AUSTRALIAN SENATE INQUIRY:

THE EFFECTS OF CLIMATE CHANGE ON EMPLOYMENT AND TRAINING NEEDS

SUBMISSION FROM
ELECTRICAL ELECTRONIC INDUSTRY TRAINING LTD.

AUGUST 2008

CONTENTS

Overview of Electrical Electronic Industry Training Ltd. (EEIT)

Electrical Electronic Industry Training Ltd. (EEIT) is an incorporated company established in 1995 in Victoria. As a not-for-profit business all income from EEIT projects finance initiatives and projects such as development and delivery of training and related services, research and auditing at an industry and enterprise level.

The EEIT Articles of Association state in part:

- The principal object of the company is to provide training in the electrical, electronic and electricity industries (the "electrical" industries), which is accredited or recognised by the relevant government and industry bodies.

- The company also provide services to the electrical and related industries, too:
    - Develop and encourage safe work practices in the electrical industries; and,
    - To co-operate actively with private and public sector bodies in Australia and overseas,
    - The company may provide training and services directly or as a consultant,
    - The company may only use its income, assets and profit for its objects,
    - The company must not distribute any of its profits, income or assets directly or indirectly to members.

- Consistent with its objectives the companies directors must have experience with industry training with two being nominated from the CEPU, Electrical Division, Victorian Branch, and the other three from the electrical industry, as defined, with a background in competency based training.

EEIT is in partnership with the Electrical Trades Union, Southern States Branch (ETU) and develop, manage and broker the best training delivery outcomes for members of the ETU.

A broad range of services are also provided by EEIT to any industry client and its employees.

Executive Summary

This submission from Electrical Electronic Industry Training Ltd. (EEIT) is in response to the Senate Inquiry: The Effects of Climate Change on Employment and Training Needs.

This submission contains content also presented in July 2008 by EEIT to the COAG Working Group on Climate Change and Water: Design Options for the Expanded National Renewable Energy Target Scheme paper.

EEIT submits that matters relating to employment and training that have been referred to in numerous previous submissions to government are similar or identical to matters relevant to the current Senate Inquiry.

The effects of climate change must also be considered with and as part of the direction of renewable and energy efficiency and the subsequent objective of an overall reduction in the amount of energy consumed.

While the end-use consumers must be the target group for education relating to the consumption of energy renewable and energy efficiency measures the same individuals will look for expertise in seeking advice on what measures to implement.

The electrician contractor must be considered one of these experts.

Training for electricians and electrical contractors on the effects of climate change, renewable and energy and efficiency is therefore necessary to provide a variety of beneficial measures to energy consumers on how to reduce energy consumption.

This will have an effect on employment and training needs of electrical workers that if not addressed correctly will be the detriment of employers and employees alike and will slow the introduction of renewable and energy efficiency measures designed to address the effects of climate change.

In the expanding Australian market of climate change, renewable and energy efficiency training for electricians and electrical contractors is therefore crucial for its success.

All electrical energy consumers, particularly domestic consumers, will benefit from the skills training strategy being developed and implemented by the ETU and EEIT in Victoria.

Relevant submissions previously provided by EEIT in partnership with the ETU at a National and Victorian level have also been attached as reference material with this submission:

- ETU Submission to the Federal Government paper: Towards A National Framework for Energy Efficiency, March 2004
- Victorian Government Consultation Paper: "The Greenhouse Challenge for Energy – Driving Jobs, Investment and Reducing Emissions", July 2003.

EEIT takes the opportunity in this submission to also specifically refer to the Federal Governments, Carbon Pollution Reduction Scheme, Green Paper, July 2008, especially Chapter 8, Household Assistance Measures, as we believe matters referred to in that submission are also relevant to design options in an expanded renewable and energy efficiency target scheme and market.

Shown in the attachments to this document are submissions to the Victorian Government in 2003 and the Federal Government in 2004 made previously by the Electrical Trades Union, Southern States Branch (ETU) and assisted by EEIT.

These submissions identified, amongst other things what we again identify here and that is that training for qualified electricians in renewable energy provides necessary experience and skills that are essential to ensure that consumers are provided correct and practical services to reduce energy use.

These references are primarily focused on the skill and qualification level of electricians and electrical contractors constructing, installing and maintaining renewable and alternative energy systems, particularly for domestic consumers.

Evidence exists that there is knowledge and skills gaps of what is required of electricians in the effects of climate change, renewable and energy efficiency and that skills gap training is urgently required.

The Carbon Pollution Reduction Scheme, Green Paper, July 2008, item 1.1, Introduction of the Climate Change Paper lists six dot points as follows:

> *The Australian Government has committed to implementing an expanded national RET scheme that will:*
>
> - *ensure the equivalent of at least 20 per cent of Australia's electricity supply- approximately60 000 gigawatt-hours (GWh)—is generated from renewable sources by 2020*
> - *increase the MRET to 45 000 GWh to ensure that together with the approximately 15,000 GWh of existing renewable capacity, Australia reaches the 20 per cent target by 2020*
> - *bring both the national MRET and existing state-based targets into a single national scheme*
> - *count only renewable energy towards the target and keep the same eligibility criteria as in the current MRET scheme*
> - *phase out the RET between 2020 and 2030 as emissions trading matures and prices become sufficient to ensure a RET is no longer required.*

- *retain the eligibility of all renewable energy projects that have been approved under existing state-based schemes.*

Further in the Introduction it states in part that:

> *One of the working group's tasks is to ensure an effective national response to climate change, including a nationally consistent set of climate change measures to support an emissions trading scheme (ETS) and the expanded national RET.*

EEIT notes the positive initiatives outlined in the COAG Working Group on Climate Change and Water: Design Options for the Expanded National Renewable Energy Target Scheme paper.

This submission primarily concentrates on the current level of skilled and qualified electrical employers and employees that are required to understand the relationship between climate change, renewable energy and energy efficiency measures if they are to contribute.

It also identifies the current a lack of skilled, experienced, qualified and licenced electricians capable of designing, constructing, installing and maintaining an expanded renewable and energy efficiency network throughout Australia.

ETU research undertaken for over a decade identifies that no current single training program delivers the essential underpinning knowledge to enable an electrical contractor to provide a broad range of expert advice to a consumer. This advice must include a broad range of products, systems and equipment so that a consumer will be provided a variety of choices on energy efficiency measures.

Renewable energy options must be part of that advice.

The ETU has therefore determined that EEIT will assist and manage the development and implementation of its own strategy and training program of education and training on renewable and energy efficiency for its members to address this short fall.

ETU and EEIT are stakeholders in the ElectroComms and EnergyUtilities Industry Skills Council (EE-OZ) framework and have actively participated in the development and implementation of the national qualifications framework in the National Electrotechnology Training Package, UEE07.

The pathways for electricians into renewable energy industry sector exist but we are also very aware of the overall small take-up of the available training throughout Australia.

Although a number of TAFE providers are developing a range of renewable energy initiatives recent reports such as those developed by the Victorian TAFE based Specialist Energy Training Networks (SETN) titled: Skills Shortage and Renewable Energy, endorse similar evidence from organisations such as EE-OZ on the small take-up of renewable energy training.

In February 2008 the ElectroComms and EnergyUtilities Industry Skills Council, EE-OZ undertook a national Environmental Scan of the related industry sectors it has responsibility for.

The section from that recent and comprehensive report relating to the ElectroComms and EnergyUtilities work force development stated in part that:

1.2 Key impacts shaping workforce development in the Australian ElectroComms & EnergyUtilities industries

EE-Oz Training Standards has identified the 'Top 5' impacts currently shaping workforce development within the industries under the ISC's coverage. These are;

- Demand for knowledge and skills;
- Skills shortages;
- The ageing workforce;
- New technologies, and;
- Managing increasing demand whilst meeting regulatory, environmental and safety compliance requirements

Today's ElectroComms and EnergyUtilities industry members, regardless of sector or discipline, work in highly technical and continually changing environments. Science and technology continues to influence existing products and trigger new processes and equipment to meet global and local community demands.

Hence, the industries require personnel able to apply their knowledge and skills, communicate ideas both orally and in writing, control highly technical equipment, critically assess and appraise situations and apply creative, diagnostic and problem solving techniques on a day-to-day basis, whilst simultaneously maintaining pace with technological advancement.

Apprentices and existing workers are expected to build high levels of competency, flexibility, and capability across a wide range of areas, equipment, technologies, processes and procedures and be prepared for continuous development of their knowledge and skills throughout their working life.

By means of example, the advent and introduction of wireless/satellite communication systems has resulted in the need for technicians skilled in the use of computers and Internet-based systems in every day work environments. There has also been an increased focus on diagnostic skills rather that repair skills at this level.

It is for these reasons that the ElectroComms and EnergyUtilities industries are characterised by a relatively high skills profile compared with the overall Australian labour force. Almost a quarter of the industry's work force is in the 'trades' category, compared with around 13% across the total Australian labour force. The industries also have an above average proportion of workers at the 'Associate Professional' level (typically persons with Diplomas, Advanced Diplomas, or an equivalent) and a below average proportion of 'low-skilled' workers. As a result, approximately 40% of workers in the industries possess a VET level qualification, compared with around 22% of the total labour force.

> The industry's highly variable and potentially hazardous work environments demand highly capable and competent personnel. The Industries are, however, currently suffering severe skills shortages and these shortages are projected to increase as the supply of EE-Oz Training Standards skilled tradespersons in the industry continues to fall short of current market demand and growth in the volume of work continues to exceed the available supply of skilled labour, particularly in areas incorporating advanced technologies.

In July 2008 the ETU surveyed over 1,500 of its members in Victoria who are small to medium electrical contractor employers.

One section of this survey required responses to a question on Urgently Required Advanced Skills.

The Weighted Average of responding electrical contractor employers placed Renewable Energy as a: "Urgently Required Advanced Skills Requirement" in a list of twelve (12) identified crucial areas of skills.

This further highlights a need to focus on the range of skills and qualifications required when considering…*"nationally consistent set of climate change measures to support an emissions trading scheme (ETS) and the expanded national RET".*

This factor therefore must become a critical issue for consideration by both the COAG Working Group and the Senate Inquiry into: The Effects of Climate Change on Employment and Training Needs.

Without this identified skills shortages and areas of necessary skills training will limit the potential success of the COAG and Senate based initiatives and the subsequent directions that Governments may take.

In 2004 the ETU provided a submission to the Federal Government paper: Towards a National Framework for Energy Efficiency Issues and Challenges – March 2004 (see attached) that stated in part that:

> ***1. Why is action needed on energy efficiency?***
>
> *In addressing this fundamental question the ETU refers to the abundant information available on growth in energy consumption patterns and does not question the fact that consumption will continue to rise unless Demand Management/End Use strategies become a principle focus.*
>
> *The significance of addressing a broad strategy that will deliver change has been considered for some years by many in the trade union movement.*
>
> *In 1991 as part of a national strategy the ETU was a major sponsor and contributor to research undertaken by the University of New South Wales. That research was completed into a book titled: "Powering the Future".*

This book remains as one of the most comprehensive on the issues that still face the Australian energy sector and the citizens of Australia.

The ETU maintains that the principle established by this book was a back-to-back-to-back range of strategies to address the back-to-back-to-back range of issues that face governments, industry and consumers to be able to deliver the greatest benefits.

Unfortunately, most did not heed or apply the advice provided.

Further, that:

A program of clear and unambiguous information is essential to be developed and introduced by governments and/or regulators at the same time as introducing technologies that empower consumers to make their own changes in reducing consumption.

EEIT would welcome providing further advice to the Senate Inquiry or subsequent processes that may follow.

Electrotechnology Training Framework and Outcomes

The National Electrotechnology Training Package has been developed by industry stakeholders into a highly sophisticated structure since the mid 1990's and is overseen by the National Skills Council, EE-OZ.

Following its most comprehensive review this package was recently re-endorsed by all relevant industry stakeholders, states, territories and the Federal Government.

The National Electrotechnology Training Package meets all requirements of the Australian Qualifications Training Framework (AQTF) and contains Renewable Energy qualifications and pathways from Certificate II through to Advanced Diploma in Renewable Energy.

As a principle stakeholder in the development processes of this framework the EEIT acknowledges the importance of the structure for industry including the significant role undertaken by EE-OZ.

EEIT however maintains that nationally only a few electricians have taken up this training structure to achieve the skills, underpinning knowledge and qualifications necessary to undertake work on renewable energy systems. This lack of take-up by tradesperson electricians and electrical contractors has a negative impact on the initiatives being implemented in the renewable energy industry as numbers of trained and qualified tradespersons will not be capable of meeting the coming demand.

EEIT acknowledges a recent increase in Victoria of the numbers of electricians and electrical contractors undertaking the "Grid Connect" and "Stand-Alone Photo Voltaic Systems" training courses required for electricians to connect renewable/alternative energy systems into the electricity network.

This is yet another indicator that electrical contractors and employers are only choosing those training components necessary to satisfy the regulatory requirements and are not undertaking the complete range of training available.

The EEIT offers in this submission real alternatives to address this matter.

A number of factors can influence a decision by a small to medium enterprise to undertake training including the time required, generally in a person's own time, and to a lesser degree associated costs to complete a renewable energy qualification outcome.

The EE-OZ Skills Council, National Environmental Scan, 2008, in section 1.2 stated:

1.2 Key impacts shaping workforce development in the Australian ElectroComms & EnergyUtilities industries

EE-Oz Training Standards has identified the 'Top 5' impacts currently shaping workforce development within the industries under the ISC's coverage. These are;

- Demand for knowledge and skills;
- Skills shortages;
- The ageing workforce;
- New technologies, and;
- Managing increasing demand whilst meeting regulatory, environmental and safety compliance requirements

Today's ElectroComms and EnergyUtilities industry members, regardless of sector or discipline, work in highly technical and continually changing environments. Science and technology continues to influence existing products and trigger new processes and equipment to meet global and local community demands.
Hence, the industries require personnel able to apply their knowledge and skills, communicate ideas both orally and in writing, control highly technical equipment, critically assess and appraise situations and apply creative, diagnostic and problem solving techniques on a day-to-day basis, whilst simultaneously maintaining pace with technological advancement.

Apprentices and existing workers are expected to build high levels of competency, flexibility, and capability across a wide range of areas, equipment, technologies, processes and procedures and be prepared for continuous development of their knowledge and skills throughout their working life.

By means of example, the advent and introduction of wireless/satellite communication systems has resulted in the need for technicians skilled in the use of computers and Internet-based systems in every day work environments. There has also been an increased focus on diagnostic skills rather that repair skills at this level.

It is for these reasons that the ElectroComms and EnergyUtilities industries are characterised by a relatively high skills profile compared with the overall Australian labour force. Almost a quarter of the industry's work force is in the 'trades' category, compared with around 13% across the total Australian labour force. The industries also have an above average proportion of workers at the 'Associate Professional' level (typically persons with Diplomas, Advanced Diplomas, or an equivalent) and a below average proportion of 'low-skilled' workers. As a result, approximately 40% of workers in the industries possess a VET level qualification, compared with around 22% of the total labour force.

The industry's highly variable and potentially hazardous work environments demand highly capable and competent personnel. The Industries are, however, currently suffering severe skills shortages and these shortages are projected to increase as the supply of EE-Oz Training Standards skilled tradespersons in the industry continues to fall short of current market demand and growth in the volume of work continues to exceed the available supply of skilled labour, particularly in areas incorporating advanced technologies

ETU Southern States Branch Clean and Renewable Energy Training Program

The ETU Southern States Branch of Victoria and Tasmania current membership of approximately 20,000 also contains approximately 3,000 Registered Electrical Contractor (REC) with the majority being small to medium employers.

Evidence exists that there is a knowledge and skills gap of what is required of electricians in the renewable energy sector.

ETU research undertaken for over a decade identifies that no single training program delivers the essential knowledge to enable an electrical contractor to provide a broad range of expert advice to a consumer. This advice must include a broad range of products, systems and equipment so that a consumer will be provided expert advice on a variety of choices on energy efficiency measures.

As a result of the direction taken in the Australian renewable energy sector, the direct affects of climate change and the current skills shortages relevant to these sectors the ETU has initiated development of a training program for its membership address this short fall.

The ETU has therefore determined that EEIT will assist and manage the development and implementation of its own strategy and training program of education and training on renewable and energy efficiency for its members to address this short fall.

The national post trade Certificate IV, Renewable Energy qualification provides excellent reference material. But this content must be contextualised to suit outcomes sought by electricians and electrical contractors seeking, or considering an extended role in the expanding renewable energy sector.

This ETU strategy will also deliver training necessary for trained and qualified electricians and electrical contractors to provide comprehensive advice to consumers on systems that can establish real energy efficiency outcomes.

A critical component of the ETU training program is the household energy audit.

It is considered that this strategy will provide incentive for electrical contractors and electricians to seek further skills and qualifications outcomes in renewable energy.

The ETU Victorian training program will commence early in 2009.

Carbon Pollution Reduction Scheme, Green Paper, July 2008

To highlight the effects of climate change on employment and training needs reference is also made to the Federal Governments Carbon Pollution Reduction Scheme, Green Paper, July 2008.

Chapter 8, Household Assistance Measures:

Under the heading of Clause 8.1, Household Assistance Commitments, Page 278 of the Green Paper, it states that the Government is committed to:

- *Increase payments, above automatic indexation, to people in receipt of pensioner, carer, senior and allowance benefits and provide other assistance to meet the overall increase in the cost of living flowing from the scheme.*
- *Increase assistance to other low-income households through the tax and payment system to meet the overall increase in the cost of living flowing from the scheme.*
- *Provide assistance to middle-income households to help them meet any overall increase in the cost of living flowing from the scheme.*
- *Review annually in the Budget context the adequacy of payments to beneficiaries and recipients of family assistance to assist households with the overall impacts of the scheme, noting that these payments are automatically indexed to reflect changes in the cost of living.*
- *Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.*
- *The Government has also indicated in the terms of reference for Australia's Future Tax System Review that it is to consider the interrelationships between the tax and transfer payment systems and the scheme.*

Focus is given here to the fifth dot point:

> *Provide additional support through the introduction of energy efficiency measures and consumer information to help households take practical action to reduce energy use and save on energy bills so that all can make a contribution.*

We note Clause 8.3, Broad Distributional Price Impacts, of the Carbon Pollution Reduction Scheme, Green Paper, July 2008 states in part that:

> *The overall price impact of the scheme on an individual household's welfare will always be difficult to quantify. It will depend on many factors including:*
> - *the carbon price (or the price of permits)*
> - *the pass through of the carbon price to individual retail prices(that is, the extent to which the carbon costs are reflected in the prices of goods)*
> - *individual consumption patterns*
> - *individual households' levels of disposable income*
> - *the assistance provided to households by the Government to manage the impacts of the scheme*
> - *the ability of households to adjust consumption patterns in response to higher carbon prices. For example, those households with higher disposable incomes can more readily access capital markets to undertake energy efficiency home improvements. This is not necessarily the case for households on lower incomes or with greater debt.*

Further in table 8.1, of the Carbon Pollution Reduction Scheme, Green Paper, July 2008, Projected Price Effects by Commodity, 2010 – 2011 states in part that:

> *"An upper band estimate of the impact of a $20.00 carbon price is that electricity Prices would rise by around 16%.*
>
> *Upper bound estimates of the impact of a similar carbon price on gas and other household fuel prices are that these would rise by around 9 per cent. More broadly, a carbon price of around $20 is projected to increase the average price of all goods by around 0.9 per cent.*
>
> *The price impacts will vary across households according to many different factors.*

Clause 8.4, Energy efficiency opportunities and challenges, of the Carbon Pollution Reduction Scheme, Green Paper, July 2008, states in part that:

> *The Carbon Pollution Reduction Scheme will be the Government's primary policy instrument to reduce emissions. The establishment of a carbon price under the scheme will provide incentives for households and businesses to increase energy efficiency, but additional policies to exploit energy efficiency opportunities can also contribute to emissions reductions.*
>
> *Improvements in energy efficiency have the potential to deliver a significant quantity of emissions reductions in Australia over the period ahead. Research conducted by the former Sustainable Energy Authority of Victoria and, more recently by McKinsey & Company, suggests that many energy efficiency abatement opportunities are available and that these have low costs*

Shown in the attachments to this document are submissions made previously by the ETU to the Victorian Government in 2003 and the Federal Government in 2004.

These submissions identified, amongst other things what we again identify here and that is that training for qualified electricians in renewable energy provides necessary experience and skills that are essential to ensure that consumers are provided correct and practical information to reduce energy use.

Practical and cost efficient measures by domestic consumers are achievable and ensure that they make a real contribution in the carbon reduction strategy.

Without expert advice from trained and qualified electricians consistency of available measures will not be achieved and without this neither will benefit.

In 2004 the ETU provided a submission to the Federal Government paper: Towards a National Framework for Energy Efficiency Issues and Challenges – March 2004 (see attached) that stated in part that:

1. Why is action needed on energy efficiency?

In addressing this fundamental question the ETU refers to the abundant information available on growth in energy consumption patterns and does not question the fact that consumption will continue to rise unless Demand Management/End Use strategies become a principle focus.

The significance of addressing a broad strategy that will deliver change has been considered for some years by many in the trade union movement.

In 1991 as part of a national strategy the ETU was a major sponsor and contributor to research undertaken by the University of New South Wales. That research was completed into a book titled: "Powering the Future". This book remains as one of the most comprehensive on the issues that still face the Australian energy sector and the citizens of Australia.

The ETU maintains that the principle established by this book was a back-to-back-to-back range of strategies to address the back-to-back-to-back range of issues that face governments, industry and consumers to be able to deliver the greatest benefits.

Unfortunately, most did not heed or apply the advice provided.

Further, that:

A program of clear and unambiguous information is essential to be developed and introduced by governments and/or regulators at the same time as introducing technologies that empower consumers to make their own changes in reducing consumption.

Conclusion

The effects of climate change must be considered as part of the direction of renewable and energy efficiency and the subsequent overall reduction in the amount of energy consumed.

While consumers must be the target group for education relating to the consumption of energy renewable and energy efficiency measures the same individuals will look for expertise in seeking advice on what measures to implement.

The electrician contractor must be considered one of these experts.

Training for electricians and electrical contractors on the effects of climate change renewable and energy efficiency is therefore necessary to provide a variety of beneficial measures to energy consumers on how to reduce energy.

In this expanding market of climate change, renewable and energy efficiency training for electricians and electrical contractors is therefore crucial for its success.

All electrical energy consumers, particularly domestic consumers, will benefit from the skills development based training strategy being implemented by the ETU in Victoria.

However, consumers can only make judgments on what may be an advantage if they have been provided with a mechanism or information on where to obtain it.

This will have an effect on employment and training needs of electrical workers that if not addressed correctly will be the detriment of employers and employees alike and will slow the introduction of renewable and energy efficiency measures designed to address the effects of climate change.

EEIT would therefore welcome a further opportunity to provide further submissions and have detailed discussions on this strategy with the COAG Working Group on Climate Change and Water.

ATTACHMENT 1

TOWARDS A NATIONAL FRAMEWORK for ENERGY EFFICIENCY

ISSUES AND CHALLENGES

A DISCUSSION PAPER PREPARED FOR THE:

ELECTRICAL TRADES UNION SOUTHERN STATES BRANCH

MARCH 2004

OPENING COMMENT

"Energy is not so much a single product as a mix of products and services, a mix upon which the welfare of individuals, the sustainable development of nations, and the life-supporting capacities of the global ecosystem depend.

In the past, this mix has been allowed to flow together haphazardly; the proportions dictated by short term pressures on and short term goals of government, institutions and companies.

Energy is too important for its development to continue in such a random manner.

A safe, environmentally sound and economically viable energy pathway that will sustain human progress into the distant future is clearly imperative.

It is also possible.

But it will require new dimensions of political will and institutional co-operation to achieve it".

(World Commission on Environment and Development 1987:176)

FORWARD

The ETU welcomes the opportunity to provide this Discussion Paper and rely on the submission as provided by the Electrical Trades Union, Southern States Branch, to the Victorian Government Consultation Paper: "The Greenhouse Challenge for Energy – Driving Jobs, Investment and Reducing Emissions", July 2003.

While it is accepted that the abovementioned submission was based on "the greenhouse opportunities" it is also argued that the majority of the matters contained in it are the same as for energy efficiency improvements.

The ETU submits that by improving energy efficiency in Australia will have the benefits in reducing greenhouse by a reduction of or better use of energy. Therefore these are compatible matters and should be considered as part of a range of strategies that can addressed together.

In the Executive Summary of that submission the ETU stated in part that:

> *"The greenhouse 'challenge' is viewed by the ETU as an opportunity that should be embraced positively. The experience overseas has shown that contrary to the notion that somehow programs to reduce greenhouse gases will 'cost' the community, such programs create jobs; deliver significant welfare benefits to households; and inspire healthy and comfortable workplaces.*
>
> *The current policy mix in Victoria is orientated to promoting consumption of electricity, of which the majority is supplied by brown coal-fired generation. Poor regulatory design, inappropriate market incentives, poor building and appliance standards and lack of solar passive urban design means that consumers are underwriting very significant levels of investment in non-renewable generation, and in transmission and distribution network augmentation.*
>
> *Government itself is underwriting unnecessary consumption through subsidies to customers that fail to address consumption.*
>
> *This investment could otherwise be used for energy efficiency, demand management and development of renewable energy.*
>
> *In addition coal is hardly taxed at all but electricity users subsidise the energy intensive aluminium smelting industry.*
>
> *This suggests that the transition to a carbonless energy sector would have very positive impacts on customers and the economy when compared with the status quo.*

> Victoria has an immense opportunity to make economic savings and grow jobs by undertaking energy efficiency and developing a renewable energy industry for Australia and the Asia/Pacific region.
>
> In order to achieve this the Victorian government needs to think in terms of a 'back-to-back-to-back' series of policies that links greenhouse abatement at the retail level to networks to generation so that consumers through to producers, and government have the same incentive to reduce consumption and greenhouse gas intensity of emissions.
>
> The priorities for policy aimed at reducing greenhouse emissions from the energy sector in Victoria must comprise immediate and long-term strategies."

In addressing this Discussion Paper: "Towards a National Framework for Energy Efficiency – Issues and Challenges", the ETU submission as referred to above highlights the issues and challenges (with a Victorian perspective) but in this paper that perspective is considered with a national focus.

As was stated in the previous submission the challenges should be reconsidered as <u>opportunities</u> as they also offer significant growth in employment as well as reducing energy consumption and also creating energy efficiencies.

While the public ownership of the Australian energy sector remains the policy of the ETU, it is argued that the national strategies required are principally the same for a private market or sector as for a government market or sector.

The debate about ownership remains as that debate, whereas the energy efficiency debate is about establishing nationally focused and co-ordinated strategies for energy efficiency. It is the ETU's submission that the strategy to establish and implement energy efficiencies must <u>not be</u> dominated by the ownership question as many may advocate.

A component part of the debate and strategies must include the opportunities that sustainable energy offer as well as the inclusion of the greenhouse debate and other related matters.

Therefore, the priorities for energy efficiency must also be targeted at reducing greenhouse emissions and must comprise immediate and long term strategies not affected by state boundaries or questions of ownership.

1. Why is action needed on energy efficiency?

In addressing this fundamental question the ETU refers to the abundant information available on growth in energy consumption patterns and does not question the fact that consumption will continue to rise unless Demand Management/End Use strategies become a principle focus.

The significance of addressing a broad strategy that will deliver change has been considered for some years by many in the trade union movement.

In 1991 as part of a national strategy the ETU was a major sponsor and contributor to research undertaken by the University of New South Wales. That research was completed into a book titled: “Powering the Future”. This book remains as one of the most comprehensive on the issues that still face the Australian energy sector and the citizens of Australia.

The ETU maintains that the principle established by this book was a back-to-back-to-back range of strategies to address the back-to-back-to-back range of issues that face governments, industry and consumers to be able to deliver the greatest benefits.

Unfortunately, most did not heed or apply the advice provided.

The debate and implementation of efficiencies cannot be continually focussed primarily on generation as this diminishes the opportunities that exist for enacting real change to our use of energy in Australia.

The Introduction of Powering the Future is also as relevant in the context of this paper and reads in part that:

> *“The Electricity Supply Industry exists as a major component of the Australian economy in its own right as a major employer, as a purchaser, as a catalyst for the introduction of new technologies and a major producer of energy used by “downstream’ industries. The performance of the electricity industry has been accused of limiting expansion in other industries (AMC 1990: 118).*
>
> *There are many problems associated with having a multitude of authorities governing a major input to industry, particularly one in which a central government wishes to implement its own industry and economic policies:*
>
> *“With different policy makers and agencies responsible for each, policies tend to be discrete rather than integrated with rival bureaucracies, indirect policy tools and competing problems and solutions, the economic policy process becomes a fight about priorities” (Davies 1988:158) (quoted in Johnson and Rix 1991).*
>
> *The major issues confronting the electricity supply industry in Australia are its orientation to growth; its lacklustre management performance; the environmental imperative; its State-based orientation resulting in a lack of coordination; and inadequate arrangements to ensure proper accountability.*

> *The industry is required to improve its production, distribution and end-use efficiency; to meet customer's needs at appropriate prices; to institute processes to ensure optimum returns from its primary* energy inputs; and to meet its obligations to its employees and the wider community (Johnson and Rix 1991:xiii).

Powering the Future posed three fundamental challenges that the industry, unions and Australian governments must face:

1. *The industry has to meet the challenge of restructuring and improved efficiency if it is to play an important part in meeting Australia's economic and social objectives;*

2. *The direct challenge posed by the general retreat from the economic and political advances made over the last two centuries which have seen the rise of the involvement of the public sector in the provision of basic goods and services to a citizenry which has achieved a role in decision making;*

3. *The global challenge we face in common with other species resulting from two centuries of human exploitation of the planet's natural resources.*

The ETU endorses the part of the Introduction in:"Toward a National Framework for Energy Efficiency" that the States and Commonwealth must:

"…….achieve a step change in Australia's energy efficiency with the objective of unlocking significant economic potential associated with increased implementation of energy efficient technologies and processes to deliver a least cost approach to energy provision in Australia."

Further, that:

> "…….. development of a National Framework to identify major areas of inefficiency and areas for improved coordination and cooperation across jurisdictions in delivery of energy efficiency policies and programs."

2. Understanding the Energy Market

Evidence exists that few consumers understand the electricity and gas market, and there is an almost total lack of understanding as to how consumers may affect their own changes.

For as long as this lack of knowledge remains with the majority of Australian energy consumers the principle of creating or implementing major end-use of energy efficiencies with domestic consumers will either fail or be of limited value.

As small consumers currently feel powerless to make change therefore where any change mechanism is introduced the acceptance will be minimal.

A program of clear and unambiguous information is essential to be developed and introduced by governments and/or regulators at the same time as introducing technologies that empower consumers to make their own changes in reducing consumption.

Domestic consumers are generally made aware of their consumption on receipt of their energy bill. The consumption has already taken place and little incentive exists to alter consumption patterns rather than to just complain and pay the bill.

Technology already exists to change the way we consume and identify what we are consuming at the time of consumption. To empower consumers to make immediate decisions to cease and/or alter energy consumption habits at or near the point and time of use is essential.

The “Take Off Five” road speed reduction campaign initiated by the Victorian State Government is one example of immediate reduction in consumption. This campaign not only has the benefit of reducing vehicle speed and reducing death and injury but also in reducing energy (petrol and gas) consumption. The consumption may only be very small but it nonetheless is a reduction and when multiplied across tens of thousands of vehicles and on every vehicle trip reductions become significant.

Some years ago when Victoria was faced with major electricity energy shortage the Victorian Government requested that consumers reduce their electricity consumption with the reaction being immediate.

This voluntary consumption reduction behaviour identifies that consumers can alter their behaviour when directed in a crisis but longer term change is required with consumers being provided the incentives to make the changes as has been achieved with a reduction in road speed.

3. Interval Metering with 2 Way Communication

The ETU welcomes the draft decision of the Victorian Essential Services Commission (ESC Media Release Number 3/2004 – 12/3/2004) to mandate the introduction of new electricity (interval) meters.

The Commission's Chairperson, Mr. John Tamblyn, stated in part in the media release:

> *"With the benefit of interval meters, customers will be in a position to better manage their energy consumption and to choose the retail prices and services that will lower their energy bills as well. In addition, interval meters can deliver environmental benefits."*

The media release then referred to energy benefits and efficiencies to be achieved:

> *"The efficiencies and consumer benefits that the commission expects to result from the widespread introduction of interval meters flow mainly from the more efficient and less costly patterns of energy usage by electricity customers due to:*
>
> - *time of use energy prices based on the actual costs of electricity supply;*
> - *better information about their electricity consumption; and*
> - *providing access to innovative energy services that will assist them in managing their energy consumption.*
>
> *Cost efficiencies and consumer benefits come from:*
>
> - *smoothing of the needle peaks in the Victorian electricity demand profile which currently contribute significantly to the cost of electricity generation and greenhouse emissions;*
> - *reduced energy costs be delaying investments in new generation and network infrastructure that would otherwise be needed to satisfy future growth in peak demand; and*
> - *improved security of electricity supply from a better balance of supply and demand and a reduced requirement from under utilised reserve capacity.*

The media release then referred to mandated progressive installation:

> *"However the commission has concluded that it is necessary to mandate the progressive installation of interval meters on the basis of evidence that competitive forces alone would not produce a timely meter rollout on the scale needed to generate the economies and efficiencies that are available"*

Interval metering provides a real opportunity to introduce technology on a wide scale to change consumption habits. A mass and controlled role out of interval metering will enable consumers to alter their consumption behaviour.

A programmed and strategic national interval meter rollout should be the principle focus of an education program for all electricity consumers outlining the advantages of the expenditure of an interval meter being installed in their premises.

On the sale and/or rental of a property it should become an automatic requirement (together with the requirement to increase energy rated components and solar hot water systems) that an interval meter be installed. The increase in volume would produce a reduction in costs.

Electricity retailers/distribution businesses should be required to offer contracts to consumers whereby the additional installation costs are amortised over extended periods to provide further incentive for consumers to install interval meters.

Reference is again made to part of the ESC press release that:

> *…."evidence that competitive forces alone would not produce a timely meter rollout"…*

All State Territories and the Federal government must show leadership by mandating the introduction of interval metering throughout Australia as the benefits and efficiencies that will be achieved are large.

4. Solar Hot Water Systems

Together with the installation of interval metering should be the installation of solar hot water systems in domestic premises.

A strategic state by state and commonwealth program should be developed whereby energy consumers are educated to the longer term advantages to them, to energy efficiency and our environment.

The installation of an interval meter, and the resulting drop in consumption of energy combined with a solar hot water unit, and the added value to a premises, would also become a program of incentives for small consumers to alter their consumption behaviour.

A similar message of increases in energy costs if consumption behaviour is not undertaken would also be necessary to act as an incentive.

5. Energy Audits for Consumers

Domestic consumers find it almost impossible to find a tradesperson or other advisers that can offer a realistic plan to improve energy efficiency in the home without significant and immediate costs.

Energy auditing should be part of an overall strategy of creating energy efficiencies from the production, transmission, distribution to the end use of energy.

As part of a longer term strategy domestic consumers should also be provided with encouragement and greater incentives, by way of special energy tariffs, to purchase new and improved energy rated appliances, install interval metering, solar hot water and other energy related matters.

6. Employment Growth

The ETU maintain that with the manufacturing, installation and maintenance of interval metering and solar hot water would create numerous employment opportunities.

Further to this would be additional employment in ancillary services needed to be provided.

Web based information technology that consumers could be able to register and reduce consumption in response to signals received by the interval meter would create numerous employment in the IT market and ancillary sectors.

As referred to in point 3 massive employment opportunities will be created with the mandated installation of interval metering while at the same time creating large energy efficiencies, a reduction in consumption, benefits to the consumer and related greenhouse benefits.

7. Industry Training

Currently there are few training programs available for electrical or gas trades persons to be trained in sustainable energy or energy efficiency programs or systems.

An incentive for governments and employers, driven by a new market being created, therefore creates an immediate need for trained tradespersons to undertake the work involved as referred to above.

The relevant national industry training advisory boards together with public and private training institutions should be required to develop programs for training and retraining of tradespersons to provide energy efficiency advice especially for domestic consumers.

This should address installation of interval metering, solar hot water and other alternative energy systems, retrofitting of premises and other related initiatives.

Conclusion

As referred to in the Forward of this paper the ETU relies on the detail provided in the submission as provided by the Electrical Trades Union, Southern States Branch, to the Victorian Government Consultation Paper: "The Greenhouse Challenge for Energy – Driving Jobs, Investment and Reducing Emissions", July 2003.

While the ETU accepts that there are numerous other initiatives that need to be addressed to create efficiencies and benefits, evidence shows that "market forces" cannot be relied upon to create real efficiencies and benefits for energy use in Australia.

Federal, State and Territory governments must show leadership in addressing the issues and challenges in energy efficiency by adopting a principle of establishing opportunities.

It is considered by the ETU that the end use or demand management of energy particularly for domestic consumers is the substantial and mainly untapped potential that has yet to be realised.

ATTACHMENT 2

ETU
Proud to be Union

Electrical Trades Union
of Australia

THE GREENHOUSE CHALLENGE FOR ENERGY:

Driving jobs, investment and reducing emissions.

A Submission prepared by the Electrical Trades Union of Australia, Southern States Branch
for the Victorian Government Consultation Paper July 2003

The greenhouse opportunity for energy: driving jobs, investment and reducing emissions

Electrical Trades Union

submission to the Victorian government's

The greenhouse challenge for energy: driving investment and reducing emissions

Consultation Paper

July 2003

Glossary

Term	Definition
Abatement	Program to reduce greenhouse emissions
Ancillary service	Support to correct frequency or voltage with transmission/generation
Deemed and *standing offer*	All domestic customers were placed on deemed contracts for supply (replacing the old maximum uniform tariff) when competition started. If a domestic customer cannot obtain a market contract from a supplier, she/he can ask to go on the safety net tariff (the standing offer)
Demand	The customers requirement of electricity
Demand management	Moderating the customers requirement for electricity
Distributed generation	Generation plants that are embedded in the distribution network
Distribution networks	The low voltage poles and wired businesses. Also known as Distribution Network Service Providers (DNSP) or distribution businesses (DBs)
Geo-sequestrate	Bury greenhouse gases in the ground
Incentive regulation	'Light handed' regulation of Distribution networks that provides them with incentives to performance above benchmarks as they can keep the additional efficiencies they create
Intermittent' generation	Generation that only operates in a spasmodic way
Interval metering	Measures and records the customers consumption on a half hourly basis
Least cost planning	Undertaking energy efficiency or demand management rather than spending more on building new power station or augmenting distribution and transmission networks
Retrofit	To renovate a building to make it energy efficient
Spinning reserve	Spare generation capacity in case of plant break down
Vesting contracts	Longer term contracts between retailers and generators to underpin supply to customers that are not competitive

Executive summary

The greenhouse 'challenge' is viewed by the ETU as an *opportunity* that should be embraced positively. The experience overseas has shown that contrary to the notion that somehow programs to reduce greenhouse gases will 'cost' the community, such programs create jobs; deliver significant welfare benefits to households; and inspire healthy and comfortable workplaces.

This submission aims to identify and propose policy that is within the power of the Victorian government to deliver without recourse to consultation with other states or involvement in National Electricity Market (NEM) decision-making processes. To this end the submission is orientated to those areas of energy policy where the Victorian government has exemptions from the National Electricity Code, such as distribution regulation and retail licensing.

The current policy mix in Victoria is orientated to promoting consumption of electricity, of which the majority is supplied by brown coal-fired generation. Poor regulatory design, inappropriate market incentives, poor building and appliance standards and lack of solar passive urban design means that consumers are underwriting very significant levels of investment in non-renewable generation, and in transmission and distribution network augmentation. Government itself is underwriting unnecessary consumption through subsidies to customers that fail to address consumption. This investment could otherwise be used for energy efficiency, demand management and development of renewable energy. In addition coal is hardly taxed at all but electricity users subsidise the energy intensive aluminium smelting industry. This suggests that the transition to a carbonless energy sector would have very positive impacts on customers and the economy when compared with the status quo.

Victoria has an immense opportunity to make economic savings and grow jobs by undertaking energy efficiency and developing a renewable energy industry for Australia and the Asia/Pacific region.

In order to achieve this the Victorian government needs to think in terms of a 'back-to-back-to-back' series of policies that links greenhouse abatement at the retail level to networks to generation so that consumers through to producers, and government have the same incentive to reduce consumption and greenhouse gas intensity of emissions.

The priorities for policy aimed at reducing greenhouse emissions from the energy sector in Victoria must comprise immediate and long-term strategies.

Networks

- ✓ Replace the current incentive regulation regime with 'least cost planning' as the regulatory framework for the oversight of networks
- ✓ Include environment and social justice as objectives as equal to economic regulation as the raison detre of the Essential Services Commission
- ✓ Mass roll out of interval metering to all customers with real time communications capacity to provide a pricing signal to all end users
- ✓ Use rural subsidies for energy efficiency and demand management

Retail

- ✓ Introduce a retailer emissions benchmarking scheme
- ✓ Introduce pricing principles to ensure a rudimentary demand management signal for all consumers
- ✓ Work to ensure that retailers provide customers with appropriate pricing signals to complement the roll out of interval metering
- ✓ Domestic customers should be supplied under fully regulated prices, terms and conditions that are supported in part by 'vesting contracts' with renewable energy producers, and by vesting contracts with fossil fuel generators that provide on going incentives to reduce the greenhouse gas intensity of their output.

Generation

- ✓ Increase the brown coal royalties to fund development of renewable energy and undertake energy efficiency measures
- ✓ Increase the Mandatory Renewable Energy Target to 10%
- ✓ Under the Commissioner for Environmentally Sustainable Development create a consortia – a standing group of stakeholders to devise a long-term strategy to retire existing coal generation with cleaner, and ultimately clean, renewable generation.

Addressing the built environment

- ✓ Extension of 7 star energy efficiency ratings and mandatory solar hot water heaters for all buildings – upgrade to occur when property is sold or let
- ✓ New solar passive urban planning
- ✓ Reestablishment of the Home Energy Advisory Service to at least 150% of 1993 CPI adjusted funding to ensure the burden of change is not inequitably shared.

Institutional

- ✓ Integrate environmental planning with energy planning and regulation

1. Background

"The Electricity Supply Industry exists as a major component of the Australian economy in its own right as a major employer, as a purchaser, as a catalyst for the introduction of new technologies and a major producer of energy used by "downstream' industries. The performance of the electricity industry has been accused of limiting expansion in other industries (AMC 1990: 118).

There are many problems associated with having a multitude of authorities governing a major input to industry, particularly one in which a central government wishes to implement its own industry and economic policies:

> With different policy makers and agencies responsible for each, policies tend to be discrete rather than integrated with rival bureaucracies, indirect policy tools and competing problems and solutions, the economic policy process becomes a fight about priorities" (Davies 1988:158) (quoted in Johnson and Rix 1991)

> In 1991 the Electrical Trades Union was one of several unions who commissioned *Powering the Future*, a research project that surveyed the changes taking place in the energy sector at that time. The report said

The major issues confronting the electricity supply industry in Australia are its orientation to growth; its lacklustre management performance; the environmental imperative; its State-based orientation resulting in a lack of coordination; and inadequate arrangements to ensure proper accountability.

The industry is required to improve its production, distribution and end-use efficiency; to meet customer's needs at appropriate prices; to institute processes to ensure optimum returns from its primary energy inputs; and to meet its obligations to its employees and the wider community (Johnson and Rix 1991:xiii).

Powering the Future posed three fundamental challenges that the industry, unions and Australian government must face:

1. The industry has to meet the challenge of restructuring and improved efficiency if it is to play an important part in meeting Australia's economic and social objectives;
2. The direct challenge posed by the general retreat from the economic and political advances made over the last two centuries which have seen the rise of the involvement of the public sector in the provision of basic goods and services to a citizenry which has achieved a role in decision making;
3. The global challenge we face in common with other species resulting from two centuries of human exploitation of the planet's natural resources.

Arguably market reform to the industry in Victoria in the intervening period has failed to deliver on these key objectives. In the area of environment, particularly greenhouse gas emissions the failure is manifest with a dramatic increase of 41% for electricity generation between 1990 and 1999.

This submission aims to identify and propose policy that is within the power of the Victorian government to deliver without recourse to consultation to other states or involvement in National Electricity Market (NEM) decision-making processes. To this end the submission is orientated to those areas of energy policy where the Victorian government has derogations from the National Electricity Code, such as distribution regulation and retail licensing. It proposes a series of achievable actions that give substance to the objectives contained with the Victoria ALP's *Plan for Building a Stronger and Fairer Community in Victoria – Labor Listens Then Acts, Chapter 8: Sustainable resources*.

Having recognised that as a state government there are limitations to the extent that the Victorian government can act unilaterally, some broader points are worth making. Firstly, climate change is real and is accepted by Australians as an urgent issue. Do governments have a choice other than to take immediate action? Victoria faces a most extraordinary challenge. Victoria's reliance on brown coal fired electricity generation presents enormous difficulties. In the longer-term several large coal-fired power stations equalling over 6000MW of capacity need to be replaced with cleaner fuel sources. In addition a further 2000MW of new peak demand is forecast in ten years. To this should be added the increasing insecurity of Victoria's water resources. Eight per cent of Victoria's water resources are dedicated to power generation – thermal and hydro. Hydro plants have a dual role in providing water storage. The irony is that greenhouse emissions affect the reliability of water as a harvestable resource that reduces the reliability of hydro.

Hydro is traditionally conceived of as peaking plant. Victoria is now a summer peaking electricity system, so demand for water per se and demand for water for hydro generation now coincides but these resource requirements sometimes conflict.

Peaks in demand can (and should) be reduced by demand-side measures. It is feasible that forecast growth in demand can be addressed in this way. Base load demand however requires fuel sources that are 100% reliable. Plant itself can never be regarded as 100% and hence spinning reserve is essential. In order to replace coal-fired stations a variety of technologies need development. The ETU endorses the Victorian government's support for wind farms. Victoria has the potential to be the Renewable Energy Industry base for the Asia Pacific region.
The ETU has lobbied business and government to establish wind generation manufacture in Victoria. The development of renewable energy would lead to hundreds of additional jobs in regional Victoria in an initial sense and further long term jobs as demonstrated in Europe and the United States.

Wind power however is not 100% reliable at present. As 'intermittent' generation it cannot replace coal stations. Research and development for solutions to permit wind power to perform as base load providers is an urgent requirement.

The technology also needs to be developed to improve its frequency and voltage effects to ensure wind power can be dispatched on an equal footing with other generation technologies. At the present time, much of the ancillary service support required for wind comes from coal. To this end government should re-consider its support for markets in ancillary service payments (ASPs) and find some other mechanism for the provision/funding arrangement for ASPs.

In the absence of planned phase out of coal stations the dispatch of renewable energy instead of coal does not necessarily mean that coal stations reduce production.

To the contrary, the minimum operating levels of coal turbines means that steam bypass occurs when electricity cannot be dispatched. The coal is still burnt. Coal stations also operate most efficiency (in regard to emissions and service) with least alteration to the level of output. Rapid ramping (increasing output in a short period) is significant in increasing the emission intensity of output. Coal stations that compete are stations that must ramp far more frequently than under centralised operation and dispatch.

Transmission connections may increase security of supply but transmission involves losses that do not occur with distributed generation; discourages energy efficiency; and in the case of Victoria is a vehicle to export greenhouse intensive electricity.

For this reason Basslink is a double-edged sword: it may bring wind power from Tasmania but it will also take coal to Tasmania.

Basslink is predicated on arbitrage in relation to peak pricing: if peaks are reduced which is feasible Basslink's financial viability is threatened. Using Tasmanian hydro to supply mainland peaks will be detrimental the Tasmanian rivers. Transmission lines have other environmental externalities such as electro-magnetic radiation and for the submarine link across Bass Strait magnetic fields and stray electrical currents.

While government has been criticized for favoring coal to gas technologies and permitting further exploration of coalfields it is understandable in the absence of viable substitution why such halfway strategies are being embraced. That said government needs to be absolutely certain of the coal technology it promotes. We must go forward on the premise of reducing emissions rather believing that we can lockup or 'geo-sequestrate' carbon.

Halfway measures may be necessary but scarce resources must be placed strategically in order to ensure that long-term research efforts are not compromised by efforts to adopt such halfway strategies.

Also at a national level, each state jurisdiction urgently needs to review the application of the pro-growth 'incentive regulation' regimes to the oversight of distribution networks as these have not only been significant in encouraging consumption but it prioritises capital expenditure on assets over operations and maintenance, and in increasing the loading on the networks reduces workplace safety and reliability of supply.

2. 'Back-to-back-to-back' policy making: integrating generation, network and retail sectors

The single most important step the Victorian government can make in regard to greenhouse abatement in the energy sector is ensuring that its oversight of the electricity supply industry (ESI) provides all sectors of the ESI with the same incentive to reduce emissions and reduce consumption. The failure to do so will only ensure that whatever measures are put in place will largely be doomed.

"Labor will embrace the challenge of moving towards a less carbon dependent economy"(ALP 2002:75)

2.1 Commissioner for Ecological Sustainable Development (ESD)

The Victorian ALP proposes to create a Commissioner for Ecological Sustainable Development (ESD) to "audit government agencies and promote green practices to industry and consumers" (ALP 2002:69). The ETU fully supports the creation of a statutory Commissioner for ESD, and propose that it establish what we would call a 'consortia' to explore and debate how Victoria's carbon intensive generation sector can be transformed over time to be emission free as possible.

The ETU envisages the consortia as a standing process, with broad formal participation by industry, unions, consumers, environmental groups, social justice groups, scientists and various levels of government. The consortia would have working groups and would conference once a year with the purpose of robust debate regarding technologies for generation; and the mapping of the economic, environmental and equity ramifications of potential options for retiring existing coal-fired generators. In essence a strategic planning process taken outside of election cycles and where the interests of the environment, of consumers, of workers in the electricity supply industry (ESI): of asset owners, and government are presented and critically examined in an open and democratic process. The consortia would build consensus around long-term goals.

There are many short-term goals listed in Chapter 8 of *Labor Listens – Then Acts* that provide the framework for a highly successful program of reducing greenhouse emissions that also work towards economic efficiency, consumer benefits and jobs.

2.2 5 star energy ratings for building standards and solar hot water heating (ALP 2002:69)

The ETU is pleased that this promise has already been partially fulfilled. The extension of the 7 star rating and mandatory installation of solar hot water heaters (SHWH) to all buildings would have very significant economic benefits.

It is anticipated that there will be a considerable slow down in the housing construction sector in the near future, the extension of the 5 star rating and SHWH would provide on going work for people in the construction sector during the down turn. The ETU believes the ACT model of requiring certificates of 5 star rating and SHWH prior to the sale or lease of a domestic property is highly meritorious. The beauty of it is that the vendor and the buyer effectively share the cost of upgrade at a point in time where the capital is available to undertake the work. Enough properties are rented or sold to provide steady work over a considerable period of time.

It imposes no costs on those such as aged pensioners who are asset rich but income poor. In addition to the employment benefits, the declining affordability of home ownership means that more people have no option but to find accommodation in the private rental market. The affordable end of the market has long been characterised as being of poor thermal quality and because of the landlord/tenant 'split incentive' problem stocked with highly inefficient energy appliances. Increasing amounts of taxpayer's money subsidies these tenants (federal rental assistance, state concession programs) but they are frequently and quite unsustainably trapped into high levels of consumption in order to maintain a basic level of welfare. The 7 star rating overcomes the split incentive: it improves the likelihood that the tenant can maintain the tenancy by lowering the costs of utility services. By extension it lowers the state's liability in terms of concessions, emergency relief and utility relief grants. Landlords too benefit when tenants can maintain their tenancies without falling into arrears.

The ETU has been highly supportive of the SHWH rebate program however the hope that it would kick off production of SHWH at improved economy of scale has not eventuated. The economies of scale are only going to be achieved by mandating installation.

It is widely recognised that greenhouse emissions result from our built environment. It is important that existing infrastructure be retrofitted. For the longer-term planning building codes and planning laws must change to maximise solar passive design.

2.3 Energy at affordable prices

In its *Energy For Victoria,* the Bracks government promised to ensure that:

> "consumers can access energy at affordable prices. The Government is committed to ensuring all consumers, especially low income earners, can access essential energy services at affordable prices" (DNRE 2000:52)

The ETU is highly supportive of this objective. The ETU itself runs a 'Heaters for Winter' campaign that aims to help underprivileged people get some winter warmth with a heater. Many people are using dangerous heaters that can cause house fires and lead to deaths. This campaign encourages the donation of column heaters as the safe alternative. Last year, ETU shop stewards and members were able to source hundreds of heaters for the winter appeal. ABC radio 774 Drivetime host Virginia Trioli, The Salvation Army and the Metropolitan Fire Brigade all promote the campaign.

The ETU recognises however that many low-income households struggle constantly with energy affordability and frequently can do little about their consumption as they either do own the house they live in or do not have the money to undertake energy efficiency. The $3 million over four years that has been allocated for energy efficiency measures for low-income households and public housing tenants in neighborhood renewal areas therefore is very welcome (State Budget media release 2003). However, the ETU would like to see a full retrofit program rather than what at around $700,000pa looks like tokenism.

It is our understanding that the work undertaken by the current scheme(s) is of a limited nature, failing to address appliances for example.

Moreover, the ETU is disturbed by the contracting out of such programs for the purpose of using voluntary or work for the dole labour.

Retrofit programs require skilled labour and householders should have the confidence that the people undertaking work in their homes are accredited and that they can trust the organisation has engaged (employed) persons that are fully professional in their conduct. The ETU believes a state wide retrofit program such as the former Home Energy Advisory Scheme (HEAS) is vitally necessary.

A new HEAS would complement the 7 star rating regulation impact on future employment of housing industry workers, and it would provide a fantastic opportunity take on apprentices. We note that the government has made a large commitment to extend gas reticulation to central Victoria to compensate for the withdrawal of local firewood supplies as a result of the declaration of box ironbark forest as national park. While the investment in new network sounds large it will in fact serve relatively few households. A HEAS is vital for those households who cannot afford to get connection and change to gas appliances.

The *Special Power Payment*, a subsidy of $118m for rural customers and the subsequent *Network Tariff Rebate* of $52m are not means tested and as cash back type rebates fail to address the longer-term plight of rural consumers. If such subsidies were delivered in the form of energy efficiency and demand management measures, the reduction in consumption would work to offset the increase in prices and improve reliability of supply. The price signal would provide incentive for energy efficiency and distributed (renewable) generation. These measures would grow jobs in rural areas, instead of growing unsustainable (environmentally and financially) consumption of electricity.

2.4 Essential Services Commission, the Sustainable Energy Authority, Victorian Greenhouse Strategy

The first Bracks government has delivered on the establishment of the Essential Services Commission (ESC), the Sustainable Energy Authority (SEAV), and the development of the Victorian Greenhouse Strategy (VGS). The ETU like many environment and consumer/welfare groups was very disappointed that the transformation of the former Office of the Regulator-General did not ultimately include social and environmental objectives as had been initially promised. The ESC basically represents a name change. However, the influence of the ESC on environmental policy is profound, and we will address that later.

SEAV while having had a substantial increase in funding has seemingly abandoned its role in providing advice and assistance to households regarding energy efficiency. The VGS has inexplicably neglected most of the ESI.

So despite the creation of institutions to address greenhouse in the energy sector there has been a very substantial failure to develop and coordinate policy aimed at real change. Energy policy in Victoria is dominated by a focus on the supply-side of the ESI yet the issue – for the environment, and more security of supply is really about the demand-side. Victoria has a consumption crisis. Our pattern of consumption remains based on electricity as an endlessly available and cheap resource. Neither policy nor market signals exist to inform the end user that their choices have dramatic consequences for the environment and for future prices.

In addition to the ESC, the SEAV, the Greenhouse Office (VGS) now a part of the Department of Environment and Sustainability (DSE), the Department of Infrastructure's Energy Policy and Security unit, the Department of Treasury and Finance and the Office of Premier and Cabinet play major roles in energy policy. It seems that energy policy is highly fragmented, and driven by short-term contingencies. On the surface the separation of environmental (energy) policy from energy policy and regulation regarding the ESI appears like a recipe for failure (for the environment).

The ETU's experience of the electrical safety audit/powerline heights clearance issue has demonstrated clearly to us that the behavior of network businesses is driven by the incentives those businesses have under the ESC. We cannot therefore see why it would be different in regard to environmental regulation, other than the current strategies under the VGS have little relationship to the ESI: the point is that it should and all care should be exercised to ensure compatible sets of regulation.

This is why the ETU conceives greenhouse abatement programs as requiring 'back-to-back-to-back' policy making that integrates generation, network and retail regulation.

2.5 Renewable energy development and government leadership

In its 2002 election policy the Bracks Government committed to

> Examin[ing] the experience of other states in the introduction of energy retailer greenhouse benchmarks to develop and implement a scheme appropriate for Victoria to complement our comprehensive greenhouse strategy and increas[ing] the share of Victoria's electricity generating capacity using renewable energy sources from the current 4 per cent to 10 per cent by the year 2010.

In order to deliver these election promises the ETU proposes that the government increase the brown coal royalties it currently levies. This is the most efficient method of taxing 'carbon'. Funds raised could be used for development of renewable energy generation and energy efficiency. Given the failure of full retail competition, government needs to 'refranchise' domestic consumers, that is, fully regulate prices, terms and conditions of supply by retailers and have this arrangement underpinned by a return to a 'vesting contract' arrangement as existed between 1994 and 2000. Government would then have considerable capacity as brokers on behalf of the 45% of demand households represent to direct industry policy by mandating the percentage of green power these vesting contracts should supply. For fossil fuel generators competition for the vesting contracts would include performance standards in regard to achieving reductions in greenhouse gas intensity of output.

The re-franchising of domestic consumers needs to link disadvantaged households to a retrofit program and to an improved concessions framework. Rural subsidies could form part of this program. Domestic participants in this pool should be delivered power that is affordable. Greenhouse saved through its program would be formally monitored to be included in carbon trading or other such schemes.

In the longer-term it would be desirable to have green power cheaper than brown power (which it would be if the externalities were internalised). Such a scheme would act as a kind of a vesting contract underwriting private investment in renewable energy.

Based on the kind of annual savings Pareto Associates (2003) estimates low-income households without large air-conditioning units would make if there were robust pricing signals for air-conditioning, the government could deliver modest price cuts to vulnerable customers in this pool and deliver green or part green energy[1]. This program could form part of the government's proposed *Sustainability Fund* – putting triple bottom line into practice.

The retailer benchmarking scheme needs to be underpinned by requirements on DNSP to firstly, have the same objective in reducing consumption, and secondly, to do so in a cooperative and constructive way with retailers. Least cost planning regulation for networks delivers on the first. A memorandum of understanding (MOU) between DNSPs and retailers would assist in the second. DNSPs are able to locate investment to specific localities to relieve constraints hence make demand management and energy efficiency investment even more cost effective.

The need for back-to-back arrangement for networks and retail is likely to be demonstrated by the stress being placed on NSW networks by increased demand arising from air-conditioning use.

The greenhouse benchmarks have been put in place at a time when the DNSPs are constrained by their revenue caps from investing to either augment to cater for such growth or undertake demand management and energy efficiency.

[1] Pareto Ass estimates savings of around $200pa. Origin Energy offers green power contracts for an extra $52pa (one dollar extra pw)

2.6 Facilitating private investment in substantial additional electricity capacity

As indicated earlier the ETU believes that there should be greater emphasis on demand-side solutions to what is essentially a demand-side problem. The need for new generation can be deferred with demand management and energy efficiency. This provides a small window of opportunity for new capacity to replace coal-fired generation.

3. Least cost planning or 'integrated resource planning'

Least cost planning (LCP) is defined as requiring

> ..utilities to consider energy efficiency resources equally with traditional supply-side resources in determining the best way to meet forecasted energy demand. The choice is based on cost; the less costly resources are selected for development before more expensive ones. In this manner, ratepayers and society will be able to meet future demands for energy while minimizing the total resource cost (Moskovitz 1992:2).

At the present time in Victoria there are no requirements or incentives for utilities to reduce demand by end users or shift consumption to defer or make unnecessary new generation facilities, transmission or distribution infrastructure. Since market reform and privatisation not only has energy consumption grown unchecked, but past mechanisms, such as off-peak tariffs to reduce peak load consumption have abandoned or are being undermined. The failure of the theorised demand-side response to appear in the NEM has occasioned inquiry by the Victorian government.

The resulting report *Electricity Demand Side Management Study Review of Issues and Options for Government* by Charles Rivers Associates (CRA), recommended among other things

Supporting the ORG's decision to require DNSPs to plan and augment networks in ways that minimise costs to consumers, and request that ORG consider mandating that DNSPs demonstrate that they have given proper consideration to demand response and other demand side measures in their network planning processes.

Giving TNSPs more responsibility for ensuring delivery of demand side alternatives to network augmentation where they are cost-effective.

Requesting that VENCorp re- visit its planning criteria and procedures for the sole purpose of identifying additional measures that could be undertaken to provide increased facilitation of demand response and other appropriate demand-side measures. (CRA 2001:6)

The Victorian Energy Networks Corporation (Vencorp) has obligations to undertake demand management but does not do so. Transmission companies (TNSPs) have not been given responsibility to deliver alternatives to network augmentation, and the ORG (now the Essential Services Commission (ESC)) requirement on distributors (DNSPs) to practice demand management is more apparent than real. The first real test of the requirement was AGL's decision to construct a sub station in Gowenbrae to cater for growth in consumption that was later abandoned in favour of the Somerton gas – fired power station. The ESC waived the obligation to tender out for a demand-side response. It may have been the case that existing assets could have been sufficient if energy efficiency measures had been implemented.

CRA said "energy efficiency measures… are valuable in their own right – they offer (a) attractive financial returns to users when compared to the operating costs of less efficient stock and equipment, (b) better environmental outcomes for society through reduced greenhouse gas emissions, and (c) greater economic efficiency for the State overall (CRA 2001:14).

In the case of Gowenbrae/Somerton regulator complicity was a factor but this has been the exception in Victoria. The obligation to tender is very weak and most of the data external organisations need to seriously propose a demand-side solution to local constraints is held by the networks, or unknown. This poses an almost insurmountable barrier to this provision succeeding in reducing consumption and hence greenhouse gases. The distribution network service providers (DNSP) simply do not have sufficient incentive to overcome any barrier let alone one that difficult. This primarily arises as a result of the application of 'incentive regulation'.

4. Incentive regulation

'Incentive regulation' is the form of regulation that is applied to the monopoly DNSP in Victoria and has been defined as "contain[ing] inducements for the utility to increase productivity in a quest for lower costs. Additionally, [it] can be devised to provide an incentive for the utility to move towards a more efficient pricing structure. However, all regulatory schemes involve some degree of enforcement (stick). In particular, service quality standards are generally maintained by a system of penalties for not complying" (Australian Consumer and Competition Commission 2000).

Applied in Victoria it means that the utility is given a forward looking revenue allowance based on anticipated capital, depreciation, operating and maintenance

costs for the next regulatory period (5 years). These costs relate in turn to the demand forecasted for the next period. The utility can increase profits by reducing costs as it is permitted to keep these savings for up to 10 years after which they are shared with customers (this is called the 'efficiency carryover'). Such efficiency drives are checked, in theory by performance and service standards to prevent inappropriate cost cutting[2].

To provide pressure for the achievement of efficiencies the utility is required to cut the aggregated prices to customers (the tariff 'basket') by an amount nominated by the regulator. Prices therefore are subject to what is known as price capping. In Victoria network prices may rise by the rate of inflation but an efficiency cut ('X') will be applied: the formula is expressed as CPI-X. Sitting at the bottom of this approach is the asset valuation off which the regulator as proxy for the market determines a base rate of return. In crude terms a rate of return percentage is determined by the regulator and applied the asset value, eg a 7.75% return on $2b of assets.

DNSPs can make submissions to the regulator about what they regard as an acceptable rate of return, bigger being better from their perspective, but that is the extent to which they can influence its size. They can, however, increase the size of their asset base. The fastest way to do this is to encourage consumption (demand). The uptake of larger refrigerative air-conditioning units (4 and 10kwh) is very effective in this regard. The revenue allowance as noted above is determined in relation to a specific demand forecast, that is, the total cost of supplying customers are contained within this specified volume of sales.

Each additional sale that exceeds the forecast is 100% profit in that there are no costs to the DNSP associated with the sale. Incentive regulation therefore contains a range of very powerful incentives to encourage growth in consumption.

Another aspect of the current regulatory oversight is that networks are free to set their own tariffs with minimal guidance on how this should be done.

At present the only constraints are that each tariff class should reflect costs that are between stand alone and incremental costs. This presents a choice virtually between 0 and the sky! Clearly these upper and lower bounds of what can be charged need to be tighter (to prevent cross-subsidisation aimed at encouraging consumption).

[2] The ETU believes that there are inappropriate levels of 'cost cutting' in operations and maintenance. This reduces reliability of supply. It is our experience that members are intimidated by DNSP to not speak out about particular incidences. Actual reliability and safety levels are not accurately represented by the performance indicators and reporting of the ESC.

The second constraint is that the overall basket of tariffs should comply with the CPI-X determined by the regulator and that individual tariffs should not increase by more than 2% in any year. Despite this, over time considerable tariff re-balancing can occur. Very large users of electricity could get electricity at well below cost under these arrangements. All users of electricity should face tariff structures that signal that there are additional costs to increasing consumption. For domestic customers, a lifeline amount of consumption, no standing charges, and sharply increasing and expensive blocks of consumption thereafter provide a rudimentary demand management signal. For other users – whose needs are diverse, tariff pricing signals also need to apply.

The considerable encouragement of *incentive regulation* to foster consumption has been evident with retailers such as AGL offering domestic customers no-deposit, 12 month, interest-free loans for the purchase of refrigerative air-conditioning, and TXU altering its domestic tariffs to make electricity cheaper as more in consumed!

The Essential Services Commission is required under the National Electricity Code to nominate the form of regulation it intends use for the forthcoming electricity distribution price review. This provides a process by which the government can make changes to ensure least cost planning is adopted. These changes would need to be mirrored by legislative amendments to the Electricity Industry Tariff Order.

6. The move to full retail competition

By 2001 wholesale prices had risen significantly. In part this reflected growth in consumption, particularly peak consumption. This meant there were times when there was no excess generation capacity. Between 1994 and 2000 the MUT had been underpinned by fixed price 'energy only' contracts between retailers and the generators that had been determined by the Kennett government. All the Master

Vesting Contracts (MVC) expired by 2001.

Their purpose had been to provide some stability in the transition to a fully competitive market.
One of the consequences was that generators were guaranteed an income of $35-$42MWh for its franchise load (the non-competitive customers) at a time when the wholesale price collapsed in the face of excess generation capacity. The result was a price war for the custom of the large customers in the newly opened market. Large users achieved considerable benefits (ACM 1996), that arguably would have been somewhat less had the MVC not been in place, and such price-cutting encourages growth in consumption (and provided dis-incentives for energy efficiency and cogeneration).

As soon as the MVC started to expire, prices started rising. It coincided with the tightening of demand that also drove prices up. Growth in demand in this period quickly put paid to the view that there was "[t]oo much capacity" (OSOE 1994:1).

A major blackout in the summer of 1999 resulted in the state government imposing restrictions and undertaking a review of security of supply (DNRE 2000).

The result of all this was that at the end of 2001 and on the eve of FRC (which had been delayed a year) spot market prices were highly volatile: the main source of risk in the market for retailer was domestic load. The average spot market price had risen to pre-reform levels. It had been expected by the Kennett government that the year that FRC commenced the excess profits that were a feature of the MUT would be competed away. The Kennett government, in other words, thought that the MUT would allow sufficient 'headroom' to provide incentive for competition.

The retailers gazetted new tariffs for the *deemed* and *standing offer* customers (i.e. the formerly franchised customers) on the eve of FRC that instead lifted prices considerably, arguing that wholesale costs had risen and that the lack of prospective headroom would dampen competition. The government intervened and imposed 'price caps' to the *deemed* and *standing offer* tariffs to prevent market abuse (monopoly pricing by the retailers). In addition it instituted a new taxpayer subsidy, the *Special Power Payment*, for rural customers. This subsidy and the subsequent *Network Tariff Rebate* are not means tested and as cash back type rebates fail to address the longer-term plight of rural consumers. If such subsidies were delivered in the form of energy efficiency and demand management measures, the reduction in consumption would work to offset the increase in prices and improve reliability of supply. The price signal would provide incentive for energy efficiency and distributed (renewable) generation. These measures would grow jobs in rural areas, instead of growing unsustainable (environmentally and financially) consumption of electricity.

7. Price discrimination and its role in encouraging consumption

The electricity industry is opposed to price caps claiming the lack of sufficient headroom undermines their financial viability. The premise of headroom is that excess prices encourage new retailers to enter the market, which places downward pressure on prices. As discussed earlier the MUT was the high point from which prices were expected to fall. Because costs jumped the MUT supposedly no longer has the anticipated headroom.

Government has acknowledged that the current headroom is generous to the retailers. Allowing average increases means that retailers have considerable discretion to rebalance tariffs. Individual tariffs can increase substantially as long as the increase is off set by reductions to other tariffs. The same rule is basically true also of network tariffs oversight. It not only permits, but encourages price discrimination between customer classes. Ramsey pricing, as form of price discrimination involves applies a mark-up to the tariff of customers with the least elastic response to price increases, in order to preserve revenues so that price cuts can be delivered to the most elastic (or price sensitive) customers who might otherwise substitute their fuel source, relocate or reduce consumption.

The premise is to ensure that the volume of consumption is not affected by price increases. Typically it is the household sector that is subject to such price increases because its demand is least elastic or responsive to price changes. There is a contradiction in promoting competition as the means to obtain cost reflective tariffs (efficiency) whilst explicitly permitting price discrimination that is only possible when certain customer segments are unable to avoid excessive monopoly charges.

8. Cost smearing and interval metering

Retailers face energy cost and risk pressures. Off-peak prices, for example, were traditionally been held down to below cost in order to stave off the requirement for new generation capacity and to provide off-peak demand to ensure efficient overnight operational levels for Victoria's large thermal power stations[3]. Despite over night demand for electricity being low price for this off-peak load effectively has a (high) price floor that contrasts oddly with the demand situation. In the early days of the National Electricity Market it was common for generators to bid negative prices to ensure overnight dispatch.

The dominant source of risk in the energy only market is extreme summer peaks in demand that is largely driven by the installation of more and larger domestic refrigerative air-conditioning. Retailers only know what individual households consume after the fact.

Standard accumulation meters record total consumption in a period rather than how much and when, yet in the wholesale market prices vary literally every five minutes. Electricity produced for use on hot summer afternoons costs far more than almost any other time. Retailers purchase most of their anticipated energy requirements through forward contracts.

[3] Coal-fired stations are increasingly engaging in steam bypass when demand levels fall below operational levels, or as part of rebidding strategies. Non-dispatch of energy does not mean non-production of greenhouse gas emissions

Miscalculation of demand and the need to purchase from the spot market – when prices are high is a very considerable financial risk for retailers as they are then buying on a variable price but selling on fixed (the results can be bankruptcy as in California or major sell down as for AGL in NZ).

Retailers, however, cannot separate out those domestic customers who contribute to this big summer peak in order to bill them for the extra costs. The result of not having this 'pricing signal' available to households is that retailers simply average or 'smear' the costs over all households. There is very considerable inequity in doing so, as the poorest households are far less likely to have the offending air-conditioning types (Pareto Associates 2003). In addition to the application of an average price, a risk premium is also included in the event that there is more consumption at higher prices than envisaged by the retailer when it is arranging long-term supply contracts.

A similar problem occurs in relation to networks in which the additional costs of supply necessitated by this extreme peak consumption are smeared across users rather than apportioned to those who cause the problem. Larger users are required by law to have smart 'interval meters' which measure the time of consumption and they pay prices accordingly. If there was interval metering for all customers and competition was robust[4], customers who do not present as risky (non air-conditioned households) should be able to escape the considerable level of subsidies they currently pay. Retailers would be motivated to ensure that their high-risk customers (those using the high impact refrigerative air-conditioning at peak times) either modify their behaviour or pay higher charges.
The cost of supplying electricity at summer peak times is so large that user-pays would most certainly change consumer demand for air-conditioning. However, the price signal would need to occur in real time:

> Relying on manual reading of interval meters is not much of an improvement on manual reading of accumulation meters because consumers would still have to wait weeks to find out what the impact of usage on time-of-use tariffs actually was. This deficiency in the [ESC] proposals is compounded by the near certainty that retailers would still have to factor in similar price-consumption volatility risk if they were relying on consumers to manually respond to price signals in time-of-use tariffs (Pareto Associates 2003:v).

If the price cap was lifted, this would allow retailers to simply keep smearing the *increasing* costs of the energy market across their *deemed* and *standing offer* customers.

[4] Full retail competition has been notable for its lack of popular appeal, and customer churn remains very low. Successful implementation of a price signal therefore would require that the deemed and standing offers provide the choices that should be available by installing interval metering. Customers would need to make a choice between these options

As it is, the DNSP are able to do exactly that because building bigger networks is considered legitimate expenditure by the regulator. While retailers do not know the actual consumption of individual domestic customers, it is most unlikely that they will offer market contracts that in any way address the peak demand (air-conditioning) cross-subsidy issue. The lower the price cap, the more pressure retailers should face to remove the obstacles to time of use tariffs.

The lack of support from some Victorian retailers for a mandated roll-out of interval metering suggests that the current price caps are not biting hard enough. Again, if the price cap was lifted it would provide greater scope for tariff rebalancing detrimental to the interest of smaller domestic customers.

Pareto Associates (2003) summarised the domestic air-conditioning situation as follows:

[There has been] around 50% increase in air- conditioning penetration across Australia over the last 5 years:

> • Relatively uniform penetration of air-conditioning across all household income groups in Victoria with around 50% of all households having some form of air-conditioning, and around 40% of most households having refrigerative air-conditioning.
>
> • Increasing penetration of 'higher-cost', high capacity air-conditioning with rising household income, with penetration rates below 10% in the lowest household income groups rising to just under 30% amongst the highest household income groups.
>
> • Significantly higher penetration of air-conditioning or all types, including the 'higher cost', high capacity types amongst older aged households (in Australia)" Significantly higher penetrating of air-conditioners in South Australia than Victoria, and significantly higher penetration of 'higher-cost', high capacity types in both South Australia and NSW than Victoria. This suggests Victoria may have some way to go yet with air-conditioning driven extreme peak demand volatility.
>
> • The majority of households in Victoria still having no air-conditioning, and the overwhelming majority having no air-conditioning or 'lower-cost', low capacity airconditioning.

These estimates suggest non-AC users on average consumption may save around $150-$200/year better off, and AC-users without Off-Peak Hot Water may pay $400-$500/year more on 150% of average consumption. Consumers with very high (say 6kW) airconditioning demand may face total cost increases of $1,000/year or more compared to current 'standard' tariffs" (Pareto Associates 2003:vi-vii).

It should be noted that the penetration of air-conditioning in the older age group could reflect a longer period over which AC could have been purchased. This data

also does not break down penetration between home owners/purchasers and tenants. Around 23% of Victorians live in private rental and the majority of this is in the low to affordable range. The lack of thermal efficiency and poor energy efficiency of appliances in private rental has long been a source of grievance for tenants generally and those who experience hardship paying utility bills.

These electricity customers are likely to be locked into high levels of consumption as a result of the split incentive between landlord and occupier[5]. It also means that the likelihood of air-conditioning per se being in these properties let alone the larger reverse cycle models is very low. The smearing of higher energy and network costs therefore across housing types has profound consequences for equity (penalizes those not responsible and who have the least capacity to pay) and from a greenhouse gas abatement perspective prioritises expenditure to current bills instead of permitting investment into energy efficiency.

A user-pays approach to air-conditioning will free up capital for energy efficiency while at the same time as providing a very serious financial incentive to undertake efficiency measures.

Average Annual Forecast Load Growth	Economic Growth Scenario 2002-2007 (% pa)			Economic Growth Scenario 2002-2012 (% pa)		
	Medium	High	Low	Medium	High	Low
Summer 10% Maximum Demand	2.92	3.80	1.79	2.76	3.55	1.77
Winter 10% Maximum Demand	1.96	3.00	0.96	2.05	2.97	1.10
Annual Energy Consumption	1.96	2.79	1.20	1.95	2.77	1.12

Table 4.1 - Average Victorian Load Growth (% pa generated at power stations)

Source: Vencorp Annual Planning Review 2002

[5] The ACT requires that houses for sale must have certification of minimum 5 star energy efficiency rating. Likewise all tenanted properties should be required to be of a minimum five star energy efficiency rating and comply with minimum appliance performance standards.

Vencorp estimates that a medium forecast of peak growth demand in Victoria will mean an increase from 9,032 MW in 2001-02 to 11,859 MW in summer 2011-12. Energy consumption for the medium growth scenario is forecast to rise from 47,959 GWh in 2001-02 to 58,153GWh in 2011-12 on a generated basis (Vencorp 2002).

This suggests at least another Loy Lang A station is needed within ten years but Victoria has sufficient base load capacity assuming proposed interconnectors are built and the are no major problems with existing plant.

Load growth requires generation (the 'energy only') costs, plus transmission (estimated by Vencorp as being between $233 - $406 million to 2007 (Vencorp:ii), and distribution. The DNSP were given in 2001 a revenue allowance of $1b for operating and maintenance costs and an additional $1b to cater for new growth, for the period until 2006. With the forecasts predicted by Vencorp it is anticipated that the DNSP will seek and be granted funds to cater for growth in consumption as has been the case in NSW recently. This 2000mw plus of new capacity will require very substantial price increases. Pareto Associates (2003) suggest that household bills could double.

In terms of policy a decision needs to be made now as to where this massive expenditure should be directed: to consumption supplied predominately by coal-fired power station or to energy efficiency, demand management and renewable energy.

The alternative to the growth scenario has been provided by the Sacramento Municipal Utility District in California – in the year 2000 100,000 domestic customers volunteered for interruptible air-conditioning contracts (and were curtailed on 6 occasions), and commercial and industrial customers also made available 13 MW through load curtailment. By doing so SMUD avoided setting new records for peak demand and customers enjoyed 10 consecutive years without rate rises as well as avoided blackouts (SMUD 2000).

9. Pricing principles - retail

At the present time retail prices structures are not required to conform to any guidelines. Domestic prices under the deemed and standing offer tariffs lock customers into minimum levels of expenditure through high fixed charges. Such fixed charges increase the per kWh rate which means that for low-consumption users the cost of supply is higher than for someone who consumes significantly more. TXU changed it domestic tariff structures to increase the size of the fixed charges and reverted from an inclining block tariff to an inverted tariff. Inverted tariffs lower the cost per unit as more is consumed.

Clearly, all tariff structures need to provide a signal to the end user that encourages or rewards reductions in consumption. Government should be mandating retail pricing principles to ensure that this occurs.

10. Carbon tax

The imposition of a carbon tax on energy users may be an option to raise funds for investment in energy efficiency and development of the renewable energy industry. Customers faced with levies or taxation should also be provided with other encouragements to change behaviour and effort should be made to avoid penalising domestic customers who have little or no control over their consumption. Should such a policy option be adopted it should be on the following provisos:

End user pricing structures provide a rudimentary demand management signal;
That all customers are interval metered and appropriate tariff selection available;
That low-income households are specifically targeted for major retrofit programs/concessions;

That at least 7 star energy efficiency ratings, and preferably 7 star ratings are mandatory for new and existing buildings; A high minimum mandatory appliance standard; Planning laws and building codes maximise solar passive urban design.

11. Other considerations

Aluminium smelters

Aluminium smelters in Victoria pay are highly subsidised by other users, paying around $14mwh (Turton 2002) or between $100m and $200m pa. The premise of reforms to the electricity industry was to remove cross-subsidies that distort efficient investment. Subsidies for aluminium smelting are a prime example of such distortion and suggest selection application of competition policy. $200m per year would make a good initial contribution to the development of the renewable energy sector. In addition permitting aluminium prices to rise would provide a price signal for the recycling of aluminium. Recycling uses around one twentieth of the energy of initial production (Johnson and Rix 1991).

Nuclear energy

The ETU strongly endorses the government's policy of opposing nuclear energy and uranium mining.

Energy and Water Ombudsman

The ETU makes the observation that the vast bulk of matters that go to the Energy and Water Ombudsman relate to householders problems with capacity to pay.

The ETU proposals for greenhouse abatement would have very positive effects for energy affordability and would by definition dramatically reduce the number of matters dealt with by Ombudsman: more savings that can be shared between consumer and investment in renewable energy and energy efficiency!

12. A closing comment

> *"Energy is not so much a single product as a mix of products and services, a mix upon which the welfare of individuals, the sustainable development of nations, and the life-supporting capacities of the global ecosystem depend.*
>
> *In the past, this mix has been allowed to flow together haphazardly, the proportions dictated by short term pressures on and short term goals of government, institutions and companies.*
>
> *Energy is too important for its development to continue in such a random manner.*
>
> *A safe, environmentally sound and economically viable energy pathway that will sustain human progress into the distant future is clearly imperative.*
>
> *It is also possible.*
>
> *But it will require new dimensions of political will and institutional co-operation to achieve it". (World Commission on Environment and Development 1987:176)*

The current policy mix in Victoria is orientated to promoting consumption of electricity, of which the majority is supplied by brown coal-fired generation.

Poor regulatory design, poor housing and urban design and inappropriate market incentives means consumers are underwriting very significant levels of investment in non-renewable generation, and in transmission and distribution networks.

Government itself is underwriting unnecessary consumption through subsidies to consumers.

This investment could otherwise be used for energy efficiency, demand management and development of renewable energy. This suggests that the transition to a carbonless energy sector would have very positive impacts on customers and the economy when compared with the status quo.

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