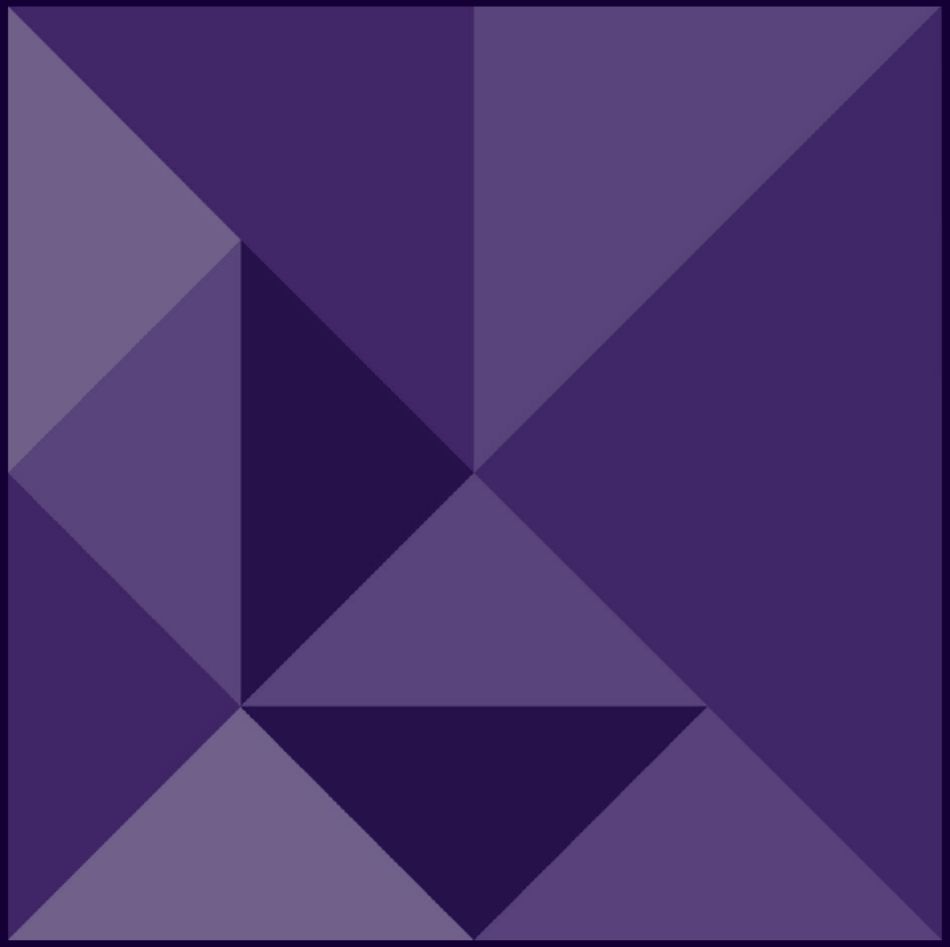
ACIL ALLEN

18 July 2022

Report to Sydney Desalination Plant Pty Ltd

National Electricity Market analysis

In support of SDP's third regulatory period submission to IPART



About ACIL Allen

ACIL Allen is a leading independent economics, policy and strategy advisory firm, dedicated to helping clients solve complex issues.

Our purpose is to help clients make informed decisions about complex economic and public policy issues.

Our vision is to be Australia's most trusted economics, policy and strategy advisory firm. We are committed and passionate about providing rigorous independent advice that contributes to a better world.

Contents

1 Introduction 2

2 SDP's contract with Infigen 2

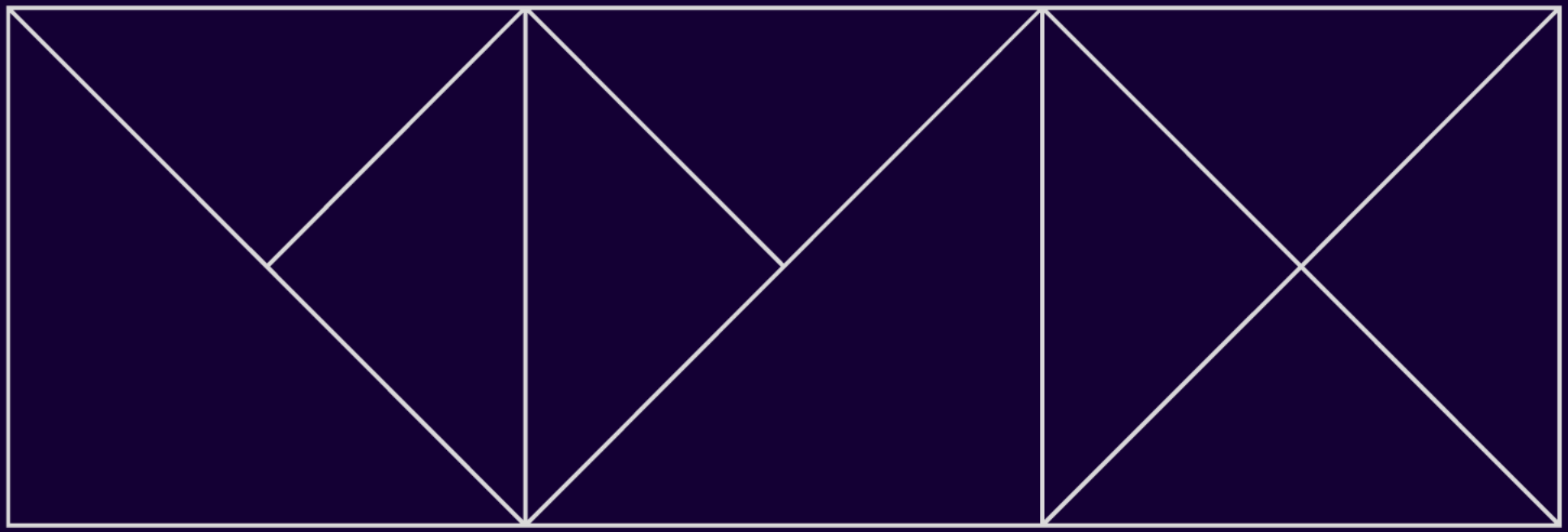
2.1 Introduction 3
2.2 The ESA 3
2.3 The RSA 3
2.4 The ESA and RSA represent a form of PPA 4
2.5 How does the Infigen PPA price compare with other PPAs? 5

3 The reasonableness of SDP's contracting approach 6

3.1 Introduction 7
3.2 The contracting approaches in more detail 8
3.3 Assessment of each approach 10
3.4 Conclusions 15

1

Introduction



ACIL Allen has been engaged by Sydney Desalination Plant (SDP) to provide electricity market advice regarding the National Electricity Market (NEM), in support of SDPs third regulatory period (RP 3) submission to the New South Wales Independent Pricing and Regulatory Tribunal (IPART). Our engagement is limited to considerations of the energy supply contracts SDP entered into with Infigen[1] and the Capital Wind Farm.

The report is set out as follows:

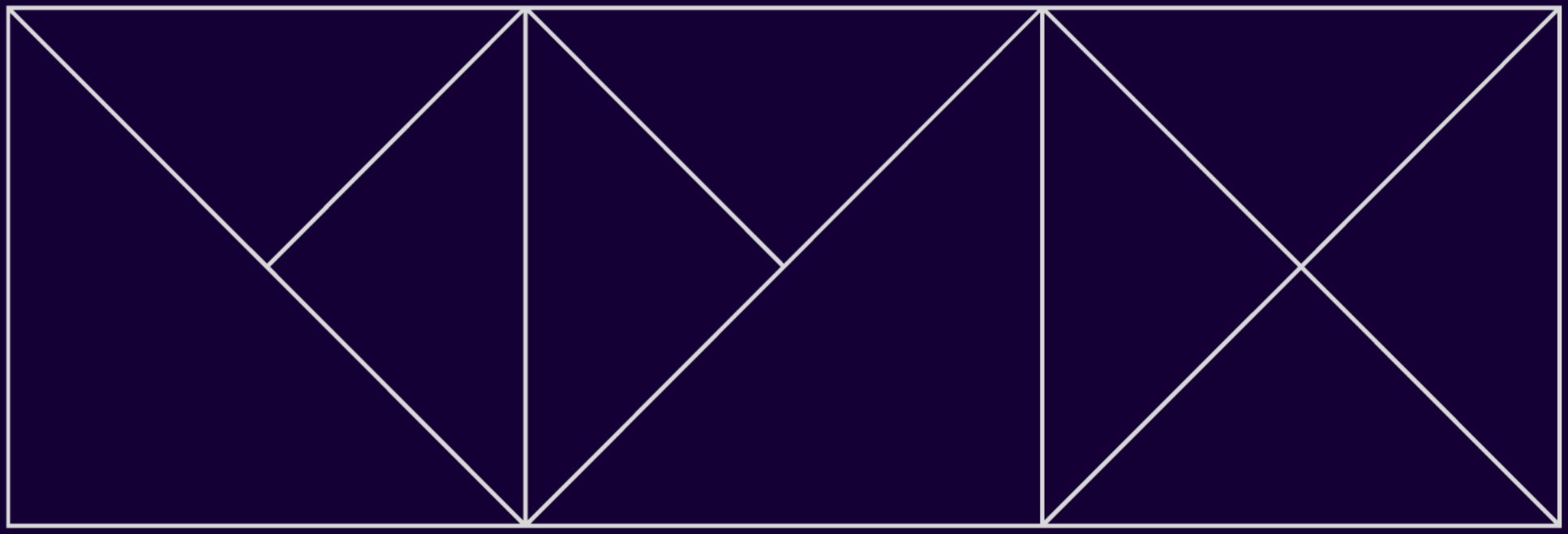
— Chapter 2 summarises SDP's contracts with Infigen.

— Chapter 3 assesses SDP's contracting approach with other approaches to procuring renewable energy.

[1] The original counterparty to the contracts was Infigen. Iberdrola Australia acquired Infigen in 2020-21, and hence is now the counterparty. However, for simplicity, this report continues to refer to the contracts as "Infigen contracts".

SDP’s contract with Infigen

2



2.1 Introduction

SDP has entered into two long term supply contracts with Infigen[2] to 2030:

- one for the supply of electricity (the Electricity Supply Agreement or ESA)
- the other for the supply of renewable energy certificates - Large-scale Generation Certificates (LGCs) and Small-scale Technology Certificates (STCs) (the REC Supply Agreement or RSA).

The first RSA and ESA were dated 28 July 2008 (with Amending Agreements added to the RSA and ESA in 2010 and 2012). At that time the Renewable Energy Target (RET) had been in operation since 2001, with a target of two per cent of the nation's electricity generation from renewable sources. In 2009, a year after the execution of original RSA and ESA, the target was increased such that renewable energy would make up the equivalent of 20 per cent of Australia's electricity (41 000 GWh) by 2020.

SDP's contracts with Infigen were the result of a competitive tender process held by Sydney Water Corporation (SWC) to secure these contracts and reflects the cost of additional renewable energy capacity to be developed in time for SDP's commissioning.

2.2 The ESA

The ESA contract price includes the wholesale supply of electricity, Energy Savings Certificates (ESC) under the NSW Energy Savings Scheme and any retail operating cost (ROC) and operating margin (ROM) to support Infigen's retail operations.

The ESA includes a Minimum Annual Volume amount and if SDP consumes less than this amount in a year then the difference between the Minimum Annual Volume and the consumption level is considered a shortfall quantity. The Minimum Annual Volume is 338,400 MWh for most years of the ESA.[3] Any shortfall quantities in energy consumed by SDP are treated as difference payments based on the difference between the contract price and the going market price, such that, if a shortfall occurs, SDP will receive a payment from Infigen if the market price is greater than the contract price, and vice versa. This means that SDP is exposed during shortfall events when market prices are less than the contract price. SDP makes a gain if market prices rise above the contract price.

The ESA has a commencement date 16 February 2010 and an expiry date of 16 February 2030. The Base price is [redacted]/MWh (as at the base date of 31 December 2007) and is escalated annually at CPI to give the annual contract price. The contract price includes the supply of electricity at the "Sydney West 132 kV" transmission node, Energy Savings Certificates (ESC) under the NSW Energy Savings Scheme and any retail operating cost (ROC) and operating margin (ROM) to support Infigen's retail operations. Connection and network costs, ancillary service charges, market charges are recovered separately as pass through items. There is no pass through of costs associated with an emissions trading scheme or carbon price.

2.3 The RSA

The RSA has a commencement date of 17 November 2009 and an expiry date of 16 February 2030. The Base price is [redacted]/MWh (as at the base date of 31 December 2007) and is escalated annually at CPI to give the annual contract price. Under the RSA, the supply of LGCs is required to be produced by the Capital Wind Farm (unless the Capital Wind Farm is not able to create enough LGCs).

The annual contract volume after the third year of the RSA is nominated by SDP no later than six months prior to the given year but cannot exceed the equivalent of 360,000 MWh. The minimum annual volume of LGCs to be purchased by SDP in any year is equivalent to 180,000 MWh of electricity created by Capital Wind Farm (which equates broadly to a 59 percent take or pay).

[2] Originally, the ESA was entered into between BBP Energy Markets Pty Limited, which was a Babcock & Brown owned entity that was renamed Infigen Energy in 2010 in connection with Babcock & Brown's administration. The RSA was entered into with Renewable Power Venture Pty Limited, which is also an Infigen entity.

[3] There are lower Minimum Annual Volumes for the first two contract years and the final contract year (which is a part year).

2.4 The ESA and RSA represent a form of PPA

The ESA and RSA between SDP and Infigen can be broadly thought of as a power purchase agreement (PPA) with Capital Wind Farm, although they also include other retail operating costs typically not included in a PPA. The ESA component is different to a traditional PPA in that it is load following (with a minimum annual take and maximum half-hourly load) rather than generation output following. This means that Infigen is required to satisfy the load profile requirements of SDP when SDP is operating regardless of the Capital Wind Farm generation profile. In other words, Infigen is exposed for any occasions when SDP's half hourly load profile (capped at the ESA's maximum load level) is greater than Capital Wind Farm's half-hourly generation profile. Infigen will manage its obligations under the ESA not just with Capital Wind Farm output but using a portfolio approach of physical generation from its assets as well as other contracting/hedging arrangements.

The terms of ESA and RSA cover the period from the commissioning of the project out to 2030. In effect, the ESA and RSA means that SDP has largely underwritten the development of Capital Wind Farm. A contemporary PPA would not cover such a long period – with most having an end date set as 2030 (the year the current LRET concludes).

ACIL Allen has not been engaged to review in detail the ESA and RSA, but the summary above of the salient features of the contracts highlights the following:

- The ESA in effect has 100 percent take or pay, whereas the RSA has a 59 percent take or pay option.
- Despite the take or pay provisions, and unpredictability in SDP's load requirements, the contracts offer a firm price to SDP, and hence SDP's customer, during periods of operation. It also ensures that SDP can acquire sufficient LGCs when they are operating without relying on a potentially thinly traded spot of the spot market.
- The ESA protects SDP from exposure to a potentially volatile NEM price during period of consumption.
- The ESA gives SDP exposure to NEM spot prices if SDP does not consume the minimum annual volume as prescribed in the ESA. Thus, low spot prices (less than the contract price) are a real risk to SDP since they would be required to make a difference payment to Infigen (and conversely SDP would receive a difference payment from Infigen if spot prices were greater than the contract price).
- The ESA and RSA include the supply of ESCs, ROC and ROM and are for delivery at the "Sydney West 132 kV" transmission node. To compare the bundled prices of ESA and RSA with bundled prices for energy and LGC supply from other PPAs, the cost of ESCs, ROC and ROM and losses associated with transmitting electricity from the NSW regional reference node to the "Sydney West 132 kV" transmission node must be taken into account.

In Figure 2.1, we summarise our estimate of the annual bundled wholesale price for SDP's contract with Infigen.

Figure 2.1 Estimated wholesale prices from SDP's energy and LGC supply contracts ($/MWh, nominal, at RRN)

Note: Presented on a financial year ending basis; ROM/ROM and ESS costs have been deducted; actual inflation used for 2012 to 2021, and an assumed long term inflation of 2.5 per cent adopted post 2021.

Source: ACIL Allen analysis of ESA and RSA

2.5 How does the Infigen PPA price compare with other PPAs?

Entering into a PPA type arrangement removes the risk of short-term price volatility but introduces the risk of long-term competitiveness.

Noting the difference between SDP's firm contract with Infigen and a traditional PPA, which in itself represents additional value to SDP since it does not need to manage any mismatch between load and generation when it is operating, it is still meaningful to compare SDP's bundled contract price with Infigen with other PPAs – since Infigen was unlikely at the time to agree to a contract that did not support the commercial development of Capital Wind Farm. ACIL Allen's analysis of renewable energy PPAs shows that, in terms of price, the contracts entered into between SDP and Infigen are comparable with other PPAs entered into at around the same time (as shown in **Figure 2.2**).

Figure 2.2 Actual PPA prices ($/MWh, real 2021) (at time of commissioning)

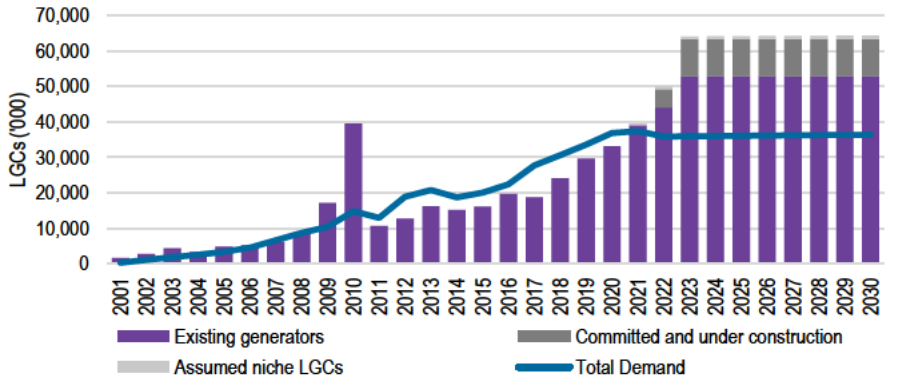
Note: Values represent the bundle of wholesale electricity and renewable energy certificate price at time of commissioning; ROM/ROM and ESS costs have been deducted; actual inflation used for 2012 to 2020. Other PPAs shown in the chart have similar terms to the Infigen ESA/RSA.

Source: ACIL Allen analysis

It is worth noting that at the time of the commissioning of Capital Wind Farm in 2010, there was about 1,700 MW of aggregate wind farm capacity operating in the NEM. This aggregate capacity has since increased eight-fold to be about 14,000 MW by the mid-2022. This highlights the contracts with Infigen were struck in the very early stages of the development of utility scale renewable energy in the NEM, and at a time when the renewable energy target was far more modest (reflecting the infancy of renewable generation in Australia more broadly).

Since then, RET was revised upwards in 2009 (as noted earlier) and split into the Large-scale Renewable Energy Target (LRET) and Small-scale Renewable Energy Scheme (SRES) from 2011 onwards, which ceased the contribution of rooftop PV towards the LRET from 2011. State based renewable energy targets have also been introduced, and in recent years, corporates are entering into PPAs to prove up their green credentials. These changes in policy and appetite for corporate PPAs have changed the nature of the NEM.

Figure 2.3 LRET demand-supply balance ('000 LGCs)

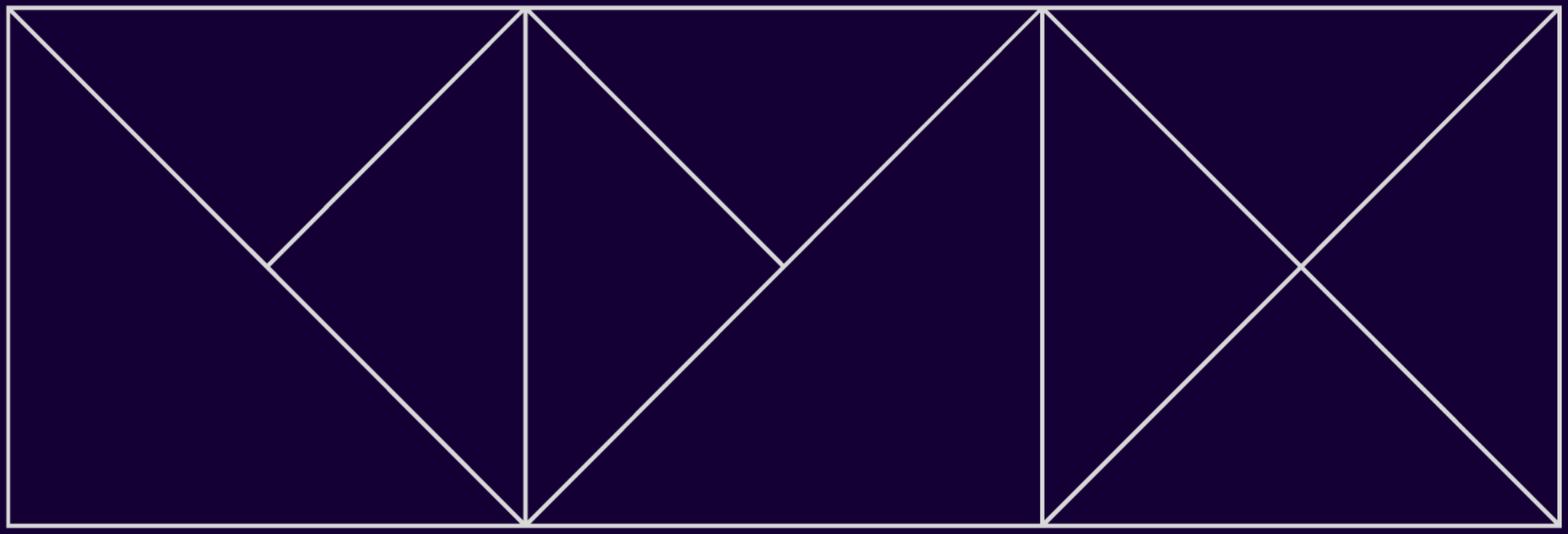


Note: Up to 2011, the RET did no distinguish between large-scale and small-scale installations. The large volume of LGCs created in 2009 and 2010 was a direct result of the significant uptake of rooftop PV. The RET was split into the LRET and Small-scale Renewable Energy Scheme (SRES) in 2011 – from which point rooftop PV installations created small-scale technology certificates (STCs) – and not LGCs.

Source: ACIL Allen analysis

The reasonableness of SDP's contracting approach

3



3.1 Introduction

There was a requirement, as part of the Greenhouse Gas Reduction Plan[4] (GGRP), placed on SDP to enter into a PPA with Infigen, after running a contestable procurement approach.

Two other energy and LGC procurement approaches, not available to SDP due to the regulatory obligations of the GGRP, include:

— entering into short term supply/hedge arrangements (e.g. contracting forward 12 to 24 months with a retailer)

— taking full merchant risk (that is, procuring energy from the NEM and LGC spot market as required, via a retailer).

ACIL Allen has considered these two alternate approaches, together with SDP's approach, that could be considered by IPART in setting an efficient wholesale energy cost allowance for SDP.

Each of these approaches has been assessed for efficiency in terms of:

— planning conditions imposed on SDP

— volume risk for SDP when considering the intermittent nature of the plant's energy demand

— price risk for SDP and its customers

— policy risk for SDP and its customers (such as renewable energy policy and emissions reduction policy)

— regulatory considerations for SDP (such as the IPART Terms of Reference).

The assessment of each energy procurement approach includes consideration with actual outcomes to date, in terms of:

— trends in the levelised cost of electricity (LCOE) of renewable sources of generation

— changes in renewable energy policy and carbon emissions reduction policy

— trends in the development of large-scale renewable generation in the NEM such as approaches taken and requirements for development, including financing requirements, approaches to underwriting the projects

— trends in large-scale renewable energy contracting arrangements (i.e. power purchase agreement prices, terms and conditions)

— trends in wholesale electricity price and LGC price outcomes, which will show the volatility inherent in the NEM and LRET markets – driven by short term stochastic variables such as weather, as well as longer term impacts due changes in gas price, or carbon price policy changes, or LRET policy uncertainty.

[4] https://sydneydesal.com.au/wp-content/uploads/greenhouse-gas-reduction-plan.pdf

3.2 The contracting approaches in more detail

3.2.1 SDP's PPA approach

As noted earlier, SDP has entered into two long term supply contracts with Infigen to 2030 – the ESA and RSA – which can be broadly thought of as a PPA with Capital Wind Farm.

The ESA component is different to a traditional PPA in that it is load following (with a minimum annual take and maximum half-hourly load) rather than generation output following. This means that Infigen is required to satisfy the load profile requirements of SDP when SDP is operating regardless of the Capital Wind Farm generation profile. In other words, Infigen is exposed for any occasions when SDP's half hourly load profile (capped at the ESA's maximum load level) is greater than Capital Wind Farm's half-hourly generation profile. In effect, Infigen will manage its obligations under the ESA not just with Capital Wind Farm output but using a portfolio approach of physical generation from its assets as well as other contracting/hedging arrangements.

ACIL Allen has not been engaged to review in detail the ESA and RSA, but the summary above of the salient features of the contracts highlights the following:

- The ESA in effect has 100 percent take or pay, whereas the RSA has a 59 percent take or pay option.
- Despite the take or pay provisions, and unpredictability in SDP's load requirements, the contracts offer a firm price to SDP, and hence SDP's customer, *during periods of operation*. It also ensures that SDP can acquire sufficient LGCs when they are operating without relying on a what was at the time a thinly traded spot market.
- The ESA protects SDP from exposure to a potentially volatile NEM price during period of consumption.
- However, the ESA results in SDP being exposed to NEM spot prices if SDP does not consume the minimum annual volume as prescribed in the ESA. Thus, low spot prices (less than the contract price) are a real risk to SDP since they would be required to make a difference payment to Infigen (and conversely SDP would receive a difference payment from Infigen if spot prices were greater than the contract price).

3.2.2 Short-term contracting approach

SDP could enter into a short-term (one to three years) arrangement with an electricity retailer where the retailer sells SDP its energy and renewable energy certificates at a fixed price per MWh on the assumption that SDP is operating for the period of the contract. The retailer would purchase short-term supply/hedge agreement/s for electricity and renewable energy certificates on SDP's behalf – via an exchange or broker to cover SDP's load requirements as if it were operating for the period of the contract.

This means that SDP would take on the volume risk of its intermittent generation, such that the retailer would sell the contracted electricity surplus to SDP's actual requirements at the prevailing market price and provide a debit or credit to SDP depending on the outcome of the sale of surplus electricity. Therefore, this could be considered a prudent and efficient price only if SDP were always required to operate or had a higher level of certainty about required energy volumes.

3.2.3 Spot market approach

SDP could enter into an arrangement with a retailer where SDP pays for electricity and renewable energy certificates purchased on its behalf from the spot market for these products at the time when the electricity is required (i.e. when SDP is in operation). This approach results in the elimination of volume risk but introduces significant spot price risk.

3.2.4 Comparison

The short-term contracting approach and SDP's PPA approach are comparable in that volume risk for contracted energy not required by SDP due to the unpredictability and intermittency of its operations, is handled through sale of electricity and LGCs surplus to SDP's requirements. However, there is a risk that there will be a difference between the market price and the contract price at the time of sale of surplus electricity and LGCs.

The spot market approach eliminates volume risk without relying on additional credits or debits associated with the contracted electricity in surplus of SDP's actual consumption, but introduces significant price risk to SDP and its customer.

The PPA approach ensures access to sufficient LGCs at a known price when SDP is operating. Conversely, the short-term contract and spot approaches do not guarantee SDP access to LGCs sufficient to cover 100 per cent of its energy needs during periods when there is a shortfall of LGCs – which occurred in the market between 2017 and 2020 (and discussed below in further detail).

3.3 Assessment of each approach

We now consider each approach and assess them for efficiency in terms of:

- planning conditions and GGRP imposed on SDP
- price risk for SDP and its customers
- volume risk for SDP when considering the intermittent nature of the plant's energy demand
- policy risk for SDP and its customers (such as renewable energy policy and emissions reduction policy).

3.3.1 Planning conditions and GGRP imposed on SDP

The key conditions imposed on SDP in relation to energy costs require:

a) The desalination plant be powered by 100 per cent renewable energy (or equivalent).
b) Details of regulatory requirements with respect to energy and greenhouse gases and a system for managing change in these requirements over time.
c) A framework for considering and managing factors such as availability, certainty, flexibility, adaptability, additionality and any co-benefits of options identified and applied to achieve (a).

A PPA is necessary to be certain that the planning requirements for 100 per cent renewable energy can be met

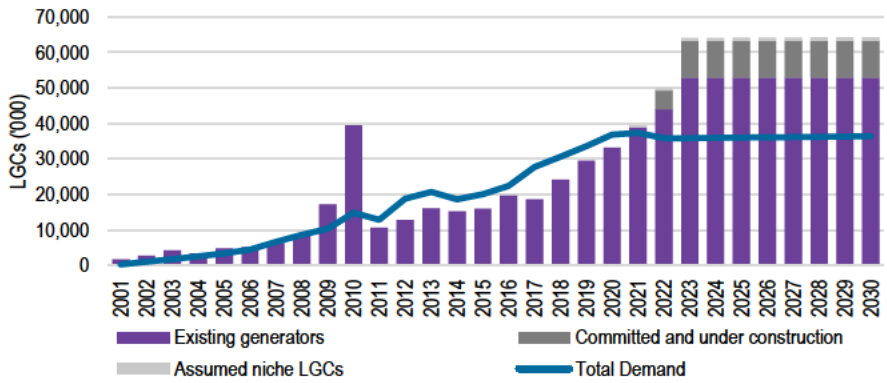
In theory, any of the approaches outlined above are able to secure energy supply to satisfy the requirement of SDP being powered by 100 percent renewable energy, providing the amount of LGCs surrendered by SDP in each year is equivalent to the amount of energy consumed. However, around the time the planning conditions were established (2007 to 2009), the RET scheme was in its infancy and finely balanced as shown in Figure 3.1.

The PPA approach is the only approach to ensure access to sufficient LGCs at a known price when SDP is operating. The short-term contract and spot approaches do not guarantee SDP access to LGCs sufficient to cover 100 per cent of its energy needs during periods when the scheme was finely balanced from its inception in 2001 up to 2009. Additional load from SDP's operations may well have resulted in the RET being in undersupply. Hence it was prudent for SDP to enter a contract for guaranteed supply of LGCs at the time.

There was a noticeable shortfall of LGCs between 2017 and 2020 – a hangover from the hiatus of investment in renewable energy projects from the 2014 Warburton Review, which considered the abolition of the LRET (and the market viewed abolition as a real risk).

Had SDP operated between 2017 and 2020 without a PPA, and instead adopted the short-term contracting or spot approach, then it would have struggled to secure LGCs equivalent to is energy needs, and hence been in breach of its planning requirements. If SDP had operated and managed to secure LGCs either via a short-term contract or on the spot market, it would have exacerbated the shortfall in the LRET, and in effect transferred the shortfall onto other parties in the market.

Figure 3.1 LRET demand-supply balance ('000 LGCs)



Note: Up to 2011, the RET did not distinguish between large-scale and small-scale installations. The large volume of LGCs created in 2009 and 2010 was a direct result of the significant uptake of rooftop PV. The RET was split into the LRET and Small-scale Renewable Energy Scheme (SRES) in 2011 – from which point rooftop PV installations created small-scale technology certificates (STCs) – and not LGCs. The Total Demand excludes demand created by SDP if it were operating.

Source: ACIL Allen analysis

Further, if SDP did not enter into a PPA to incentivise the development of an additional renewable generator then it would have been difficult to demonstrate additionality, because at that point in time the LRET was not fully subscribed and did not become fully subscribed until about 2020.

The development of about 85 percent of large-scale renewable generator capacity participating in the LRET has been underpinned by a PPA of some form. The vast majority of wind farm developers and their financiers are unwilling to take on full merchant risk.

SDP's contracts with Infigen quite reasonably incentivised the development of the Capital Wind Farm. This is not to say the wind farm would not have eventually been developed without the contract with SDP, but rather, the fact SDP was willing to enter into a PPA brought forward the necessary *additional* investment to provide certainty that 100 percent the energy requirements of the desalination plant were met by renewable energy.

A PPA helps manage renewable policy risk

If the LRET was abolished, for example, as a consequence of the Warburton Review then, in the absence of a PPA, SDP could find it challenging to demonstrate that it is procuring energy from a renewable source.

If the LRET had been abolished then there would be no market for LGCs (indeed LGCs would cease to exist). If this were to be the case then SDP could enter into a hedge agreement with a renewable plant, but this does not allow SDP to demonstrate it is procuring energy from a renewable resource. A hedge is simply a financial arrangement and does not directly demonstrate that the physical generation from renewable plant is being attributed to satisfy SDP's energy requirements.

3.3.2 Price risk for SDP and its customer

Given that IPART has a regulatory determination period of five years for SDP and the determination does not consider annual reviews to account for changes in conditions in the electricity or LGC markets (including changes in electricity and LGC price outcomes) during the regulatory period, it would appear there is a regulatory prerogative to have a fixed energy and renewable certificate price for SDP's customer during the regulatory period.

Figure 3.2 and Figure 3.3 show the actual average spot and futures contract prices for wholesale electricity in New South Wales and LGCs respectively, compared with SDP's contract with Infigen. When calculating the average futures contract prices we have assumed a prudent retailer or off-taker would build up a portfolio of contracts prior to the contract year itself – this is the same approach that ACIL Allen has adopted when calculating the contract prices as part of its analysis for the Queensland Competition Authority (QCA) and the Australian Energy Regulator (AER) for their respective determinations of regulated retail electricity prices and caps for consumes on notified prices in Queensland, New South Wales and South Australia.

The annual average New South Wales spot wholesale electricity prices have ranged from a low of just below $30/MWh in 2011-12 to high of about $150/MWh in 2021-22 . Base futures contract prices for NSW also display a degree of volatility but the range is less than that of the spot prices.

After a hiatus of new large-scale renewable investment, mostly in response to the uncertainty created by the Warburton Review, LGCs were in noticeable shortfall between 2017 and 2020, hence the LGC prices increased towards the penalty price[5] during that period. The substantial investment in large-scale renewables that has occurred between 2019 and today has resulted in an expectation of oversupply, and prices have declined noticeably.

This demonstrates that there also exists price volatility for LGCs.

If IPART was to use the short-term contracting approach to estimate the cost of SDP's energy and LGCs, then IPART would need to estimate contract prices based on a futures market which is quite illiquid beyond two years into the future, thus representing a real risk of price exposure for SDP given IPART requires the locking in of prices prior to the beginning of the five-year regulatory period.

Figure 3.2 and Figure 3.3 demonstrate that SDP, by entering into a PPA type arrangement with Infigen, has reduced the risk of short-term price volatility for electricity and LGCs, and hence aligns more with IPART's regulatory prerogative. Whereas undertaking a short-term hedging approach or spot approach would require price uncertainty to be dealt within the regulatory framework in the form of an annual review, which in turn could result in substantial annual price movements within the determination period.

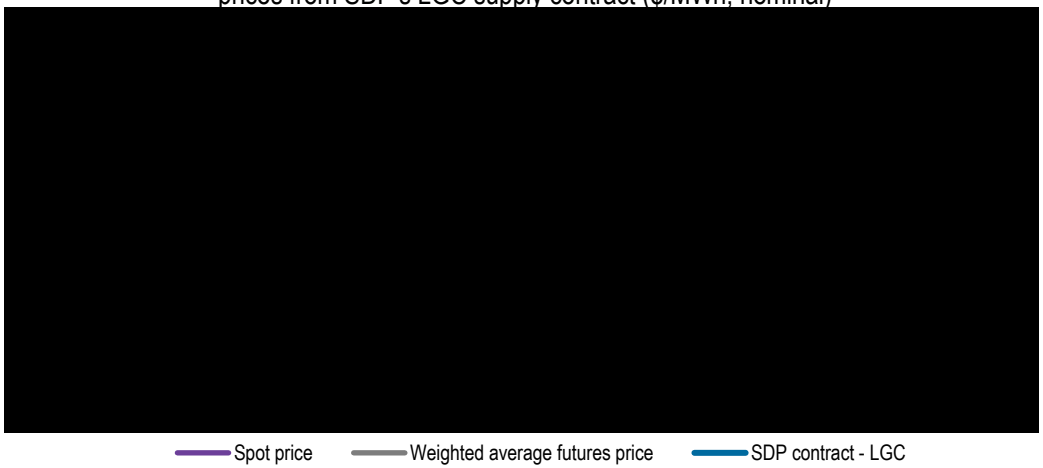
Figure 3.2 New South Wales annual futures and spot prices compared with estimated wholesale prices from SDP's energy supply contract ($/MWh,

Note: Values presented on a financial year ending basis. Includes data up to 30 June 2022.

Source: ACIL Allen analysis of AEMO, ASX Energy data and ESA

[5] The penalty price is payable by a liable entity (such as an electricity retailer) to the Clean Energy Regular (CER) for any shortfall in the number of LGCs surrendered relative to its liability. The penalty price can be thought of as a price cap for LGCs.

Figure 3.3 Annual futures and spot LGC prices compared with estimated wholesale prices from SDP's LGC supply contract ($/MWh, nominal)



Note: Values presented on a financial year ending basis. Includes data up to 30 June 2022.
Source: ACIL Allen analysis of various sources and RSA

3.3.3 Volume risk for SDP when considering the intermittent nature of the plant's energy demand

Based on ACIL Allen's understanding of SDP's future operating rules, SDP could be called on at any time to materially increase water production. SDP is not able to predict over a five-year period when it will be required to operate in terms of frequency and duration. Given the desalination plant's unpredictable use, the most efficient approach to procuring energy, in terms of volume risk, is to purchase energy requirements on the spot market at the going price at the time of consumption.

Such an approach would alleviate any residual volume risk for SDP, as the plant essentially pays for what it consumes at the going spot market rate, unlike any form of contracting approach which requires SDP to take on volume risk. For example, in the current contracts which SDP has entered into SDP have minimum take or pay volumes – the same would hold if SDP entered into standard short-term contracts – any residual volume would be priced at the going market price. Of course, this approach still exposes SDP to the risk of not being able to demonstrate that it is procuring renewable energy in the event the LRET policy had been abolished.

However, importantly, the short-term contract and spot market approach would expose SDP and its customer to significant price risk for electricity and LGCs.

The short-term contract and spot market approach would also have entailed significant volume risk with respect to the availability of LGCs in the period prior to 2020 during the period of LGC shortfall. The amount of LGCs required by SDP when in operation is not insignificant and under the short-term contract and spot market approach it cannot be guaranteed that sufficient LGCs to operate SDP in a fully renewable manner would be available when required.

3.3.4 Policy risk for SDP and its customers

The two key policy risks SDP has faced and will continue to face when procuring renewable energy are:

— uncertainty around renewable energy policy

— uncertainty around emissions reduction policy.

Regardless of changes to renewable energy targets and state based renewable energy policy, SDP is required to procure its energy requirements from a renewable source.

As discussed earlier, if the LRET were to be abolished then it would be difficult to demonstrate that SDP's energy requirements are derived from a renewable source unless it has entered into a physical contract with a new renewable energy supply project. SDP could enter into a short-term financial hedge with a wind farm, but this does not necessarily mean that the wind farm is supplying energy to satisfy SDP's actual consumption – it is simply a financial hedge. For SDP to be powered by a renewable source, a new source of generation is required to be constructed in addition to the renewable sources that would have existed had SDP not existed – otherwise entering into a contract with an existing wind farm is simply a financial arrangement that does not incentivise an incremental increase in renewable supply.

Conversely, if the LRET had been increased, as the RET was in 2009 for example, and as was proposed by the Labor Party around 2016 with its 50 percent renewable energy by 2030 policy, there may well have been a delay in the LGC demand-supply balance

moving into surplus. As a result, LGC prices may well have increased, albeit temporarily, reflecting the scarcity value of LGCs until further supply was commissioned.

Renewable policy risk not only relates to an increase in target, but also includes occasions when policy uncertainty produces volatility in the market. An example of this is the 2014 Warburton Review of the renewable energy target. A consequence of the uncertainty surrounding the LRET at that time was a hiatus in new build which led to a temporary shortfall in LGCs, and LGC prices on the spot and futures market approached the tax adjusted penalty of about $92.

SDP entering into a long-term contractual arrangement removed the risk of higher bundled prices due to potentially higher targets and policy uncertainty, whereas a short-term contracting approach or spot market approach would have left SDP exposed to high LGC prices during the 2017 to 2020 period.

3.4 Conclusions

- Our key findings are: The Short-term Contracting approach:
  - Reduces price volatility risk to some degree and is an efficient way of pricing electricity and renewable energy only if SDP was always required to operate or had a higher level of certainty about its future required energy volumes. However, this approach does not manage the price risk (the risk that SDP will not recover the purchase cost of surplus electricity from the market price) when the plant is not operating.
  - Does not necessarily ensure certainty that renewable energy is available for the desalination plant particularly during periods in which the LRET was in shortfall.
  - Does not manage the risk of renewable energy policy change.
  - Does not demonstrate a framework for the additionality of renewable energy generation capacity as required by the regulatory provisions.
  - Given SDP's five-year regulatory period, would require IPART to rely on estimates of contract prices based on a futures market which is quite illiquid beyond two years into the future, thus representing a real risk of price exposure for SDP given IPART requires the locking in of prices prior to the beginning of the five-year regulatory period.
- The Spot Market Approach:
  - May produce the most efficient price since SDP would be charged the going market rate for electricity at the time it was consumed.
  - However, this approach is not prudent as it does not minimise price uncertainty, and introduces significant price risk to SDP. If SDP continues to be regulated in five yearly periods by IPART then, under this approach, SDP is exposed at times the desalination plant operates – particularly when spot market prices for electricity are high. Further, the spot market for LGCs also displays a reasonable degree of price volatility. Recent volatility in the spot prices for both LGCs and electricity in some states highlights the risks inherent in this approach.
  - This approach would require IPART to estimate future spot prices for up to five years in advance given IPART requires the locking in of prices prior to the beginning of the five-year regulatory period, given IPART requires the locking in of prices prior to the beginning of the five-year regulatory period, thus representing a real risk of price exposure for SDP.
  - As with the short-term contracting, the spot market approach does not ensure certainty that renewable energy will be available to the desalination plant, nor does it necessarily demonstrate the additionality of renewable energy generation capacity as required by the planning provisions.
- SDP's PPA approach:
  - Is tied to a renewable energy generator which ensures certainty that renewable energy can be supplied to SDP even in the event that the LRET is in shortfall, or a change or repeal of the renewable energy target legislation.
  - Demonstrates additionality by essentially underwriting the development of a wind farm for the life of that wind farm.
  - Is the result of a competitive tender process held by SWC to secure these contracts and reflects the efficient cost of additional renewable capacity available to be developed in time with SDP's commissioning.
  - reduces SDP's and customers' exposure to price volatility and ensures supply of energy and LGCs.

Our key finding in relation to SDP's planning conditions are that they required additionality, certainty and availability of supply, and he only way to secure the energy supply at the time of commissioning SDP was a PPA because there was no certainty of a continued supply of renewable energy using any other approach. Further, the unpredictability of SDP's operations means the only way to secure the ability to operate at any point in time (i.e. to supply water using 100 percent renewable energy) is to have a long term contract to underwrite a new renewable energy project. Without the PPA, SDP could not have guaranteed operation under 100 percent renewable energy.

Our key finding in relation to the price levels in the Infigen contracts, is that the bundled price in the contracts were efficient when compared to other observable PPA's executed at the same time as the Infigen Contracts.

On the basis of our key findings, ACIL Allen concludes that an appropriate efficient and prudent approach for determining the energy prices for SDP's pricing submission given IPART's current Terms of Reference, and the planning conditions imposed on the desalination plant (specifically those related to) is to either consider PPAs similar to the contracts entered into between SDP and Infigen Energy at the time of SDP's

development, or use the actual price of the Infigen contracts. Our analysis of observable PPAs suggests that the bundled price of SDP's contract with Infigen was efficient at the time of execution. This, coupled with the New South Wales Government, at the time, deeming the commissioning of SDP and its associated energy supply as necessary to satisfy the overriding public interest of security of water supply, suggests that the cost of the energy supply associated with the Infigen contacts is the appropriate measure of SDP's energy costs.

Melbourne
Level 9, 60 Collins Street
Melbourne VIC 3000 Australia
+61 3 8650 6000

Sydney
Level 9, 50 Pitt Street
Sydney NSW 2000 Australia
+61 2 8272 5100

Brisbane
Level 15, 127 Creek Street
Brisbane QLD 4000 Australia
+61 7 3009 8700

Canberra
Level 6, 54 Marcus Clarke Street
Canberra ACT 2601 Australia
+61 2 6103 8200

Perth
Level 12, 28 The Esplanade
Perth WA 6000 Australia
+61 8 9449 9600

Adelaide
167 Flinders Street
Adelaide SA 5000 Australia
+61 8 8122 4965

ACIL Allen Pty Ltd
ABN 68 102 652 148

acilallen.com.au