SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Over the last two decades, New Zealand's energy policy has been marked by a commitment to light-handed regulation, to ongoing government monitoring and review and to liberalisation. Relative to many IEA member countries, New Zealand has a small population, low population density and is isolated from the rest of the world. Given this, its success with energy market liberalisation is remarkable. In fact, New Zealand was a pioneer in electricity market liberalisation, whereas many countries are just starting down the path of liberalisation. Furthermore, the country's strong commitment to undistorted and transparent liberalised markets is evidenced by a general lack of direct energy subsidies to specific customers or producers. Its commitment to ongoing review of its energy markets to ensure efficient and competitive outcomes is shown by the government's recent creation of two new regulatory bodies, the Electricity Commission (EC) and the Gas Industry Company (GIC). In short, New Zealand should be proud of its high-quality energy policies.

Nevertheless, the government's commitment to ongoing policy improvement and its new and very difficult energy challenges require continued policy evolution and government action. To that end, the government of New Zealand should strengthen its policy documents to reduce regulatory uncertainty, particularly in the face of recent energy policy and institutional changes. The energy strategy announced at the end of 2005 is a promising development and should be completed as quickly as possible.

The establishment of the EC and the GIC provides much needed regulatory oversight to industries that had previously been left to self-regulation. Furthermore, the new regulatory threshold regime for network energy businesses may improve transparency and efficiency in these industries by reducing the regulatory burden and increasing business flexibility. There are likely to be long-term benefits to customers from these new institutions and regimes, but in the medium term the changes create uncertainty, which could inhibit appropriate investment. While the establishment of the Electricity Commission puts in place an institution better equipped to make necessary regulatory reforms, its lack of complete independence from the government, including the government's discretion on the removal of commissioners, is a cause for concern. The government should modify the governance structure of the Electricity Commission so that it operates independently. With respect to the GIC, a very new co-regulatory body owned by gas industry participants, some concerns have been raised as to whether it is a viable long-term institution. The government and the GIC should work to establish a stable regulatory regime as quickly as possible to minimise the negative effects of the current transition period. While New Zealand's threshold regulatory mechanism for network businesses is an innovative regulatory approach, the mechanism may increase regulatory uncertainty as it is applied on an *ex post* basis. In certain situations it might be prudent to allow companies to apply for *ex ante* approval of particular projects to ensure that sufficient infrastructure is built and supply security is not threatened.

Appropriate investment is underpinned not only by regulatory stability, but also by accurate and easily available market information. For this reason, the government's continuous modelling of medium- and long-term scenarios and the free dissemination of the scenario findings greatly benefit the market. The government should continue this work, and ensure that worst-case scenarios (*e.g.* no new significant gas fields are discovered) remain included in the analysis.

As in many countries, responsibilities for New Zealand's energy and environmental policy and regulation are spread across different parts of the government. While it is impossible to put all responsibilities in a single institution, New Zealand's structure could be streamlined.

New Zealand's energy market also suffers from increased regulatory risk due to two factors related to the appeals process – limited appeals remedies and the lack of strict time limits. Both of these factors increase uncertainty for companies operating in the energy industry, and could therefore inhibit investment. The government should consider expanding the scope of regulatory appeals and instituting strict time limits.

Meeting New Zealand's Kyoto greenhouse gas (GHG) emissions target is very difficult because energy-sector emissions are relatively small and half of the GHG emissions come from the agricultural sector, where there are no practicable emissions-reducing technologies in the short term. Current government estimates project that emissions could be 21%, or 64 $MtCO_2$-eq, above the Kyoto target during the first commitment period (2008-2012). The government has not yet outlined how it will cover the remaining shortfall, but it is likely to include international mechanisms such as joint implementation, the clean development mechanism and international emissions trading. Given that these mechanisms often need significant lead time and that prices are likely to rise closer to the first commitment period, the government should outline and undertake its international efforts as quickly as possible. It is positive that the government has quantified its financial liability to account for emissions credits it will probably have to purchase, but it should ensure that this liability is sufficient to cover the shortfall and should detail as quickly as possible how it will spend the money. The government should also detail what part of its shortfall will be met through domestic action and implement the appropriate policies as quickly as possible.

It is disappointing that the government has decided not to proceed with its planned carbon tax for some sectors of the economy, as incorporating a carbon price signal into the market is a cost-effective means of reducing GHG emissions. Following on this decision, the government is considering other options, including in the short term a more narrow carbon tax and in the longer term other measures. The government should also consider policy options beyond a revised carbon tax, including an emissions trading scheme linked to international markets. Regardless of the mechanisms implemented, and given that the government has abruptly changed its policy direction, it should finalise all climate change policies and measures as quickly as possible. Given the large number of small and medium-sized enterprises, the government should explore the possibility of expanding the coverage of voluntary agreements to them.

Owing to historically low energy prices, energy efficiency in New Zealand has generally not been strong. As energy prices, security of supply concerns and environmental problems have grown, so has the government's focus on energy efficiency. In 2001, New Zealand set an ambitious target to improve energy efficiency by 20% by 2012; government estimates show that only a 1.1% improvement has occurred between 2001 and 2003. While energy efficiency policies do not generally have immediate effects, the results do highlight the need for continued and vigilant monitoring of efficiency measures. Meeting the long-term efficiency targets will require accurate data collection and sector-level monitoring, not just economy-wide monitoring. It is positive that the government is considering specific sectoral efficiency targets. Such targets should be measurable, cost-effective and practicable.

Energy consumption in the transport sector makes up the largest share of total consumption and is growing faster than in any other sector. Efficiency in the transport sector is relatively low, in part because New Zealand has a large share of used vehicles and because petrol and diesel taxes are relatively low. Stronger policies that give incentives for substantially improved energy efficiency in the transport sector are necessary. The government should consider fiscal and tax incentives, as well as fuel economy standards for new cars. The country is considering developing a fuel economy labelling scheme for all vehicles at the point of sale, which is a positive step. Labelling should be made mandatory and implemented as quickly as possible. As a large share of the population lives in urban centres, reduced reliance on single-passenger vehicles and greater reliance on public transit and alternative modes of transport would have a large effect on transport-sector energy efficiency. The government should strengthen incentives to reduce single-passenger vehicle transport through policies such as tolls on highways and for entering congested city areas, car-pool lanes, corporate discounts or tax incentives for employees to use public transport or alternative transport modes and taxes and fees on central district parking. The government is investigating some of these options, but it should expand the scope of possible options and implement a set of policies as soon as possible.

The residential sector also provides good opportunities to improve energy efficiency. In light of the poor thermal insulation found in many older New Zealand homes, the government has developed a comprehensive strategy to improve thermal insulation in these buildings, which is a very positive step. The government is currently reviewing its building code for new and upgraded buildings and considering implementing enhanced energy efficiency requirements. A strengthened building code should be established and put into force as quickly as possible. As New Zealand moves to a regime that includes more energy efficiency elements in its building code, the government should ensure that building code compliance mechanisms and enforcement training evolve with it. The joint New Zealand-Australia programme on minimum energy performance standards for appliances should continue to expand, adding cost-effective standards for more product classes as quickly as possible. New Zealand's efforts to introduce appliance labelling, including endorsement labelling, should continue to be expanded and made mandatory for more product classes. The government should also more aggressively market its energy efficiency public awareness information.

There is much to praise in New Zealand's approach to renewables policy, particularly in the electricity sector. Unlike many IEA countries, the government has not taken mandatory measures thanks to favourable and competitive renewable energy sources, particularly for wind. This light-handed approach to renewables promotion is consistent with New Zealand's overall approach to energy policy and is very commendable. Despite the growth of renewables to date, New Zealand is aware that growth of fossil fuels consumption is outpacing growth in renewable energy supply and the government is working to remove barriers to the growth of renewable energy supply, including through recent revisions to the Resource Management Act. New Zealand should continue these efforts, taking care to ensure that regional residents remain active and informed stakeholders in the process. Integration of large amounts of wind into the electricity grid poses some unique challenges for New Zealand. Nevertheless, such risks do not preclude wind from growing into a larger and more significant source of New Zealand's electricity supply, but they do require that the system operator and all stakeholders work together to develop and implement the best medium- and long-term systems and market rules to mitigate any negative effects as quickly as possible. Such measures should use incentives rather than requirements whenever possible and ensure that the full costs of all energy resources – wind and other – are made transparent and allocated accordingly.

While New Zealand appears to be on track to meet its overall renewables target of increasing by 30 petajoules (or 0.7 Mtoe) annually the amount of energy produced from renewables by 2012, it is unlikely to meet its indicative biofuels target of 2 PJ (0.05 Mtoe) by 2012 if further efforts are not made. The government has announced that it is developing and intends to introduce a mandatory biofuels sales obligation on suppliers. Care should be taken to ensure that this target is set at a level that is cost-effective compared with other options of reducing oil dependence. It is positive that the government is considering a mandatory sales obligation for suppliers, as this can be a flexible manner of increasing biofuels uptake.

The depletion of the Maui gas field by the end of the decade is a major challenge facing New Zealand. The government has proactively enhanced incentives for exploration and increased exploration levels indicate that this strategy is working. Nevertheless, the government should monitor the effectiveness of the incentives and evaluate the need for further measures. Whether or not New Zealand should import natural gas is a hot topic in the country. The government is leaving the possibility of importing natural gas open and the decision on the construction of a liquefied natural gas import terminal to the private sector, reflecting the government's reluctance to interfere in the market. The government should also continue to ensure that there are no undue regulatory barriers for market participants to construct natural gas import infrastructure. The government might also consider regulatory incentives for such infrastructure, taking care that any incentives are not at the undue expense of competition from other supply options

The government's successful implementation of an open access regime on the Maui pipeline will help encourage hydrocarbon exploration by providing greater access to the downstream market. The open access regime on its two gas transportation pipelines may also encourage the development of gas import infrastructure, as it will give confidence to resource owners that they can get access to the downstream market.

New Zealand has not been in compliance with its IEA oil stockholding requirement for several years. Its stocks fell to 61 days of net imports as of 1 January 2006, well below the 90-day obligation. This is the lowest reported level of stocks by an IEA member country in over a decade. Over the last year and a half, the government has been working on a plan for coming into compliance through tendering additional stocks, possibly to be held abroad in other IEA member countries. The plan is already behind its original timetable to bring New Zealand into compliance by mid-2006. To remedy this unacceptable situation, the New Zealand government should speed up implementation of its tendering plan or, as alternatives to tendering or options for the future, require that industry hold mandatory stocks or create a special industry stockholding agency for this purpose.

It is critical to note that in improving its electricity market, New Zealand faces a number of country-specific challenges that stem from its unique characteristics, including its lack of interconnections with other countries, its reliance on large amounts of hydro, its radial network geography and its small size. In particular, given the small size of the country it is not surprising that there are only five generators. Nonetheless, the small number of market participants – exacerbated by the vertical integration between generators and retailers – is a cause for concern and market power abuse is a real threat. The Commerce Commission's inquiry of wholesale and retail electricity markets is, therefore, a positive step that will keep pressure on market participants to behave competitively.

The lack of liquid and transparent financial markets to hedge electricity price risk and locational basis risk is a significant barrier to entry that exacerbates market power concerns. A market that allowed companies to hedge locational basis risk, in particular, would help improve transparency, reduce commercial incentives for retail-generation vertical integration, reduce barriers to entry and increase competition. It would also build on New Zealand's already impressive level of transparency in the physical market.

The country's growing electricity demand means that new capacity must be built to ensure sufficient supply, particularly in drought years. For this reason it is positive that New Zealand does not cap its electricity prices, as this does not suppress the high peak price signals that encourage new generation investment. In addition, the country's locational marginal pricing system creates appropriate incentives for investors to build new capacity when and where it is needed. Unfortunately, the government's 155 MW reserve power plant, Whirinaki, operates in a way that acts as a soft electricity price cap, which can suppress prices and incentives for generation investments. It is understandable that the government has commissioned its own power plant given the country's unique risks stemming from the heavy reliance on hydro and a lack of interconnections. Nevertheless, the Electricity Commission and the government should revise the operation policy for Whirinaki such that it includes only 1-in-60-year hydro level triggers, not price triggers. As the Electricity Commission is responsible for contracting for future reserve capacity, it has the opportunity to do so in a way that is less distorting to the market. It should consider tendering for financial products that are not tied to specific facilities, reducing the market-distorting effects of government intervention.

Consistent with its limited financial resources, New Zealand's energy-related R&D portfolio is quite small. The government generally focuses research money on projects where smaller grants can directly benefit New Zealand's supply security and economic efficiency. Furthermore, New Zealand seeks to gain the benefits of other countries' larger research efforts by being a fast technology taker. Such a strategy takes the greatest advantage not only of the country's small R&D funding portfolio, but also of its flexible market economy and energy sector. The country should continue this sound strategy, and not be tempted to overspend on basic science research. It is positive that the country has started to develop explicit R&D priorities that match its new energy and environmental challenges. The government should also work to make the development of public-private partnerships a priority. New Zealand rapidly increased government funding of energy R&D

between 2000 and 2004 by an average annual rate of 17%, which also increased the share of energy R&D budget per unit of GDP. The government should strive to continue this growth, particularly as New Zealand's energy R&D spending per unit of GDP remains relatively low compared with that of other IEA member countries.

RECOMMENDATIONS

The government of New Zealand should:

General Energy Policy

- *Seek to allay stakeholder concerns about certainty and predictability of regulatory policies, institutions and regimes in order to underpin appropriate energy market investments.*
- *Complete the planned energy strategy and review of the climate change policy package as quickly as possible.*
- *Continue to articulate scenarios, including worst-case scenarios, for medium-term gas supply possibilities so as to stimulate discussion and analysis to bring greater and more timely certainty about gas supplies.*
- *Ensure security of electricity supply through appropriate regulatory policies that do not inhibit infrastructure investment in either transmission or generation, in light of the country's medium-term supply constraints.*
- *Ensure regulatory independence of the Electricity Commission from the government.*
- *Ensure that the roles and relationships of different government entities are clearly and optimally defined, particularly where these entities have overlapping responsibilities.*
- *Consider establishing a streamlined merit-based appeals mechanism for energy-sector decisions from the Commerce and Electricity Commissions; consider implementing or strengthening time limits for energy-related hearings and decisions from the Electricity Commission, the Commerce Commission and the Environment Court.*
- *Intensify efforts to increase energy efficiency and, where appropriate, renewables, particularly in the transport sector.*
- *Continue to support a level playing field for both state-owned and independent energy companies.*

- *Periodically reconsider the policy of not selling any state-owned enterprises in the energy sector, especially when a policy change may result in more efficient and competitive outcomes.*

Energy and the Environment

- *Outline a budget and plan for international actions to meet New Zealand's projected Kyoto Protocol shortfall, and implement the plan as quickly as possible.*

- *Finalise and implement all climate change policies and measures as quickly as possible, particularly in light of the government's recent decision not to proceed with the planned carbon tax.*

- *Consider implementing a carbon tax or emissions trading – or a combination of the two – as quickly as possible.*

- *Consider revised incentives for enterprises to participate in negotiated greenhouse agreements, and ensure effective reporting and monitoring; consider expanding the coverage of voluntary agreements to small and medium-sized enterprises.*

- *Address CO_2 emissions from the transport sector through appropriate fiscal and regulatory measures.*

- *Continue research efforts on methane emissions from the agriculture sector, noting the difficulty of reducing such emissions.*

- *Continue to implement policies and measures that address New Zealand's local air quality problems in a cost-effective manner.*

Energy Efficiency

- *Continue to improve data collection and data accuracy in order to better evaluate the cost-effectiveness of energy efficiency measures.*

- *Complete the* National Energy Efficiency and Conservation Strategy *(NEECS) review in a timely manner and ensure that the revised NEECS establishes sectoral targets that are measurable, cost-effective and practicable.*

- *Ensure that responsibilities for energy efficiency promotion are clearly defined and efficiently organised; ensure effective co-ordination between the relevant authorities.*

- *Introduce policies and measures – such as revised transport fuel tax rates and arrangements, tax incentives or fleet-wide fuel economy standards on new cars – designed to improve the fuel efficiency of New Zealand's vehicle fleet.*

- *Implement fuel efficiency labelling of both new and used vehicles.*
- *Introduce policies and measures that encourage a shift away from single-occupancy cars in order to reduce the energy intensity of transport.*
- *Ensure that revisions to the building code implement cost-effective energy efficiency measures in new and existing buildings as quickly as possible.*
- *Ensure that the revised building code is flexible so that it can incorporate new cost-effective energy efficiency measures for buildings on an ongoing basis.*
- *Ensure compliance with energy efficiency requirements in the existing and revised building code.*
- *Intensify efforts to broaden the scope of and improve minimum energy performance standards and labelling for electrical appliances, consumer electronics and office equipment to the extent that they are cost-effective.*
- *Put sustained emphasis on education and raising public awareness regarding energy efficiency.*

New and Emerging Renewables

- *Continue to investigate the system effects of greater wind power penetration, such as on grid reliability and stability, and implement appropriate short-term and long-term mitigation measures as quickly as possible.*
- *Design and implement flexible policy measures to achieve appropriate biofuels targets in the transport sector.*
- *Raise public awareness of biofuels.*

Fossil Fuels

- *Monitor the effects of the measures taken to stimulate exploration activity and evaluate the need for further actions to accelerate and bring forward exploration and development of oil and gas reserves in an increasingly competitive world market for hydrocarbon investments.*
- *Ensure that the newly instituted open access regime for the Maui gas pipeline supports competition and contributes to the development of the market, as well as provides incentives for new hydrocarbon exploration and production.*
- *Ensure that there are no undue regulatory barriers for market participants to invest in natural gas import infrastructure.*
- *Maintain a stable mandate for and closely monitor the work of the Gas Industry Company in order to provide more regulatory certainty and predictability and ensure efficient and competitive functioning of the gas market.*

- *Complete urgently the necessary legal and administrative arrangements to bring New Zealand into compliance with the 90-day IEA stockholding obligation as quickly as possible.*
- *Consider requiring industry to hold mandatory stocks or to create an industry stockholding agency for this purpose.*
- *Consider evaluating the potential of South Island lignite resources to be competitive with other energy sources given emerging energy technologies for lignite use in electricity generation and conversion to transport fuels, and disseminate this information to the market.*

Electricity

- *Remove any inefficient barriers to entry for new market participants.*
- *Implement a financial mechanism that allows market participants to manage locational basis risk, and implement the appropriate mechanism without delay.*
- *Revise the triggering mechanism for the Whirinaki power plant so that it is triggered only by hydro levels; ensure that the Electricity Commission's ongoing tendering for capacity minimises any distortion of the competitive market.*
- *Ensure that the Commerce Commission's threshold mechanism provides appropriate incentives for network investment and that regulatory reviews are completed in a timely manner.*
- *Consider providing for* ex ante *approval of investment projects on request in order to increase regulatory certainty.*
- *Ensure that the Commerce Commission's quality thresholds take into account local, not just regional, electricity quality so that pockets do not experience undue risk of outages or unreliability.*
- *Further develop the ability of the demand side of the market – including residential and industrial customers – to respond to price signals, including through the development of financial instruments.*

Research and Development

- *Ensure that the R&D roadmap for the energy and environmental sectors well reflects New Zealand's new energy challenges, in part by enhanced co-operation between the different ministries involved in energy policy and R&D.*
- *Stimulate co-operation and communication between public and private sectors in energy R&D.*