Welcome!

John Griffiths, City of Melbourne
Purpose

To build a deeper understanding of the what, why and how of Corporate Power Purchasing Agreements (PPAs) and to share insights and advice from the MREP experience.
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<th>Morning</th>
<th>Afternoon</th>
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<tr>
<td>09:30 Breakfast</td>
<td>12:30 Module 4: Objectives and the MREP journey</td>
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<td>10:00 Welcome &amp; MREP Overview</td>
<td>12:50 Activity</td>
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<td>10:10 Module 1: The opportunity</td>
<td>13:05 Module 5: Market Conditions</td>
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<td>to do things differently</td>
<td>13:20 Module 6: Contract Structures and Pricing</td>
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<td>10:35 Module 2: Key Considerations</td>
<td>Models</td>
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<td>11:15 Morning tea</td>
<td>14:20 Break</td>
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<td>11:25 Module 3: Panel discussion Q &amp; A</td>
<td>14:30 Scenarios Activity</td>
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<td>12:00 Lunch</td>
<td>15:15 Module 7: Project Finance and Bankability</td>
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<td>16:00 Module 8: How to work in a group model</td>
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<td>16:25 Closing</td>
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<td>16:30 Drinks!</td>
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Melbourne Renewable Energy Project – Introduction
Today’s Facilitators

City of Melbourne: John Griffiths, Senior Sustainability Officer

Energetics: Anita Stadler, Associate, Jamie Ayers, Associate and Alister Alford, Senior Manager

Ashurst: Jeff Lynn, Partner and Cassandra Wee, Senior Associate

NAB: Ally Bonakder, Director, Energy, Specialised & Acquisition Finance
The MREP Journey
1. The opportunity to do things differently

Jamie Ayers, Energetics
Renewable Energy Will Be Consistently Cheaper Than Fossil Fuels By 2020, Report Claims
An international trend towards power purchasing
This trend is also evident in Australia

Increasing penetration of intermittent renewables, supported by dispatchable gas generation

Closure of Liddell power station in 2022

mid-renewables forecast scenario
An Australian trend

Melbourne Renewable Energy Project – Module One

Expected combined total since 2016 >3GW

- NSW
- Victoria
- SA
- Queensland

* Project capacity enabled by a corporate PPA, with contracted PPA volume often smaller than the project capacity
How do you purchase renewable energy?
Renewable energy certificates

LCGs
The benefits of purchasing renewable energy

- Transitioning to renewable energy is a way to take action on climate change
- Enhance reputation and speak to the values of customers
- More stable electricity budget and lower costs (incl environmental compliance cost)
- Behind the meter options lack scale and other retail electricity strategies do not provide a long term shield against electricity price increases and volatility
Prices in the National Electricity Market

- **Max:** $14,200 / MWh
- **Min:** -$1,000 / MWh

Retail contract prices are linked to futures contract prices (fixed for 1 to 3 years).

Retailers hedge against this risk.

Volatile spot market prices set by matching supply and demand - near real time.

≈ $80 / MWh (FY2019)
Corporate PPAs in the energy market...

1. A PPA does not impact your network charges
2. A financial PPA operates in the spot market
3. Retailer is required to link a financial PPA to the supply of electricity to your premises

Spot market

Melbourne Renewable Energy Project – Module One
Be clear-eyed about the risks of “direct” power purchasing
LGCs are subject to price volatility
What are the key market drivers impacting price?

- Demand
- Supply
- Policy
- Regulation
- Other
What are the key market drivers impacting corporate PPA prices?

- Technology and location
- Size of offtake
- Contract and price models
- Procurement approach
- Tenure
“Wholesale prices will continue to be volatile in this rapidly transforming market environment. Corporates interested in power purchase agreements need to understand the fundamental market drivers and their impact in order to mitigate their energy price risk over the longer term.”

Gilles Walgenwitz, General Manager
Energy and Carbon Markets, Energetics

“Energy users must look beyond headline PPA prices to consider the physical market infrastructure capacity, long-term supply mix and expected price developments in the respective NEM markets. Failure to do so could result in what appears to be a cheap PPA price becoming very expensive five years down the track.”

Anita Stadler, Principal Consultant, Energetics
2. Key Considerations
What are the important questions to ask?

What are the strategic drivers behind my organisation’s interest in corporate PPAs? Have we considered other avenues to meet those objectives?

How will the PPA price we negotiate today be impacted by future market developments?

Does my business have the necessary attributes to be able to enter into a PPA?

Which contracting/price model and volume is best suited to meet the strategic intent of my organisation?
Leading drivers of corporate PPAs

- Cost savings / budget certainty
- Sustainability leadership
- Other value adds

Different uses of LGCs have an impact
Should we consider a PPA?

- Be creditworthy (investment grade credit rating ideally)
- Energy is a strategic consideration, enabling your organisation to make a long term commitment
- Ideally consume at least 15 GWh per annum in a State (if you want to go it along)
- Have relatively predictable electricity needs over ~10 year term

Melbourne Renewable Energy Project – Module Two
What are the contracting options for a PPA?

<table>
<thead>
<tr>
<th>Contract for Difference PPA</th>
<th>Electricity supply-linked PPA</th>
<th>LGC Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Agreement between customer and generator</td>
<td>• Agreements include retailer/s as well as generator</td>
<td>• Agreement between customer and generator</td>
</tr>
<tr>
<td>• Does not involve physical supply of electrons</td>
<td>• Links customers electricity use to a specific generation source</td>
<td>• No supply of power, LGCs or “Green Product” only</td>
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<tr>
<td>• Pure financial product</td>
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</table>
How big is our demand for power?

Volume of electricity used

Partnerships vs. Alone

PPA and/or Behind the meter

Technology type
Typical demand for power by type of organisation

- Data centres
- Large retail chains
- Large corporates
- Multinationals
- Universities
- Major insurance and financial institutions
- Stadiums, convention centres
- Regional water board
- Local Governments
- CBD Office

Indicative Size – GWh/year

1-5  5-20  20-50  50-100  100+
How variable is our demand for power?

Consumption

Time of day

Seasonally

5 to 10 years

Financial hedge

Partial load contracts
Morning Tea!
3. Q & A
Corporate PPAs can deliver significant financial benefits (2020 snapshot*)

*90-60 = $30 / MWh i.e. 30/90 = 33%

* Each project is unique, with the cost benefit dependent on the scale and risk transfer between parties. Value must be assessed over life of the transaction.

Melbourne Renewable Energy Project – Module Two
Lunch!
Welcome Back
4. Objectives and the MREP Journey
A New Wind Farm: Crowlands

80 MW capacity = 39 wind turbines

140+ Jobs during construction + 8 Jobs Ongoing operation and management of the plant + Opportunities for local businesses
Power Purchase Agreement

Melbourne Renewable Energy Project

88 GWh of energy
over a third of Crowlands Wind Farm total capacity

= 17,600 average households power use every year

OR

22,512 cars
off the road every year

OR

96,800 tonnes
of greenhouse gas pollution every year

This project will help Melbourne achieve

Electricity from renewables + 0 Net emissions

Melbourne Renewable Energy Project – Module Four
The benefits of this approach
Our big insights and takeaways

Do your homework.

Ensure strong strategic alignment amongst members in your group.

Engage expert advisors if you need to.

Senior leadership support is essential.
5. Understanding electricity markets

Alister Alford, Energetics
Electricity 101

Demand

- **Power**
  - = 1 kW

- **Energy**
  - 1 kW x 1 hour = 1 kWh

x 1,000 = 1 MW

Supply (e.g. Wind Farm)

- = 100 MW

= 350,000 MWh

Water analogy

- Dam = energy
- River flow = power
The electricity supply chain

Legend:
- Dispatch Instruction (scheduled and semi-scheduled generators)
- Physical electricity flow
- Financial flows
- Performance standards

Very volatile prices (Market cap $14,000/MWh and floor -$1,000/MWh)
Regulated network prices set for 5 year terms
Prices are typically only fixed for 1 to 3 years (ASX Futures markets maximum time horizon is 3 years)

Under the National Electricity Rules the retailer is the financially responsible market participant for all the electricity consumed at the customer supply points managed by it
All electricity supplied to the market is sold at the ‘spot’ price.

Spot price fluctuates in response to supply and demand.

Price set by marginal generator on a 5 minute basis with settlement price calculated on a 30 min basis.

Retailers and generators lock in long term revenues or costs at a fixed rate (futures / forward contracts).

Quarterly/yearly futures contracts liquid over 3 years.

Basis for retail contract pricing.
Retailer’s cost of hedging

1. Spot prices

**Market risk premium**
This is based on:
- Forward price premiums
- Market liquidity (number of buyers and sellers)

2. Forward prices

**Contract risk premium**
This is based on:
- Customer load shape risk
- Customer credit risk
- Validity/market liquidity
- Retail margin/admin fee

3. Retail contract prices
Electricity spot markets
Concerns of volatility leading into summer – Hazelwood closure concerns

Government Intervention

Reaction to summer volatility
Volatility in seasonal price and cash flow impact

Revenue from generation linked Contract for Difference can exhibit significant seasonal behaviour

Electricity contract market seasonality

Victorian ASX Futures Price ($/MWh)

CfD revenue

Month

1 2 3 4 5 6 7 8 9 10 11 12

Q1 2019 Q2 2019 Q3 2019 Q4 2019

112 80 70 60

Annual price

Electricity contract market seasonality
Getting the price right

Understanding relationship or correlation between:

- Production weighted average spot price
- Average spot price
- Expected average spot price in contract year
- Standard contract price
- Consumption weighted average contract price
6. Contract Structures
Project type

The story

Degree of risk

Length of contract

New or existing?
Contract options for renewable energy

- Purchasing GreenPower® from a retailer
  (GreenPower® can be added to any electricity bill and there is no long term commitment required/flexible)

- Long term agreement to buy renewable energy certificates from a renewable power plant (which doesn’t include retail electricity supply). These can come from a new project, or an existing power plant.

- Long term agreement with an electricity retailer
  Underlying power purchase agreement with an identified off-site renewable energy project. This project can be an existing power plant, or a new power plant.

- Purchasing renewable energy certificates from a broker (with no link to a particular renewable energy project).

- Owning a large scale off-site power plant
  Contract a retailer to supply you with the electricity, through the distribution network, to your various sites.
Contract model categories

LGC only

Contract for Difference PPA

Electricity supply-linked PPA (inc or excl LGCs)

Used to take direct control of your compliance LGC cost; or to procure LGCs for voluntary carbon offset purposes

Used as an instrument to mitigate your exposure to electricity market risk without the need to engage a retailer

Involves a retailer to source or manage the supply of electricity from a renewable energy project

A different way of procuring electricity that replaces your current retail agreement
Form of renewable energy

- Unbundled contract
- Bundled contract
- Support new energy project

LGCs, electrons, or both?
Melbourne Renewable Energy Project – Module Six

- Developer
- Customer
- Loan and security package ($$)
- LGC SPA
- Tripartite agreement

Financier
Financial PPA

- Financier
  - Loan and security package ($$)
- Generator
- Customer
- AEMO/Pearl
- RSA
- Retailer

Contract for Difference
Supply Linked Retail PPA - MREP Contractual Structure

Tripartite agreement

Financier

Loan and security package ($$)

Developer

Internal PPA between related entities

Retailer

LGC SPA

Each individual MREP participant

RSA

Each individual MREP participant
6. Pricing Models
Making the most of price benefits

- **Financial PPA spectrum**
- **Electricity supply-linked PPA spectrum**
- **Standard fixed price, fixed term retail electricity contract**

Relative Bundled PPA price in $/MWh

- High
- Low

Relative market risk to corporate

- High
- Low

Sub-$60s indexed to inflation

Indicative of the impact other factors such as the volume contracted and tenure can have on the price for the same technical market risk exposure
**Key differences compared to a standard electricity contracting approach**

**Standard approach: short-term retail electricity contract**

- Energy user pays a fixed price for 1-3 year contract period with some volume flex
- Prices are set according to the futures market every time the retail contract is renewed
- Follows energy users’ consumption pattern (i.e. load-following)

**Long term contract backed by a generator**

- Generator receives a pre-determined price for a fixed volume for 8-10 years from the buyer, who receives the market price
- Buyer benefits if the spot market price increases above the contract price
- Not load-following – requires retailer to link generation output to consumption plus provide balancing power to firm supply

Best suited in a low price, stable market
Contracts for difference

Melbourne Renewable Energy Project – Module Six

- Wholesale spot market price
- CFD Strike Price
- Generator pays company
- Company pays generator
Cash flow cycle in a 1MW contract with a $50 Strike price

For this settlement period the generator lost $5
Key challenge for all parties

Volume
- Changing operational requirements of corporate
  +
- Variable generation source
  +
- Possible transmission congestion risk

Price
- Lack of visibility beyond futures market horizon of 3 years
  +
- Cash flow variability

Corporate time of use / Load shape
Generator shape risk
How have you sized your PPA?

Illustrative example using the annual average production profile of the solar project sized to different consumption thresholds.

- **Compliance LGCs**
- **Voluntary LGCs**
- **Balancing power**

1. **Typical day load profile of a commercial building**
2. **Maximum demand**
3. **100% renewable**

Excess power generated by solar project relative to demand.
What pricing model to select for both power and LGCs?

- Adjustments
- Indexation
- Reference price
- Spot exposed?
- Shape
- Pre and post PPA?
- Impact of Group?
- Volume
- PPA
- Corporate
- Derivatives
- AFSL
- Hedge Accounting
Energy users currently pay for LGCs as part of their electricity bill (presently 16.06% of volume and expected to increase to between 20% and 23.5% between 2020 and 2030).

Emissions intensity at point of consumption includes the impact of reduction efforts paid for under the RET Policy.

To claim carbon neutrality, offsets must be additional to the RET... without the LGCs you cannot claim the green credentials from a renewable energy source.
Illustrative hybrid model example

Illustrative comparable RSA contract rates

$/MWh (red $)

1. Fixed (30-40% Block) indexed + Cap Contract (variable)

2. Final blended price for 100% of power

3. Price premium paid for the residual 60-70% of volume at the market price (i.e. ③). Resulting in the blended rate (i.e. ②) above the fixed PPA rate.

Since the price for the fixed block ① is typically indexed, the premium will reduce in a falling market over time.

Notes:

- Volume and price variance is managed by the retailer by re-setting the price for much of the power every 2-3 years
- The volume for ① may be fixed in MWh over term of contract or as a % of load
• What are your *organisational drivers* to purchase renewable energy?

• Do you have an interest in **securing a stable long-term electricity price**, or prefer to follow the market?

• Is it important that the renewable electricity project be a *newly constructed project*, or can it be sourced from existing power plants?

• Do you require the electricity to be accredited as renewable energy for **carbon neutral accreditation**?

• Are you prepared to *pay a premium* to achieve the above objectives, or do you want the lowest cost?

• Do you have a *preferred technology* (wind, solar or other)?

• Are you interested in **additional co-benefits**, such as community or educational benefits?
Break!
7. Project Finance and Bankability

Ally Bonakdar, NAB
8. How to work in a group model

John Griffiths, City of Melbourne
Jeff Lynn/Cassandra Wee, Ashurst
Deal type

Group: shared costs

Individual: less complex decision-making

Individual or group?
Group Governance
MREP Governance structure

- Council
- Executive Leadership Team
- MREP Steering Group
- MREP Project Team
  - Sustainability
  - Procurement
  - Communications
  - Engagement
  - Legal
- Partner Organisations
- Partner organisation internal governance and approval processes x 14
- Internal Advisors
  - Procurement
  - Legal
  - Governance
  - Property
  - Engineering
- External Advisors
  - Probity
  - Energy Market
  - Legal
  - Procurement Agent
- Evaluation Panel
  - MREP Project Team, partner organisation and representatives

Regular project communications and reporting
Ad hoc advice and communications
Memorandum of Understanding or Participant Agreement

An agreement governing the relationship between the participants, and to facilitate the tender process and execution of project agreements
Successfully granted an authorisation from the Australian Competition and Consumer Commission, such that the proposal is effectively “immunised” from contravening the CCA.
Facilitation & Leadership
MREP Timeline

1 yr

3-12 months

Market testing
Business case development
Develop renewable energy strategy
Procurement strategy development
Road testing

3-6 months

3-6 months

Communications approach
Industry consultation and/or briefing
Tender development

1 day to 2 months

Tender released

3 months

Tender assessment and contract negotiations

3-6 months

Tender awarded

1-2.5 years

Construction

Melbourne Renewable Energy Project – Module Eight
9. Activity
1. At your tables you will see a pile of cards – these cards contain potential scenarios that could arise in the National Energy Market in the next 10 years.
2. Reflecting on the notes that you made earlier this afternoon, choose one of our hypothetical contracts
3. Take it in turns to pick scenarios from the deck and discuss how these would impact your chosen contract
4. Your table facilitator will have some outcome cards to identify how some of these issues could play out given your chosen contracting model
Thank you