

# Victorian Renewable Energy Target

2021/22 Progress Report



Environment,  
Land, Water  
and Planning

OFFICIAL

Tabled by the Minister for Energy and Resources, pursuant to Section 8 of the Renewable Energy (Jobs and Investment) Act 2017.

**Image**

Bulgana Green Power Hub

**Acknowledgement of Country**

Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk Country

**Photo credit**

Department of Environment, Land, Water and Planning

# Minister's foreword



I am pleased to report that the 2021/22 financial year has seen Victoria's renewable energy sector continue to develop strongly despite a challenging global environment. Victoria's renewable energy generation reached 34.1 per cent of Victoria's electricity generation in 2021/22 – almost double that of five years ago. This increase puts Victoria well on track to achieve our next renewable energy target of 40 per cent renewable generation by 2025.

This year also saw the Victorian Government

- announce an historic VRET of 95 per cent renewable generation by 2035, as well as an increase to the legislated VRET 2030 target from 50 per cent to 65 per cent and

- set new Victorian energy storage targets for at least 2.6 gigawatts

(GW) of energy storage capacity by 2030 and at least 6.3 GW by 2035 to support an accelerated renewable energy transition in Victoria.

These targets will be critical in leading Victoria through an accelerating renewable energy transition, which gathered pace this year following the announcement of earlier coal closure and the impact of extremely high international energy prices. Achieving these VRET and storage targets is estimated to bring forward around \$9.5 billion in economic development and around 59,000 two-year jobs over the period to 2035.

We continued to support investment in Victoria's energy infrastructure needs, with the announcement of six successful projects in our second VRET auction and twelve projects to strengthen Victoria's electricity grid under stage 1 of our Renewable Energy Zones Fund. These VRET auction projects will bring forward a combined 623 megawatts (MW) of new renewable energy capacity and 365 MW of energy storage, while the REZ Fund projects include a 125 MW big battery and grid forming inverter technology near Kerang. At a more local level, the Victorian Government has committed to installing 100 neighbourhood batteries across the state.

This year we also committed to bring back public ownership of energy by reviving the State Electricity Commission (SEC) to build renewable energy projects in Victoria. Through the SEC, we will make an initial investment of \$1 billion towards delivering 4.5 GW of new renewable energy capacity.

We have continued with the roll-out of our nation-leading Solar Homes Program to reduce emissions and help Victorians save on their energy bills. Over the 2021/22 financial year, the Solar Homes program supported more than 43,471 Victorians to install new rooftop PV with a capacity of 306 MW, while the Solar for Business program supported more than 1,524 small and mid-sized Victorian businesses to install a further 22 MW of capacity.

The Solar Homes program is expected to generate 14 per cent of Victoria's 40 per cent renewable energy target by 2025 and 15 per cent of the increased VRET 2030 target of 65 per cent renewable generation. By 2027/28, the Solar Homes program is expected to reduce Victorian electricity sector emissions by around 1.7 million tonnes of carbon dioxide equivalent and reduce National Electricity Market (NEM) emissions as a whole by around 3.0 million tonnes of carbon dioxide equivalent, below what they would otherwise have been.

In terms of large-scale electricity generation, an impressive 2,626 MW of renewable energy projects were in construction or commissioning during the year. Collectively, these projects worked through challenges posed by the coronavirus pandemic, and complex network issues affecting the commissioning of new renewable energy projects in the NEM. These projects are estimated to have resulted in capital expenditure of \$593 million during the 2021/22 financial year. Activity in these large-scale projects and Victoria's rooftop PV sector is estimated to have resulted in 3,833 jobs during the 2021/22 financial year.

Please join me in celebrating the achievements of our renewable energy sector – and Victoria's strong progress towards our VRET targets – in 2021/22. Our government will continue to work with the community and renewable energy industry to lead the energy transition and deliver strong outcomes for Victoria.

# 1. Background

## 1.1 About this report

Under the *Renewable Energy (Jobs and Investment) Act 2017* (REJI Act), Victoria legislated renewable energy targets of 25 per cent by 2020, 40 per cent by 2025 and 50 per cent by 2030.

Section 8 of the REJI Act requires the Minister for Energy and Resources (the Minister) to report to the Parliament for each financial year on:

- the progress made towards meeting the renewable energy targets;
- investment and employment in Victoria in relation to renewable electricity generation; and
- the performance of schemes to achieve targets under the REJI Act that promote the generation of electricity by large scale facilities that utilise renewable energy sources or convert renewable energy sources into electricity.

The reporting period for this report is the 2021/22 financial year.

This report presents an assessment of progress towards the targets and state-wide investment and employment in Victoria in relation to renewable energy generation.

The Department of Environment, Land, Water and Planning (DELWP) has based this report on the latest publicly available information from sources including the Australian Energy Market Operator (AEMO), the Clean Energy Regulator (CER), and project information received from renewable energy project developers.

## 1.2 The Victorian Renewable Energy Target and Victoria's renewable energy sector

The Victorian Government introduced the VRET to provide greater policy certainty and investor confidence for the renewable energy industry in Victoria. The REJI Act and Victorian government initiatives in support of the targets have been important drivers of the development of renewable energy projects in Victoria.

The announcement of the first VRET auction results in September 2018 supported investment in five new Victorian wind and solar projects with a combined capacity of 800 megawatts (MW). These projects have contributed to activity in Victoria's renewable energy sector and growth in Victoria's renewable energy generation over the past few years<sup>1</sup> (Figure 1).

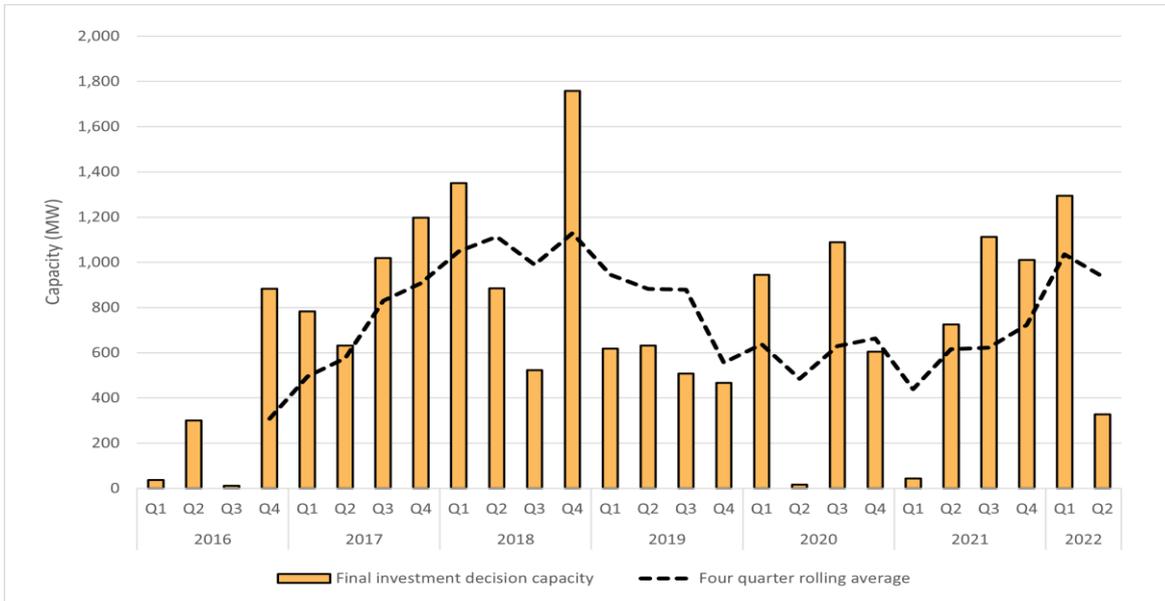
The announcement of the successful second VRET auction projects in October 2022 will support investment in six projects with a combined 623 MW of new renewable generation capacity and a 365 MW and 600 megawatt-hours (MWh) of new battery energy storage<sup>2</sup>. These projects are expected to flow through to increased financial commitments of Victorian renewable energy projects later in 2022/23.

**Figure 1: Renewable energy project capacity committed by quarter in Australia since 2016, MW**

---

<sup>1</sup> See <https://www.energy.vic.gov.au/renewable-energy/victorian-renewable-energy-and-storage-targets/victorian-renewable-energy-target-auction-vret1>

<sup>2</sup> New Solar Farms Powering Victoria, 7 October 2022. See <https://www.premier.vic.gov.au/new-solar-farms-powering-victoria>



Source: Clean Energy Regulator, Quarterly carbon market report – June quarter 2022, September 2022.

## 2. Progress towards the VRET targets

### Highlights

- Over the 2021/22 financial year, renewable energy sources accounted for approximately 34.1 per cent of Victoria's electricity generation, up from 29.3 per cent in 2020/21.
- As at 30 June 2022, there were 12 renewable energy projects under construction or undergoing commissioning in Victoria. These projects have a combined capacity of 1,662 MW.
- This volume of Victorian renewable energy projects under construction or undergoing commissioning, as well as the continuing strong investment in rooftop PV systems by Victorian homes and businesses, has Victoria well placed to achieve its VRET target of 40 per cent renewable generation by 2025.

### 2.1 Victoria's current electricity generation profile

#### Renewable energy generation

In the 2021/22 financial year, Victoria generated around 18,081 gigawatt hours (GWh) of electricity from VRET eligible renewable energy sources (Table 1). This renewable electricity generation accounted for around 34.1 per cent of the 52,959 GWh of electricity generated in Victoria in 2021/22 from all sources<sup>3</sup>. The major contributors to renewable generation in Victoria over the 2021/22 financial year were wind generation (about 17.9 per cent), solar power including both large-scale solar and rooftop PV (10.3 per cent) and hydroelectricity (4.9 per cent).

Table 1: Victorian electricity generation by source, 2021/22 financial year

| Source  | GWh           | Share (%)    |
|---|---------------|--------------|
| Brown coal  | 32,548        | 61.5         |
| Gas   | 2,090         | 3.9          |
| Renewable energy  |               |              |
| - Wind  | 9,482         | 17.9         |
| - Solar (rooftop PV)  | 3,715         | 7.0          |
| - Hydroelectricity  | 2,610         | 4.9          |
| - Solar (large scale)   | 1,756         | 3.3          |
| - Bioenergy (renewable energy sources eligible under VRET) <sup>4</sup> | 519           | 1.0          |
| Other (renewable energy sources non-eligible under VRET)                | 239           | 0.5          |
| <b>Total eligible renewable energy</b>                                  | <b>18,081</b> | <b>34.1</b>  |
| <b>Total all renewable energy</b>                                       | <b>18,320</b> | <b>34.6</b>  |
| <b>Total</b>  | <b>52,959</b> | <b>100.0</b> |

Source: NEM Review, Metered generation (as generated), extracted on 1 July 2022<sup>5</sup> except for bioenergy (based on Australian Government Department of Climate Change, Energy, the Environment and Water, Australian Energy Statistics)<sup>6</sup> and some small

<sup>3</sup> The share of renewable generation from all sources (VRET eligible and ineligible) in 2021/22 was 34.6 per cent of Victoria's total electricity generation.

<sup>4</sup> Bioenergy from native forest wood waste is not included as an eligible renewable energy source under VRET, as per the Minister's declaration of renewable energy sources on 29 June 2018. Victorian Government Gazette No. S318. Throughout this report, references to 'eligible renewable generation' should be interpreted as referring to the renewable generation sources that are eligible to contribute to VRET.

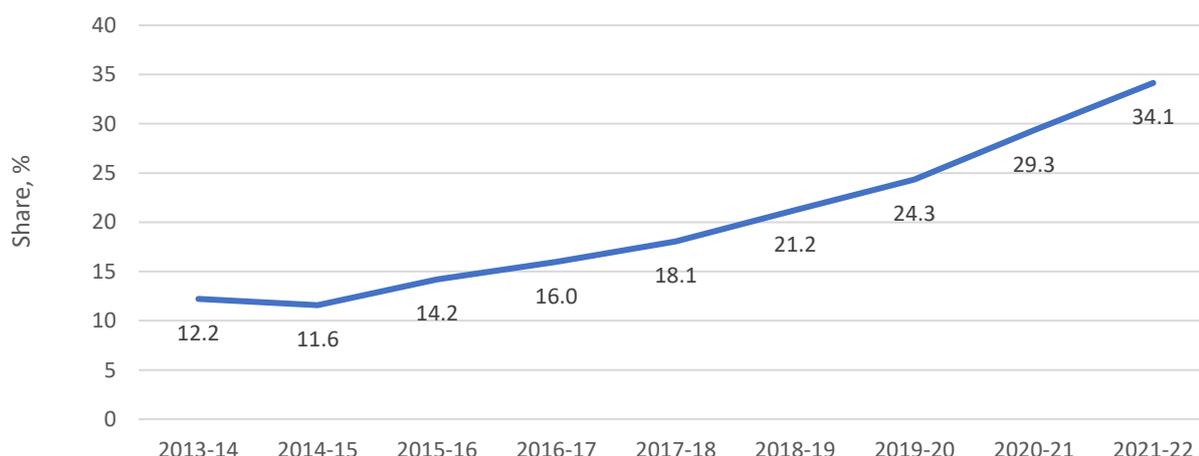
<sup>5</sup> NEM Review is an Australian electricity data service prepared by Global Roam and subscribed to by DELWP. NEM Review's metered generation data is based on AEMO's actual 5-minute electricity generation data for scheduled generating units, semi-scheduled generating units and non-scheduled generating units and estimated output of rooftop solar PV systems from AEMO's Australian Solar Energy Forecasting System. The NEM Review data captures the vast majority of Victorian electricity generation with some exceptions – see footnotes 6 and 7, below.

<sup>6</sup> NEM Review does not include data for Victorian bioenergy generation. Estimated electricity generation from bioenergy generation is instead sourced from the Australian Energy Statistics, Table O Electricity generation by fuel type 2020/21 and 2021. Note that this update did not include data for 2021/22 so data from 2021 was used as a proxy for 2021/22.

generators (based on Departmental estimates)<sup>7</sup>. Note: Totals may not sum due to rounding.

The share of renewable energy in Victoria’s electricity generation has increased steadily over the last seven years, from 11.6 per cent in 2014/15 to 34.1 per cent over the 2021/22 financial year (Figure 2). The Solar Homes Program contributed around 2.5 per cent of Victoria’s electricity generation in 2021/22, which is estimated at around 6 per cent of Victoria’s 2025 renewable energy target of 40 per cent renewable generation.

**Figure 2: Victorian renewable electricity generation share, 2013/14 to 2021/22**



Source: Please refer to Table 1 for sources.

The increase in Victoria’s renewable electricity generation over this period has come from new wind and solar farms and the installation of rooftop PV systems across the state. The installation of rooftop PV systems has been supported by the Solar Homes Program since 2018. The Solar Homes Program is expected to generate 14 per cent of Victoria’s 40 per cent renewable energy target by 2025 and 15 per cent of the increased VRET 2030 target of 65 per cent renewable generation<sup>8</sup>.

### Installed renewable energy generation capacity

As of 30 June 2022, Victoria had 9,932 MW of installed capacity from all sources of renewable energy eligible to contribute to Victoria’s renewable energy targets – hydroelectricity, wind, solar (including both large-scale solar and rooftop PV) and bioenergy excluding native forest wood waste<sup>9</sup> (Figure 3). This compares to 8,417 MW of installed capacity at 30 June 2021<sup>10</sup>.

In 2021/22, Solar Victoria’s Solar Homes Program supported 43,471 new rooftop PV installations in Victoria (for both owner-occupier households and rental providers), with an estimated capacity of 306 MW of rooftop PV installed. From its commencement to the end of June 2022, the Solar Homes Program has supported 1,260

<sup>7</sup> Electricity generation volumes for some small generators – Chepstowe (6.1 MW), Codrington (18.2 MW), Leonard’s Hill (4.1 MW), Toora (21 MW), Wonthaggi (12 MW), Coonooer Bridge (19.8 MW), Maroona (7.2 MW), Timboon West (7.2 MW) and Yawong (7.2 MW), Swan Hill (14.4 MW), Numurkah APSU (6 MW), Girgarre 1 and 2 (5 MW each), Echuca (5 MW), Stanhope 1,2,3 and 4 (5 MW each), Katamatite (5 MW), Numurkah 1 and 2 (5 MW each), Robinvale (9.2 MW), Longford (46.4 MW), Qenos (21 MW), Wunghnu (5 MW), Melbourne Airport (12 MW), Ferguson (12 MW), Waurn Ponds Smart Energy Project (7 MW), Stanhope 5 (5 MW), Yarroweyah (5 MW), Bamawm (5 MW), Pine Lodge (5 MW), and Tatura (5 MW) – are not reported by NEM Review. Annual output of these generators is estimated by the Department.

<sup>8</sup> Based on internal analysis conducted by the Department of Environment, Land, Water and Planning.

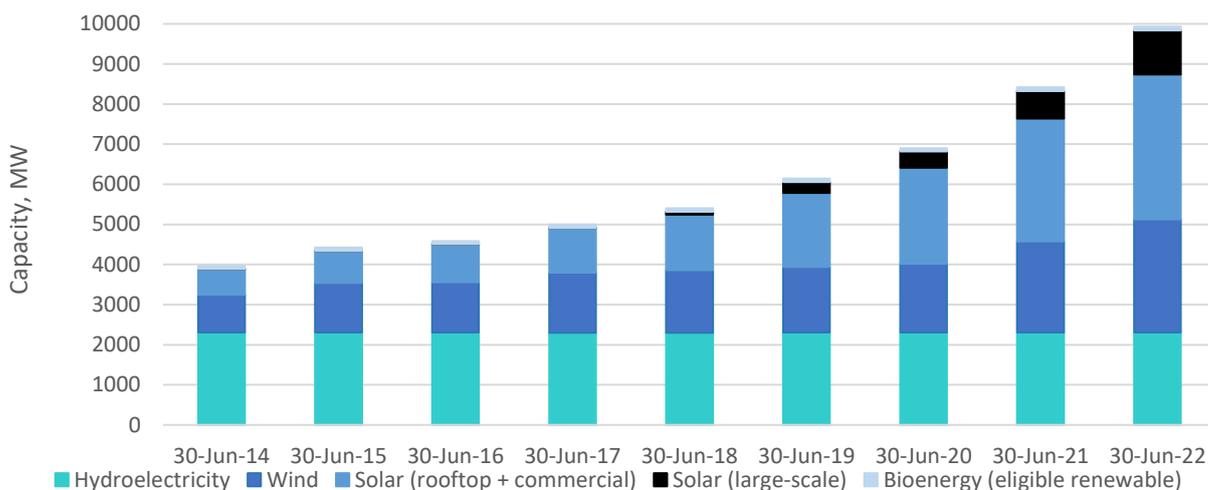
<sup>9</sup> See footnote 4.

<sup>10</sup> The 2020/21 VRET Progress Report reported a total installed renewable energy capacity of 8,374 MW, which was derived from the most up to date information at the time of publishing. This capacity has been updated for the 2021/22 VRET Progress Report with the most recent data for 2020/21 from AEMO Generation Information and the CER small-scale postcode data for solar installations (see footnotes 12 and 13). This change reflects updated rooftop PV and accredited power station data from the CER.

MW of rooftop PV systems in Victoria<sup>11</sup>. Additionally, in 2021/22, the Solar for Business program supported more than 1,524 small and mid-sized Victorian businesses to install a further 22 MW of capacity.

Victoria’s commissioned renewable energy capacity increased by 5,969 MW between the end of June 2014 and the end of June 2022. This is overwhelmingly driven by the installation of rooftop solar PV systems and the commissioning of large-scale wind and solar farms. Over this period, rooftop PV capacity increased by 2,981 MW, wind capacity increased by 1,877 MW, large-scale solar capacity increased by 1,100 MW and bioenergy capacity increased by 13 MW.

**Figure 3: Victorian renewable electricity generation capacity, 2013/14 to 2021/22**



Source: Based on AEMO, Generation information for Victoria<sup>12</sup>; CER, Small-scale postcode data<sup>13</sup> and CER data on accredited power stations<sup>14</sup> and other generation project information<sup>15</sup>.

## Emissions reduction

Victoria’s electricity sector greenhouse gas emissions have fallen from around 60.1 million tonnes (Mt) of CO<sub>2</sub>-e in 2014/15 to around 39 Mt of CO<sub>2</sub>-e in 2021/22 (Figure 4). This decline was associated with the reduction in coal fired electricity generation (mostly contributed by the retirement of the Hazelwood Power Station in March 2017), and the growth of renewable electricity generation (which allows for the replacement of coal capacity) in Victoria over this period.

In 2021/22, the Solar Homes Program is estimated to have reduced emissions in the National Electricity Market by 0.70 Mt of CO<sub>2</sub>e below what they would otherwise have been. By 2027/28, the Solar Homes Program is

<sup>11</sup> Based on Solar Victoria program tracking.

<sup>12</sup> AEMO Generation information spreadsheets for Victoria dated 30 May 2014, 13 August 2015, 11 August 2016, 29 December 2017, 8 August 2019, 30 April 2020, 7 July 2021 and 22 July 2022 were used in developing this data. See <https://www.aemo.com.au/energy-systems/electricity/national-electricity-market-nem/nem-forecasting-and-planning/forecasting-and-planning-data/generation-information>

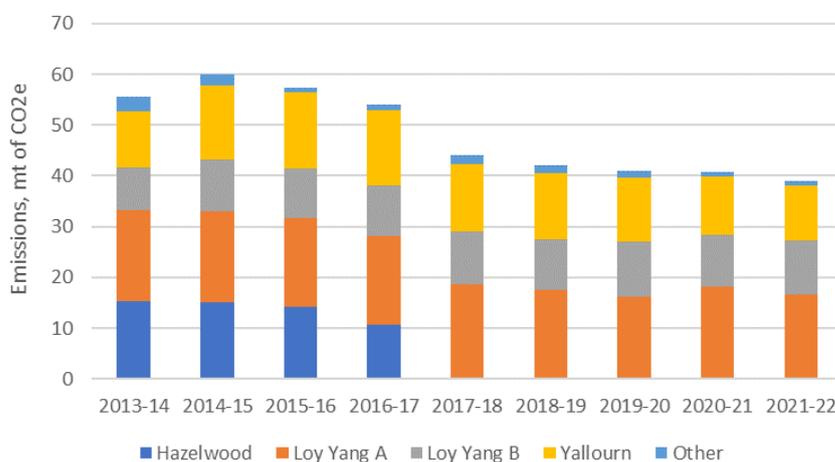
<sup>13</sup> CER small-scale postcode data for solar installations from 2014 through to 2020 is sourced from historical data available on the CER website at <http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations/historical-postcode-data-for-small-scale-installations>. CER small-scale postcode data for solar installations from 2021 onwards is sourced from CER postcode data as at 20 July 2022 available at <http://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations>

<sup>14</sup> The CER’s data on accredited power stations up to the end of 2021 is available at <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/Large-scale-Renewable-Energy-Target-market-data/large-scale-renewable-energy-target-supply-data/historical-large-scale-renewable-energy-target-supply-data>. The CER’s data on accredited power stations in 2022 is available at: <http://www.cleanenergyregulator.gov.au/RET/About-the-Renewable-Energy-Target/Large-scale-Renewable-Energy-Target-market-data/large-scale-renewable-energy-target-supply-data>

<sup>15</sup> This information includes publicly available information from project websites and media releases and information that DELWP has obtained directly from project proponents.

expected to reduce electricity sector emissions in Victoria and the National Electricity Market by around 1.7 and 3.0 Mt of CO<sub>2</sub>e respectively below what they would otherwise have been.

Figure 4: Emissions from electricity generation in Victoria, 2013/14 to 2021/22



Source: NEM Review, Greenhouse emissions, extracted 9 July 2022.

## 2.2 Renewable energy development

### Renewable energy generation projects commissioned in 2021/22

In the 2021/22 financial year, Victoria's renewable energy capacity increased by 1,513 MW (Table 2). This growth was driven by the:

- commissioning of the Bulgana, Diapur (formerly Nhill) and Dundonnell wind farms;
- commissioning of the Bamawm, Kiamal, Pine Lodge, Stanhope 5, Tatura, Winton, Yarroweyah and Yatpool solar farms;
- installation of 547 MW of rooftop solar panels by Victorian homes and businesses.

Table 2: Change in Victorian renewable electricity generation capacity in 2021/22

| Project                 | Technology        | Capacity (MW) | Location                         | Commissioned |
|-------------------------|-------------------|---------------|----------------------------------|--------------|
| Bulgana                 | Wind              | 204           | 20 km north of Ararat            | Q4 2021      |
| Diapur (formerly Nhill) | Wind              | 7             | 19 km west of Nhill              | Q4 2021      |
| Dundonnell              | Wind              |               | 23 km north east of Mortlake     | Q2 2022      |
|                         |                   | 336           |                                  |              |
| <b>Subtotal – wind</b>  |                   | <b>548</b>    |                                  |              |
| Bamawm                  | Large-scale solar | 5             | 140 Middleton Road, Bamawm       | Q4 2021      |
| Kiamal                  | Large-scale solar | 200           | Calder Highway, Ouyen            | Q4 2021      |
| Pine Lodge              | Large-scale solar | 5             | 1365 Midland Highway, Pine Lodge | Q4 2021      |
| Stanhope 5              | Large-scale solar | 5             | 219 Stokes Rd, Stanhope          | Q4 2021      |
| Tatura                  | Large-scale solar | 5             | 5923 Midland Highway, Tatura     | Q4 2021      |
| Winton                  | Large-scale solar | 99            | Winton-Glenrowan Rd, Winton      | Q2 2022      |
| Yarroweyah              | Large-scale solar | 5             | 233 Montgomery Rd, Yarroweyah    | Q4 2021      |
| Yatpool                 | Large-scale solar | 94            | Doering Road, Carwarp            | Q4 2021      |
| Rooftop PV (a)          | Rooftop PV        | 547           | State wide                       | Year round   |
| <b>Subtotal – solar</b> |                   | <b>965</b>    |                                  |              |

| Project                                  | Technology | Capacity (MW) | Location | Commissioned |
|--|------------|---------------|----------|--------------|
| <b>Subtotal – bioenergy<sup>16</sup></b> |            | <b>1</b>      |          |              |
| <b>Total</b>                             |            | <b>1,513</b>  |          |              |

Note: (a) includes both small-scale rooftop PV installations and commercial scale rooftop PV installations. \* “btm” refers to behind-the-meter solar generation. Totals may not sum due to rounding. Sources: Information on the large-scale projects was obtained from public and private sources<sup>17</sup>. Small-scale rooftop PV capacity is sourced from CER, Small-scale postcode data<sup>18</sup> while commercial scale rooftop PV capacity is sourced from CER data on accredited power stations<sup>19</sup>.

### Renewable energy generation projects under construction or undergoing commissioning

As at 30 June 2022, there were 1,662 MW of renewable energy projects under construction or undergoing commissioning in Victoria (Table 3). This comprises eight wind farms with a combined capacity of around 1,596 MW and four solar farms with a combined capacity of 66 MW.

Table 3: Victorian renewable energy projects under construction or commissioning as at 30 June 2022

| Project  | Technology        | Capacity (MW) | Location                          | Estimated commissioning <sup>20</sup> |
|--|-------------------|---------------|-----------------------------------|---------------------------------------|
| Berrybank (stage 2)                              | Wind              | 109.2         | 60 km south west of Ballarat      | Q4 2022                               |
| Lal Lal (Yendon)                                 | Wind              | 144           | 25 km south of Ballarat           |                                       |
| Moorabool (North)                                | Wind              | 150           | 25-30 km south east of Ballarat   | Q4 2022                               |
| Moorabool (South)                                | Wind              | 162           | 25-30 km south east of Ballarat   | Q4 2022                               |
| Mortlake South                                   | Wind              | 158           | 5 km south of Mortlake            | Q4 2022                               |
| Mt Gellibrand                                    | Wind              | 132           | 25 km east of Colac               | 2022                                  |
| Murra Warra (stage 2)                            | Wind              | 209           | 25 km north of Horsham            | Q3 2022                               |
| Stockyard Hill                                   | Wind              | 532           | 35 km west of Ballarat            | Q4 2022                               |
| <b>Subtotal – wind</b>                           |                   | <b>1,596</b>  |                                   |                                       |
| Cohuna   | Large-scale solar | 34            | Kerang-Leitchville Road Horfield  | Q3 2022                               |
| McCain   | Large-scale solar | 7             | Ballarat                          | Q2 2023                               |
| Melbourne Water (btm*) - Eastern Treatment Plant | Large-scale solar | 19            | Bangholme, Melbourne              | Q4 2022                               |
| Melbourne Water (btm*) - Winneke Treatment Plant | Large-scale solar | 6             | 35 km north-east of Melbourne CBD | Q4 2022                               |
| <b>Subtotal – solar</b>                          |                   | <b>66</b>     |                                   |                                       |
| <b>Total – wind and solar</b>                    |                   | <b>1,662</b>  |                                   |                                       |

Note: \* “btm” refers to behind-the-meter solar generation. Totals may not sum due to rounding. Projects are reported by nameplate capacity as reported by AEMO, Generation Information, dated 7 July 2022<sup>21</sup>. Sources: Information on all projects was obtained from public and private sources<sup>22</sup>.

<sup>16</sup> Includes a 1.1 MW increase in capacity of Wollert landfill gas plant reported by AEMO.

<sup>17</sup> See footnotes 12 and 15 above.

<sup>18</sup> See footnote 13 above.

<sup>19</sup> See footnote 14 above.

<sup>20</sup> Estimated commissioning dates are based on the best available information to DELWP at the time of reporting. This includes information available from AEMO and project proponents. These dates are estimates only and subject to change.

<sup>21</sup> Projects contracted with the Victorian Government are reported by the capacity as reported by the project proponents, to ensure consistency across the government’s reporting of these projects. For other projects, nameplate capacities from AEMO’s Generation Information spreadsheet dated 7 July 2022 have been used. See <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Planning-and-forecasting/Generation-information>.

<sup>22</sup> See footnotes 12 and 15 above.

## 2.3 Investment and employment

### Highlights

- **Large-scale renewable projects in development** (2,627 MW) in Victoria over the 2021/22 financial year are estimated to support around \$593 million in capital expenditure and around 661 jobs in the 2021/22 financial year.
- Over the whole period from project commencement to completion, these projects are estimated to support \$4.831 billion in capital expenditure and 4,330 jobs.
- In addition to the jobs supported through the construction of large-scale renewable energy projects, rooftop solar PV installations completed in 2021/22 are estimated to have supported a further 3,172 jobs.

The installation and operation of renewable energy facilities attracts investment to the State, contributing to jobs growth and economic activity across Victoria. This section of the report discusses the investment and employment outcomes for Victoria's renewable energy sector in 2021/22.

Investment and employment from large-scale renewable energy projects commissioned or under construction in Victoria during 2021/22 are based primarily on information provided to DELWP by renewable energy project proponents. Victoria's small-scale solar industry is also an important driver of jobs and investment in Victoria. DELWP estimates that Victoria's rooftop solar PV industry supported approximately 3,172 jobs in 2021/22<sup>23</sup>.

### Investment and employment from large-scale renewable generation projects

Based on information available to DELWP<sup>24</sup>, it is estimated that the large-scale renewable generation projects in development in Victoria during the financial year 2021/22 generated \$593 million in capital expenditure and 661 jobs over the 2021/22 financial year (Table 4)<sup>25</sup>. Over the whole period from project commencement to completion, these projects are estimated to support \$4.831 billion in capital expenditure and 4,330 jobs. Projects in development during 2021/22 include projects that were commissioned during 2021/22 or were under construction or undergoing commissioning as at 30 June 2022.

**Table 4: Estimated capital expenditure and jobs associated with Victorian large-scale renewable energy projects in development in 2021/22**

|              | Capacity (MW) | Capex (\$m) |                   | Jobs       |                   |
|--------------|---------------|-------------|-------------------|------------|-------------------|
|              |               | In 2021/22  | Over project life | In 2021/22 | Over project life |
| Wind         | 2,143         | 506         | 3,994             | 455        | 3,357             |
| Solar        | 484           | 87          | 837               | 206        | 972               |
| <b>Total</b> | <b>2,627</b>  | <b>593</b>  | <b>4,831</b>      | <b>661</b> | <b>4,330</b>      |

Source: Information sourced directly from project proponents and publicly available information from project websites and media articles. Note the capex and jobs figures for 2021/22 are an estimate of the proportion of the total capex and jobs from project commencement to completion that occurred in the 2021/22 financial year. Totals may not sum due to rounding.

Wind farm projects in development during 2021/22 are expected to account for around \$506 million in capital expenditure and 455 jobs over 2021/22, while solar projects in development during 2021/22 are expected to account for around \$87 million in capital expenditure and 206 jobs in 2021/22.

<sup>23</sup> Based on data from the Clean Energy Regulator and the employment multiplier for rooftop PV reported in Rutovitz, J., et al. (2020) *Renewable Energy Employment in Australia: Methodology*. Prepared for the Clean Energy Council by the Institute for Sustainable Futures, University of Technology Sydney.

<sup>24</sup> This information includes publicly available project information from websites and media articles, and information obtained by DELWP from project proponents. Note that whole-of-project renewable energy project jobs figures are reported here in the same terms as they were provided by the proponents.

<sup>25</sup> Construction jobs for 2021/22 have been estimated by apportioning the construction jobs figure reported by project proponents by the number of months in 2021/22 that the project was under construction relative to the project's total construction period. Operational jobs for 2021/22 have been estimated by apportioning the operational jobs figure reported by project proponents by the number of months in 2021/22 that the project was generating. DELWP notes that jobs figures are difficult to define and that this approach is an approximation.

## Investment and employment by region

As Victoria's renewable energy facilities are being constructed in parts of the state with very strong renewable energy resources, the economic activity associated with renewable energy construction will benefit these regions. The areas of western Victoria, including the Central Highlands, Wimmera Southern Mallee, Barwon and the Great South Coast have particularly good wind resources and have attracted much of Victoria's wind farm investment (Table 5). In the same vein, large-scale solar project development has occurred in Victoria's north to capture the higher levels of solar irradiation in those parts of Victoria relative to the rest of Victoria. More recent large-scale solar project investment has moved east towards Goulburn and the Ovens Murray districts in response to more favourable network conditions in those areas.

**Table 5: Overview of renewable energy project development activity in Victoria during 2021/22, by region<sup>26</sup>**

|                              | Capacity (MW) |            | Capex (\$m) |           | Jobs       |            |
|------------------------------|---------------|------------|-------------|-----------|------------|------------|
|                              | Wind          | Solar      | Wind        | Solar     | Wind       | Solar      |
| Barwon and Great South Coast | 735           | 0          | 113         | 0         | 129        | 0          |
| Central Highlands            | 988           | 7          | 206         | C         | 194        | C          |
| Goulburn                     | 0             | 20         | 0           | 29        | 0          | 107        |
| Loddon Campaspe              | 0             | 5          | 0           | C         | 0          | C          |
| Mallee                       | 0             | 328        | 0           | 0         | 0          | 19         |
| Ovens Murray                 | 0             | 99         | 0           | 0         | 0          | C          |
| Wimmera Southern Mallee      | 420           | 0          | 187         | 0         | 133        | 0          |
| Metropolitan                 | 0             | 25         | 0           | 46        | 0          | 40         |
| <b>Total</b>                 | <b>2,143</b>  | <b>484</b> | <b>506</b>  | <b>87</b> | <b>455</b> | <b>206</b> |

Source: Information sourced directly from project proponents and publicly available information from project websites and media articles. C = Not reported as results reflect single projects. Totals may not sum due to rounding.

<sup>26</sup> Regional definitions in this table are based on Regional Development Victoria's Regional Partnerships classifications at: <https://www.rdv.vic.gov.au/regional-partnerships>

### 3. Closing statement

The VRET 2021/22 Progress Report provides a review of data and key statistics on the status and trends of the development of the renewable energy sector in Victoria, with a focus on outcomes achieved over the 2021/22 financial year.

Overall, 2021/22 saw Victoria’s renewable energy industry progress and despite continued challenges from the COVID-19 pandemic there was an increase in generation from wind and solar. In 2021/22, new projects commencing commissioning dropped to 10 projects, which is well below the high levels recorded in 2017/18 and 2018/19. Two large scale projects in commissioning at the end of the year, Moorabool and Stockyard Hill, increased output by 215 MW and 476 MW respectively during the year.

Activity in Victoria’s small-scale solar sector remained at a high level, although lower than FY 2020/21, as Victorian households and businesses continued to embrace rooftop solar generation and the Victorian Government’s Solar Homes Program.

A synthesis of the key findings with respect to the reporting requirements under the REJI Act are set out in Table 6 below.

**Table 6: VRET 2021/22 Progress Report – synthesis of findings**

| Reporting requirements  | Financial year 2021/22   | Section with further detail |
|---|--|-----------------------------|
| Progress made towards meeting the renewable energy targets                            | <p>Renewable energy generation accounted for 34.1 per cent of Victoria’s electricity generation over the financial year.</p> <p>Victoria is on track to meet the 2025 target of 40 per cent renewable energy generation.</p> <p>Victorian renewable energy generation capacity is expected to exceed the minimum generation capacity of 11,354 MW that was estimated to be required to achieve the 2025 target. As at 30 June 2022, there was 9,932 MW of installed renewable energy generation capacity in Victoria and 1,662 MW under construction or commissioning, a total of 11,594 MW.</p> | Section 2.1                 |
| Investment and employment in Victoria in relation to renewable electricity generation | <p>Victoria’s commissioned small and large-scale renewable energy capacity increased by around 1,513 MW.</p> <p>Eight large-scale solar farms and three large scale wind farms with a combined capacity of 965 MW were commissioned in Victoria in 2021/22.</p> <p>As at 30 June 2022, Victoria had eight wind farms and four solar farms with a combined capacity of 1,662 MW under construction or undergoing commissioning.</p>   | Section 2.2                 |
|   | <p>Projects commissioned during 2021/22 or under construction or undergoing commissioning as at 30 June 2022 are estimated to have resulted in capital expenditure of \$593 million and around 661 jobs in 2021/22.</p>  | Section 2.3                 |