

Renewable Energy Action Plan





RENEWABLE ENERGY ACTION PLAN

Renewable / Affordable / Reliable

Together, we are generating investment and supporting thousands of new jobs in renewable energy right across Victoria.

Our plan for a modern energy future will provide renewable, affordable and reliable energy for all Victorians.

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In August 2015, the Victorian Government released our Renewable Energy Roadmap. We sought a wide range of feedback on the Roadmap through an extensive consultation process, with public forums held across our state.

The response we received was overwhelming, including more than 60 public submissions from organisations (industry, environment and climate groups, and local government) and over 1,200 from members of the public.

This level of interest in the Roadmap showed us that Victorians are ready and willing to engage on initiatives that encourage and facilitate renewable energy generation in our state. This feedback has helped shape this Renewable Energy Action Plan and we thank all those who have contributed so far to this important piece of work.

Advancing Victoria's renewable energy sector



The energy sector is rapidly transforming. Our Renewable Energy Action Plan reflects the significant transition already underway in Victoria.

The *Independent Review in the Future Security of the National Energy Market* by Dr Finkel has focused attention on the ability of energy markets to meet the needs of households, businesses and communities. At the same time, there has been significant investment in new energy technologies across the country.

This plan outlines the decisive action that the Andrews Labor Government is taking to encourage investment in our energy sector and to ensure Victorians continue to benefit from a renewable, affordable and reliable energy system into the future.

Affordability, reliability and emissions-intensity have become core concerns for households and businesses. Thankfully, solutions to transition our system are available now, helping to achieve a modern, renewable energy system to support our economy and way of life.

We recognise the challenges and risks associated with a rapid transition. We know industry, businesses and households are feeling the pressure of prices and supply uncertainty. We also know that workers may be feeling pressured as our economy transitions. It's why we are working with small, medium and large Victorian businesses to capitalise on this transition and create new pipelines of employment.

The Renewable Energy Action Plan is a \$146 million comprehensive and integrated strategy developed over many months, incorporating significant stakeholder engagement. Our vision and fully funded actions recognise global, national and local developments.

The Renewable Energy Action Plan, along with the Energy Efficiency and Productivity Strategy, sets out what the Government has already achieved as well as the steps we are taking to help meet our energy goals.

The cornerstones of Victoria's Renewable Energy Action Plan are ensuring that:

- our supply remains affordable as more consumers and communities gain greater control over the energy they use, generate and store;
- our modern energy system remains safe and secure, so Victorians can continue to enjoy current high levels of energy reliability; and
- the new energy technologies sector creates jobs, attracts investment and grows the economy for the benefit of all Victorians.

Our transition to a modern and renewable energy future is already well underway. Renewable energy is already the cheapest and cleanest new source of energy supply. Increasing our electricity generation capacity will help to reduce power prices. This is one important reason why we have set Victorian renewable energy targets of 25 per cent by 2020 and 40 per cent by 2025. We are continuing to carefully support the transition from emissions-intensive, centralised sources to cleaner and more distributed sources of electricity. Victoria can benefit economically, socially and environmentally from this transformation.

Together, we can put Victoria at the forefront of this transition, and ensure our energy future is a bright one.

The Hon. Lily D'Ambrosio MP
Minister for Energy, Environment and Climate Change
Minister for Suburban Development

A renewable, affordable and reliable energy system

The Andrews Labor Government has already set Victoria on the path to a renewable, affordable and reliable energy system by setting ambitious and achievable targets for renewable energy generation, investing in energy storage, and supporting new and emerging technologies. The Renewable Energy Action Plan, along with the Energy Efficiency and Productivity Strategy, builds on our work to date across the sector.

Through the Renewable Energy Action Plan we will:

- empower and engage households, businesses and communities, supporting community energy projects; and ensuring affordable energy supply;
- ensure our energy system is smart, safe and reliable by advancing energy storage, smart grids and microgrids, creating value through data and other energy innovations; and
- create jobs, attract investment and grow our economy through boosting the new energy technologies sector.

Supporting sector growth

Creating new jobs, investment and energy sector growth



To deliver the Renewable Energy Action Plan, we are investing **\$146 million**



Empowering communities and consumers

Empowering and engaging households, businesses, and communities



Modernising our energy system

Strengthening our affordable, reliable and resilient energy system

This is coupled with our significant investment in energy efficiency and productivity measures

The Renewable Energy Action Plan sets our long-term renewable energy policy agenda and pathway. It connects a suite of initiatives that are driving investment and action in renewable energy.

The Andrews Labor Government is taking decisive action to ensure our affordable, reliable, renewable energy future

Victoria's Renewable Energy Target

We will increase renewable energy generation to 25 per cent by 2020 and 40 per cent by 2025 to deliver a sustained pipeline of investment. This will include 20 per cent for large-scale solar power, to develop strong industry capability and lead the nation.

Investing in energy storage

We will support commercial investments that aim to provide Victoria with at least 40 MW of battery storage and over 100 MWh of capacity by summer 2018, to help security and reliability of supply and encourage downward pressure on energy bills.

The New Energy Technologies Sector Strategy

We will ensure Victoria is ready for sector transformation and well-placed to capture the economic and environmental benefits, including creating new jobs and building skills and capabilities. This strategy is part of the Government's Future Industries Initiative and is supported by the \$20 million New Energy Jobs Fund (NEJF).

A suite of other Victorian Government and national policies will also help shape our energy system

Energy Efficiency and Productivity Strategy

The forthcoming Energy Efficiency and Productivity Strategy documented separately and backed by \$53 million, will drive Victoria's transition to an energy efficient economy. The actions it contains will cut emissions by more than 34 megatonnes by 2030, save participating businesses and households \$6.7 billion, and support over 2,500 jobs per year.

Independent Review into the Future Security of the National Electricity Market

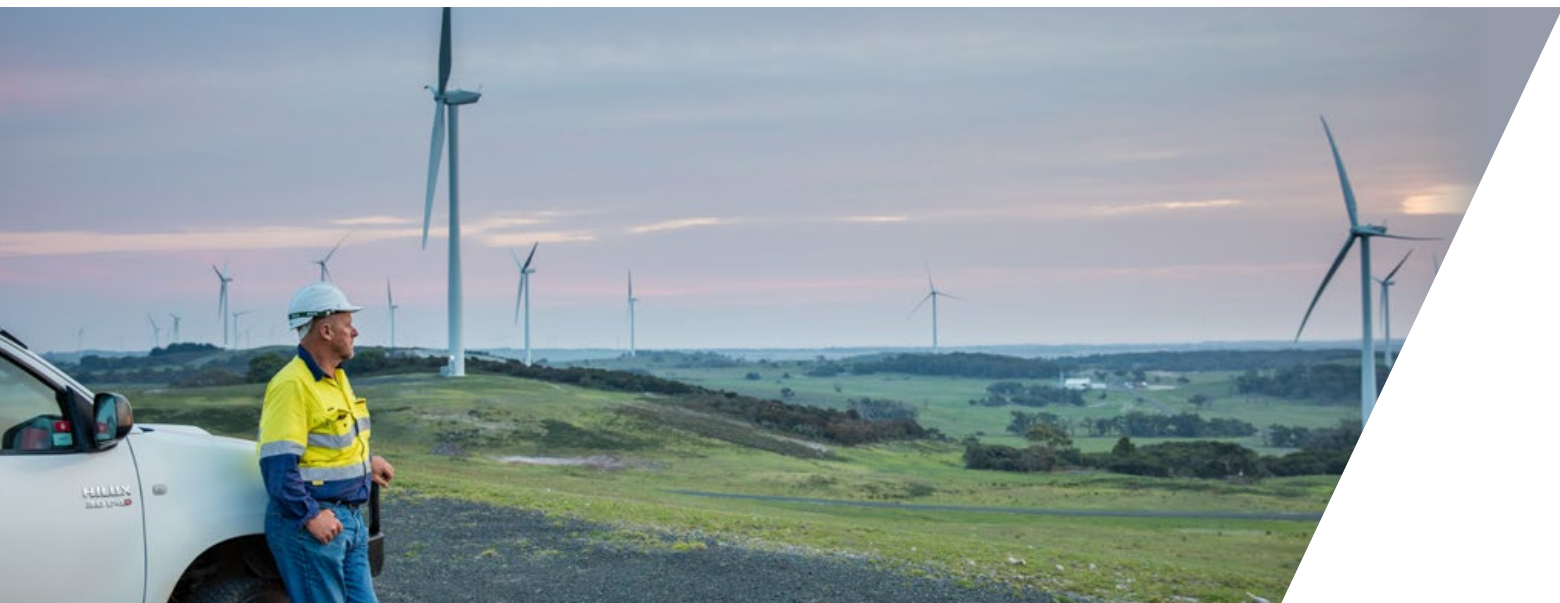
Chaired by Dr Alan Finkel AO, the independent review has assessed the current security and reliability of the NEM, and provides advice to governments on a coordinated, national reform blueprint.

Victoria's electricity and gas retail markets review

An independent bipartisan review to examine whether the operation of Victoria's electricity and gas retail markets are operating in the best interest of the consumer.

Moving to a clean energy supply

Victoria's Climate Change Act 2017 establishes a target for Victoria to have net zero greenhouse gas emissions by 2050. Victoria's Climate Change Framework makes it clear that moving to a clean energy supply by increasing renewable energy generation is a key pillar of the state's approach to emissions reduction.



Middle image Bald Hills wind farm. Bottom Image courtesy Mitsui & Co. (Australia) Ltd



Our renewable energy sector

Advancing Victoria's renewable energy sector

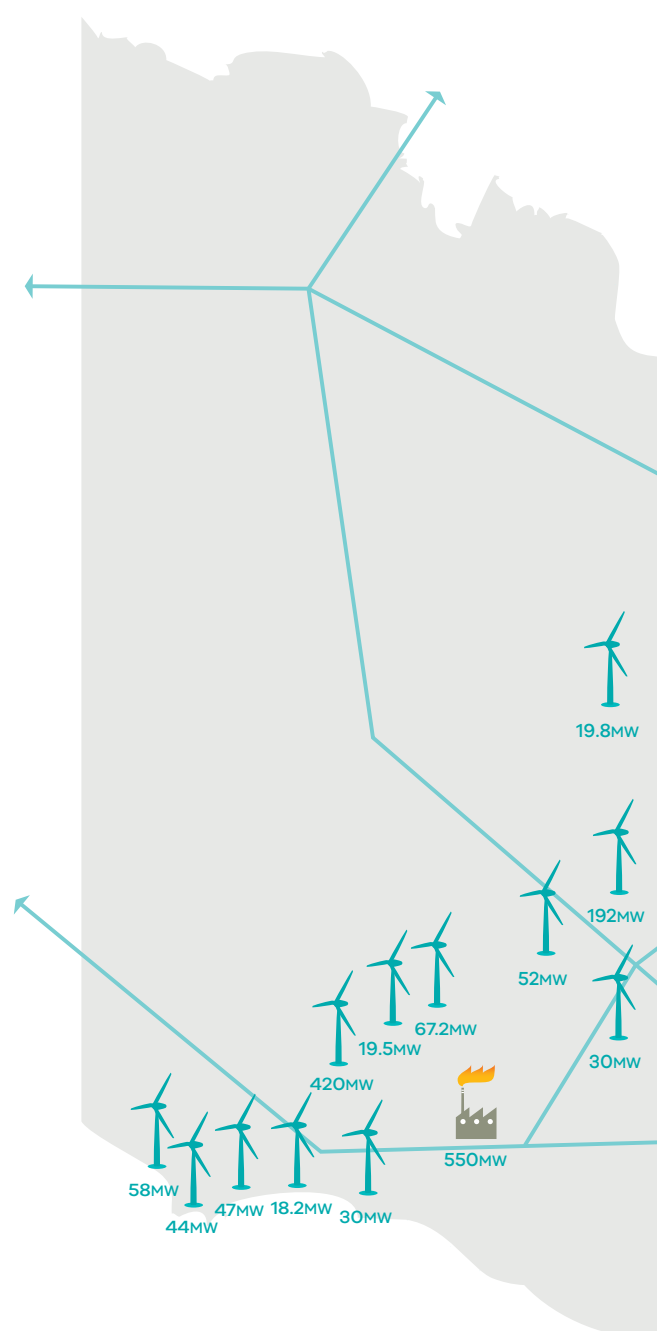
Energy systems around the world are transforming, driven by rapid development of technologies, changing consumer behaviour, and global demands for cleaner energy. New sources and methods of supply, such as self-generation, are emerging at the same time as demand patterns are changing.

Proven technologies are already available to support modernisation of our energy system. These include energy storage, renewable energy generation, demand management and smart grids. By acting now, we give ourselves the best opportunity to capitalise on the transformation and transition smoothly, reducing the risk of higher late adoption costs. Victoria has been blessed with rich resources such as wind and solar.

Victoria is in a strong position to advance our system, given our extensive renewable resources, pivotal positioning within the National Electricity Market (NEM), investment in smart technologies, and strong skills and workforce capabilities.

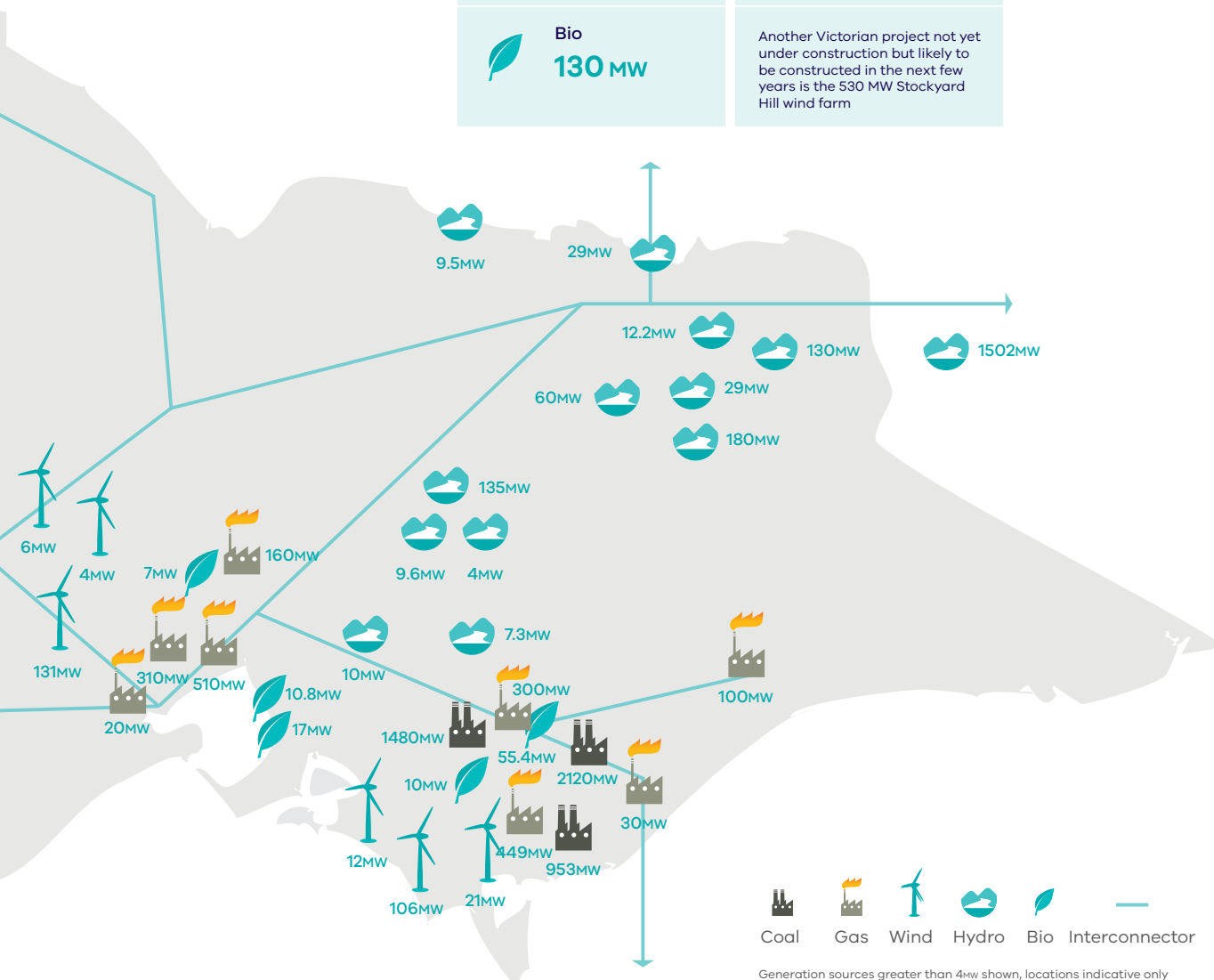
Renewable energy is now the cheapest new power generation source.¹ The Andrews Labor Government is increasing the amount of renewable energy generation to deliver a more resilient system, capitalising on our abundant natural resources and our skilled workforce.

FIGURE 1
Victoria's current generation profile



1 Bloomberg New Energy Finance, 1H 2017 APAC LCOE Update - Australia

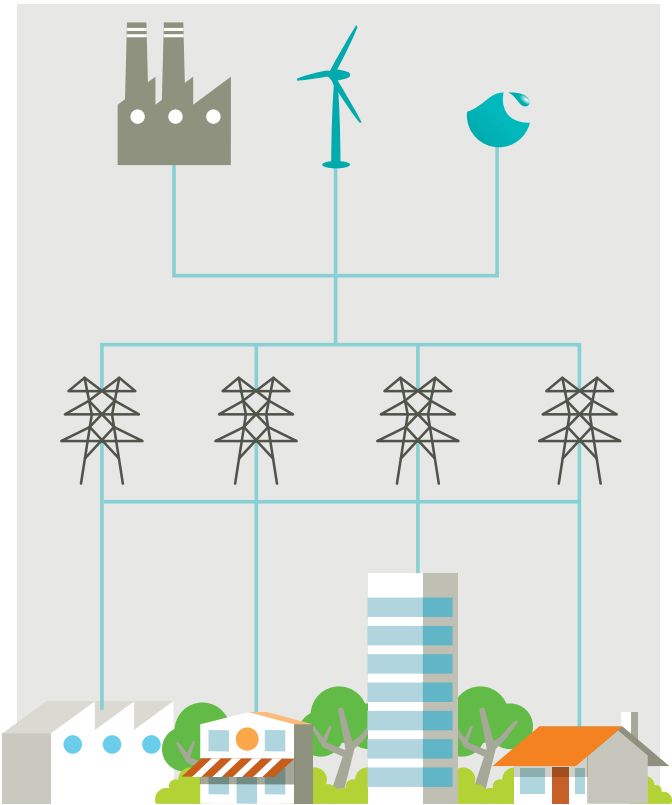
CURRENT RENEWABLE GENERATION CAPACITY	FORTHCOMING PROJECTS END 2018	FUTURE PROJECTS
 Wind 1,489 MW	 Wind 192 MW	 Wind 2,082 MW
 Solar 1,001 MW Including rooftop solar PV	 Solar 125 MW Large-scale	 Solar Our future solar projects will include a commitment for 20% of VRET auctions dedicated to solar
 Hydro 2,296 MW	 Battery storage 40 MW	
 Bio 130 MW	Another Victorian project not yet under construction but likely to be constructed in the next few years is the 530 MW Stockyard Hill wind farm	



Victoria's energy transformation

FIGURE 2
Victoria's energy transformation

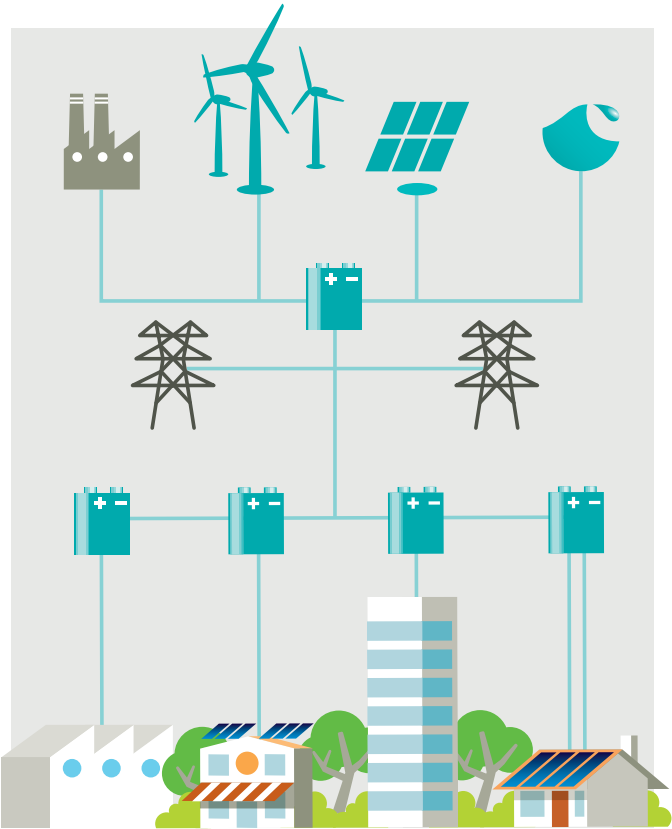
Current



Centralised fossil fuel production

Centrally-located transmission and distribution

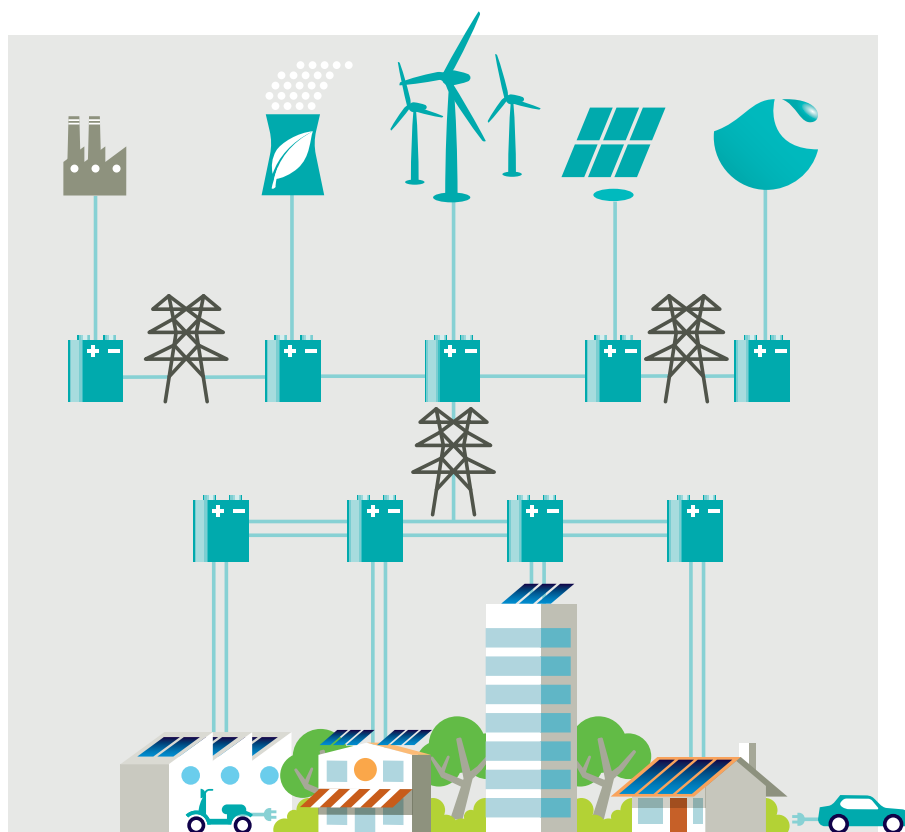
Transition



Large-scale sustainable production



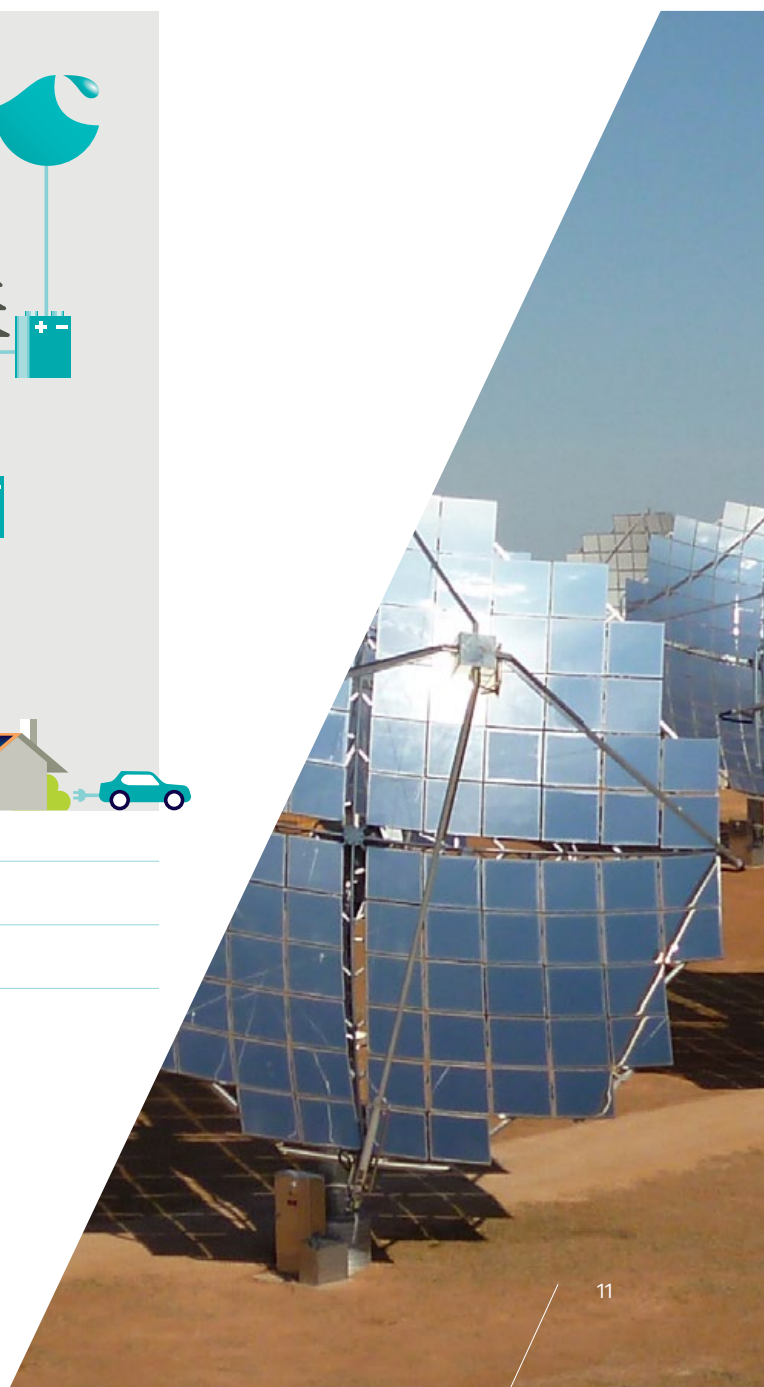
Future



Clean and reliable energy generation

Flexible and decentralised energy grids

Consumer and community-driven energy services



Maximising opportunities

We are already beginning to see opportunities to introduce more renewable energy in Victoria, with new technologies enabling a more integrated system at lower cost.

We will work with key stakeholders to support local communities and workers to ensure a smooth transition to a more renewable energy system and in the process we will maximise opportunities through:

- ensuring a reliable and resilient electricity supply;
- building skills and capabilities to grow the sector;
- investing in growing the renewable energy sector and economy; and
- helping communities and businesses invest in new energy solutions and opportunities.

Part of this work will also include supporting impacted industries and people as our system changes.

Investing in growing the renewable energy sector and economy

Renewable energy and new energy technology is one of the world's fastest growing sectors. This is why the Andrews Labor Government has identified it as a priority sector for our economy.

In 2016, we released our New Energy Technologies Sector Strategy, outlining our approach to modernising Victoria's energy sector. It foreshadows our priorities and the actions required to ensure Victoria captures the economic and environmental benefits of a transforming sector.

Victoria has vast renewable energy resources that we can harness. Victoria's wind generation currently has the strongest growth potential, particularly in regional Victoria in the Central Highlands, Gippsland and Barwon South-West regions. There are also opportunities for significant offshore wind exploration. At the same time, urbanised areas are likely to see continued growth in rooftop solar photovoltaic (PV), with significant potential in the commercial and industrial sectors. In the north-west of our state, solar PV is beginning to be rolled out at utility-scale. Planned grid augmentation will help unlock our abundant natural resources well into the future.

FIGURE 3

Victoria's average yearly wind speed

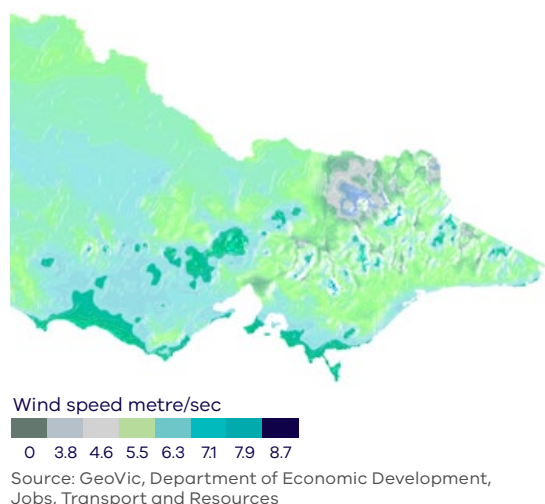
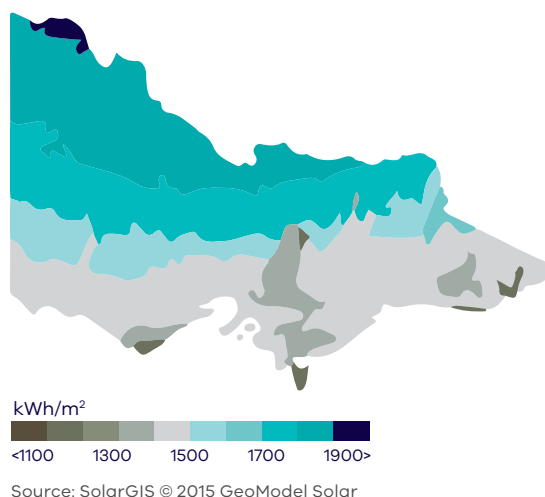


FIGURE 4

Victoria's solar radiation data



Helping communities discover new energy opportunities and manage the transition

Communities play an important role in increasing renewable energy generation by establishing grassroots projects that adopt new energy technologies.

Across Victoria, communities are already progressing projects ranging from powering primary schools with solar power to transitioning entire towns to 100 per cent renewable energy.

We must also support our communities in transition. The Andrews Labor Government has established the Latrobe Valley Authority to bring together local people, councils, industry and governments to secure the economic future of the Latrobe Valley.

It is important that economic support goes hand in hand with investments in the infrastructure to these community needs. Therefore, our package of support also includes a \$174 million Community Infrastructure and Investment Fund to support the infrastructure, education and health priorities of the community.

We will support Victorian communities to realise their innovative renewable energy projects, incorporating new energy technologies and business models, through programs like the Community Power Hub trials and the *Guide to Community-owned Renewable Energy for Victorians*.

Ensuring a reliable and resilient electricity supply

In Victoria, increasing our renewable energy mix and modernising our electricity system is not just about building wind and solar farms. We must also make our electricity networks affordable and reliable. Our energy market needs to be fit for purpose, supporting new ways of generating, distributing, sharing and using energy. Maintaining the ongoing reliability of supply, that we have enjoyed for many years is critical.

As microgrids, peer-to-peer trading and other innovations continue to emerge, enabled by smart technology infrastructure, it will be important to work with industry, businesses and the broader community to maximise the benefits of the growing energy sector.

We are introducing supply management tools to optimise the output of renewable energy generation and protect supply reliability. These tools include utility, residential and commercial energy storage technologies.

Building skills and capabilities to grow the sector

Victoria has a highly skilled workforce underpinned by a world class education system.

We will meet the skill requirements of the growing renewable and new energy technologies sector by providing new opportunities for workers within other Victoria's industries, particularly the manufacturing sector. We will support industries to transition. As part of this work, we'll support industries to transition and help impacted workers find new opportunities.

Victoria has an opportunity to grow and develop its presence as a centre of excellence in renewable energy and other new energy technologies. We can build on our expertise in advanced manufacturing, including high-end specialised components, and research and development. We can also utilise our vast renewable resources and established energy infrastructure.

Building collaborative relationships between research and educational institutions, and international and local businesses, is critical to capitalising on our capabilities within the renewable energy sector.



Photo credit top image Selandra Community Place



Making it happen

Victoria's approach

The Renewable Energy Action Plan sets out how Victoria will ensure a renewable, affordable and reliable energy supply, which uses large-scale renewable energy technology and ensures grid stability. During this time, we will support Victoria's pathway from a carbon-intensive to net zero emissions energy sector by 2050.

Victoria's Renewable Energy Action Plan provides a considered way forward. The plan describes our comprehensive set of actions designed to drive the transformation necessary to support long-term growth, and complement or enhance existing network stability and security of supply.

The Renewable Energy Action Plan relies on effective collaboration and engagement across all stakeholder groups, as we work together to transform how we generate, use and store energy in Victoria.

Energy security is a key feature of this plan, and weighting will be provided to projects and new technologies that add to overall system security. The Andrews Labor Government is engaged with many Australian-based and leading international businesses who want to invest and locate in Victoria. We must learn from past experiences to ensure we make the most of current opportunities.

Our approach will focus on:



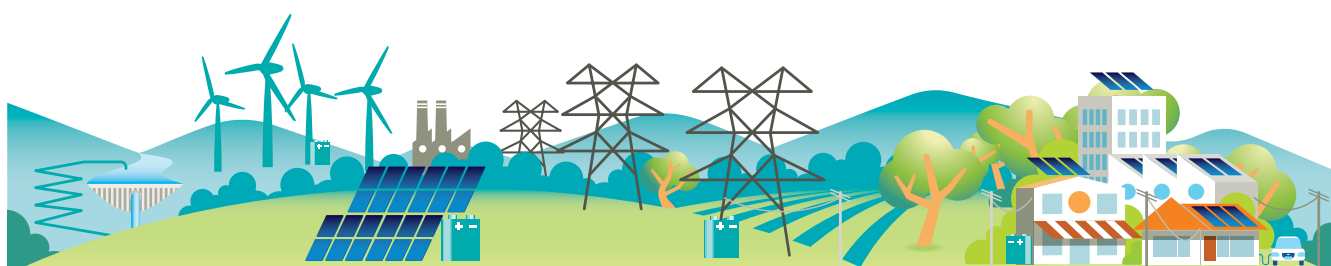
Creating new jobs, investment
and energy sector growth



Empowering and engaging
households, businesses,
and communities



Strengthening our affordable,
reliable and resilient
energy system



Creating new jobs, investment and energy sector growth



We will create new jobs, investment and energy sector growth by:

Positioning Victoria as a leader in renewable energy and accelerating large-scale renewable energy generation

Ensuring Victoria's smooth transition

Encouraging sector growth and investment

Our approach to transitioning the energy system will create jobs, build skills and knowledge for local application, international export of services, and attract capital and investment to our state.

Victoria's long-term electricity generation profile is transforming and a significant increase in renewable energy generation, from household systems to utility-scale sources like wind and solar farms is anticipated. Today, large-scale renewable energy is already the cheapest source of low-emissions generation.

The transition will gather momentum as renewable energy generation becomes more cost-effective and efficient at residential, commercial and utility-scales.

We will actively attract jobs and investment to Victoria by encouraging new energy technology businesses to establish operations in Victoria. This process has already begun with new energy software companies and large-scale energy developers setting up headquarters and offices in Victoria. We recognise the benefits of working with businesses to innovate, secure investment, build new markets and ensure a strong, coordinated supply chain.

"As the world moves towards renewable energy, governments that move first will be in the box seat to maximise their share of jobs and investment in a low carbon economy. Victoria's leadership is helping to nurture new industries in the state and return stability to renewable energy investment."

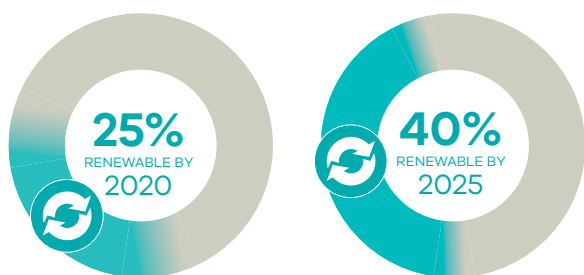
Kane Thornton, CEO, Clean Energy Council

"We look forward to working alongside the Victorian Government and the private sector to help transform clean energy investment, address financing barriers and assist in attaining the objectives of Victoria's Renewable Energy Action Plan."

Ian Learmonth, CEO, Clean Energy Finance Corporation

FIGURE 5

Delivering the Victorian Renewable Energy Target supported by competitive reverse auctions



Action 1

Setting and delivering on ambitious and achievable renewable energy targets

We contribute to meeting our renewable energy generation targets of 25 per cent by 2020 and 40 per cent by 2025 through running a competitive process for new renewable energy generation projects.

The VRET scheme will complement the Commonwealth RET scheme until 2020. The design and flexibility of our scheme will deliver the best projects at least cost.

We will also support updated technical connection standards through national processes.

Action 2

Purchase renewable energy certificates

Under our Renewable Certificates Purchasing Initiative we will use government's purchasing power as a large electricity user to purchase renewable energy certificates. The Andrews Labor Government is providing \$48.1 million to underpin the implementation of the renewable certificate purchasing initiative.

We will purchase renewable energy certificates from two new Victorian windfarms with a total generation capacity of around 100 MW.

We are undertaking a second round of renewable certificate purchasing, which will bring forward up to 75 MW of large-scale solar, of which 35 MW will be used to power all of Melbourne's 410 trams.

CASE STUDY

Victorian Government supporting two new wind farms and new large-scale solar farms

We are bringing forward investment in renewable projects through our Renewable Certificates Purchasing Initiative announced in August 2016. Our two new windfarms have a total generation capacity of around 100 MW, which is estimated to be able to supply enough renewable energy to power more than 80,000 Victorian homes. The windfarms are expected to be operational by 2018, and will be located at Kiata near Horsham and Mount Gellibrand near Colac. We will also bring forward up to 75 MW of large-scale solar through the second round of our renewable energy certificate purchasing.

We have established a renewable energy generation target of 25 per cent by 2020, rising to 40 per cent by 2025 – a significant increase from the 2016 levels of 16 per cent



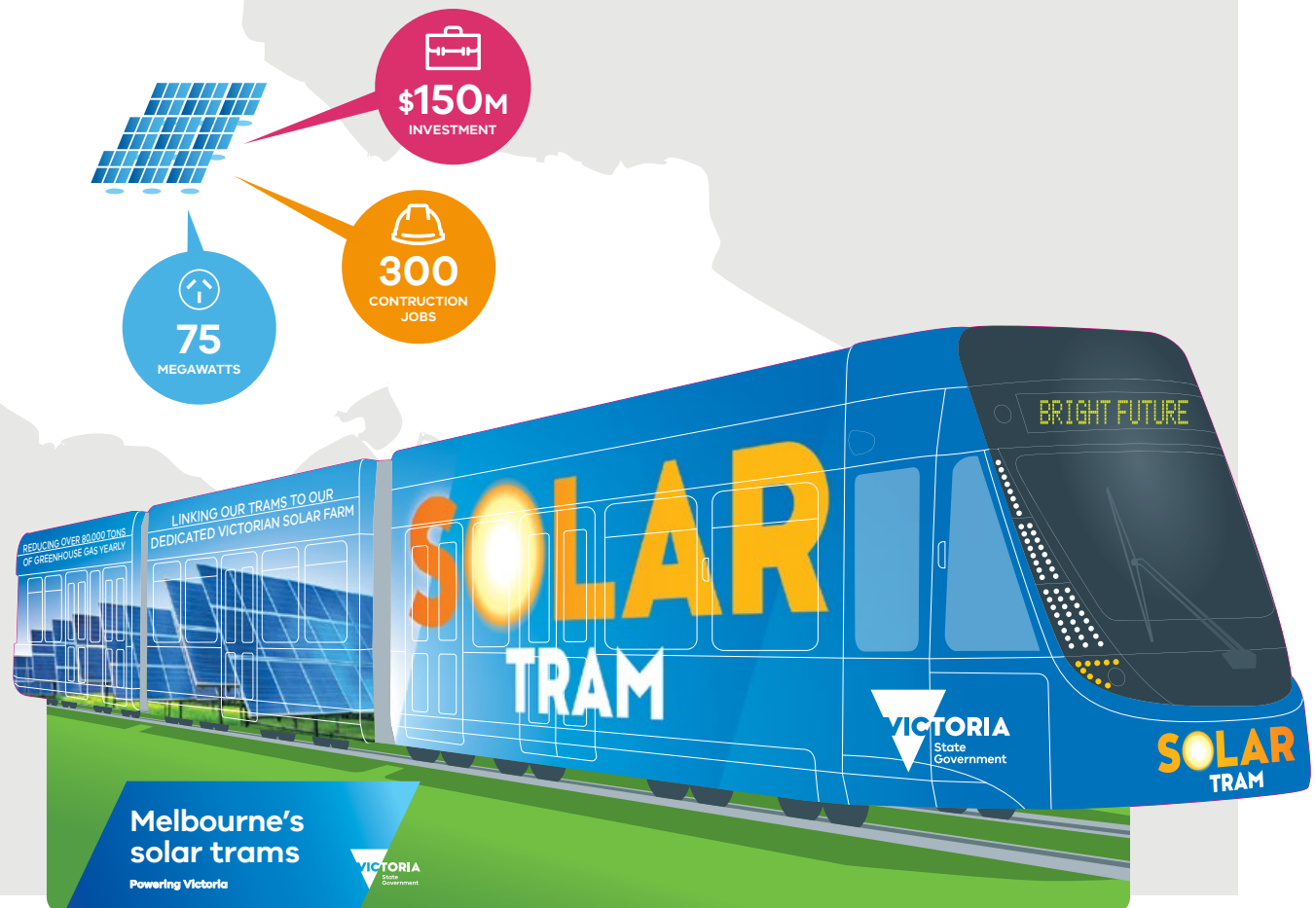


POLICY IN ACTION

Investing in large-scale solar energy to power Victoria's trams

We will back the public transport upgrade by entering into a renewable certificate agreement with Victorian solar farms, creating a reliable revenue source for the solar projects to be developed.

These projects also support achieving our state's renewable energy target through the second round of renewable certificate purchasing in 2017. The projects will provide equivalent electricity load to power Yarra Trams' 400-strong tram fleet, and create up to 300 jobs and \$150 million of investment.



Action 3

Energising our transport sector

As we move towards a clean energy future, Victoria's transport sector will experience changes. New transport technologies will help reduce emissions and our reliance on oil-based fuels, and improve our energy security.

Victoria's current public transport upgrade plan will deliver the largest program of work to create a world class transportation system with accessibility, reliability, safety and sustainability at its heart. We will support the public transport upgrade plan by linking the entire tram network's energy usage to large-scale solar farms.

This project will also contribute to our emissions reductions goal under the TAKE2 program.

Action 4

Government leading the way

We will help new government buildings and major projects adopt technology, including solar panels and battery storage.

We will work with the Clean Energy Finance Council (CEFC) to help deliver projects that reduce emissions by leveraging emerging and innovative new technology.

We are also establishing mechanisms to support investment. Victoria is the first government in Australia to issue Green Bonds, raising \$300 million to finance a range of new and existing projects that deliver environmental benefits. More than \$60 million of this has financed energy efficiency and renewable energy projects.



Action 5

Establishing bodies to support the transformation

We have established the Victorian Renewable Energy Advocate to help industry and communities navigate regulatory requirements and effectively use the range of new and existing support services and subsidies available. The Advocate will promote Victoria as a place to invest in renewable energy, and will provide advice to government to inform key changes to improve renewable energy development in Victoria.

We will also work to provide targeted support platforms for industry during the energy transition, including small and medium enterprises (SMEs).

Action 6

Streamlining renewable energy project processes and approvals

We continue to look for ways to create a stable policy, regulatory and planning environment to encourage investment security for Victoria. We have established a 'one stop shop' for wind farm planning permit matters to ensure relevant government agencies can respond promptly to issues for individual applications. We are also undertaking a review of the model planning permit conditions in the wind farm guidelines. Further, we will implement an end-to-end analysis of the planning process for wind farm applications. These actions will result in faster and simpler approvals processes for wind farm projects.

We are also introducing changes so new wind farm applications will need to have noise assessments and noise management plans reviewed and verified by environmental auditors appointed under the EPA's statutory environmental audit system. This reform will give the community and industry greater assurance that wind energy facilities will be designed and constructed to achieve compliance with the relevant noise standards.

Action 7

Supporting investment in the new energy technologies sector

We will initiate and leverage programs such as New Energy Jobs Fund, which provides \$20 million in funding for new energy technology projects, to develop and access the most efficient and low-cost new energy technologies in the world.

We are delivering the 15 goals identified in the New Energy Technologies Sector Strategy to support Victoria's communities, manufacturers and service providers to capture their share of the market growth in new energy technologies. The sector strategy will continue to focus on:

- Investing in clean energy generation technology
- Strengthening sector skills, collaboration and innovation
- Encouraging development of new consumer driven markets
- Building statewide capabilities

We will produce periodic reports on our progress towards achieving the sector strategy goals.

Empowering and engaging households, businesses, and communities



We will support and empower communities and businesses, and keep energy affordable by:

Helping households and businesses make renewable energy decisions that will save energy and money

Making it easier for communities to manage their energy and invest in renewable energy

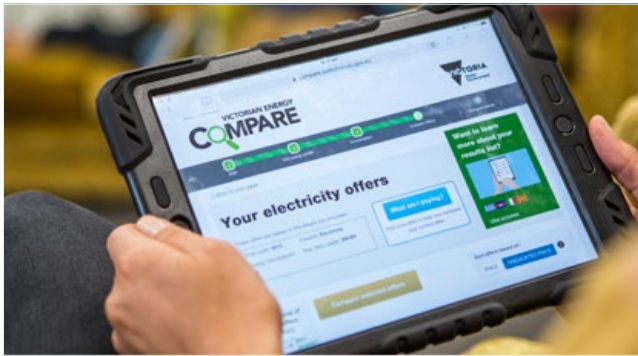
Reducing costs by making the energy system more efficient

New tools mean consumers use and generate energy more effectively than ever before, giving them more opportunity to control their energy costs.

As new ways to manage energy emerge, households, businesses and communities will become less reliant on traditional centralised electricity networks. Localised grids and microgrids will see communities and businesses take control of their energy needs, reducing their reliance on the electricity network and strengthening grid resilience.

“By using new products and services to improve energy productivity, residential consumers can reduce their ongoing costs, and businesses can become more competitive and reduce exposure to future price rises. Energy productivity can also reduce the shared costs of managing energy security and emissions.”

Communities and businesses are already investing in smarter energy systems, distributed generation and energy storage. These actions assist the network and give consumers more control over their energy use costs, and how and when they export excess energy back into the grid.



Victorian Energy Compare

Over 260,000 Victorians have used Victorian Energy Compare since its launch. Nine out of 10 users report being able to save money on their energy bills, with typical savings of \$330 per year on electricity and \$330 per year on gas. All it takes is three easy steps:

- 1 Visit **victorianenergysaver.vic.gov.au**
- 2 Answer questions about your energy usage
- 3 Find the best offers and save money on your energy bills

"It showed I could save about \$400 to \$500 off my annual bill, so a pretty easy decision to make. Any small business owner should use this tool because there is a good chance you're going to save some money. It's a real no brainer."

Small osteopathic clinic in the city

Action 8

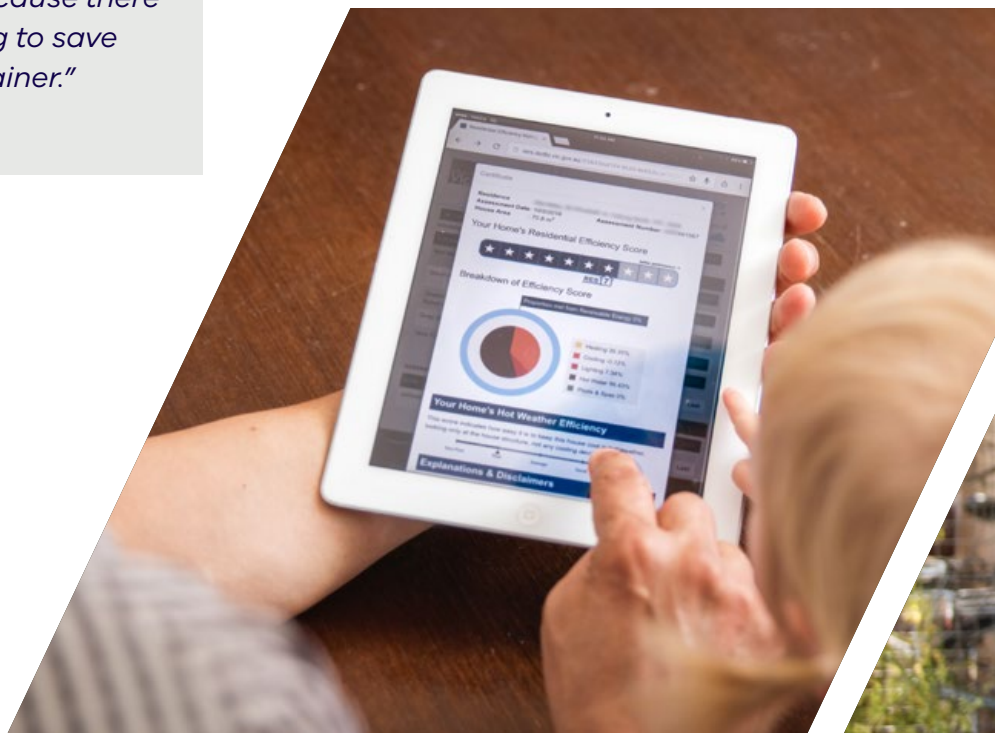
Empowering households to take control of their energy use

Victorian residential consumers and businesses can now choose from up to 25 electricity retailers and 10 gas retailers competing for business in the market. Consumers need to know where to find, understand, and choose between available energy plans to find one that best suits their needs.

We have created Victorian Energy Compare, an independent price comparison website to help Victorians reduce their annual electricity and gas bills. Victorian Energy Compare is the first of its kind in Australia, and one of the first in the world to use smart meter data as a basis for comparing retail tariffs. It enables residential and business consumers to compare electricity, gas and solar tariff offers from retailers.

We have committed \$7.82 million to update the website and improve awareness of the services. This will include complex and innovative tariffs that entered the market on 1 January 2017, such as cost reflective pricing or demand tariffs.

Our upgrades will ensure that the Victorian Energy Compare website continues to be a world leader in online energy comparison.



Action 9

Ensuring a fair approach for all consumers

We have legislated to ensure households and businesses with onsite renewable energy generation are paid a fair price for the electricity they export to the grid. We have also introduced a fairer feed-in tariff scheme. From 1 July 2017, eligible customers will receive a minimum feed-in tariff rate of 11.3 cents per kilowatt hour (kWh) for selling excess electricity back into the grid, an increase on the current minimum rate of 5 cents per kWh.

We have passed legislation which requires all Victorian retailers to offer rooftop solar PV and other renewable energy customers the same rates, terms and conditions as they offer their non-renewable energy customers.

We have updated the energy licence exemption arrangements to allow Victorians to access solar power directly from solar businesses through power purchasing agreements.

We also commissioned an inquiry by the Essential Services Commission to examine the network values associated with local generation, and to consider how these values can best be recognised and rewarded through feed-in tariffs or other mechanisms.

Action 10

Supporting local energy projects across Victoria

We will establish three pilot Community Power Hubs in regional areas, with a view to expanding this program across Victoria.

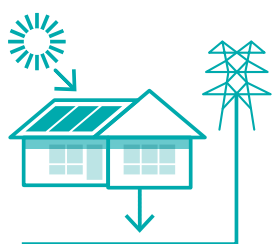
The three hubs in the Latrobe Valley, Ballarat and Bendigo will enable community groups to access renewable energy expertise and services for project planning, business case development, legal, project and financing advice, and to help them navigate the planning and regulatory system.

We have provided grants to more than 40 Life Saving Victoria clubs, which has seen the installation solar panels on site.

We have also released the *Guide to Community-Owned Renewable Energy for Victorians*, which provides valuable information for communities interested in developing community-owned renewable energy projects.

FIGURE 6

Minimum feed-in tariff set by Essential Services Commission



To 30 JUNE 2017

5cents /kWh minimum

From 1 JULY 2017

11.3cents /kWh minimum



We have supported delivery of a new feed-in tariff framework for selling excess electricity back into the grid, including payment for the environmental and social value of the energy provided.





CASE STUDY

Saving lives and generating renewable energy

Electricity represents a significant cost to lifesaving clubs whose sole objective is protecting lives at Victoria's beaches. In January 2016, the Government announced the Community Renewables Solar Grants initiative to help ease this cost burden.

Under this initiative, Victorian lifesaving clubs applied for grants to install solar PV systems at their club. The savings on their energy bills allow these clubs to allocate more funds to their vital day-to-day services. More than 40 Life Saving Victoria clubs are currently benefiting from the use of solar renewable energy as a result of the grants from the initiative.

Action 11

Improving processes for community renewable energy projects

Victorians are telling us that they want action to support community renewable energy projects. That is why we initiated the Parliamentary Inquiry into community energy projects. We look forward to their recommendations.

In the meantime, we have introduced exemptions from energy licensing solar power purchasing projects, to decrease the regulatory burden for such projects and encourage their development in Victoria.

We are also conducting a review of the General Exemption Order in the interests of energy consumers. The review explores matters such as customer choice, pricing, enforcement and dispute resolution, as well as clarity of the exemptions framework. The review also explores introducing exemptions from energy licensing for community-owned renewable energy projects.

POLICY IN ACTION

Supporting local energy projects by creating pilot Community Power Hubs

Each pilot Community Power Hub will comprise a roundtable of organisations that will develop community energy projects. Community energy groups will bring project ideas to their Hub and receive assistance to develop them into feasible projects that are ready for capital raising.

To support communities, we will help develop business cases or feasibility studies, and offer technical, legal and project coordination support needed to progress community energy projects, while also contributing to building local capacity and skills.

The pilots will showcase renewable energy innovations and provide greater energy security for the Latrobe Valley, Ballarat and Bendigo.



Action 12

Creating smart, solar energy schools

We will assist Victorian schools to install solar systems. This assistance will be tailored to the schools need and may include rooftop solar PV installations at primary and secondary schools across regional Victoria. Energy efficiency measures may also include opportunities for lighting upgrades to schools as an effective measure to reduce energy consumption. Curriculum resources will be developed to support student education on energy consumption.

Action 13

Supporting important artistic and cultural sustainability events

We will sponsor and host an internationally renowned sustainable design event with Land Art Generator Initiative.

We will present an annual Minister's Award for Community Renewable Energy Innovation to the community or local government project that shows the best demonstration of a new energy technology or business model incorporating renewable energy and energy storage.

We will consolidate key energy project information into a single digital resource that provides readily accessible and up-to-date information on renewable energy projects across the state. We will establish new, consolidated learning resources aimed at promoting these renewable energy projects and ecotourism in Victoria.

We have sponsored a competition, Energy Hack 2016 and 2017, which generates ideas to promote renewable energy projects and ecotourism in Victoria.

Action 14

Encouraging more efficient investment in our energy system

Victoria has ample generation capacity to meet demand for electricity, especially as Victorians keep improving energy efficiency and generating more power from rooftop solar PV.

However, supply can be tighter at times of peak demand, when we have weather extremes. Peak demand also drives up wholesale electricity prices, as more expensive forms of fast response generation such as gas may be needed to manage demand spikes.

We can use demand management tools as an alternative to increasing supply by investing in more generation or greater transmission network capacity.

We will advocate strongly in national regulatory reform processes to ensure electricity network businesses pursue demand management options ahead of more costly network augmentations, extensions and replacement.

We will also pursue national reforms that enable other energy businesses, such as local generators and frequency control service providers, to provide demand management services that support system reliability and manage wholesale market volatility.

We will leverage the immense data capability generated by Victoria's statewide smart meters to promote new and innovative demand management products and services. This will support efficient use of the electricity network and help consumers better understand their energy use.

Below Selandra Community House



Action 15

Stimulating and attracting new demand management services with community benefits

Demand management tools and services open new and more efficient ways to ensure consumers have secure access to electricity during extreme weather. Demand management tools can also create long-term savings for all consumers.

We will co-sponsor a \$1 million innovative collaborative trial to revolutionise future energy market trading. The dEX is a digital platform that will allow electricity distribution businesses, distributed generators and third parties to engage in open trading of various energy products and services to overcome grid constraints and support the integration of renewable energy sources into the network. This platform will be initially piloted in the Mornington Peninsula, to help technology services to assist customers to better manage summer peak demand and reduce constraints on the network.

Action 16

Delivering a more flexible approach to grid connections

We are creating a modern and fair regulatory framework that will streamline negotiations with network service providers and investors, ensuring competitive and timely grid connections.

The grid connection process is a crucial and complex stage of any generation project. Renewable energy and innovative distributed generation projects are often large enough to have grid connection impacts and small enough that grid connection costs can impact the economic viability of a project.

We are now improving the process. We have passed legislation to adopt national arrangements for small-scale distributed generator connections to improve process transparency and timeliness.

We are assessing the need for a review to determine reasonable network connection requirements for distributed generation in Victoria. The Government will work with distribution businesses and the commercial scale solar industry to adopt consistent requirements.

Demand management options

Consumers can opt to take up direct load control services so they can operate individual appliances, such as pool pumps and air-conditioners, during non-peak periods, and use smart technologies to automatically manage their energy demand. Major industrial consumers can apply voluntary load reductions during heatwaves, for financial return.

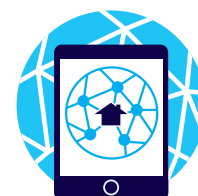
POLICY IN ACTION

Promoting smarter and more flexible electricity use

In 2017, we will explore policy options to:

- support network transformation in Victoria by facilitating a market for grid services and removing regulatory barriers to efficient network investment;
- enable greater demand side participation in the broader energy market through policy leadership and regulatory reform; and
- facilitate more efficient electricity use by consumers by enabling new demand management services and rewards.

Strengthening our affordable, reliable and resilient energy system



We will deliver a smart, reliable and modern energy system to supply Victoria by:

Ensuring Victoria's renewable energy system provides reliable supply

Supporting our smart and innovative energy system

Making sure we have capabilities to transition to the next generation of energy technologies

A smart energy system delivers reliable, cost-effective supply, giving all consumers greater choice and control over how they source, buy, sell and use energy. It integrates and supports new technologies for generation, storage and control of energy, as well as peak demand reduction and increasing interconnection.

We will enhance the diversity of our electricity generation mix to increase resilience and maintain energy security and reliability. We are bringing forward the integration of energy storage, which will align with our renewable energy targets. Building additional renewable energy storage capacity will increase energy availability.

"Securing the supply doesn't mean locking in the status quo – on the contrary, it means being able to navigate change."

Dr Alan Finkel, Australia's Chief Scientist, Chair of COAG Energy Council NEM review panel

In addition to providing leadership, policy and regulatory stability and innovation opportunities, the Government will take steps to address and remove barriers that affect renewable energy deployment. We will shape an approach that balances the need for effective and stable regulation with reduced red tape and improved network performance.

Action 17

Supporting energy storage that integrates with renewable generation

Storage solutions, particularly batteries, are already successfully used to modernise and strengthen energy systems around the world.

The Andrews Labor Government is setting Victoria on the path to leadership in energy storage. Energy storage systems, from household batteries to grid scale facilities, improve grid reliability and lower prices by allowing low-cost power to be stored for times of high-cost and high-demand.

Batteries, pumped hydro and other technologies can provide instantaneous energy during critical peak times, as well as helping to integrate renewable energy generation. When combined with renewable energy, storage will help maintain our reliable and affordable energy supply, especially in times of peak demand.

We have made an overall commitment to energy storage up to \$25 million, with 40 MW minimum battery storage deployed by January 2018, providing capacity of at least 100 MWh.

We will achieve this by delivering a minimum of two 20 MW batteries in western Victoria, to support battery storage becoming mainstream.

This will deliver utility-scale battery storage projects that optimise new or existing large-scale wind or solar farms, in line with an energy storage framework.

We will also provide \$100,000 towards a \$150,000 pre-feasibility study of solar pumped hydro using groundwater in Bendigo.

We will engage with the sector, regulators and market institutions to develop a plan to implement new market rules to support energy storage and new technologies. We will invite other jurisdictions to work with us to resolve regulatory issues regarding the integration of energy storage into the National Electricity Market rules at a national level.

Action 18

Advocate to deliver secure, reliable and fairly priced gas for renewable energy generation

We will continue to use gas as a fuel to support renewable energy generation.

The current upward pressure on gas prices and forecast constraints on gas supplies is the result of the commencement of exports of gas from interstate. To ensure gas is available to support renewable energy generation, we require a sufficient supply at a fair price.

We will continue to work through the COAG Energy Council and with market institutions to improve transparency and competition in the Victorian and east Australian gas markets.

Action 19

Establishing the Centre for New Energy Technologies (C4NET)

Collaborative relationships between research and academic institutions, and local and international businesses, are critical to attracting and building skills, capacity and jobs. As new energy technologies play a greater role in transforming the energy sector, we need research, analysis and capability to support industry growth and understand trends.

C4NET will establish an innovative platform bringing together industry, universities, communities and government to build the policies, technologies, workforce capabilities, and tools needed to understand the changes underway in the sector. Through opening access to data, and linking university capabilities with industry and community needs, we will help Victoria capitalise on the opportunities arising from our modern energy future.

Our improved and centralised expertise will ensure Victoria meets our zero-net emissions target by 2050, and has a renewable, affordable and reliable energy system.

POLICY IN ACTION

Establishing C4NET \$5.36 million

C4NET will help build the skills and capabilities required for a modern workforce, and enable the development of tools to support a resilient and reliable electricity grid. It will support collaboration between industry and universities, as well as provide the framework for educating the next generation of industry professionals.

C4NET will:

- create partnerships with Victorian universities and industry;
- help build new energy technologies skills and capabilities; and
- support better ways to unlock the benefits of energy data.

Opening up access to de-identified energy data through C4NET will provide industry, research institutions and government the ability to develop new energy tools, improve system efficiency and undertake critical analysis.



Setting Victoria's energy storage direction

The Andrews Labor Government will bring forward the integration of energy storage to help protect and enhance the security, resilience and reliability of the electricity grid, and ensure a modern energy system. We have practical actions to support this.

1 Next generation energy storage deployed now to strengthen Victoria's electricity system

We will build one of Australia's largest battery storage facilities. Our storage initiative will support development of at least two 20 MW of utility-scale battery storage by summer 2018, providing storage capacity of at least 100 MWh. This is a first step towards getting ahead of summer peak load demands expected early next year and supporting more widespread adoption of energy storage.

We will encourage applicants to seek funding from the Australian Renewable Energy Agency (ARENA) in parallel to the Victorian initiative, to drive even further investment in new energy technology and energy system reliability in Victoria.

Additional energy storage may be deployed according to future grid security, reliability and stability requirements.

2 Demonstrating new energy solutions and business models

We will invest in a series of commercial ready smart, microgrid and precinct-scale energy storage demonstration projects across Victoria. These commercial demonstrations will include battery storage and new technology solutions with the potential to boost renewable energy dispatching using smart systems.

These demonstration projects will showcase the use of energy storage in different settings and in combination with other complementary technologies. The demonstration of smart microgrids will help Victorians attract international interest and provide education, skills and job creation opportunities.

Energy trading

Energy storage facilities, such as pumped hydro, can allow for the purchase of energy in low price periods and then traded during high

Supply management

In an electricity system with high levels of variable generation, energy storage provides a way of managing supply

Security of supply

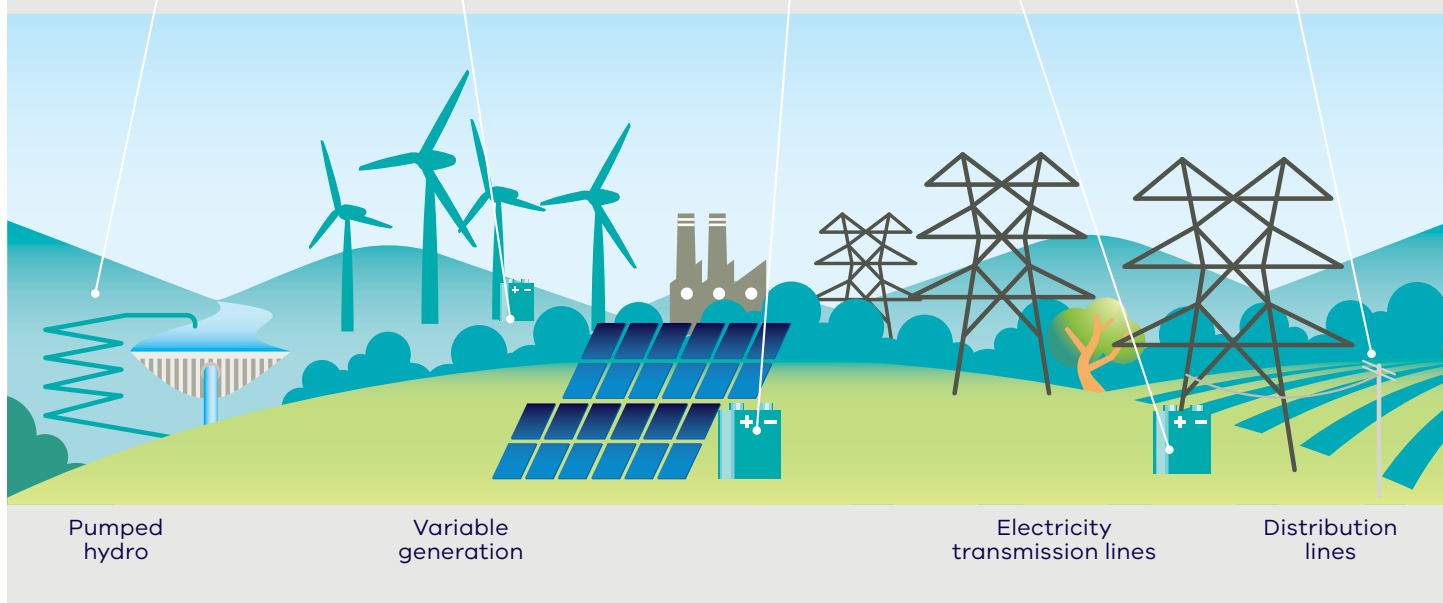
Energy storage provides backup for reductions in generation

Network support

Energy storage can provide a range of network support services including voltage support and overcoming network bottlenecks

Power stability

Balancing of supply and demand in instantaneous time frames to maintain grid frequency





Summer 2018

40+ MW STORAGE

100+ MWH CAPACITY

3 Modernising energy markets and rules

We will lead the modernisation of the energy market by engaging with the sector, regulators and market institutions to develop a plan to implement new market rules and change processes to support energy storage and new technologies.

4 New advanced technology opportunities

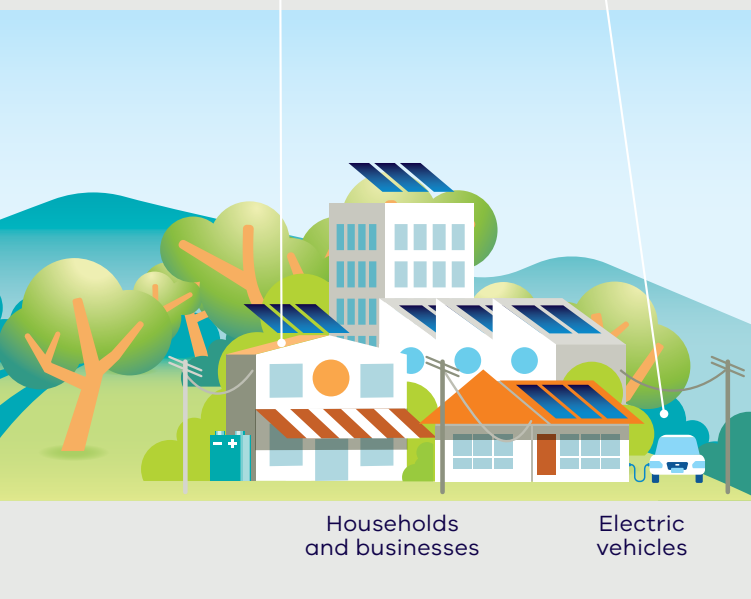
We will explore the most appropriate long-term commercial options for Victoria that support a resilient electricity sector underpinned by renewable energy, through emerging and proven technologies like large-scale solar thermal, biomass, and wave generation for commercial applications. This will provide opportunities for energy storage to be included in new, large renewable energy procurements.

Demand management

Consumers can use batteries to manage their use of electricity during peak price periods

New consumer products

The emergence of new technologies, such as electric vehicles and smart homes enable storage to be applied in new ways



We will make energy storage mainstream in Victoria through deploying at least 40 MW, with at least 100 MWh of capacity by summer 2018. Additional energy storage may be deployed according to future grid security, reliability and stability requirements.

Action 20

Unlocking the potential and benefits of energy data

We will work with industry to develop a new energy data platform to gather, intersect and leverage real time smart meter data. The data platform aims to be a central repository for energy data, including consumption, voltage, tariff and other data collected by Victoria's smart meters.

Better access to energy usage data will create energy-wise consumers, increase system efficiency and drive innovation in the renewable energy sector.

We will provide \$1.8 million to conduct a concept study to consider how the energy data platform can best be developed, built and maintained. Working closely with C4NET, we will support consumers, the renewable sector industry, new market participants, and research institutions to access data for modelling and forecasting, while ensuring robust consumer and privacy protections.

“Developments in storage technology allow us to use the power grid more economically. With sound policy settings, it is becoming possible to provide electricity from zero emissions sources more securely and at lower costs than power users face today. Succeed, and we will turn exceptional renewable energy natural resources into foundations for Australia as a superpower of the low carbon world economy. Victoria's leading role in engineering and information technology allows it to navigate the way for the integration of battery storage and renewable energy”.

Prof. Ross Garnaut AO, Chairman, ZEN Energy

Action 21

Exploring innovative smart grid, microgrid and storage models

We will invest \$15.8 million in microgrid, smart grid and renewable energy storage demonstration projects, spanning up to 10 sites across Victoria that apply new technology in innovative ways to deliver integrated local energy solutions and encourage renewable energy uptake.

Market development of new energy technologies is critical to a resilient system based on decentralised energy resources. Microgrids will help communities reduce reliance on the electricity network and strengthen grid resilience. Microgrids generally operate through connection to the mainstream electricity grid, but can also break off and generate their own energy for local consumption if required, during power outages, for example.

We will provide additional support for research, development and commercialisation of new electricity grid management solutions, through smart, microgrid pilot demonstrations for decentralised energy resources. The Government will co-sponsor an innovative and collaborative demonstration project that could revolutionise future energy market trading using peer-to-peer trading platforms.

As part of C4NET, we are working with Patterson River Secondary College to develop a microgrid demonstration project. The microgrid may include solar, battery storage, shallow geothermal and back-up generations. The demonstration projects will also integrate with the school curriculum and could form the basis of a model for other Victorian schools.

We have signed Memorandum of Understandings with Monash University to collaborate on Monash's Transformative Energy Initiative and Deakin University to accelerate battery research and development.

Action 22

Investing in emerging energy solutions

We will work with ARENA and CEFC to ensure investment continues in the next wave of energy technologies consistent with the scale and capabilities of Victoria's rapidly changing energy sector.

In addition to traditional renewable energy sources of solar and wind, newer technologies such as solar thermal and bioenergy are becoming increasingly viable for commercial scale applications.

To better unlock this potential, we will implement industry development plans to support Victorian-based renewable energy sectors. These plans will support the growth of bioenergy and marine energy, with the potential to expand to other industries as they emerge.

We will provide \$2 million towards the development of waste-to-energy facilities in Victoria, and investigate the potential for solar thermal and bioenergy technology for industrial heating applications to support investment in alternative technology.

Action 23

Leading transition to a modern energy system

We will ensure we have the capability to maintain energy affordability and modernise the energy sector to benefit consumers, the economy and the environment.

We are working with key stakeholders to ensure a coordinated, national approach to a more modern distribution and transmission network. We acknowledge the work already completed and will support the work underway by the COAG Energy Council, energy market institutions and the Commonwealth Chief Scientist's *Independent Review into the Future Security of the NEM*.

We will advocate for a review of the national electricity and national gas objectives set out in national energy laws.

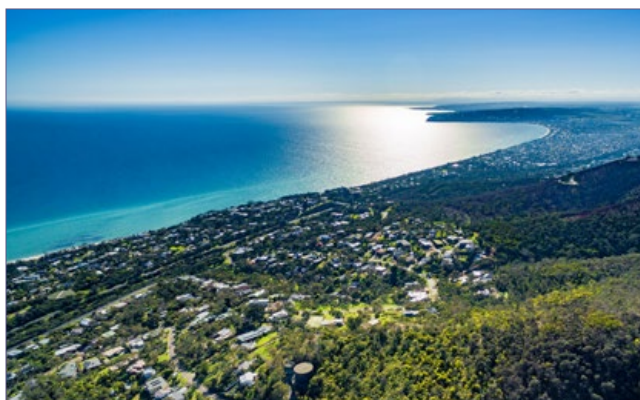
To support accountability and transparency, we will publish an annual statement of progress of the Renewable Energy Action Plan. The first of these statements will be released towards the end of 2017.

POLICY IN ACTION

Demonstrating innovative smart grid, microgrid and storage models

The Government will invest \$15.8 million over four years in a series of smart, microgrid demonstration projects across Victoria. These projects will include battery storage and demand management solutions being applied in different locations and network configurations, with the potential to apply grid enhancements to increase renewable energy uptake.

Through this action, we will modernise our electricity grid to be a fully integrated, intelligent system that meets the demands and expectations of modern Victoria.



CASE STUDY

Mornington Peninsula Community Grids project

The Mornington Peninsula Community Grids project is helping residents to manage their energy use and offset the need to build costly new infrastructure.

The Victorian Government has awarded GreenSync over \$550,000 in grant funding from the New Energy Jobs Fund to support its digital control platform, which coordinates and optimises renewables connected to the grid.

The project will involve solar PV, battery storage systems and demand response enabled device units, which allows businesses, households and community centres to reduce or shift their energy use during peak electricity demand events like heatwaves.

This is one of 24 grants announced under the Government's \$20 million NEJF.





Implementing our actions

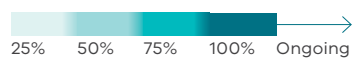
IMPLEMENTATION PLAN /

Action

Action 1	Setting and delivering on ambitious and achievable renewable energy targets	
Action 2	Purchase renewable energy certificates	Tenders and arrangements
		Contracts
Action 3	Energising our transport sector	Tenders and arrangements
		Contracts
Action 4	Government leading the way	
Action 5	Establishing bodies to support the transformation	
Action 6	Streamlining renewable energy project processes and approvals	
Action 7	Supporting investment and growth in the sector (NEJF)	
Action 8	Empowering households to take control of their energy use	
Action 9	Ensuring a fair approach for all consumers	
Action 10	Supporting local energy projects across Victoria	
Action 11	Improving processes for community renewable energy projects	
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Action 22	Investing in emerging energy solutions	
Action 23	Leading transition to a modern energy system	



Progression



Calendar years shown

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