WHOLESALE PRICE FORECASTS FOR CALCULATING MINIMUM FEED-IN TARIFF

FINAL REPORT FOR THE ESSENTIAL SERVICES COMMISSION

24 FEBRUARY 2020

CONTENTS

Tables

Figures

1 INTRODUCTION

Frontier Economics has been engaged to advise the Essential Services Commission (ESC) on wholesale price forecasts for the purpose of calculating a Feed-in Tariff (FiT).

1.1 Background

The ESC is required under the *Electricity Industry Act 2000 (Vic)* to determine one or more rates to be paid by electricity retailers to customers who feed-in surplus renewable energy generation into the grid. In financial years 2018/19 and 2019/20, the ESC has published two minimum FiT rates:

- A single flat-rate FiT
- A time-varying FiT (with peak, shoulder and off-peak rates).

The ESC has engaged Frontier Economics to project Victorian wholesale prices for 2020/21, to inform its determination of the FiT rates for 2020/21. This report details our approach, considerations, methodology and results.

Frontier Economics previously advised the ESC on Victorian wholesale prices for 2019/20 to inform the ESC's determination of FiT rates for 2019/20.[1] The methodology that we have adopted for this final report is the same as we used previously advising on wholesale prices for 2019/20.

1.2 Our approach

The value of small scale renewable energy fed into the grid is a function of wholesale spot prices at the times of those exports. Therefore, it is necessary to develop a forecast of half-hourly prices that are appropriately correlated to data on half-hourly solar PV exports in the relevant period. We achieve this by using historical half-hourly prices as the starting point for forecasting prices, and ensuring we select half-hourly prices from the same time period as that for which we have solar export data.

Preferably, we select for our starting point historical half-hourly prices that are from the same period as the *most recent* solar export data. Our view is that, generally speaking, more recent prices would be expected to better reflect future demand and supply conditions. However, as a precautionary measure, we analyse historical half-hourly prices analysis to assess whether the half-hourly prices coinciding with the most recent solar export data seem to reflect any 'abnormal' outcomes that would not be expected to recur.

We then scale the selected historical half-hourly Victorian spot prices to an estimate of the average spot price for 2020/21. The price at which a quarterly base swap for Victoria trades on ASXEnergy is generally taken to reflect the market's expectation of the average electricity spot price for Victoria for the relevant quarter (after adjusting for the implied contract premium). In our analysis we make use of forward contract prices for the FiT period (2020/21) from ASXEnergy. This scaling shifts the average of the historical half-hourly spot prices to reflect the contract price, without altering the underlying pattern of half-hourly spot prices. In this way, the relationship between exports and price is maintained.

[1] Frontier Economics, *Wholesale Price Forecasts for Calculating Minimum Feed-in Tariff*, A Report for the Essential Services Commission, 4 February 2019.

1.3 Best practice

The approach used in this paper is consistent with what we consider to be best practice and reflects the approach that we have previously adopted in providing similar advice to other regulators. More specifically:

- The approach allows the correlation between half-hourly solar exports and half-hourly market prices to be maintained, so that the resulting FiT accurately reflects the relationship between the two.
- Price profiles have been scaled to meet future expectations of spot prices. Consistent with other work, we have inferred future price levels from ASXEnergy contract prices (adjusted for an assumed contract premium).
- In our previous advice to IPART, we accounted for uncertainty in customer load and solar export quantities by using a Monte Carlo simulation of available data, motivated by the fact that a longer time series of distributor data was available.[2] However, we do not recommend the approach in this case: while we have a series of prices and solar export data that is sufficiently long for Monte Carlo analysis (Q3 2016 to Q2 2019) a full set of solar export data for all five distribution network service providers (DNSPs) in Victoria is only available for the last four of these quarters. Monte Carlo analysis on the full set of data would mean excluding two distribution businesses from the analysis. Since each network is likely to have a slightly different relationship between times of solar exports and prices, any export-weighted results are likely to be biased if two DNSPs are excluded from the analysis. Our view is that it is preferable to use the more recent data that includes all five DNSPs.

Overall, we consider the approach outlined in this report to be consistent with regulatory best practice. We also consider that the approach outlined in this report has the benefit of being relatively simple and transparent: it relies largely on publicly available data and, in principle, could be replicated by interested stakeholders (subject to the availability of reasonable data on half-hourly solar exports).

1.4 About this final report

Throughout this final report, we make references to the four quarters of a calendar year (i.e. Q1, Q2, Q3 and Q4). The months associated with these quarters are:

- January to March for Q1.
- April to June for Q2.
- July to September for Q3.
- October to December for Q4.

For the most part, references to quarters are coupled with a year e.g. ‘Q1 2020’. However, in sections of the paper which deal with quarterly analysis over multiple years, we may refer to a quarter in general (without specifying a year). In these cases, ‘Q2’ for example, refers to the months April to June across all years under analysis.

This remainder of this report is structured as follows:

- Section 2 outlines the methodology used to produce a wholesale price profile for 2020/21.
- Section 3 discusses our analysis of historical prices in Victoria.
- Section 4 presents our results.

[2] Other aspects of our approach are similar to our previous advice to IPART: using historical data for exports and spot prices as a starting point; scaling prices to a forecast of future spot prices; weighting the forecast spot prices by exports; calculating an annual average (or peak, shoulder and off peak) FiTs based on this.

- Section 5 compares the current report to results from our previous final report as well as the wholesale electricity component of the VDO.
- Section 6 provides our response to submissions to the ESC's draft report that relate to the determination of the FiT.

1.5 Updates since the draft report

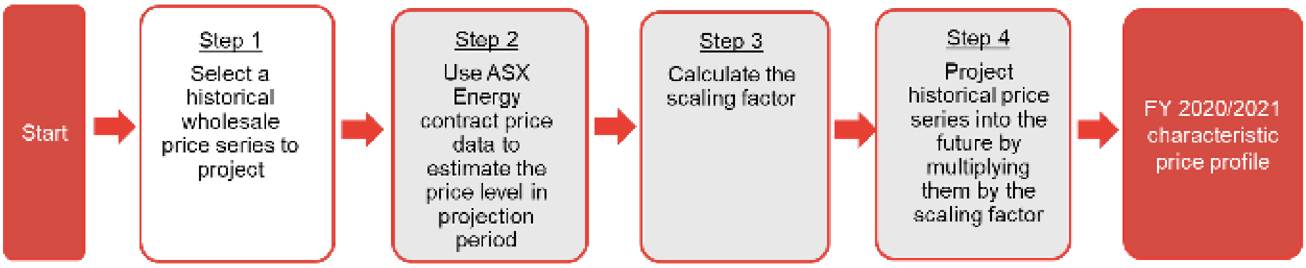
Since our draft report we have updated our estimates of the FiT to reflect the more recent ASXEnergy price data that is available.

In this final report we also present only those results that the ESC has made use of in its draft decision: the FiT estimates that are based on 12 month trade-weighted ASXEnergy prices. Since the other results we presented in our draft report (FiT estimates based on 40-day or 24 month ASXEnergy prices and FiT estimates based on time-weighted ASXEnergy prices) are not used by the ESC, we do not present them in this final report.

2 METHODOLOGY FOR PROJECTING PRICE

In this section, we set out our methodology for estimating the wholesale price profile for 2020/21, which is summarised in **Figure 1**:

Figure 1: Summary of methodology



Source: Frontier Economics

Our methodology consists of four steps:

- **Step 1: Select an historical wholesale price series to use as the basis for forecasts**

  Preferably, we select for our starting point historical half-hourly prices that are from the same period as the *most recent* solar export data. Our view is that, generally speaking, more recent prices would be expected to better reflect future demand and supply conditions. In other words, if the ESC has access to solar export data up to Q2 2019, as we understand that it does, we recommend using historical price data for Q3 2018 to Q2 2019.

  In some cases, there may be sufficient reason to believe this most recent wholesale price data series will not reflect future supply and demand conditions and another set of spot prices should be used as the basis for forecasts. This is why we assess historical price patterns to check whether recent prices exhibit abnormal 'shape' that is likely to be unreflective of future conditions.

  We note that this process of selection is informed by our assessment of historical pricing patterns and the availability of relevant solar export data. It may be that different circumstances in future would suggest an alternative approach. For instance, a longer time series of solar export data may warrant a Monte Carlo analysis to generate a profile for solar exports and prices that is made up of outcomes over a number of historical years, although this would also depend on the extent to which patterns of prices may change in future.

- **Step 2: Calculate price level for 2020/21**

  The average price level for 2020/21 is represented by the average prices of 2020/21 quarterly base swaps (after adjusting for an assumed contract premium). In our calculations, we assume a contract premium of 5 per cent.

  Quarterly base swaps trade for a number of years in advance of maturity, meaning there is a time series of prices for these contracts. We calculate the average prices of quarterly base swaps across 40-day, 12-month and 24-month periods. We also calculate average prices based on a time-weighted approach (giving equal weight to each daily price) and using a trade-weighted approach (weighting the daily prices according to the number of trades on the day). The period over which the average is taken as well as the type of average taken affects the final projected prices. Given three options for periods and two types of averages, we end up with six possible sets of projected prices.

Our view is that the 40-day average price provides the best indicator of the market's view of prices for 2020/21. Averaging prices over a longer period would mean giving weight to views of prices for 2020/21 that have since changed, likely as a result of updated information about market conditions in 2020/21. In the context of retail tariff regulation, retailers have argued in the past, and some regulators have accepted, that average prices over a longer period should be used. The justification given for this is generally that retailers will actually buy contracts over a longer period when hedging a retail load. While we do not dispute that retailers will likely buy contracts over a number of years leading up to the commencement of 2020/21 to hedge their retail load, we would still view the current market price as the best reflection of the economic value of those contracts and consider that decisions should be made on the basis of that economic value. The rationale for taking a 40-day average price, rather than the current market price on a single day, is to avoid the possibility of gaming the regulatory arrangement. The 40-day average approach is consistent with the approach that a number of regulators take to setting cost of capital parameters.

However, there may be good reasons that a regulator will choose to base regulated prices on something other than 40-day average contract prices. For instance, a longer averaging period, such as 12 months of 24 months, would be expected to provide regulated prices that are more stable over time and would also likely result in regulated prices that are more reflective of incumbent retailers' actual costs (since most retailers will buy contracts over a number of years leading up to the year).

Regarding the type of average to use, our view is that a time-weighted approach would generally provide the best indicator of prices for 2020/21. A trade-weighted approach will give greater weight to a daily price on a day with many trades than on a day with fewer trades; but, in our view, a larger number of trades occurring on a day does not necessarily mean that the closing price conveys more reliable information about the market's view of future electricity prices. However, one advantage of a trade-weighted approach is that it will naturally exclude prices on those days on which no trade occurred, and on those days the published price is a less reliable indicator of the market's view of prices.

In our results we have provided trade-weighted average quarterly base swap prices, as requested by ESC, and results based on these trade-weighted average quarterly prices. We have averaged prices for the relevant period up to and including 17 January 2020.

- **Step 3: Calculate the scaling factor**

  For each historical quarter (from Q3 2018 to Q2 2019), we calculate the average price for that quarter by taking a time-weighted average across all half-hourly prices. We then calculate the scaling factor for that quarter by dividing the relevant ASXEnergy price for the equivalent quarter by that time-weighted average price.

  For example, we might find the following:

  - if the average price for the historical quarter Q3 2019 was $80/MWh, and the ASXEnergy price for Q3 2020 was $100/MWh, the scaling factor for Q3 would be 1.25;
  - if the average price for the historical quarter Q4 2018 was $100/MWh, and the ASXEnergy price for Q4 2020 was $110/MWh, the scaling factor for Q4 would be 1.1;
  - and so on, for the other quarters.

- **Step 4: Apply scaling factor to starting point historical prices to develop a forecast of half-hourly prices**

  For each half-hourly price in the historical quarter, we multiply the half-hourly price by the relevant scaling factor for that quarter. This provides the resulting half-hourly prices for 2020/21. We also perform checks to confirm that these half-hourly prices do not exceed the NEM Market Price Cap[3]

[3] We used the latest available MPC of $14,700/MWh (for 2019/20) - https://www.aemc.gov.au/news-centre/media-releases/aemc-publishes-schedule-reliability-settings-2019-20

(MPC) or Market Floor Price[4] (MFP). We also check that the prices do not exceed the Cumulative Price Threshold[5] (CPT).

Once we have developed a forecast of half-hourly prices for 2020/21, we are able to calculate the *weighted average* of these prices by solar PV exports, and/or *average* these half-hourly prices in different ways in order to inform the ESC's determination of a FiT. For instance, we can average the half-hourly prices over the whole year to inform the ESC's determination of a single flat-rate FiT. Or, we can average the half-hourly prices in peak, shoulder and off-peak periods to inform the ESC's determination of a time-varying FiT. When averaging for peak, shoulder and off-peak periods we use the definitions of these periods presented in **Table 1**.

Table 1: Time of use classifications

PERIOD	WEEKDAY	WEEKEND
Peak	3pm – 9pm	N.A.
Shoulder	7am – 3pm; 9pm – 10pm	7am – 10pm
Off-peak	10pm – 7am	10pm – 7am

Source: Essential Services Commission

[4] We used the MFP of -$1,000/MWh as prescribed in Chapter 3 of the National Electricity Rules Version 113 - https://www.aemc.gov.au/sites/default/files/2018-04/Reliability%20Panel%20Final%20Report.pdf

[5] Where the sum of the spot prices 36 consecutive trading intervals exceeds the CPT, the Administered Price Cap (APC)of $300/MWh will be applied for all trading intervals. The CPT for 2019/20 is $221,100 – https://www.aemc.gov.au/news-centre/media-releases/aemc-publishes-schedule-reliability-settings-2019-20

3 SELECTING A HISTORICAL PRICE SERIES

In this section we select an historical price series to use as the basis for forecasts. As discussed in the methodology section, we prefer to use the most recent series of prices for which we have solar export data (Q3 2018 to the end of Q2 2019) but may not if there is sufficient reason to believe this most recent wholesale price data series will not reflect future supply and demand conditions.

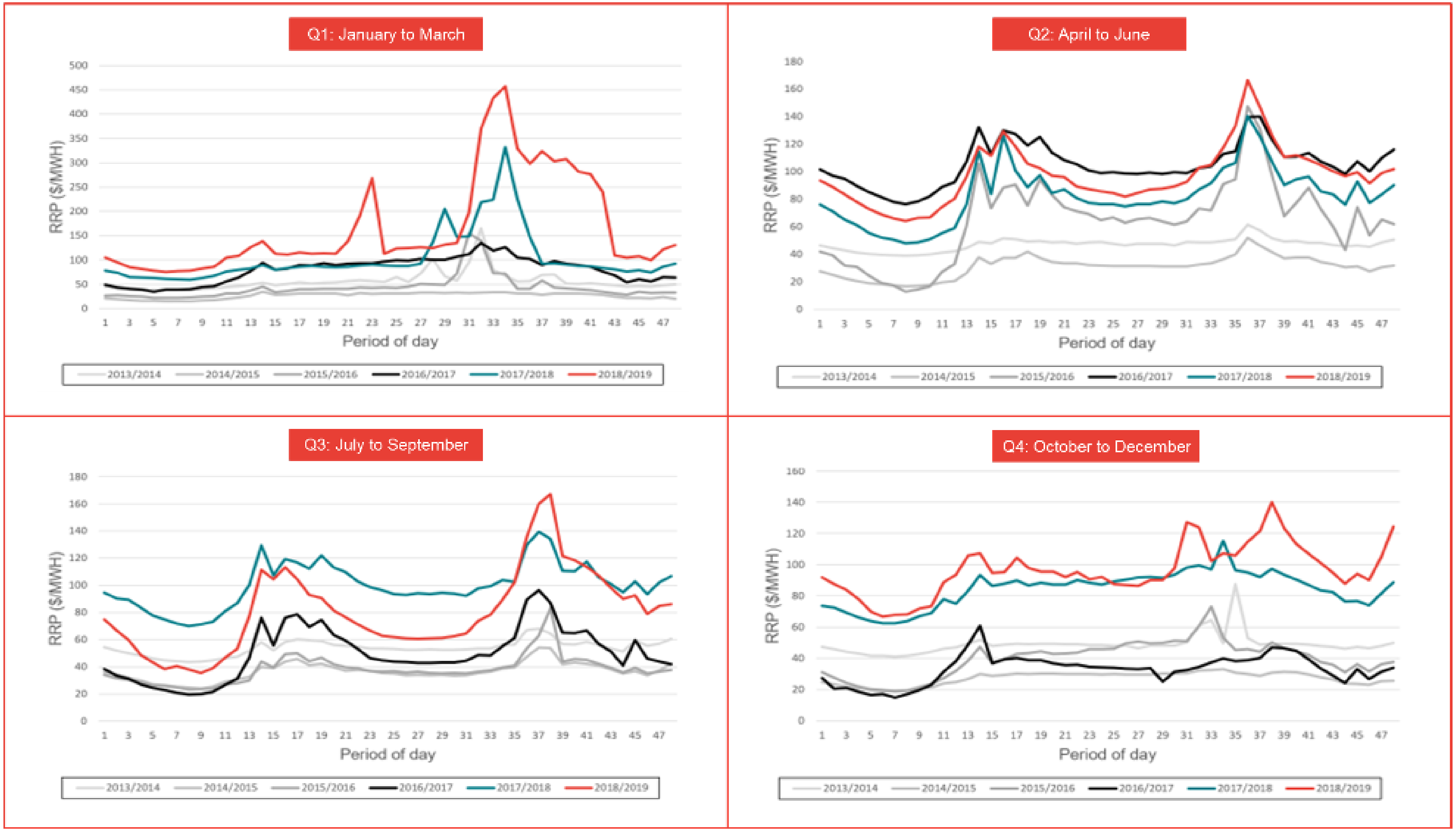
Importantly, we are primarily concerned with the shape of the historical half-hourly prices, not the absolute level of these prices since the average level of the prices is ultimately determined by ASXEnergy contract prices.

We analyse patterns of historical prices for Q3 2018 to the end of Q2 2019 by comparing historical prices over a number of recent years. The analysis is conducted:

- On five years of historical half-hourly data on prices from Q1 2014 to Q2 2019.
- On a quarterly basis:
  - to understand seasonal differences in prices, and
  - to ensure analysis lines up with the quarterly contracts traded on ASXEnergy (which we use to determine average prices for 2020/21).

Figure 2 presents the average daily pattern of Victorian spot prices, for each quarter, over the period Q1 2014 to Q2 2019.

Figure 2: Price profiles for Victorian wholesale prices for the past six financial years (by quarters)



Source: National Electricity Market data from AEMO, analysis by Frontier Economics

Our analysis of these historical half-hourly prices highlighted several observations:

- For the most part, across the years, we find that daily price profiles were similar within each quarter
- For the most part, prices have tended to peak in similar trading intervals, or adjacent trading intervals. This is particularly the case in winter – Q2 and Q3 – where prices peak once in the morning (trading intervals 13 – 15 on working days and trading intervals 17 – 19 on non-working days) and once in the evening (between trading intervals 36 – 38). This is less apparent in summer – Q4 and Q1 – when outcomes are more volatile; but nevertheless, we see prices peaking in the late afternoon or early evening. Particularly in Q1 2019 we see high prices extending well into the night.
- For the most part, prices have tended to be at their lowest in similar trading intervals. Specifically we tend to see prices at their lowest over night and during the middle of the day.

While, on the whole, we see similar pricing patterns over the years, suggesting that outcomes in 2018/19 were not 'abnormal', we do note that:

1. Prices in 2018/19 have tended to be higher than in previous years and, in particular, prices during the evening in Q1 2019 were much higher than previous years.

   While this might raise a concern that these unusually high prices during working days in Q1 2019 are unlikely to be a good predictor of future price outcomes, as it happens the ASXEnergy forward market suggests that higher prices for Q1 are expected again in 2020.

2. The ratio of evening prices (intervals 35 to 41) to midday prices (intervals 21 to 31) has tended to increase over each financial year, especially between 2017/18 and 2018/19

   This is most noticeable over Q3 where the difference between the lowest midday price and evening peak, around $100/MWh, is substantially higher in 2018/19 relative to any other financial years. We would expect this general result where there has been an increase in solar PV penetration over time, as has been the case in Victoria. This means that more cheap electricity is produced in the middle of the day, depressing midday prices and followed by a spike in evening demand as the sun goes down and people return home from work.

Based on this, we recommend using the historical prices for the most recent four quarters for which both historical prices and solar export data are available (the preferred series). These prices will be used to project prices for 2020/21.

4 RESULTS

In this section we present the results of our analysis as follows:

- Projected quarterly average spot prices for 2020/21 (based on ASXEnergy contract prices adjusted to remove a 5 per cent contract premium) using trade-weighted averaging over 12 months. These prices are presented in Section 4.1.
- Projected flat average spot prices for 2020/21 as well as projected average prices for peak, shoulder and off-peak periods. These prices are presented in Section 4.2.

4.1 Projected quarterly average spot prices for 2020/21

Table 2 presents trade-weighted quarterly average spot prices for 2020/21. These are the results of Step 2 of our analysis, and are used to determine scaling factors and, ultimately, to forecast half-hourly prices for 2020/21.

Table 2: Projected average prices for 2020/21, using **trade-weighted** ASXEnergy contract prices (after removing 5 per cent contract premium) ($ 2020/21)

CALENDAR QUARTER	12 MONTH AVERAGE ($/MWH)
Q3 2020	76.08
Q4 2020	76.73
Q1 2021	106.44
Q2 2021	64.32

Source: Base swap price data from ASXEnergy and Analysis from Frontier Economics

4.2 Average half-hourly prices in 2020/21

Using the projected quarterly average spot prices for 2020/21 presented in Section 4.1, and historical half-hourly prices for 2019/20, we developed forecasts of half-hourly spot prices for 2020/21. These half-hourly spot prices are the results of Step 4 of our analysis.

This section summarises the average of these half-hourly price forecasts for 2020/21, providing a flat annual average and average prices during peak, shoulder and off-peak periods of the year.

The results in **Table 3** and **Table 4** are based on:

- trade-weighted ASXEnergy prices for 2020/21 (as presented in **Table 2**)
- a **12 month** trade-weighted average of ASXEnergy prices
- historical half-hourly prices for 2019/20.

Table 3 provides average half-hourly prices that do not take into account solar export data (that is, the half-hourly prices are time-weighted averages), while **Table 4** provides average half-hourly prices that are weighted by solar exports in each half hour interval. These solar export-weighted prices are based on solar export data for 2019/20 for each DNSP that was provided by the ESC.

Table 3: Summary of half-hourly spot prices for 2020/21 (based on historical quarters Q3 2018 to Q2 2019), unweighted by solar exports ($ 2020/21)

RATE TYPE		AVERAGE SPOT PRICE (C/KWH)
Single-flat rate		8.08
Time-varying rate	Peak	12.58
	Shoulder	7.90
	Off-peak	6.16

Table 4: Summary of half-hourly spot prices for 2020/21 (based on historical quarters Q3 2018 to Q2 2019), solar export-weighted ($ 2020/21)

RATE TYPE		EXPORT-WEIGHTED AVERAGE SPOT PRICE (C/KWH)
Single-flat rate		7.26
Time-varying rate	Peak	9.48
	Shoulder	6.91
	Off-peak	6.20

5 COMPARISON WITH 2019/20 FIT AND VDO

This section briefly compares the results of our flat-rate FiT for 2020/21 with the equivalent result for 2019/20 and considers how these changes relate to changes in the wholesale electricity component of the Victorian Default Offer (VDO) over a similar time period.

5.1 Comparison with 2019/20 FiT

Frontier Economics previously advised the ESC on the forecast of wholesale electricity prices for the purpose of calculating a FiT for 2019/20.[6] As discussed, we used the same methodology for this final report that we previously used for the 2019/20 FiT. In this section we explore what is driving the differences in results between the two reports.

The value of the FiT depends on both the projected average price in each quarter (based on ASXEnergy base swap prices) and the correlation between projected half-hourly prices and solar export data.

Average ASXEnergy prices

Broadly speaking, average ASXEnergy prices depend on what the market expects future electricity prices to be and how this average is calculated. **Table 5** shows that the average ASXEnergy prices in the current report, used to scale historical prices have increased in Q1, stayed relatively constant in Q4 and declined in Q2 and Q3. Overall, these prices are lower on average relative to our previous final report from February that informed the 2019/20 FiT (February report).

It is important to note when comparing results across reports, that while projected average prices in both reports are based on ASXEnergy prices, they are calculated differently: while in the February report there were based on a 40-day trade-weighted average, the average projected price in the current report is based on a 12-month trade weighted average of ASXEnergy prices.

Therefore, the lower average ASXEnergy prices in the current report (and thus lower average projected prices) are driven by two main factors:

- The market's expectations of average prices across 2020/21 are generally lower relative to what they were for prices across 2019/20; and
- In the current report, the projected average price is calculated based on a 12-month average of contract prices rather than a 40-day average
  - Though not always true, this has also resulted in lower average projected prices as market participants have anticipated a higher price over 2020/21 over the past 40 days relative to their expectations over the last 12-month period.

Given lower average ASXEnergy prices (and lower projected average price levels), we would expect a lower FiT rate, all else equal.

[6] Frontier Economics, *Wholesale Price Forecasts for Calculating Minimum Feed-in Tariff*, A Report for the Essential Services Commission, 4 February 2019.

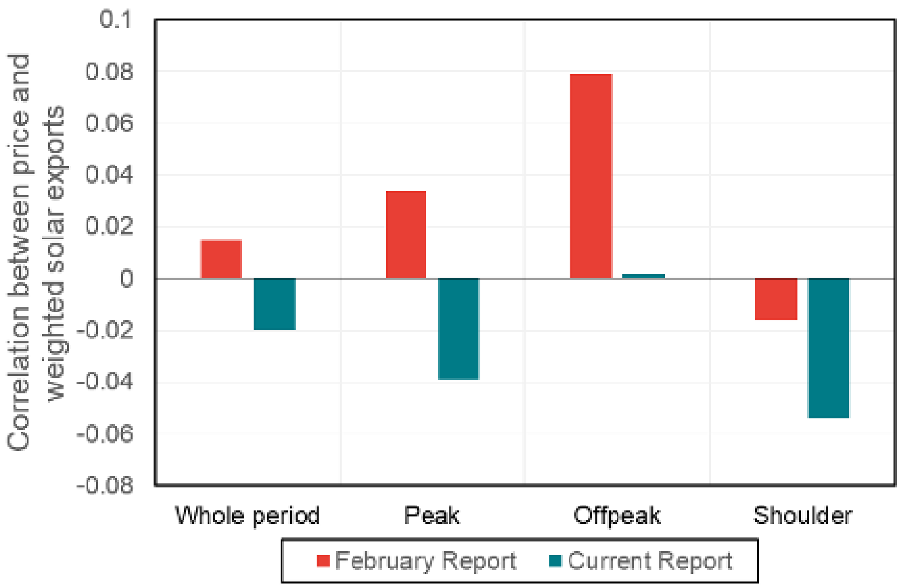
Table 5: Comparison of projected average prices based on ASXEnergy contract prices (after removing 5 per cent contract premium)

PERIOD	FEBRUARY REPORT – 2019/20	CURRENT REPORT – 2020/21
Q3	85.60	76.08
Q4	75.89	76.73
Q1	97.97	106.44
Q2	76.15	64.32

Correlation between projected half-hourly prices and solar export data

The correlation between projected half hourly wholesale electricity prices and solar exports has an influence on FiT rates that are based on projected prices that are solar weighted. **Figure 3** summarises how the correlation between wholesale electricity prices and solar exports across the year have changed between our previous report to the ESC and this final report.

Figure 3: Comparison of correlation between wholesale electricity prices and weighted solar exports[7]



Source: Frontier Economics

Clearly, for this final report, projected wholesale electricity prices are much more anti-correlated with corresponding solar exports in every period. This has the effect of lowering solar weighted FiTs.

[7] Solar exports are weighted equally across all 5 DNSPs.

5.2 Comparison with VDO

While our estimate of the wholesale electricity price component of the flat-rate FiT has fallen in this final report for 2020/21 compared with our previous final report for 2019/20, our estimate of the wholesale electricity cost component of the Victorian Default Offer (VDO) for 2020 has increased relative to our previous estimate of the VDO for 2019/20.

While there are similarities in our approach to estimating the wholesale electricity components of the FiT and the VDO, there are important differences that account for these different trends:

- We are estimating the FiT for 2020/21 and the VDO for 2020. This means that the high contract prices for Q1 2020 affect our estimate of the VDO but not our estimate of the FiT.
- The solar weighted FiT is determined, in part, by the correlation between solar exports and prices, while the VDO is determined, in part, by the correlation between retail load and prices. The same changes in pricing patterns that have resulted in a reduced correlation between solar exports and prices in 2019/20 have a very different impact on the correlation between retail load and prices in 2019/20.
- The ESC has adopted a 12-month trade weighted average price for determining the FiT for 2020/21 – as discussed, this change in averaging period has the effect of lowering the FiT for 2020/21. The trend for the VDO has not been affected by a similar change in approach, since the VDO for both 2019/20 and 2020 made use of a 12-month trade weighted average price.

6 RESPONSE TO SUBMISSIONS

This section addresses a number of issues relating to the determination of the FiT that were raised by stakeholders in response to the ESC's draft report.

6.1 The FiT should be the same as the import tariff

Some submissions suggested that the FiT should be equal to the import tariff. However, the FiT and the import tariff are different:

- The FiT represents a payment for electricity that is generated and supplied to the grid.
- The import tariff represents a payment for the retail supply of electricity to a customer's premises. The FiT also includes a component to reflect the cost of electricity that is generated and supplied to the grid, like the FiT does. However, this typically only represents 30-40% of the total import tariff. The import tariff also includes a component to reflect the cost of the electricity grid, a component to reflect the cost of complying with the renewable energy target and a component to reflect the cost of operating a retail business.

Because the FiT represents a payment for generation and supply of electricity, while the import tariff represents a payment for costs incurred across the entire electricity supply chain, it would be uneconomic for the FiT and the import tariff to be set at the same level.

Also, the payment for electricity that is incorporated in the FiT is different to the equivalent payment for electricity that is incorporated in the import tariff. The reason is that each of these payments reflect the time at which electricity is exported to the grid (for the FiT) or imported from the grid (for the import tariff). Prices tend to be lower at times when solar electricity is exported by residential customers than they are at times when electricity is imported by residential customers.

6.2 The FiT is decreasing while the import tariff is increasing

Some submissions questioned why the FiT is deceasing while the regulated import tariff (the VDO) is increasing.

There are three reasons that the FiT and an import tariff can move in different directions.

First, the change in the import tariff could be driven by one of the components of the import tariff that does not form part of the FiT, such as network tariffs, the cost of complying with the renewable energy target or the costs of operating a retail business. For instance, increases in network tariffs could increase the import tariff without affecting the FiT.

Second, the difference could be driven by different trends in wholesale electricity prices at different times of the day. For instance, the FiT might fall because wholesale electricity prices are falling at times when solar electricity is exported by residential customers while, at the same time, the import tariff might rise because wholesale electricity prices are rising at times when electricity is imported by residential customers.

Third, given that many residential customers are on market offers for the FiT and imported electricity, changes in these prices may reflect changes in the competitive landscape.

6.3 Retailers make excess profits from on-selling solar electricity exported by their customers

Some submissions suggested that retailers make excess profits from on-selling solar electricity at the FiT rate.

The FiT is based on the value of wholesale electricity at times when residential customers tend to export solar electricity. If the FiT falls, this is because the value of electricity during those times has fallen.

We do not expect retailers to make excess profits on-selling this electricity; in principle, if they were not purchasing electricity from residential customers exporting solar electricity then they would pay the same price for electricity from the wholesale market.

Retailers will on-sell this solar electricity that they purchase from residential customers at a higher import tariff, but this reflects the additional costs that retailers face due to network tariffs, the costs of complying with the renewable energy target and the cost of operating a retail business.

6.4 The FiT should be zero at times of excess electricity

Some submissions suggested that the FiT should be zero at times of excess electricity.

The flat FiT is an annual average price, the time-varying FiT is an average price that applies to all peak, shoulder and off-peak periods in the year. As such, the FiT reflects the average wholesale price for electricity weighted according to times at which solar electricity is exported by residential customers. This weighted average will include times in the year when electricity prices are very low and other times in the year when electricity prices are higher.

6.5 The approach to determining the FiT overstates the expected value of exported solar electricity

Some submissions suggested that basing the FiT on historical pricing data risks overstating the value of the FiT because ongoing installation of solar PV is likely to reduce over time the value of electricity during the middle of the day.

We agree that, other things being equal, there will likely be a trend towards the value of electricity being lower in the middle of the day as more solar PV is installed. We also agree that, even if the market expects these outcomes, our approach of scaling recent historical half-hourly prices to ASXEnergy contract prices would not perfectly capture this effect.

However, there are any number of other factors that also affect patterns of half-hourly prices from one year to the next. As should be clear from the recent historical prices shown in **Figure 2** identifying the effect of solar PV on historical prices would be extremely challenging; forecasting the effect in future more so. The challenge is increased by the likelihood that the impact of solar PV on prices is likely to be non-linear: the effect of additional solar PV on prices during the middle of the day will depend on the broader supply and demand conditions in the market.

The potential for trends in the electricity market – either the installation of additional solar PV of other trends – is the reason that we use the most recent historical data possible in our approach. By using the most recent historical data we are likely to minimise the issue of trends in the electricity market affecting price outcomes.

Alternatively, we could undertake market modelling to account for the expected impact of solar PV on future electricity prices. However, this would be a far more complex and less transparent approach for setting the FiT of the VDO. Given that stakeholders have generally expressed a preference for simpler and more transparent approaches for setting the FiT and the VDO we would generally be cautious about recommending such an approach.

frontier economics

BRISBANE | MELBOURNE | SINGAPORE | SYDNEY

Frontier Economics Pty Ltd
395 Collins Street Melbourne Victoria 3000

Tel: +61 (0)3 9620 4488
www.frontier-economics.com.au

ACN: 087 553 124 ABN: 13 087 553