



Project Update

Week ending 2 March 2018

PROJECT TALLY (February)

Number of projects = 538

- 215 Generating

- 323 In Development

Total Capacity = 79,051.5 MW

- 21,704.5 MW Generating

- 57,347 MW In Development

Tempo secures \$11 million in contracts and preferred status on large solar

27 February

Tempo Australia Limited (ASX: TPP) today announced that the company has secured a number of new construction and maintenance contracts with a combined value of over \$ 11 million, while also receiving binding letters of intent for \$23 million worth of new solar works in Victoria.

The contracts have been signed with new and existing clients in the industrial, commercial and telecommunications sectors, and include:

- execution of a five-year Master Service Agreement (MSA) for maintenance of telecommunication network for a leading international mobile network manager, following the similar MSA previously awarded for the Vodafone network;
- execution of a one-year MSA for the supply of electrical services for Cushman & Wakefield's national infrastructure currently under management;
- delivery of electrical maintenance services for the City of Vincent in Western Australia until 2019; and
- execution of a five-year MSA for another leading international mobile network manager to deliver construction services and testing of telecommunication towers, following the MSA previously awarded to carry out distributed antenna system work.

Tempo's CEO and Managing Director, Max Bergomi, said the recent contract awards were an encouraging sign for the company

whose new national approach was delivering greater efficiencies for clients.

"We are pleased to be continuing to broaden our client base and provide new and existing clients with the advantage and efficiencies that result from planning and dispatching services from our National Operations Centre in Sydney," he said.

Letters of intent for Victorian solar projects

In addition to the contracts, Tempo has also recently received two binding letters of intent totalling \$23 million from a leading International Power Company (IPC) for the following works:

- Supply and installation of a high voltage substation for a 100 mega-watt solar farm; and
- Engineering and construction of all plant for a 35 mega-watt solar farm, including mechanical, electrical and civil works, HV substation, and procurement of electrical cables.

The commencement of works is subject to the IPC reaching agreement on a Power Purchase Agreement as part of the Victorian Renewable Energy Auction Scheme, expected in the third quarter of 2018.

"These letters of intent are validation of our large project service offering and the work that has occurred over the past 12 months to develop relationships with key partners in the renewable and power energy space," said Mr Bergomi.

“Tempo has been actively engaged in a tendering phase while markets have been in a state of delay, and we’re optimistic that these recent wins are a sign of what’s to come in 2018,” he said.

Update to contract awards and letters of intent

28 February

Further to the previous announcement on 27 February 2018, Tempo Australia Limited (ASX: TPP) provides an update regarding the new construction and maintenance contracts and binding letters of intent for solar works in Victoria.

Both of the international mobile network managers referenced in the previous announcement have existing contracts with the Tempo group, and are large offshore financial disclosing entities who manage a large portion of Australia’s mobile network on behalf of Australian network carriers.

In regards to the letters of intent with the leading International Power Company (IPC) also referenced, Tempo confirms the company is part of a listed multinational group that reports multi-billion dollar annual EBITDA’s, providing the Tempo Board with sufficient comfort to engage as a counterparty. This agreement is binding upon both parties, however is still subject to the IPC being successful in the competitive process to reach agreement on a Power Purchase Agreement as part of the Victorian Renewable Energy Auction Scheme.

The Victorian Government is expected to award commercial contracts in the third quarter of 2018. Should the bid be won by the aforementioned IPC, Tempo will release an announcement at that time further outlining details of the projects, counterparty and other necessary information relevant to the market.

Source: Tempo Australia

CETO Wave Energy update

27 February

- [Albany Wave Energy Project](#) site specific design and development advances
- CETO 6 design, development and testing progress
- Significant European and UK collaboration, research and supply agreements to support delivery of Albany and future wave projects

Carnegie Clean Energy Limited (ASX:CCE) is pleased to provide an update on the latest developments on its CETO 6 design and its Albany Wave Energy Project, as well as new and ongoing collaboration relationships with several key UK-based partners and suppliers.

As announced in November, CETO 6 builds on Carnegie’s decade long development of CETO, and over the past two years, incorporates internal and external collaboration efforts as well as significant time and resource investment to deliver a step change in performance. The CETO 6 design builds on intellectual property first lodged by Carnegie in 2013 incorporating on-board power generation and multiple moorings and power take off (PTO) modules.

The first deployment of the CETO 6 unit will be at Albany in Western Australia. The Albany Wave Energy Project (AWEP) involves the design, manufacture and install of a CETO 6 unit in Carnegie’s existing licence area offshore from Torbay and Sandpatch in Albany during the 2019/2020 summer weather window. The Project will also deliver common user infrastructure at the Albany site which Carnegie will make available for other wave energy industry developers once AWEP is complete.

AWEP is supported by \$15.75m from the Western Australian Government’s Department of Primary Industries and Regional Development and \$11.7m of undrawn funding from Carnegie’s \$13m CETO 6 grant from the Australian Renewable Energy Agency (ARENA).

The past months have seen design progress on the core CETO 6 technology as well as the site-specific design and development for the Albany Wave Energy Project.

Site Development Activities

Recent site development activities include completion of a metocean modelling study, deployment of an acoustic wave and current meter, ongoing monitoring of the previously deployed wave buoy, local site investigations, studies and surveys and ongoing stakeholder engagement.

The detailed measurement of the wave resource at the offshore site has been occurring for over two months from the installation of Carnegie's wave buoy at a site approximately 1.5 kilometres offshore from the existing Albany wind farm. The data buoy is deployed in 30 meters of water depth and is measuring wave height, period and energy spectra and is transmitting this data to Carnegie's CETO team. Wave data gathered at the deployment site feeds into the CETO 6 unit design and also supports the development of the Project's installation, operations and maintenance design and planning. A significant wave event was recorded in December when the Hmax (maximum wave height) reached 6.8 m.

In addition, the University of Western Australia (UWA) completed a Metocean modelling study for the Project and deployed an acoustic wave and current meter (AWAC). These activities were done through the Wave Energy Research Centre (WERC) which was established in association with Carnegie's AWEP.

These activities help characterise the yearly wave conditions and extreme events that could be experienced at the offshore site. This detailed knowledge of the nearshore wave field feeds into many aspects of the Project design and delivery including management of extreme loads and identifying safe working conditions. Through WERC, the University of Western Australia will also soon deploy two additional wave buoys at strategic locations

which will help calibration of the Metocean modelling work.

Carnegie and its contractors have also been undertaking environmental site inspections and appraisals, grid connection studies and site surveys which will continue as part of the Project's approvals, permitting and consultation processes. Upcoming activities on site include geophysical and geotechnical surveys which will help further characterise the deployment site. Good progress has also been made on the cable design, including installation and route options for the cable installation at the AWEP site.

Onshore Site Inspections and Surveys in Albany

Consultation with specific project stakeholders and engagement with the local supply chain has commenced and local community consultation activities will be undertaken over the next few months.

Carnegie will be exhibiting at the Great Southern Sustainable Living Fair & Expo in Albany in March and will also be holding several additional engineering and local supplier events.

CETO 6 Design Activities

The CETO 6 design packages for the Albany Wave Energy Project are progressing, along with the ongoing CETO research and development, which includes developing tools and methods to support AWEP as well as undertaking collaborative R&D activities that will feed into future commercial CETO Projects.

The CETO design team has been progressing the CETO Unit architecture design including modelling to establish the optimum physical implementation of the Power Take Off (PTO) inside the Buoyant Actuator to maximise power and facilitate construction for AWEP. Testing campaigns to validate preferred PTO designs are currently under development.

Further design and analysis of the CETO Unit performance has been undertaken across the

range of expected sea states at the Albany site to achieve the best Buoyant Actuator (BA) geometry for power production, load optimisation and manufacturing, local logistics and operating costs. This is now incorporating the specific data for the site from the metocean study.

The optimised Buoyant Actuator (BA) geometry will now proceed to wave tank testing at the University of Plymouth in South West England. A tank testing campaign at 1/20th scale will commence in the coming weeks that will test the preferred geometry and power take off design for CETO 6 and the validation of the computational work undertaken for the Albany as well as at Wave Hub, in Cornwall, UK. Carnegie has signed an MOU with the University of Plymouth to collaborate on the development of CETO wave energy projects at Wave Hub in Cornwall by utilising numerical and tank testing methods and analysis. Successful delivery of AWEF will allow Carnegie to proceed towards delivery of a CETO array project at the Wave Hub site.

Carnegie has completed further Computational Fluid Dynamics (CFD) numerical simulations for estimation of the power, loads and motions of CETO 6 at Albany. This work supports the load and motions case that will feed into final design specifications for components such as the foundations.

Geotechnical and foundation development activities are also being progressed in the UK via a newly signed MOU with James Fisher Marine Services Ltd. This collaboration is focused on low cost foundation design, subsea connectors, components and tooling, array planning, operation, installation and maintenance requirements for wave energy projects at Wave Hub.

A wave to wire model of the CETO 6 technology at Albany is also being developed using Mathworks products. Virtual prototyping such as this reduces risk and fosters innovation because it allows the rapid

testing of novel ideas and cost-effective understanding the dynamic behaviour of specific components.

In addition, a design load calibration methodology is also under development. There is currently no wave energy converter (WEC) design standard the industry can directly rely on to define a relevant safety factor. The method developed is a statistical approach based on extreme value analysis to define the relevant design load. This aims at ensuring the design load considered delivers the appropriate level of safety without being overly conservative and therefore adding unnecessary cost. This work is being developed in collaboration with UWA via the Wave Energy Research Centre (WERC).

Further work has been performed to develop a system level Failure Mode and Effect Analysis (FMEA) building on best system engineering practice for AWEF. This ensures early identification of potential failures and triggers the implementation of relevant mitigations actions.

With the immediate focus for delivery of the first CETO 6 prototype shifting from Wave Hub in Cornwall to Albany in Western Australia, Carnegie and Wave Hub Limited signed a Memorandum of Understanding (MOU) to capture Carnegie's work delivered to date at Wave Hub and to progress development for a CETO array following the Albany Project. The collaboration activities will focus specifically on site development, array planning, operational and maintenance requirements for wave energy devices and arrays.

Source: Carnegie Clean Energy

CEO of Australian Renewable Energy Agency (ARENA)

27 February

After overseeing 320 projects which have led to more than \$3.5 billion dollars of investment over the last six years Ivor Frischknecht has advised the Government he will not be seeking a third term as the Chief Executive Officer of the Australian Renewable Energy Agency (ARENA).

Mr Frischknecht has helped to make ARENA a success by utilising his expertise in energy, innovation and early stage investment.

Under his guidance, ARENA has developed a clear set of priority investment areas consistent with the Turnbull Government's emphasis on affordable and reliable energy.

Of significance ARENA has invested in the construction of 12 new large-scale solar farms, a variety of battery projects and the feasibility study for Snowy 2.0 during Mr Frischknecht tenure.

He has strengthened key relationships between ARENA, the Australian Energy Market Operator (AEMO), the Australian Energy Market Commission (AEMC) and the Clean Energy Finance Corporation (CEFC).

Mr Frischknecht has provided the Government with sufficient notice of his intentions to allow a thorough search to be undertaken to find a suitable replacement and ensure a smooth handover.

I thank Mr Frischknecht for the contribution he has made in helping the Government to deliver a more affordable and reliable energy system as we transition to a lower emissions future.

Source: Federal Government

Project Update

Bowen Solar Farm

Infigen Energy submitted a referral to the Federal Department of the Environment & Energy for its proposed [Bowen Solar Farm](#) in northern Queensland. The project involves the construction of a large-scale solar farm with a maximum capacity of 100MW within a 137.6 ha development footprint, connected to the grid via the existing high voltage line within the property. The detailed design, specific layout and electricity generating capacity have not been confirmed at this stage. However, it is envisaged the project will involve a typical solar farm with arrays, switch yards, battery storage, control building, and car park area to facilitate the operation of the solar farm within the nominated development area. The proposed development footprint includes 73.9 ha of cleared grazing land, 39.7 ha of heavily disturbed regrowth vegetation and 24ha of heavily disturbed remnant vegetation.

Windlab Exceeds Prospectus Forecast; Scales Up Operations

28 February

Windlab Limited (ASX: WND) has today released its annual results for the 2017 year.

Windlab delivered a strong financial result for 2017, and in doing so met its prospectus revenue forecast and exceeded its Net Profit Before Tax (NPBT) statutory prospectus forecast. The Company achieved strong revenue and earnings growth. Revenue for the year grew 36% to \$23.3M, excluding equity accounted profits from associates (operating projects). NPBT grew 184% to \$14.4M, compared to a statutory prospectus forecast of \$12.5M.

Operating expenses were \$6.3M including \$0.7m in one off IPO costs, compared to a statutory prospectus forecast of \$7.4M. Direct Project expenditure was \$2.7M, compared to a prospectus forecast of \$3.2M, despite progressing all major projects as expected.

Cashflow from Operating Activities grew 775% to \$12.0M, driven by financial close payments from Coopers Gap and Kennedy Energy Park, project revenues from South Africa and the US and growing recurring cashflows.

Recurring revenues from asset management and equity accounted profits from operating projects more than doubled to \$2.7M.

At year end the Group held \$14.2M in cash, mainly in Australian dollars. Net assets grew from \$13.4M to \$56.9M, including \$23.6m in new equity net of costs, conversion of \$10.6M in debt, and the strong net profit. The Group's outstanding fixed-interest working capital facility with the Clean Energy Finance Corporation totals \$4.7m, a very modest level of gearing against total assets of \$73.1m.

Investments in operating projects grew by \$30.3m following contribution of the Group's 50% share of construction equity to Kennedy Energy Park and the accumulation of profits in the Kiata Wind Farm SPV.

"These results are an affirmation of Windlab's scientific advantage, development track record and business model. Strong growth in recurring revenue will continue this year as Kiata and Kennedy contribute in 2018 and beyond." said Roger Price, Executive Chairman.

"In parallel with achieving these results in 2017 we have continued to invest in our pipeline, with Lakeland, Kennedy Phase 2, and our overseas projects progressing through development. These investments will underpin Windlab's future growth plans as we complete projects and extract value from our high quality development portfolio."

Source: Windlab

Project Update

Beelbee Solar Farm

APA submitted a referral to the Federal Department of the Environment & Energy for its proposed [Beelbee Solar Farm](#), approximately 42km west of Dalby in Queensland, with a 9km transmission connection into the national electricity grid. The Beelbee Solar Farm is expected to produce between 150MW and 240MW of power into the national electricity grid, depending on the selection of either fixed or tracking panels, and final design configuration. The solar farm site will consist of arrays of panels in a number of discrete areas, avoiding site constraints and areas of ecological significance.

It is estimated there will be between 524,000 and 816,000 solar modules (based on concept designs). The arrays, including necessary spacing, access, and inverters, will cover a total area of approximately 360ha or 70% of the site.

Approval has been sought for battery storage of up to 100MWh. While specifics of the battery storage (type and layout) have not been determined, it is estimated that an area of approximately 17,000m² will be required for the full 100MWh capacity.

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New data: Australia fails on emissions, yet again

1 March

Australia's greenhouse gas pollution levels have jumped yet again, increasing for the third consecutive year, following the release of the latest national data.

The Department of the Environment and Energy's National Greenhouse Gas Inventory report shows Australia's greenhouse gas pollution levels increased by 0.8% (without land use change and forestry) over the year to September 2017.

Climate Councillor and international climate scientist Professor Will Steffen said the latest data shows Australia's pollution levels continue to reach disappointing new heights.

"This is an abject failure and Australia can do better than this. We are now becoming complacent, as the nation's greenhouse gas pollution levels consistently rise, every quarter since March 2013," he said.

"The window of opportunity to tackle climate change is rapidly closing. We cannot sit on our hands and allow another year to go by, when more than 554 million tonnes of carbon dioxide (in 12 months to September 2017) is pumped into the atmosphere. All of this data should serve as yet another serious warning signal for the Federal Government to act swiftly to cut our rising pollution levels and to tackle climate change."

"We must continue the transition to clean, affordable and reliable renewable energy and storage technologies through strong and credible climate and energy policy. The proposed National Energy Guarantee will do nothing but guarantee failure when it comes to tackling climate change."

"Renewables have proven themselves time and time again, our states and territories have embraced their necessity in Australia's future, now the Federal Govt should do the same."

Source: Climate Council

Project Update

Jupiter Wind Farm

The NSW Department of Planning & Environment recommended not to approve EPYC's proposed 350 MW [Jupiter Wind Farm](#) near Tarago, which will now go to the Planning Assessment Commission for a final decision. The reasons given by the DPE for refusing the development application are:

1. The project would result in unacceptable visual impacts on the landscape and residences in the local area;
2. The project is not supported by the majority of local residents, the local councils and key interest groups;
3. The project is not consistent with the applicable land use zoning provisions; and
4. For the above reasons, the project is not a suitable site for a large-scale wind farm and is not in the public interest.

PROJECT BRIEFS

Community information sessions have been held in support of Green Switch Australia's proposed 45 MW [Gregadoo Solar Farm](#) in the Riverina district of New South Wales.

Terrain Solar has started planning for its Glenella Solar Farm proposed for an 80 hectare site in the Mackay region of Queensland.

Agave trial powers up Far North bio revolution

28 February

Renewable electricity and biofuels made from agave are now one step closer, following kick-off of a groundbreaking trial by [MSF Sugar](#), with support from the Queensland Government.

Minister for State Development, Manufacturing, Infrastructure and Planning Cameron Dick joined Member for Cook Cynthia Lui and MSF Sugar CEO Mike Barry today, to inspect the company's first crop of over 3,500 agave plants at Arriga.

“Commencement of MSF Sugar’s agave trial is a major milestone in the company’s journey to develop its \$60 million biorefinery complex,” Mr Dick said.

“Once operational, MSF Sugar’s proposed biorefinery complex will be a world-first initiative that will see the company produce sugar, renewable baseload electricity and ethanol biofuels from one location, using locally-grown sugarcane fibre and potentially agave, a succulent plant native to Mexico and South America.”

Mr Dick said the benefits of developing a large-scale agave cropping industry in the Far North were significant, for residents and local farmers.

“Using both agave and sugarcane fibre as feedstock for the biorefinery and green electricity plant means both facilities can operate all year around rather than just nine months, which overcomes sugarcane’s seasonal nature,” Mr Dick said.

“Agave needs little irrigation and grows well in low-grade agricultural land, so the potential future income diversification opportunities for local farmers are considerable.”

Mr Dick said that MSF Sugar has advised that its biorefinery complex was expected to generate 80 construction and farming jobs and a further 50 operational jobs.

“Powered by an onsite bagasse and potentially agave fuelled 24 MW Green Power Station, the MSF Sugar combined biorefinery complex is expected to produce 110,000 tonnes of raw sugar, green electricity for the grid and 55 million litres of ethanol biofuel annually. The Green Power Station will also supply baseload electricity to 28,000 homes, 24 hours per day,” Mr Dick said.

Member for Cook Cynthia Lui said the project represents a major boost for the region’s economy.

“MSF’s project here in Arriga is another step towards achieving the Palaszczuk Government’s vision for a \$1 billion sustainable, export-oriented biotechnology and bioproducts sector,” Ms Lui said.

According to MSF Sugar CEO Mike Barry, “undertaking such an ambitious pilot project would be much less achievable without the support of the Queensland Government, which highlights the important role governments play in supporting the development of sustainable, high value industries”.

“The Biofutures Acceleration Program funding enabled us to fast-track the project and without this support, we may not have progressed to trial stage for another couple of years,” he said.

Mr Dick said the project was receiving funding from the Queensland Government’s Biofutures Acceleration Program to conduct a feasibility study which will consider all processes related to farming the new agave crop, making the biomass products (ethanol and electricity) and delivering the end products to market. This builds on funding from the Queensland Government’s Biofutures Commercialisation Program to demonstrate bioethanol production for agave at the pilot scale.

Source: Queensland Government

Technology

GE announces Haliade-X, the world’s most powerful offshore wind turbine

1 March

- Haliade-X brings higher value to customers by producing more energy from the wind with a 12 MW generator rating, an industry-leading capacity factor¹ and advanced digital capabilities

- Haliade-X 12 MW is currently being bid for projects that will ship in 2021

- Haliade-X 12 MW will produce 45 percent more energy than any other offshore wind turbine available today and will generate up to 67 GWh annually², enough renewable power for up to 16,000 European households²
- \$400 million program will fund engineering, testing and supply chain development over the next three to five years

GE Renewable Energy (NYSE:GE) today unveiled its plan to develop the largest, most powerful offshore wind turbine: the Haliade-X. Featuring a 12 MW direct drive generator and an industry leading gross capacity factor of 63 percent¹ the Haliade-X will produce 45 percent more energy than any other offshore turbine available today². GE will invest more than \$400 million over the next three to five years in development and deployment of the Haliade-X.

John Flannery, Chairman and CEO of GE, said, "We want to lead in the technologies that are driving the global energy transition. Offshore wind is one of those technologies and we will bring the full resources of GE to make the Haliade-X program successful for our customers."

Towering 260 meters over the sea, more than five times the size of the iconic Arc de Triomphe in Paris, France, the Haliade-X 12 MW carries a 220-meter rotor. Designed and manufactured by LM Wind Power, the 107-meter-long blades will be the longest offshore blades to date and will be longer than the size of a soccer field. One Haliade-X 12 MW turbine will generate up to 67 GWh annually², enough clean power for up to 16,000 households per turbine, and up to 1 million European households in a 750 MW windfarm configuration.

Jérôme Péresse, President and CEO of GE Renewable Energy said, "The renewables industry took more than 20 years to install the first 17 GW of offshore wind. Today, the industry forecasts that it will install more than 90 GW over the next 12 years. This is being driven by lower cost of electricity from scale and technology. The Haliade-X shows GE's

commitment to the offshore wind segment and will set a new benchmark for cost of electricity, thus driving more offshore growth."

The ability to produce more power from a single turbine means a smaller number of turbines in the total farm, which translates to less capital expenditure for the balance of plant and reduced risk in project execution as the installation cycle time is reduced. It also simplifies operation and maintenance of the wind farm. All of this reduces the investment and operation cost for developers, makes offshore wind projects more profitable, and ultimately lowers cost of electricity for consumers.

John Lavelle, CEO of Offshore Wind at GE Renewable Energy said "The Haliade-X 12 MW will help our customers in an increasingly competitive offshore environment, and through its size and digital functionality provide important value across manufacturing, installation and operation."

GE's Haliade-X platform is designed to offer greater efficiency in generating power from the wind that is available. With a 63 percent gross capacity factor¹, the Haliade-X 12 MW is five to seven points above the current industry benchmark. Therefore, it will produce more energy per MW installed, which will significantly increase returns for customers.

To design and build the Haliade-X platform, GE Renewable Energy is relying on an unprecedented collaboration across the GE portfolio, leveraging the knowledge of GE's Onshore wind team, with 50,000 turbines in the field; the blade expertise of LM Wind Power; the GE Power and GE Aviation engineers for peer reviews of component and systems design; the Global Research Center for control systems and component validation; and GE Digital for supporting digital modelling, analytics and app development. The program is a GE-wide effort.

GE Renewable Energy aims to supply its first nacelle for demonstration in 2019 and ship the first units in 2021.

¹ "Capacity factor" compares how much energy was generated against the maximum that could have been produced at continuous full power operation during a specific period of time.

² Based on wind conditions on a typical German North Sea site.

Source: GE

Project Update

Bango Wind Farm

NOTICE OF PLANNING ASSESSMENT COMMISSION MEETING

The Department of Planning and Environment (DP&E) has completed its assessment of the [Bango Wind Farm](#). The application has been referred to the Planning Assessment Commission (the Commission) for determination, under the terms of the Minister's delegation.

Due to the level of public interest in the proposal, the Commission will be meeting to hear public views on the Assessment Report and recommendation, prior to determining the proposal. This is an opportunity for interested parties to comment on the DP&E's assessment and recommended conditions of approval, before a decision is made.

The Commission meeting is scheduled to commence at 9:00am on Thursday, 22 March 2018 at the Boorowa Ex-Services & Citizens Club, 55-59 Pudman Street, Boorowa NSW 2586. The meeting is open to the public to observe the proceedings.

NOTE: The NSW Department of Planning and Environment has recommended approval of the Bango Wind Farm subject to conditions.

Historic Snowy deal

2 March

The Turnbull Government has reached an agreement with the New South Wales and Victorian Governments to take full ownership of [Snowy Hydro](#) Limited in a deal that will deliver more than \$6 billion in Commonwealth funds for investments in infrastructure across both states.

The historic agreement will generate more reliable energy, cheaper electricity, better infrastructure and more jobs for NSW and Victoria.

Initiated by the Federal Government and announced at the 2017 Federal Budget, the deal includes a broad commitment to invest the proceeds in productive infrastructure projects, with NSW set to receive \$4.154 billion and Victoria \$2.077 billion, reflecting their respective Snowy shareholdings.

The agreement also builds on the Turnbull Government's substantive energy sector reforms to ensure reliable and affordable energy for businesses and households.

In a win for Australian energy consumers, the agreement will pave the way for the Snowy 2.0 pumped hydro project to proceed to a final investment decision by the independent Snowy board.

The purchase will see this iconic infrastructure remain in Australian Government hands and NSW and Victoria will receive a fair market value for an important energy asset. The deal will be contingent on the Victorian Parliament confirming the sale and the Commonwealth Parliament passing an appropriation bill.

Key terms reached as part of the purchase are:

- The Australian Government will increase its shareholding from 13 per cent to 100 per cent by purchasing NSW's (58 per cent) and Victoria's (29 per cent) shareholdings. The agreed fair market value of the enterprise is \$7.8 billion. Allowing for Snowy Hydro's debt

as of 31 December 2017, NSW will receive \$4.154 billion and Victoria \$2.077 billion.

- NSW and Victoria will invest proceeds of the sale into productive infrastructure, further boosting their already substantial capital works budgets and providing a vital boost to the national economy.
- NSW will provide all reasonable assistance to Snowy Hydro in relation to its current and future operations (including planning and approvals process for Snowy 2.0);
- The Australian Government will provide an assurance that Snowy Hydro will continue to be a successful operation. Importantly, it will continue to be in public ownership, and employment levels and existing head office locations will not change;
- There will be no change to current arrangements on water issues; and
- The transaction will not affect allocations of GST for NSW or Victoria.

Snowy Hydro is a critical player within the National Electricity Market. The company owns and operates 5,500 MW of generation capacity including the iconic Snowy Mountains Scheme. Snowy 2.0 is a proposed expansion of the Snowy Mountains Scheme and will provide an additional generation capacity of 2000 MW to power about 500,000 homes at peak demand.

The Commonwealth thanks the Secretaries of the Australian, NSW and Victorian Treasuries that have worked on this complex deal since May 2017. All jurisdictions have worked cooperatively in securing this important transaction.

Source: Federal Government

Project Brief

Junee Solar Farm

Terrain Solar submitted a development application to the Junee Shire Council for its proposed 26 MW [Junee Solar Farm](#), approximately 5km north of Junee in New South Wales. The solar farm infrastructure will occupy a footprint of approximately 93 hectares. The generated electricity will be

exported into the network through augmentation works to Essential Energy's existing 66 kV overhead transmission line that traverses the site and runs through to the Junee Zone Substation. The project has an estimated capital investment value of approximately \$30mil.

WA's first co-located wind and solar farm completed at Emu Downs

2 March

When APA Group bought the Emu Downs Wind Farm in 2011, the new owners faced a challenge: how do you guarantee a steady supply of energy throughout the day?

The Emu Downs Wind Farm, a 48-turbine farm that was constructed in Western Australia in 2006, stands on a site featuring two dominant wind resources. In the morning, wind blows from the east, while in the afternoon, the Fremantle Doctor sweeps in from the west. In the middle of the day, however, the wind dips, resulting in a fall in energy production at the 80-megawatt wind farm.

The solution? A [20-megawatt solar farm](#) built on the same site to complement the prevailing wind resource, using the existing transmission connection infrastructure.

"You've got the profile of the wind in the morning, which dips in the middle of the day, and you've got the solar picking up in the middle of the day. It fits in really nicely," says Adam Pegg, Head of Business Development in Renewables at APA Group. "You get a flatter profile with the wind and solar working together."

The size of the solar farm is an important element in its design. "Twenty megawatts sounds like an arbitrary number, but it was what our modelling spat out," says Pegg. "We didn't have to increase the size of our substation or increase the connection point

and we were able to squeeze 20 megawatts of solar in there without too much curtailment.”

Now, he says, the 80-megawatt wind farm and 20-megawatt solar farm produce 100 megawatts of energy that pass through the existing 80-megawatt connection point.

The Emu Downs Solar Farm (EDSF) features 75,000 photovoltaic panels spread across 70 hectares on a site adjacent to the wind farm, 200 kilometres north of Perth and 30 kilometres west of Cervantes.

The \$92 million project has been operational since December 2017, when it was finished three weeks ahead of schedule.

EDSF forms part of the first co-located solar and wind farm in Western Australia, and one of the first in the country. As well as providing complementary energy resources, co-location delivers cost savings through the use of shared infrastructure, including the substation and the connection point, and “any operating synergies that might exist,” says Pegg.

APA Group has entered into a power purchase agreement to sell electricity and generation certificates generated by the solar farm to energy provider Synergy to 2030.

ARENA provided APA Group with \$5.5 million in funding for the project, one of 12 of solar farms that won funding through ARENA’s multimillion-dollar large-scale solar round in 2016.

The \$92 million project has been operational since December 2017, when it was finished three weeks ahead of schedule.

The development of large-scale solar has leapt ahead in recent years in large part to ARENA’s funding scheme, says Pegg. “It was an important step for the industry.”

In 2011, when APA Group first developed plans for the solar addition to the wind farm,

solar was prohibitively expensive, he says. “It was at least a couple of hundred dollars per megawatt-hour, compared to wind, which was perhaps half the price.”

Back then, Pegg notes, the largest solar plant in the country was 10 megawatts. Today, the 12 solar farms that ARENA has commissioned will triple Australia’s large-scale solar capacity from 240 MW to 720 MW and power 150,000 Australian homes.

ARENA CEO Mr Ivor Frischknecht said the completion of the Emu Downs Solar Farm was a significant milestone for renewables in Australia.

Source: ARENA

New Project

Rodds Bay Solar Farm

Developer: Renew Estate

Capacity: 300 MW

Location: Bororen, northern Queensland

LGA: Gladstone Regional Council

Expected cost: \$400-500mil

Description: The project site is approximately 2758 ha in size. Key elements of the proposed infrastructure include PV modules mounted on tracking array structures, containerised power conversion stations containing electrical switchgear and an electrical substation for connection to the National Electricity Market. The project includes:

- Approximately 900,000 photovoltaic solar modules
- Approximately 10,000 tracking structures
- Approximately 55 containerised Power Conversion Stations containing electrical switchgear, inverters and medium voltage transformers

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