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Australian Energy Market Commission
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Re: Five Minute settlement: Directions Paper | Infigen Energy Group Submission

Thank you for the opportunity to submit a response in relation to the issues raised in the *Five Minute settlement: Directions Paper* ("Directions Paper"). Infigen values engagement with the Australian Energy Market Commission.

Introduction to Infigen Energy

Infigen is an active participant in the Australian energy market. It is a developer, owner and operator of renewable energy generation assets delivering energy solutions to Australian businesses and large retailers.

Infigen owns 557 MW of installed generation capacity operating in New South Wales, South Australia and Western Australia and sells the energy and Large-scale Generation Certificates (LGCs) through a combination of medium and long term contracts and through the spot market.

Infigen is looking to develop further renewable energy projects in response to the strong demand for renewable sourced energy and decreasing cost of development. It has a number of projects that offer near-term development opportunities. It recently reached financial close on the 113.2MW Bodangora wind farm development project in New South Wales.

Infigen welcomes the introduction of new technology and associated market rules to enable this new technology to integrate into the existing Australia energy market framework.

However, our overarching view is that given the unprecedented change and breadth of issues facing energy market participants and consumers at present any significant change to the design of an established, functioning 20-year old market must be introduced with caution. Further, given the significant work streams being undertaken by the AEMC in the areas of system security, reliability, gas markets and retail competition as well as the South Australia's government's battery deployment initiative it would be prudent to delay a decision on the move to a five minute settled market. This will allow time to observe how the cost of new technology comes down and how they will ultimately integrate into the broader energy system.

Infigen views the South Australian battery initiative as a watching brief on integration, costs and lessons learned. For this reason it is suggested that at a later stage, for example, twelve (12) months following commencement of the project the review then considers the question of a change in market design. It would also allow the opportunity to integrate the findings of AEMC's other works streams into the five minute settlement rule change proposal.

Our responses to the AEMC's Directions paper on five minute settlement are provided below.

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Question 1

(a) How suitable is the proposed assessment framework for this rule change request?

Infigen is satisfied with the assessment framework

(b) Are there any additional factors that should be considered in assessing this rule change request?

Not at this stage.

Question 2

(a) How material are the price signal inefficiencies under 30 minute settlement and are there other data or data sources that would enable this issue to be more comprehensively addressed?

It would appear to Infigen that at this stage the inefficiencies are quite minor and not material in the context of other major changes occurring in Australia's energy market.

It is also evident that the perceived inefficiencies presented are also a function of the ownership and operating configuration of generators in regions such as Queensland rather than a market design issue. It is likely that such matters are transitory and will be addressed over time as the market is further developed and the transmission system evolves. In our view it follows that a permanent market design change is not warranted at this point.

In relation to the question regarding data source, Infigen is satisfied that the data sources that have been utilised by the AEMC to date are adequate.

(b) What extent would a move to five minute settlement address inefficiency in price signals from 30 minute settlements?

Whilst recognising that five minute pricing would be favourable for emerging technologies such as battery storage, Infigen believes that a change to five minute settlement would have an immaterial effect on perceived price inefficiency. Please refer to our response to question a) above.

(c) Are there any other inefficiencies that should be considered?

None that Infigen is aware of that relate to the proposed rule change.

Question 3

How does an ageing generation fleet together with rapidly evolving digital technologies and the increasing role of intermittent generation affect the prospects of five minute settlement as compared with 30 minute settlement?

The ageing generation fleet is predominantly coal fired generation. This proposed rule change will have a greater effect on peaking generation such as gas fired generation as their inability to react to five minute price signals at times will mean that they are less able to offer hedge products such as caps.

As explored in greater detail in this submission it is important to recognise that changes to cap product supply in the market will impact cap pricing and in turn also affect pricing of swaps and other derivatives. This is potentially a major unintended consequence of the proposed rule changes as any increases in hedge product pricing will mean that electricity prices that consumers are exposed to will increase.

Battery technology is energy constrained in that it can only discharge for relatively short time periods and is subject to recharging requirements once stored energy is dispelled. It follows that there is a risk that at times five minute pricing will become increasingly volatile as the transition of the energy supply mix moves from periods set by batteries as the marginal price source to traditional peaking plants.

Question 4

What kinds of generator bidding behaviours would emerge under five minute settlement as compared with 30 minute settlement?

This topic has been well debated and covered by market participants and industry bodies. It is Infigen's view that strategic bidding generators may reduce the volume they sell to the market under five minute settlement. Their natural response to the five minute will be to sell less so they have sufficient length to continue to drive the price behaviours they are after.

Despite advances in demand side management and new technologies such as storage, they currently lack sufficient scale and market share to ensure that strategic bidding will not continue and that the rule change, at least in the short to medium term, will not increase costs for consumers. It is very plausible that costs to consumers will actually increase due to lack of availability and pricing of required hedging products.

Question 5

(a) What other issues are likely to be material in considering the introduction of five minute settlement?
In addition to behavioural impacts, implementation and transition costs as well as hedge market liquidity and pricing changes are the key issues to be considered.

Reduced liquidity of financial market contracts, as well as uncertainty about future cap and other hedge product prices has the potential to increase hedging costs for participants over a significant period of time and could result in additional costs being passed through to consumers. In Infigen's view, the relationship between the introduction of the rule change and its potential impact on contract pricing and liquidity is a key area worthy of closer examination by the AEMC.

Other considerations include potential impact on system security caused by altering the market to increase rewards for fast response technologies and decrease rewards for comparatively slower technologies that provide the system with real inertia. Infigen believes it would be prudent to incorporate the findings of the system security work program currently being pursuing by the AEMC prior to drawing a conclusion in relation the merits and feasibility of five minute settlement.

Infigen is of the view that on balance, it is prudent to delay a decision on the introduction of five minute settlement. In the event that this isn't the course the commission pursues then at a minimum it is recommends that the findings from other AEMC work streams referred to at the start of this submission are incorporated into the thinking.

(b) Is there other data or data sources that can better inform the analysis of the materiality of the problem with 30 minute settlement or the move to five minute settlement?

This topic has been extensively covered in consultations and work carried out by the AEMC. Whilst data and data sources utilised thus far are sufficient it would be beneficial to examine futures market open interest and contract liquidity and pricing impacts for all contract types and not restrict the analysis/commentary to cap contracts.

Question 6

(a) How material are the issues identified around demand-side optionality? Are there any material issues or benefits that have not been identified?

Infigen has no material comments in regard to this question other than to emphasise that it is desirable that participation for all market participants is compulsory and not-optional if this rule change is enacted.

(b) If demand-side optionality is adopted as a temporary measure, should the settlement residue be incorporated in intra-regional residue settlements? If not, how should it be treated?

Infigen has no comment on this matter.

(c) How might the contract market react if demand-side optionality is adopted on a temporary basis

Infigen is of the view that demand-side optionality is not desirable, even as a temporary measure.

Question 7

(a) Are there any suitable alternatives to collecting five minute data from the transmission network metering installations used to compile the NSLP other than reconfiguring or replacing the existing meters?

Infigen has no comment on this.

(b) What percentage of meters can be remotely reconfigured? What would this process look like and what would costs be? Conversely, what percentage would be need to be manually reconfigured or replaced?

Infigen has no comment on this.

(c) The Commission has proposed aligning the transition with the timeframes for the NER test and inspection regime. Would this provide an appropriate amount of time for changes to occur?

Infigen has no comment on this.

(d) For which categories and situations should an exemption from providing five minute data be considered? Why?

Infigen has no comment on this.

(d) Are there any other metering implementation issues relevant to collecting five minute data that should be considered?

Infigen has no comment on this at this stage.

Question 8

(a) To what extent would a transition period mitigate the one-off contract negotiation costs of a move to five minute settlement?

Contract negotiation costs are just one of the costs that will be incurred by the market in the move to five minute settlement. Contract design, approval processes, licensing, trading and bidding system design and configuration, literature and documentation changes are additional but not an exhaustive list of one-off and ongoing costs to be assessed. It is not possible to accurately quantify such costs and as such a transition period would not fully mitigate these costs and market disruptions.

However, despite this, a longer transition period is clearly more desirable than a shorter one as this will enable contracts to unwind and importantly, competitively priced technology to be tested in the market and potentially deployed.

(c) What length of time would be appropriate to enable contracts to either expire or be adapted to take into account the future implementation of five minute settlement?

This is a very subjective issue as it needs to be considered in the context of a multitude of contract types, term and complexity.

However, as a guide, the ASX futures are listed out to seventeen (17) calendar quarters at any point in time. Hence, it would be prudent to allow at least this period from legislation changes and the time that the rule change takes effect.

Question 9

(a) To what extent would contract market liquidity be affected by a move to five minute settlement, as distinct from other pressures on liquidity?

This matter is extensively covered by AFMA in its submission to the AEMC. Infigen concurs with AFMA's assessment of the impact of the rule change on market liquidity. Please review to AFMA's submission for further detail.

(b) How would the contract markets adapt to a move to five minute settlement?

Please see response above.

(c) To what extent would new types of hedge cover emerge?

Please refer to AFMA's response to this question in its submission.

Infigen agrees with AFMA's assessment in relation to new types of hedge instruments but cautions that whilst some new technologies can provide a physical hedge to five minute price movements and potentially financial hedges, it is not clear that they will and. It must also be acknowledged that certain technologies, such as battery storage, do not actually add electrons to the market. A large number of batteries would be required to underpin a prolonged period of price volatility, particularly if they made the role of peaking generation uneconomic. Further it is important to note that whilst batteries may potentially decrease price in some periods they may also increase price in other periods, which will result in cap and swap prices increasing due to uncertainty. This is a view shared by a number of long-standing market participants on both the retail and generation sectors.

We are not at a stage in the market where batteries or demand side response providers have significant capacity to fill in the void left by existing generation sources if they choose to restrict their hedge offering as an economic consequence of the rule change.

Given that the installed capacity of batteries in the market is less than five MW at present and we have nearly 4GW of OCGT generation in the NEM it is unlikely that new technology installations will grow rapidly enough in the short term to replace any reduction in hedge products offering by current generation sources without given rise to price increases for consumers.

In the medium term however, the general consensus is that a change to five minute settlement may make sense. Prior to that change we should be certain that the technologies being encouraged through the change are more cost effective. Initially an avenue to having them more deeply deployed in the energy system will ensure we understand how they actually will operate and what other compensating factors might be needed to ensure the system remains balanced.

(d) To what extent would existing generators develop new operating strategies to underpin hedge contracts?

This matter has been covered extensively by the AEMC during its consultation process and by market participants in their submissions. It is recognised that the response of existing generators will be multi-faceted depending on the structure of the new rules. However, suffice to say that generators will look to optimise their bidding and contracting strategies at all times and take advantage of market inefficiencies and demand/supply dynamics. This will include behavioural analysis of new technologies such as storage and particularly their energy delivery limitations in times of potential price volatility.

(e) To what extent would new generation plant be able to provide hedge contracts?

This will depend on the technology specifications and operating characteristics of the generation as well as installed capacity. It is difficult to quantify actual and likely behavioural changes and product offering given the significant number of market developments occurring at present.

See Infigen response to question 9c.

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Question 10

(a) What are the costs, synergies and risks involved in upgrading IT systems to accommodate five minute settlement?

Infigen has no comment on this.

(b) What timeframes are required to upgrade IT systems?

A long transition time will assist with system development and upgrades to existing market and operational systems. Infigen's proposes a transition time frame of at least 4 and ¼ years (to align with ASX futures expiry) to allow for IT upgrades.

Question 11

(a) Are there any further categories of costs that would be incurred if five minute settlement was adopted?

No additional categories noted at this point.

(b) How suitable is the proposed two-stage transition period to implement five minute settlement? Do you consider there to be a more preferable approach to a transition period such as alternative timeframes?

Infigen is of the view that the three year period proposed for stage A is not sufficient. A transition period of more than four years is preferred as outlined in our responses to previous questions relation to transition period.

(c) What are the detailed benefits, costs and risks of the proposed two-stage transition to five minute settlement on:

(i) existing contract arrangements?
(ii) metering requirements?
(iii)IT system requirements?

As these items have been extensively covered in AEMC consultations. Infigen has no further comments.

(d) Are there any other practical aspects of implementing five minute settlement that should be considered?

Infigen has no comment on this. Most items have been covered and addressed by current AEMC deliberations.

We thank the AEMC for its efforts in examining the pros and cons of this proposed rule change and look forward to engaging in the next round of consultation. In closing we re-iterate our view that implementing five minute settlement in the medium term will ultimately lead to poor outcomes for consumers.

Please feel free to contact me directly in relation to Infigen's submission.

Yours faithfully,

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