

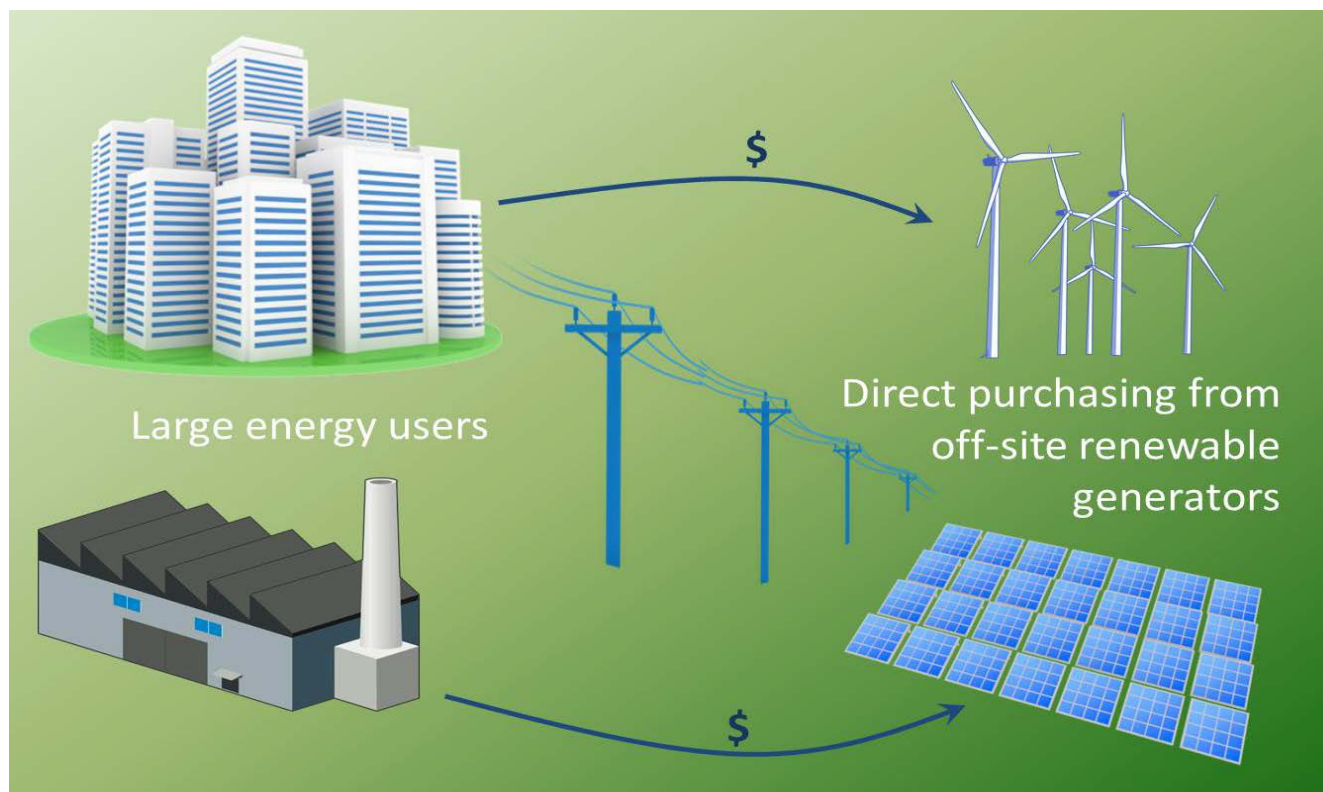
# Off-Site Renewable Energy

Stakeholder Workshop #1

24<sup>th</sup> Nov 2016

Never Stand Still

Engineering



# Project Overview

Title	Facilitating large energy user deployment of off-site renewable generation
Funding	CRC for Low Carbon Living
Duration	12 months
Motivation	Recent market explosion in the US Initial movements in Australia but perceived lack of transparency/information
Methodology	Case studies Market survey Stakeholder workshops



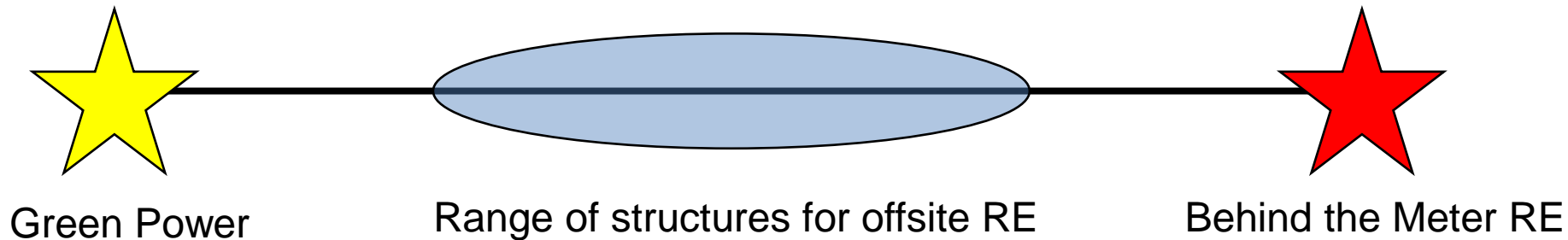
# Project Rationale - Objectives

- **Rationale**

To bring information into the public domain which supports end user decision making and reduces transaction costs associated with implementing direct procurement deals

- **Objectives**

1. to explore the options available to end users in directly procuring offsite renewable energy; and
2. to describe the market for such services in the Australian electricity industry context;
3. to describe the current status of offsite contracting in Australia and identify drivers and barriers to market development.



# Transaction costs and market maturity – where we want to go

## Rationale

To bring information into the public domain which supports end user decision making and reduces transaction costs associated with implementing direct procurement deals



# Market Survey



Interviews completed with 31 end users, 6 retailers, 6 project developers and 4 intermediaries.

## Drivers and attitudes

- Energy costs
- CSR and RE
- Drivers
- Experience and attitudes:
  - Green Power
  - On-site generation
  - Off-site generation

## Off-site RE preferences

- Buy vs own
- Green or black
- Counterparty identity
- Aggregation
- Additionality

## Forward looking

- View on the likely development in Aust.
- Barriers
- Recommendations

## For electricity retailers

- Business drivers
- Product offerings
- Deal preferences

## For project developers

- Business drivers
- Deal preferences
- Financing
- Risk allocation

# Case Studies



Project name	Who?	BOO/ Buy	Single/ Aggreg.	Black/ LGC only	Retailer involved?	Status	Case study?
Desalination Plant	Sydney Water	Buy	Single	Black+LGC	Retailer = developer	Complete	
Singleton Solar Deal	UTS	Buy	Single	Black only	Supply unserved load	(Pre-existing)	*
RE Reverse Auctions	ACT state govt	Buy	Single	LGC only	No	Complete	
RE Purchasing	Victorian state govt	Buy	Single	LGC only	No	Construction	*
Sunshine Coast Solar Farm	Sunshine Coast City Council	BOO	Single	n/a	Pass through spot exposure	Construction	*
Melbourne RE Project (MREP)	Melbourne City Council	Buy	Aggreg	Black+LGC	PPA counterparty	Tender	*
Sydney Metro North West	Transport for NSW	Buy	Single	Black+LGC (probably)	PPA counterp (probably)	Tender	*
RE Buyers Forum	WWF/JLL	Buy	Aggreg	Black+LGC	PPA counterparty	EOI	
Summerhill Solar Farm	Newcastle City Council	BOO ? (TBC)	Single	n/a	TBC	EOI	*
Solar Trams	Yarra Trams	Buy	Single	n/a	n/a	Did not proceed	

# Stakeholder Workshops

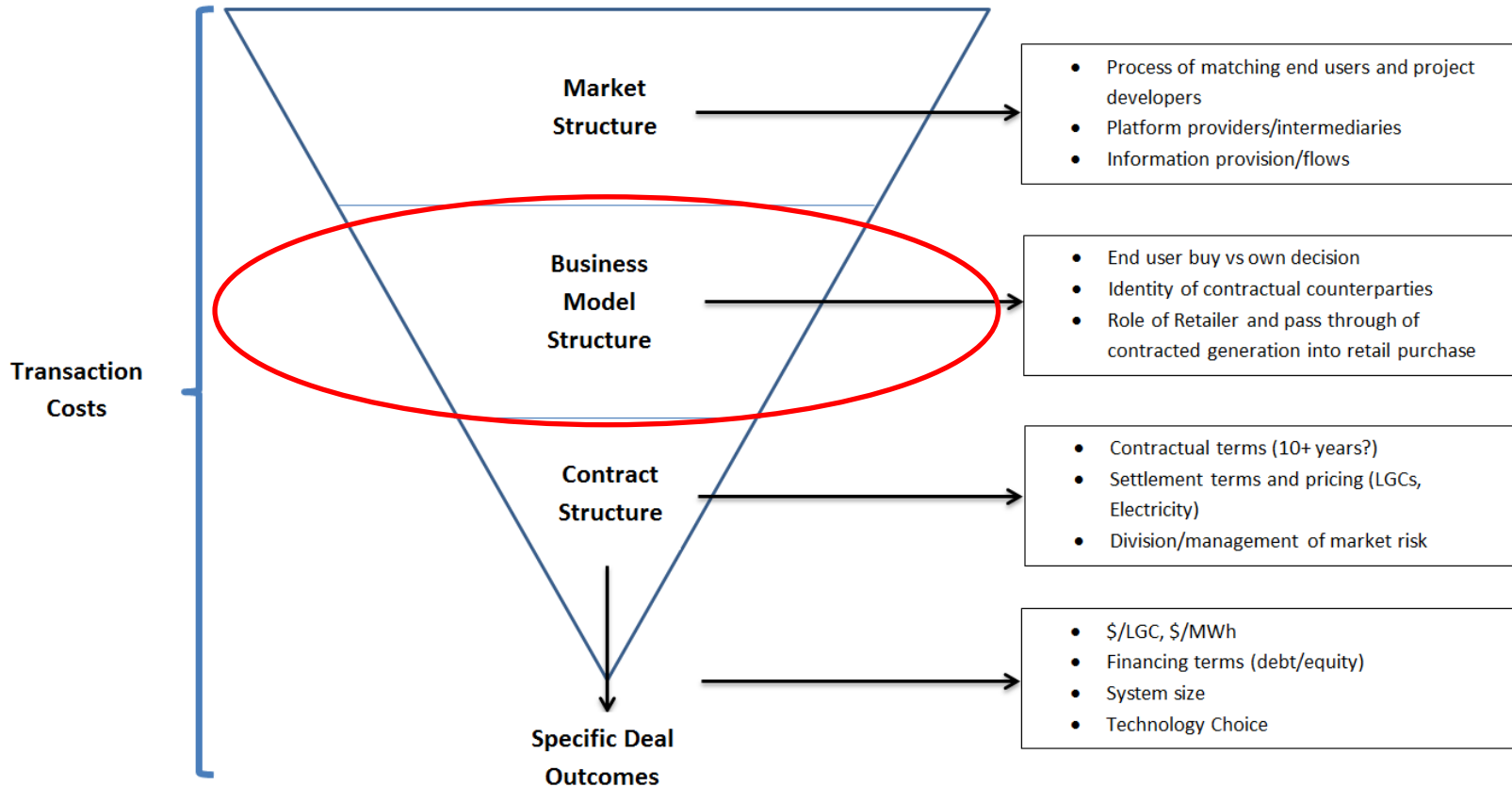


- Get **feedback** from stakeholders
- Generate discussion
- Engage stakeholders in activities to explore details
- Enable networking between stakeholder groups

9:00 am	Presentation 1: <b>Business structures</b>
9:45 am	Stakeholder activity 1
10:30 am	Morning tea
11:00 am	Presentation 2: <b>Market structures</b>
11:45 am	Stakeholder activity 2
12:15 pm	Final question time
12:30 pm	Lunch

# Session 1 – Business Structures

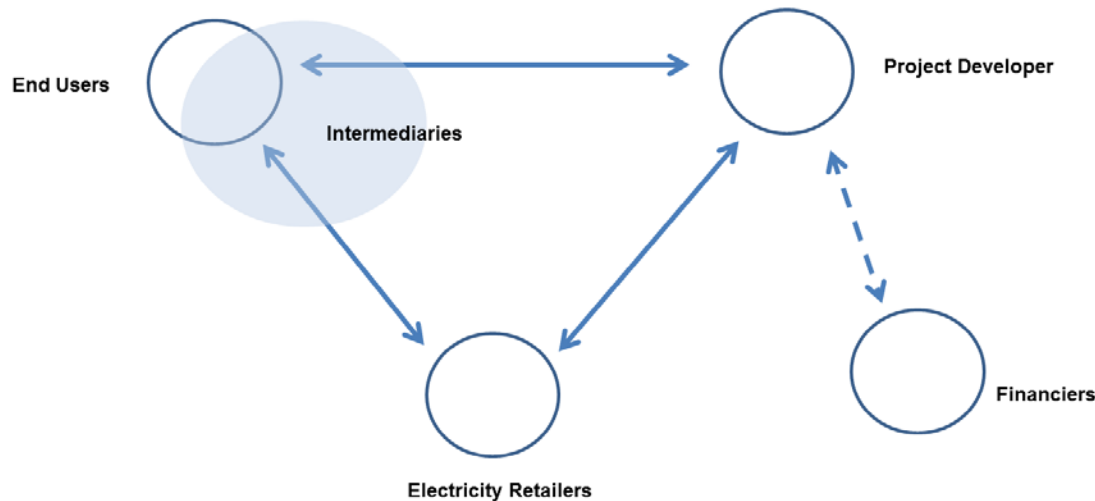
The success of source specific end use RE procurement will depend on the efficiency of this process



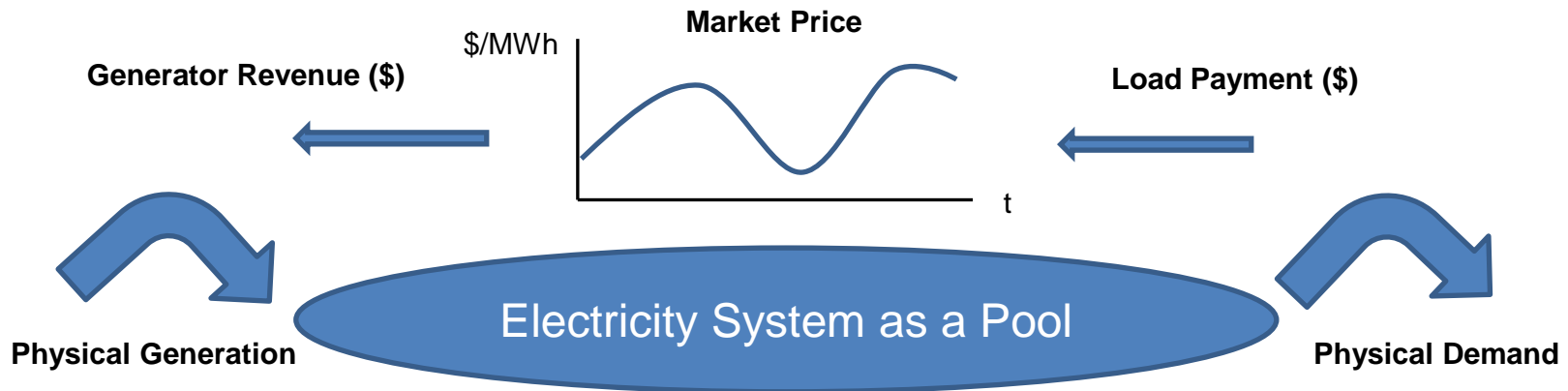


# Session 1 - Business Structures

- **Key question** – What do you want to procure?
  - ‘Green’ – LGCs as offsets to purchased ‘grid’ electricity
  - ‘Green’ and/or ‘Black’ – LGCs and/or financial pass through of generation value
- **How to structure the relationship between the End User, Retailer, and Project Developer? Focussing on generation pass through**



# Black Pass Through – Context



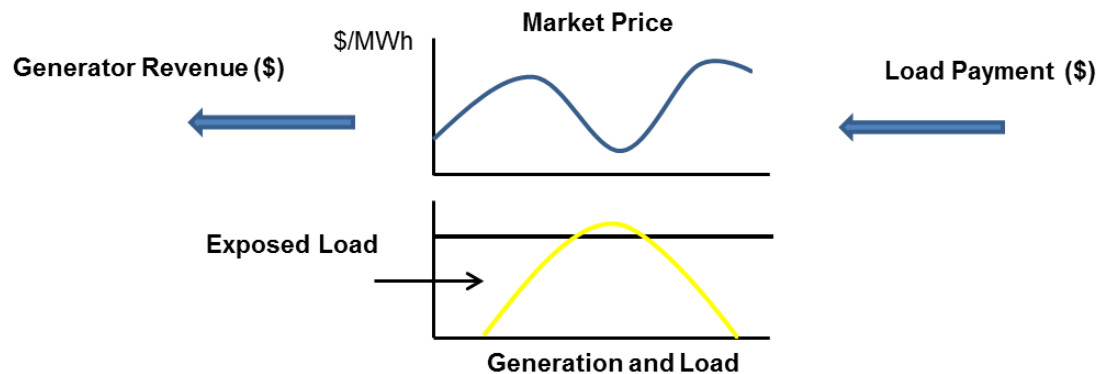
- The electricity system doesn't match specific sources of supply and demand at a physical level.
- 'Pass through' of contracted generation is therefore a financial construct rather than a physical one
- Key concept:
  - Generator revenue depends on generation timing and wholesale electricity market prices (generation revenue)
  - End user load pays depending on timing and wholesale electricity market prices (load payment)

# Black Pass Through – Context

- If timing of generation and load match perfectly, revenue and payment cancel, eliminating market exposure
- If, there is a mismatch between generation and load, a residual financial market exposure exists (balancing risk)

## Example

- PV will only cover load during daylight hours leaving evening/night load exposed to market prices.
- Area under the generation curve can be netted off total load payment -> just pay for the cost of generation.



# Role of an Electricity Retailer

- Electricity Retailers manage electricity market risk on behalf of end users.
  - An electricity retailer is required at some level to pass through generation value (we will go into that further)
  - Risk associated with residual (load-generation mismatch) needs to be allocated and managed
- If an end user wishes to purchase RECs as green offsets then no electricity retailer is required in this capacity
- If the pass through of 'black' generation value is desired there is a question as to;
  - How best to structure relationship between parties
  - How best to allocate responsibility for residual 'balancing' market risk



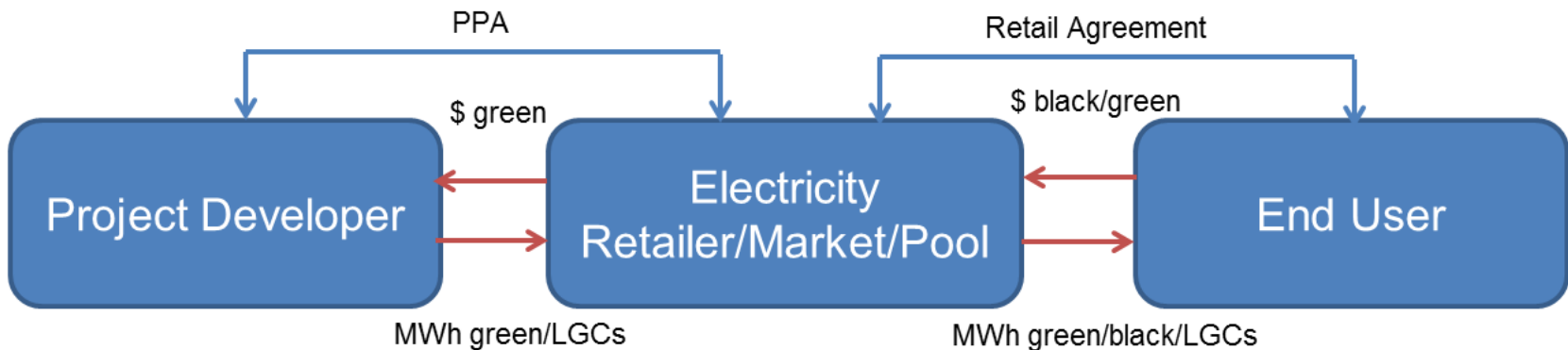
# Session 1 Exercise - Business Structures

- **The focus of the following exercise is on the pass through of 'black'**
- There are three structures which are presented with respect to different approaches to allocating risk and enabling financial pass through of generation value.
- We are interested in your views:
  - What positives and negatives do you perceive?
  - What factors do you think are important in considering the different approaches?
  - What are your preferences with respect to the different structures?
- Your facilitator will start by brainstorming pros and cons
- At the end of the exercise fill out the voting slip and say why you chose the option you did.



# Approach 1 - Retailer as PPA Counterparty

- This is the approach which corresponds most closely to the status quo
- The retailer holds the PPA as the counterparty either on behalf of the end user
- The end user would have a retail contract of the same length as the PPA duration
- The retailer would provide balancing services and pass through generation value + the cost of servicing the balancing load
- The end user just has to deal with the electricity retailer, single contract to manage



# Approach 1 – Issues and Example

## ISSUES TO CONSIDER

- Reduction in retail market flexibility, end user is locked into (long term retail agreement) for both contracted RE and balancing grid electricity
- Who gets to choose the project to be contracted with, the retailer or the end user? There is a negotiation challenge.
- The pricing of balancing grid electricity over the longer term such that the retailer doesn't exercise un-due pricing power.
- Retailer needs to have a high enough credit rating to bank a PPA. Not all retailers have such a credit rating.

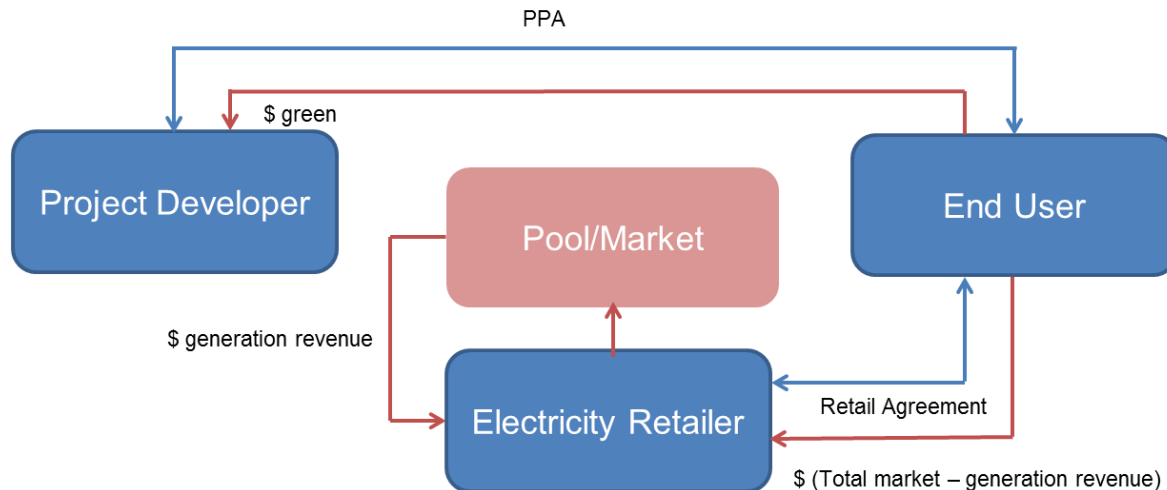
## EXAMPLE(S)

- Both the JLL-WWF Renewable Energy Buyers Forum and Melbourne City Council are utilising this approach. Approach lends itself to aggregation.

Project name	Who?	BOO/Buy	Single/ Aggreg.	Black/ LGC only	Retailer involved?	Status	Case study?
Melbourne RE Project (MREP)	Melbourne City Council	Buy	Aggreg	Black+LGC	PPA counterparty	Tender	*
RE Buyers Forum	WWF/JLL	Buy	Aggreg	Black+LGC	PPA counterparty	EOI	

# Approach 2 – End User as Counterparty – Pass Through

- End user acts as the PPA counterparty, end user enters into a PPA with a project developer of their choice
- Pays the project developer directly in respect of contracted renewable generation
- End user then contracts with an electricity retailer who is happy to facilitate pass through and balance mismatched load.
- Retailer receives generation settlement revenue, which offsets financial exposure to market, and the end user pays the retailer in respect of net load.





# Approach 2 – Issues and Example

## ISSUES

- The end user is able to retain retail market flexibility
- Need to find an electricity retailer who is happy to take the generation
- End user not restricted in choice of project they wish to contract with, end user is bearing all the counterparty risk
- Balancing services/risk is placed naturally with the electricity retailer
- Does not lend itself to aggregation therefore scale may be a larger barrier
- Smaller retailers, with poorer credit ratings, can provide these services

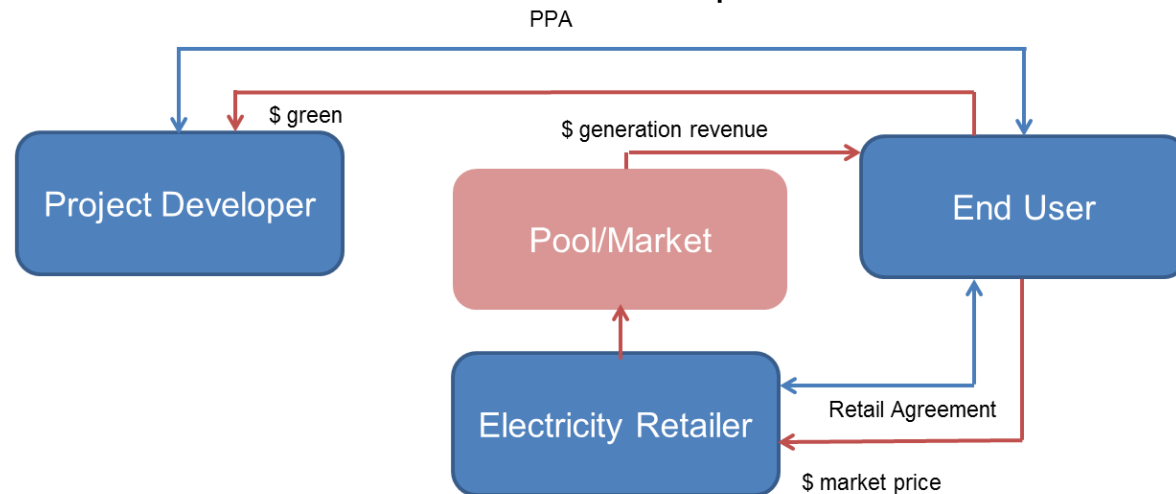
## EXAMPLE(S)

- UTS-Singleton solar farm

Project name	Who?	BOO/Buy	Single/ Aggreg.	Black/ LGC only	Retailer involved?	Status	Case study?
Singleton Solar Deal	UTS	Buy	Single	<u>Black+LGC</u>	Supply unserved load	Complete	*

# Approach 3 – End User as Counterparty – Self Hedge

- End user acts as the PPA counterparty, end user enters into a PPA with a project developer of their choice
- Pays the project developer directly in respect of contracted renewable generation
- Retailer passes through market spot price exposure, possibly according to time of the day
- End user utilises generation revenue or difference contract to self hedge wholesale market exposure.
- End user either bears settlement mismatch risk or purchases additional hedging products.



# Approach 3 – Issues and Example

## ISSUES

- Retain retail market flexibility
- End user not restricted in choice of project they wish to contract with, but they bear project developer counterparty risk
- End user accepts market mismatch risk in the first instance, Additional risk management products may be required
- End user bears a greater contract admin/settlement load/more complex
- Smaller retailers, with poorer credit ratings, can provide these services

## EXAMPLE(S)

- Sunshine Coast City Council

Project name	Who?	BOO/Buy	Single/ Aggreg.	Black/ only	LGC	Retailer involved?	Status	Case study?
Sunshine Coast Solar Farm	Sunshine Coast City Council	BOO	Single	n/a		Pass through spot exposure	Construction	*

# Exercise Instructions

- On each table are copies of the slides showing each option
- We are interested in your views:
  - What positives and negatives do you perceive?
  - What factors do you think are important in considering the different approaches?
  - What are your preferences with respect to the different structures?
- Your facilitator will start by brainstorming pros and cons
- **At the end of the exercise fill out the voting slip and say why you chose the option you did.**



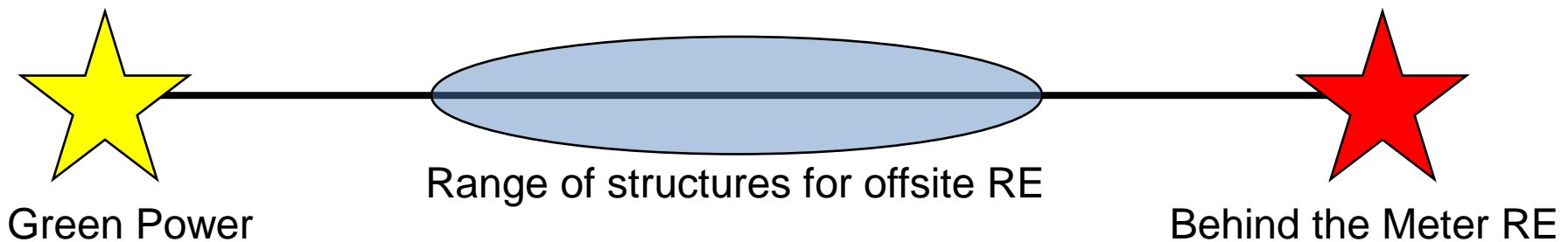
# Questions / Discussion

(followed by morning tea)



# Session 2 – The Market for Offsite RE

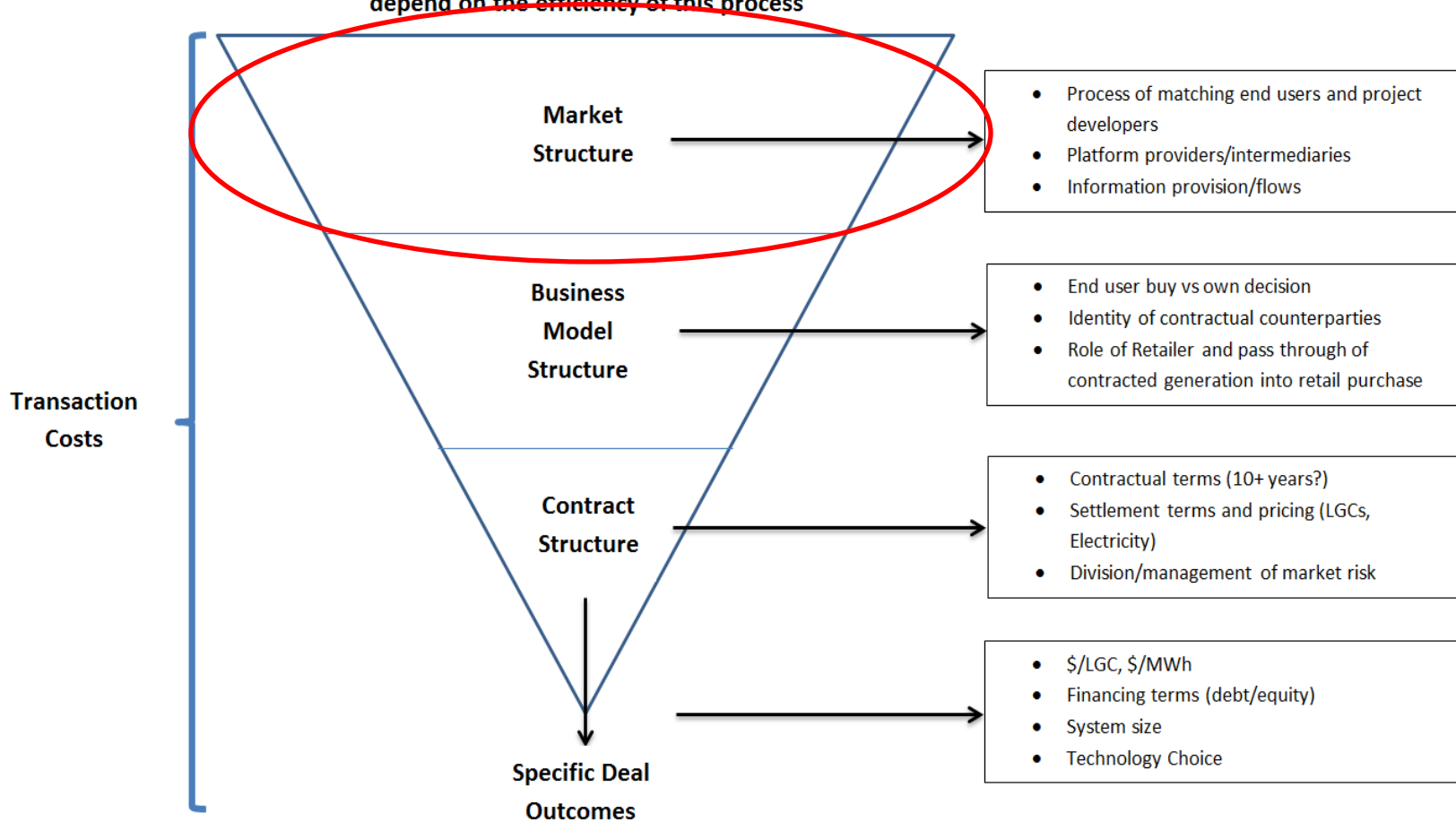
- Context: The market for offsite RE is part of a larger market for renewable energy procurement which includes Green Power and behind the meter RE.



- This session will focus on the development of a market for offsite RE services/products by considering
  - What gets sold/bought in this market?
  - Process of matching end users and project developers
  - How are interactions facilitated/information flows?

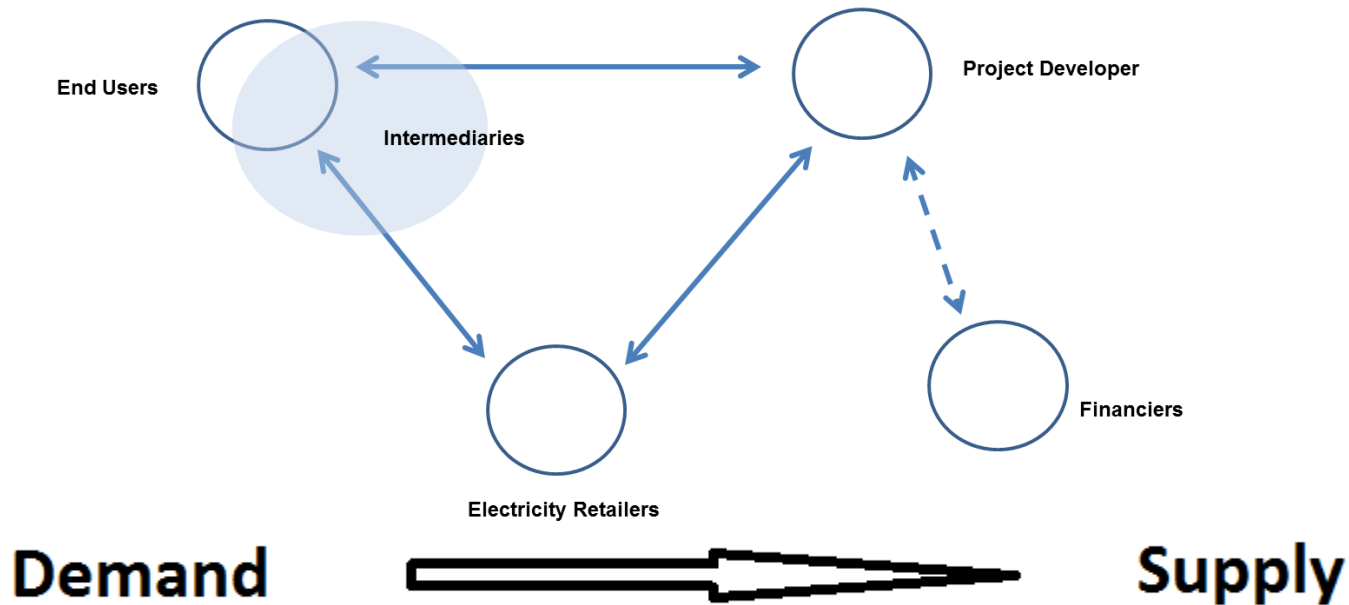
# Three level 'funnel' map

The success of source specific end use RE procurement will depend on the ~~efficiency~~ of this process



# Some Objectives

- Some objectives for a offsite RE contracting market;
  - End user needs and preferences are met;
  - Mutually beneficial exchange is realised;
  - Contracting and deal making is efficient (transaction costs are minimised);
  - Sufficient information is available to enable rational decision making;





# Product vs Service

- Given our **objectives** (end user preferences, mutual benefit, efficient contracting, information for rational decision making)
- Imaging the future market for offsite RE as consisting of two modes of supply side/demand side interaction:
  - **Product led or Service led**
- In this case the ‘good’ is the same; it is the procurement of offsite RE, but the manner in which the parameters of that ‘good’ are determined and end user needs satisfied is different.
  - A **product led** approach to the development of an offsite RE market involves the supply side of the offsite RE market developing a set of standardised offerings (products) from which end users choose.
  - A **service led** approach to the development of an offsite RE market involves the end user engaging with the supply side in order to seek out specific solution (likely non-standardised) which meets their specific needs.

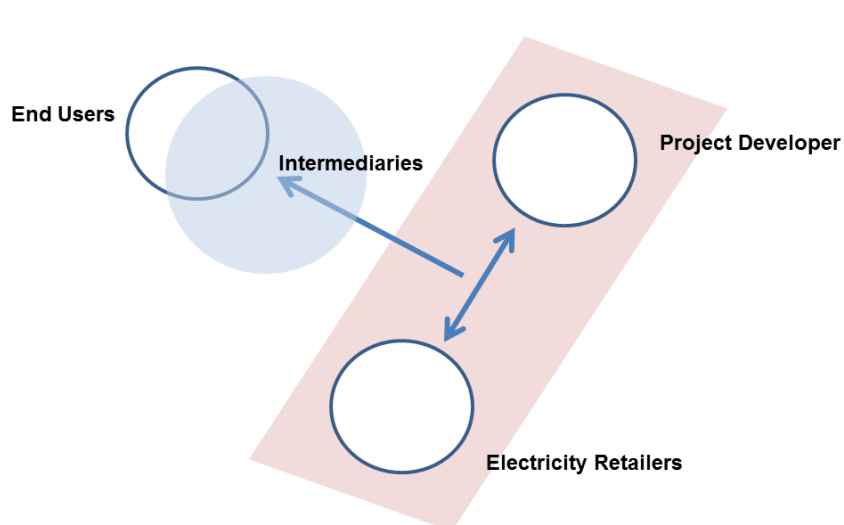


# Product vs Service

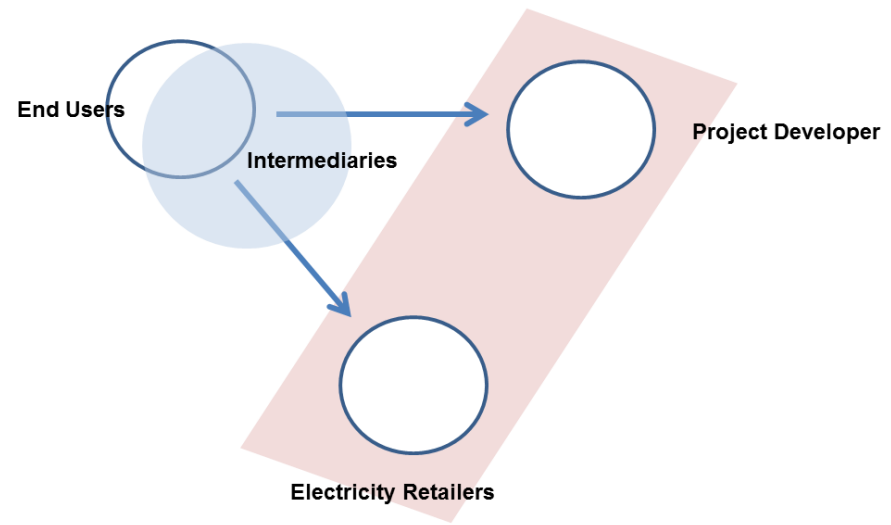
- The market will likely consist of a mix between these two modes

## Questions for brain storming

- What will be the mix between product led and service led outcomes
- What factors will be important in determining this mix?
- What might these 'products' end up looking like?



Product Led Approach



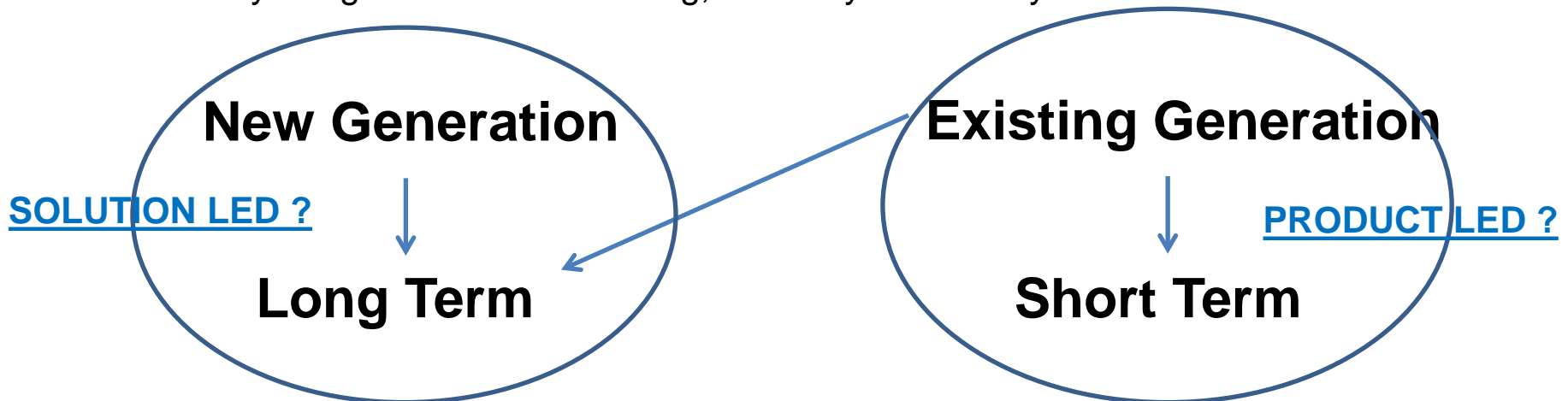
Solution Led Approach

# Product vs Solution - Term & New vs Existing

- **Introducing two additional parameters to the product vs solution question**
- **New/Existing** - Contracting with existing generation offers the prospect of shorter term agreements.
  - New generation requires longer term offtake agreements (10+ years)
  - Existing generation open to shorter term agreements (2 – 5 years)

## **Questions for brain storming**

- What role will end user choice between New and Existing generation influence solution vs product led outcomes?
- Do you agree with the following, if so why? if not why?

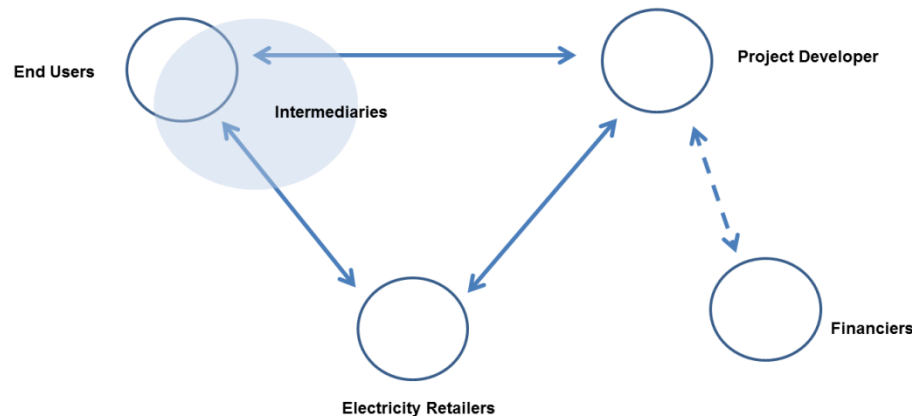


# Product vs Solution – Facilitation and Sale

- End users core business activities are generally not related to energy and lack skills in house to manage generation procurement.
- End users require information, skills, and additional facilitation to procure offsite RE
- There are a range of entities who are positioned to facilitate
  - Energy brokers
  - Electricity retailers
  - NGO/Government/Quasi Government (Councils)
  - Aggregation Groups

## **Question for brain storming:**

- Who do you think the main groups will be in facilitating end user procurement?



# Exercise Instructions

- On each table are copies of the slides showing the brainstorming questions

## **Questions for brain storming:**

- What will be the mix between product led and service led outcomes
- What factors will be important in determining this mix?
- What might these 'products' end up looking like?

## **Questions for brain storming:**

- What role will end user choice between New and Existing generation influence solution vs product led outcomes?
- Do you agree with the diagram, if so why? if not why?

## **Questions for brain storming:**

- Who do you think the main groups will be in facilitating end user procurement?

- Your facilitator will record your views



# Questions / Discussion

