy associated with its production, distribution and disposal). Likewise websites are nice, but many people don’t use them, particularly in some demographics.

Information needs to be provided where it is needed. Eg at the retailer, on products, as part of building consents.