

LIFE AFTER COAL

PATHWAYS TO A JUST AND SUSTAINABLE TRANSITION FOR THE LATROBE VALLEY



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Above: Workers in the UK construct a prefabricated house

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EXECUTIVE SUMMARY

CHANGE IS COMING

The Latrobe Valley has a proud history of supplying the electricity that powers Victoria. But coal-burning power stations are ageing and –responding to climate change – the world is moving rapidly to cleaner energy sources. In this shifting context, the Latrobe Valley faces inevitable change. The question is: how will that change be managed?

With recent news that Hazelwood power station may close as early as in April 2017, there is a narrow window of opportunity to ensure that the Latrobe Valley prospers during the transition to a cleaner economy, rather than suffers as it did during previous economic changes.

A ‘just transition’ is a framework for managing the shift towards such new economies, with a focus on inclusive participation for those affected and a fair distribution of the costs and benefits of change.

This report explores what a just, and well-managed, transition process for the Latrobe Valley might look like. As experience from around the world has shown, when industrial change does arrive it can come very quickly, and being unprepared is costly.

In South Wales, UK, where there was little transition planning prior to the 1980s coal-mine closures, the damaging economic and social consequences have been profound and long-lasting. By contrast, Rochester, New York, which started planning its transition two decades before the city’s main employer – Kodak – collapsed, the situation has been more positive.

The first closure of one of the four large coal-burning power stations in the Latrobe Valley could be as early as 2017, and the rest could quickly follow. Tangible action and funding to develop an alternative economic future is required now.

For the Latrobe Valley to successfully achieve a just transition, two equally important processes must occur: (1) an orderly and planned transition *away* from coal; and (2) a collaborative and inclusive transition *towards* a sustainable local economy.

MINIMISING THE IMPACT OF POWER-STATION CLOSURE

An orderly and planned transition *away* from coal should include the following elements:

- **A plan to phase-out power stations over time:** introducing a timetable for an orderly phase-out of the four Latrobe Valley power stations and three associated mines, creating certainty for energy supply planning and local economic adjustment;
- **Support for mine and power station workers:** making sure employees receive their full entitlements. Additionally, power-station operators should cooperate to ensure older workers across the fleet are eligible for redundancy packages, while continuing to employ younger workers at the remaining generators; and
- **Comprehensive mine rehabilitation:** carrying out rehabilitation works at each mine and delivering environmentally sound landscapes in line with community expectations.

CREATING THE NEXT ECONOMY

A collaborative and inclusive transition towards a sustainable local economy should:

- Build on the Valley's assets – its physical infrastructure, skilled workforce and tertiary education sector;
- Rely on 'big picture' thinking, which goes beyond piecemeal support for individual projects to create an environment that breeds innovation and new investment; and
- Take a whole-of-government approach to leverage investment from a range of sources to deliver long-term economic, social and environmental benefits for the region.

While good transition planning processes are important, so are ideas for sustainable economic development. This report profiles five potential new industries:

- **A home energy efficiency retrofit program for Gippsland**, which could create up to 620 jobs over 10 years and save Gippsland households \$58 million dollars on their energy bills;
- **Commercial building energy efficiency**, potentially generating savings of \$27.7 million per year for local businesses – which could then be spent elsewhere in the local economy;
- **A State Energy Transition Centre** that would take advantage of the region's existing electricity infrastructure to create a range of renewable energy, manufacturing and education initiatives;
- **Sustainable prefabricated housing construction** with an ecovillage on under-used land in Morwell; and
- **Solar water-heating manufacturing** taking advantage of the booming solar hot-water industry to create a local manufacturing hub in Morwell.

These case studies are intended to contribute to the conversation about transition already well underway in the Latrobe Valley community. However, the report recognises that there are many other options for increasing economic activity. As a firm believer in environmental and social justice, Environment Victoria offers these ideas to encourage – and participate in – discussions about new economic opportunities for the Latrobe Valley.

ESTABLISHING A LATROBE VALLEY COAL CLOSURE TRANSITIONS FUND

Accelerating the development of new industries like those mentioned above, or expanding existing non-coal based industries will require ongoing funding support from both the state and federal governments. Establishing a Latrobe Valley coal closure transitions fund (similar to New York State's Fossil Fuel Plant closure fund) and contributing to it in future state and federal government budgets will allow long term planning and support for new economic activity in the region. The Victorian government's \$40 million commitment in the last state budget could be the first deposit into this fund. The federal government also needs to contribute to the Latrobe Valley's transition, and should be developing a coherent plan for phasing out coal generators and supporting just transitions nationally.

NEXT STEPS IN THE TRANSITION

Local leaders are driving transition planning in the Latrobe Valley community – but they need support.

Drawing in all sectors of business and the community will help to ensure an inclusive and consultative process. A locally led task force – with diverse representation – could drive this.

There is no easy formula for managing change, just as there is no one new industry that can replace the role power stations have played in the Latrobe Valley. This is not a bad thing – diversity helps build resilience. Good planning and strong community involvement can ensure that change, no matter how big, is positive and energising.

By building a more diverse and sustainable economy, the Latrobe Valley can create a more diverse and sustainable future.

01

INTRODUCTION

The Latrobe Valley has long supplied the energy that powers Victoria – supporting the state’s development and prosperity.

But the urgent need to end climate pollution means the world is shifting to cleaner energy sources, and so the Latrobe Valley must look beyond coal for new sources of economic activity.

Australia is already transitioning from coal: in the past three years more than three gigawatts (GW) of coal generation has been retired, 160 megawatts (MW) of which came from Morwell’s small Energy Brix power station. And recent news suggests that Hazelwood Power Station (which has a capacity of 1600 MW) could be withdrawn as early as April 2017.¹

The changes that are coming to the Latrobe Valley are inevitable, but Victoria can choose how this change is managed. The community must come together to support the Latrobe Valley so that it prospers under a new, cleaner economy – rather than suffering, as it has under past economic shifts.

ABOUT THIS REPORT

Throughout this report, we will make the case that – for the Latrobe Valley to successfully achieve a ‘just transition’ – two equally important processes must be delivered:

1. **A transition from coal-fired electricity:** a planned process for phasing out coal-power stations, supporting affected workers and rehabilitating the mines; and
2. **A transition to a sustainable local economy:** inclusive development of new economic opportunities and jobs for the Latrobe Valley.

The Latrobe Valley is not the only community facing these challenges. The first section of this report will examine how other communities have handled similar changes, and draw on these lessons to illustrate what a successful transition looks like.

¹ ‘Hazelwood shutdown: Victoria’s dirtiest power station set to close early next year,’ Josh Gordon, Adam Morton, *The Age*, 24 September 2016

Secondly, we will discuss the transition from coal-fired electricity – outlining how the imminent threat of climate change has made phasing out coal power from our electricity grid both necessary and inevitable. A successful transition requires three things: a well-planned process for phasing out the four coal-burning power stations; comprehensive support for affected coal industry workers; and environmentally sound and socially acceptable rehabilitation of the three mines.

Finally, the substance of this report will focus on the second challenge, the transition towards a sustainable local economy. We offer this discussion as a contribution to the ongoing conversation within the Latrobe Valley community, already led by a number of inspiring local actors. This section aims to help the community move beyond vague and potentially threatening concepts like ‘transition’, by focusing on specific ideas which could be further explored to create new jobs and economic activity – building a positive vision for the future.

This report will examine five case studies that could provide local economic opportunities. We highlight how Gippsland may benefit from state-wide programs – such as a comprehensive and ambitious energy efficiency strategy – as well as local initiatives driven by community groups like Voices of the Valley, Earthworker and the Latrobe Valley Sustainability Group.

These case studies are not the only, and may not be the best, options for the Valley. Rather, they have been chosen as examples of economic diversification that deliver both environmental *and* social benefits. They are provided to encourage discussion about opportunities that go beyond adapting to the consequences of the inevitable shift to renewable energy to actively contribute to – and benefit from – that transformation.

Following the case studies we conclude by recommending the establishment of a Latrobe Valley coal closure transitions fund and outline ways that the Latrobe Valley community to lead the transition to a diverse and sustainable local economy.

We demonstrate that while it is essential that the Latrobe Valley community drives discussion about the region’s future, the necessary changes can’t be left to the Valley alone. The wider Victorian and Australian community must provide practical support in the form of funding and investment, while a number of complementary policy and regulatory changes may also be needed to ensure new investment in the Valley.

“While it is essential that the Latrobe Valley community drives discussion about the region’s future, the necessary changes can’t be left to the Valley alone.”



02

A 'JUST TRANSITION' FOR THE LATROBE VALLEY

WHAT IS A 'JUST TRANSITION'?

The concept of a 'just transition' as a policy framework to manage the shift towards a more climate-resilient economy and society has been gaining traction around the world in recent years. It recognises that the costs of economic restructuring are rarely distributed equally. History has repeatedly demonstrated that economic change has often happened in a chaotic fashion leaving ordinary workers, their families and communities to bear the brunt of the transition to new ways of producing wealth – leading to unemployment, poverty and exclusion.²

At the same time, the costs of failing to act on climate change will also fall unequally. Whether that be the adverse health impacts of extreme weather events, such as heatwaves, on people living in poor quality housing, or the heightened risks to farmers of a drier and more unpredictable climate.

A just transition requires a fair distribution of the costs and benefits of environmental policies across the economy, and opportunities for those affected to have a say in determining their future.

The Latrobe Valley community and regional economy are still feeling the effects of the poorly managed electricity sector privatisation in the 1990s, including low incomes, high rates of long-term unemployment and other indicators of social disadvantage. The Latrobe Valley has also borne more than its fair share of the health costs of coal – epitomised by the effects of the 2014 Hazelwood mine fire.

The Latrobe Valley community needs a plan for an orderly and phased transition to a more diversified economy, which safeguards the future health and prosperity of the community. What's more, the Valley's assets – in terms of infrastructure, skilled workforce, tertiary education sector and energy industry expertise – make it uniquely placed to drive and lead that transition.

² 'Climate change and labour: the need for a "just transition"', ILO 2010, Vol. 2, Issue 2, *International Journal of Labour Research*, International Labour Organization, Geneva at: http://www.ilo.org/wcmsp5/groups/public/@ed_dialogue/@actrav/documents/publication/wcms_153352.pdf

But while the Latrobe Valley has been shaped by brown coal, in the words of Latrobe City Mayor Michael Rossiter, “our community is much more than that. Our community is innovative, connected; it’s tough, resilient, determined ... The transition away from brown coal is not the thing that we fear. What we fear is being abandoned. It is the leaving behind of an industry which directly employs hundreds and indirectly employs thousands without anything else to go to.”³

As experience from around the world has shown, when industrial change does come it may come very quickly. And the consequences of not being ready can be severe. In Wales, UK, where little to no transition planning occurred prior to the closure of the region’s coal mines in the 1980s, the economic and social consequences have been profound and long-lasting. In contrast, in Rochester, New York, where transition planning started two decades before the city’s main employer – Kodak – collapsed, the situation is more positive.

While the last coal-fired power station in the Latrobe Valley may not close for some time, it could equally occur much faster. Real progress towards developing an alternative economic future needs to be made now, to ensure the new industries that will provide future employment and businesses opportunities are in place by the time the power stations close.

“Our community is innovative, connected; it’s tough, resilient, determined ... The transition away from brown coal is not the thing that we fear. What we fear is being abandoned. It is the leaving behind of an industry which directly employs hundreds and indirectly employs thousands without anything else to go to.” – Latrobe City Mayor Michael Rossiter

What’s already happening to support a just transition in Gippsland and the Valley?

Community discussion about a just transition for the Latrobe Valley and Gippsland is already progressing at a state and regional level. Key initiatives include:

- The Victorian Government has committed \$40 million to a Transition Fund for the Latrobe Valley. Details of how these funds will be invested are yet to be announced;⁴
- The Hazelwood Mine Fire Inquiry report and subsequent Implementation Plan have recommended that \$60 million be spent on a special ‘Health Innovation Zone’ for the Latrobe Valley to improve the region’s health;
- A number of local government planning processes such as the Latrobe Council Economic Development Strategy have been developed in recent years;⁵

³ ‘Don’t keep us in the dark on coal closures says Latrobe Valley’, Michael Rossiter, *Latrobe Valley News*, 29 April, 2016

⁴ The Victorian government’s Implementation Plan following the Hazelwood Mine Fire Inquiry, <http://www.dpc.vic.gov.au/index.php/news-publications/hazelwood-mine-fire-inquiry-implementation-monitor>

⁵ Economic Development Strategy, Latrobe City Council, http://www.latrobe.vic.gov.au/About_Us/Media_and_Publications/Latest_News/Latrobe_City_positions_itself_at_the_Engineering_Capital_of_Australia

- Under its *Regional Partnerships* program, the Victorian government has committed to a range of initiatives such as \$10 million for the Gippsland Logistics Precinct, \$2.5 million for Gippsland Lakes Protection and a new technical school for Gippsland;⁶
- The *Gippsland Regional Plan*, released in 2015, identifies a range of regional economic opportunities within broad themes of economic prosperity, education and community well-being, natural environment stewardship, and connectivity;
- The Victorian Government's *Regional Jobs and Infrastructure Fund* provides grants to regional and rural local government authorities, government agencies, not-for-profits, community groups and businesses, encouraging applications from businesses in high-growth sectors such as: medical and new energy technology; food and fibre; transport, defence and construction technology; international education and professional services;⁷
- The Victorian Government's \$20 million *New Energy Jobs Fund* – part of the \$200 million *Future Industries Fund* – aims to drive innovation in new energy technologies, increase the uptake of renewable energy generation, reduce greenhouse gas emissions and create jobs;⁸
- The previous Victorian Government in 2013 awarded more than \$9 million in funding to projects that enable transition and diversification through the Latrobe Valley Industry and Infrastructure Fund, which was supported by the Latrobe Valley Industry and Employment Roadmap; and⁹
- The Committee for Gippsland's 'Our Region, Our Future' report released in July 2016, examines the economic impact of power station closure and identifies opportunities for economic transition based on a survey of local small business.

While these processes are driven by a recognition of the need for economic diversification and highlight many of the opportunities for growth in the region's other key industries – such as agribusiness and tourism – many largely assume an ongoing role for coal in some form in the Valley's future economic and employment mix.

However, the realities of climate change mean that the world is inevitably moving towards a future powered by renewable energy, where coal will play an ever-diminishing role. It makes little economic sense to be investing in enterprises that will have no place in that future, particularly when the history of efforts to promote alternative uses of coal has largely been one of failed projects and undelivered promises.

The choice facing Australia, Victoria and the Latrobe Valley is whether we embrace the opportunities and new jobs that can be created if we move decisively away from coal, or wait until change is imposed upon us and suffer the economic and social consequences. We need to look ahead to what a prosperous future could look like if the Latrobe Valley's coal was kept safely in the ground.

⁶ Regional Partnerships, Regional Development Victoria, <http://www.rdv.vic.gov.au/regional-statement/regional-partnerships>

⁷ Regional Jobs and Infrastructure, Regional Development Victoria, <http://www.rdv.vic.gov.au/regional-jobs-and-infrastructure-fund>

⁸ New Energy Technologies, Business Victoria, <http://www.business.vic.gov.au/support-for-your-business/future-industries/new-energy-technologies>

⁹ <http://www.rdv.vic.gov.au/about-us/announced-funding/latrobe-valley-fund>



The view from Morwell to Hazelwood power station.

BEYOND BUSINESS-AS-USUAL THINKING

A just transition will require big picture thinking that goes beyond piecemeal support for individual projects. It needs to be transformational, creating an environment (economic, physical and cultural) that fosters and catalyses innovation and investment in a diverse range of new industries and businesses. It needs to recognise that the challenge goes beyond simply offering re-training and new employment for workers directly employed in the electricity sector, although that will be important. Job must also be created for the workers and businesses that rely on the downstream spending of those who currently work in the coal-fired electricity sector.

The recently announced Victorian government \$40 million Transition Fund is a good start. However it's important that this funding is directed as much as possible towards 'catalytic' projects, which leverage other sources of investment and leave a legacy of self-sustaining and successful industries.

Furthermore, success will depend on a whole-of-government approach. A range of government initiatives – from the *New Energy Jobs Fund*, *Future Industries and Infrastructure Fund*, and the forthcoming *Energy Efficiency and Productivity Strategy*, to housing affordability and energy hardship initiatives – could be knitted together to drive and support a comprehensive transition plan for the Latrobe Valley. Looking beyond traditional industries, arts and creative industry initiatives could deliver further economic dividends by fostering a vibrant and welcoming community culture that attracts skilled workers and entrepreneurs to the region.

Victoria has a unique opportunity to show how transition can be done properly. By leading by example, Victoria and the Latrobe Valley can make a significant contribution to the urgent worldwide task of transitioning away from fossil fuels while ensuring affected communities are not left behind.



03

LEARNING FROM OTHER COMMUNITIES IN TRANSITION

Communities around the world are facing similar challenges to the Latrobe Valley in adjusting to change, the loss of core industries and the need to create new business and employment opportunities. While there's no blueprint that can be directly applied to the Latrobe Valley, there may be useful lessons that can be learnt from the experiences of other communities.

ROCHESTER AFTER KODAK

The decline of the Eastman Kodak technology company provides a stark example of the consequences of an industry failing to adapt to changing circumstances, and the speed at which that change can occur. At the same time, Kodak's hometown of Rochester, New York, provides a leading example of how planning for the future can help a community survive the loss of their largest employer.



Rochester, New York.

In its heyday in the early 1980s, Kodak was the dominant employer in Rochester, employing more than 60,000 people.¹⁰ By 2012 when the company filed for bankruptcy, that number had dropped to 2,300 employees and revenue had plummeted from more than \$14 billion in just 7 years. Despite having invented the digital camera in 1975, Kodak's decline was largely caused by its failure to recognise the disruptive impact digital technology would have on its film and print-based photography business, and to plan for and adapt to that change.

However, despite having been a largely 'one company town' for most of its history, Rochester has not suffered the same fate as Kodak. Over the same three-decade period in which Kodak shed more than 50,000 jobs, the wider community gained a net 90,000 jobs. To a large extent, the seeds of Rochester's recovery lay in key legacies of Kodak's dominance:

- Highly skilled Kodak workers made redundant over the years created a valuable labour pool for new and emerging industries, particularly in optics and photonics;
- Rochester's strong tertiary education sector – a product of Kodak philanthropy – is now the area's largest employer and has attracted billions of dollars in research grants, the benefits of which have flowed into the local economy; and
- Rochester's cultural institutions such as Eastman School of Music, the Rochester Philharmonic and the International Museum of Photography, are major assets, which have encouraged highly skilled former Kodak workers to stay in the region and continue to contribute to the community and economy.

Despite these benefits of Kodak philanthropy, Rochester community leaders recognised more than two decades ago that the city lacked an active entrepreneurial class to create the new business opportunities that would be needed as the dominant employer declined. In fact, it was the very presence of a single, large company that had kept smaller businesses from emerging.¹¹

In response, Rochester began establishing a network of private and not-for-profit partnerships to diversify its economy. Today, organisations such as High Tech Rochester and Greater Rochester Enterprise work with government and the research and education sector to train entrepreneurs, support innovation and research and 'incubate' new business ventures. As a result, Rochester is now home to a diverse set of industries in food and beverage manufacturing, photonics and imaging, biotech and life-sciences, energy innovation, software and IT services. Rochester's energy innovation industries encompass manufacturing, research and development enterprises across a range of applications including fuel cell technology, solar energy, wind energy, battery and energy storage. Since 1996, 51 start-ups – 38 of which are still active – have been created based on University of Rochester technologies alone.¹²

¹⁰ 'Kodak employment continues to shrink', Mike Dickinson, *Rochester Business Journal*, 20 March, 2014, <http://www.rbj.net/article.asp?aID=206802>

¹¹ 'No rust in Rochester', Duncan T. Moore, *New York Times*, 2 February 2012, <http://www.nytimes.com/2012/02/03/opinion/rochesters-survival-lessons.html>

¹² 'No rust in Rochester', Duncan T. Moore, *New York Times*, 2 February 2012, <http://www.nytimes.com/2012/02/03/opinion/rochesters-survival-lessons.html>

Success to date has relied on state and local government playing a key role, offering incentives such as grants, loans and tax credits to encourage business investment. Programs are available individually or bundled as part of a comprehensive package for larger capital investments that retain or create jobs as well as projects that create many high-paying jobs. The Greater Rochester Enterprise also offers tailor-made technical assistance through its 'Economic Gardening' program to local companies needing help with strategic issues facing their business.¹³

Despite these successes, Rochester is by no means out of the woods. While local GDP is rising, it is still below the 2006 peak, as the city continues to feel the impacts of the nation-wide recession, which followed the 2008 global financial crisis. However, the fact that the non-manufacturing sectors of the Rochester economy are outperforming the rest of the US in terms of GDP and jobs growth, is one sign that Rochester's economic diversification strategy has helped it weather the economic shocks of the past two decades better than it otherwise might have.¹⁴

WALES 30 YEARS AFTER THE MINERS' STRIKE

In contrast, South Wales in the United Kingdom suffered the economic and social consequences of a failure to manage change. This example highlights the importance of addressing entrenched social disadvantage early in an unavoidable transition process.

At its peak, the British coal industry employed more than a million men, and was one of the most important industries in the UK. The decline started after the First World War, but was accelerated after the Second World War, and in particular after the miners' strike of 1984. Following the strikes, more than 25,000 Welsh mineworkers lost their jobs in the decade-long program of pit closures initiated by the Thatcher government, and today just 1200 work in the industry.¹⁵ Because of the acrimonious relationship that existed between government and workers at the end of this bitter dispute, there was little interest in managing a just transition for workers and their communities, and no plan for the massive unemployment that followed.

¹³ Greater Rochester Enterprise,

<http://www.rochesterbiz.com/DoingBusinessHere/BusinessInformation/BusinessIncentives.aspx>

¹⁴ '2015 US and Rochester Area Economic Outlook', Keith, G. 2015.

<https://www.cfasociety.org/rochester/Linked%20Files/Gary%20Keith%202.18.15.pdf>

¹⁵ 'The Decline of the UK Coal Industry', Tevjan Pettinger, 2012,

<http://www.economicshelp.org/blog/6498/uncategorized/the-decline-of-the-uk-coal-industry/>



Miners' strike in London in 1984.

Today, more than 30 years later, a 2014 study conducted by Sheffield Hallam University found that “former coal mining communities across south Wales are still blighted by poverty and unemployment”. Only half the job losses following the South Wales pit closures have been replaced, which has exacerbated an already substantial employment problem. The health and well-being of the Welsh population is also low, with the rate of residents claiming disability welfare benefits standing at more than 10 percent – twice the British average.¹⁶

It was not until the 1990s – a decade after the strike – that the British government began the ‘Valleys Initiative’ to create new jobs and environmental and community improvements in the former mining valleys. Reclamation of abandoned mine sites became a cornerstone of the Welsh strategy for regeneration, with the result that thousands of acres of abandoned mines have now been turned into ventures such as a mountain bike park and the South Wales miners’ museum. The two attractions bring 120,000 visitors to the former mining valley each year.

The community has led efforts to reinvent the rural economy, but has struggled to reach the necessary scale in the absence of government support. One such example is the DOVE workshop, started by a group of women who came together during the miners’ strike to provide community-based education as a practical path/response to regenerate the local economy. Three decades later, the DOVE building hosts a diverse set of small-scale entrepreneurs, including a day-care centre, a library, a community garden and a café featuring local foods. While these initiatives have the advantage of being community-owned and driven, they are small and offer relatively few new, well-

¹⁶ ‘South Wales mining communities “still feeling job cuts”’, 19 June 2014, *BBC News*, <http://www.bbc.com/news/uk-wales-27920610>

paid jobs. They fall short of the level of economic stimulus needed to overcome widespread and long-standing disadvantage.

In the last ten years, the Welsh government has made a commitment to develop clean energy industries, in an effort to cultivate a job base built on innovation rather than mining. Twenty-five wind farms generate 300 MW of energy, several companies are building and developing solar technology (including Australian company Dyesol), and experimental wave- and tidal energy projects are planned for sites along the coast.

The country has also drawn on the expertise in its universities. It has formed a multi-school Low Carbon Research Institute, headquartered at the Cardiff University School of Architecture, where work focuses on energy efficiency for new buildings and exploring the economics of retrofitting existing homes in the UK.¹⁷

But while these are all promising initiatives, they do not yet match the scale of what's needed to overcome decades of entrenched disadvantage. While Wales is doing better than in the 1980s, its GDP ranks last in the UK and unemployment is as much as 25 percent in some former coal-mining towns.

KEY THEMES EMERGING FROM THESE EXPERIENCES:

- There is no 'quick fix'. It takes time for new, self-sustaining businesses to emerge and become a viable replacement for declining industries. If those new economic opportunities are not put in place quickly at the time of industry decline, then the resulting loss of skilled labour and economic activity can be severe and recovery may take decades.
- When government and business are absent from the transition process, even with the presence of strong local leaders, the impacts of neglect on community well-being – including health and morale – can be severe and long-lasting. Conversely, when change is imposed from outside, local communities may feel seriously disempowered. A possible lesson from this is that transition is likely to be more effective when it is the combined effort of local community leaders bolstered by strategic government and industry support and funding.
- New economic opportunities can benefit from capitalising on existing assets and advantages of the region.
- Effective, collaborative partnerships between government, the education and research sector, and business are key to successful new business incubation.
- The existence of an attractive lifestyle based on a vibrant cultural scene or beautiful natural assets can help to encourage valuable skilled employees to stay or re-locate to the region and contribute to its future.

¹⁷ 'Britain's Appalachia engineers a brighter post-coal future', Jonathan Hiskes, 30 March 2010, <http://grist.org/article/2010-03-30-wales-britains-appalachia-engineers-a-brighter-post-coal-future/>



04

AN ORDERLY AND PLANNED TRANSITION AWAY FROM COAL

An orderly and planned government process to phase out coal-burning power stations must address three inter-related elements:

1. Planned power station closure;
2. Supporting directly affected employees through the transition; and
3. Ensuring mine rehabilitation is done properly in line with community expectations.

These processes must occur concurrently with community and government efforts to facilitate broader economic development efforts across the region, as will be discussed in the next section of this report.

PLANNED POWER STATION CLOSURE

Effectively responding to climate change will require a fundamental restructure of our energy systems and economy on a global scale – not an insignificant task. And yet, the longer we delay in implementing this shift, the less time we are giving ourselves to adjust to change in an orderly and equitable way.



Aerial view of Hazelwood power station and retired Energy Brix factory

There is widespread concern that the ‘carbon budget’ – the space in the atmosphere for further emissions while limiting global warming to under two (or indeed 1.5) degrees – is already spent.

Victoria’s four large coal-fired power stations are responsible for almost 50 percent of the state’s climate pollution. It is impossible to make serious inroads into Victoria’s carbon pollution without addressing the operation of these power stations.

The importance of planning for closure has been highlighted with the unexpected closures of the smaller Anglesea, Morwell and Port Augusta Power stations. These closures were precipitated by a number of factors, but the declining economic status of brown coal looms large for the future of the industry globally. None of these recent closures were predicted or planned, with consequent disruptive impacts for local communities. The impact of sudden and unplanned closure of one of Victoria’s ‘Big Four’ generators would be greater. Speculation from its French owners that Hazelwood could be closed soon¹⁸ shows that this is a real and imminent situation that can no longer be ignored.

To reduce the risk of sudden, disruptive closure – and to ensure that power-station closure happens in a way that leads to the most effective reduction in emissions – the Victorian government should provide certainty around power station closure timelines. A range of policy tools are available, but any mechanism should ensure that the most pollution-intensive power stations are phased out first.¹⁹

SUPPORTING AFFECTED WORKERS AND THEIR COMMUNITY THROUGH THE TRANSITION

While the electricity and coal-mining sectors are relatively small employers, they provide almost a third of the higher paid jobs in the Latrobe Valley and make a significant contribution to wider economic output, jobs and businesses throughout the region.²⁰

The Latrobe Valley has already lived through a poorly managed structural adjustment process during the 1980s and 1990s when the State Electricity Commission of Victoria was broken up and privatised. The consequences for the Latrobe Valley included high unemployment, significant loss of people and skills from the region, and depressed local business conditions.²¹

¹⁸ ‘Update1- Engie mulls closing Australia’s Hazelwood coal-fired plant’, *Reuters*, 25 May 2016, <http://www.reuters.com/article/engie-coal-australia-idUSL5N18M5PF>

¹⁹ *Six Steps to Energy Efficiency Leadership*, Environment Victoria, 2015, <http://environmentvictoria.org.au>

²⁰ Latrobe Valley Industry and Employment Roadmap, Regional Development Victoria 2012; *Our Region, Our Future: Securing an economic future for Gippsland and the Latrobe Valley*, Committee for Gippsland 2016

²¹ *The Latrobe Valley, Victim of Industrial Restructuring*, Birrell, B, 2001. Centre for Population and Urban Research, Monash University

It is essential that such mistakes are not made again. The wider Victorian and Australian community must ensure those employees directly affected by power station closure receive support for managing such a significant upheaval to their livelihoods, and alternative economic and employment opportunities are created within their communities.

Critical to this process is meaningful, open and transparent consultation between government, industry, local business, unions and the local community. The absence of such consultation during the 1990s privatisation process left the Latrobe Valley community feeling marginalised and disempowered.

This time, the community deserves a process which builds trust and ownership of the change process over time; draws on the knowledge, skills and resources of the local community – including often marginalised groups such as Indigenous peoples and women; and focuses on practical options to create hope for the future.

As well as the potential diversity of options for new economic opportunities such a process could deliver, certain minimum requirements for protecting the rights of existing power workers must be met.

1. The Latrobe Valley's power stations and mines are operated by different private entities. Unions have proposed that these operators should cooperate to ensure older workers across the fleet are eligible for redundancy when one power station closes, allowing younger workers to re-deploy to remaining stations.²² For example, if Hazelwood power station is the first to close, workers at Yallourn and Loy Yang A and B could also be offered voluntary redundancy packages. If taken, these packages would create a job vacancy at one of the remaining power stations that could then be taken by a younger worker from Hazelwood.
2. All employees taking redundancy must receive their full entitlements, as part of a comprehensive, industry-wide redundancy, relocation and retraining program funded by industry – not the public purse.
3. The portability of entitlements for employees re-locating to other power stations must be ensured.

²² 'Hazelwood closure speculation: the community responds', *Latrobe Valley Express*, 26 September 2016 http://www.latrobevalleyexpress.com.au/story/4188710/hazelwood-closure-speculation-the-community-responds/?cs=1462&mc_cid=9e19195dfd&mc_eid=9412a2e2f6

MINE REHABILITATION

THE NEED

The Hazelwood mine fire in early 2014 was Victoria's biggest environmental and public health disaster. The two Hazelwood Mine Fire Inquiries (HMFI) that followed revealed that mine rehabilitation has been a much-neglected aspect of the mining process.

Mine rehabilitation is the process of repairing the damage to the landscape caused by mining. It mitigates fire risk from the coal, but also creates jobs, reduces toxic coal dust, and has the potential to create a landscape that provides ongoing public amenities or benefits.²³



Loy Yang Mine.

In a 2014 report, Environment Victoria estimated that rehabilitation of the three Latrobe Valley mines over a 20-year period would create hundreds of jobs and stimulate approximately \$1.2 billion in regional economic activity.²⁴ Rehabilitation options that create the potential for ongoing employment (e.g. through tourism) deliver further and longer lasting benefits to the community.

²³ *Preventing the Preventable*, Environment Victoria 2014, [http://environmentvictoria.org.au/sites/default/files/Preventing%20the%20Preventable_FINAL%20\(1\).pdf](http://environmentvictoria.org.au/sites/default/files/Preventing%20the%20Preventable_FINAL%20(1).pdf)

²⁴ *Preventing the Preventable*, p.7.

	USA†	Latrobe Valley low-cost case ‡	Latrobe Valley medium-cost case ‡	Latrobe Valley high-cost case ‡
Expenditure * millions of AUD	\$411m	\$243m	\$421m	\$600m
Total job years created	8578	5076	8789	12523
Jobs per year Over 20 years	429	254	439	626
Economic benefit Billions of AUD	\$1.18b	\$0.70b	\$1.21b	\$1.72b

* Using an exchange rate of \$0.90 † Actual expenditure and job creation ‡ Projected expenditure and job creation

Table 1. Job creation and wider economic benefits of mine rehabilitation.

On the flip side, the failure to properly rehabilitate the Latrobe Valley mines would leave a permanent scar on the landscape – a legacy of abandonment and a dangerous and worthless use of large areas of land within the Valley.

THE OPPORTUNITY

Rehabilitation brings a unique opportunity to create a landscape that benefits the local community.

Mine rehabilitation is a site-specific challenge: no one solution can be rolled out at every mine. The second Hazelwood Inquiry found that filling the mine pits with water is likely to be the most viable solution for the Latrobe Valley. It was noted, however, that there are still many unresolved issues with converting the mines to lakes,²⁵ such as where the water will come from, the downstream consequences of diverting so much water into the mines, and whether the water quality will be good enough to allow public use of the lakes.

As future users of the land, it is essential that local community members be included in decisions about how the land is rehabilitated and for what final purpose. On this point, the report of the second HMF I said the community “should have an active role in developing a vision for the mines post-closure”, noting that until now they had been “almost entirely excluded from this process”.²⁶

Prior to the hearings on mine rehabilitation, Environment Victoria ran a community workshop in Morwell to start exploring ideas around potential future land use. Four major themes emerged:

²⁵ See, for example, *Hazelwood Mine Fire Inquiry Report IV*, Section 6.11 (“Knowledge Gaps”), p106 <http://hazelwoodinquiry.vic.gov.au/201516-report/volume-iv-mine-rehabilitation/>

²⁶ *Hazelwood Mine Fire Inquiry Report IV*, p112.

1. Active recreation: racetrack; golf course; extreme sports
2. Nature-based uses: botanic gardens; wildlife refuge; agriculture/horticulture; restoring to native vegetation
3. Arts and culture: MONA-style art gallery; amphitheatre and concert venue
4. Lake uses: sailing; fishing; water park

Rehabilitation of mines (including brown coal mines) in other parts of the world has delivered successful post-mining landscapes that continue to bring benefits to their communities. Many of these implemented land uses similar to those identified as desirable for the Latrobe Valley. While the site-specific engineering challenge remains, this is not completely uncharted territory.

ENABLERS OF SUCCESS

Properly planned mine rehabilitation that meets community expectations will deliver significant benefits to the Latrobe Valley. By accepting the recommendations of the second HMFI on rehabilitation, the Andrews government has greatly increased the likelihood of achieving positive results. This has been an intractable problem that is now being confronted by the state government – a very welcome step. The government’s implementation plan, released in June 2016, outlines a comprehensive approach to improving mine rehabilitation outcomes.²⁷ However, as the plan is implemented, specific focus must be directed to:

1. Ensuring sufficient funding is available to carry out rehabilitation to an acceptable standard

- The government has committed to increasing rehabilitation bonds for each of the mines to the match operator’s assessment of the rehabilitation cost, by January 2017.
- It is likely that the mine operator estimates are much lower than the real cost of rehabilitation. In early 2017, the government will conduct a further process to determine a more accurate estimate of likely rehabilitation costs. Bonds should be increased to match this estimate. Further security could be provided by requiring the bonds to be held as cash bonds, rather than bank guarantees, which is the current practice.
- Recent examples in Queensland have shown that companies can try to evade their rehabilitation responsibilities by creating subsidiary companies that have no assets but who hold the rehabilitation liability. This makes it harder for governments to recover the costs of rehabilitation if the new company defaults. In response, Queensland passed chain-of-responsibility legislation, which allows governments to access the assets of parent companies to ensure rehabilitation works can be funded. Similar legislation should be introduced in Victoria to further reduce the risk of poor rehabilitation outcomes in the Latrobe Valley.

²⁷ *Hazelwood Mine Fire Inquiry Implementation Monitoring*, <http://www.dpc.vic.gov.au/index.php/news-publications/hazelwood-mine-fire-inquiry-implementation-monitor>

Mine	Original bond	Bond required by 31 Dec 2016	Expert estimate of rehabilitation cost at HMFI
Hazelwood	\$15m	\$73.4m	\$243–357m
Yallourn	\$11.46m	\$68.5m	\$167–344m
Loy Yang	\$15m	\$112m	\$221–392m

Table 2. Rehabilitation bond increases
(estimated true cost provided by independent consultant AECOM at HMFI).

2. Establish a comprehensive process for public participation in final land-use planning

The government has committed to establishing a Latrobe Valley Mine Rehabilitation Commissioner, whose role is to coordinate much of the required planning and research. A key function of this office needs to be conducting meaningful public consultation with the Latrobe Valley community, including:

1. Setting community expectations of what successful rehabilitation will achieve; and
2. Community priorities for post-mining land use.

The outcomes of this consultation need to be central to all subsequent decision making on rehabilitation.

- Prior to the HMFI hearings on mine rehabilitation, the inquiry conducted numerous public consultation sessions. These discussions with all segments of the community and in particular with the traditional owners of the land, the Gunaikurnai people, need to continue.
- A key risk is that rehabilitation planning could be dominated by a technocratic view of the world that delivers a stable landform, but brings no added benefits to the community – a wasted opportunity. The mines occupy an enormous footprint within the Valley and the land ought to be used for a socially, environmentally and economically positive space.



05

SUSTAINABLE ECONOMIC OPPORTUNITIES

It is vital that the Latrobe Valley's inevitable transition away from its traditional industries is managed well, with clear planning for phasing out coal power, comprehensive support for energy workers and successful mine rehabilitation. But an equally important issue for the Latrobe Valley is what it transitions *towards*.

In this part of the report we will discuss five opportunities for economic development in the region:

1. Home energy efficiency and renewable energy retrofits;
2. Commercial building resource efficiency;
3. A State Energy Transition Centre;
4. Sustainable prefabricated housing construction; and
5. Solar water-heating manufacture.

Some of these ideas originate from community-driven transition projects and discussions within the Latrobe Valley. These five opportunities are not offered as definitive answers. Rather, they should contribute to the broader conversation about transition, providing specific examples of what new industries could look like in the Valley. Consideration should also be given to finding new ways to support existing industries in the region – such as agriculture and health – so they continue to grow sustainably.

The common theme that unites these opportunities is a focus on sustainability – delivering both environmental and social benefits. Emphasising sustainability will help ensure that the changes the Latrobe Valley makes now will support social and ecological prosperity in the future.

CASE STUDY 1:

HOME ENERGY EFFICIENCY RETROFIT PROGRAM FOR GIPPSLAND

The opportunity

Upgrading the efficiency of Gippsland's homes could create jobs and boost local economic activity, as well as cut household energy bills, improve health outcomes and reduce greenhouse gas emissions.

The efficiency of Victoria's housing stock is generally poor, with homes built before 2005 performing at an average of less than 2 stars (compared with the 5 Star standard required for new homes). Homes in Gippsland are older than the state average – nearly 70 percent of homes state-wide have been built since 1960, while most homes in Morwell, Traralgon and Moe were built between 1940 and 1959.²⁸

Inefficient homes are draughty and cold in winter and dangerously hot in summer – or else prohibitively expensive to keep comfortable. As electricity and gas prices have risen in recent years, energy wastage through inefficiency is translating into unaffordable energy bills for many Victorian households. More than 34,000 Victorians had their electricity disconnected for unpaid bills in 2013–14,²⁹ while the Latrobe Council area was a 'hotspot' for utility disconnection complaints in 2015.³⁰

For vulnerable groups such as the elderly and those with chronic health conditions, living in poor quality housing is a threat to their health – particularly in extreme weather. The heatwave in southeast Australia in late January 2009 is estimated to have contributed to 374 excess deaths,³¹ while a recent international study concluded that more people die from the effects of chronic cold in Australia than in Sweden.³² Given the harsher climate in Gippsland, the impact of inefficient homes could be expected to be more severe than in other parts of Victoria.

Home energy efficiency can be improved by installing basic measures such as insulation, efficient lighting, draught sealing and window-shading at a cost of approximately \$2000 per star increase. Upgrading a home to 5 stars can cut household energy bills by 40 percent, representing savings of approximately \$1000 per year for an average Victorian household.³³ Integrating efficiency retrofits with renewable energy (rooftop solar) can further improve savings.

A low-income efficiency retrofit program for Gippsland

The Victorian government has recognised the need to address the poor quality of Victoria's housing stock, and has committed to delivering an *Energy Efficiency and Productivity Strategy* later in 2016.

²⁸ Existing Buildings Research Project – Isolating opportunities for the improvement of environmental performance of existing housing stock, Warren-Myers G, Vines M, Carre A 2012, RMIT University, (unpublished). Prepared for Sustainability Victoria

²⁹ Energy Retailers Comparative Performance Report 2014-5, Essential Services Commission 2016

³⁰ *Annual Report*, Energy and Water Ombudsman Victoria 2015

³¹ <https://blogs.csiro.au/climate-response/stories/explainer-heatwaves-in-australia/>

³² 'Cold weather is a bigger killer than extreme heat', Adrian Barnett, *The Conversation*, 22 May 2015,

<https://theconversation.com/cold-weather-is-a-bigger-killer-than-extreme-heat-heres-why-42252>

³³ *Household Energy Report*, Sustainability Victoria 2014

This presents an opportunity for the government to commit to implementing a comprehensive household energy efficiency retrofit program for Gippsland, which could serve as a pilot for the subsequent roll-out of a state-wide scheme.

Delivering a pilot retrofit program in Gippsland as a precursor to a comprehensive state-wide scheme would have a number of advantages, including:

- Cost-effectiveness, by achieving economies of scale in delivery of upgrades to discrete geographic areas;
- Prioritising policy response to a key hotspot for energy hardship; and
- Contribution to wider regional social policy and economic development objectives, particularly health improvement objectives and commitments flowing from the Hazelwood Mine Fire Inquiry.

Upgrading Gippsland's pre-2005 housing stock over 10 years could support between 340 and 620 jobs across a range of occupations and businesses in trades, services and manufacturing. Many of these jobs would be in small to medium sized enterprises, which are likely to be local.³⁴

At the end of the 10-year program, Gippsland households could be expected to be saving between \$39 and \$58 million dollars from their energy bills.³⁵ If these savings are then spent elsewhere in the economy, they could support an estimated 200 to 300 jobs in an ongoing basis.³⁶

“Upgrading Gippsland’s pre-2005 housing stock over 10 years could support between 340 and 620 jobs across a range of occupations and businesses in trades, services and manufacturing. Many of these jobs would be in small to medium sized enterprises which are likely to be local.”³⁷



Insulco employee installs roofing insulation.

³⁴ Calculations based on methodology from Environment Victoria 2015, *Six Steps to Efficiency Leadership*. This is an estimate of gross jobs, not net additional jobs created.

³⁵ Assuming a conservative estimate of household savings of \$500 - \$750 per year x 78,000 upgraded households, given that many low-income households are low energy users, and hence their savings may be lower than statewide average of \$1000 per year.

³⁶ Calculations based on methodology from Environment Victoria 2015. This is an estimate of jobs supported across the economy, not just Gippsland.

³⁷ Calculations based on methodology from Environment Victoria 2015, *Six Steps to Efficiency Leadership*. This is an estimate of gross jobs, not net additional jobs created.

A Gippsland home retrofit program would see an estimated 78,000 homes upgraded,³⁸ specifically:

- The region's 3600 public housing dwellings upgraded within 10 years;
- Low-cost finance made accessible to the region's nearly 55,000 owners of pre-2005 homes,³⁹ with priority for Gippsland's estimated 21,500 low-income homeowners;⁴⁰
- Gippsland's estimated 23,500 renters⁴¹ enjoying lower running costs and improved comfort over time, with approximately 11,000 low-income renters (assumed to be living in the lowest quality houses) benefiting earlier;⁴² and
- Fully funded retrofit programs implemented in low-income, high-needs households including those with chronic health conditions, those participating in retailer hardship programs or experiencing energy-related financial stress.

Enablers of success

Delivering a home energy efficiency retrofit program for Gippsland would require a mix of policy and regulatory changes at a state-wide level, improved access to low-cost finance for upgrades and targeted government investment in the homes of those most in need.

The Victorian Sustainability Fund currently holds more than \$400 million, which must be spent on environmental programs. It represents an important source of capital, which could be drawn upon to finance delivery of the *Energy Efficiency and Productivity Strategy* – by establishing a state-wide low-cost loans scheme, and providing direct assistance to the most vulnerable. Another potential source of capital for upgrades in rental properties is the Victorian Property Fund.

Key elements of an effective program would include:

Minimum standards for rental properties

Rental properties are typically less efficient than owner-occupied houses, as landlords have little incentive to invest in improvements because tenants are responsible for paying the bills. The most effective way to address the split incentive facing landlords and tenants is to introduce minimum standards for efficiency performance at the point of lease. The minimum standard should initially be set relatively low, requiring upgrade of the worst performing properties, and be raised progressively over time. Pairing this with the introduction of affordable finance would make sure landlords are able to meet standards (see below).

Pilot low-cost retrofit finance scheme for Gippsland

Efficiency upgrades save money over time. However the upfront costs can be unaffordable for many homeowners and landlords. A pilot, low-interest loans scheme that allows Gippsland to finance

³⁸ From 80 percent of 98,000 total households in Gippsland, ABS 2011 *Census data, Latrobe – Gippsland (SA4)*

³⁹ From approximately 70 percent of Australian households own their own home with or without a mortgage
ABS (2011) 4130.0 – *Housing Occupancy and Costs, 2011–12*

⁴⁰ From approximately 39 percent of 55,000 owners of pre-2005 homes estimated to be renters. One Million Homes Alliance (2015) *Roadmap to 2025*

⁴¹ From approximately 24 percent of 98,000 total households estimated to be renters, OMH 2015

⁴² From approximately 46 percent of those 23,500 renters estimated to be low income, OMH 2015

integrated energy efficiency and solar upgrades for homes owned or tenanted by low-income households could be delivered through:

- **Local government** provision of rates-based financing schemes based on Environmental Upgrade Agreements (EUAs). Legislative change to extend EUA financing to residential buildings would be required;
- **Community services organisations** provision of low-interest loans to low-income clients for appliance and building shell upgrades; and
- **Registered Housing Agencies (RHAs)**, which provide social housing to low-income and disadvantaged Victorians through a range of leasing models. Further work needs to be done in partnership with RHAs to develop financing arrangements which don't risk rent increases or compromise overall affordability for tenants.

Deliver a Gippsland low-income energy efficiency program for those most in need

Many of Victoria's most disadvantaged households (with high energy expenditure or medical special needs), are unable to afford even no-interest loan repayments for essential energy efficiency upgrades, and require targeted interventions from government. In particular, government should commit to upgrading Victoria's entire public housing stock within 10 years, though a boost to existing public housing asset management and maintenance programs. This would translate to approximately 360 public housing dwellings in Gippsland receiving an upgrade per year over a period of 10 years.

Retrofit programs for vulnerable households can be most cost-effectively delivered where they can be targeted to locations with high numbers of priority households, so as to achieve economies of scale in the delivery of services. However, current data limitations – hindering links between housing tenure, concession-card holders, hardship program participation and location data – would need to be overcome for the effective delivery of such programs.

PUSH BUFFALO

People United for Sustainable Housing (PUSH) in Buffalo, New York, is a community movement that is tackling the inter-related problems of poverty, racial injustice and climate change. Since 2005, PUSH Buffalo has been mobilising local residents to create strong neighbourhoods with quality, energy efficient and affordable housing, expand local hiring opportunities and to advance economic justice in Buffalo.

PUSH GREEN, the organisation's energy efficiency social enterprise, uses a community-based model to deliver broadly accessible energy efficiency programs. Facilitated through Green Jobs New York Legislation, PUSH GREEN empowers residents to access energy audits, installation services and low-cost financing. By recruiting small businesses, non-profits, and multi-family building owners into the program, many living wage jobs are created for local people.

PUSH GREEN's program 'Staying Warm and Dry on the West Side' helps homes renovate their roofs and plumbing to a point where energy efficiency measures can be successfully installed. This program allows low-income home owners to stay in their homes longer, supporting PUSH's anti-gentrification model for development without displacement.

CASE STUDY 2:

COMMERCIAL BUILDING ENERGY EFFICIENCY

The opportunity

Improving the energy efficiency of commercial buildings offers significant opportunities for reducing costs for Gippsland businesses, creating jobs and freeing up wasted energy expenditure for spending in the local economy. In particular, there are significant opportunities for upgrading ‘mid-tier’ offices, which dominate Gippsland’s commercial building sector.

The commercial building sector accounts for about eight percent of Australia’s total energy consumption and 11 percent of Australia’s greenhouse gas emissions. The highest energy users in commercial building sector are heating (44 percent), lighting (24 percent) and equipment and appliances (18 percent).⁴³ On average, efficient commercial buildings use 66 percent less electricity than an average Australian building.⁴⁴

The commercial building sector is extremely diverse, ranging from office and retail (food and non-food) space, to education, health and community facilities. Within the sector, office buildings and non-food retail buildings offer the greatest opportunities for efficiency savings, collectively accounting for more than 40 percent of the total opportunity.⁴⁵

Upgrading the efficiency of office buildings not only delivers direct financial savings from reduced energy consumption, but also complementary benefits such as improved staff comfort and retention, reduced sick leave and improved overall staff productivity.⁴⁶ In many cases, these productivity benefits can outweigh the direct financial savings from cutting energy waste.⁴⁷

Commercial building efficiency opportunities and benefits in Gippsland

The Gippsland regional economy is dominated by small to medium enterprises (SMEs) and the majority of office space in the region is ‘mid-tier’ – the sector where significant untapped opportunities exist. As illustrated in figure 1, the key opportunities for efficiency improvements in these buildings lie in upgrades to HVAC (heating, ventilation, air-conditioning), insulation, water heating and lighting.

Improving the energy efficiency of Gippsland’s existing commercial buildings could save \$27.7 million in energy costs.⁴⁸ Recent studies have found that cost-effective measures for improving commercial building efficiency can pay for themselves in one to three years.⁴⁹

⁴³ ‘Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, Part 1’ Department of Climate Change and Energy Efficiency, 2012

⁴⁴ ‘Mid-tier commercial office buildings in Australia: Research into improving energy productivity,’ Ernst & Young, 2015 prepared for Green Building Council of Australia

⁴⁵ *ibid.*

⁴⁶ ‘Australian Carbon trust report: Commercial Buildings Emissions Reductions Opportunities,’ ClimateWorks, 2010

⁴⁷ ‘Australian Energy Efficiency Policy Handbook,’ Energy Efficiency Council, 2016

⁴⁸ ‘Low Carbon Growth Plan for Gippsland,’ ClimateWorks, 2011

⁴⁹ ‘Energy use and energy efficiency opportunities data for commercial sector and small/medium businesses: Summary of Results,’ ClimateWorks 2011; Energetics 2012, prepared for Department of Climate Change and Energy Efficiency

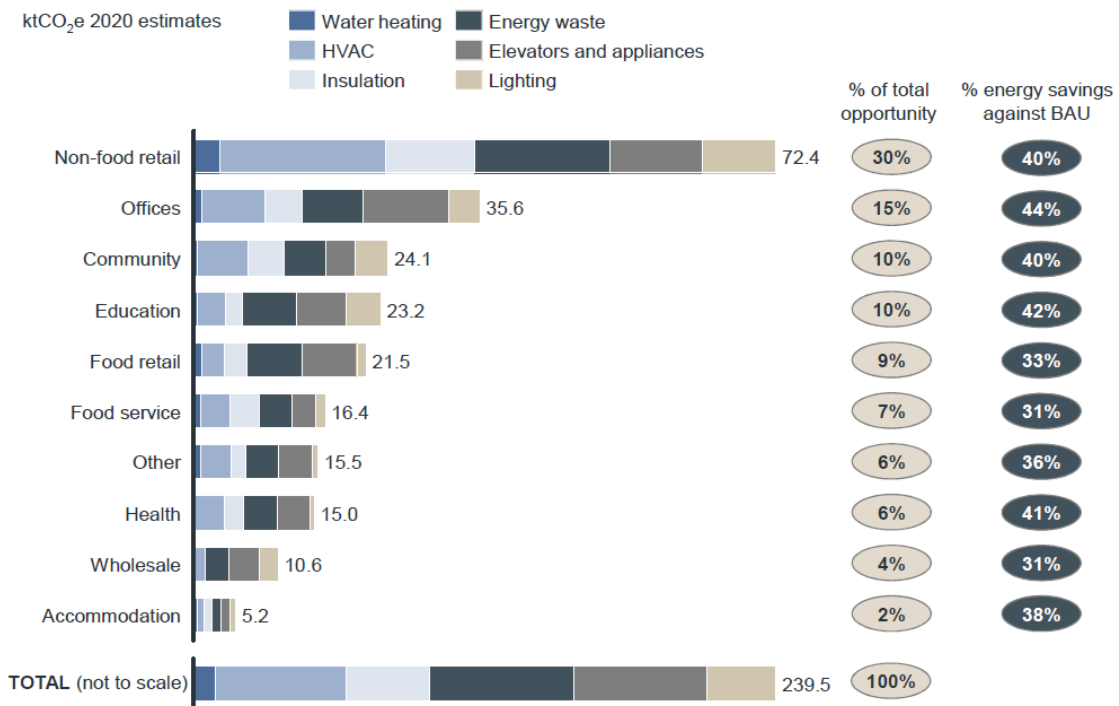


Figure 1. Energy reduction opportunities in commercial building retrofits, Gippsland⁵⁰

The \$27.7 million per year of savings could support up to 147 jobs due to the economic impact of money saved from energy bills being spent elsewhere in the economy.⁵¹ This is in addition to the jobs in trades and services – sales and installation of insulation, more efficient appliances, heating, air-conditioning and control systems – many of which would be in local Gippsland businesses.

Enablers of success

While many of the efficiency opportunities in the mid-tier office sector are cost-effective now and have short payback periods, a number of barriers still hinder investment.

Mid-tier building owners and tenants are diverse in size, business structure, investment strategy, attitude to risk and understanding of efficiency benefits and opportunities. As a consequence, there is no ‘one size fits all’ approach for improving performance in this sector. This diversity and complexity is a key reason why less policy attention has been devoted to this sector to date, relative to the top-tier office-building market.⁵² Furthermore, Gippsland’s dispersed population also means that opportunities can be highly fragmented and the opportunities more difficult to capture.⁵³

It is critical that policy responses recognise and respond to these differences. Importantly, policy responses also need to recognise that the majority of SMEs – local ‘mum-and-dad’ businesses with

⁵⁰ ‘Low Carbon Growth Plan for Gippsland,’ ClimateWorks, 2011

⁵¹ Calculations based on methodology from Environment Victoria 2015, *Six Steps to Efficiency Leadership*.

⁵² ‘Driving efficiency in mid tier offices,’ Energy Efficiency Council, <http://www.eec.org.au/efficiency-action/efficiency-insight-february-2016/#midtier>

⁵³ ‘Low Carbon Growth Plan for Gippsland,’ ClimateWorks, 2011

many other business objectives competing for attention – may not always be early adopters of new technology.⁵⁴

To overcome these barriers, the Australian energy efficiency sector is calling for investment of at least \$10 million a year for 10 years through the Council of Australian Governments (COAG) to fund a ‘10 year Action Plan’ to upgrade Australia’s entire office sector. Key actions under the office sector plan include:

- Engagement programs to equip building managers with relevant retrofit information and tools;
- Transitional incentives/levies to be introduced in 2016–18, potentially based on council environmental charges (e.g. buildings with a NABERS rating of 4 stars or higher are charged lower Council levies); and
- Minimum lease standards to be introduced in 2020, potentially stipulating a minimum NABERS rating (e.g. 3 stars) for a building to be legally leased.

On-bill financing arrangements, such as Environmental Upgrade Agreements (EUAs) provide an affordable mechanism for funding integrated efficiency and renewable energy upgrades. Under an EUA, lenders provide finance to a building owner for environmental upgrades, with the local council then collecting the repayments through its rates system and passing them on to the lender. The Victorian government legislated to extend EUA financing for commercial buildings to all Victorian local government municipalities in 2015. However, EUA finance is not yet available through Latrobe City Council.

For a successful roll-out of such a scheme across Victoria, including Gippsland, state government will need to play an active role in brokering partnerships between councils and providers of low-cost finance to ensure all councils have access to the necessary financial resources.

EFFICIENCY UPGRADE BUSINESS CASE: MANNY’S MARKET, MORWELL

Manny’s Market is a family-owned shopping centre located in Morwell, which is facing significant competition from new stores in the Morwell area run by large chains. The business is also facing rising utility bills and operational costs, which is having an impact on business profitability.

An energy audit identified opportunities to reduce energy usage by 29 percent, equivalent to \$38,489 in annual savings. Key upgrade opportunities include LED lighting, replacement of old fridges and cool room, and replacement of three old air-conditioning systems with a single high-efficiency unit. With 10-year finance under EUA, the owner’s repayments would be around \$40,000 less than traditional finance over four years. With a tenant contribution, the owner’s portion of annual repayments would be reduced to under \$9000. The overall result is a net benefit of almost \$30,000 to the business’s bottom line. The Latrobe Valley would benefit from jobs and investment associated with the building upgrade and an important local business would be more sustainable with lower energy use and operating costs, enabling the business to better compete with national and international competitors.

(This is an illustrative example only, as EUA finance is not yet available in Morwell.)

⁵⁴ ‘Motivating mid-tier offices’, Harrington, P. 2015, Presentation to National Energy Efficiency Conference, Melbourne, November 2015, Pitt&Sherry

CASE STUDY 3:

STATE ENERGY TRANSITION CENTRE



The opportunity

Just as the electricity sector has played a central role in the Latrobe Valley's economy to date, the transition to renewable energy could create new opportunities for regional economic growth and job creation into the future. The Voices of the Valley community group is promoting a vision for a State Energy Transition Centre (SETC) which takes advantage of this shift, to drive the development and growth of new energy-based industries in the Latrobe Valley.⁵⁵

The Latrobe Valley's key physical and social infrastructure assets, which currently underpin the electricity sector, means it is uniquely placed to take advantage of the new economic opportunities created by the shift to renewable energy:

- Existing physical electricity distribution infrastructure – the poles and wires – which all lead to the Latrobe Valley;
- The sector's heavy industry base and infrastructure, much of which could be re-purposed;
- The skills and expertise of the Valley's workforce, comprising not only power sector employees but also the trades and services technicians and professionals in supply chain businesses; and

⁵⁵ Voices of the Valley, <http://www.votv.org.au/>

- The region’s tertiary education and research sector, particularly Federation University, Federation Training and a proposed new technical school to be built in Morwell.

As the Victorian electricity grid moves from being powered primarily by coal-fired generators located in the Latrobe Valley to being powered primarily by renewable energy, it will necessarily shift from a centralised distribution grid, to a more de-centralised, distributed network. This shift will bring new opportunities to supply a range of services needed by a modern renewable energy electricity system.

“The Latrobe Valley’s key physical and social infrastructure assets, which currently underpin the electricity sector, means it is uniquely placed to take advantage of the new economic opportunities created by the shift to renewable energy.”

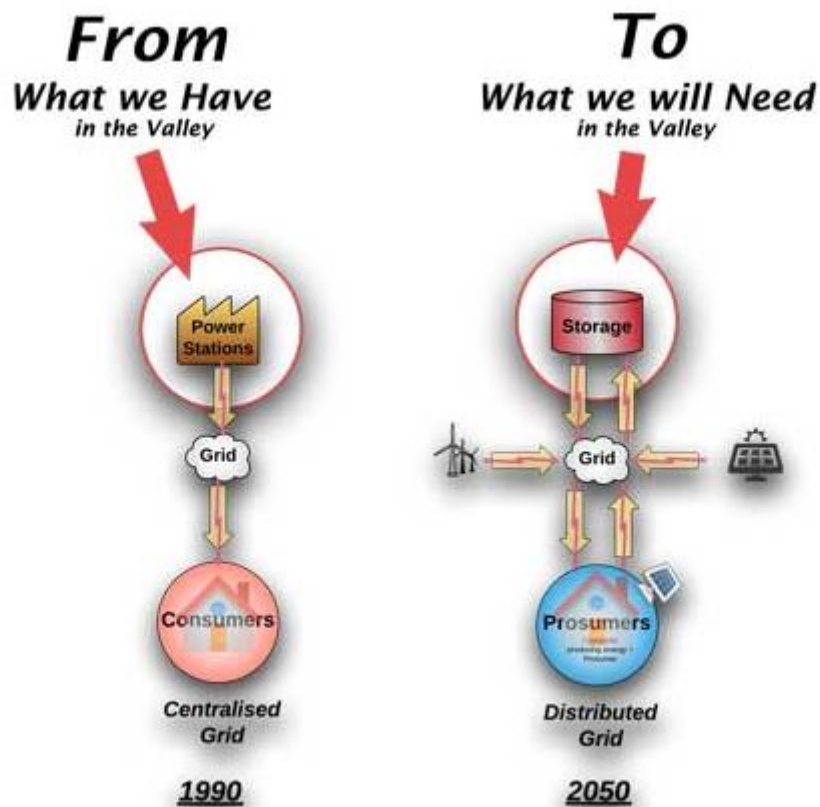


Figure 2. Centralised versus distributed energy grids⁵⁶

New energy-based industries needed by a modern, renewable energy-powered grid encompass the manufacture, installation, maintenance and operation of energy harvesting and storage systems, as well as training for the technicians, tradespeople, community organisers and administrators needed to build and run the system.

⁵⁶ Voices of the Valley, <http://www.votv.org.au/>

The aim of the SETC plan is to achieve transformational change for the region’s economy by creating the policy, logistical and financial environment necessary for the successful growth of a diverse range of new industries. As a consequence, jobs would be created requiring a range of sectors and skill-sets and across a range of new business initiatives.

A central part of the concept is that it be community-owned, so that the Latrobe Valley community – rather than large, foreign-owned companies – controls the region’s future direction and prosperity. The aim would be to work in partnership with the region’s business, community and education sectors to build ownership of ideas, and create practical, cooperative models that encourage diverse participation.

‘Hyberg’ – a community-owned energy bank and retailer

A central plank of the SETC concept is the Hyberg project – a community energy project integrating renewable energy harvesting, storage and retailing.

The Latrobe Valley’s climate is not conducive to large-scale wind- or solar power generation, so the main opportunity for renewable energy harvesting lies in small-scale installations, particularly rooftop solar. But despite the growth in popularity of rooftop solar in Australia over the past decade, many households are missing out because they can’t afford the upfront costs, have shaded roofs, live in apartments or because they rent. Community energy projects – in which a community pools resources and shares the benefits of renewable energy – are a way of continuing to grow the renewable energy sector, while ensuring the benefits are shared by all.

A range of models for developing community cooperative generation and storage systems exist, including on- and off-site shared solar, group purchasing and community-driven financial models.



Figure 3. Community power models⁵⁷

⁵⁷ Renew Economy, www.reneweconomy.com.au

Importantly, community energy projects also allow for ownership of energy systems – which have traditionally been in the realm of government and large private organisations – to ensure the benefits are more equitably distributed.⁵⁸

While the community power sector in Australia is less developed than overseas, it is growing rapidly with at least 19 projects operating and at least 59 groups developing, delivering and/or operating community energy projects.⁵⁹ Prominent among successful projects is Australia’s first community wind farm at Hepburn in Victoria, and the Renewable Newstead project, which aims to run this central Victorian town on 100 percent locally sourced renewable energy.⁶⁰ With almost 10 MW of installed renewable energy systems at the end of 2014, the sector is delivering over 50,000 MWh of clean energy each year, and avoiding more than 43,000 tonnes of carbon emissions.⁶¹

The Hyberg concept envisages establishing community power or solar garden projects, with a particular focus on participation by low-income and other disadvantaged households.

These community-scale microgrids would be integrated with storage, to build community-owned ‘energy banks’ which would supply electricity back to the grid when needed.

RENEWABLE ENERGY AND STORAGE

A renewable energy grid needs some storage capacity to ‘buffer’ and stabilise the variability of supply from renewable sources such as wind and solar. Being able to store electricity allows network managers to supply extra electricity when it’s needed to keep supply secure and prices lower (by adding supply when wholesale prices are high).

Importantly, a key aim is for the microgrid installation to be an energy retailer in its own right. This would not only remove the requirement for all members of the community power project to have the same commercial retailer, but also ensure profits from the sale of electricity to the grid flowed back to the community.

In terms of economic and job benefits, the Hyberg project would stimulate demand for the components of the system – from rooftop solar panels to batteries and control systems. Some of these products or their components could be manufactured locally,⁶² while additional jobs would be created in businesses supplying sales, installation, maintenance and operation services. And by providing a demonstration of how this system could be implemented elsewhere, it would have the potential to develop new markets for both the new technologies as well as the skills to manage and maintain them.

The project would also help build community support for renewable energy and encourage engagement with the transition process. Furthermore, by improving access to renewable energy for low-income and disadvantaged groups – and thereby helping to ease the financial and health stress

⁵⁸ National Community Energy Strategy 2015, <http://c4ce.net.au/nces/>

⁵⁹ National Community Energy Strategy 2015, <http://c4ce.net.au/nces/>

⁶⁰ Renewable Newstead, <http://www.renewablenewstead.com.au/>

⁶¹ National Community Energy Strategy 2015, <http://c4ce.net.au/nces/>

⁶² <http://energy.gov/eere/sunshot/community-and-shared-solar>

of living in poor quality, inefficient housing – the Hyberg project would be contributing to wider socio-economic and health improvement objectives for the region.

The Hyberg project is consistent with a concept proposed in GetUp! and Solar Citizen's *Homegrown Power Plan* – that the federal government establish 50 'Community Powerhouses' to provide legal and technical expertise and start-up funding to help kick-start DIY clean energy projects in towns and suburbs across Australia. Modelling undertaken by Marsden Jacobs and Associates found that, given time, community energy projects could leverage \$17 of community funding for every \$1 of government funding.⁶³

New energy industries manufacturing and innovation zone

The global market for energy-storage devices, particularly residential battery storage is growing rapidly – and there is significant potential for Australia to be a key player. The global market for grid-connected rooftop solar systems coupled with battery storage is predicted to grow tenfold to reach more than 900 MW in 2018, up from just 90 MW in 2014.⁶⁴ The cost of lithium-ion batteries is expected to fall by 60 percent in less than five years, while flow battery costs could fall by 40 percent, leading to a similar boom as has occurred in the solar PV industry.⁶⁵

The State Energy Transition Centre concept envisages the establishment of an economic innovation zone, where new and emerging industries seeking to capitalise on these new market opportunities would co-locate to network and share resources. Ideal candidates for this hub are manufacturing businesses building solar panels and batteries to supply the local community power projects described above and Australia's growing renewable energy sector. Potentially other manufacturing, trades and services industries, such as prefabricated building construction discussed in the next case, could be encouraged to re-locate or expand their business within the zone. For example, Earthworker's *Eureka's Future* enterprise has recently established a worker-owned solar water heating manufacturing cooperative in Morwell (see case study five).

Attracting new enterprises serving both the Gippsland region and wider markets could also help stimulate demand for success of other projects such as the Gippsland Logistics Precinct and Freight Terminal.

Research, innovation and training partnerships

In the State Electricity Commission (SEC) era, a symbiotic relationship existed between industry and the tertiary education sector. Local institutions provided training for the technicians and tradespeople required by industry, while industry supplied apprenticeships, expertise and experienced instructors.

⁶³ *Homegrown Power Plan*, Solar Citizens & GetUp 2016, <http://www.getup.org.au/campaigns/renewable-energy/homegrown-power-plan/homegrown-power-plan>

⁶⁴ 'Australian Energy Storage Roadmap,' Clean Energy Council 2015 citing 'Energy Storage in PV Report – 2014', IHS Technology, October 17 2014, <https://technology.ihs.com/461779>

⁶⁵ 'Energy Storage Study,' prepared for Australian Renewable Energy Agency, 2015

Such a relationship could be re-established through developing productive partnerships between education, research and industry, to drive innovation in new energy industries and provide industry-oriented local training services.

There is also an opportunity to develop education and training services that not only service emerging local industries, but have wider application to broader national and international markets. For example, the expected growth in the uptake of home battery storage technology will require high quality training for installation technicians. Latrobe Valley education institutions could become specialist providers of such training.

Enablers of success

The State Energy Innovation Centre concept is currently under active development by Voices of the Valley, and discussions are ongoing with a range of government, education sector and industry stakeholders to continue to explore options and refine the concept.

Key areas for further work or potential barriers to address are emerging:

- Exploring the feasibility of establishing an ‘economic overlay’ over the area covered by the Health Innovation Zone recommended by the Hazelwood Mine Fire Inquiry. The economic overlay could potentially offer businesses located within its boundaries concessional tax arrangements or other financial incentives for doing business within the zone;
- Governments at federal and state level adopting industry recommendations to support the growth of battery storage, including electricity tariff reform, ensuring product safety and improving information to consumers;⁶⁶
- Building on work being done by projects such as Renewable Newstead, to develop workable, scalable financial models which could drive roll-out of the community power Hybergy project;
- Further exploring the feasibility of establishing the Hybergy project as a community-owned retailer, perhaps through the creation of a community-owned online energy trading platform as envisaged by the Community Power Agency and the *Homegrown Power Plan*⁶⁷;
- Federal and state governments adopting the Community Power Agency’s recommendation to invest \$460 million dollars over 10 years to establish 50 Community Powerhouses around Australia including in the Latrobe Valley, to facilitate the establishment of community power projects;⁶⁸ and
- Continuing discussions with regional educational institutions (Federation University and Federation Training) about research and training partnerships, particularly delivery of specialised training for battery installers to support the safe roll-out of this technology.

⁶⁶ ‘Accelerating the uptake of battery storage,’ Clean Energy Council, 2016

⁶⁷ *Homegrown Power Plan*, Solar Citizens & GetUp, 2016

⁶⁸ ‘Establish Community Power Houses’, Community Power Agency, https://d3n8a8pro7vhmx.cloudfront.net/solarcitizens/pages/1211/attachments/original/1461219971/Community_Powerhouses_Policy_-_Homegrown_Power_Plan.pdf?1461219971

CASE STUDY 4:

SUSTAINABLE PREFABRICATED HOUSING CONSTRUCTION INDUSTRY FOR GIPPSLAND



Workers in the UK construct a prefabricated house.

The opportunity

There is an opportunity to establish a prefabricated housing construction industry in the Latrobe Valley. Capitalising on the region's trades, manufacturing, forestry and timber skills, it would help address housing affordability challenges both in the Valley and across Victoria.

Victoria is facing a housing crisis. Housing unaffordability particularly for renters is at record levels, and there is a severe shortage of social housing across the state.⁶⁹ There are nearly 40,000 people on public housing waiting and transfer lists⁷⁰, while more than 22,000 people are estimated to be homeless, including more than 3500 children.⁷¹ While housing is more affordable in Gippsland than the rest of Victoria, there are nevertheless more than 1500 families on the public housing waiting list in the region.⁷²

⁶⁹ Council to Homeless Persons, 2014, <http://chp.org.au/wp-content/uploads/2014/10/141008-making-social-housing-work-housing-stress.pdf>

⁷⁰ 'Public housing waiting and transfer list' Department of Human Services <http://www.dhs.vic.gov.au/about-the-department/documents-and-resources/research,-data-and-statistics/public-housing-waiting-and-transfer-list>

⁷¹ Homelessness, Australia, <http://www.homelessnessaustralia.org.au/index.php/about-homelessness/fact-sheets>

⁷² <http://vcoss.org.au/state-budget-submission-2015-16-tackle-the-housing-crisis/>

As well as a housing supply crisis, Victoria also has a significant housing quality crisis. A large and growing number of Victorians, particularly low-income households, are struggling with rising energy prices or facing health risks because their homes are inefficient – draughty and cold in winter and dangerously hot in summer (see case study one).

The Latrobe Valley Sustainability Group has identified that prefabricated housing could be part of the solution, as it is generally cheaper to build to higher efficiency standards and has less environmental impact during construction than conventional buildings. Furthermore, prefabricated construction offers key advantages over conventional construction for in-fill development in established urban areas – where affordable housing is a key need – as it causes less on-site disruption and inconvenience for neighbours.⁷³

Capitalising on Victoria's status as a leader in prefabricated construction leader

Off-site construction systems offer a range of economic and environmental benefits over traditional construction:

- Construction times are at least 50 percent faster;
- Cost savings of between 10 and 50 percent;
- Up to 80 percent of site waste can be recycled; and
- Thermal performance up to 30 percent better, which allows high efficiency buildings to be built more affordably.⁷⁴

In 2014, the global market for prefabricated housing was estimated to be more than \$96 billion, up from \$60 billion in 2011. In Australia, prefabricated buildings make up only about 3 percent of the annual \$150 billion construction industry (around \$4.6 billion), compared with 50 percent of residential buildings in Finland and 74 percent in Sweden.⁷⁵

WHAT IS OFF-SITE PREFABRICATED CONSTRUCTION?

Prefabricated or off-site building construction encompasses a range of systems from fully constructed modular buildings and pods, to a range of panel systems, which lock together quickly and simply on-site. These systems use innovative technologies and materials, such as Structural Insulated Panels (SIP) made from expanded polystyrene (EPS) sandwiched between plantation-grown plywood, low-emissions fly ash cement composite panels, and cross-laminated timber (CLT) panels. New technology is increasingly being used to improve design and management of the construction process, as well as the operational efficiency of the building once completed.

The Australian industry has set a target of achieving 10 percent market share (worth \$15 billion) by 2025, which it estimates would support 20,000 jobs. Victoria is already established as the centre of

⁷³ 'Tony Arnel on the promise of modular construction', *The Fifth Estate*, 25 February 2014,

<http://www.thefifthestate.com.au/columns/spinifex/tony-arnel-on-the-promise-of-modular-construction/59526>

⁷⁴ *Transition from Automotive Industry to Manufacturing of Prefabricated Modular Affordable Housing*' Submission to 'Future of Australia's automotive industry' Inquiry, University of Melbourne, PrefabAUS 2015,

⁷⁵ Ibid

the Australian prefabricated construction sector and is expected to capture 40 to 50 percent of predicted industry growth over the next 5 years.⁷⁶

LITTLE HERO RETAIL AND RESIDENTIAL DEVELOPMENT, MELBOURNE

The eight-storey Little Hero development in Melbourne's CBD was constructed in 2010 using modular prefabricated components manufactured off-site in a factory in Brooklyn. Little Hero was completed in approximately nine months – about twice as fast as traditional construction methods – with only 20 working days spent in on-site assembly. Despite being located in a narrow city laneway, traffic and business interruptions were minimal and noise pollution was significantly lower than traditional construction. The construction process was also significantly more environmentally sustainable than conventional concrete building methods.



Little Hero on site construction

Capturing market growth opportunities for Gippsland

As well as helping to address the deficit of public housing in Gippsland, a local prefabricated construction industry could supply affordable, highly efficient homes to other parts of Victoria and Australia. As Gippsland is well served by a freight rail network, the industry could be geared towards producing flat-packed homes for transport elsewhere.

This proposal links to the State Energy Transition Centre concept outlined in the previous chapter, in that the proposed economic innovation zone could help to create incentives for both local and other prefabricated building construction companies to expand their business in the region.

Prefabricated sustainable 'eco-village'

A key element of the concept is the development of a demonstration 'ecovillage' incorporating a range of affordable housing options, as well as community spaces and facilities such as parks and meeting spaces. Homes would be built to efficiency standards of at least 7 to 8 stars, delivering

⁷⁶ *ibid*; Dr Tuan Ngo, University of Melbourne, pers. comm; Government of Western Australia 2105, The impact of new techniques and technologies on the residential housing sector of the construction industry.

energy savings to inhabitants of between \$179 and \$347 per year compared with a standard 6 star house.⁷⁷ The homes would incorporate all-abilities access features (such as wide doorways, no steps, lowered benchtops etc) and be powered by electricity from renewable sources only. The homes would also include locally made cabinetry and other components such as solar water heating, thus expanding opportunities for other local businesses such as Earthworker's solar water heating manufacturing operation (see next case study).

Several potential sites exist for the eco-village development, such as the under-utilised land at Morwell's western entrance or the current site of the Commercial Road Primary School (which is to be amalgamated into a newly built Morwell Primary School). This development would not only expand the supply of affordable housing in the region, but also serve to raise awareness and improve public acceptance of prefabricated housing, thus helping to expand private market opportunities.

Potential for job creation and value-adding

Prefabricated housing requires a mix of skills and supports jobs along the entire supply chain from research, design and off-site construction, to final assembly of the dwelling and installation of services at the site.⁷⁸

The Australian industry is divided into three categories from Tiers 1 to 3. Tier 1 companies typically have sophisticated and capital-intensive design, and assembly line operations – and may employ several hundred people. Tier 3 companies have smaller, less capital-intensive operations, which may build around 50 homes per year, and typically employ five to six people.

While Melbourne is already home to a number of sophisticated automated factories, advice from industry sources indicates that there is scope for the expansion of smaller, Tier 3 companies in the Latrobe Valley.⁷⁹ At least one prefabricated construction company already exists in the Valley, Klikal Modular Pty Ltd, which has developed a system using fly ash composite to produce light and extremely strong wall panels that click together simply and easily.

Prefabricated construction could also provide significant opportunities for value-adding to timber products. Timber can be used not only in the construction of laminated ply panels, but increasingly in framing even for multi-storey buildings. Discussion with industry sources suggests there is currently insufficient sustainably harvested plantation timber in Gippsland to fully supply the needs of a prefabricated housing industry. However industry planning could work towards this goal in the medium to longer term, particularly through the development of plantations on marginal agricultural land.

⁷⁷ http://greenhomecalculator.com.au/index.php?option=com_ghcalc&home=new&topid=1&subid=2#

⁷⁸ 'The impact of new techniques and technologies on the residential housing sector of the construction industry.' Government of Western Australia, 2015

⁷⁹ Dr Tuan Ngo, University of Melbourne, personal communication, May 2016

Enablers of success

Policy settings to unlock private investment

Government can provide incentive for new business by developing a policy environment, which encourages private investment. For example, in 2004 the UK Housing Corporation set a target for at least 25 percent of new social housing it funds to be built using ‘modern methods of construction’, which gave a significant boost to the prefabricated housing industry.⁸⁰

The Victorian government released its *Construction Technologies Sector Strategy* in March 2016, articulating a vision for Victoria to capitalise on new opportunities in digital and off-site construction technologies. Among other initiatives, the strategy commits to leveraging government procurement processes by identifying off-site construction opportunities in health, education, housing, transport and other major developments.⁸¹

The Victorian government could set a target for a certain percentage of new public housing stock to be prefabricated and to meet high efficiency standards (at least 7 to 8 Star). The Western Australian government has recently pledged to produce 20,000 new affordable housing options, using low-cost modular construction techniques.⁸²

The prefabricated industry peak body PrefabAUS has also identified a number of national policy and regulatory issues that must be addressed to support industry growth, such as reform of the National Construction Code.⁸³ Australia’s home financing system, which currently relies on the gradual release of funds as milestones are reached, also needs reform. As prefabricated construction typically needs funding upfront, this system can cause significant cash-flow issues, particularly for small businesses.⁸⁴

Government investment in new public housing

The Victorian government could play a pivotal role in kick-starting this new industry by investing in new public housing stock – thus providing a baseline predictable level of demand, which would encourage private investment. With many of Victoria’s most disadvantaged citizens living in social housing, and with climate change likely to exacerbate the adverse impacts of poor quality housing, the government has a duty of care to ensure this long-lived stock is built to high efficiency standards.

A national alliance of housing and homelessness peak bodies is calling on the federal government to establish an Affordable Housing Growth Fund starting with \$750 million in the first year, growing to \$15 billion over 15 years.⁸⁵ Further, the Victorian Council of Social Service and other Victorian housing and homelessness peak bodies are calling on the Victorian government to invest \$200

⁸⁰ ‘Off-site construction of apartment buildings: A case study,’ Boyd, Khalfan and Maqsoom (2012), *Journal of Architectural Engineering*. March 14, 2012

⁸¹ *Construction Technologies Sector Strategy*, Government of Victoria, Department of Economic Development, Jobs, Transport and Resources, 2016

⁸² *Affordable Housing Strategy 2010-2020*, Government of Western Australia 2010,

⁸³ ‘Not just daggy dongas: time to embrace prefabricated buildings,’ <https://theconversation.com/not-just-daggy-dongas-time-to-embrace-prefabricated-buildings-43120>

⁸⁴ *ibid.*

⁸⁵ Australians for Affordable Housing, <http://housingstressed.org.au/get-the-facts/>

million per year for 20 years in additional new social housing for the State.⁸⁶ A range of options exist for using government investment to leverage additional funds to finance affordable housing, such as public–private partnerships, social impact bonds, or housing finance aggregator models, which enable social housing providers to access lower cost debt.⁸⁷

Additional affordable housing stock for the Gippsland region could either be co-located in a single development, such as the ‘eco-village’ concept described above, or dispersed throughout the community according to need. Linking this investment to a requirement for installation of solar water-heating appliances, could expand business opportunities for local manufacturers such as Eureka’s Future (see case study five).

Furthermore, Victorian government support for the establishment of a manufacturing and innovation zone as part of the State Energy Transition Centre concept (see case study three), could assist in encouraging prefabricated construction businesses to establish or re-locate to the Valley.

Research, training and industry partnerships

Under its \$46.5 million *Automotive Transition Plan* the Victorian government is working with industry and research partners to explore options and pathways for automotive industry workers and infrastructure to transition to prefabricated housing construction.⁸⁸ For example, Hickory Group has established a modular factory in Melbourne which employs more than 150 people, many of whom are ex-auto industry workers.⁸⁹

The *ARC Training Centre for Advanced Manufacture in Prefabricated Housing* is leading this transition work with the automotive industry, and is interested in exploring opportunities for establishing a similar collaborative research and industry development program in the Latrobe Valley.⁹⁰

There may also be opportunities for partnerships with regional education and training institutions, such as the new Federation Training facility in Morwell, which has identified manufacturing as one of its five goals.

⁸⁶ ‘Tackle the Housing Crisis,’ Victorian Council of Social Services, <http://vcoss.org.au/state-budget-submission-2015-16-tackle-the-housing-crisis/>

⁸⁷ ‘New model for financing affordable housing,’ SVA, <http://www.socialventures.com.au/sva-quarterly/new-model-financing-affordable-housing/>

⁸⁸ *Transition from Automotive Industry to Manufacturing of Prefabricated Modular Affordable Housing*, Submission to ‘Future of Australia’s automotive industry’ Inquiry, University of Melbourne, PrefabAUS, 2015

⁸⁹ ‘Building a housing industry from the relics of a car industry,’ Jemma Green, Peter Newman, <https://theconversation.com/building-a-housing-industry-from-the-relics-of-a-car-industry-23195>

⁹⁰ Dr Tuan Duc Ngo, University of Melbourne, personal communication., May 2016

CASE STUDY 5:

SOLAR WATER HEATING MANUFACTURE

The opportunity

Solar water-heating manufacturing presents another opportunity for economic diversification in the Latrobe Valley – particularly in the context of Earthworker’s strategy to establish a manufacturing operation in Morwell.⁹¹

Water heating is the third largest user of energy in Victorian homes (after space heating and whitegoods), representing 16 percent (or around \$450) of the average home’s annual energy bill of \$2800.⁹² Water heating is also the second largest source of household greenhouse emissions, accounting for 24 percent of total emissions from the average Australian household.⁹³

Solar water-heating systems – either a solar hot-water system or a heat pump – can save households money on their energy bills and reduce emissions by using direct sunlight or warmth from the air to heat water.

Approximately 47,000 solar water-heating systems (stand-alone solar hot water or heat pumps) were installed in Australian homes during 2015, taking the total installed across the country to more than 958,000. While the total number of systems is continuing to rise (Figure 4), annual installations have been declining since the high point of 2009 (Figure 5).⁹⁴

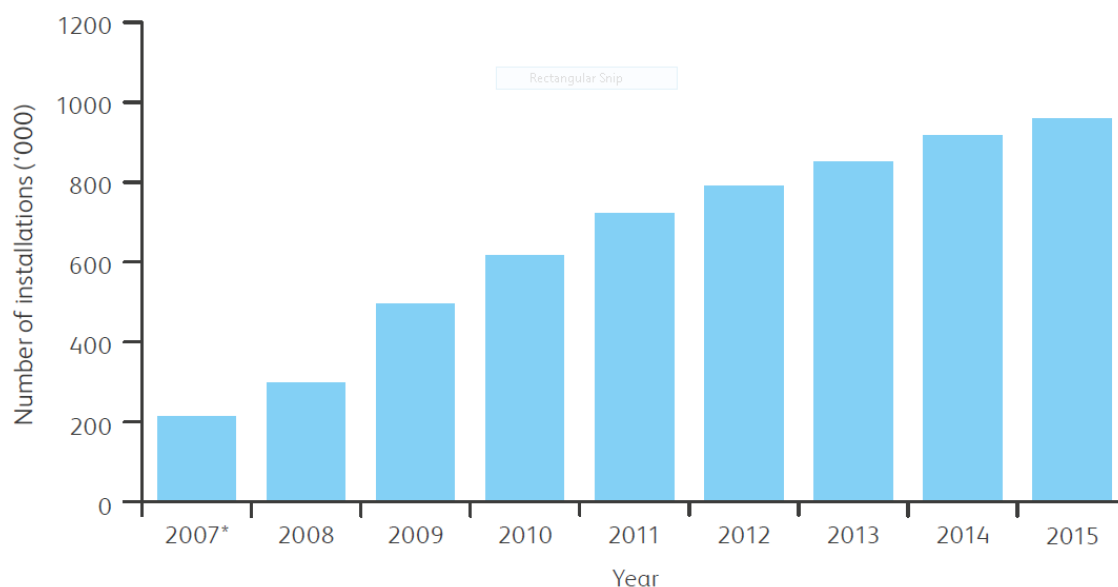


Figure 4. Cumulative installations of solar water heaters, Australia.

⁹¹ Eureka’s Future Workers’ Cooperative Business Plan, Eureka’s Future, October 2014

⁹² Household Energy Report, Sustainability Victoria, 2014

⁹³ 4602.2 - Household Water, Energy Use and Conservation, Australian Bureau of Statistics, Victoria, Oct 2011, <http://www.abs.gov.au/ausstats/abs@.nsf/Products/9C96AA9AEEA1E416CA25774A0013BE79>

⁹⁴ Clean Energy Council, <https://www.cleanenergycouncil.org.au/technologies/solar-water-heating.html>

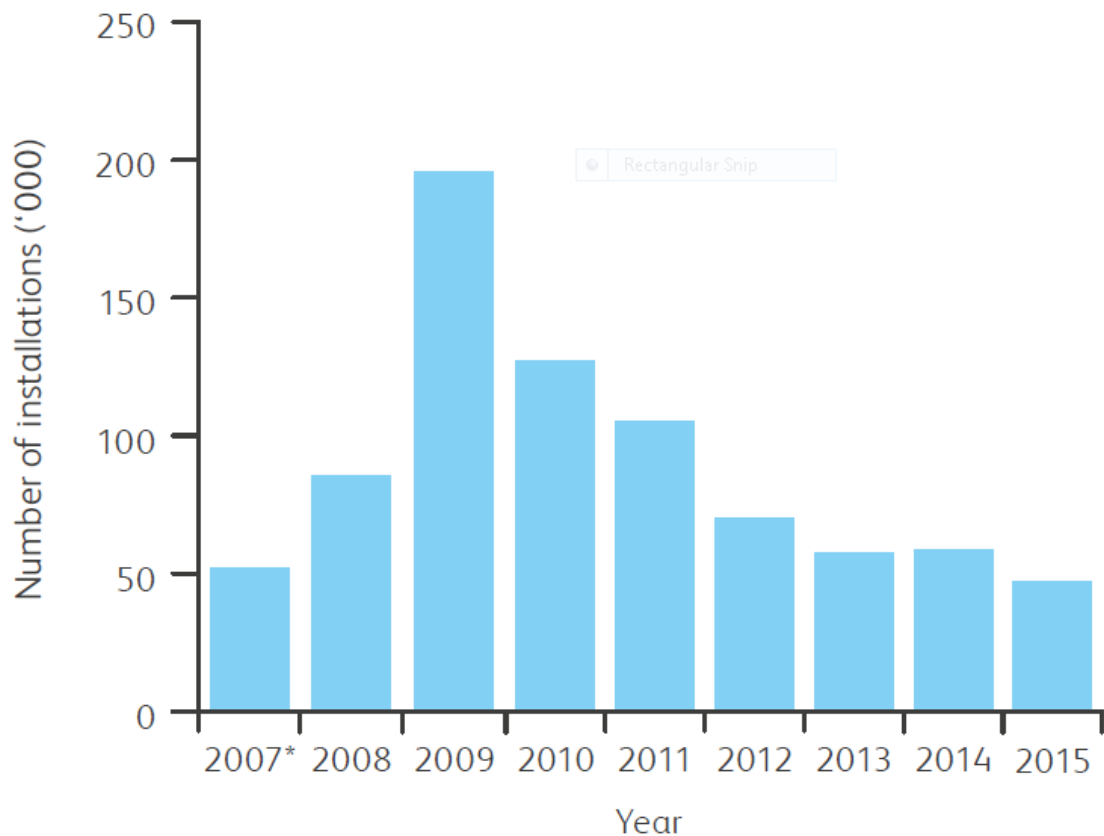


Figure 5. Annual installations of solar water heaters, Australia.

Almost a million new hot-water systems are installed in new homes and to replace existing systems each year.⁹⁵ With only around 12 percent of Australian homes currently using a solar water-heating system, there is substantial room for market growth – and for reducing household bills and greenhouse emissions. Solar water-heating units are manufactured in Australia, although Australian manufacturers are facing stiff competition from systems imported from Europe and China.⁹⁶

The challenge – and opportunity – is not only to increase solar’s share of the total water-heating market, but also to increase the share of solar water-heating systems manufactured in Australia.

Earthworker solar water-heating manufacturing

Earthworker Cooperative is a community-led initiative that aims to provide sustainable jobs in the manufacture of renewable energy technologies and products. In the current economic environment – where Australian manufacturing businesses face a tough choice between cutting costs by undermining wages and conditions or re-locating overseas – worker-owned, not-for-profit cooperatives such as Earthworker represent a potentially more viable business model.

⁹⁵ From 200,000 new homes per year https://hia.com.au/~media/HIA%20Website/Files/IndustryBusiness/Economic/fact%20sheet/3494_HIA2015_IndustryFactSheet_161115.ashx; plus 750,000 existing homes (9 million existing homes / 12 year lifespan)

⁹⁶ *Clean Energy Report*, Clean Energy Council, 2015

Earthworker's objective is to facilitate the growth of the social sector economy by establishing a network of community-owned cooperatives across Australia. The first cooperative to be established is Eureka's Future, which is working towards establishing a solar hot-water system manufacturing operation in Morwell. The Eureka's Future cooperative has grown out of partnerships with a number of Australian companies, such as Everlast Hydro System. Following Everlast's liquidation in January 2016, Earthworker secured all plant, equipment and intellectual property and is working to get a new operation up and running in Morwell.

The first product planned for manufacture in Morwell is the Eureka's Future Solar Ready water tank. Eureka's Future plans to distribute the locally made Solar Ready tank as part of complete solar hot-water systems using heat pump and evacuated tube technology, and also bundle these systems with solar PV panels and battery storage technology.

There is an opportunity to capitalise on the synergies between the Eureka's Future Morwell operation and other energy-based industries and initiatives being developed by the Latrobe Valley community and highlighted in this report. By establishing a presence in the Valley, Eureka's Future would contribute to the growth of the region's manufacturing and industry base – as envisaged in the State Energy Transition Centre concept (case study three). At the same time, expanding the stock of affordable housing (case study four) and rolling out a comprehensive efficiency retrofit program for residential building stock (case study one), could help to create the stable demand needed for a successful business.⁹⁷



Eureka's Future factory.

⁹⁷ Eureka's Future Workers' Cooperative Business Plan, Eureka's Future, October 2014

Enablers of success

Market incentives and assistance for low-income households

As with the rest of the renewable energy sector, the solar water-heating industry is highly influenced by government policy settings such as the Renewable Energy Target (RET), building regulations and financial incentives – such as rebates and subsidies. Uncertainty and the subsequent scaling back of the RET at a federal level has contributed to declining sales in recent years, while Victoria’s 6 Star standard for new homes (which mandates either a solar hot-water system or a rainwater tank) has helped to maintain demand for stand-alone SHW systems to a certain extent in this state.

A number of policy changes that would either remove existing barriers to uptake, or create greater incentive, should be considered:

- Amendment of Victoria’s regulations for new buildings to require the installation of solar water-heating (heat pump or stand-alone solar hot water) and a rainwater tank (rather than a choice of one or the other as in the current 6 Star standard);
- Amending the Victorian Energy Efficiency Target (VEET) scheme to encourage uptake of solar water-heating systems, irrespective of whether mains gas is available in the area; and
- Ensuring Earthworker products are included in VEET and hence eligible for subsidy.

The upfront costs of solar heating systems can also be a barrier to uptake by low-income households. Initiatives that would assist in overcoming these barriers include:

- A subsidy, which would act as a booster subsidy to the VEET scheme;
- Access to a no-interest loan to pay the balance;
- Information about solar water heating options; and
- Payment of full upgrade costs for severely financially disadvantaged households.⁹⁸

Social housing sector installations

There are more than 80,000 social housing dwellings in Victoria, approximately 65,000 of which are government-owned public housing. As discussed in case study one, there is an urgent need to upgrade the energy efficiency of these homes so as to shield tenants – already among Victoria’s most disadvantaged – from the financial and health impacts of poor quality housing, and to ensure they continue to provide safe and affordable shelter into the future.⁹⁹

A state government commitment to upgrading Victoria’s entire public housing stock within 10 years, would translate into 5000 to 7000 homes receiving an efficiency upgrade per year. A complementary commitment to installing solar water-heating systems as part of these upgrades would help to expand demand and market opportunities for manufacturers such as Earthworker. Government can also play a key role in driving the upgrade of Victoria’s 15,000 community housing dwellings (including the installation of solar water-heating systems), by supporting housing associations to access information, advice and finance to implement efficiency upgrades.

⁹⁸ Alternative Technology Association and Brotherhood of St Laurence, personal communication, June 2016

⁹⁹ *Roadmap to 2025*, One Million Homes Alliance, 2015, <http://environmentvictoria.org.au/2025-efficient-homes-roadmap>

Working capital for Morwell operation

Earthworker is seeking Victorian government assistance in the form of ‘social procurement’ – whereby the government invests in Eureka’s Future solar products for use in public and community housing – and a low-interest loan to provide working capital to begin manufacture of solar hot-water systems in the Latrobe Valley.

06

NEXT STEPS

Environment Victoria does not seek to present this report as a definitive ‘blueprint’ for how to implement a successful and just transition within the Latrobe Valley. The case studies within this report are examples of economic diversification opportunities, which may have potential, but will require further discussion and development by the community – in partnership with government and industry – in order to progress.

However through the work Environment Victoria has been doing with local community groups over the past decade– as well as lessons gleaned from elsewhere – it’s clear that we now know enough to identify some key building blocks of a successful process.

In that vein, this report concludes by making a series of recommendations about how the process of developing and implementing a just transition for the Latrobe Valley could progress from here.

1. MEANINGFUL, RESPECTFUL, INCLUSIVE CONSULTATION

The electricity sector privatisation process of the 1990s failed to include any meaningful consultation with affected workers or the wider regional community, which left the Latrobe Valley community feeling marginalised and disempowered. This has created a legacy of mistrust, fear and resistance to further change that will need to be overcome if the Valley is to move forward with hope for the future.

Regional bodies such as the Latrobe City Council, the Committee for Gippsland and others, have variously conducted surveys of small business, held community forums or other processes for gauging public opinion. These processes have provided a valuable start and what is needed going forward is a deeper, more engaged process that goes beyond seeking public feedback.

The community deserves a more inclusive economic development process than in the past. One that includes groups who have traditionally been sidelined: such as women, Indigenous people, socio-economically disadvantaged groups and young people. The process must challenge business-as-usual ideas about economic development, taking into account future trends such as the economic

and social impacts of climate change. What comes next must build first on the knowledge, skills and resources of the region before we look to outside industry.

Those who participate in inclusive, democratic decision-making processes gain greater skills and feel a sense of ownership of the long-term outcomes. Such processes empower people to lead the process as active economic agents shaping their own future, rather than passive recipients of government-sponsored programs.

The Victorian government has begun to support this process through the \$40 million budget allocation outlined above. However, both state and federal governments must continue to resource and support such best-practice community transitions processes for the Latrobe Valley.

1. LONG-TERM THINKING AND CAPACITY-BUILDING

To fully capitalise on the processes described above – and to build the skills required for successful change – the community must learn, and draw inspiration, from those who have faced similar challenges. Thought should be given to developing and funding a regional capacity-building program that ensures community members learn and progress together, while maintaining broad-based ownership of the process. This could involve representatives of other communities in transition undertaking speaking tours to the region as well as study tours that give Latrobe Valley community leaders the opportunity to experience other situations first hand.

Such capacity building should be pitched to the long term: developing the skills and expertise of future generations of Latrobe Valley leaders and community, as well as providing encouragement for young people to stay in – or return to – the Latrobe Valley region and contribute to its future. Possible measures include establishing overseas-study scholarships for Latrobe Valley students, as well as exchange programs and sister-school relationships with other communities facing similar challenges. These programs would not only offer tangible benefits in terms of individual learning, but also help build community morale by reinforcing the idea that the Latrobe Valley is not ‘going it alone’.

2. ESTABLISH A ‘COAL CLOSURE TRANSITION FUND’

Accelerating the development of new industries like those mentioned above, or expanding existing non-coal based industries will require ongoing funding support from both the state and federal governments. Establishing a Latrobe Valley coal closure transitions fund (similar to New York State’s Fossil Fuel Plant closure fund) and contributing to it in future state and federal government budgets will allow long term planning and support for new economic activity in the region. It could also fund local capacity-building efforts – providing the Latrobe Valley with the necessary skills, support and expertise to ensure that the community plays a lead role in driving the transition.

The Victorian government’s \$40 million commitment in the last state budget could be the first deposit into this fund. The federal government also needs to contribute to the Latrobe Valley’s transition, and should be developing a coherent plan for phasing out coal generators and facilitating just transitions nationally. The \$45 million recently withdrawn by the state and federal governments

from failed coal projects in the Latrobe Valley should also be added to the transition fund and retained in the region.

3. MAKING ROOM FOR NEW INDUSTRIES

The coal industry has been the mainstay of the Latrobe Valley and wider Gippsland economy for decades and continues to make a significant contribution across the region. But that dominance can be a double-edged sword in terms of the overall resilience and strength of the economy, and its capacity to attract and grow new business opportunities.

Research suggests that a diversity of small businesses and suppliers determines the likelihood of new industry emerging in – or being attracted to – an area. A large, integrated industry – such as the steelworks in Pittsburgh USA, which sources much of its inputs and services internally – can depress local supply-chain business, discourage innovation and offer few opportunities for new entrants. In contrast, cities such as New York – which developed on the back of the more decentralised garment industry where no single company dominated – have created much more diverse economies conducive to the development and attraction of new business.¹⁰⁰ This was also true of Rochester (the home of Kodak), which had to make a deliberate effort to create the kind of entrepreneurial culture that had failed to flourish when it was a one-company town (see chapter three, ‘Learning from other communities in transition’).

On the basis of this evidence, it may well be that continuing to focus on coal could actively undermine efforts to encourage the growth of new business opportunities. Acting decisively to announce phased closure of the power stations could, therefore, be a necessary precursor to a successful economic diversification.

4. WHOLE OF GOVERNMENT APPROACH

In presenting potential new economic opportunities for the region, this report has sought to highlight the synergies and connections between the various ideas and the ways in which key policy initiatives could have multiple and related benefits. For example, the government committing to invest in additional public housing would not only help address Victoria’s homelessness and housing supply problems. It would also create stable demand for prefabricated housing construction businesses, solar water-heating manufacturers, and associated trades and services. Investment in a household energy-efficiency-retrofit pilot program for Gippsland could help address growing energy hardship, while supporting local trades and services jobs and creating demand for locally manufactured products – such as solar water-heating appliances. And creating a ‘special economic zone’ – as envisaged by the State Energy Transition Centre (see case study three) – could encourage new businesses to establish in the region.

However fully realising the multiple social, economic and environmental benefits of these initiatives will require a whole-of-government approach that harnesses a range of processes and funding. Those directly relevant to the case studies in this report include the Victorian government’s forthcoming *Energy Efficiency and Productivity Strategy*, the *Future Industries and Infrastructure*

¹⁰⁰ ‘Local industrial conditions and entrepreneurship: How much of the spatial distribution can we explain?’, Glaeser, E. and W. Kerr (2009) *Journal of Economics and Management Strategy*, Vol. 18, No. 3, Fall 2009, pp. 623-663

Fund, the New Energy Jobs Fund, Victorian Construction Technologies Sector Strategy, public-housing services, homelessness services, housing affordability and energy hardship initiatives.

Furthermore, experience elsewhere has shown that a vibrant and welcoming community culture, high-quality education services, as well as beautiful natural and recreational assets, can create an environment that attracts and retains the skilled workers that a diverse economy needs. Consequently, arts and creative industries, tourism and education initiatives should also be drawn upon. A number of initiatives already underway – among them the Latrobe Creative Precinct¹⁰¹ and the ‘Transiting Cities: ReActivate Latrobe Valley’ project – aim to reconnect the community with creative individuals and small industries living and working in the Latrobe Valley.¹⁰² This work explores collaborative solutions with local stakeholders and specialists to build resilience for the area in the short and long term.

The second Hazelwood Mine Fire Inquiry recommended establishing a special ‘Health Improvement Zone’: trialling new ways to deliver health services; improving integration of disparate government services and funding, and improving, community engagement in the healthcare system.

Perhaps a similar concept could be applied to establish the State Energy Transition Centre proposed ‘Special Economic Zone’, whereby a range of sources of funding and policy initiatives could be harnessed to create an integrated, whole-of-government transition program. This could be driven by an over-arching transition authority, such as the recently proposed Latrobe Valley Transition Committee.¹⁰³ Such a body would need to meet all the requirements outlined above – such as inclusiveness, capacity building and a focus on long-term sustainability.

¹⁰¹‘Latrobe Valley at regional heart of our creative state,’ Premier of Victoria, <http://www.premier.vic.gov.au/latrobe-valley-at-the-regional-heart-of-our-creative-state/>

¹⁰² ‘Transitioning Cities,’ ReActivate Latrobe Valley, <http://transitingcities.com/reactivate-urban-action/>

¹⁰³‘Push to revive Latrobe Valley committee’, Stephanie Charalambous, *Latrobe Valley Express*, 23 August 2016, <http://www.latrobevalleyexpress.com.au/story/3916995/push-to-revive-latrobe-valley-committee/>

CONCLUSION: EMBRACING THE FUTURE

How we respond to climate change in the next decade will be critical – not just for the Latrobe Valley, but for the entire Australian and global community. It will either be a time of chaotic change as the global economy crashes headlong into the realities of climate change and vulnerable communities are left to fend for themselves, or it will be an exciting and inspirational time where we grasp the opportunities of the future with both hands and make sure the benefits of a sustainable economy are shared fairly.

The tools we could use to effectively combat climate change hold enormous potential. Creating community-owned, renewable power grids, upgrading the efficiency of our homes and businesses, and developing new sustainable building technologies – to name just a few – will also help address the social equity and health problems that are disproportionately experienced by communities like the Latrobe Valley.

While the global community faces these challenges and opportunities, communities such as the Latrobe Valley are at the ‘pointy end’ of change, and risk being left behind by externally imposed decisions. The Victorian and wider Australian community has a responsibility to ensure the Latrobe Valley is not left once again to face those challenges alone. Environment Victoria looks forward to continuing to support the Latrobe Valley community to find and implement a just solution to the climate crisis to which we have all contributed.



Locals leading Earthworker's Walk With The Valley in 2016.

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