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DRAFT NEW ZEALAND ENERGY STRATEGY AND DRAFT NEW ZEALAND ENERGY EFFICIENCY AND CONSERVATION STRATEGY

SUBMISSION TO THE MINISTRY OF ECONOMIC DEVELOPMENT

2 SEPTEMBER 2010

BACKGROUND

The Institution of Professional Engineers New Zealand (IPENZ) is the lead national professional body representing the engineering profession in New Zealand. It has approximately 11,500 Members, including a cross-section from engineering students, to practising engineers, to senior Members in positions of responsibility in business. IPENZ is non-aligned and seeks to contribute to the community in matters of national interest giving a learned view on important issues, independent of any commercial interest.

EXECUTIVE SUMMARY

IPENZ is pleased to see the reintroduction of the New Zealand Energy Strategy and the New Zealand Energy Efficiency and Conservation Strategy. However, IPENZ questions whether two strategies are needed and recommend that the government combine the two strategies into one strategy document and make any legislative changes required to enable this.

IPENZ considers that the target of 90 per cent renewables by 2025 is not achievable without substantial changes to the policy environment, such as the introduction of financial interventions to encourage renewable generation.

The IPENZ Membership is split on the merits of relying on the electricity market to choose which generation is developed, versus increased government interventions to incentivise certain types of generation to enable the target to be met.

IPENZ supports the uptake of new energy technologies. It supports focused investment of resource and development funds to enable the development of our resource strengths and characteristics. IPENZ considers that photovoltaics, marine energy, hot rock and gas hydrates are resources that may be worth considering.

IPENZ has concerns regarding New Zealand's future electricity security of supply. New Zealand has a vulnerable electricity supply and a fragile electricity system. IPENZ

considers that the draft New Zealand Energy Strategy understates the risks to security of supply and does not pay sufficient attention to the concerns of the Electricity Commission.

In relation to emissions from electricity generation, IPENZ considers that the government needs to consider what its objectives are and then needs to clearly signal the interventions (if any) that it will take to achieve this outcome. In relation to emissions from transport, IPENZ notes that the only initiative in the draft New Zealand Energy Strategy is fuel efficiency labelling. IPENZ considers that the New Zealand Energy Strategy should contain further initiatives to reduce transport emissions.

In relation to an energy-efficient transport system, IPENZ considers that the government needs to either develop a new transport strategy or indicate its support for the New Zealand Transport Strategy 2008.

Also, IPENZ considers that the draft New Zealand Energy Efficiency and Conservation Strategy should contain more initiatives to promote renewable technologies and vehicle efficiency.

In relation to business energy efficiency, IPENZ supports an analytical approach to identify the best opportunities to achieve energy efficiencies in business. IPENZ considers that a number of policy initiatives in the New Zealand Energy Efficiency and Conservation Strategy are industry-wide issues and suggest that the initiatives that are prioritised and more targeted.

Finally, IPENZ considers that neither the New Zealand Energy Strategy or the New Zealand Energy Efficiency and Conservation Strategy pays sufficient attention to demand management, sustainability, or the role that partners will play in implementing the strategies. IPENZ recommends that the strategies be amended to address this.

THIS SUBMISSION

This submission is in response to the draft New Zealand Energy Strategy (NZES) and the draft New Zealand Energy Efficiency and Conservation Strategy (NZEECS). Unless stated, NZES and NZEECS refer to the 2010 draft strategies.

This submission contains both general comments and more specific comments on the two strategies.

GENERAL COMMENTS ON THE STRATEGIES

STRATEGIC PLANNING HAS MERIT

IPENZ is pleased to see the government has decided to reintroduce these two energy-related strategies. This form of strategic planning enables government to take an overview, set goals, outline policy proposals and to provide a mechanism to implement the Government Policy Statement on Electricity. It is assumed that the May 2009 Government Policy Statement will now be updated as it removed references to the NZES and NZEECS.

SUSTAINABILITY NEEDS TO BE INFUSED

IPENZ considers that the theme of sustainability and the needs of not only the present but also future generations' needs to be considered. While IPENZ notes that some initiatives do consider future generations, it considers that sustainability needs to be a theme that runs throughout the strategies.

ARE TWO STRATEGIES NEEDED?

The two original strategies were introduced by the previous government. The preparation of the NZEECS is required through the Energy Efficiency and Conservation Act 2000 but there is no legislative requirement to prepare the NZES.

IPENZ thinks it is timely to consider whether there is a need to have two separate strategies and to make corresponding legislative change. Comparing the "areas of focus" in the NZES and the "objectives" in the NZEECS there is duplication in the topics of energy-efficient transport system, developing renewable energy (electricity), embracing new energy technologies, and warm, dry, energy-efficient homes.

The reason for having two documents is not apparent. IPENZ notes that the strategies relate to the structure and responsibilities of the two key government departments – the Ministry of Economic Development and the Energy Efficiency and Conservation Authority and perhaps this is the reason for having two documents. IPENZ considers that this is not a sound reason for having two strategies and that it can contribute to silos and fragmented policy advice and delivery. Having two related and overlapping strategies is further complicated by both documents using different terminology for the same thing ("areas of focus" versus "objectives", different styles and different approaches. The NZEECS has targets and the NZES does not.

IPENZ recommends that there be one strategy document to cover energy delivery, security of supply, energy efficiency and conservation. This document should include transport fuels fleet and vehicle fleet efficiencies.

RELYING ON THE ELECTRICITY MARKET VERSUS GOVERNMENT INTERVENTIONS

The IPENZ Membership is split on the merits of relying on the electricity market to choose which generation is developed versus increased government interventions to incentivise certain types of generation.

Some IPENZ Members consider that generation incentives are best provided through the electricity market as the market will determine the overall best economic outcome. However, other IPENZ Members consider that the government should be more interventionist and offer incentives (such as feed-in tariffs) to encourage generation that is renewable and produces less emissions.

IPENZ notes that the government proposals encapsulated in the draft strategies appear to do neither of these, given the expectation that 90 per cent renewables will be achieved by 2025 but no interventions are presented to make this happen.

DEMAND MANAGEMENT

IPENZ considers that neither of the strategies pays sufficient attention to demand management.

For electricity, demand management consists of both interruptible load and overall load reduction. Interruptible load (load management) can be quickly disconnected, for example through ripple control. A survey of 222 businesses by the Energy Efficiency and Conservation Authority in 2004 identified at least 160 megawatts (MW) (1.9 per cent of total capacity) of consumer demand that could easily be used as a resource (short term) to manage peak demand or network constraints.

Mechanisms to reduce overall demand include demand side participation in the wholesale market, smart metering, smart appliances and time-of-use pricing. In recent years we have seen the rundown of interruptible supplies (the most notable domestic

example being ripple control of hot water but the potential in industry such as frozen storage may also be significant).

For transport, the government does not have a corresponding transport strategy and in its place has a Government Policy Statement (GPS) on Land Transport Funding. The GPS has continued funding on demand management but the 2009 GPS has 11 per cent less funding than the 2010 GPS.

The 2009 GPS claimed that "moving too quickly on modal shift will have a negative impact on environmental and economic efficiency". Modal shifts to public transport, walking and cycling might encourage energy efficiency as these modes are themselves more energy efficient. However, energy efficiency is not an objective function in its own right and there are other considerations to take into account such as affordability, access and the individual right to make choices.

Therefore, it is IPENZ's view the 2009 GPS has taken a backward step on demand management and hence on energy efficiency in transport. In light of the NZEECS and its transport-related targets, the 2010 transport GPS needs to address demand management issues more positively.

PARTNERS

The implementation of these strategies cannot be undertaken by government alone and there is no recognition of the roles that partners are able to play in their implementation. These partners include major government-owned SOEs (generators, Transpower, KiwiRail), local government, businesses and the community.

Given local government's role in regulation (Resource Management Act 1991, Building Act 2002) and in owning and funding local roads (half of vehicle kilometres travelled are on local roads), and in community leadership, the omission of any reference to partners in implementing the strategy is a considerable oversight. The 2007 NZEECS did acknowledge this issue – albeit briefly. IPENZ therefore recommends that the NZEECS be amended to acknowledge the roles of the government's partners in implementing the NZEECS.

SPECIFIC COMMENTS ON THE DRAFT NEW ZEALAND ENERGY STRATEGY

INTRODUCTION AND THE FUTURE

While IPENZ supports the overall intention of the government's goal as presented on page 6 of the draft NZES, it considers that it could be simplified and that if there are two strategies then these should have a common goal or goals. The key ingredients of the goal should be energy efficiency, reducing emissions, security of supply and downward pressure on prices (or competition).

IPENZ agrees with statements made on page 2 of the draft NZES in relation to New Zealand having an abundance of diverse energy resources. Compared to other nations, New Zealand is an energy-rich country with substantive petroleum resources as well as significant renewable energy sources, including geothermal, hydro and wind energy.

IPENZ notes the statement on page 2 of the NZES that "over the next 40 years, New Zealand's energy mix is expected to change". IPENZ considers this change to be an opportunity – for the utilisation of new technologies, for the introduction of new fuel sources and for the associated new knowledge that would accompany these. IPENZ notes that the adoption of new technology and fuel sources will require that effort is directed to improving expertise and capability in this country. Also it will be important to ensure that the technologies and fuel sources are tested and appropriate for use.

In relation to Our Future on page 4, IPENZ is concerned that one part of the "desirable long-term future" is that "New Zealand's major petroleum basins have been surveyed and areas with potential have been explored, developed and fully utilised". The term "fully utilised" implies that the resources are completely used up and IPENZ assumes that this is not the intention of the government. New Zealand can benefit from a proactive strategy that considers energy options and pathways. Planning now needs to consider the needs of not only the current generations but also the generations yet to come. IPENZ recommends that this wording be revised and changed to "explored, defined and identified opportunities actively pursued".

AREA OF FOCUS 1 – DEVELOP PETROLEUM AND MINERAL FUEL RESOURCES

IPENZ supports the intention to develop New Zealand's petroleum and mineral fuel resources. IPENZ submitted on the government's Petroleum Action Plan in January 2010. That submission noted that:

- the development of New Zealand's petroleum resources has the potential to significantly lift our economic performance
- the government should have a role in providing geoscientific data, engaging with industry, improving permitting processes and reviewing legislation
- there are significant shortcomings in the training and education of people for this industry, and that education and skills should be an additional action in the Action Plan to align with the six drivers of the government's overall economic programme.

AREA OF FOCUS 2 – DEVELOP RENEWABLE ENERGY RESOURCES

The proposals to encourage biomass to energy development, geothermal energy, and medium and smaller-scale renewable technologies, and marine energy are supported.

However it is our view that these initiatives on their own will fall well short of achieving the "aspirational" target of 90 per cent of electricity from renewable sources by 2025. This is because the New Zealand model for the provision of generation is a market-based model. There is very little direct intervention by government in investment decision making on the form or timing of investment in electricity generation, nor does electricity planning take full account of the barriers to uptake at these higher levels of penetration.

The 2010 Generation Update sets out the projects that are either under construction, consented, have consents under appeal or have applied for consent. Based on these information sources, IPENZ has concluded the following:

- current generation is 45,911 gigawatt hours (GWh), 63.9 per cent of which is from renewables (based on an average hydrological year)
- demand in 2025 is estimated to be 50,989 GWh, based on the recent IPENZ policy publication *Electricity Generation: Achieving New Zealand's Objectives*[1]
- it seems reasonable that by 2025 the following will be commissioned:
    - projects that are under construction
    - projects that are consented.

If this happens, then generation will be 51,528 GWh (slightly more than demand requirements), with approximately 33,468 GWh of this will be from renewables. Thus, the renewables percentage would be 65 per cent – well short of the 90 per cent target.

[1] Available on the IPENZ website at http://www.ipenz.org.nz/ipenz/media_comm/Additional_publications.cfm

If this scenario is altered to include the decommissioning of two of Huntly's units (500 MW) and commissioning of a corresponding amount of renewables (eg wind) then the renewables percentage will rise to 70 per cent, still well short of the 90 per cent target.

Another way to consider this issue is to consider some of the scenarios in the draft 2010 Statement of Opportunities (2010 SOO) prepared by the Electricity Commission[2]. This shows that for the Sustainable Path Scenario the renewable percentage will be 89 percent and for the South Island Wind it will be 86 percent.

However, to achieve 89 percent by 2025, the Sustainable Path Scenario requires:

- 504 MW of price-responsive load curtailment
- the decommissioning of 750 MW of coal-fired generation and 50 MW of open-cycle gas turbine at Huntly
- the decommissioning of the Southdown combined cycle gas turbine (122 MW), and the Taranaki combined cycle gas turbine (380 MW)
- the uptake of electric vehicles.

To achieve 86 per cent by 2025, the South Island Wind Scenario requires:

- 122 MW of price-responsive load curtailment
- the decommissioning of 500 MW of coal-fired generation at Huntly
- the decommissioning of the Southdown combined-cycle gas turbine (122 MW), and the Otahuhu combined-cycle gas turbine (380 MW).

These sets of assumptions are major and not necessarily preferred, as acknowledged in the draft 2010 SOO.

It is difficult to see how these outcomes could be achieved without major government intervention. It is highly unlikely that a "business-as-usual" approach will resolve the issues currently facing New Zealand's electricity industry and produce the right outcomes for both business and the people of New Zealand.

However, as noted above, the IPENZ Membership is split as to whether New Zealand should be more interventionist. Interventions could include financial interventions to encourage renewable generation, for example feed-in tariffs, capital investment subsidies or rebates, tax incentives and credits, public investment or financing, and financial penalties which could discourage thermal generation.

IPENZ believes that even with such a dramatic change to the way government incentivises the construction of new generation plant, it may still be insufficient to achieve the above two SOO scenarios or similar outcomes. This is because of the existing plant mix, and the existing commitments of plant under construction and plant in the planning processes.

Therefore IPENZ considers that the 90 per cent renewables target is not achievable without substantial changes to the policy environment.

AREA OF FOCUS 3 – EMBRACE NEW ENERGY TECHNOLOGIES

IPENZ supports the uptake of new energy technologies, assuming that sufficient time is given to ensure the technologies are appropriately tested before uptake.

[2] Available on the Electricity Commission website at http://www.electricitycommission.govt.nz/pdfs/opdev/transmis/pdfsconsultation/2010-draft-SOO.pdf

However, IPENZ believes that the text in the NZES does not adequately reflect the significant and commendable paradigm shift signalled by the Minister of Research, Science and Technology in his announcements enabling commercialisation of research, science and technology to boost economic growth. These included changes to a trial of technology transfer vouchers, to encourage links between firms and publicly-funded research organisations, and supporting technology transfer from research organisations to firms, and commercialisation of new products and processes.

Government support for the research and development of these new technologies needs to bear in mind the overall objective of supporting economic growth and lifting productivity, and as the NZES suggests, be prioritised to our resource strengths and unique characteristics. This may mean that government support is not provided to the current wide range of energy-related technologies being developed by other countries that may be uneconomic for New Zealand. Potential resources for consideration in New Zealand may include photovoltaics, marine energy, hot rock and gas hydrates.

AREA OF FOCUS 4 – COMPETITIVE ENERGY MARKETS DELIVER VALUE FOR MONEY

IPENZ supports the objectives to improve electricity competition and the promotion of competition through time-of-use tariffs, smart metering, and smart appliances. IPENZ notes that the NZES is silent on these important pricing techniques and instead refers to the Electricity Industry Bill. The Strategy should be more explicit on these technologies.

The Bill also proposes supporting customer switching through the provision of a fund, and allowing lines companies to provide retailing services – all of which are supported.

In its submission on the Electricity Industry Bill, IPENZ opposed the transfer of Tekapo A and B as it considered that the risks associated with this transfer outweigh the potential South Island retail market improvements. IPENZ continues to hold this view and also believe that the asset swap could well lead to the inefficient use of water and a loss of system resilience.

Regarding gas, the development of new sources is important – not only to provide a good source of alternative energy and to make New Zealand less reliant on imported fuel stocks, but also electricity generation. Increasing wind energy penetration requires a corresponding investment in thermal peaking plant and a more flexible grid. This is currently inhibited by a limited gas market and the uncertainty of future gas availability and the uncertainty of future carbon prices. Action to accelerate exploration activity and continued data acquisition by government will be critical to future electricity prices. This is highlighted by the analysis in the draft 2010 SOO – the most cost-effective future generation scenario is the "high gas discovery" scenario.

Therefore IPENZ agrees with the government programmes to support ongoing gas exploration and development.

AREA OF FOCUS 5 – OIL SECURITY AND TRANSPORT

IPENZ notes that the government recently extended the biodiesel grant programme. IPENZ ran a (non-scientific) poll of its Members in which Members where asked what they thought of the extension of the subsidy. Approximately 57 per cent of the Members who voted supported the extension while approximately 34 per cent were against the extension. Nine per cent had no opinion. This suggests support for the grant programme.

IPENZ considers that the government needs to do more to encourage biofuels, where it makes technical and environmental sense. One IPENZ Member noted that, for example, Air New Zealand has demonstrated that biofuels are viable for use in aircraft. This is an

area that could be developed further and could provide economic benefit to New Zealand.

IPENZ supports the exemption of light electric vehicles from road user charges as an initial incentive to encourage the uptake of electric vehicles, and the exemption may need to be extended after 2013, depending on the uptake. However it is recognised that the relative price of new vehicles and the lack of supporting infrastructure will remain impediments to their wider use for some time to come.

AREA OF FOCUS 6 – RELIABLE ELECTRICITY SUPPLY

IPENZ has serious concerns regarding New Zealand's future electricity security of supply. New Zealand's electricity system is fragile and has an emerging security of supply issue.

New Zealand has a vulnerable electricity supply due to its high reliance on climatic-related generation sources, low storage and isolated location. The country has experienced generation-related shortages in four of the last 10 years.

As noted above in Area of 2 – Develop renewable energy resources, IPENZ completed a policy publication *Electricity Generation: Achieving New Zealand's Objectives.* In that publication and the associated study, IPENZ found that in 2015, New Zealand's capacity margin will be barely sufficient. Further, a sufficient capacity margin will exist in 2025 only if there is significant new investment in thermal plant, and continued operation of most existing thermal plant.

These findings are consistent with the Electricity Commission's *Annual Security Assessment 2009*[3] which raises concerns about security of supply. The Security Assessment states that "There are also serious concerns about peak security during winter 2012, with capacity margins projected to be below the security threshold in the baseline and most sensitivities".

A further area for concern is that operators of existing thermal plant are indicating concerns about plant life and maintenance costs if the plant is cycled on and off too often. We may be increasing the risk of catastrophic plant failure.

IPENZ is also concerned that New Zealand faces some difficulties and uncertainties in relation to future generation types. Increasing numbers of wind and hydro projects are raising environmental concerns and are meeting increasing community resistance. Gas plants needed for base and peak loads are facing a difficult investment climate because of the lack of any appropriate signals for investment and the limited gas market.

New Zealand needs investment in rapid response peaker and backup plant to support hydro and wind generation to address this security of supply issue. The Electricity Commission's Annual Security Assessment shows a worrying trend with "over 600 MW of new generation that was rated as 'medium' or higher probability for 2010 or 2011 in the 2008 assessment, has since been deferred until at least 2013 or cancelled".

IPENZ believes the NZES understates the risks to security of supply and does not adequately reflect the latest information and concerns of the Electricity Commission and other expert commentators.

[3] Available on the Electricity Commission website at http://www.electricitycommission.govt.nz/pdfs/opdev/secsupply/policy/ASA-2009-final.pdf

AREA OF FOCUS 7 – BETTER CONSUMER INFORMATION TO INFORM ENERGY CHOICES

IPENZ supports better consumer information to enhance competition and encourage the efficient use of energy. Consumers are better informed and will make better choices through time-of-use tariffs and smart metering.

In Covec's report *Domestic Electricity Tariffs and Demand Side Management*[4], which was prepared for the Parliamentary Commissioner for the Environment, Covec recommended that common standards for smart meters be developed, that the deployment of these meters be mandated, and that retailers be required to make time-of-use tariffs available as an option. These issues should be considered for inclusion in the NZES.

One IPENZ Member noted there may be some issues with advanced metering outside urban areas. Advanced metering relies on connectivity. Outside urban areas cellphone coverage is variable and thus advanced metering outside urban areas may be difficult due to this.

AREA OF FOCUS 8 – ENHANCE BUSINESS COMPETITIVENESS THROUGH ENERGY EFFICIENCY

This issue is discussed in the response to the NZEECS – "Enhance business growth and competitiveness from energy productivity investment".

AREA OF FOCUS 9 – AN ENERGY-EFFICIENT TRANSPORT SYSTEM

This issue is discussed in the response to the NZEECS – "A more energy-efficient transport system, with a greater diversity of fuels and renewable energy technologies".

AREA OF FOCUS 10 – WARM, DRY, ENERGY-EFFICIENT HOMES

This issue is discussed in the response to the NZEECS – "warm dry and energy-efficient homes with improved air quality to avoid ill health and lost productivity".

AREA OF FOCUS 11 – BEST PRACTICE IN ENVIRONMENTAL MANAGEMENT FOR ENERGY PROJECTS

IPENZ is aware of the review of the Resource Management Act 1991 Phase 2 and that infrastructure issues are being considered by the Infrastructure Technical Advisory Group. IPENZ questions whether there is any need to include reference to this in the NZES. These reviews cover all major infrastructure, including those related to energy (electricity generation and roads). Therefore in this respect there is nothing special about energy infrastructure and the general provisions in the Resource Management Act, and when it is amended it will address any concerns, and will apply to all infrastructure.

On the National Policy Statement on Renewable Electricity Generation, Policy 1 stated that the benefits of renewable electricity generation activities, at any scale, are of national significance. This is counter intuitive and enables domestic wind turbines to be eligible for a Ministerial call-in. We suggest the National Policy Statement include a threshold whereby small generators would not be considered to be nationally significant.

AREA OF FOCUS 12 – REDUCE ENERGY-RELATED GREENHOUSE GAS EMISSIONS

It is noted that electricity generation and transport comprise a total of 64 per cent of energy-related greenhouse gas emissions.

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[4] Available on the Parliamentary Commissioner for the Environment's website at http://www.pce.parliament.nz/assets/Uploads/Reports/pdf/Covec_PCE_Report_Tariffs.pdf

IPENZ recommends that the government carefully consider what policy interventions are needed to bring out its desired greenhouse gas emissions outcome. Given that the government supports the Kyoto Protocol and the New Zealand Emissions Trading Scheme, it seems most appropriate that the government support initiatives to reduce greenhouse gas emissions.

In relation to emissions from electricity generation, in 2007 the Ministry for the Environment stated in its *Framework for a NZ Emissions Trading Scheme*[5] that price-based measures may lead to a moderate emission reductions from the electricity generation sector, irrespective of the emissions price, and over the long-term emission price levels of $15 to $25 per tonne would keep emissions at about current levels. This was seen as an improvement, as Business as Usual had projected a steady growth.

The draft 2010 SOO predicts that two of the five future generation scenarios (high gas discovery and medium renewables) will result in increased emissions, while another two scenarios (South Island Wind and Sustainable Path) will result in decrease in emissions.

Given the likely variability of emissions from electricity generation and the relatively modest predicted reductions, IPENZ recommends that the government determine its optimum outcome (ie reduced, similar or higher emissions to current) and clearly signal the interventions (if any) that it will take to achieve the optimum outcome.

In relation to transport, we note that the NZES makes little reference to transport emissions. There has been a small increase in fuel prices as a result of the emissions trading scheme, but it is well known that transport demand has very low demand elasticity relative to price and therefore the emissions trading scheme will not reduce transport emissions. We note that New Zealand is dependent on the vehicle emissions regulatory arrangements of our trading partners. The greater influence on emissions is expected to be from vehicle technology which will also improve driving fuel efficiency.

IPENZ notes that the only suggested initiative in the NZES is fuel efficiency labelling on vehicles. IPENZ recommends that the NZES include further initiatives to reduce transport emissions, as current proposals will have little effect.

IMPLEMENTING THE NEW ZEALAND ENERGY STRATEGY

In relation to the implementation of the NZES, IPENZ supports annual reporting to the Minister, as proposed on page 18 of the draft NZES. IPENZ recommends that the reports be made publically available to ensure transparency and to inform stakeholders and the general public.

IPENZ supports the proposal on page 18 that the Minister will consider whether a review of the NZES is required after five years. This seems appropriate given the timeframe of the NZEECS is also five years.

SPECIFIC COMMENTS ON THE DRAFT NEW ZEALAND ENERGY EFFICIENCY AND CONSERVATION STRATEGY

SUPPORT FOR ENERGY EFFICIENCY AND CONSERVATION

IPENZ supports the focus on energy efficiency and conservation. For energy efficiency, it is very important that the cost-effective sector-specific initiatives initiated by Electricity Commission continue to be researched, and implemented. The Kema *Electric Energy-*

[5] Available on the Ministry for the Environment's website at http://www.mfe.govt.nz/publications/climate/framework-emissions-trading-scheme-sep07/html/index.html

Efficiency Potential Study[6] concluded that 819 GWh (1.9 per cent) of electricity savings per annum was achievable through efficiency programmes that involved subsidies averaging 33 per cent of the cost of the incremental investment required for the more efficient solution. Included in the above figure are Energy Efficiency and Conservation Authority programmes that are estimated to deliver approximately 400 GWh per annum (1 per cent per annum)

IPENZ is very pleased the NZEECS includes the use of energy savings targets, as a tool to encourage effective policy interventions, and to evaluate and monitor progress. IPENZ is also pleased to see that the NZEECS is focused on reducing New Zealand's energy intensity, rather than simply energy efficiency.

OBJECTIVE 1 – TRANSPORT – A MORE ENERGY EFFICIENT TRANSPORT SYSTEM, WITH A GREATER DIVERSITY OF FUELS AND RENEWABLE ENERGY TECHNOLOGIES

For transport, the government does not have a corresponding transport strategy and in its place has a Government Policy Statement (GPS) on Land Transport Funding. The focus of the GPS is on economic growth and productivity, with no direct reference to an energy-efficient transport system, fuel diversity and renenewable energy technologies. IPENZ considers that the government should either develop a new transport strategy or indicate its support for the New Zealand Transport Strategy 2008.

Regarding the targets, it is interesting to see that this NZEECS has targets for transport energy savings and reduced travel and there is no corresponding transport strategy with these targets. Also, these targets are unsubstantiated in any way, and require consideration about how and where in New Zealand these might be achieved. It is thus not feasible to comment on a target without further information.

For the transport of freight, IPENZ supports the utilisation of shipping and rail, especially electric rail. IPENZ considers that these modes of transporting freight are more energy efficient than road transport.

IPENZ notes that the draft NZEECS contains little in the way of direct initiatives to promote renewable technologies and vehicle efficiency, apart from general comments on supporting biofuels and electric vehicles (with no corresponding policy initiatives), and the fuel economy labelling of light vehicles. The 2007 NZEECS had some key actions and this NZEECS could have been a considerable improvement on the previous document. IPENZ recommends that the NZEECS include more direct initiatives to promote renewable technologies and vehicle efficiency.

OBJECTIVE 2 – BUSINESS – ENHANCED BUSINESS GROWTH AND COMPETITIVENESS FROM ENERGY PRODUCTIVITY INVESTMENT

In 2008, the Electricity Commission produced a guide outlining their energy-efficiency initiatives titled *A Guide to Electrical Efficiency Work Stream at the Electricity Commission.* Their approach has been to identify the sectors, technologies and practices where potential exists, examining and understanding the barriers to investment, and developing cost-effective electricity-efficiency programmes.

Recent studies, including the Kema Potentials Study, have found that across all sectors on average, the benefits of energy efficiency exceed the costs of intervention by three to four times. For all sectors, lighting has been identified as the area where a change in technology has the highest value. For the commercial and industrial sectors, areas with potential include refrigeration, office equipment, heating, heating ventilation and air

[6] Kema 2007, New Zealand Electric Energy-Efficiency Potential Study, Electricity Commission, Wellington

conditioning systems, building management systems, motor systems and compressed air systems. Sector-specific research has been initiated in a number of these areas.

IPENZ supports this type of analytical approach of identifying the best opportunities to achieve energy efficiencies in businesses. IPENZ considers that a number of policy initiatives in the NZEECS are industry-wide issues and suggest that initiatives that are prioritised and targeted to specific issues are likely to be more effective in realising the targets.

OBJECTIVE 3 – HOMES – WARM, DRY AND ENERGY-EFFICIENT HOMES WITH IMPROVED AIR QUALITY TO AVOID ILL-HEALTH AND LOST PRODUCTIVITY

The initiatives for improvements to homes are supported. Regarding clean heating, there is specific reference to solar hot water heating, but we are aware that[7] hot water heat pumps have higher co-efficients of performance and are more cost effective than solar hot water heating, and are less prone to installation problems. This should be openly acknowledged and hot water heat pumps and other appropriate technologies should be given priority.

There is also reference to clean woodburners and we believe that the role of woodburners in providing affordable and effective space heating and reducing reliance on national electricity generation and the grid has not been sufficiently recognised and supported. There is the opportunity to provide support for converting old wood burners to cleaner models as well as promoting the use of wood burners in new households.

OBJECTIVE 4 – PRODUCTS – GREATER BUSINESS AND CONSUMER UPTAKE OF ENERGY-EFFICIENT PRODUCTS

In IPENZ's view, this is an area where market failure occurs because consumers do not have sufficient technical knowledge. Introducing mandatory efficiency standards based on allowing only equipment designed to achieve minimum lifecycle costs can have lasting effects. Time-of-use tariffs combined with smart meters and smart appliances will shift the benefits of efficient devices even further in the favour of the customer. A rigorous and interventionist approach on electricity using devices is justified by the higher returns on capital for demand initiatives than by expanding generation capacity.

It has been a matter of concern to IPENZ for a number of years that a lukewarm approach has been taken by successive governments to energy efficiency. There have been some efficiency gains through the introduction of more efficient devices but there has not been the full realisation of the potential gains due to the introduction of some lower efficiency devices such as washing machines and dishwashers.

IPENZ considers that there should be further promotion of energy efficiency and the labelling programmes to consumers and retailers to ensure they are have the best information on which to base their purchasing/retailing decisions.

OBJECTIVE 5 – ELECTRICITY SYSTEM – AN EFFICIENT RENEWABLE ELECTRICITY SYSTEM SUPPORTING NEW ZEALAND'S GLOBAL COMPETITIVENESS

This issue is discussed in the response to the NZES area of focus – "develop renewable energy resources".

[7] Thomas and Lloyd, 2005, *Experimental and Simulated Performance of Commercially available Solar and Heat-pump Water Heaters in New Zealand*, University of Otago, Dunedin.

OBJECTIVE 6 – PUBLIC SECTOR – GREATER VALUE FOR MONEY FROM THE PUBLIC SECTOR THROUGH INCREASED ENERGY EFFICIENCY

The initiatives for government agencies on high energy users and the government housing portfolio are supported.

The paragraphs on local government confuse local government's multiple roles – as an owner of assets (appropriate for this objective), as a regulator and as community leader. The latter two roles do not belong in this section, and as discussed below there should be another section on the role of the governments' partners.

GOVERNANCE

IPENZ supports the proposed progress reporting as outlined on page 29. IPENZ supports the proposal that the reports be published and recommends that the reports be published as soon as possible after the end of the financial year.

IPENZ recommends that the reports to the Minister be made publically available to ensure transparency and to inform stakeholders and the general public.

CONCLUSION

IPENZ appreciates the opportunity to make this submission and is able to provide further clarification if required.