Energy models for councils - a decision maker's guide

Prepared for:

Central Victorian Greenhouse Alliance

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GUIDE SUMMARY

This guide provides councils with the necessary tools to investigate alternative electricity generation and/or procurement strategies. It enables councils to make more informed decisions when determining which options are most beneficial to them, in their own specific circumstances, in terms of cost minimisation, emissions reductions, and community benefits. The potential risks involved with each option are also considered. This guide can be used as a resource for procurement staff, sustainability staff, councillors, and executive managers within council, as well as external energy project developers and community energy groups dealing with councils.

Council energy procurement in a changing market

Most councils have a small number of larger facilities, such as town halls and council offices, and a larger number of smaller facilities such as community halls or sporting facilities. Often councils also manage a large number of streetlights that can account for up to a half of their energy spend. Total consumption ranged anywhere from 0.5 GWh to 10 GWh per annum across the councils. Many councils also generate their own energy, mostly in the form of rooftop solar to offset some of the load during the day. Likewise, many councils have demand-side initiatives to improve efficiency at their facilities.

Council procurement processes must adhere to legislated requirements, and due to the complexities involved Victorian councils have traditionally purchased electricity through Procurement Australia (PA) procurement, Municipal Association of Victoria (MAV) procurement, or Victorian Government standing electricity purchasing arrangements.

There is continued uncertainty in energy markets due to changing energy and climate change policy and transformational technological shifts. In the medium-term the continued wholesale price volatility has presented opportunity for local governments to build behind-the-meter generation and adopt innovative energy procurement strategies to achieve more price-certainty, reduce greenhouse gas emissions, support the development of new renewable energy projects, support community energy groups, and often access lower prices. While there are several potential benefits of alternative options, there are also risks involved including retail energy price drops, new technology risks, complexity of negotiating new contracts, development risks, and grid connection and curtailment issues.

Choosing the best way to obtain electricity

This guide puts forward a decision-making framework to help councils determine which alternative approaches to energy procurement are best suited to their needs. By considering the pros and cons of each option, and how these relate to your council's corporate objectives, you can decide which alternative procurement model is most suited to your specific circumstances.

The decision-making framework is based on the following criteria:

- Ownership – whether council directly owns the powerplant or not
- Newness – whether council contracts with an existing powerplant, or a new one
- Exclusivity – whether the arrangement just involves one council as the energy buyer, or aggregates several buyers
- Location – whether the powerplant is located in the local government area or further afield
- Technology – whether a specific generation technology, such as solar PV or wind, is favoured
- Siting – whether or not the powerplant can be situated on council-owned land
- Contract structure – whether council favours a 'physical' or 'financial' contracting arrangement.

Individual councils' responses to these criteria will determine the energy procurement model(s) best suited to their circumstances.

Alternative energy generation and procurement models

Nine alternative models are described across the following three categories:

1. Behind-the-meter models:
   a. Model 1: Behind-the-meter power purchase agreement
   b. Model 2: Virtual net metering
   c. Model 3: Virtual Power Plant
2. Investment models:
   a. Model 4: Large powerplant developed on council land
   b. Model 5: Council as a co-investor in a larger project
3. Purchasing models:
   a. Model 6: Retailer-aligned power purchase agreement
   b. Model 7: Long-term REC purchase
   c. Model 8: Contracts-for-difference
   d. Model 9: Aggregated service providers

For each alternative model the following information is given:

- A description of the model
- Example case-studies where the model has been used
- Why the model was chosen as a viable alternative model
- Benefits and risks of adopting the model
- Opportunities to help achieve social and community outcomes through the model.

Making a decision

This guide suggests facilitating a high-level workshop with cross-functional council staff to formulate responses to each of the decision-making criteria, and decide on the preferred energy procurement strategy. Complimentary to the decision-making framework provided, a decision tree is also provided as a visualisation of the decision-making process.

Next steps

Once a preferred model (or preferred models) has (or have) been selected, a process must then be followed to help ensure council successfully and correctly implements the model. The broad steps in this process are to:

1. Identify council's needs, objectives and priorities and gain buy-in across the organisation
2. Select the preferred model(s) and develop business case(s)
3. Design a procurement process.

The specific resourcing needs, capabilities, and capacity requirements involved in undertaking an alternative renewable energy procurement process will vary depending on the type of project selected.

Undertaking an alternative energy procurement process can be more resource-intensive than traditional approaches, and the risk profile can be larger. This is because there is a need to understand the different contracting arrangements, manage the various risks involved, communicate the potential complexity of the deal and develop and analyse the business case for a contract that is often long-term (seven years or more). However, recent examples demonstrate that there is also significant opportunity for councils to reduce their energy spend.

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This report has been prepared for the Central Victorian Greenhouse Alliance (the Client) as outlined in the Proposal and scope of works. The services provided in connection with this engagement comprise an advisory engagement, which is not subject to Australian Auditing Standards or Australian Standards on Review or Assurance Engagements, and consequently no opinions or conclusions intended to convey assurance have been expressed.

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The findings in this report have been formed on the above basis.

VERSION CONTROL

Version	Date	Author	Project Director
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1 CONTENTS

1 BACKGROUND

1.1 The Social Energy Procurement Project

The Social Energy Procurement project is a collaborative council project coordinated through the Central Victorian Greenhouse Alliance[1]. The project is funded by the Department of Environment, Land, Water and Planning (DELWP), and is a partnership between the following councils and greenhouse alliances:

- Swan Hill Rural City Council (Lead)
- Mildura Rural City Council
- Gannawarra Shire Council
- Buloke Shire Council
- Greater Bendigo City Council
- Ballarat City Council
- Hepburn Shire Council
- Mount Alexander Shire Council
- Macedon Ranges Shire Council
- Glen Eira City Council
- Ararat Rural City Council
- Central Victorian Greenhouse Alliance
- Eastern Alliance for Greenhouse Action
- Western Alliance for Greenhouse Action
- South East Councils Climate Change Alliance
- Northern Alliance for Greenhouse Action.

This project aims to help advance councils' understanding of alternative electricity procurement, with a particular focus on the following three areas:

- Determine the risks and opportunities of entering into offsite Power Purchase Agreements (PPAs) (and the variety of PPAs available)
- Determine and prioritise the options for councils contracting energy from local community energy projects using case studies provided by the CVGA from the region
- Understanding the different business models for councils to co-invest in large scale energy infrastructure.

Point Advisory was engaged by the CVGA to develop this guide.

1.2 Objective of this Guide

The objective of this guide is to build understanding of how alternative electricity procurement options can enable Councils to align their spending with other objectives such as community benefit, cost minimisation, and emissions reductions. The guide presents Councils with various options available for structuring alternative purchasing arrangements, and the various benefits and disadvantages of these approaches. It will enable councils to make more informed decisions when determining which options are beneficial to them. The project also aims to facilitate greater partnerships between Councils and community energy groups in their region and identifies ways in which community energy groups can be involved in delivering electricity to Councils.

The expected benefits of the guide to different readers are presented in Figure 1 below.

[1] The Central Victorian Greenhouse Alliance is a formal partnership of 13 local governments in central and northern Victoria including the Cities and Shires of Ararat, Ballarat, Buloke, Central Goldfields, Greater Bendigo, Hepburn, Gannawarra, Loddon, Macedon Ranges, Mildura, Mount Alexander, Pyrenees and Swan Hill. The CVGA works with its member councils on regional projects, knowledge sharing and targeted advocacy.

Figure 1:Expected benefits of this guide to different stakeholders

Procurement staff

- Understand a range of alternatvie approaches to procuring energy
- Understand the risks and benefits of each approach
- See real-world examples of alternative approaches

Sustainability staff

- Learn about different models for alternative energy procurement
- Advocate for the procurement of low emissions renewable energy for Council operations
- Start a conversation to discuss opportunities for collaboration in energy procurement

Councillors and executive managers

- Understand the changing energy landscape
- Analyse opportunities to drive economic growth and employment in the LGA through new energy projects

Energy project developers and community energy groups

- Understand government perspectives on local social energy procurment
- Identify opportunities and models through which to deliver new projects to local councils
- Develop literacy and understanding of government needs, process and due diligence factors for community energy project procurement
- Build connections and opportunities between local community energy groups and local government

What is community energy?

Community-owned renewable energy or community energy (CE) refers to projects where a community group initiates, develops, operates and benefits from a renewable energy resource or energy efficiency initiative. Community groups are formed based on a common interest or geographical region such as a town or suburb. Every CE project is different, being tailored to each community's needs and context.

There are a range of social, environmental, technological, economic and political motivators that drive CE projects in Australia and around the world, with the key aspect being the creation of local community engagement and assets. CE projects may also be developed to maximise local ownership and decision-making, generate jobs, use resources efficiently and sustainably, match energy production to local energy needs and circumstances, and help address climate change.

The Australian community energy sector currently has over 90 community energy groups across the country, who are in various stages of project development and have collectively built over 70 projects. Current examples of community energy and local government partnerships can be seen through the Lismore Community Solar Farm projects and Bendigo Sustainability Group solar projects on council facilities. Mid-scale generation community energy examples are Hepburn Wind and the proposed Macedon Ranges Renewable Energy Park.

1.3 Methodology

The following process was followed to develop this guide:

Stage 1:
Understanding PPAs in the local government context

- Desktop analysis
- Interviews with member Councils and other key stakeholders
- Analysis and validation of engagement outcomes
- Development of alternative models for energy procurement for councils

Stage 2:
Councils procuring local community energy

- Interviews with project developers and local energy groups
- Analysis and validation of approaches to integrating local community energy into council energy procurement
- Development of a guide for councils

Stage 3:
Council capacity building

- Forum preparation
- Regional forum delivery to share key findings with member Councils and other stakeholders
- Project finalisation

2 COUNCIL ENERGY PURCHASING IN A CHANGING MARKET

The Australian electricity market is experiencing an extended period of change characterised by price volatility, retirement of old fossil-fuelled powerplants, emergence of new technologies and changes in contracting methods. These changes have resulted in recent cost increases – primarily caused by increased network costs, increases in wholesale electricity prices, and political uncertainty. These changes have presented customers with opportunities to reduce costs by managing their energy needs differently. In the last two years, large energy users have begun to consider opportunities for generating their own electricity on-site as well as entering into alternative electricity purchasing arrangements.

2.1 Council energy use and generation

Most councils have large portfolios of owned and operated assets. These typically include a small number of larger facilities (such as town halls, aquatic centres and council offices) and sometimes hundreds of smaller facilities (including community halls, childcare centres, reserves, and sporting facilities). Many of these smaller facilities are leased to third parties such as community groups.

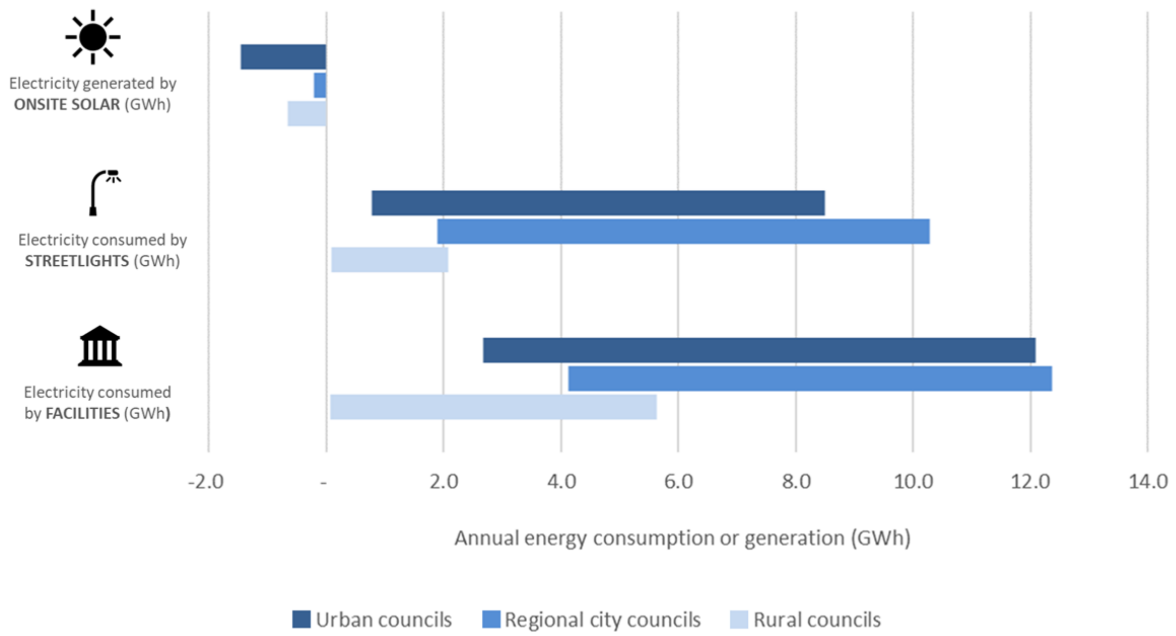
Most councils also manage a large number of streetlights that can account for a significant proportion of their energy spend. There may also be other assets such as landfills or airports which may be co-owned with other councils or private stakeholders.

Across these combined assets, councils' electricity consumption can be significant. Depending on the size of the council, total consumption ranges anywhere from 0.5 gigawatt hour (GWh) to 10 GWh per annum.

Many councils also have behind-the-meter generation, mostly in the form of rooftop solar, to offset some of the load during the day. Most councils also have demand-side initiatives to improve efficiency at the facilities they operate, undertaking energy assessments at their larger sites and installing efficient technologies where economical (e.g. LED lighting), which further reduces the daytime load.

The range of energy consumption and generation reported by councils of different sizes is shown in Figure 2 .

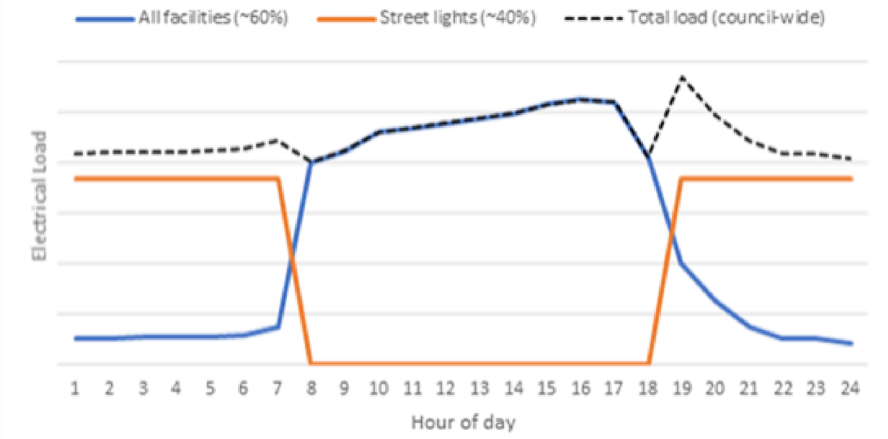
***Figure 2: Average energy consumption and generation by council size*[2]**



[2] Data is based on participating councils' energy loads

Because of the wide range of assets typically operated by councils, the total load profile for most councils is relatively flat over a 24-hour period. This is due to the significant overnight load from streetlights, balanced out by significant daytime load across most buildings (see Figure 3).

Figure 3: Typical council daily electricity load profile



2.2 Traditional energy purchasing arrangements for councils

Councils have historically entered into retail electricity supply contracts for up to five years (often adopting 2- or 3-year contracts with options to extend). In some cases, one contract covers all council sites. In other cases, there are separate arrangements for different load types: for example, one contract for streetlights; another for large facilities (generally those with consumption above 160MWh/year); and a third contract for smaller buildings. Similarly, electricity and natural gas can be supplied by different retailers. Recent volatility in wholesale electricity markets has resulted in many retailers being reluctant to offer contracts beyond two-year periods.

Council procurement processes are governed by requirements in Sections 186 and 186A of the *Local Government Act 1989* (the Act). The Act enables Councils to appoint an agent to act on behalf of Council in undertaking a procurement process. Historically, because of the complexities involved in energy procurement, most Victorian councils have purchased electricity through one of three group purchasing approaches:

1. Procurement Australia (PA) procurement
2. Municipal Association of Victoria (MAV) procurement
3. Victorian Government standing electricity purchasing arrangements

The Victorian Government has approved PA and MAV to act as procurement agents on behalf of local governments. Furthermore, local governments have the option of purchasing energy through the Victorian Government's standing electricity purchasing arrangements. Procurement Australia and MAV Procurement undertake energy tenders on behalf of groups of councils (and in the case of the former, a range of other public sector customers such as hospitals and state government statutory bodies). Historically, the view has been that aggregating local governments provided greater scale and the ability to manage fluctuations of load across a portfolio which enabled Councils to receive a more attractive market offer.

Council procurement processes require that a fair market testing process is undertaken to ensure that products and services deliver value for money to Councils and ratepayers. Generally, the Act requires that a tender process be held for the provision of goods and services. The Minister is also authorised to provide exemptions to local governments from undertaking tender processes in accordance with Section 186. It is important to note that the Local Government Bill (2018), which is currently under review at the time of writing, proposes changes to the Local Government Act 1989 to encourage a greater focus on collaborative procurement between councils.

Most councils interviewed as part of this engagement have opted into the MAV Procurement or Procurement Australia processes. Some councils have a combination of contracts from different suppliers for their streetlights, large sites, or small sites. Contracts through these processes commenced in January 2018 in the case of MAV procurement, and July 2018 in the case of Procurement Australia. Two Councils have adopted the State Government standing electricity offer for their streetlights. Notably, one Council undertook its own tender process.

Councils also appointed external agents to undertake energy procurement because it relieves them of the complexities involved, including forecasting market fluctuations, managing site invoicing, porting meters and benchmarking tariffs. However, some councils have indicated that group purchasing arrangements have resulted in certain suppliers' customer service levels falling below expectations and becoming an ongoing point of frustration. Several councils also feel they have little influence on the tender evaluation criteria used by group procurement organisations because they are a small part of a much larger group.

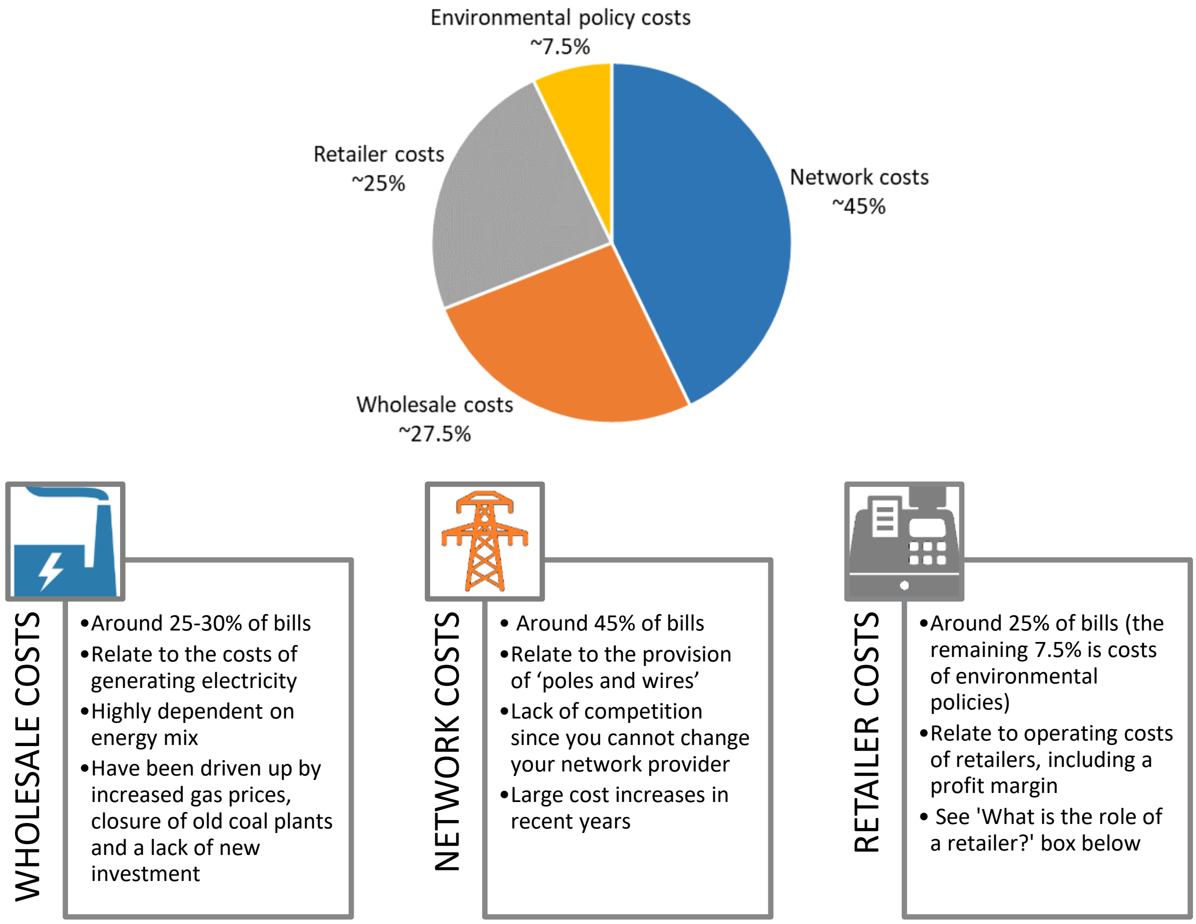
Most councils are open-minded about the potential for alternative models that deliver an energy cost reduction, especially where they have the potential for local economic and/or environmental benefits, particularly with respect to carbon emission targets. Whilst most councils did not identify social procurement, community benefits or greenhouse gas reductions as important considerations when procuring electricity in the past, some did indicate that these would be considerations in the future, although they noted that cost was a key consideration. Some councils indicated that they were prepared to pay a little more for local procurement or environmental outcomes, however these amounts were insignificant in the scale of electricity contracts.

2.3 Changing energy markets and changing energy procurement

Over the last decade the energy sector has experienced price increases, market volatility and underinvestment in generation assets. These have resulted from policy uncertainty, increased infrastructure spending by networks, and changes to the generation mix. At the same time, emerging technologies (such as batteries) and falling costs of renewable electricity are disrupting the ways in which customers are engaging with electricity procurement. Consequently, energy is now the subject of significant national policy debate.

The key components of energy bills are shown in Figure 4 below.

***Figure 4: The main components of electricity bills in Australia*[3]**



[3] Australian Energy Regulator, State of the Energy Market: May 2017

Large energy customers are increasingly undertaking a range of energy management strategies – including demand management, load shifting, energy efficiency and on-site generation to reduce their overall bills. Alternative off-site contracting can also limit exposure to wholesale electricity prices and retail (firming) costs and can form part of a comprehensive energy management strategy.

What is the role of a retailer?

The primary role of a retailer is to ensure electricity prices paid by customers are relatively stable compared to the daily fluctuations in wholesale electricity prices. While customers pay a fixed rate per kWh, wholesale electricity market trades vary from minus $1,000/MWh to $14,000/MWh and are traded in five-minute blocks and settled in 30-minute intervals. A more typical medium-term price is in the range of $40-$100/MWh. The retailer manages these short-term price fluctuations to deliver a certain price to customers.

Retailers do this by purchasing electricity from the National Electricity Market (NEM) and implementing a range of hedging arrangements. In the case of commercial and industrial contracts, these costs represent the bulk of retailer charges. The balance or retail charges include metering costs billing, profit margin, customer service provision, and marketing costs. By law, any electricity supplied to a customer from the grid is required to be supplied by a retailer. For this reason, the services of a retailer are usually required when 'transporting' electricity from one site to another utilising the distribution network.

There is continued uncertainty in energy markets due to future energy and climate change policy, as well as transformational technological shifts that are underway. While this situation may lead to continued wholesale price volatility, the ongoing uncertainty has presented opportunity for businesses and local governments to build significant levels of behind-the-meter generation, adopt innovative energy procurement strategies to mitigate price volatility, access lower prices, reduce greenhouse gas emissions and support the development of new renewable energy projects.

In the survey conducted as part of this engagement, councils indicated a general willingness to investigate alternative approaches. When asked their willingness to consider an energy procurement arrangement that is significantly different to the typical retail arrangements, the average response from local governments surveyed as part of the development of this guide was 6.2 out of 10 (where 1 was 'not at all' and 10 was 'definitely'). This indicates a significant appetite among councils to explore alternative procurement arrangements.

Alternative electricity purchasing arrangements can involve reducing costs to the customer by providing the supplier with greater contract certainty, thereby reducing risk. Ways in which alternative contracts may differ from standard contracts include:

- longer duration of contract
- the method in which the retail rate is determined
- greater certainty about load (demand)
- sharing revenues and risks relating to wholesale spot market costs and revenues
- mechanisms for indexing retail prices to movements in market prices
- underwriting investment in new power plant through contractual agreements between the generator, project financier, customer and retailer
- co-investment, including arrangements and investment scenarios involving local community energy groups.

These arrangements often enable customers to lock in price certainty, which also provides generators with revenue certainty, which in turn enables project developers to secure finance. This often allows developers of new projects to offer customers lower wholesale prices compared to those seen in the short-term spot market.

A potential risk of locking in a longer-term price is that the customer could be left with a contract to pay prices that are higher than the prevailing market in the event that wholesale prices fall over the long term. To mitigate this risk, it is important to undertake due diligence, seek expert energy market advice and engage in a risk-based decision-making process.

What is a Power Purchase Agreement?

A 'Power Purchase Agreement' (PPA) is a broad term that has been used in the energy sector for a long time to refer to a contract for the purchase for large volumes of electricity from a generator over an extended time period (e.g. 7-25 years).

Historically, PPAs were signed between retailers and generators - such as coal-fired power stations. In some instances, very large energy users (such as aluminium smelters) would also enter into agreements with generators to 'offtake' energy from these power stations via a PPA. These PPAs typically involved the sale of wholesale volumes of electricity without a retail component – that is, without the facility to 'firm' load intermittency through short term purchasing and hedging on the spot market.

In recent years, the term has evolved to encompass a greater variety of contract types, and the number of generators and customers who have entered into PPAs has also broadened. The term 'corporate PPA' applies to contracts between large customers and large-scale off-site powerplants that are typically (but not always) powered by renewable energy. These have been adopted by customers such as universities, municipalities, and the IT, food processing, high tech manufacturing and pharmaceutical sectors.

PPAs can also be structured to support 'behind-the-meter' electricity generation assets. In these cases, electricity is supplied to a customer by a third party which owns and operates a generation asset (such as rooftop solar or gas fired cogen plant) at the customer's site. This model is described further in Part 4 (4.3.3).

A brief description of the main variations of PPAs is provided below. More detailed information about each of these is provided in Section 0 of this guide.

Traditional PPA

- Historically signed between generators and large offtakers, such as retailers
- Primarily served to provide long-term price certainty to generator and customer, mitigating risk of wholesale market fluctuation
- Existence of PPA enabled project finance and commitment to invest
- 'Firming' arrangements managed by the offtaker (usually a retailer).

Behind-the-meter PPA

- A long-term contract between a generator and a customer for the supply of electricity at a host site.
- The powerplant is owned by a third party and located at the customer's host site.
- The third party is responsible for owning, maintaining and operating the plant, and supplying electricity at a contracted price.
- Generator may take on risk of input fuel prices, if any.
- Ownership of plant can revert to host at completion for contract.

Renewable Energy Certificates -only PPA

- Involves long-term purchase of Renewable Energy Certificates (RECs) only from a specific powerplant.
- Has been used by retailers and large energy users as a mechanism to lock-in favourable REC prices over a long term period
- Could theoretically be contracted with an on-site or off-site power plant

Retail-linked PPA

- Also referred to as a 'sleeved' or firmed PPA.
- With or without renewable energy certificates
- Involves the sale and supply of electricity underpinned by the wholesale price from a contracted off-site powerplant
- A 'firming' component enables supply of electricity at intermittent periods when powerplant isn't generating
- The model provides long-term price certainty by tying electricity costs to the operating costs of the power plant

Virtual PPA

- Does not involve sale of physical electricity
- Contractual arrangement to deliver price certainty to buyer and seller
- Can involve a risk and revenue sharing arrangement such as financial hedge
- Usually a hedging mechanism to mitigate against increased electricity costs across a larger electricity portfolio
- Also known as a 'financial' PPA

2.3.1 Weighing up a portfolio approach

To help mitigate risks of high energy costs and ongoing energy policy uncertainty some organisations have taken a 'portfolio approach' whereby they adopt more than one model to cover different components of their energy demand.

The following strategies could be included in a portfolio approach:

- energy efficiency, energy monitoring and measurement initiatives
- demand response capabilities (the ability to be paid for curtailing demand at peak periods in the grid)
- rooftop solar PV owned by the customer
- rooftop solar PV owned by another organization and sold to the customer behind the meter
- other generation (such as gas cogen, methane generation, or diesel backup generators)
- one or more retail electricity supply agreements for electricity from the grid
- one or more corporate PPAs tied to fixed cost generation contracts
- and potentially some hedging contracts (such as 'contracts for difference' – see Part 4.3.3).

The number of components within a portfolio of energy solutions would be dependent on a number of factors including the natural resource and site availability for various technology deployment, volume of Council's energy demand, total energy costs as a proportion of Council's total expenditure, and Council's capacity to manage multiple energy contracts and energy generating assets.

A large organisation with high electricity demand and high proportion of total expenditure (such as Telstra, an aluminium smelter, a water authority, or data centre) would include most, if not all, of the above approaches in their energy management strategy. They would have greater drivers to diversify energy sources and reduce exposure from any single source and would have greater internal capabilities and capacity to manage a diverse range of energy generation assets and contracts. On the other hand, a small organization would have limited capacity to manage several generation assets, several back-up supply contracts, retail electricity supply contracts, and one or more hedging contracts.

An electricity customer with a relatively small electricity demand (i.e. less than 5,000 MWh/yr) will have insufficient load to sign multiple corporate PPAs from separate renewable energy generators. Rather than fragmenting its electricity demand, it may be better served to minimise grid demand through energy efficiency and behind-the-meter generation opportunities, while putting its entire electricity demand into a single electricity supply contract to retain buying power.

The nature of the portfolio strategy should be tailored to reflect the needs of the customer organisation. Examples of organisations that have adopted these diversified approaches include Telstra, Australia Post, Sydney Airport, BlueScope and Victorian water utilities. A portfolio approach is advocated by the Central Victorian Greenhouse Alliance (CVGA) and the Eastern Alliance for Greenhouse Action (EAGA) as a risk mitigation measure, however local context and the sophistication of local community energy groups should also be considered.

2.3.2 How alternative purchasing models can benefit councils

Alternative electricity purchasing arrangements, whether 'behind-the-meter' solutions or PPAs, are fundamentally different to regular retail supply agreements in that they physically or contractually tie the customer to a specific electricity generator over a term generally longer than a retail contract. This long-term commitment enables long-term price certainty and can be an effective strategy in managing price volatility and budget uncertainty. Under the right circumstances, this strategy can also secure lower prices than standard retail contracts (see breakout box on the declining price of PPAs on the following page).

Some of the potential benefits associated with alternative purchasing arrangements include:

- Achieving long-term price security via contract terms longer than the traditional 2- to 5-year contract
- Potential to lock-in cheaper prices with longer-term contracts (although with a risk that market prices could drop over the contract period) – see breakout box below
- Potential to reduce net-carbon emissions in a cost-effective way
- Promotes development of renewable energy technologies

- Local economic and social benefits (e.g. job creation for local projects, cheaper local energy prices, community investment potential, community benefit sharing, education and training opportunities, etc.)

Some of the potential risks associated with alternative purchasing arrangements include:

- Potential that retail energy prices will drop over the term of the arrangement, leaving the customer paying more
- New technology risks (e.g. sub-par performance, breakdowns)
- Complexity involved in negotiating new contracts
- Development risks (including construction delays, technical design, contractor selection and capabilities, etc.)
- Grid connection and curtailment risks.

The benefits and risks associated with each procurement model will be addressed in more detail in Section 4.

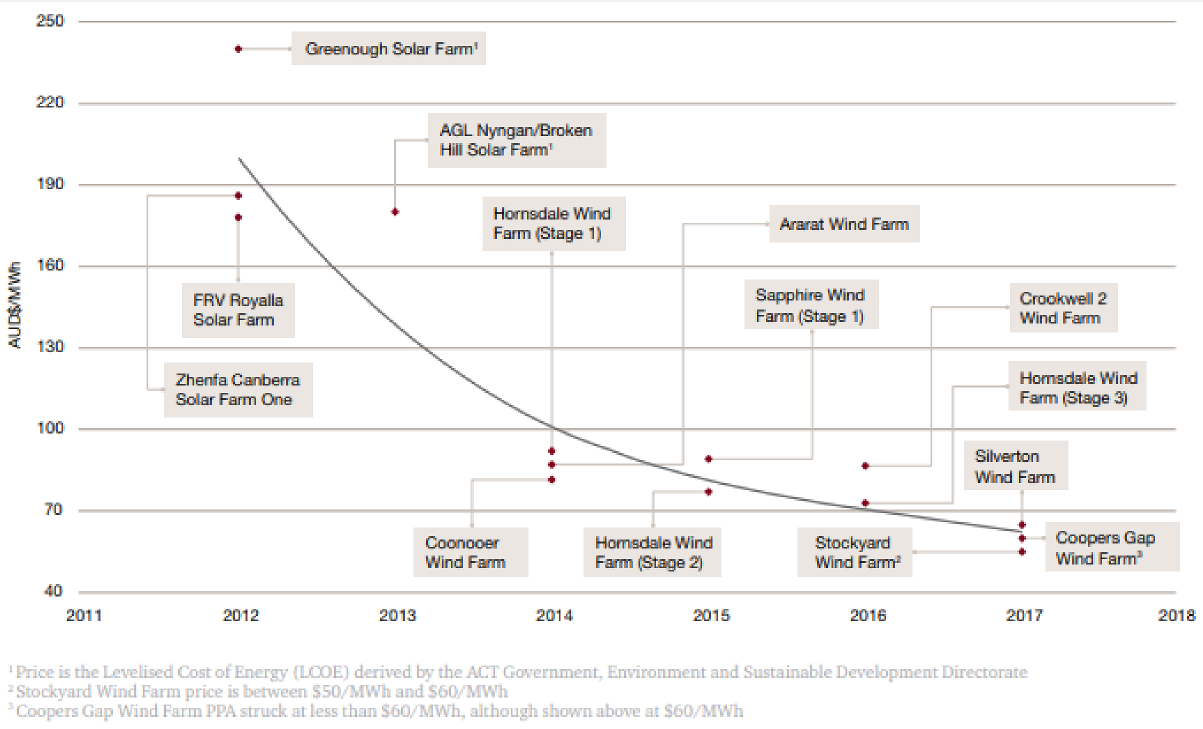
The declining price of PPAs

It is difficult to predict the exact price outcome of a PPA because data is rarely publicly released and when it is, it tends to be 'headline' numbers that do not reflect the detail of the arrangement over its full life. For example, a corporate PPA may not include a 'firming' component, which is usually provided by a retailer and will be priced separately (see 'What is the role of a retailer?' break out box above).

Despite this, we know that PPAs have been steadily declining in price and in many cases the wholesale component of a PPA is lower than the wholesale spot price of electricity, as shown in Figure 5. This is also supported by a recent report published by Beyond Zero Emissions, which found that "leading companies of all sizes are signing power purchase agreements to secure low-cost electricity from solar and wind, typically paying 20 to 50% less than the standard market price."[4]

And while the price of PPAs has been falling, market prices have risen significantly.

***Figure 5: The declining price of PPAs since 2012*[5]**



A major part of the reason why PPAs can lead to lower prices for consumers is that they are longer-term arrangements, lasting in length from about 7 to 25 years. Longer terms have the potential to deliver lower prices because the revenue needed to pay off the power plant can be spread over a longer period. The longer-term offtake certainty can enable attractive financing, and provides the generator with revenue certainty over the term of the

[4] Electrifying Industry by Beyond Zero Emissions (2018) available at http://bze.org.au/electrifying-industry-2018/

[5] *Optimising Energy Procurement via Corporate PPAs* by PwC (2017) available at https://www.pwc.com.au/publications/pdf/optimising-energy-corporate-ppas-nov17.pdf

contract, which enables the generator to avoid pricing in the risk of offtake uncertainty. So, for electricity consumers, PPAs can offer significant cost savings compared to short-term electricity purchasing contracts.

Because of these longer terms, PPAs also offer consumers the ability to circumvent the volatility in energy prices, gain a degree of certainty over their future energy costs and manage energy accordingly. Because nobody can accurately predict the future of electricity market movements and prices, there is a risk that prices in the wholesale market could fall significantly. In this scenario, consumers will be locked into an energy price that could be higher that the prevailing market price at some future point. It is therefore important that customers take a view on whether the contract price is a price acceptable to them over the contract term irrespective of whether market prices remain high, or fall in future.

For the purposes of this Guide, the message for readers is that alternative energy procurement options provide significant opportunities for councils, and councils should understand the opportunities and risks and pursue an approach that works best for their circumstances. Councils should base their contracting decisions on a business case, based on a proposed contracting model and generation technology and location, along with an electricity price forecast developed by expert market advisors.

A changing electricity market - FAQs

How is energy traditionally procured by councils?

Councils have historically entered into group purchasing contracts through procurement processes organized by the Municipal Association of Victoria or Procurement Australia. Some Councils have also chosen to adopt the State Government standing electricity contract which is available to State Government agencies and local governments. These arrangements have enabled Councils to take advantage of the scale and purchasing power of resulting from participation in a larger group.

How is the energy procurement landscape changing?

Rather than simply purchasing electricity, large energy customers are becoming more pro-active about how they manage their energy costs. This includes energy efficiency initiatives on site, on-site generation, demand response (reducing consumption at peak times or shifting demand to other times of day), and increasingly, changing their retail and wholesale contracting arrangements.

What are some of the emerging alternative models?

A number of new models have recently emerged which enable customers to have more direct control over the source of their power supply and more ability to make decisions about the energy market risks to which they are exposed. A variety of models are comprehensively discussed in Part 4. Examples include:

- customers taking ownership of their own solar farms
- customers sharing in the revenues from new wind farms
- customers purchasing electricity from solar panels located on their roof but owned by a community group.

Why are alternative models emerging?

Alternative models are emerging for a number of reasons. These include:

- Recent increases in energy costs have prompted large energy users to consider cost saving measures
- Emergence of corporate PPAs in the United States have illustrated opportunity to be smarter about managing costs
- Falling cost of renewable energy technologies enables some customers to contract lower energy costs than the wholesale market
- An abundance of potential renewable energy projects seeking offtake agreements present opportunities for customers

Who is taking up PPAs?

Diversified energy management strategies and corporate PPAs are being adopted by a broad range of large customers. These include universities, water utilities, infrastructure operators, manufacturers and food processing industries, telecommunications utilities, data centres and the IT sector and local governments.

What are the main risks and/or opportunities associated with these alternative models?

There exist opportunities to enter into a range of innovative electricity contracts. These include opportunities to lock in competitive pricing, long-term price certainty, share revenues with electricity generators, co-own large power plants. Some of these innovative approaches may place new risks upon customers which they aren't used to with regular retail arrangements. These may include risks resulting from faults in the operation of a power plant, network constraints, or unexpected market fluctuations. The risks vary with different models and can be managed with the right knowledge. Additional due diligence or market analysis might be required before rushing to a decision. The various risks are outlines in the discussion of the various models in Part 4.

3 A FRAMEWORK FOR ASSESSING DIFFERENT MODELS

This section sets out a framework that can be used by councils to help determine which alternative approaches to energy procurement are best suited to their needs.

3.1 The framework

This decision-making framework for alternative approaches to energy procurement has been developed taking into account the various options that are available when selecting an alternative purchasing model, as shown in Figure 6. By considering the benefits and disadvantages of each option, and how these relate to your organisation's corporate objectives, you can decide which alternative procurement model is most suited to your circumstances. Note that the options for each decision criterion aren't necessarily mutually-exclusive (i.e. horizontally), for instance some models could be applied regardless of generation technology. Likewise, there is no fixed relationship between options across the different decision criterion (i.e. vertically), although the options may be interrelated depending on the specific council's circumstances.

Figure 6: Energy generation or procurement model assessment framework[6]

Decision criterion	Options		
Ownership	Owned / co-owned		Not owned
Newness	New build		Existing power plant
Exclusivity	Exclusive model		Aggregated model
Location	Within LGA	Within region	Outside region
Technology	Solar	Wind	Other (e.g. waste)
Siting	On-site		Off-site
Contract structure	Physical	Financial	LGC

Each of the decision criteria of this framework are discussed in detail in the following sections. Your organisation's corporate objectives will determine how you respond to each of these criteria and will be shaped by:

- policies such as your greenhouse emissions reduction policy and any emissions reduction targets
- any policies or positions relating to support for renewable energy in your area (and any particular forms of renewable energy)
- any policies relating to local/regional economic development and preferences to partner with local businesses or community organisations
- any support programs or staff delegations to enable local community energy group or project development
- your organisation's need to reduce business costs, or appetite to incur additional costs in order to deliver on the above objectives
- your organisation's ability and willingness to install renewable energy generation on your sites
- your willingness to own and operate large scale energy generation infrastructure.

This framework has been used to illustrate the specific models and case studies outlined in Section 4.

[6] This matrix has been adapted from *Facilitating End User Deployment of Offsite Renewable Generation* by Dr E Mitchell & Dr G Mills, University of NSW (2017)

3.2 Criteria for the decision-making framework

3.2.1 Ownership

Large energy customers who engage with alternative energy procurement models have the option of investing into and/or owning a powerplant, or contracting to purchase electricity from a powerplant over a long-term period without an ownership stake in the facility. Both approaches have been demonstrated in Australia recently.

The benefits of developing and owning a utility scale power plant may involve reduced costs, and the ability to retain the asset for its designed life. For many CVGA councils, access to land is another incentive: councils could build assets on council owned land, thereby reducing costs. There are several additional considerations when choosing to develop and own a renewable energy power plant that are not experienced when purchasing power from a third party. Most CVGA councils indicated little appetite for owning a large-scale powerplant, however some councils suggested they were open to considering the possibility.

Conversely, most councils are comfortable owning, operating and maintaining small-scale rooftop solar installations. The nature of risks associated with developing and owning small-scale or large-scale renewable energy assets are similar, however the consequences and impacts of those risks vary significantly with scale.

Development, operation and maintenance of powerplants involves a number of special considerations. These include:

- **Technology related risks and due diligence –** Risk of technological faults resulting from manufacture and delivery to site. Due diligence to ensure technologies selected are fit for purpose and appropriate for the location. Technology related risks include plant performance, breakage, suitability of design, sub-optimal performance.
- **Performance –** Ensuring optimal plant performance over time to deliver expected revenues. There is a risk of decline in performance over time, unexpected outages, accidents, continued availability of qualified maintenance and operational staff, etc.
- **Network considerations –** Issues that would prevent the powerplant from exporting to the grid. These could include grid connection challenges, network faults, or network constraints that would result in the curtailment of the powerplant's ability to export power to the grid.
- **Market volatility –** Changes in wholesale pricing that would undermine the powerplant's ability to return expected revenues
- **Regulatory considerations –** Potential for changes to national electricity market rules, regulatory frameworks concerning the Renewable Energy Target (RET), electricity reliability, or interface with transmission and distribution networks.
- **Development and construction risks and due diligence –** Issues with planning approvals, delays, and construction quality.

3.2.2 Newness

Alternative energy procurement models offer the opportunity for customers to purchase energy from new powerplants, or existing installations.

For strategic reasons, many councils expressed a desire to procure energy from a new installation on the basis that this would drive investment, construction and employment (ideally in their own LGA – see section 3.2.4 below). There may also be a better 'story' to be derived from new energy developments. However, energy acquired from new facilities may cost more than from existing installations and construction delays may not align with existing contract timings.

The size of load may also be an important factor in determining whether to source energy from new or existing powerplants. In the case of existing projects, the scale of the offtake may not be relevant as the powerplant will already have been constructed, or committed, and will not be reliant on the offtake to support the business case. The customer or group of customers will be able to purchase a relatively small proportion of the offtake and will not be critical to the investment decisions concerning the plant.

Conversely, where a new renewable energy project depends on an offtake agreement (or agreements) in order to commit an investment decision, the project developers will have in mind a volume of load which will be critical to securing finance or capital investment for the project to proceed. In the case of large, off-site projects of several megawatts (MW) or more, individual councils will not have the volume of offtake required to underpin a project, and it will be necessary to aggregate with other customers (see section 3.2.3 below). Renewable energy project developers may look for an offtake contract equivalent to between 30 and 50 per cent of the energy produced by the plant in order to commit to development.

3.2.3 Exclusivity

Energy purchasing arrangements can be undertaken as a sole (exclusive) purchaser, or as part of a group (aggregated) purchasing arrangement. Historically, local governments in Victoria have participated in group purchasing arrangements. A group purchasing approach allows aggregation of demand, enabling offtake contracts with larger projects, generally delivering a more competitive price. It also enables councils to share costs of specialist advice such as specialist legal advice, technical due diligence and electricity market advice.

Conversely, while group purchasing offers benefits of scale, managing a purchasing group also entails specific costs and resourcing requirements which need to be considered. A group approach requires:

- group administration and knowledge sharing
- relationship management
- a group decision-making framework
- facilitation of group decision making
- consensus and compromise when making decisions
- compromise when shaping outcomes.

A sole purchaser approach may be more suitable if the site or scale of the project lends itself to a single Council – for example when considering a behind-the-meter solution, or a landfill methane project that would only generate sufficient volumes of electricity to meet one council's demand

3.2.4 Location

The location of electricity projects can vary widely and is not contingent upon a council's location within the national electricity grid. It is possible to contract with generators located far away from your physical location. At the other end of the spectrum, the powerplant can be located on your rooftop, or elsewhere in your LGA.

Your decision on where to locate the project is likely to be based on several factors, including:

- **Availability of land –** The availability and suitability of land is an immediate practical consideration for any renewable energy project. The sites typically available to councils for large-scale renewable energy developments include landfills (operational and closed), parcels of vacant land and sometimes airports (see section 3.2.6). The ownership of land, size, zoning, and future use intentions and proximity of neighbours are all considerations in determining whether the site is suitable for a renewable energy project and the appropriate technology. The accessibility of the site for construction needs to be considered as do contamination and past land use. In the case of disused landfill sites, the site may need to settle over a period of years before a renewable energy facility can be constructed on it. The need to acquire land for development of a renewable energy project will impact the business case, so there are likely to be cost advantages to developing a project on council-owned land.
- **Availability of energy resource –** Renewable energy resources are not evenly distributed – some regions have abundant solar resources, while others are better suited to wind. Some locations have access to biomass (including agricultural, forestry and municipal waste), or hydro resources. Within the study area, locations in and around Ararat, Ballarat and parts of the Buloke Shire have particularly good wind resources. Solar resources are more abundant north of the Great Dividing Range such as Gannawarra Shire, Swan Hill Rural City Council and Mildura Rural City Council.
- **Suitability of grid connections –** If planning to export electricity to the grid, powerplants must be located close to a grid connection suitable to the scale of their output. Where a network connection isn't immediately available, it may be possible to construct one, however this comes at significant cost. In the case of a large wind or solar farm, connection to a transmission line with adequate capacity may be required. Transmission networks in the north and west of Victoria are generally operating at or near capacity at peak periods. This means that on many parts of the network there may be limited ability for large projects to connect to the network until network upgrades take place. In the case of a rooftop solar installation, a connection to a local distribution network may or may not require grid protection infrastructure.
- **Economic and community benefits –** Delivering economic and community benefits to the local region may be a key consideration for councils. In this case, building the installation locally may be important. This could unlock the potential for community engagement, education, training and tourism opportunities.

Where location is a primary driver, the technology and scale are likely to be determined by the location.

3.2.5 Technology

A broad range of technologies are available to large customers seeking to enter into alternative purchasing arrangements. Technologies can include a variety of renewable and non-renewable assets. Potential opportunities which have been identified in the study area include:

- Small-scale solar PV (rooftop and ground mounted)
- Large-scale solar PV (1 MW+, ground mounted)
- Wind farms (large scale)
- Waste to energy – anaerobic digestion or incineration
- Landfill methane capture and combustion
- Pumped hydro.

Factors that can determine or influence the technology selected include the following:

- Particular geography or location
- Site characteristics (size, gradient, geology)
- Preference for location of generation 'behind-the-meter' or on Council land
- Scale of demand (solar PV is better suited to small loads)
- Alignment with other Council objectives – such as waste management, or partnering with local industries
- Preference for a particular contracting or ownership structure
- Local community and political preferences.

3.2.6 Siting

Renewable energy assets can either be located 'behind-the-meter' on a site where energy will be consumed, off-site, on another parcel of land owned by the consumer, or on land owned by a third party. By locating projects behind-the-meter, it is possible to avoid incurring network charges for transporting electricity over the 'poles and wires'. Locating a project off-site requires electricity to be transmitted through the grid and 'sold' back to the customer. This typically requires a retailer to be involved in delivering the solution and can affect the economics of the project.

Whether your project is sited on council land or elsewhere depends on:

- availability and size of land
- future intentions for the use of the land
- access to energy resource (sun, wind, biogas, waste, etc.)
- the opportunities for grid connection in the vicinity, and capacity for energy to be fed into the grid
- desire to provide opportunities for local residents and/or community groups to participate in the energy project (e.g. via a virtual power plant)
- the ownership of the site, noting that project sites can be owned by Council, or other entities.

3.2.7 Contract structure

Electricity contracts are sometimes referred to as being 'physical' (also referred to as 'direct' or 'retail') or 'financial' (also referred to as 'synthetic' or 'virtual').

'Physical' contracts refer to the sale and provision of actual electricity to the contracted site. In other words, energy generated is earmarked to be purchased and used by a specific customer. This is usually through a retail contract, or the provision of a generation service, such as rooftop solar panels, or a generator on-site.

'Financial' or **'virtual''** contracts do not involve the actual supply of electricity to the customer's site. Instead, an off-taker guarantees the generator a contracted price for the generation of electricity, either in the form of a financial arrangement or in return for the supply of renewable energy certificates, or both. These arrangements can act as a hedge against a customer's retail electricity costs. Under a 'financial' arrangement, the generator sells the electricity to the grid at the spot price. If the spot price falls below the contracted PPA price, the off-taker will make up the difference by paying the generator 'top-up' payments. If the spot price exceeds the PPA price, the generator will refund the difference to the off-taker. This arrangement is also called a ‘contract-for-difference’. In these arrangements, the customer maintains a separate physical electricity supply with a retailer.

‘LGC contracts’ are virtual electricity contracts which involve the generator supplying renewable energy certificates – called ‘Large Generation Certificates’ (LGCs) to the customer at a contracted price. The customer can then decide whether to voluntarily surrender the LGCs as part of an emissions reduction strategy, use the LGCs to acquit any obligation under the Federal Governments ‘Renewable Energy Target’ scheme, or sell the certificates to other parties.

4 ALTERNATIVE ENERGY MODELS

4.1 Behind-the-meter models

4.1.1 Model 1: Behind-the-meter power purchase agreement

Decision criterion	Options		
Ownership	Owned/ co-owned		Not owned
Newness	New build		Existing power plant
Exclusivity	Exclusive model		Aggregated model
Location	Within LGA	Within region	Outside region
Technology	Solar	Wind	Other (e.g. waste)
Siting	On-site		Off-site
Contract structure	Physical	Financial	LGC

Description of model

This model involves the installation of a powerplant that is owned by a third party 'behind-the-meter' at a customer's site. The powerplant can be a rooftop solar installation, a diesel generator or other generation system, such as biomass.

The generation asset is owned, maintained and operated by the third party, and power is supplied to the customer at a contracted rate. The asset owner/operator takes on the risks associated with maintaining and operating the plant and guarantees a long-term contracted price.

Ownership of the solar system often reverts to the host site following the expiry of the term of the agreement.

Example case studies

A community-council partnership enables a CE group to access a premise or land from a council to install a renewable energy system, with the council agreeing to purchase all electricity generated. The community group will often initiate the renewable energy project and then approach the council to enter into a partnership. The council will have ideally conducted assessments of its buildings and identified sites suitable for installations. The CE group will lease the site, invest in the project and/or receive dividends from selling the electricity to council. Alternatively, it may provide a loan to the council for the infrastructure purchase.

Examples of this type of project include Lismore Community Solar, Clean Cowra and the Bendigo Sustainability Group. Appropriate legal structures include a trading cooperative and public company limited by shares. Other projects include the Pingala Brewery solar installation in Sydney.

This model can also be used in large corporate arrangements. For example, the Victorian agribusiness Nectar Farms in Stawell is supplied 100% renewable energy from the neighbouring Bulgana 196MW wind farm through a behind the meter arrangement.

Why it was chosen

This model presents opportunities for Councils to install solar systems on rooftops without incurring initial capital outlay.

The model also potentially presents opportunities for deep community engagement around renewable energy actions and involving community investors by enabling community organisations to offer energy supply services to Councils.

Discussion of benefits and risks

The primary benefit involves the avoidance of initial capital outlay with the ability to spread energy payments over the contract term.

A further benefit is that the owner/operator addresses any under-performance issues, and monitors and maintains the plant over time. A consequence of this is the need to enable site access to the plant operator to undertake these functions and to maintain an ongoing relationship over the life of the contract.

With regards to the benefits to local community energy groups, councils can act as a creditworthy host. Often in regional communities, councils will frequently be the least risky host available for community energy groups.

The main risk is that the contracted supplier may not have the necessary capabilities and resources to maintain operation of the plant over the life of the contract. Contracts should ensure that continuity of supply is maintained. Council may need to assume responsibility for operation of the plant at an agreed point in time.

Steps to implementation

1. Identification of suitable sites (e.g. Roof space, landfill).
2. Design system to appropriate scale
3. Develop procurement process and tender specification
4. Undertake tendering process
5. Negotiation and contracting
6. Implementation.

Opportunities for social engagement

This model is well suited to engagement with community groups acting as the owners and operators of energy-generating assets on council sites. The sites operated by the Bendigo Sustainability Group are a case in point.

There are also opportunities to engage with social enterprises that benefit particular sectors of the community, such as the long-term unemployed, indigenous and other traditionally disadvantaged community segments in procuring rooftop solar assets.

Finally, energy cost savings can be shared with community organisations that tenant council sites.

4.1.2 Model 2: Virtual net metering

<table>
<tr><th>Decision criterion</th><th colspan="3">Options</th></tr>
<tr><td>Ownership</td><td colspan="2">Owned / co-owned</td><td>Not owned</td></tr>
<tr><td>Newness</td><td colspan="2">New build</td><td>Existing power plant</td></tr>
<tr><td>Exclusivity</td><td colspan="2">Exclusive model</td><td>Aggregated model</td></tr>
<tr><td>Location</td><td>Within LGA</td><td>Within region</td><td>Outside region</td></tr>
<tr><td>Technology</td><td>Solar</td><td>Wind</td><td>Other (e.g. waste)</td></tr>
<tr><td>Siting</td><td colspan="2">On-site</td><td>Off-site</td></tr>
<tr><td>Contract structure</td><td>Physical</td><td>Financial</td><td>LGC</td></tr>
</table>

Description of model

Virtual net metering (or otherwise known as Local Electricity Trading) involves energy generated offsite being used to “net off” the electricity consumed at another site. The model requires an arrangement with a ‘friendly’ retailer and the use of local electricity distribution networks.

Example case studies

The University of Technology Sydney partnered with Singleton Solar Farm in 2015. XYZ Solar, owners of the solar farm, provide 12 per cent to the University of Technology Sydney's Chau Chak Wing Building's annual electricity consumption. About half of the 407 kW solar farm's energy credits are attributed to the University in what is called a Virtual Net Metering (VNM) arrangement.

The Northern Alliance for Greenhouse Action have recently undertaken a Local Energy Trading feasibility study for its member councils.

Why it was chosen

Several councils own sites with significant roof space that could be used for the installation of solar PV, but which lack sufficient electricity demand at those sites to consume all of the energy generated. A virtual net metering solution would enable any excess electricity generated to be used at other Council sites.

Discussion of benefits and risks

- There are few examples where this model has been implemented successfully
- Likely to incur full transmission network charges not just local use of system charges
- Business case may require negotiation of avoided network charges
- Requires cooperation from retailer, and potentially distribution business in order to develop successful business case
- The local network services provider, Powercor, places export constraints on sites in some areas

Steps to implementation

1. Identification of a cooperative retailer
2. Negotiation of network charges with distribution businesses
3. Development of business case based on consumption, available roof area, network tariffs, etc.
4. Rooftop assessment – determine suitability of sites – condition of rooftops, metering arrangements, grid connection opportunities etc.

Opportunities for social engagement

Installation of solar PV can be undertaken in partnership with social enterprises that benefit disadvantaged community segments.

Generation assets can be owned by community groups and/or local residents with energy sold back to council.

Energy can be supplied to community organisations that tenant council buildings (such as sports clubs, childcare service providers, etc.).

4.1.3 Model 3: Virtual Power Plant

Decision criterion	Options		
Ownership	Owned / co-owned	Not owned	
Newness	New build	Existing power plant	
Exclusivity	Exclusive model	Aggregated model	
Location	Within LGA	Within region	Outside region
Technology	Solar	Wind	Other (e.g. waste)
Siting	On-site	Off-site	
Contract structure	Physical	Financial	LGC

Description of model

A virtual powerplant is a distributed system of remotely managing generation, storage, and consumption across a number of small sites that can be aggregated and orchestrated to dispatch into the grid at the right place at the right time. This involves using software and communications to make the distributed energy resources visible to a retailer and/or the network.

The coordination of these resources provides additional revenue streams to system owners for the provision of electricity and ancillary network services. The generating and storage assets can be owned by a central owner (such as an electricity retailer) and located at consumers' sites with the power paid for by the consumer. Alternatively, they can be owned by multiple entities and managed centrally by a service provider.

Example case studies

AGL's Adelaide Virtual Power Plant aggregates 1,000 solar households and batteries.

Reposit's business model is essentially a VPP, using household-owned batteries and solar to support grid demand for market benefits.

Why it was chosen

Provides an ability for Councils to utilise their existing Council and community assets (such as town halls and recreation centres) and cooperate with community organisations and households (schools, childcare centres and homes) to pool energy generation and demand to optimise generation and consumption.

Discussion of benefits and risks

Benefits include: optimisation of large rooftop solar assets, and allowing community groups and households to participate in local energy markets.

The key risk is the complexity in coordinating several generation assets and their interaction with the electricity grid, although this risk is generally outsourced to a specialist provider.

Steps to implementation

1. Development of Expression of Interest to identify potential service providers and suitable models
2. Business case development
3. Identify and engage with likely VPP Partner sites (if involving non-Council sites)
4. Develop a model specification based on model developed
5. Undertake a Tender for the model selected
6. Technical design and implementation

This model would benefit from an iterative design process with suppliers. Such approaches are challenging under the requirements of the Local Government Act but can be achieved with careful procurement process design.

Opportunities for social engagement

Community sites, particularly those with large rooftops, can be included in the VPP solution. Energy cost savings can be shared with community organisations who occupy council sites.

Social enterprises which benefit disadvantaged groups can be employed in delivery of solar and battery infrastructure.

Local residents can be engaged to sell the electricity they generate back to worthwhile local causes.

There is potential to engage with community organisations to invest in and (co-)own the generation and storage assets (as in the case of Bendigo Sustainability Group and Hepburn Wind).

4.2 Investment models

4.2.1 Model 4: Mid-to-Large powerplant developed on council land

<table>
<tr><th>Decision criterion</th><th colspan="4">Options</th></tr>
<tr><td>Ownership</td><td colspan="2">Owned / co-owned</td><td colspan="2">Not owned</td></tr>
<tr><td>Newness</td><td colspan="2">New build</td><td colspan="2">Existing power plant</td></tr>
<tr><td>Exclusivity</td><td colspan="2">Exclusive model</td><td colspan="2">Aggregated model</td></tr>
<tr><td>Location</td><td>Within LGA</td><td colspan="2">Within region</td><td>Outside region</td></tr>
<tr><td>Technology</td><td>Solar</td><td colspan="2">Wind</td><td>Other (e.g. waste)</td></tr>
<tr><td>Siting</td><td colspan="2">On-site</td><td colspan="2">Off-site</td></tr>
<tr><td>Contract structure</td><td>Physical</td><td colspan="2">Financial</td><td>LGC</td></tr>
</table>

Description of model

This model involves building a powerplant on council land and exporting the electricity generated to the grid. The powerplant can be owned and operated by council(s), or by another entity. The electricity generated can be:

- sold to the grid at the spot price
- sold to a retailer through a PPA
- managed by a retailer through a 'virtual net metering' arrangement and supplied to other council sites.

There is potential for surplus electricity and/or RECS to be sold to other large energy customers, or retailers through offtake agreements.

Example case studies

The Sunshine Coast Solar Farm is a 15MW solar farm owned by Sunshine Coast Regional Council. The power is exported to the grid and supplied to Council by Council's electricity retailer, Diamond Energy through a long-term retailing arrangement. The retailer manages the intermittency of the power supply, supplying electricity at times when the sun isn't shining.

The Ballarat and Bendigo landfill sites are host to generators owned and operated by LMS. LMS exports the electricity to the grid. While it isn't currently the case, offtake agreements contractually tied to the output of these facilities could supply Council sites through retail offtake agreements.

Between 2010 and 2014, CVGA councils established a private company, Sustainable Regional Australia Pty Ltd, which built, owned and operated two medium scale demonstration solar farms in Bendigo and Ballarat. These farms were developed through the federally funded Central Victorian Solar Cities project. The projects were later sold.

Why it was chosen

Several councils have vacant land available, primarily in the form of closed landfill sites. The availability of land removes one of the input costs of developing a new renewable energy facility and can improve the economics of a project.

Discussion of benefits and risks

By owning a powerplant, councils have the ability to insulate themselves from future price volatility in the electricity market.

There is also the opportunity to work cooperatively with other large energy users and community organisations in the district to deliver greater price certainty through long-term electricity contracts.

As an owner of the plant, Council needs to ensure the ongoing efficient operation of the plant through operation and maintenance contracts.

A range of project development and electricity market risks exist. These arise from potential fluctuations in the electricity market and changes to market regulations which could affect the economics of the powerplant, technology risks which could affect the performance of the plant, future network constraints which could affect the ability of the plant to export to the grid, and risk arising from the development and construction process.

Steps to implementation

1. Scoping study:
    a. Technical scoping
    b. Development of business case
    c. Agreeing on ownership & operating structure
2. Development of retailing model (if any)
3. Development of funding strategy and securing capital and finance.
4. Bidding for offtake agreements (if any)
5. Tendering for technology, O&M and construction contracts
6. Tendering for provision of retail service (if any)

Social engagement

This model lends itself to involvement of cooperatives or community companies in the ownership (as in owning and operating the asset), co-ownership or co-investment of the plant. A vehicle such as a sub-trust could be established to encourage community investment in the facility.

If undertaken by Council/s or in partnership with Council/s, development of the facility can involve the community, for example through employment and traineeships aimed at traditionally disadvantaged groups, through inclusion of local training institutes, etc.

Definitions of community Opportunities for community capital raising and co-ownership and community co-investment are given in the glossary.

4.2.2 Model 5: Council as a co-investor in a larger project

Decision criterion	Options		
Ownership	**Owned / co-owned**	Not owned	
Newness	**New build**	Existing power plant	
Exclusivity	**Exclusive model**	**Aggregated model**	
Location	**Within LGA**	**Within region**	**Outside region**
Technology	**Solar**	**Wind**	**Other (e.g. waste)**
Siting	On-site	**Off-site**	
Contract structure	Physical	**Financial**	LGC

Description of model

This model is similar to Model 4 however it involves councils taking a part-share in a mid- to large-scale renewable energy project that was developed primarily by another party off-site on land not owned by council. The likelihood is that council would be a minority shareholder in the project. There may also be opportunities for other minority investors to become involved, including community groups and local residents. The project would likely (but not necessarily) be a mid- to large scale facility such as a solar farm, wind farm, or waste-to-energy project.

As in Model 4, electricity would be sold to the grid at the spot price or through a long-term offtake agreement.

For councils to purchase electricity from the powerplant, a retailer arrangement will be required. It may also be possible for council to receive revenues from the powerplant whilst maintaining separate retail electricity supply arrangements.

Example case studies

The Macedon Ranges Sustainability Group has been working for many years on a community-developer partnership for a proposed local renewable energy park. Community-developer partnerships are where the community or a renewable energy developer initiates a renewable energy project and both parties agree to deliver it in partnership. This structure is used typically for large (multi-MW) renewable energy projects where a community investment vehicle is part owner, along with the renewable energy developer and possibly other entities. The community often leads community engagement and consultation activities while the developer leads the technical studies. In many cases, the developer owns a majority of shares and holds most of the decision-making power.

Why it was chosen

This model is relevant for proposals by Macedon Ranges Sustainability Group, Hepburn Wind and Bendigo Sustainability Groups. With regards to Macedon Ranges Sustainability Group, the project developer proposes to offer a minority shareholding to the Sustainability Group for their long-term role in the project development, coupled with a public community share offer for community investment into the project. There could be opportunity for councils to also invest. Likewise, Hepburn Wind is open to investment from councils and other large local entities alongside community retail investors for their existing wind farm and proposed solar farm development on-site.

The model presents an approach to investing in large-scale renewable energy power plant without the need for councils to undertake significant development work, although detailed due diligence would be required. The model would enable Council to benefit from ongoing electricity market revenues associated with the plant without needing to undertake the bulk of the development task.

This model could also apply to commercial projects with no community energy component, whereby the council could partner singly with the commercial project.

Discussion of benefits and risks

Under this model, the scale of the investment would be significantly smaller than the overall investment in the power plant. The approach enables councils to benefit from the economics of a larger scale project while only requiring a smaller capital outlay (which could nevertheless vary from a small investment to millions of dollars).

Council's involvement in the development process would be simplified.

The model enables community co-investment and/or, as a co-owner, may provide Council with greater ability to shape other community benefits.

This approach requires that an existing project developer with a relatively advanced project be open to additional equity investment from council.

Steps to implementation

This model requires further consideration of processes required for councils to invest in and/or become co-owners of large-scale renewable energy projects. These would include whether Councils are able to engage with unsolicited proposals, or whether competitive processes would be required. There are provisions under section 193 of the *Local Government Act 1989* relating to councils entering into ventures which may be relevant to this model.

The following broad steps would need to be developed:

1. Project identification and selection

2. Business case development

3. Due diligence

4. Contracting and investment

5. Ongoing governance and management

6. Process for entering into retail supply arrangements.

7. Opportunities for social engagement

8. Project can be owned and/or developed by a community group
9. Potential for investment by individuals
10. Engage social enterprise, including employment and training for traditionally marginalised groups.

4.3 Purchasing models

4.3.1 Model 6: Retailer-aligned power purchase agreement

Decision criterion	Options		
Ownership	Owned / co-owned		Not owned
Newness	New build		Existing power plant
Exclusivity	Exclusive model		Aggregated model
Location	Within LGA	Within region	Outside region
Technology	Solar	Wind	Other (e.g. waste)
Siting	On-site		Off-site
Contract structure	Physical	Financial	LGC

Description of model

Often referred to as a 'sleeved' PPA, this arrangement involves a three-way contract between a customer, a retailer and a utility scale, offsite generator. The deal is typically over a long-term period (between seven and 20 years). The contract includes price elements that recognise the fixed or predictable costs of developing and operating the powerplant while also delivering a 'firmed' electricity supply. 'Firming' refers to the provision of electricity at times of intermittency (such as when the sun doesn't shine on solar panels).

Due to periodic fluctuations in firming costs associated with wholesale electricity price movements, some price flexibility can be worked into the retail elements of the contract. Retailers will generally not offer a retail price beyond two years; however, with this approach a proportion of the retail price can be fixed with the remaining portion exposed to wholesale market fluctuations. This can be in the form of a market-indexed retail price reset, or in the form of re-tendering for a retailer. Each approach has risks and benefits.

This type of deal can source electricity from a new or existing renewable energy project, and may involve a contract for the retail supply of electricity with or without Renewable Energy Certificates.

Example case studies

The Melbourne Renewable Energy Project (MREP) entered into a 10-year PPA which underwrote the Crowlands Wind Farm through Pacific Hydro/Tango as retailers.

The University of New South Wales (UNSW) entered into a PPA which underwrote the construction of the Sunraysia Solar Farm.

The University of Technology Sydney (UTS) entered into a PPA with the Singleton Solar Farm, an existing project which enabled a shorter term contract. The retailer was ERM.

Why it was chosen

Whilst this approach is relatively new in the market, retailer-aligned PPAs are attracting significant interest and have demonstrated an ability to deliver highly competitive rates over long contract periods. They have underwritten the construction of a significant amount of new renewable energy capacity.

This model was described by Hepburn Wind and their energy retailer Powershop as desirable with regards to their solar farm development. This model could be applied for a portion or all of the onsite generation. By partnering with a community energy project locally – which often suffer from economies of scale issues and may struggle to secure the needed PPA prices for project viability – this model could provide the necessary leverage for a project to proceed.

Discussion of benefits and risks

This model enables councils to support the development of new renewable energy projects and partially lock-in long term price certainty while also receiving a retail electricity supply service. This reduces the need to manage a separate retail contract and hedging contract (such as through the 'contract for difference' model below).

Tying the contract to a specific powerplant enables councils to manage energy costs, promote regional economic benefits and benefit from the promotional benefits associated with the new renewable energy project.

The complexity involved in contracting involves a significant volume of legal work, requiring specialist legal advice

Developing a business case involves specialist electricity market forecasting capability.

Steps to implementation

1. Determine LGC/electricity volume required
2. Develop business case – seek market advice regarding LGC/electricity price forecast
3. Design tender process
4. Engage specialist advisors
5. Develop tender specification
6. Undertake tender process; tender evaluation
7. Negotiation and contracting.

Opportunities for social engagement

Inclusion of social procurement and/or community benefits through tender criteria.

Potential to stimulate a degree of community investment and/or ownership (e.g. Coonooer Bridge Wind Farm, Sapphire Wind Farm).

Through tender criteria, requiring project developer to incorporate a community benefits fund, employment and training opportunities, and other community benefits.

4.3.2 Model 7: Long-term REC purchase

Decision criterion	Options		
Ownership	Owned / co-owned	Not owned	
Newness	New build	Existing power plant	
Exclusivity	Exclusive model	Aggregated model	
Location	Within LGA	Within region	Outside region
Technology	Solar	Wind	Other (e.g. waste)
Siting	On-site	Off-site	
Contract structure	Physical	Financial	LGC
Contract structure	Physical	Virtual	

Description of model

This model Involves a contract to purchase renewable energy certificates (in the form of Large-scale Generation Certificates or LGCs) from a specific renewable energy project. The customer would enter into a separate electricity sale agreement with a retailer for the supply of electricity.

The LGC offtake agreement can help provide the project developer with the revenue certainty necessary to secure project finance. The LGCs can be used to:

- Meet the customer's regulatory obligation under the Renewable Energy Target, in which case they can be transferred to the retailer to acquit this liability
- Enable the customer to claim that its electricity supply is zero carbon.

Due to expected falls in the price of LGCs, there is likely to be reduced potential for LGC offtake agreements to underpin project finance for new renewable energy projects in the future.

Example case studies

The Victorian Government reverse auctions are an example of a long-term REC purchase agreement.

Why it was chosen

This model is a relatively straightforward and low-risk way for councils to reduce their greenhouse gas emissions and move towards net zero emissions. The forward purchasing of LGCs could provide a much-needed income stream for community energy projects and be a key aspect of the business case feasibility. Community energy projects are more vulnerable to market volatility due to their economies of scale being small.

Discussion of benefits and risks

Long-term REC purchase agreements enable councils to claim zero carbon electricity, thereby reducing their greenhouse gas emissions footprints. This model avoids the complexities of including a retailer in the PPA deal. It enables Councils to contractually support, and purchase LGCs direct from renewable energy projects. It enables councils to contract from either a new or existing renewable energy project.

This model is subject to significant risk from both ongoing regulatory uncertainty, and the strong possibility of a fall in LGC prices in the short-to-medium term.

Steps to implementation

1. Determine LGC volume required
2. Develop business case – seek market advice regarding LGC price forecast
3. Undertake tender process. Design of tender process would vary depending on whether an LGC contract is sought from a new or existing project. In the event of a new project, greater due diligence and contractual negotiations are likely to be required.
4. Negotiation and contracting.

Opportunities for social engagement

Partnership with local community energy projects. Co-branding potential with the energy generator.

4.3.3 Model 8: Contracts-for-difference

Decision criterion	Options		
Ownership	Owned / co-owned	**Not owned**	
Newness	**New build**	**Existing power plant**	
Exclusivity	**Exclusive model**	**Aggregated model**	
Location	Within LGA	**Within region**	**Outside region**
Technology	**Solar**	**Wind**	**Other (e.g. waste)**
Siting	On-site	**Off-site**	
Contract structure	Physical	**Financial**	LGC

Description of model

A contract for difference is a financial (or 'virtual') contracting arrangement between two parties which can deliver benefits to both the generator and customer. The contract for difference sits alongside a physical electricity supply contract. This can either be a retail electricity contract associated with the renewable energy project contracted through the contract for difference, or an entirely separate retail arrangement.

A contract for difference provides a generator with revenue certainty and can provide the customer with an opportunity to share in spot market revenues from a renewable energy project. Under the arrangement, the customer guarantees the generator spot market revenues at an agreed rate – referred to as a 'strike price'. When spot prices exceed the strike price, the generator will provide any surplus revenues to the customer. When spot prices fall below the strike price, the customer provides payments to the generator to make up the difference. A fall is spot market revenues will be reflected as a reduction in wholesale electricity costs and is therefore likely (but not guaranteed) to be reflected as a fall in the customer's retail costs and vice versa. This therefore becomes an effective strategy to stabilise customer electricity costs by offsetting retail cost increases through a parallel revenue strategy.

The approach requires customers to adopt derivative accounting standards as the contract for difference is a form of derivative financing arrangement. Councils do not generally have the appetite to adopt derivative accounting standards and several, including the councils involved in the Melbourne Renewable Energy Project, have opted not to adopt the contract for difference structure for this reason.

Example case studies

The ACT Government's renewable energy target wind auctions

The Victorian Government's renewable energy target wind auctions

Telstra's Emerald Solar Farm

Why it was chosen

This model has been used to considerable success by large energy users as a hedge to mitigate against fluctuating wholesale energy prices and enable customers to benefit from high revenues generated by powerplants.

This approach enables customers to provide development of new renewable energy powerplants by supportive revenue strategies.

Discussion of benefits and risks

The core benefit of this model is that it enables electricity customers to share in electricity spot market revenues from the contracted powerplant. In this way, the customer derives benefit from times when a powerplant generates revenues during periods when wholesale energy prices are high. Conversely, the customer is also required to provide the generator with price support at times when wholesale prices are low.

A contract for difference requires specialist advice in the form of detailed electricity market forecasts and revenue modelling associated with the specific power plant, specialist legal advice in developing contracts, and careful due diligence concerning the power plant involved. Because a contract for difference is a derivative contract, it will require adoption of derivative accounting standards which may also require specialist accounting advice.

Adopting this model requires detailed cost benefit modelling and a sound electricity market forecast to enable a business case to be developed. Obtaining this form of advice increases the initial transaction cost.

Steps to implementation

1. Determine required load
2. Develop business case – undertake market forecasting and modelling
3. Develop tender process and develop specification
4. Undertake tender process.
5. Negotiation and contracting.

Opportunities for social engagement

This model presents limited ability for involvement of community groups as it tends to be more applicable to utility scale renewable energy projects and large users. However, these could be applied to mid-scale community energy projects. There may be opportunity for commercial projects involved to undertake community involvement during their construction and operation, or to offer investment opportunities to the community, such as in the case of the Sapphire Wind Farm in NSW.

4.3.4 Model 9: Aggregated service providers

<table>
<tr><th>Decision criterion</th><th colspan="4">Options</th></tr>
<tr><td>Ownership</td><td colspan="2">Owned / co-owned</td><td colspan="2">Not owned</td></tr>
<tr><td>Newness</td><td colspan="2">New build</td><td colspan="2">Existing power plant</td></tr>
<tr><td>Exclusivity</td><td colspan="2">Exclusive model</td><td colspan="2">Aggregated model</td></tr>
<tr><td>Location</td><td>Within LGA</td><td colspan="2">Within region</td><td>Outside region</td></tr>
<tr><td>Technology</td><td>Solar</td><td colspan="2">Wind</td><td>Other (e.g. waste)</td></tr>
<tr><td>Siting</td><td colspan="2">On-site</td><td colspan="2">Off-site</td></tr>
<tr><td>Contract structure</td><td>Physical</td><td colspan="2">Financial</td><td>LGC</td></tr>
</table>

Description

Increasingly, third-party service providers are acting as aggregators for large and medium customers to facilitate energy purchasing agreements between customers and large renewable energy projects.

This model doesn't necessarily require Councils to form a purchasing group or to undertake a group tender process. The aggregator is not likely to be councils' usual procurement agents (Procurement Australia or MAV Procurement) but rather a commercial specialist energy service provider. The aggregator offers energy contracts to a number of customers who would be too small on their own to provide generators with an attractive offtake deal.

Example Case Studies

Murra Warra Wind Farm facilitated by Telstra Energy. Off-take customers include the University of Melbourne, Monash University, ANZ and Coca-Cola Amatil. The deal enables customers to hedge their electricity costs by sharing in the market revenue from the wind farm.

FlowPower has reportedly signed an offtake agreement with the Ararat Wind farm – an existing renewable energy project. Flow Power then uses the output from the wind farm to offer a hedged electricity product to a range of medium sized businesses including manufacturers and dairy producers.

Simex Zen Energy has plans to construct 1 GW of large solar farms, battery storage and pumped hydro to supply electricity to One Steel's operations in Whyalla, Melbourne, Sydney and Newcastle. Simex Zen Energy will also offer off-take agreements to other industrial customers in the form of hedged energy contracts.

Renewable Energy Hub has facilitated renewable energy PPA deals between food manufacturer Mars and the Kiamal Solar Farm, and between Infigen and the Kiata Wind Farm, both in Western Victoria.

It is understood that NAB is also seeking to commence aggregating groups of large energy customers in the near future.

Why it was chosen

Customers are able to take advantage of a corporate PPA-like product without requiring the typically large load. This model presents councils with the advantage of enabling speed to market without undertaking lengthy procurement processes.

Discussion of benefits and risks

The benefits of this approach include:

- enabling smaller customers can participate in alternative purchasing arrangements by aggregating scale
- standardising offtake agreements to minimise the complexity involved in contracting these types of deals
- enabling customers to take a 'portfolio' approach to their energy purchasing by enabling exposure to multiple generation projects
- reduced need to manage an existing group.

Disadvantages to this approach may include:

- limited ability to determine the location and form of projects
- limited ability to influence the form of contracting arrangement and community and social benefits

The role of aggregators is to facilitate deals between generators and customers. Typically, customers would approach aggregators rather than select them through a tender process. Whether aggregators would participate in a local government tender process has not been tested. It is possible that some potential aggregator suppliers would participate in tenders for retailer integrated PPAs (model 5)

It is possible that procuring through an aggregation process may not satisfy the procurement processes normally undertaken by local government. Careful consideration needs to be given to the design of the procurement process, including consideration of whether a Ministerial exemption could be sought to enable this approach.

Steps to implementation

1. Determine required load
2. Develop business case – undertake market forecasting and modelling
3. Assess model's compliance with council procurement rules
4. Undertake procurement process
5. Negotiation and contracting

Opportunities for social engagement

This model presents little opportunity for social and community engagement. However, it could be applied to mid-scale community energy projects. Opportunities are generally dependent on community inclusion activities undertaken by the renewable energy projects supported by the aggregator.

Figure 7: Summary table of the decision criteria for each alternative procurement model

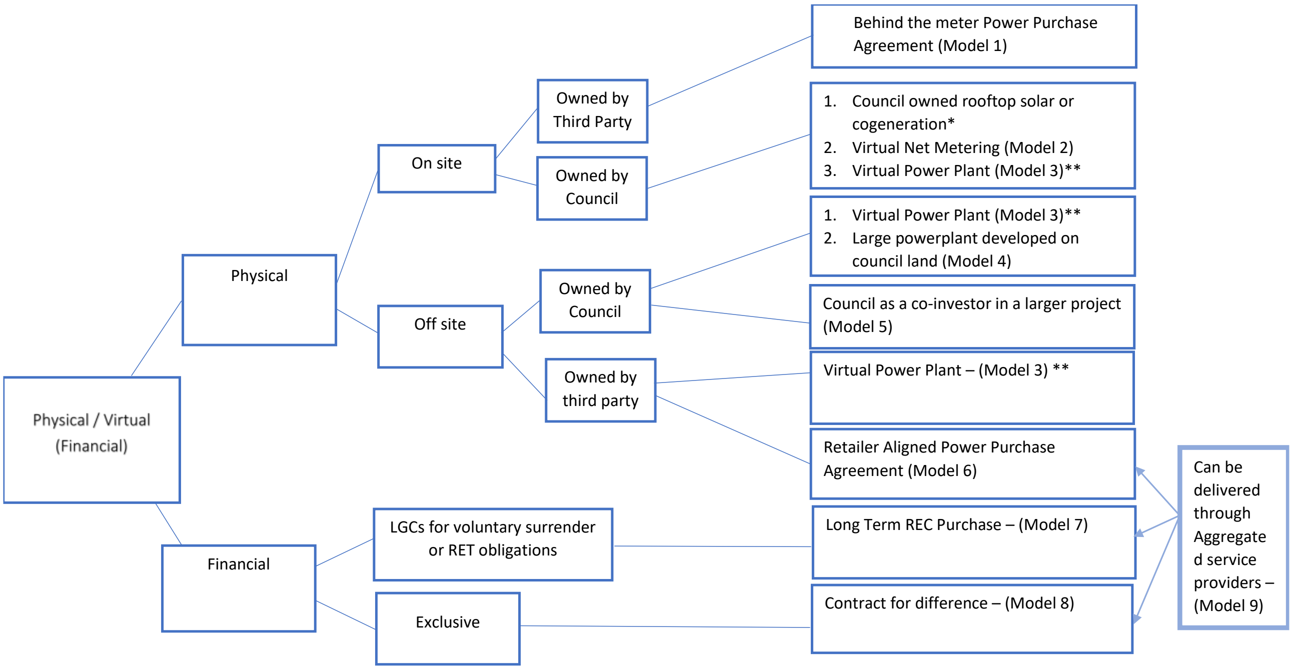
Decision criteria →	Ownership		Newness		Exclusivity		Location			Technology			Siting		Contract structure	
Alternative procurement models ↓	Owned	Not Owned	New	Existing	Exclusive	Aggregated	Within LGA	Within region	Outside Region	Solar	Wind	Other (e.g. waste)	On-site	Off-site	Physical	Virtual
Model 1: Behind-the-meter PPA		X	X		X		X			X		X	X		X	
Model 2: Virtual Net Metering	X	X	X	X	X		X			X		X	X		X	
Model 3: Virtual Power Plant	X	X	X	X	X	X	X			X		X	X	X	X	
Model 4: Large powerplant developed on Council land	X		X		X	X	X			X		X	X	X	X	
Model 5: Council as a co-investor in a larger project	X		X		X	X	X	X	X	X	X	X		X		X
Model 6: Retailer-aligned PPA		X	X	X		X		X	X	X	X	X		X	X	
Model 7: Long-term REC purchase		X	X	X	X	X	X	X	X	X	X	X	X	X		X
Model 8: Contracts-for-difference		X	X	X	X	X		X	X	X	X	X		X		X
Model 9: Aggregated service providers		X	X	X		X		X	X	X	X	X		X	X	X

5 MAKING A DECISION

The decision to undertake an alternative electricity procurement process will be grounded in an understanding of Council's existing and future energy needs, corporate drivers and sustainability objectives. Councils should consider their position on the criteria described in Section 3 to help guide their decision. It may be useful to undertake a high-level workshop with cross-functional staff from across Council (i.e. finance, procurement, facility management, sustainability and economic development) to develop Council's response to these criteria, and test them against policies and strategies.

In addition to the decision making matrices provided in Section 0, a decision tree is provided in Figure 8 to help guide councils towards the alternative energy procurement arrangements that are best suited to their circumstances.

Figure 8: Decision tree to assist councils in selecting procurement models and identify likely technologies



*Conventional Rooftop solar PV is outside the scope of this report

** Virtual Power Plants can be delivered solely on Council sites or in partnership with third parties (such as schools, businesses, etc).

6 NEXT STEPS

Figure 9 shows the steps that councils should take to assess and implement alternative electricity procurement arrangements. While many of the steps are common to the various energy procurement models identified, the exact approach and level of detail required will vary depending on the scale of the project, council's role in the development, and the scale and the model adopted.

Figure 9: Next steps for assessing and implementing an alternative energy procurement arrangement

Identify needs and priorities and gain buy-in

- Energy needs assessment - including current and future energy demand
- Understand corporate priorities, needs, and appetite for risk
- Identify preferences for co-benefits; Identify strategic parnerships
- Understand local community energy opportunity and sophistication of group
- Test internally with senior executive and gain cross-functional buy-in
- Develop governance and decision making model (eg. internal steering group, or external partnerships)

Select likely models and develop business case

- Identify most appropriate model(s) based on Councils' needs, priorities and risk appetite
- Scope market to identify availability of suppliers
- Undertake business case modelling to determine business case - depending on the model selected and scale of project, this may involve sophisticated energy market advice and modelling

Procurement process

- Design and develop a procurement process suited to the model selected
- Develop a scope and specification
- Assemble procurement team including, if necessary, specialist advisors
- Execute procrement process

6.1 Resource, capability and capacity requirements

Undertaking an alternative energy procurement process is likely to be significantly more resource-intensive than the traditional approach of assigning the procurement process to an agent or procuring through the State Government. This is due to the need to understand the different contracting arrangements, manage the various risks involved, communicate the potential complexity of the deal and develop and analyse the business case for a longer-term contract. Resources will involve staff and executive time as well as engaging external advisors and support.

The specific resourcing needs involved in undertaking an alternative renewable energy procurement process will vary depending on the type of project selected, the number of stakeholders and whether Council chooses to be an asset owner or a customer. Where several Councils aggregate their electricity demand to participate in a group purchasing process, many of the tasks can be shared centrally. This approach can work well for smaller councils with insufficient load to undertake their own project, or where councils wish to share the administrative burden of developing alternative procurement approaches. For example, the Victorian Greenhouse Alliances have been convening a local government electricity procurement working group since 2017 and are now undertaking a business case for a retail aligned PPA for interested councils. However, an aggregated approach raises an additional requirement for a central relationship management and knowledge coordinating role.

Figure 10 shows the capabilities that councils are required to have (either in-house or contracted) in delivering different alternative energy procurement approaches. In the matrix, the number of stars indicates the level of capability required.

Figure 10: Required capabilities to deliver different alternative energy procurement approaches

Alternative energy procurement approach ➔ / Required capabilities to deliver 🡻	Regular MAV or PA process	Solo PPA	Facilitating PPA via Buyers Group	Participating in PPA via Buyers Group	Large-scale council-owned powerplant	Leading development of VPP
Learning curve	*	***	***	**	***	**
Project management	*	**	***	*	***	***
Stakeholder management (including managing relationships with internal and external stakeholders)	*	**	***	**	***	***
Business case development (including energy data management)	*	**	**	*	**	**
Technical and engineering					***	**
Procurement and reporting (including specification development and probity)	*	***	***	*	***	***
Due diligence	*	**	**	*	***	**
Contract development, negotiation and execution	*	***	***	**	***	***
Implementation		**	**	*	***	***

Appendices

APPENDIX 1: GLOSSARY AND ABBREVIATIONS

Behind-the-meter – Generation of electricity at the consumer's premises which is consumed on-site and is not supplied through the electricity meter through the grid.

CE – Community Energy

CEP – Community Energy Project

CfD – Contract for Difference

Community co-investment – Where a community investment vehicle buys rights to a portion of the earnings of the renewable energy project but has no decision-making power or control over the operation of the asset. The community investment vehicle could be a company, cooperative, association or trust.

Community co-ownership – Where a community-owned vehicle owns a portion of the renewable energy development and plays an active role in decision-making. In this arrangement, the community vehicle may have initiated the development and may own a controlling interest in the project (i.e. more than 50%) — or they may take a smaller role. Here, the community vehicle carries risk and responsibilities for the life of the project, but is often responsible for aspects of development that capitalise on their community nature — such as delivering community engagement and communications.

CVGA – Central Victorian Greenhouse Alliance

EAGA – Eastern Alliance for Greenhouse Action

Firming – The practice of sourcing electricity from the spot market, or a portfolio of generation assets to balance supply and demand at times when intermittent sources of generation – such as wind and solar – don't generate. Firming is usually undertaken by retailers, but is also undertaken by very large electricity users such as aluminium smelters and telecommunications providers.

LGA – Local Government Area

LGC – Large Generation Certificates – A form of renewable energy certificate generated by powerplants (>100 kW capacity) under the RET. Each certificate represents 1MWh of electricity generated.

MAV – Municipal Association of Victoria

NEM – National Electricity Market

Off-taker – A customer who contracts with an electricity generator to purchase electricity over a contracted period.

PA – Procurement Australia

Physical – A transaction incorporating the actual sale and supply of electricity.

'Poles and wires' – A shorthand term used to refer to the electricity transmission and distribution network and the organisations responsible for operating and maintaining those networks. The term refers to all electricity transmission and distribution infrastructure, including substations, transmission stations, cables, poles, towers, and other infrastructure.

PPA – Power Purchase Agreement

PV – photovoltaic – A type of solar panel that uses chemical reactions to generate electricity. This is the main type of solar panel found on rooftops, and is different to solar thermal panels which are used to generate heat for hot water.

REC – Renewable Energy Certificate

RET – Renewable Energy Target

SEP – Social Energy Purchasing/Procurement

SGC – Small Generation Certificate – a form of renewable energy certificate generated by small systems (>100 kW) under the RET. Each certificate represents a deemed 1MWh of electricity generated.

VNM – Virtual Net Metering

Virtual – A financial contracting (as opposed to physical) energy model (also known as a 'synthetic' model)

APPENDIX 2: USEFUL REFERENCES

Discussion Paper on Electricity Procurement in the Local Government Sector by the Victorian Greenhouse Alliances (available at https://eaga.com.au/wp-content/uploads/Local-Govt-Energy-Procurement-Discussion-Paper-2017-05-11.pdf)

Facilitating End User Deployment Of Off-Site Renewable Generation by the Cooperative Research Centre for Low Carbon Living (available at http://www.lowcarbonlivingcrc.com.au/sites/all/files/publications_file_attachments/rp1032_final_project_report_2017_0.pdf)

Green Hedging – a Guide to Structuring Corporate Renewable PPAs by Baker McKenzie (available at https://www.bakermckenzie.com/-/media/files/insight/publications/updated-wwf1443-corporate-ppa-reportonline--15-june-2018.pdf?la=en)

Guide for Community-Owned Renewable Energy Projects for Victorians by the Victorian Department of Economic Development, Jobs, Transport and Resources (available at https://www.energy.vic.gov.au/__data/assets/pdf_file/0030/57945/Community-Energy-Projects-Guidelines-Booket-A4_-WEB.pdf)

Optimising Energy Procurement via Corporate PPAs by PwC (available at https://www.pwc.com.au/publications/pdf/optimising-energy-corporate-ppas-nov17.pdf)

Renewable Energy Procurement: A guide to buying off-site renewable electricity by the City of Melbourne (available at https://www.melbourne.vic.gov.au/sitecollectiondocuments/mrep-guide-renewable-energy-procurement.pdf)

The Rise of Corporate PPAs by Baker McKenzie (available at https://www.bakermckenzie.com/-/media/files/insight/publications/2015/12/the-rise-of-corporate-ppas/risecorporateppas.pdf?la=en)

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