



4 September 2014

Mr Ben Skinner
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Dear Mr Skinner

Optional Firm Access - First Interim Report

Origin Energy (Origin) appreciates the opportunity to provide comments to the Australian Energy Market Operator (AEMO) Optional Firm Access (OFA) First Interim Report. Origin understands the terms of reference provided by the Standing Council on Energy and Resources (SCER) tasked AEMO to determine the functional design of the access settlement system consistent with the Australian Energy Market Commission (AEMC) OFA design parameters.

AEMO analysis has indicated that it is difficult to clearly identify benefits from access settlements:

AEMO has reviewed recent events of non-cost reflective offers in order to test this hypothesis. In each of these events, generator behaviours were also affected by a number of market design and structural issues which are outside of the scope access settlement. It will be difficult to identify the incremental benefits that arise from access settlement alone.¹

Origin considers AEMO has identified two fundamental issues inherent in the design of the OFA model that increase complexity and questions the practicality of the model:

- Linking access capacity in settlement and treatment of auxiliary loads and marginal loss factors; and
- Discrepancy between 5 minute dispatch and 30 minute trading intervals and calculating flowgate prices within a trading interval.

Origin considers AEMO has undertaken detailed technical analysis to gain a comprehensive understanding of access settlement. The analysis has revealed the difficulty in clearly identifying benefits under access settlements. AEMO's analysis highlights the complex, dynamic and interrelated facets in the National Electricity Market (NEM) in how spot market outcomes are determined with any benefits from changing bidding behaviours being unclear.

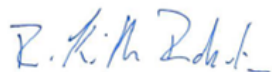
Access settlement, if implemented, could impose significant changes to the operation of the NEM. The ability and practicality of access settlement to shift settlement from dispatch to capacity, to enable the OFA objectives to be achieved, should therefore, be rigorously assessed against the cost of implementation. The potential for unintended

¹ AEMO 2014, 'Optional Firm Access AEMO First Interim Report,' July 2014, Melbourne p. 3.

consequences through any staged implementation should also be assessed in determining whether to implement access settlement.

Should you have any questions or wish to discuss this information further, please contact Ashley Kemp on (02) 9503 5061 or ashley.kemp@originenergy.com.au.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'K. Robertson'.

Keith Robertson
Manager - Wholesale and Retail Regulatory Policy
Energy Risk Management

1. Limited identifiable benefits in access settlement

Origin supports the approach of AEMO in determining whether access settlement is practical to implement and how it is likely to influence dispatch. In assessing the design elements in access settlement AEMO has been required to assess the practicality of introducing access settlement and whether access settlement will lead to a perceived improvement in generator bidding behaviour.

Origin is supportive of the approach AEMO has taken to testing with a detailed technical platform notwithstanding the constraints from testing access settlements over a limited historical period. Such an approach is likely to be more rigorous and closer to power system operating conditions than stylised economic modelling. AEMO indicated however, that it is difficult to clearly identify benefits from access settlements from testing:

AEMO has reviewed recent events of non-cost reflective offers in order to test this hypothesis. In each of these events, generator behaviours were also affected by a number of market design and structural issues which are outside of the scope access settlement. It will be difficult to identify the incremental benefits that arise from access settlement alone.²

AEMO has also identified a number of potential aspects under access settlement where it may not be able to achieve its stated objectives.³

2. Access settlement design

The Standing Council on Energy and Resources tasked AEMO to design and develop an implementation plan for the access settlement system consistent with the AEMC design parameters. AEMO has identified a number of impractical and complex design elements under access settlements that could lead to inefficiencies where access settlement be implemented. The practical difficulties in designing and implementing access settlement are derived from the approach of the AEMC through the Transmission Frameworks Review (TFR) to decouple access and dispatch and link capacity with access.

AEMO has identified two fundamental design issues with access settlement that determine the practicality and workability of the model:

- Linking access with capacity in settlement; and
- The discrepancy between 5 minute dispatch and 30 minute trading intervals.

Settlement based on capacity

As outlined in the Optional Firm Access Technical Report, access settlement is the process that de-links dispatch from access. As opposed to current arrangements where settlement is derived from dispatch outcomes, settlement outcomes will be derived from generator capacity entitlements under the firm access standard. The intent of access settlement is to shift from settlements derived from sent out energy to settlement derived from an acquired financial capacity.

² AEMO 2014. p. 3.

³ Ibid. p. 17.

AEMO has identified a potentially significant issue with the design of access settlement with the treatment of ancillary loads.⁴ Under current arrangements, a generator receives a dispatch target incorporating total generation with auxiliary load deducted from sent-out generation. Under access settlement, as auxiliary loads are factored into dispatch, they could be settled at the local flow gate price. This could create an anomaly where the auxiliary load is settled based on the local flowgate price rather than the Regional Reference Node (RRP) potentially leading to negative settlement residues.

The practicality of grandfathering existing arrangements within access settlements can only be measured against the practicality of access settlements in total. Permanent carve-outs and exemptions for specific aspects within NEM power system operations are likely to lead to inefficiencies and question the workability of the model more generally.

Five minute dispatch and thirty minute trading intervals

The approach of the AEMC to the calculation of access settlements is to retain existing market parameters where trading intervals (TI) are 30 minute periods with settlement calculated on the basis of 5 minute dispatch intervals (DI). This adds additional complexity to the settlements process by incorporating the RRP in addition to the marginal constraint value or flowgate price for every dispatch interval where a constraint binds at a flowgate through a trading interval.

Access settlement requires the marginal value of the constraint to be incorporated into the settlements process, reflecting the flowgate price. This complicates the settlement process, as identified in the OFA Technical Report, when constraints do not bind across a whole TI and instead bind for a single DI or over several DIs but with a varying marginal constraint value. Origin understands the approach of AEMO to resolving the additional complexity is to treat each DI where a constraint binds is to treat the DI as though the constraint bound for the TI and divide the constraints marginal value or flowgate price by 6 - the number for DIs in a TI.

An additional complexity identified by AEMO with access settlements is incorporating the coefficient for separate generating units at a power station into settlements when they have different coefficients. Origin agrees with AEMO that different generating units at a power station have separate coefficients where the units are connected to different parts of the transmission network. Eraring, for example, has different coefficients for units 1-2 and 3-4 being connected to the 330kV and 500kV networks respectively.

AEMO has identified a solution to this issue by having less granular dispatch unit identifiers to the generating unit level to a coefficient at the level of the power station. While AEMO have identified a potentially practical solution to the identified problem, it does so in a less efficient manner to how units are currently identified.

Under existing arrangements, a binding constraint exposes generators to dispatch or volume risk associated with being constrained down. This is easily resolved through the settlements process where the marginal value of the constraint is not relevant and the sent-out generation, adjusted for marginal loss factors, is settled at the RRP. Analytical work on access settlement by AEMO suggests the settlements process would increase in complexity and be less efficient raising a question as to whether it would be consistent with the National Electricity Objective.

⁴ It is unclear if the problem identified by AEMO relating to auxiliary load would extend to electrical loss incurred within a power station, for example, through station transformers.

3. Transitional arrangements

The SCER terms of reference tasked AEMO to recommend an implementation plan for access settlements reflecting the AEMC's recommendation on the most efficient option for staging implementation. The design aspects of access settlement would render a staged implementation by jurisdiction or region impractical and complicate the settlements process.

Access settlement involves the calculation of a flowgate price in addition to the RRP in determining the price for a TI. In practical terms this involves tagging constraints to enable the marginal value of the constraint to be calculated in the settlements process. Numerous constraints, however, have elements that are located in regions outside the region experiencing an intra-regional constraint.

Origin recognises AEMO is able to tag or tag select elements in a constraint equation. Requiring AEMO, however, to pick through constraints for elements that should be included or excluded in the settlements process increases the complexity and the practicality of any staged implementation of access settlement.

4. Is access settlement equitable?

AEMO identified an issue under access settlement where non-scheduled market generation would receive the RRP and not be exposed to the local flowgate price under periods of congestion. Origin agrees with AEMO that excluding non-scheduled generation makes access settlement problematic given it may not apply across all generation systems but it raises a more poignant question as to whether access settlements and OFA more generally is equitable.

While we note this specific issue is beyond the remit of AEMO, there is a question as to why market scheduled generators should be exposed to the basis risk introduced by access settlement when the generator may have not directly contributed to congestion. Line loading and generation flow paths are impacted by a number of factors including load and line ratings. A significant load could, for example, decrease line loading when it is located near a generator but increase line loading where it is located a distance from a generator. Conversely, the loss of significant load could impact the level of line loading depending on the location on the network. Is it equitable to expose a generator to basis risk arising from congestion when the generator may not have caused congestion?