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New Zealand Energy Strategy
Ministry of Economic Development
PO Box 1473
Wellington

By email: nzes@med.govt.nz

SUBMISSION ON THE DRAFT NEW ZEALAND ENERGY STRATEGY

1 Orion New Zealand Limited (*Orion*) welcomes the opportunity to comment on the *Draft New Zealand Energy Strategy – Powering Our Future* (the *NZES*).

2 Our submission is in two parts:

2.1 general comments; and

2.2 our response to some of the specific questions raised in the paper, which we set out in the schedule to this letter.

GENERAL COMMENTS

Background on Orion

3 Orion owns and operates the electricity distribution network in central Canterbury between the Waimakariri and Rakaia rivers, and from the Canterbury coast to Arthur's Pass. Our network covers 8,000 square kilometres of diverse geography, including Christchurch city, Banks Peninsula, farming communities and high country.

4 We transport electricity from nine Transpower grid exit points to more than 180,000 homes and businesses. A reliable and safe supply of electricity is of critical importance to the community we serve. Our priority is the continued cost-effective improvement of our network performance.

5 Our ultimate shareholders are:

5.1 Christchurch City Council (89.3%); and

5.2 Selwyn District Council (10.7%).

6 Christchurch has significant smog problems in winter months. The Government's clean air measures will reduce this problem. However, these measures will also increase demand on our network and increase the amount of electricity we deliver across it.

7 These factors mean that Orion is keen to assist the Government to create an energy strategy that reduces CO_2 emissions and improves energy efficiency in both the transport and the electricity sectors, thereby delivering gains to New Zealand.

Targeting energy policy

8 We consider that energy policy aimed at reducing greenhouse emissions should primarily focus on reducing winter electricity demand, rather than summer electricity demand. To achieve this, 'winter' energy efficiency measures such as insulation, efficient heating systems and efficient lighting should be emphasised over 'summer' measures such as solar water-heating, photovoltaics, more efficient refrigerators and irrigation.

9 The reason for this emphasis on winter electricity demand is that it will be very expensive to build renewable generation to meet increased winter demand. Cost benefit analysis of various policy initiatives should take this cost into account.

Pricing to encourage demand side participation

10 We strongly believe that efficient pricing should be used, as it is a low-cost method that significantly increases consumers' price responsiveness.

11 Efficient pricing is a difficult concept to explain in one sentence; however it can be simplified as pricing that lets customers know what it costs to deliver electricity to them at different times of the day and year. For example, we believe customers should be aware that it typically costs more to deliver electricity to them at 5pm on a winter evening than at midday on a summer day.

12 Price signals employing 'time of use' pricing structures encourage off-peak system use and voluntary load reduction during peak demand periods. Orion has successfully used such pricing since the mid 1990's to signal

investment cost implications to major customers (investment costs are greatest during periods of peak demand).

13 Because we inform major customers when peak demand occurs, and when the electricity industry's costs are greatest, these customers have developed innovative solutions to minimise their energy usage and maximum demand requirements.

14 Since the split of line and retail businesses in 1998, retailers on Orion's network have passed these pricing signals through to major customers. However, such price signalling is still lacking in the residential and small business sectors. Here, Orion correctly signals the investment cost implications to electricity retailers in our delivery pricing structure. However, retailers then 'rebundle' these price signals and 'average them out'. This means the end-customer does not see any price signals to show when electricity costs (including delivery costs) are high or low. At best they only see a different price for day and night.

15 We believe significant potential exists to signal the 'true costs' of electricity to customers. At the very least, this could be some form of summer/winter pricing, although ideally such pricing would be more reflective and would show customers the limited number of hours per annum when electricity costs are very high. We believe this would serve two purposes. It would:

15.1 reduce electricity usage at these high cost times; and

15.2 increase public awareness of energy efficiency and show the public how they can benefit from conserving energy.

16 Cost-reflective pricing does not bring:

16.1 an increase in the overall price of electricity; or

16.2 an increase in final bills to customers.

It simply results in a reallocation of charges; lower in summer and higher in winter. Consequently it is a very low 'cost-to-the-economy' means of achieving energy efficiency.

17 We also note that the draft *New Zealand Energy Efficiency and Conservation Strategy* (the *NZEECS*) states on page 47, under the objective of '*smart electricity networks – getting the most from our electricity sector*', that the objective '*seeks to increase the price responsiveness of consumers, including improved demand-supply information flows…*'.

18 Yet the following page, which sets out the means to achieve this objective, does not mention efficient pricing. We strongly believe that efficient pricing is a low-cost method which would significantly help to achieve this goal.

19 We recommend that a strategy to encourage energy retailers, electricity networks and Transpower to adopt cost-reflective pricing should be included in both the NZEECS and the NZES.

Encouraging renewables while maintaining security of supply

20 The Government has recognised the need to maintain some thermal generation for system security reasons. We agree with this approach.

21 We do however consider that the Government should go further, and through the NZES, encourage large electricity lines businesses (LELBs) to establish more generation to:

21.1 assist with dry year and other unexpected supply contingencies such as a serious grid, plant or fuel supply disruption; and

21.2 operate at periods of peak electricity demand so that investment in lines can be deferred.

22 The Government has indicated its willingness to relax to some extent the Electricity Industry Reform Act (*EIRA*) limitations on LELBs who want to own and operate generation. Orion supports the initiative to allow LELBs to own and operate generation in network areas outside their own.

23 We do however remain concerned that the Government proposes to continue to restrict LELBs from generating in their own network area, due to fears that LELBs could abuse their monopoly position. We understand this concern, and have recently written to MED with a proposal that we think will:

23.1 allay this concern; and

23.2 overcome the concern that reserve generation could impact on the electricity market.

24 Specifically, we have proposed that LELBs should be subject to an annual MWh (energy) cap, rather than a MW (capacity) cap. This would enable distributors to embed peaking plant to run for a limited number of hours in a year when loads on the distributor's network are high. This limit would

prevent distributors competing for retail customers, who naturally require 24 hour - 365 day service.

25 As an example only, 10MW x 24 hours x 365 = 87,600 MWh per annum. While we do not necessarily suggest this should be the limit (as we would argue for a greater value), we do point out that a 100,000MWh annual energy volume cap is approximately equivalent to the 10MW limit proposed in the NZES.

26 This quantity of energy is only 3% of the total energy consumed on Orion's network over the course of a year; therefore we do not consider that it would impact on the electricity market. However, if we were allowed to generate and own this quantity of energy over a limited number of hours each year (for example, 500 hours) this would have a significant impact on reducing our peak demand. It would also be available as a reserve energy source if required.

27 We recommend that the NZES should provide for the use of limited thermal generation in this manner.

Energy efficiency

28 Orion has responded to the NZEECS separately. As mentioned in our submission on the NZEECS, we want to highlight how important it is that new home builders be encouraged to build energy efficient houses. While the Building Code establishes certain guidelines, these are minimum guidelines. Currently it is very difficult for a new home builder to obtain independent, non-commercially biased information on additional efficiency measures to undertake beyond building code minimum standards.

29 In effect, we need to ensure that a new home builder can easily access information to assess the HERS star rating of their home, prior to building the home. Information on the measures they could undertake to improve the star rating is also important. New home builders could then be certain that their home would be highly energy efficient, prior to building.

30 Also, in relation to new homes, we see no reason why smart meters should not be installed in all new homes. This technology is readily available and it seems short-sighted not to ensure that new homes are constructed with this technology in place.

Appropriate regulation

31 Orion seeks an environment in which lines businesses are able to innovate in order to provide benefits to consumers and shareholders. Clearly, regulation and regulatory frameworks play a critical role in shaping the business environment in which lines businesses operate. We need a regulatory regime that delivers a reasonable degree of certainty and provides rewards for introducing efficiency gains over a reasonable period of time.

32 Parts 4, 4A and 5 of the Commerce Act are currently being reviewed by the Government. These sections form the economic regulatory regime under which LELBs operate. We welcome this review. We would however be concerned if this review caused a significant swing towards the regulatory regimes that we observe overseas which have often tended towards a 'cost of service' model. Such models can undermine incentives to innovate by ignoring the first and most important step in the distribution process; demand-side participation.

Concluding remarks

33 Orion considers that the Government is taking significant steps to encourage greater energy efficiency and a low emission future for New Zealand through the NZES and associated documents. We emphasise that key initiatives must focus on:

33.1 reducing winter demand for electricity;

33.2 efficient pricing; and

33.3 security of supply.

34 Confidentiality is not claimed for any of the content of our submission.

35 Thank you for the opportunity to make this submission. If you have any questions relating to the submission, please contact Dennis Jones (Industry Developments Manager) DDI 03 363 9526 email dennis.jones@oriongroup.co.nz.

Yours sincerely

Roger Sutton
Chief Executive Officer

SCHEDULE

Responses to questions

Chapter 2

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?

1 Orion is in favour of cost-effectively improving efficiencies, and we consider that tools such as incentives and information could be used. Regulation could be used as a last resort.

2 Businesses can hugely improve energy efficiency in New Zealand through both the uptake and development of efficiency ideas. However, given businesses' necessary focus on the profit line, financial benefits must be available if they are to take large energy efficiency steps. Therefore, the 'pricing' must be right and benefits must be allowed to be captured and not regulated away.

3 We note that the Government could make a simple change in relation to fringe benefit tax (*FBT*) for businesses that would be fiscally neutral for the Government and would favour those businesses that increase fuel-efficiency.

4 Fringe benefit tax on motor vehicles is currently applied to the cost of the vehicle only. It does not reflect the running costs of the vehicle.

5 As FBT is the same regardless of fuel efficiency, big cars that lack fuel-efficiency are often purchased by fleets. We understand that in Canterbury, 83% of Holden Commodores are purchased by fleet buyers. Charging a higher rate of FBT on vehicles that have lower fuel-efficiency would be a more accurate economic signal.

6 We understand that other countries, notably the UK, have moved to such a system where the more fuel-efficient the vehicle, the lower the FBT.

7 We note that the Government is moving to mandate that car dealers must display fuel-efficiency on vehicles. With efficiency information freely available through this means, we believe it would be relatively easy to implement an FBT scale.

8 The draft NZES also indicates that the Government is considering different registration fees for vehicles. While this has merit, we consider that

politically it may be difficult to achieve as it affects all New Zealanders. FBT, on the other hand, impacts on business and is less difficult politically. FBT could be fiscally neutral while targeting vehicles that have high fuel-use. In comparison, it is difficult to see how implementing a different registration fee scheme could be fiscally neutral and be sufficiently robust to have the desired impact.

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?

9 Orion agrees with the policy to encourage early uptake and use of hybrid plug-in and full electric vehicles. The logistics of large scale uptake and use of hybrid plug-in and full electric vehicles need to be considered. For example:

9.1 appropriate electricity pricing to encourage off-peak battery-charging must be in place;

9.2 appropriate recycling arrangements for the large battery packs must be arranged with the manufacturers or their agents.

Chapter 3

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?

10 The NZES indicates that in terms of our total primary energy supply by fuel type, our dependence on non-renewable fuels will decrease and renewable fuels including hydro will increase by 2030. While additional wind, geothermal and wave/tidal power may complement our hydro storage, we consider that fossil fuel fired plant will still be needed to meet winter demand.

11 We note that no mention has been made of the seasonal load characteristics of electricity demand or the seasonal output of the existing hydro-generation resources. Electricity demand peaks in winter. The average electricity usage on a July day in 2006 was approximately 24% higher than the average electricity usage on a January day in 2006.

12 While demand is higher in winter, the inflows into the hydro lakes are much higher in summer than in winter. The average monthly inflows into the main hydro lakes is 2452 GWh in January but only 1483 GWh in July[1].

13 While some of these inflows can be stored, this is only a proportion of the annual electricity usage. This means than on average thermal generation meets a larger portion of energy demand in winter compared to summer.

14 If further renewable generation reserves are added to the electricity system this issue will be exacerbated because renewable generation tends to have a flat output that does not change between winter and summer, or an output which is higher in summer. An example of a generation technology with a flat output is wind (although most sites have a slightly higher output in summer). Solar technologies are an example of a technology which has a higher output in summer.

15 The energy in the sun on an average January day in Christchurch is four times greater than the energy in the sun on a June or July day. This could mean that in the longer term all electricity demand in summer could be met by renewable resources, while we still need fossil fuel fired plants to meet winter demand.

16 It may be that the marginal CO_2 emissions of summer electricity use are zero in summer, but winter use is met by burning coal.

17 While we could build renewable generation to meet the winter peak load, this would be very expensive as the plant would only operate during peak periods. In simple terms, if a wind generator's output is only useful for 1/3 of the year, then its energy has cost three times as much.

18 This is not so much of an issue internationally as it is here. New Zealand is rare in that much of our electricity is generated by hydro (and potentially in the future, wind). As we build renewable capacity we will get to a point where all thermal generation plant shuts for the summer.

19 This means energy policy aimed at reducing greenhouse emissions needs to emphasise a reduction in winter electricity demand, rather than summer electricity demand. Energy efficiency measures such as insulation,

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[1] From ECNZ submission on the 1992 hydro shortage for the main hydro catchments including Tongariro, Waikato, Waikaremoana, Matahine, Waitaki, Clutha, Manapouri, Te Anau, Cobb and Coleridge.

lighting, more efficient heating systems should be emphasised over solar water heating, photovoltaics and more efficient refrigerators or irrigation.

20 Cost benefit analysis of various policy initiatives should take this into account.

21 A further benefit of reduced winter electricity demand is that it tends to reduce the costs of transmission and distribution as the transmission and distribution systems are mainly designed for winter peaks. Reducing winter peak loads lessens the need for further line investment.

22 We note that in terms of the electricity sector, the Electricity Commission has engaged Castalia to review the Electricity Security of Supply Policy. The Castalia report indicates that:

> *'New Zealand has a substantial exposure to fuel risk – A large part (56% on average) of New Zealand's generation comes from hydro sources. Our hydro stations have limited storage capacity (approximately 10 percent of annual demand). In dry periods, inflows can be reduced by around 20 percent, requiring substantial thermal backup.'*

23 Currently the Government Policy Statement (October 2006) (the *GPS*) requires the Electricity Commission to contract for significant reserve energy to cope with:

23.1 a dry year; and

23.2 other unexpected supply contingencies such as a serious grid, plant or fuel supply disruption.

The worst time for these contingencies to occur is in winter when the system is most heavily loaded. Orion has been working to mitigate these events for many years.

24 Through the pricing signals that Orion and its predecessor put in place, Orion's major customers have developed a growing pool of small standby generating plant (approximately 12 MVA) that can respond when required. Much of this generating plant is required as standby plant for such organisations as hospitals, airports, Christchurch City Council water pumping stations and the police. In the normal course of events these generators would be used rarely, if at all, over their lifetime.

25 However these generators respond quickly and reliably to assist to reduce peak loads, thereby reducing the need for investment in both the distribution and transmission networks. They can also help to reduce

demand during a dry year, and are available to cope with other unexpected supply contingencies such as a serious grid, plant or fuel supply disruption.

26 The Government has recognised the need to maintain some thermal generation for system security reasons. We agree with this approach.

27 We do however consider that the Government should go future, and through the NZES, encourage LELBs to establish more generation to:

27.1 assist with dry year and other unexpected supply contingencies such as a serious grid, plant or fuel supply disruption; and

27.2 operate at periods of peak electricity demand so that investment in lines can be deferred.

28 The Government has indicated its willingness to relax to some extent the Electricity Industry Reform Act 1998 (*EIRA*) limitations on LELBs who want to own and operate generation. Orion supports the initiative to allow LELBs to own and operate generation in network areas outside their own.

29 We do however remain concerned that the Government proposes to continue to restrict LELBs from generating in their own network area, due to fears that LELBs could abuse their monopoly position. We understand this concern, and have recently written to MED with a proposal that we think will:

29.1 allay this concern; and

29.2 overcome the concern that reserve generation could impact on the electricity market.

30 Specifically, we have proposed that LELBs should be subject to an annual MWh (energy) cap, rather than a MW (capacity) cap. This would enable distributors to embed peaking plant to run for a limited number of hours in a year when loads on the distributor's network are high. This limit would prevent distributors competing for retail customers, who naturally require 24 hour - 365 day service.

31 As an example only, 10MW x 24 hours x 365 = 87,600 MWh per annum. While we do not necessarily suggest this should be the limit (as we would argue for a greater value), we do point out that a 100,000MWh annual energy volume cap is approximately equivalent to the 10MW limit proposed in the NZES.

32 This quantity of energy is only 3% of the total energy consumed on Orion's network over the course of a year; therefore we do not consider that it would impact on the electricity market. However, if we were allowed to generate and own this quantity of energy over a limited number of hours each year (for example, 500 hours) this would have a significant impact on reducing our peak demand. It would also be available as a reserve energy source if required.

33 We recommend that the NZES should provide for the use of limited thermal generation in this manner.

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?

34 Orion agrees that wind generation will play an important part in our generation mix. It may complement hydro generation to optimise storage and reduce dry year risk. We re-iterate our concern in relation to security of supply and the need for sufficient reserve supplies.

On public confidence:

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

35 Orion considers that the Government does need to do more to improve investor perceptions of security of supply. We believe that improved investor confidence in electricity infrastructure is a key issue. Overall the reliability of supply in New Zealand is as good, if not better, than many other first world countries. The USA and Canada have had significant failures or supply as have the UK and Italy[2]. We are particularly concerned that perceptions of lack of security in New Zealand are fuelled by significant differences of opinion within the electricity industry.

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[2] On 28 Sept 2003, all of Italy was affected by a power cut. On 14 August 2003, a power cut in Eastern USA affected 50 million people. On 28 August 2003 a power cut in London affected 500,000 people. On 4 November 2006 a power cut in Europe affected 5 million people.

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?

36 Orion agrees that in some areas the level of demand-side response could be below its full potential. This can be significantly improved thought a number of measures such as:

36.1 smart pricing

36.2 smart metering; and

36.3 an appropriate regulatory environment

37 As mentioned above, we seek an environment in which lines businesses are able to innovate in order to provide benefits to consumers and shareholders. We need a regulatory regime that delivers a reasonable degree of certainty and provides rewards for introducing efficiency gains over a reasonable period of time.

38 We would be concerned if the current review of Parts 4, 4A and 5 of the Commerce Act caused a significant swing towards the regulatory regimes that we observe overseas which have often tended towards a 'cost of service' model. Such models can undermine incentives to innovate by ignoring the first and most important step in the distribution process; demand-side participation.

39 Ensuring that the appropriate price signals are available is fundamental to promoting demand-side response.

40 Over the last decade, Orion has been at the forefront in implementing and advocating demand-side management (*DSM*). DSM is a 'price-based' approach, in contrast to a 'rate of return' approach adopted by some regulators.

41 Orion's DSM focus is based on the fact that capital investment represents around two-thirds of Orion's cost structure. Therefore, correct new investment decisions are of paramount importance. Dynamic efficiency improvements will deliver the greatest benefits to consumers.

42 Orion's adoption of DSM was consistent with the implicit price-cap regulation that Orion felt it was under, rather than a rate of return cap.

43 Under Orion's pricing, if a consumer reduces peak demand, and hence Orion's future capital expenditure, the consumer obtains cost-savings through reduced network charges. This approach has provided significant benefits for Orion's consumers. By implementing cost-reflective pricing, Orion offers the demand side (retailers and consumers) a win-win opportunity.

44 Outcome 'd' of the GPS requires that:

> *"The full costs of producing and transporting each additional unit of electricity are signalled"*

45 Orion submits that this correctly indicates that prices for distribution should reflect as closely as practical the marginal cost of supply.

46 Orion removed fixed charges entirely from its prices for all but the very largest consumers in 2001. This enhanced the demand-side opportunities for consumers to save. It also supports energy efficiency initiatives.

47 We strongly believe demand-side pricing offers a low-cost method that could significantly assist in achieving consumer price responsiveness.

48 Pricing signals employing 'time of use' pricing structures encourage off-peak use of the system and voluntary load reduction during periods of peak demand. Orion has successfully used such pricing since the mid 1990's by signalling investment cost implications to major customers (investment costs are greatest during periods of peak demand).

49 By informing major customers when peak demand is occurring, and when costs are greatest, our customers have developed innovative solutions to minimise their energy usage and maximum demand requirements.

50 Since the split of line and retail businesses in 1998 retailers on Orion's network have passed these pricing signals through to major customers. However, such price signalling is still lacking is in the residential and small business sector.

51 Here Orion correctly signals the investment cost implications to electricity retailers in its delivery pricing structure. However retailers then rebundle these price signals and 'average them out'. The final effect is that the end customer does not see any price signals as to when the costs of electricity (including delivery costs) are high or low. At best they only see a different price for day and night.

52 We believe significant potential exists to signal the 'true costs' of electricity to customers. At the very least, this could be some form of summer/winter pricing, although ideally such pricing would be more reflective and would show customers the limited number of hours per annum when electricity costs are very high. We believe this would serve two purposes. It would:

(a) reduce electricity usage at these high cost times; and

(b) increase public awareness of energy efficiency and show the public how they can benefit from conserving energy.

52.2 Cost-reflective pricing does not bring:

(a) an increase in the overall price of electricity; or

(b) an increase in final bills to customers.

It simply results in a reallocation of charges; lower in summer and higher in winter. Consequently it is a very low 'cost-to-the-economy' means of achieving energy efficiency.

53 Additionally, we are concerned that some of the current regulatory decisions may produce sub-optimal outcomes. For example, the Electricity Commission's guidelines on the Transmission Pricing Methodology have been developed from the GPS cost recovery and pricing principles[3] which require postage stamp pricing. This means that more efficient locational pricing cannot be applied.

Chapter 4

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?

54 Orion considers that the key drivers for deciding which energy resources New Zealand should use in the future must balance our international obligations to reduce CO_2 emissions while remaining internationally competitive. Any move to an entirely renewables future must be tempered by the practicalities of ensuring a reliable and secure energy supply at a reasonable cost.

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[3] Paragraphs 94 and 95 of the October 2006 Government Policy Statement on electricity governance.

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?

55 As indicated above, Orion considers that in the foreseeable future we will need fossil-fuelled generation to meet winter demand and for security of supply. We consider that it would be too expensive to meet winter peaks entirely from renewables.

What can the government do to reduce barriers to distributed generation?

56 MED has already completed significant work to produce regulation to reduce barriers to distributed generation. We have contributed to this process. We strongly support distributed generation, as we believe it is a useful adjunct to other measures that reduce the need for distribution and transmission investment.

57 Orion has introduced standard pricing incentives for smaller distributed generation (up to 1 MW) to reflect the average contribution to deferring network investment. However, we have to manage this process carefully as too much distributed generation in one place, or large scale generation (>1MW), may be counter-productive and require additional network investment. We await the release of MED's draft regulations with interest.

To what degree should 'smart meters' be supported by government?

58 We strongly believe that smart metering should be supported by the Government. As we suggest later in this submission, and also in our response to the NZEECS paper, it may be useful to include targets for the number of new buildings that must have smart metering.

59 We note that 'smart meters' are only part of the solution. As previously mentioned, 'smart' (efficient) price signalling is a key area that is still lacking in the residential and small business sector.

What are the main barriers to the greater uptake of small-scale generation?

60 Economics are the main barrier to uptake. Many small scale generation technologies are currently uneconomic or do not produce significant output when needed most. A current example of this is photovoltaic technology.

On energy prices:

How should cost-reflective pricing be balanced against the issues of affordability and fairness?

61 Cost reflective pricing does not mean:

61.1 the overall price of electricity will increase; or

61.2 final bills to customers will increase.

62 It simply results in a reallocation of charges; lower in summer and higher in winter. Consequently it is a very low 'cost-to-the-economy' means of achieving energy efficiency.

Chapter 5

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?

63 It is essential that any comparisons be made on an 'apples with apples' basis. Therefore, seasonality must be considered in relation to energy sources and energy efficiency measures.

64 Any comparisons must take seasonality into account by putting emphasis on reducing winter electricity demand, not summer electricity demand. Energy efficiency measures such as insulation, efficient lighting and more efficient heating systems should be emphasised over solar water heating, photovoltaics, more efficient refrigerators and irrigation.

65 A winter energy source or a reduction in winter demand is of far greater value than a summer energy source or reduction of summer demand. In the extreme, reduced summer demand will just cause additional spill on the hydro system.

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?

66 As indicated in our general comments at the start of this submission, we believe that pricing is a key ingredient to encourage the uptake of energy efficiency measures.

67 We believe three additional targets could be established for the electricity sector. Such targets would be achievable, readily measurement and relatively low cost to achieve. These targets are:

67.1 X% of residential buildings receive a 'smart pricing signal";

67.2 Y% of commercial buildings receive a 'smart pricing signal'; and

67.3 Z% of new buildings have 'smart metering' installed.

Chapter 7

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?

68 Orion agrees that further initiatives will be required in the short-term to help low-income households. We suggest additional funding should be provided to groups such as Community Energy Action to provide increased insulation to benefit low-income families.

69 Ultimately, the initiatives that the Government is proposing in the draft strategy to improve building standards will gradually improve New Zealand housing stock and reduce this problem.