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Task Group Report Sustainability

Fostering Investment, Innovation and Confidence



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SUMMARY

The Victoria Summit Sustainability Task Group focussed on the most important aspects of sustainability and sustainable future investment in Victoria in the development of this report – the recurring theme is energy and energy investment – these areas are fundamental to achieving sustainability.

Sustainability, in practice, is about outcomes and results that benefit our workforce, community, environment and the economy.

For Victoria, given our commitment to reduce emissions by 60 per cent by 2050, addressing climate change and delivering sustainability will require a revolution and ongoing innovation in our energy system, including the plant, infrastructure, consumption patterns and the policies and regulatory frameworks that govern all of these aspects.

Victoria, with its rich fossil fuel reserves and an economic and industry structure closely tied to brown coal, may not appear the ideal place to begin the journey to a low-carbon economy.

The scale of the task is immense but comes with significant opportunities that will drive sustainable growth and innovation through all areas of our economy. Walking away from this challenge is not an option.

Market forces alone, even with a carbon price, are unlikely to deliver an optimal outcome for Victoria's future energy system and economic needs. A carbon constraint offers opportunities because it comes at a time when it is crucial for Victoria to begin investing in new generation capacity to replace its existing fleet.

To drive Victoria towards a low-carbon economy that is sustainable, energy system investment and supporting structures require innovation and policy attention from all levels of Government as well as business and the wider community.

INTRODUCTION

Victoria requires an economy that can generate opportunities for all Victorians. The increasing interconnectedness of our rapidly changing world will require an economy that is increasingly sophisticated, dynamic, innovative and internationally competitive.

The ongoing prosperity of our State will depend on many things. Some of the most important of these include the innovation of our entrepreneurs, the stability of our political institutions and the careful stewardship of our natural resources.

The recent challenges posed by the global financial crisis have demonstrated the risks inherent in our globalised world.

Victoria's response to the financial crisis has demonstrated the growing resilience of our economy to such external shocks. Nevertheless, we need to continue to work to increase the resilience of our State's economy.

The crisis will impose specific pressures on the Victorian economy for the next few years from the continuing tightness of credit markets to reduced demand in both domestic and export markets and heightened competition from rapidly growing businesses in countries such as China and India.

Long term prosperity for Victoria requires a vision for a carbon-competitive future. This vision needs to encompass many facets of our economic life including: energy, infrastructure, transport systems, the design of our cities and the links between our entrepreneurs and global markets.

OUR VISION FOR 2025: SUSTAINABLE PROSPERITY FOR VICTORIA

To deliver sustainable prosperity for Victoria in a carbon-constrained world we need a strategic sustainability agenda that:

- Addresses the scale of the challenge for our industries, especially energy, and infrastructure.
- Drives and delivers clear and consistent policy and investment signals.
- Identifies what we need to do, and what is achievable, for technology; infrastructure; workforce; policy and governance arrangements.
- Supports emerging industries and opportunities for sustainable, competitive business growth in Victoria.

SUSTAINABLE PROSPERITY IN ENERGY:

- The 20 per cent Renewable Energy Target (by 2020) is driving major solar thermal installations and wind farms are now supplying power to many regional communities and to the electricity grid.
- Fossil-fuelled generation remains an important, but smaller feature of our energy system with gas fired generation now supplying base load power and ancillary support to renewables.
- Coal fired power stations are required to enable carbon capture using storage sites in the Otways and Gippsland basins and many are investing in co-located renewable generation to manage carbon compliance.
- Nationally significant investment in smart grid capacity has been pursued through long term coordinated investment and regulatory change, supported by Governments and industry.
- Energy storage capacity is now a vital element of the energy system, enabling secure, closer matching of energy supply to demand in real time through smart grid management.
- Nuclear options are being considered.

SUSTAINABLE PROSPERITY IN TRANSPORT AND INFRASTRUCTURE:

- There are increasing markets for alternative fuels and bio-fuels including competitive coal to liquids for the domestic fuel markets (including vehicles, agriculture, industry and shipping).
- Advanced communication technologies and smart energy networks are enabling major growth and modal management for logistics and distribution companies.
- Significant investment in linked rail, road and port facilities is providing faster access to regional markets. Enhanced fast public transport networks rival private transport for efficiency and access.

SUSTAINABLE PROSPERITY IN CITIES AND REGIONS:

- New opportunities, new markets, informed consumers and a more sustainable State economy are being enabled through assistance and planning for transitions in identified regions and industries and through strengthened incentives for efficiency in the built environment and commercial sector.

ENABLING A CARBON-COMPETITIVE VICTORIA

How nations respond to climate change will be an important determinant in the sustainability of their future economic competitiveness and prosperity.

It is sometimes forgotten that climate change is an energy problem. Energy use is both at the heart of modern economic growth and, because it causes two-thirds of current greenhouse gas emissions, it is one of the primary causes of climate change.

The International Energy Agency provides a stark reminder of this fact in its latest *World Energy Outlook*: "if the world continues on the basis of today's energy policies, the climate change impacts will be severe." Climate change policies and climate change solutions must also be energy policies and energy solutions.¹

Among the primary tools underpinning the international response to climate change are policy mechanisms to put a price on greenhouse gas emissions. Policy makers have proposed both taxes and market-based instruments working with tradeable emissions permits as ways to drive efficient reductions in emissions.

International negotiations in Copenhagen at the end of 2009 are likely to create a deeper international market in tradeable permits than the Kyoto Protocol produced. With the United States and China more committed to an effective response to climate change than they have ever been, the question is when and how fast, not if, we move to a 'carbon-constrained' international economy.

A carbon-constrained future will change some of the fundamentals of economic and trade relationships, particularly in the developed world. Carbon, a new factor with a new set of prices, needs to be included in the future planning of all national and regional economies to maintain international and national competitiveness in what will be a major economic transformation.

Victorian industry benefits from operating in the global economy but this also means that business is continuously exposed to competitive pressures, often arising from new sources.

There are some important areas in which State Government policies can have a strong influence. Clearly, business relies on the Victorian Government to invest in and maintain efficient hard infrastructure in the State and to build a leading edge education and training system.

A key area of State responsibility, and one the major focus of this report, is to ensure that Victorian business, and the community generally, enjoys a secure, reliable supply of

¹ International Energy Agency, World energy outlook 2009 special early except 'How the energy sector can deliver on a climate agreement in Copenhagen', p.3.

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energy at an internationally competitive price.

Victorian business has enjoyed secure and competitively priced electricity, sourced mainly from brown coal generation, and good access to low cost natural gas. One of the major challenges for Victoria will be the long term maintenance of a secure and competitively priced energy supply that allows Victorian businesses to continue to compete with overseas rivals.

Long term prosperity for Victoria requires a vision for a carbon-competitive future. While this vision needs to encompass many facets of our economic life including energy, infrastructure, transport systems, the design of our cities and the links between our entrepreneurs and global markets, at its core it requires a vision for long term, carbon-competitive energy.

Australia has a reputation as a reliable supplier of competitively priced energy to the world and, therefore, should have an advantage in supplying energy to its own industries.

SUSTAINABILITY MEANS ENERGY INNOVATION

Scientific evidence and recent economic analyses indicate that unmitigated climate change may present greater risks to the Australian economy than to any other developed nation.

Climate change presents Victoria with one set of challenges. We have had some forewarning of the impacts climate change could arguably bring in Victoria with years of low rainfall affecting our agricultural productivity and heat waves stressing our major infrastructure. South-eastern Australia is projected to become hotter and drier as our climate changes and this will only increase the pressure on our (already scarce) water resources.

Climate change policy at a national and global level presents another challenge. A broad consensus has emerged that global greenhouse gas emissions will need to be cut by at least 50 per cent, perhaps up to 80 per cent, by 2050 if the world is to avoid the most damaging effects of climate change. Developed countries like Australia will need to drive the abatement effort if the necessary reductions are to be achieved in time.

The Australian Government has committed to implementing an emissions trading scheme as the primary policy lever to drive the Australian contribution to emissions reductions.

The emissions trading scheme will put a price on greenhouse gas emissions and create a *carbon-constrained economy* in Australia.

The Australian Government and most commentators acknowledge that the transition to a carbon-constrained economy will be the most significant structural change to the Australian economy since the deregulation of financial markets and removal of tariffs in the 1980s. Pricing greenhouse gas emissions through an emissions trading scheme has the potential to have a greater impact on Victoria than any other Australian State or Territory. The key to the scale of this impact is energy.

Victoria's energy system and a number of its key industries are carbon-intensive and will face significant cost pressures in a world with carbon constraints. Sustainable prosperity for Victoria requires a focus on energy.

As the International Energy Agency has made clear, energy is at the core of the problem as well as the solution.

Retaining Victoria's competitiveness and comparative advantage in a carbon-constrained world requires substantial changes to Victoria's energy systems and usage patterns. The challenge is big, but so are the opportunities for new industries, new jobs and new export markets. Realising these new opportunities requires real innovation from both Governments and entrepreneurs.

While the timing and development of carbon price signals from national and international emissions trading markets remains highly uncertain, what is certain is that energy innovation will be at the core of new solutions – innovation in energy resources, energy production, and energy use.

The long term sustainability of the Victorian economy means many things to many people, but any sustainability strategy requires energy innovation.

SHORT ON ENERGY, LONG ON CARBON... VICTORIAN ENERGY AT THE CROSSROADS

At the heart of the Victorian economy, indeed at the heart of any modern economy, is energy. Victoria's energy, like that of most of the developed world, comes primarily from fossil fuels. For Victoria, these fuels are brown coal, oil and gas. Burning brown coal provides more than 90 per cent of the electricity Victorian's use; but it is also the source of the majority of our greenhouse gas emissions.

For a global economy fuelled by carbon-based fossil fuels, climate change is in many ways an energy problem. From this perspective, the true extent of the climate change challenge can only be fully understood in the context of two intertwined issues: energy cost competitiveness and economic growth.

Our prosperity in the developed world today can be attributed to many things from free markets to well-functioning democracies and as a direct result of our harnessing of fossil fuels; the industrial revolution was also an energy revolution.

The stark difference in energy use between the developed and developing worlds demonstrates energy's importance to our current prosperity and its contribution to the climate change problem.

SUPPLYING FUTURE DEMAND, SUSTAINABLY

Last year, the International Energy Agency (IEA) came to the conclusion that the world's energy systems were at a crossroads. In the IEA's judgement, trends in energy supply and consumption were "patently unsustainable – environmentally, economically and socially". The IEA outlined two challenges for the world that are also highly relevant for Victoria:

- Securing the supply of reliable and affordable energy; and
- Effecting a rapid transformation to a low-carbon, efficient and sustainable system of energy supply.²

Addressing these challenges requires, in the IEA's words, "nothing short of an energy revolution."³ The IEA's conclusions are particularly relevant for Victoria. The period of global economic recovery – which we and the rest of the G20 are working to sustain – presents an opportunity to begin the real process of transforming Victoria to sustainable, low-carbon prosperity.

Victoria's current prosperity can be linked to our rich endowments of fossil fuels, particularly brown coal and gas. Access to vast reserves of brown coal has allowed Victoria to develop a low-cost, high-emission electricity generation sector that has underpinned the State's pre-eminent role in manufacturing and has been a source of considerable comparative advantage, both within Australia and internationally.^a

Victoria is blessed with vast assets of coal and gas, but climate change and our carbon reduction challenge has

rendered this a mixed blessing.

The world is now energy short and carbon long and carbon emissions will soon come with a price tag attached.

Victoria's greatest challenge in a carbon-constrained world will be to maintain its competitive advantage in the face of rising energy prices and simultaneously find low-carbon sustainable uses for our coal reserves.

Victoria needs to reduce emissions from energy production and use at the same time as energy demands are likely to increase for transport, agriculture, manufacturing and the production of fresh water through desalination.

Of our energy sources, electricity is likely to see the greatest demand increases if the projected electrification of part of our transport fleet takes place over the coming decades.

Gas demand is also likely to grow for both local electricity generation^b and export as LNG production expands to the east coast of Australia.

Victoria's energy production, in electricity and liquid fuels, will need to increase to meet this future demand.

Over the next decade, annual energy consumption in Victoria is projected to reach 56,200 gigawatt hours (GWh), a substantial increase on current use (Figure 1).

Six thousand megawatts (MW) of new capacity will be required to meet projected demand in 2030 (about two-thirds of the current fleet capacity) without a carbon price driving the retirement of the State's existing brown coal generating fleet (see Figure 2). Twelve thousand megawatts of new capacity is likely to be required by 2030 if the current fleet needs to be replaced. This represents an investment in new generation capacity in the order of \$18 billion to \$36 billion by 2030.

The challenge for Victoria is that with current technologies, even with the greater use of gas, the investment in new capacity required to meet our future energy demands will not get us the emissions reductions Governments are targeting.

Energy innovation is required across the whole energy system, including networks, to ensure that we can close the gap between what current technologies can provide and where we need to go.

Up to \$10 billion could be required to upgrade the Victorian

² International Energy Agency, *World energy outlook 2008*, p.37

³ Ibid, p. 37.

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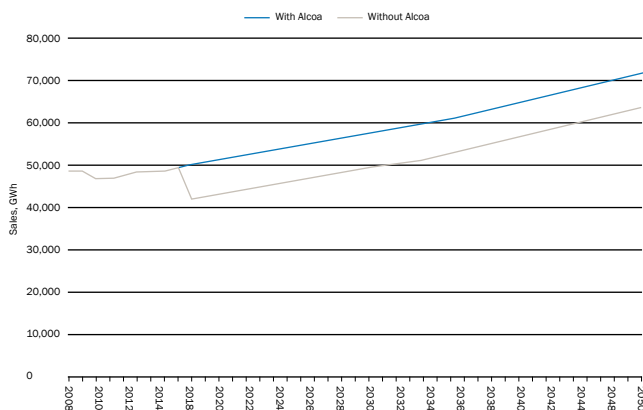
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transmission system to get electricity from these new power stations to the major load centres and an additional \$5 billion may be required to upgrade gas supply capacity to supply gas to new gas-fired power stations. These estimates assume electric cars and light trucks are a significant part of our future by 2030.

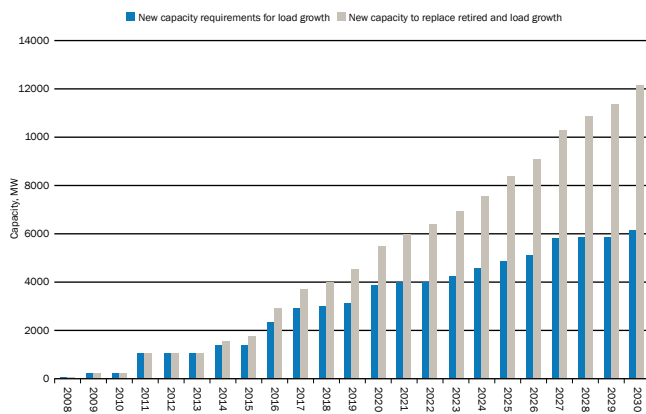
To build a fully integrated smart-grid system that enables more innovative business opportunities may require significantly more investment than what is required for electricity generation as a whole. The energy industry estimates that – Australia wide – some \$50 billion is required to drive smart transmission and distribution infrastructure.

Figure 1: Victorian Electricity Demand to 2050



Source: MMA Analysis

Figure 2: Forecast New Capacity Requirements in the Victorian Electricity Generation Sector to 2030



Source: MMA Analysis

Greater penetration rates for electric vehicles will require corresponding increases in generation capacity and significant investment in transmission and distribution infrastructure.

In this short term, the shift of the transport load to electricity will not cause major challenges given that perhaps an additional 600 MW across the whole eastern sea-board market would be required if 10 per cent of the vehicle fleet used electric drive trains.

Shifts in the transport system will, however, drive a need for regulatory and business service changes which are not yet fully addressed by policy makers.

Financing and building capacity to meet this demand over the next 20 years is a major challenge.

In a carbon-constrained world, this is an even greater challenge that requires significant innovation – technical, institutional, financial and regulatory. Without this substantial investment Victoria will be short on the energy required for a sustainable economic future.

TRANSFORMING ENERGY SYSTEMS TO ADAPT TO A CARBON-CONSTRAINED WORLD

The Victorian economy can successfully adapt to higher energy prices, particularly if new investment and innovation opportunities are pursued. Most other OECD nations pay far more for electricity, gas and transport fuels and prices for energy will increase across most countries as caps on carbon emissions are enforced.

The challenge for Victoria will be to manage the transition to the higher prices brought by a carbon-constrained economy while avoiding significant volatility in prices or supply and maintaining its cost competitiveness in energy relative to other countries.

Three primary shifts will need to occur in Victoria over the next twenty years:

- Substitution that progressively shifts the primary energy supply to low emissions energy sources like gas, renewable energy, bio-energy (waste to energy) and potentially nuclear energy;
- Capture and sequestration of emissions from fossil fuel combustion; and
- Reduction of energy use through demand-side measures including significantly increased energy efficiency and energy conservation to decrease the energy-intensity of the Victorian economy.

The challenge for Victoria is to make the transition to a low-carbon economy using a judicious mix of these three mechanisms without losing its comparative advantage. It is not a case of renewable energy or fossil fuels, but the

development of a diverse energy portfolio that includes renewable energy and fossil fuels and incentivises energy efficiency.

No single alternative, low-carbon energy option exists to simply replace existing generation capacity.

All options have their downsides from technological immaturity, community acceptance and high-cost to intermittent generating capacity or risks of high and increasing fuel prices. Innovation across Victoria's energy systems is required at an unprecedented scale and speed.

Energy systems include all of the complex networks that take energy from initial resource extraction, through the transformations that 'package' the energy so that it is useful to us, to the distribution systems that bring the energy to its final end use where it can be put to work.

Energy systems are so essential to modern society that they are inextricable from the legal, regulatory, financial and market structures that manage these systems and have the potential to drive or inhibit innovation.

Globally, energy systems' central role is in creating and sustaining economic development and – in a low-carbon world – the emissions intensity of energy systems will be one of the key limiting factors for ongoing prosperity.

In Victoria, the gap between our emissions growth from electricity generation and our targets is large and growing. Closing this gap is a significant task that will require innovation in every part of Victoria's energy system, including:

- Resource extraction and processing
- Electricity generation
- Regulatory and market arrangements
- Low-carbon energy skills in the workforce
- Distribution networks
- End-use efficiency
- Investment in innovation and the role of Government

A carbon constraint offers Victoria opportunities because it comes at a time when it is crucial for Victoria to begin investing in new generation capacity to replace its existing fleet. The emissions trading scheme will provide some drive for this new investment, but it will not be enough to drive a full, system-wide change in the way we generate, store, transmit and use energy.

The potential for a strong post-Kyoto agreement offers a wealth of opportunities for the development and attraction

of new industries, technologies and investment.

Global markets are increasingly focussing on the promise of 'clean' or 'green' technologies and activities and there is potential for Victoria to develop significant new export capability in cleaner fossil fuel resources and clean technologies and services.

But there are many challenges including:

- Ensuring investment in existing and future energy supply, particularly generation capacity;
- Finding commercially viable, low-carbon technologies that are able to meet Victoria's future electricity demand;
- Avoiding sub-optimal outcomes in major energy infrastructure investment (especially transport and distribution systems and supporting components); and
- Developing adequate skills and support industries for new technologies at the pace required to accelerate innovation and deployment, not just in Victoria, but from Victoria to global markets.

Government has a significant role to play in maximising Victoria's chances of meeting the challenge of a carbon-constrained world. Again, it is important to understand that market forces alone, even with a carbon price, are unlikely to deliver an optimal outcome for Victoria's future energy system and economic needs.

FOSTERING INNOVATION AND ESCAPING CARBON LOCK-IN

The view in some quarters is that market forces alone should be enough to drive the innovation and technical change required to transition to a low-carbon world at exactly the scale and timing required. All that is needed is for the emissions externality to be priced and market forces will do the rest of the heavy lifting.

We do not live in this world.

There is structural inertia in Victoria's energy systems, in both supply and distribution. This occurs not only because of the efficiencies that drive competitive pricing, but also because of the way incumbency has 'locked-in' fossil fuel technologies and built both technological and institutional barriers to the rapid adoption of alternatives better suited to a carbon-constrained world.

Barriers to adoption of the technologies best suited to a carbon-constrained world include not only the classic economies of scope and scale, but also access to an appropriately skilled workforce, adverse risk assessments for

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new technologies in financial markets, and institutional and regulatory structures in electricity markets and distribution networks that favour centralised, large-scale generation. This inertia must be overcome.

Traditional policy levers do not manage the challenge that uncertainty presents for socially optimal levels of investment in energy systems across the innovation chain from research and development to full commercial deployment. This uncertainty comes in two primary forms:

- *Policy uncertainty* about the long term credibility of a clear carbon price path from an emissions trading market and future Australian Government and international actions on caps, market structures (such as flexibility mechanisms and cross border permit trading) and ongoing subsidies for incumbent technologies.
- *Technology uncertainty* arising from the maturity of different low-carbon technologies, long term costs for commercial deployment at scale and availability of supporting infrastructure, and the potential for disruptive future technologies

In the current climate, there is strong competition for equity and debt. If the uncertainty about the future direction of

Australia's carbon market remains high the price of risk may delay much needed investment. Time is short and the scale of the transition is huge – a expanded Government role in demonstration and even commercial deployment is likely to be necessary.

Innovations in Government participation in the financing of energy infrastructure beyond the current public private partnership arrangements and incentive policies that are predictable over time are both needed to accelerate commercialisation of sustainable energy technologies and ensure the required investment is made to support sustainability objectives for the energy system and the environment.

VICTORIA'S CARBON COMPETITIVENESS

Victoria, with its rich fossil fuel reserves and an economic and industry structure reliant on low-cost energy may not appear the ideal place to begin the journey to a low-carbon economy.

For changes to occur in a way that minimises the adjustment burden on the Victorian economy, we need a plan for the energy industry.

INDUSTRIAL DISTRIBUTED GENERATION: VICTORIAN PLASTICS AND CHEMICALS EXPERIENCE

PACIA, the Plastics and Chemicals Industries Association, recently convened a Roundtable of Victorian member companies to discuss their energy efficiency and carbon reduction options. Most PACIA members are manufacturers who supply into virtually every industry in Australia, from automotive to home-wares, medical supplies, agriculture and building products such as insulation and paint. These businesses have long had a strong focus on sustainability.

For a considerable number of these businesses, energy comprises 30 per cent of their costs. Consequently, many have already pursued energy efficiency across their sites achieving cuts to energy consumption of around 30 per cent over the last decade. For this same long period of time, many have also been investigating, modeling and developing business case proposals for the next step – highly efficient on-site energy generation, often via a co-generation unit.

The Roundtable revealed frustration with barriers to taking the next step to invest in energy efficiency and carbon emission cuts. Whether options included installing co-generation units or systems utilising 'waste' material, all found existing Victorian and Australian

regulations impeded their progress. This is even more frustrating for some multinational companies who have energy generation on their sites in other countries; all successfully complying with regulations and augmenting grid power at no risk to the network or their communities.

Major impediments include:

- Companies are charged for augmenting power in stressed network areas (i.e. substation upgrades) and not paid for improving network stability
- While companies can negotiate load shedding, there is no equivalent for the inverse (i.e. short term peak demand) when their generation units require cleaning
- The current fixed demand pricing model excludes agreement around variable or interruptible demand, unlike overseas
- Companies have to be registered as a 'generator' to be able to provide sufficient energy into the grid to make the system viable
- Current low prices for decentralised energy generation render the systems unviable; a gross-feed in tariff would change the economics
- Neighbourhood ('precinct') co-generation is more feasible where multiple businesses are on the one property title, but perversely not when the same businesses are on different property titles.

We also need plans to assist business and local communities in our energy (and energy-intensive) regions that go beyond simple handouts.

Victoria has a strong, diverse and dynamic economy. A carbon-constrained world offers Victoria the opportunity to greatly extend its high-skilled, high-value, knowledge-intensive manufacturing operations.

Grasping this opportunity will require a policy vision focused on clean energy and carbon competitiveness.

Green manufacturing^c has an important place in Victoria's economic future and importantly will provide support for the move to sustainable energy and transport systems. There are also many opportunities for the service sector – especially education and training and potential to export knowledge services.

FUTURE COMPETITIVENESS IN A LOW-CARBON WORLD

A recent Climate Institute report⁴ on comparative carbon competitiveness does not examine Victoria directly, but has key messages for us on the importance of a long term vision for carbon competitiveness and a clear plan on how to achieve it. It is more likely than not that future action on climate change will become increasingly ambitious.

Significant parts of our economy and the community in general rely on our electricity and energy intensive industries^d.

INNOVATIVE SUSTAINABILITY INVESTMENTS FINANCE INDUSTRY

Biodiversity impacts and market opportunities are finding value for **mecu**. The credit union (Victoria's largest mutually owned financial institution) has committed to offsetting the biodiversity impacts of all new homes financed through its investment in a conservation land bank project located in Victoria's West Wimmera region. **mecu** sees good market take-up from its sustainable approach to banking including this initiative.

ENVIRONMENTAL CONSERVATION AT SCALE

Landscape Scale Conservation is a concept finding strong advocates in both community planning and in voluntary carbon markets. **Parks Victoria** is leading such a project in Habitat 141 along the Victoria-South Australia border. Victoria's key landscape scale initiative; its vision is "to work with communities to conserve, restore and connect habitats from outback to ocean" these areas will importantly sequester carbon emissions (Victoria's parks alone sequester 5.5 billion tonnes of CO₂).

Our current electricity generation industry is also highly reliant on water access and this is compounded by increasing climate change impacts.

As a State and a Nation, we have focussed on increasing our productivity growth, separating this issue from that of responding to climate change. Productivity and economic growth now needs to be linked to climate change mitigation to build a carbon-competitive future for all Victorians.

Increasing our carbon competitiveness means simultaneously growing our economy and increasing our productivity while decreasing the energy intensity of our economy and decreasing the carbon intensity of our energy supply.

The ultimate goal is to decouple economic growth from greenhouse gas emissions. As a rough estimate, achieving our goals in all three areas requires increasing our carbon productivity by between five and ten per cent per year until 2050, depending on the total emissions reductions we seek.

The only real solution that moves the Victorian economy to a low-carbon, competitive, sustainable and resilient future is the aggressive pursuit of multiple energy sources and improved energy efficiency, starting now.

The best way to think about how far we have to go in Victoria is to consider the charts in Figure 3. They show the scale of the transformation of our energy systems required. The first chart shows the level of emissions we would reach if we meet anticipated load growth using our current generation and energy mix. The next two charts are based on an estimation of per capita contribution to emissions reductions required to meet the Victorian and Australian Government's stated targets of a 60 per cent and an ambitious 80 per cent reduction by 2050. Achieving this requires nothing short of a revolution in our energy systems.

The time periods of these reductions are long, but time is required because of the high-capital outlays required. The scale of the challenge also means that we will not meet our twin goals of economic growth and emissions reductions using any one technology or without significant increases in energy efficiency.

Technological change will have an important role in decoupling economic growth from growth in greenhouse gas emissions worldwide. No silver bullet technology will transform Victoria's energy systems.

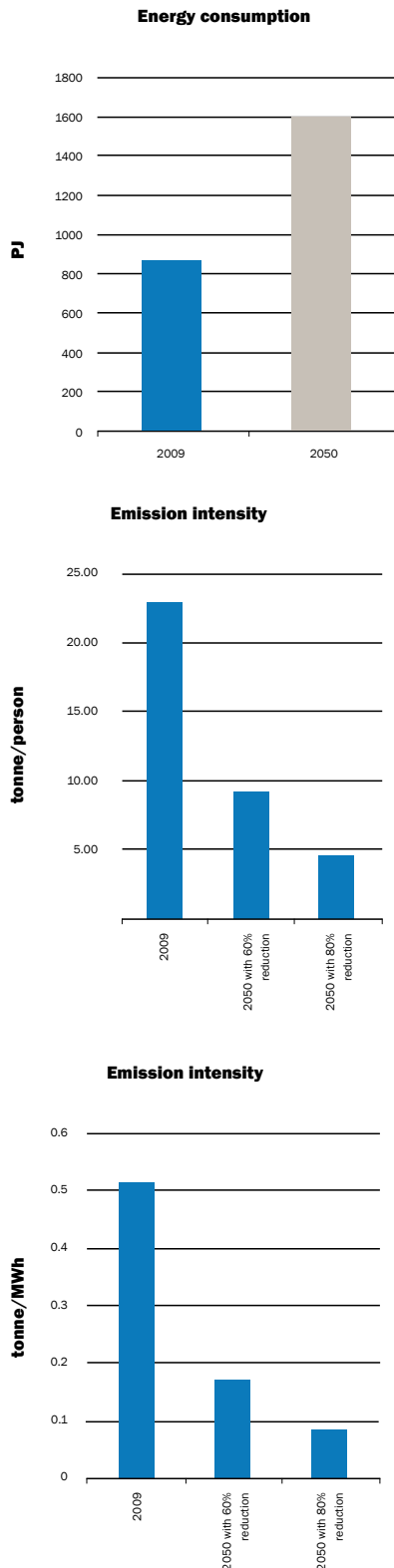
⁴ Vivid Economics, G20 low-carbon competitiveness, September 2009. p. iii

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Figure 3: Increases in Energy Consumption and Required Reductions in Emissions Intensity per capita and MWh



Source: MMA Analysis

The solution will be a diverse mix of technologies that draws on the entire resource potential of the State (see Box) in wind, solar, geothermal, tidal, coal and gas (with and without carbon capture and storage) and bioenergy options; and on demand-side strategies including increasing energy efficiency, conservation, and storage technologies (with the latter potentially having a very large role to play in a more diverse and distributed energy system).

Policies and investment structures are required that change the existing energy systems and increase the likelihood that Victoria will successfully realise the opportunities offered in a carbon-constrained future.

A CLEANER ENERGY ECONOMY – GROWING OPPORTUNITIES AND R3DE

What would a cleaner Victorian energy economy look like? Alongside the obvious transformation of our energy supply infrastructure and significant increases in energy efficiency, there are a series of other changes that will allow this transformation to happen.

The OECD calls the drivers of energy transformation ‘R3DE’: research, development, demonstration, deployment and education. Each of these drivers change technology, but each also changes education and employment patterns, daily habits from transport choices to patterns of household energy use and even the design and shape of our future cities.

A cleaner energy economy will touch all elements of the economy, business and society at large.

The Pew Center in the United States has proposed a useful definition of the clean energy economy that breaks it down into five categories – clean energy, energy efficiency, environmentally friendly production, conservation and pollution mitigation and training and support.⁵

Governments have a clear role in assisting the transition to a cleaner energy economy through education, innovation and industry policy, Government purchasing decisions, urban planning, environmental regulation, energy systems planning and research and development expenditure.

There are many cross-cutting issues in managing any movement towards a clean energy economy and require truly ‘joined-up’ Government for the shift is to be successful and sustainable.

There is a place for Government innovation and industry policy (see also the Innovation and Industry Policy Task

⁵ Pew Charitable Trusts, The clean energy economy: repowering jobs, businesses and investments across America, 2009. See also UNEP, Greenjobs: towards decent work in a sustainable low-carbon world.

Group Report) to focus on energy technologies as well as active reviews of the potential barriers in existing regulatory, institutional, industrial and educational structures that govern energy systems.

LOW EMISSIONS ELECTRICITY OPPORTUNITIES AND RESOURCES IN VICTORIA

Victoria has many options for future, large-scale generation of low-emissions electricity. These range from rich renewable energy resources, excellent storage options for carbon capture and storage and nuclear power. However, the cost of implementing these options remains higher than for fossil fuels. New investment models are also needed to overcome private sector concerns about new technology risks.

Low-emissions energy options include:

Wind: the greatest potential for wind energy generation is along the coastal regions and in central Victoria between Bendigo and Ballarat where average wind speeds exceed 7 metres per second (25km/h). Victoria has a high potential for new wind farms in the near future due to excellent wind sites and high energy demand. Currently, the installed wind capacities in Victoria are 428 MW and 154 MW are under construction. There are 3,290 MW of proposals being actively considered. The potential, economic wind resource in Victoria may be around 60 PJ per annum.

Solar: Victoria also has excellent solar energy resources, particularly in the north-west of the State where average yearly global solar exposure on a horizontal surface reaches up to 20 MJ per square metre per day. Solar is a resource that is available to be exploited at scale and at local, distributed sites. Despite lower levels of solar exposure than other States, Victoria has been identified as having one of the highest potentials for household photovoltaic energy due to our high numbers of separate and semi-detached houses. The potential economic solar resource in Victoria may be around 214 PJ per annum across solar thermal, and large and rooftop photovoltaic systems.

Geothermal: while the potential for geothermal energy is not as great in Victoria as in South Australia or Queensland, geothermal developer, Hot Rocks currently believes that the Otway Basin in Victoria is also a potential hydrothermal energy resource. Previous drilling to depths of 3,500 meters has recorded temperatures high enough to generate electricity. Barwon Water and Green Earth Energy are considering a geothermal project for the Mt Moriac area just outside Geelong. The potential, economic geothermal resource in Victoria may be around 505 PJ per annum.

Tidal and wave: potential for wave energy generation in Victoria is greatest west of Cape Otway with yearly

average wave power potential in excess of 30 kW per metre. Up to 200 km of coastline may also have economic, wave resources of greater than 30kW/m for 8 months of the year. The potential, economic wave and tidal resource in Victoria may be around 140 PJ per annum.

Biomass: biomass options in Victoria include landfill gas, sewage gas, bagasse, forest residues, agriculture crop residues, future energy crops, sawmill/wood processing residues and animal manure. All these options, with the exception of specific energy crops, use existing waste products and ensure that energy and food crops do not compete for agricultural land. The potential economic biomass resource in Victoria may be around 150 PJ per annum.

Carbon capture and storage (CCS): reducing the carbon footprint of our brown coal sector will allow our vast brown coal reserves to continue to provide fuel for the State's electricity supply. Victoria has a number of potentially high-quality geosequestration sites in on- and offshore geological formations. The Otway Basin has been identified as suitable for geosequestration and is the site of a demonstration plant. Some of the other suitable sites in Victoria are located in Bass Strait and have been identified as having some of the highest potential worldwide. Gas-fired generators will also benefit from the success of CCS technologies.

Nuclear: Australia's rejection of nuclear power puts it at odds with most other developed countries. Of the G20 nations, Australia is the only country that either has no existing nuclear plants or has no plans to build one. There are significant issues with this power source from cost to waste disposal and nuclear proliferation. However, with almost 40 per cent of the world's uranium reserves, low population density and highly stable geological formations, Australia must seriously consider this low-emissions, base-load technology option.

PEW CENTER RESEARCH

Pew's research highlights the breadth of the impact a focussed transition to a cleaner energy economy would make in Victoria and the high skill level in the existing economy that are transferrable:

- *Clean energy:* energy generation, energy transmission, energy storage
- *Energy efficiency:* energy conservation and energy efficiency
- *Environmentally friendly production:* transportation, manufacturing and industrial, construction, agriculture, energy production and materials
- *Conservation and pollution mitigation:* air and environment, recycling and waste, water and wastewater
- *Training and support:* business services, finance and investment, research and advocacy.

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SUSTAINABLE CITIES – ENERGY, BUILDINGS, TRANSPORT AND PLANNING

Cities are great drivers of economic development and great centres of wealth. They are also great consumers of energy – two-thirds of the world's energy is used in cities and this proportion is growing rapidly with increasing urbanisation.

Recent modelling shows that without global action, increasing urbanisation will increase energy use by cities by more than 50 per cent over the next two decades. By 2030 in this scenario, cities alone will use more energy than the entire world does now.⁶ Retaining the same energy sources will increase greenhouse gas emissions by a similar amount.

To successfully transition our energy profile, it is vital that energy use in cities is strongly addressed as part of any demand-side emissions reduction program.

Cities globally and in Australia represent an enormous opportunity for innovation and increases in carbon competitiveness as well as presenting significant challenges with long term lock-in because they use such a high proportion of national energy.

Much of the potential of demand-side reduction policies is in the built environment and transport sectors. However, planning decisions made now – for example, increases in low-density urban living – can shape energy use and emissions profiles of cities for decades. Structures of Government also present policy implementation challenges.

Driving real innovation and change in the emissions profiles of Victorian cities (Melbourne and major regional towns) will require high levels of coordination between all levels of Government – Local, State and Federal, and the extension or enhancement of multiple initiatives⁷ in urban design, transport and the built environment (to increase the efficiency 'urban metabolism')⁸.

Location and climate are key drivers of emissions in cities particularly through the 'gateway' role and the number of heating and cooling degree days per year which increase energy use to heat or cool buildings. Increasingly, climate is also likely to drive emissions through changes to rainfall and, for coastal cities, increased use of desalination to augment shrinking water supplies.

The location of a major port or gateway for imports, exports and travel drives increased transport emissions; while proximity to energy resources can also lock a city in to a

high emissions pathway. These drivers provide a context that constrains and corrals action on energy and emissions. Each is relevant to Victoria and particularly Melbourne.

Actions to reduce urban emissions in Victoria are underway with support from all levels of Government as well as the private sector. Specific areas where further State Government action and policy design is needed include:

- *Funding for building environmental retrofits* – Innovative environmental financing tools are needed to accelerate opportunities for retrofitting. Examples of such tools involving local government abound in Europe and the United States, but implementing some innovative strategies would require changes to Victoria's Local Government Act⁹.
- *Increasing the low-emissions travel share* – It is clear that Melbourne's public transport system requires urgent capacity expansion if it is to meet expected levels of demand growth and contribute to lowering Melbourne's emissions profile. Access to effective public transport in regional centres remains a priority. Increasing the share of zero-emissions pedestrian and cycle journeys requires the development of significant additional infrastructure across Melbourne and regional centres. Providing incentives through the taxation system that reward use of public and low emission transport by the workforce should also be considered.
- *Increasing urban density* – Low-density cities consistently have higher emissions profiles than high-density cities and decades are often required for density to increase. The Victorian Government's Melbourne 2030 vision offered a strategy for a higher-density Melbourne and this should be re-examined to ensure that Government policy continues to drive efficient environmental and economic benefits from increased urban density.
- *Increase distributed and co-generation of electricity within urban areas* – current frameworks reduce the attractiveness of local cogeneration for medium to large power users and restrict innovation in this area. Such regulatory barriers must be removed to access the multiple benefits of distributed- and co-generation, including the potential benefits of improved energy security.

SMALL BUSINESS AND SUSTAINABILITY

In developing this report, a key focus for the Sustainability Task Group has been to consider the issues for Small to Medium Enterprises (SMEs) in the scheme of sustainability policy development. In so doing, our consultations and research focussed on current issues such as the global financial crisis; consumers, markets and SMEs. We also

⁶ International Energy Agency, *World energy outlook 2008*

⁷ These include *International Council for Local Environmental Initiatives (ICLEI)*; *Clinton Foundation's Climate Initiative*; *C40 Large Cities Climate Leadership Group*; *OECD's Urban Development programme*; and the *UN-HABITAT - UNEP Sustainable Cities Programme* – all of which promotes environmental, social and economic sustainability of cities and urban centres.

⁸ See for example, M. Fuller, S. Portis and D. Kammen, *Toward a Low-Carbon Economy: Municipal Financing for Energy, Environment*, Jan-Feb 2009. See also the box on Melbourne City Council

focussed on future needs for green jobs and supply chains; on necessary change including key drivers for future sustainable investment; and capitalising on opportunities.

Of key interest is the impact and opportunities that will flow to SMEs through coordinated, strategic sustainability directions particularly in the energy and energy intensive industry areas. SMEs will need support mechanisms to assist them maintain and deliver services in a resilient, sustainable, competitive future Victorian economy.

CITY OF MELBOURNE BUILT ENVIRONMENT INITIATIVE

Melbourne City Council aims to achieve a target of zero net greenhouse gas emissions for the City of Melbourne Corporation and significantly reduce emissions for the City of Melbourne municipality by 2020. The plan to meet this target, Zero Net Emissions by 2020, aims to use market mechanisms and appropriate regulations to influence the flow of business investment in the City towards environmentally sustainable buildings, plant and power generation.⁹

The City of Melbourne's 1200 Buildings Program aims to encourage 1200 existing office buildings (5.6 million m² floor space), to undertake environmental retrofitting to improve their energy efficiency by 2020 through a range of initiatives including developing industry capacity to retrofit buildings; promoting the benefits of more energy efficient buildings; facilitating building owners' access to finance; undertaking research; showcasing new technologies; and undertaking policy and regulatory reviews to encourage more energy efficient buildings.⁹

INVESTMENT AND SUSTAINABILITY

At the firm level, the financial crisis has affected access to capital and has impacted all types of investment – sustainability included. For many small businesses, the fall-out from the global financial crisis (GFC) will translate to a focus on absolute core business and retention of business/staff. If not already off the agenda, the GFC may push the issue of (environmental) sustainability down the list of business considerations.

Conversely, the GFC impact may – for some businesses – have a far more positive effect. With further pressure to raise value and reduce costs, small businesses may look to implement sustainability practices and measures in their business.

Despite the growing cohort of businesses that are benefitting from 'greening' their business, it is clear that

many SMEs are unfamiliar with sustainability as it relates to small business and while they may implement small actions, there is not, as yet, a system-based approach. Businesses are often not sure what 'else' they can do or where to access appropriate information⁹. Cost barriers remain an issue, as do time and (internal) resources.

In this context it is vital that policymakers work with the business community to ensure that there is a broader base of understanding; that the capacity of business is enhanced in making their own operations more sustainable; and that investment in low-carbon technologies, solutions and business methods are encouraged through the policy, purchasing and regulatory landscape.

Encouragingly, Victoria is well placed to be a world leader in sustainable tourism (nature based tourism and accommodation services) which encourages valuable investment in our world-renowned natural attractions, and drives further opportunities for Victorian small business.

CONSUMERS, MARKETS AND MARKETING (CERTIFICATION)

In some markets, consumers are demanding better standards and quality around environmental marketing. In the business to business area, there is little push or incentive for businesses to market their credentials. For many small businesses, sustainability may still be seen as an 'add on' or 'nice to do'¹⁰.

At the larger end of the market, private industry is engaging in strongly branded consumer awareness campaigns such as IBM's 'smarter planet' series, Shell's 'every drop counts' campaigns and Chevron's 'human energy' campaign.

SMEs feel the impact of consumer behaviour from two distinct viewpoints:

- As suppliers of goods and services to the individual consumer, and
- As suppliers of goods and services to business consumers.

VECCI's own research suggests that, as yet, SMEs are not often asked about their environmental credentials or ethics by larger business customers. That does not mean SMEs do not believe they should do something about their environmental impact. Quite the opposite in fact: There simply is no easy mechanism for SMEs or larger businesses to know about what other businesses are doing, to learn from others or their staff about sustainability¹¹.

⁹ VECCI, Carbon Down "Market Research Report, July 2009" http://www.carbondown.com.au/downloads/CarbonDown_marketresearch_July2009.pdf
¹⁰ VECCI, Carbon Down "Market Research Report, July 2009" http://www.carbondown.com.au/downloads/CarbonDown_marketresearch_July2009.pdf
¹¹ VECCI, Carbon Down "Market Research Report, July 2009" http://www.carbondown.com.au/downloads/CarbonDown_marketresearch_July2009.pdf

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Feedback from SMEs in consultations suggests that while individual consumers' sustainability concerns *do* drive product design and marketing, SMEs often face competitive pressures that prevent them from targeting the sustainability-savvy consumer.

Consultations with small business identified a consistent theme around the need to have large producers take a lead (or an interest) in sustainable design, production, services and market development. Business owners emphasise that without this leadership, there is little competitive incentive for SMEs to pursue sustainability investments and/or product development.

Almost paradoxically, some industries are seeing the opposite circumstance occur, often on a global industry scale.

There is growing, strong evidence that large businesses are beginning to work with their supply chains to raise sustainability literacy and achieve shared sustainable outcomes that are recorded and managed from the head of supply chain.

In the private and public sectors, developments at the heads of supply chain will raise demand for environmental skills, certification and endorsement both in and for SMEs. There is a clear need for enhanced, cost-effective, professional development services that raise internal capacity in SMEs.

GLOBAL COMPETITION AND SUPPLY CHAINS – THE LOCAL IMPACT

- UK supermarket TESCO has advised their (globally sourced) suppliers that they require full carbon footprint certification by 2014.
- The US major brands Wal-Mart and Costco (who this year opened a store in Melbourne's Docklands) are also set to place TESCO-like requirements on their suppliers.
- Toyota is undertaking a carbon survey of its suppliers and will work with them to implement 'Toyota Way' principles and practices to reduce the carbon intensity of the supply chain and minimise the impacts of a carbon price.
- For some time Qenos, Australia's only polyethylene manufacturer, has required contractors to meet OH&S requirements. Qenos has now prepared an Energy Efficiency Specification to assist in sourcing plant and equipment and commenced a Life Cycle Assessment project for certain finished products manufactured using Qenos's polyethylene.
- Australia's major banks are signatories to the United Nations Environment Program Finance Initiative and are beginning to seek environmental performance information and certification from their supplier businesses.

MARKETS AND MARKETING – BUSINESS TO BUSINESS (B2B) AND BUSINESS TO GOVERNMENT (B2G)

There are two major issues in the context of consumers and markets that are, on the whole, not well addressed by sustainability policy and awareness:

- Business to business consumer awareness; and
- Procurement and supply chains.

Consumer campaigns that extend beyond just the household sector are a vital component to help build understanding and market capacity for emerging industries.

Businesses that seek environmental accreditation and endorsement often use these in marketing both to individual consumers and other businesses. Unfortunately, the plethora of standards and marks makes the pursuit of 'recognised' certification a mine-field for SMEs.

Supply chains are also a major part of the solution. Within supply chains, procurement practices in large organisations are a major, increasingly important, tool to direct sustainable outcomes without formal regulation (see above).

As a major purchaser of services, Government is like a large 'head of supply chain' in many ways. Overseas experience suggests that procurement is a vital 'third wheel' to the other policy levers of Government regulation and investment.

Government procurement policy (linked to business service and planning) is a major driver of sustainable industry growth overseas, particularly with regard to buildings. While the Victorian Government has supported the development of green procurement education through a partnership with ECO-Buy, it has not supported this initiative through a coordinated approach to Government procurement such as that pursued in the UK.

By using procurement as a policy lever, the Government can effect a supply chain change and drive lower carbon outcomes and business opportunities that support other policy goals. Note that lead times and clear communication are vitally important as part of a coordinated marketing strategy.

The value of procurement is potentially significant in Australia, and at the Victorian Local Government level. Unfortunately, figures for the total value of the State Government of Victoria's procurement were not publicly available at the time of writing.

- In 2007-08, the Federal Government spent some \$26.4 billion on procurement (contracts above \$10,000). SMEs accounted for \$9.7 billion (37 per cent) of the value and provided 54.5 per cent of the total volume of procured goods and services¹³.
- The Municipal Association of Victoria has reported that Victorian Local Government spends more than \$2.7 billion annually on goods and services. We expect that a great proportion of this is provided by local SMEs¹⁴.

PROCUREMENT AND GOVERNMENT

Beginning with the 2005 Government Sustainable Development Strategy, the UK established a Sustainable Procurement Task Force and identified the agency (the Office of Government Commerce) responsible for assisting in the delivery of Government procurement objectives (including EU regulatory compliance and Value for Money). Setting a number of targets for 2010 and 2020, the Government has committed to embed sustainable operations targets and mandatory product standards into relevant contracts and decisions in key areas including: estates strategies and lease agreements; capital expenditure plans; construction projects for new build and refurbishments; facilities management, buildings and grounds maintenance; IT hardware and services and office solutions; contracts for the supply of energy and fuels; travel services; hire, lease and pool cars.

The OGC's has established clear principles to help guide contracts including – most importantly – that sustainable procurement and efficiency should be mutually reinforcing. The OGC has guides, portals, case studies and partners with key agencies and web-sites to help expand public sector capacity and procurement literacy that are directed towards sustainability outcomes. The OGC also has a core priority to make the Government marketplace more attractive to SMEs and other suppliers by reducing barriers to entry and driving excessive bureaucracy out of the procurement process. Part of this can be seen in practice at the [supply2.gov.uk](http://www.supply2.gov.uk) site enabling SMEs to bid for contracts, gain information about contracts and advertise capacity.¹²

SMES, EMERGING INDUSTRIES, OPPORTUNITIES AND JOBS

To most, 'green jobs' implies jobs in green manufacturing or sustainable energy industries. While for others, green jobs implies the former plus the overlay of 'green' and environmental elements to traditional trades (e.g. green plumbers, water services, landscape services etc).

Others disagree with the 'green jobs' assertion, stating that that even with a lower carbon economy our workforce will look largely the same. This implies that while businesses may

change, much of the work-force who will be in jobs in 2025 is already part of the workforce today; and a good proportion of those jobs are not dissimilar to jobs existing today. Under any terminology, there remains strong recognition that we need good policy and planning to drive jobs now, as well as into the future.

The link between energy policy and emerging and sustainable industries is very strong, and of particular importance in Victoria given our economic past and prospects for a sustainable (green economy) future.

Our energy sector will, by virtue of the impact of the emissions trading scheme and the renewable energy target, see a significant shift in emphasis. There is a vital role for the Victorian Government in ensuring that the present energy and energy-intensive manufacturing workforce are supported in transitioning, and in encouraging appropriate new and transitioning investment in these sectors.

Having a better energy policy framework and support for new energy investment, emerging, and sustainable industries will support jobs that sustain and build resilience into our workforce (from the VET sector through to training and retaining skills in the existing workforce).

INDUSTRY, BUSINESS AND TECHNOLOGY DEVELOPMENTS

Industrial and technology developments in the energy sector, telecommunications, automotive manufacturing, global logistics (and transport) and 'fast-moving consumer goods' fields will have a significant impact on the local economy and local producers.

European standards for automotive products, building materials and inclusions (energy efficiency targets) and global goods trading practices, largely centred in Europe and the US, will put strong competitive pressure on our local industries and – to some extent – lead to increased merger and acquisition activity as the most profitable players expand their reach in Australia. (This is already starting to happen with companies like TESCO and Wal-Mart to whom a number of Victorian businesses supply to).

Global directions are also affecting telecommunications and energy technology development and – increasingly – cross-platform linkages. Fast broadband and smart energy networks enable significantly higher rates of efficient energy and bandwidth.

¹² Procurement break-out box sources: OGC – Sustainable Procurement: http://www.ogc.gov.uk/Introduction_to_Procurement_sustainable_procurement.asp
Sustainable Procurement and Procurement Efficiency Implementation: http://www.ogc.gov.uk/documents/Efficiency_Sustainable_Procurement_Statement.pdf
UK Government Sustainable Procurement Action Plan: http://www.eauc.org.uk/file_uploads/sustainableprocurementactionplan.pdf
Supplier Route to Government: <http://www.supply2.gov.uk>

¹³ Statistics on Australian Government Procurement Contracts: <http://www.finance.gov.au/publications/statistics-on-commonwealth-purchasing-contracts/index.html>

¹⁴ Municipal Association of Victoria 'Collaborative reform opportunities – Local government' [http://www.mav.asn.au/CA256C320013CB4B/Lookup/amc09newman/\\$file/Newman.pdf](http://www.mav.asn.au/CA256C320013CB4B/Lookup/amc09newman/$file/Newman.pdf)

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By investing in supporting infrastructure early on, we enable a far higher likelihood of opportunities for grid-enabled distributed generation (via vehicles, home or industrial installations); enhanced energy management and production load integration and monitoring; and enhanced critical infrastructure management.

Our energy sector is a key strength of the Victorian economy but it needs investment enhancement, particularly focussing on new and smaller scale options that drive opportunities for SMEs.

Given the global expectations for technology development particularly in renewable energy technologies and sustainable products (electric vehicles, energy efficient building fittings and products, and sustainable consumer goods), engineers will be in high demand for growing and emerging industries. Underlying skills issues will emerge again as the economic recovery drives growing jobs and skills from the existing and upcoming workforce.

Advanced and niche-manufacturing could gain a lot with the right drivers and strategies to support emerging opportunities for SMEs in Victoria, especially with potential export links. Our success will lie in areas and high value adding production, related service provision and in education.

With the impact of a national emissions trading scheme and growing global relevance of carbon management, the finance industry is another field likely to see strong demand for base level and specialised skills as industries and business become more familiar with carbon management and carbon accounting in their business.

The advisory sector (consultants, accountants, lawyers) will also see significant growth and skill demand for carbon and energy management literacy. While there is a growing capacity in the corporate field of 'consultants' and within large companies, there is not yet a coordinated training approach for the broader business sector.

OPPORTUNITIES AND SKILLS

At the individual business level, Victorian SMEs are likely to see growing opportunities for products and services that are aligned with growing industries and service needs.

SMEs may also face challenges as large businesses' carbon management potentially drives supplier re-evaluation. Critically, there is not at present a set of support structures

to help manage that transition, let alone address the emerging the skills sector issues in a coordinated manner.

A further problem for SMEs remains cost of and access to high quality advisors, who operate in a market with little verifiable or recognisable industry standards. Authorities on sustainability are often academic or associated with very high profile, large (often global) corporations – often out of reach of the average Victorian small business.

SMEs by virtue of their size often do not have the internal resources to focus on attaining new skills and 'getting carbon literate', particularly at the decision-maker (managerial) level.

There is a strong need for strategic training and professional development around skills as much as there is around transitioning and investment. To do otherwise will simply lead to Australia becoming a technology taker and services buyer.

Victoria's future success lies firmly with ensuring that we hold a strong place regionally in key emerging technology, business and service areas. To bridge the divide between our present industrial economy and a future sustainable, resilient economy will require enhanced strategic transition planning that links existing industries and skills sets with upcoming demand.

RECOMMENDATIONS

Our recommendations have been shaped to foster sustainable energy investment in Victoria to benefit industry and the community in meeting the challenge of a low-carbon, competitive economy.

WHAT CAN BE DONE – NOW

AN ENERGY INNOVATION POLICY AGENDA

It is vital that the State release a strategic plan that fully maps an energy future for Victoria to 2025 and beyond. That plan must establish funding models to accelerate investment in Victoria's energy system infrastructure, to deliver a transition by 2050 in line with a focus on carbon reduction. The plan (be it a White Paper, Statement or Election Agenda) must be nationally consistent and consider:

- A whole-of-government strategy that incorporates all aspects of a future sustainable, resilient and innovative clean energy economy.
- Reviewing barriers to entry across regulatory and institutional arrangements (at a State, but also Federal level) that constrain investment in and deployment of distributed generation and electricity storage options, and committing to remove them in close consultation with affected existing and new industries.
- The impact of a shift in the transport energy burden from oil to electricity and associated infrastructure requirements for 'charging points' and transport management options.
- The impact on, and strategic opportunities for, vulnerable communities and regions that will result from the CPRS and shifts in energy generation technologies in energy producing and energy intensive manufacturing regions. Opportunities must include alternative industries and use of brown coal and export capacity enhancements to support further international links for our producers, and import capacity to enable more efficient energy industry development.

TOTAL ENERGY SYSTEM INVESTMENT

As part of the strategic energy plan (outlined above), investment in the total energy system must be delivered and innovations in investment facilitation thoroughly considered through:

- Increasing support for smart grid technologies including distributed generation and electricity storage innovation through changed regulatory and investment arrangements.
- Innovations in Government participation in the financing task, beyond the current public private partnership

arrangements, that are predictable over time and help accelerate commercialisation of sustainable energy technologies.

- An expansion of the major Government role in demonstration and commercial deployment for energy generation technologies through, for example, extension of 'R3DE' funding schemes, loan or technology guarantees, provision of funds and bonds and international research support.
- Aligning strategies to focus clean energy research, development, demonstration and deployment in partnership with the Federal Government, finance, energy and wider business community.

ENERGY DEMAND SIDE RESPONSE AND THE BUILT ENVIRONMENT

Specific areas where further Government action and policy design is needed include:

- Funding for building environmental retrofits: Innovative environmental financing tools are needed to accelerate opportunities for retrofitting. Note that implementing some innovative strategies would require changes to Victoria's Local Government Act^f.
- Increasing the low-emissions travel share: Consistent with the Summit Infrastructure Report recommendations, regional Victoria's and Melbourne's public transport systems require urgent capacity expansion to meet expected levels of demand growth and contribute to lowering Melbourne's emissions profile. Providing incentives through the taxation system that reward use of public and low emission transport by the workforce should also be considered.
- Increasing urban density: Government planning policies and practice must drive consistent, efficient environmental and economic benefits from increased urban density in the metropolitan region particularly.
- Increase distributed and co-generation of electricity within urban areas: Market and regulatory barriers to local cogeneration for medium to large power users must be a focus of future cities planning to access multiple benefits including improved energy security and innovation.

EMERGING INDUSTRIES AND OPPORTUNITIES

Develop a plan to enhance the export capacity of Victorian clean technology firms through:

- Programs that educate firms about the opportunities in emerging international carbon markets and improve links between State support for emerging industries and their participation in global markets.

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- Promote Melbourne as a regional carbon trading hub via the establishment of an industry supported Carbon Market Institute.
- Promoting national and international partnerships aimed at increasing market opportunities for clean technology innovators, including SMEs through market studies, pilot projects and collaboration with national and international trade bodies.

CARBON AND ENERGY ACCOUNTING, CERTIFICATION AND QUALITY ASSURANCE

In partnership with business and industry, and in collaboration with the Federal Government, pursue the development of minimum standards and certification for carbon accountants, energy service providers (energy efficiency installers etc); and energy auditors for consumers and business customers.

EDUCATION, TRAINING AND AWARENESS – BUSINESS AND CONSUMERS

To support the business market, it is vital that we develop education and training programs for energy management and carbon market capacity targeting the professional education sector, and that consumer campaigns are further augmented by business focussed campaigns.

- Invest in coordinated communication and education programs aimed at driving consumer participation in the clean energy economy by assisting consumers to make informed choices, overcome information failures and raise awareness of the link between personal actions and climate change mitigation.
- Develop and deliver business consumer campaigns that link to options and opportunities that are readily identifiable for SMEs.

SUPPLY CHAINS AND SUSTAINABLE PROCUREMENT

The international developments in supply chain 'carbon accounting' must be addressed through the development of supporting national standards and methodology that supports international systems (and enables Victorian producers access to those markets).

- In partnership with industry, develop a consistent – agreed – methodology to enable robust carbon footprint (and water footprint) approaches for consumer goods. Supporting training and assessment approaches must also be developed.

Victoria should develop a Sustainable Procurement and Supply Chain Strategy that is truly Whole-of-Government, led by the Department of Treasury and Finance in

partnership with Sustainability Victoria and the EPA, including:

- Establishing a baseline and monitoring the total value of Victorian Government procurement and the contribution of Victorian SMEs (as the Federal Government does).
- Requiring all departments and agencies to implement a cost-effective plan for investing in energy conservation in their own operations, with performance objectives linked to capital and operational budgets.
- Taking on a leadership role in purchasing and procurement strategy, by working with suppliers to (identify, track and) improve their sustainability performance based on the work of EcoBuy and Sustainability Victoria (on green procurement) and the Department of Planning and Community Development's Victorian Government Procurement portal.

TAXATION AND R&D FUNDING FOR SMES

To drive large changes in small scale investments in more efficient equipment, 'taxation linkages' should be considered.

- The strong take-up of the small business investment allowance shows that SME consumers respond to new options and opportunities positively⁹ - in this context, green depreciation allowances should be developed at a national level for business purchases of vehicles, appliances and equipment under existing schemes (MEPs, water-mark, green car ratings etc).
- R&D tax incentive structures need to provide better incentives for clean technology development and commercialisation through enhanced structural linkages between industry, universities, researchers and allied market opportunities that maximise opportunities for Victoria's vibrant SME sector.

FUTURE STRATEGIC DIRECTIONS – KEY CONSIDERATIONS FOR STAKEHOLDERS

- Work with other States to ensure consistent, recognisable accreditation and standards are developed and upheld. Consider providing transitional support including business advice and training support for business decision makers through a training rebate or tax break.
- Develop of minimum national standards for carbon accounting, carbon analysis (foot-printing), energy efficiency, energy and water service accreditation with recognised certification bodies (such as Standards Australia, CPA and the Institute of Engineers).
- Support the development of a national Statement of 'sustainability principles' and support this with

sustainability decision criteria ('balanced score-card' approach) for use by Government and business.

- Consider the merits (and efficacy) of enabling the tax system to collect basic carbon data for all businesses (optionally, via Business Activity Statements). A pilot could be trialled with a selected industry or business type in partnership with major accounting providers or accounting software firms.

NOTES

^a Low electricity prices are a major reason why energy-intensive production processes like aluminium-smelting remain in Victoria. However, the contracts for supply of electricity to the two aluminium smelters, which alone account for around 15 per cent of Victoria's electricity load, are up for renewal in the middle of the next decade.

^b For baseload generation and increased ancillary support to renewables, in addition to the role gas currently plays in servicing peak and shoulder loads.

^c Examples include potential local capacity in carbon fibre manufacturing, energy efficiency management systems and products and intelligent transport management and monitoring systems and software.

^d Calculated from National Emissions Inventory data.

^e The classic expression of this view is: A. Wolman, 'The metabolism of cities.' *Scientific American* 1965:213, pp.179-190

^f See for example, M. Fuller, S. Portis and D. Kammen, 'Toward a Low-Carbon Economy: Municipal Financing for Energy,' *Environment*, Jan-Feb 2009. See also the box on Melbourne City Council

^g ACCI reported in September 2009 that total new capital expenditure posted a solid 3.3 per cent increase in the June quarter confounding the median economist's expectation for a -5.0 per cent contraction. But, there is the potential for weakness in H2'09 as the 'bring forward' in spending induced by the investment allowance unwinds. (ACCI CEO Update, 31 August 2009)

This paper was prepared by the Victorian Employers' Chamber of Commerce and Industry (VECCI). The opinions, findings, conclusions and recommendations expressed herein do not necessarily reflect VECCI policy or the views of those persons or parties that have contributed to the paper. While VECCI has endeavoured to provide accurate and reliable research and analysis, it will not be held liable for any claim by any party utilising this information.

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