Australia – Investment Opportunities in Renewable Energy

Webinar, Thursday 16 March 2017
09:15 – 10:15 hrs CET Paris
19:15 - 20:15 hrs AEDT Sydney
Australia – Investment Opportunities in Renewable Energy

Webinar Agenda

• Why Australia for Renewable Energy
• Tracking the Australian Renewable Energy Target
• Victoria - A State Government driving Renewable Energy Deployment
• Market Views from the Clean Energy Council
• Project success – PPAs, project viability and structure
• How the Australian Trade & Investment Commission works with Investors
• Q&A
INTRODUCING OUR SPEAKERS

Carolyn Abela Rebiscoul
Australian Trade & Investment Commission

Mark Williamson,
Executive General Manager, Clean Energy Regulator,
Australian Government

Simon Corbell,
Victorian Renewable Energy Advocate,
Victorian Government

Kane Thornton,
Chief Executive Office
Australian Clean Energy Council

Paul Curnow,
Partner, Baker & Mackenzie
Why Australia – Renewable Energy

Carolyn Abela Rebiscoul,
Investment Manager – Resources & Energy, Western Europe
4th largest economy in Asian region and 12th largest in the world

26th year of consecutive annual economic growth

GDP of more than US$1.5 trillion (two per cent of global GDP)

AAA rating by all three credit rating agencies

A strategic base for exporting to Asian markets

A growing population of currently 23.7 million

A$3 trillion of foreign investment stock with foreign direct investment up 8.7% annually since 1996
AUSTRALIA: A PARTNER FOR GROWTH IN ASIA

AUSTRALIA'S TOP 12 GOODS AND SERVICES EXPORT MARKETS – 2015–16

Note: Country ceiling for Europe only reflects the UK.

Sources: Department of Foreign Affairs and Trade, Australia’s trade in goods and services by top 15 partners 2015–16 (released 18 November 2016); Austrade
Australia ranks in the top 20 globally for solar, wind and bioenergy production. Energy generated from renewable sources is forecast to grow 20 per cent by 2034-35.

Australia needs to build approximately 30 to 50 large scale wind and solar projects to meet the target by 2020.
Signatory of the Paris Agreement
/ Emission reduction target of 26% of 2005 levels by 2030

Australia aims to meet its climate change targets through Direct Action Policies
/ Through the Emission Reduction Fund
/ Renewable Energy Target
/ National Energy Productivity Plan

Delivery agencies
/ Clean Energy Finance Corporation
/ Australian Renewable Energy Agency

Regulatory body
/ Clean Energy Regulator
ARENA EXPRESSION OF INTEREST ANNOUNCED (1 FEB 2017)

• New Expression of Interest expected from ARENA to allocate A$20 million to successful demonstration projects under the Advancing Renewables Program (ARP):
  • Projects sought that provide flexible capacity to the system such as battery storage, pumped hydro, concentrated solar thermal, biomass and demand management technology.
  • CEFC to secure long-term debt finance to support these projects.
DIVERSE RENEWABLE ENERGY RESOURCES AND OPPORTUNITIES

Wind
potential for large-scale grid-connected wind farms

Solar
potential for small- and large-scale grid-connected systems and off-grid remote locations

Geothermal
opportunities for demo projects offering ‘first-mover’ advantages

Ocean
substantial resources available for development as technology approaches commercialisation

Bioenergy
second-generation technologies will open up new feedstock for biofuels and electricity generation.
ENERGY TRANSITION IN PROGRESS

NEM Installed Capacity

<table>
<thead>
<tr>
<th>Status</th>
<th>Coal</th>
<th>CCGT</th>
<th>OCGT</th>
<th>Gas other</th>
<th>Solar*</th>
<th>Wind</th>
<th>Water</th>
<th>Biomass</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>24,686</td>
<td>2,451</td>
<td>6,421</td>
<td>2,138</td>
<td>242</td>
<td>3,830</td>
<td>7,988</td>
<td>577</td>
<td>139</td>
<td>48,472</td>
</tr>
<tr>
<td>Announced Withdrawal</td>
<td>3,600</td>
<td>379</td>
<td>34</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4,043</td>
</tr>
<tr>
<td>Existing less Announced Withdrawal</td>
<td>21,086</td>
<td>2,073</td>
<td>6,387</td>
<td>2,106</td>
<td>242</td>
<td>3,830</td>
<td>7,988</td>
<td>577</td>
<td>139</td>
<td>44,429</td>
</tr>
<tr>
<td>Committed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>111</td>
<td>615</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>725</td>
</tr>
<tr>
<td>Proposed</td>
<td>0</td>
<td>975</td>
<td>3,965</td>
<td>0</td>
<td>2,293</td>
<td>12,443</td>
<td>234</td>
<td>188</td>
<td>29</td>
<td>20,127</td>
</tr>
<tr>
<td>Withdrawn</td>
<td>-786</td>
<td>-624</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-1,410</td>
</tr>
</tbody>
</table>

Note: Existing includes Announced Withdrawal.
* Excludes rooftop PV installations.
Independent Review into the Future Security of the National Electricity Market 2017

Focus on the NEM to understand implications for security and reliability in the shift from coal-fired generators to wind and solar PV generators.

Consider solutions, regulatory implications, technical standards and business models to effectively integrate variable renewable electricity generators into the electricity grid.
The Clean Energy Regulator: Progress towards the 2020 Renewable Energy Target

Mark Williamson, Executive General Manager, Clean Energy Regulator
Our purpose: accelerating carbon abatement for Australia
The Renewable Energy Target

1 large-scale generation certificate = 1 MWh

Acquisitions in MWh × Renewable Power Percentage
The investment pipeline

- Firmly announced since 1 January 2016
- Generation 2016
- LRET 2020 Target
- Estimated generation from firmly announced capacity since 1 January 2016
- Estimated total 2020 demand

Austrade webinar 16 March 2017
The certificate market

LGC Spot Price
1 Jan 2015 - 1 March 2017

Final surrender date

Large-scale RET legislated at 33,000 GWh

$85.75
Forward wholesale price – by state

Data for period ending 6 January 2017

Source: AER|Cypha Trade|ASX, Last updated: 12 Jan 2017 - 4:50 pm

Austrade webinar 16 March 2017
Victorian Renewable Energy Target

National Policy Context

- Federal Renewable Energy Target (RET) – 23.5% by 2020
- A$40 billion in investment
- 30—50 major projects to be built by 2020
- State and Territory renewable energy targets compliment Federal RET
State and Territory targets

Victoria - 40% by 2025 (by reverse auction)
South Australia – 50% by 2025
Queensland - 50% by 2030
Australian Capital Territory - 100% by 2020 (by reverse auction)
Northern Territory – 50% by 2030
Economy of Victoria

• Maintains AAA rating (S&P and Moody’s)
• Melbourne most liveable city in the world for last 5 years. (Economist Intelligence Unit)
• Victoria is a mid-sized economy that is larger than Singapore and New Zealand and most of South East Asia. Melbourne population 5.2 million (State of Victoria - 6 million)
Victorian Renewable Energy Target

Victorian Economy

• State economy strong growth - average of 2.1% annually over the ten years to June 2015. (IMF average 1.5%)

• Advanced Industry sectors - Automotive, Aerospace, Defence, Scientific Instruments, Medical Devices and Equipment, Chemicals and Plastics, Pharmaceuticals, Fabricated Metals, TCF (textiles, clothing and footwear) and Food Processing.

Simon Corbell
Victorian Renewable Energy Advocate
Victorian Renewable Energy Target

- 25% by 2020 / 40% by 2025
- 5400MW to be supported
- Reverse auction mechanism
- Legislation to be introduced by mid 2017
- First auction to commence late 2017
- Clear Auction program to be published
Victorian Renewable Energy Target

Auction Framework

- 1500MW to be supported by 2020
- Technology neutral auction rounds + 20% for large scale solar
- Wind and solar will be major technology
- Long term contracts with contract for difference under consideration

Simon Corbell
Victorian Renewable Energy Advocate
Local content and community engagement

- Auction evaluation criteria likely to require strong local content and community engagement criteria
- Positive weightings for local economic development outcomes not just construction, also supply chain, skills development.
Economic Development Outcomes

- Construction activity estimated at 11,000 jobs
- Supply chain opportunities – tower manufacture, blade manufacture, other components
- Assist manufacturing, resource sector transition
Large scale storage initiatives

- Up to 100MW of large scale storage to be built by 2018
- A$25 million grant funding available
- Battery, pumped hydro, solar thermal
- Expressions of Interest open now.
VRET = key pathway to market for renewable energy in Australia

5 400 MW
A$9 billion investment
11,000 jobs

25% by 2020 – 40% by 2025
Thank you


AUSTRALIAN CLEAN ENERGY
INDUSTRY SNAPSHOT
GENERATION FLEET IS OLD
TRENDS & DRIVERS

- Federal Renewable Energy Target of 33,000GWh by 2020, with bipartisan support
- Australian Renewable Energy Agency and Clean Energy Finance Corporation supporting innovation and finance solutions
- State governments introducing Renewable Energy Targets or driving direct procurement
- Rising wholesale energy prices, driven by coal closure and rising gas prices
- Reducing cost of large scale renewable energy and energy storage
- Maturing and competitive EPC market, along with local supply chain development
- Growing focus on portfolio of technologies and solutions to address energy security concerns
RISING WHOLESALE ENERGY PRICES

TECHNOLOGY COST REDUCTIONS

Levelised Cost of Large Solar

* Estimate based on limited information
** Normalised for capital structure advantages associated with 20 year FIT

Source: ARENA, September 2016.
Large renewable energy projects under construction or starting in 2017

Total: 2256 Megawatts | $5107m Investment | 2955 Jobs

- WA: 20 Megawatts, $50m Investment, 100 Jobs
- NT: 313 Megawatts, $1037m Investment, 350 Jobs
- QLD: 856 Megawatts, $1666m Investment, 950 Jobs
- SA: 336 Megawatts, $665m Investment, 335 Jobs
- TAS: 730.8 Megawatts, $1689m Investment, 1220 Jobs

Clean Energy Council
### LARGE PROJECT PIPELINE

#### WIND

<table>
<thead>
<tr>
<th>State or Territory</th>
<th>Under construction (MW)</th>
<th>Approved (MW)</th>
<th>In the approvals system (MW)</th>
<th>Total (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC</td>
<td>239</td>
<td>1729</td>
<td>850</td>
<td>2818</td>
</tr>
<tr>
<td>NSW</td>
<td>175</td>
<td>2195</td>
<td>4835</td>
<td>7205</td>
</tr>
<tr>
<td>QLD</td>
<td>1045</td>
<td>345</td>
<td>1390</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td>1184</td>
<td>170</td>
<td>1354</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>118</td>
<td>453</td>
<td>2136</td>
<td></td>
</tr>
<tr>
<td>TAS</td>
<td>1565</td>
<td>339</td>
<td>339</td>
<td></td>
</tr>
<tr>
<td>ACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NT</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>532</strong></td>
<td><strong>8057</strong></td>
<td><strong>6653</strong></td>
<td><strong>15,242</strong></td>
</tr>
</tbody>
</table>

#### SOLAR

<table>
<thead>
<tr>
<th>State or Territory</th>
<th>Under construction (MW)</th>
<th>Approved (MW)</th>
<th>In the approvals system (MW)</th>
<th>Total (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIC</td>
<td>180</td>
<td></td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>110</td>
<td></td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>QLD</td>
<td>20</td>
<td>2280</td>
<td>2480</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td>10</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td></td>
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<tr>
<td>TAS</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ACT</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>NT</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>31</strong></td>
<td><strong>2585</strong></td>
<td><strong>10</strong></td>
<td><strong>2626</strong></td>
</tr>
</tbody>
</table>

Source: Clean Energy Council, July 2016.
CHALLENGES

• Securing off-take agreement with small number of credit worth counter parties
• Very competitive industry with tight margins, after a lengthy investment freeze
• Political ‘battlelines’ in relation to clean energy policy
• Lack of long term policy on carbon
• RET set for 2020, with no national target beyond 2020
• Energy security debate focused on renewable energy. Finkel review underway.
• Market and regulatory reform to recognise and incentives for new services and solutions
Investment Opportunities in Renewable Energy in Australia

Paul Curnow
Partner & Head of Asia Pacific Renewables

March 2017
Agenda

1. PPA Landscape
2. Regulatory Reform and New Opportunities
3. Key Investment Milestones
1. RET Retailer PPAs

- Under the Renewable Energy Target (RET) retailers are required to procure an increasing percentage of their electricity from renewable resources against annual targets (which collectively meet the RET target of 25% by 2020).
- The obligation to purchase LGCs is prescribed until 2030; although it is unclear what obligations will be placed on retailers after 2030.
- Accordingly, retailers are in the market for renewable energy PPAs up to 2030 – they can buy LGCs on the spot market, but look to hedge under longer-term PPAs.
- PPA tenors are between 10-12 years (until the end of the RET) or less due to price uncertainty.
- 5 + 5 term structures with put and call options are being utilised, where the price is fixed for 5 years after which the retailer has a call option and, if the call option is not exercised, the generator has a put option (at a lower floor price).
- Retailers typically take the RET change in law risk so that they will be obligated to continue to pay the bundled PPA price even if the RET is amended or repealed.
2. State Based PPA Programmes

Common structures:

- Based on a reverse auction tenders with bid-in tariffs
- Evaluation is generally on price and a degree of local jobs and investments
- Successful bidders enter into “contracts for difference” with the applicable State government where any difference between the bidder’s winning tariff and the prevailing NEM spot price which it receives will be paid by the State government.
- Contract periods differ but usually range between 15 to 20 years.

Key Issues (discussed below):

- Acquiring land
- Connection constraints
- Planning and permitting approvals
### 2. State Based PPA Programmes

<table>
<thead>
<tr>
<th>State</th>
<th>Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Victoria</td>
<td>• Renewable energy generation targets of 40 per cent by 2025 (currently 12%). This requires approximately 400/500 MW per annum.</td>
</tr>
<tr>
<td></td>
<td>• Will be done on a staged, reverse auction basis – Renewable Energy Auction Scheme (REAS).</td>
</tr>
<tr>
<td></td>
<td>• Projects commissioned before 2020 will be complementary to the RET; after 2020 will be surrendered to the Victorian Government.</td>
</tr>
<tr>
<td></td>
<td>• Developers will bid for long term PPAs (proposed to be contracts for difference, fixing the price for generation, for 10-20 years)</td>
</tr>
<tr>
<td></td>
<td>• Evaluation criteria proposed to include value for money, contribution to Victorian economic development, and community engagement</td>
</tr>
<tr>
<td></td>
<td>• Similar to ACT’s recent wind and solar reverse auctions.</td>
</tr>
<tr>
<td></td>
<td>• Framework legislation is expected to be released this month.</td>
</tr>
<tr>
<td>Queensland</td>
<td>• Qld Government has an ambitious target of 50% renewable energy by 2030 (currently only 4%).</td>
</tr>
<tr>
<td></td>
<td>• Solar150 program has been initiated (150MW Solar Auction). This is expected to be extended to 500MW.</td>
</tr>
<tr>
<td></td>
<td>• Close collaboration with ARENA.</td>
</tr>
<tr>
<td></td>
<td>• Predictions that Queensland could be the “epicenter of large-scale solar in Australia” (Bloomberg)</td>
</tr>
</tbody>
</table>
### 2. State Based PPA Programmes

<table>
<thead>
<tr>
<th>State</th>
<th>Programme</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Australia</td>
<td>• Renewable energy target of 50% by 2025 (already more than 40% from renewables).</td>
</tr>
<tr>
<td></td>
<td>• Attractive policy setting for renewable energy investors (incl. planning and tax).</td>
</tr>
<tr>
<td></td>
<td>• Experienced a state-wide blackout in [October] 2016.</td>
</tr>
<tr>
<td></td>
<td>• Experimenting with solar storage systems. Several pilot projects currently underway.</td>
</tr>
<tr>
<td>New South Wales</td>
<td>• Draft Strategic Plan anticipates a net-zero emissions by 2050.</td>
</tr>
<tr>
<td></td>
<td>• Contemplates a state-based initiative to build 500 MW of large scale renewable energy, including 250 MW through an ACT-style tender.</td>
</tr>
<tr>
<td></td>
<td>• However, several delays in implementation.</td>
</tr>
<tr>
<td></td>
<td>• Market is congested - 2,575 MW approved and 4,625 MW seeking approval.</td>
</tr>
<tr>
<td>Australian Capital Territory</td>
<td>• Has completed procurement of 600 MW of renewable energy which meets its 100% renewable energy target by 2020.</td>
</tr>
<tr>
<td></td>
<td>• Generators are obliged to transfer all LGCs to the ACT Government, who then voluntarily surrenders them to the Clean Energy Regulator or sells them into the Renewable Energy Certificates market.</td>
</tr>
</tbody>
</table>
3. Corporate PPAs

- Allows customers to lock in electricity and LGC prices for longer periods, mitigating exposure to price volatility.
- Structures include:
  - **Behind the meter**: purchase power directly from a renewable energy plant through a private network with no connection to the NEM.
  - **In front of meter; active retailer**: electricity and LGCs are purchased through a retailer who takes on spot price hedging. Challenges with this include: i) higher retail margins and ii) exposure to spot price risk for surplus energy.
  - **In front of meter; passive retailer**: electricity and LGCs are purchased through a retailer who passes the spot price to the customer and the customer hedging this price with the generator, giving the customer a wholesale electricity price while achieving price certainty for the generator. Challenges include the customer having to hold an AFSL for the derivative nature of the contract.
Regulatory Reform and New Opportunities
Energy Storage

Regulatory Changes Relevant to Energy Storage

- National Electricity Rules were amended to make it clear that non-conventional producers of electricity such as energy storage systems will qualify as generators of the purposes of the rules.
- The rule changes aims to increase market neutrality between generation and storage and clarify that battery storage can be appropriately classified as a generating unit.
- AEMC has also introduced ring-fencing guidelines that aim to provide a level playing field for third party providers in new and existing markets for metering and energy storage services, in order to promote competition in the provision of these services.
- AEMC has made a number of other recommendations which may result in further rule changes, such as in relation to technical standards and incentives for network service providers to use battery storage.
Ancillary Services

Regulatory Changes Relevant to Ancillary Services

- **Frequency control:** requirements for non-synchronous generators to acquire supply-side frequency control ancillary services from other sources (such as wind turbines fitted with synthetic inertia controllers, batteries with power conversion electronics, and spinning motors known as synchronous condensers) are likely to be introduced following a trial in South Australia in June 2017. This will create opportunities for suppliers of frequency services.

- **Demand management:** Currently demand management covers an estimated 1% of peak load in Australia, compared to 8-10 per cent in the US - ARENA estimates that demand management could supply 50 per cent of peak.

- In November 2016 the AEMC made a draft determination and draft rule to provide for a new type of market participant – a market ancillary service provider - to offer customers’ loads into the frequency control ancillary services (FCAS) markets.

- The new rule is designed to unbundle grid services - effectively separating the supply of energy and the provision of ancillary services.

- In Australia, some of the winners from the change could include demand-side aggregators and software companies with products that will help consumers understand and participate in ancillary service markets.
Energy Storage

Government funding for energy storage

- Clean Energy Finance Corporation (CEFC) and the Australian Renewable Energy Agency (ARENA) will spend $20 million on helping flexible capacity and large-scale energy storage projects become commercially viable, including pumped hydro and batteries (announced February 2017)

- ARENA has provided grants for a number of battery storage projects:
  - $553,780 towards a $1,207,800 project to improve the CSIRO's 'UltraBattery' and reduce the costs of battery storage.
  - $580,000 in grants during the early development stages of Ecoult's battery technology for it to build their UltraFlex device, a kilowatt-scale battery storage device.
  - $450,000 ARENA grant to EnergyAustralia to develop a pumped hydro energy storage project in South Australia.

- Victorian Government recently announced $5 million to support large-scale energy storage initiatives and is in the process of receiving expressions of interest for building a 20MW battery storage facility in western Victoria (the first of its kind in Australia) with co-funding from ARENA
Key Investment Milestones for Developers
Key milestones in the first **12 months** of developing a wind or solar project

1. Obtain options to lease or options to purchase for the necessary land
   - Ensure the options have bankable terms and necessary access rights
   - Consider the different property law requirements of each state
   - Consider suitability of connection arrangements on the land

2. Consider FIRB requirements
   - FIRB notification is often required for the acquisition of agricultural land interests (either directly or indirectly through acquiring another company with land assets)
Key milestones for developers in the first 12 months of developing a wind or solar project

3. Establish a suitable corporate investment structure
   - Consider tax and finance factors
   - Eg. ‘HoldCo’, ‘FinCo’ and ‘OpCo’ structure

4. Obtain necessary development and environmental approvals
   - Consider the relevant State approvals: this process generally takes anywhere between 3 and 12 months, depending on the impact level of the project
   - Consider federal regimes such as the Environment Protection and Biodiversity Conservation Act 1999 (Cth): this process can take anywhere between 2 months (for a referral) to 3 years (if a full Environmental Impact Statement is required)
5. Initiate connection discussions with network service provider

- The connection application, offer and acceptance process is regulated by the National Electricity Rules but is subject to delays which are usually caused by additional technical or other information being requested by the Network Service Provider or AEMO or delays in commercial negotiation of the connection contracts.

- Subject to such delays, it generally takes approximately 6 months from the time of initiation of discussions with the network service provider to the signing of a connection agreement.
Your contacts

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QUESTIONS
In assisting investors, the Australian Trade & Investment Commission works with other Government agencies – federal, State and Territory, like

- Australian Renewable Energy Agency (ARENA)
- Clean Energy Finance Corporation (CEFC)
- Clean Energy Regulator (CER)
- State & Territory energy and environment, planning departments

... and industry:
- Clean Energy Council (CEC), service providers, Australian and foreign market players, financers
Austrade helps companies around the world to identify and take up investment opportunities in Australia as well as to source Australian goods and services.

Our confidential assistance at no cost to investors includes:

/ National coordination of Australian Government investment services
/ Information on the Australian business and regulatory environment
/ Market intelligence and investment opportunities
/ Identification of suitable investment locations and partners in Australia
/ Advice on Australian government programs and approval processes

Let’s start a conversation

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