

# FRG – revenue sufficiency

Future Market Operability | August 2019

# Introduction

- Coal-fired power station retirement trajectory is a critical and complex variable associated with any future NEM forecasts. Currently the ISP uses the closure years provided by generators as a starting point. In addition, AEMO has commissioned a one-off revenue sufficiency study from Aurora Energy Research. In future ISP's, AEMO intends to undertake ongoing revenue sufficiency analysis.
- There's a broad range of views in the public domain on the potential life of coal generation assets.
- There is general stakeholder support for a consideration of economic retirement due to revenue insufficiency and that this would be a useful addition to the ISP.
- Several participants have pointed out that retirement decisions are influenced by a number of different factors beyond revenue sufficiency, and not all these factors are currently or can be included in market models.

# A pure revenue sufficiency approach (1):

- A pure revenue sufficiency approach looks at received *net* pool revenue: generation \* (RRP-SRMC) and assesses when fixed costs are covered (necessarily in addition to variable costs).
- The example to the right, using publicly available data, uses assumed figures for FOM<sup>1</sup>, VOM, HR and fuel costs<sup>2 & 3</sup> and actual generation, marginal loss factors and prices<sup>4</sup>.
- In this example, FOM costs are covered in 3-4 months into FY19. This methodology could be projected into the future to assess if / when FOM is not covered.
- Any reduction in capacity factors, increase in costs or decrease in prices will move the curve to the right

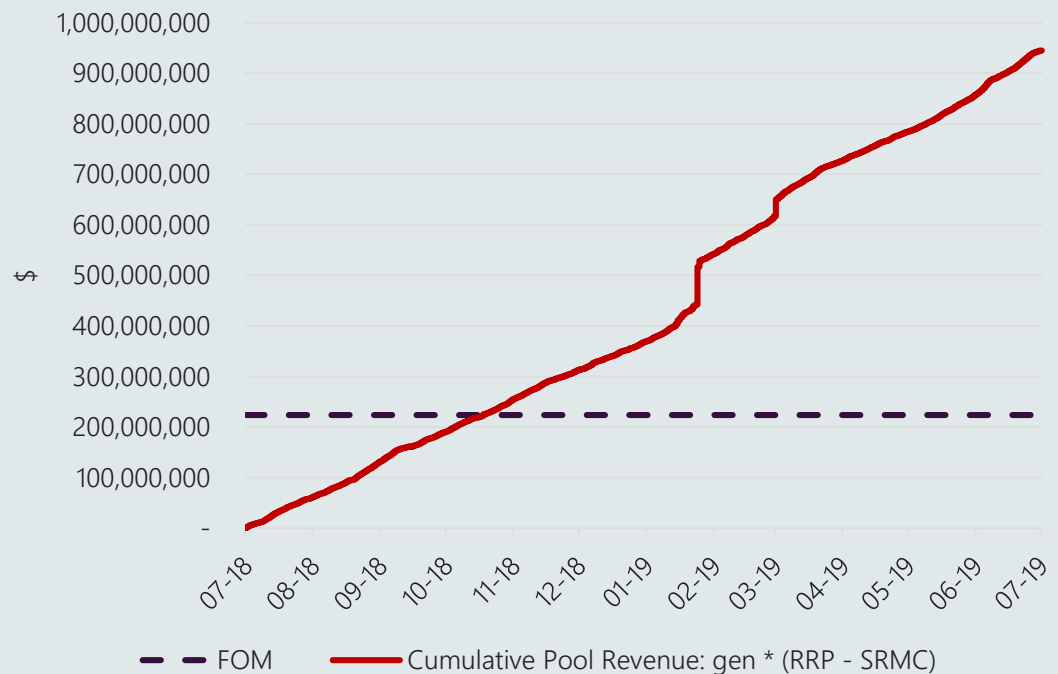
<sup>1</sup> ACL, 2013

<sup>2</sup> ISP, 2018

<sup>3</sup> Note auxiliary losses not included in this example

<sup>4</sup> AEMO actuals

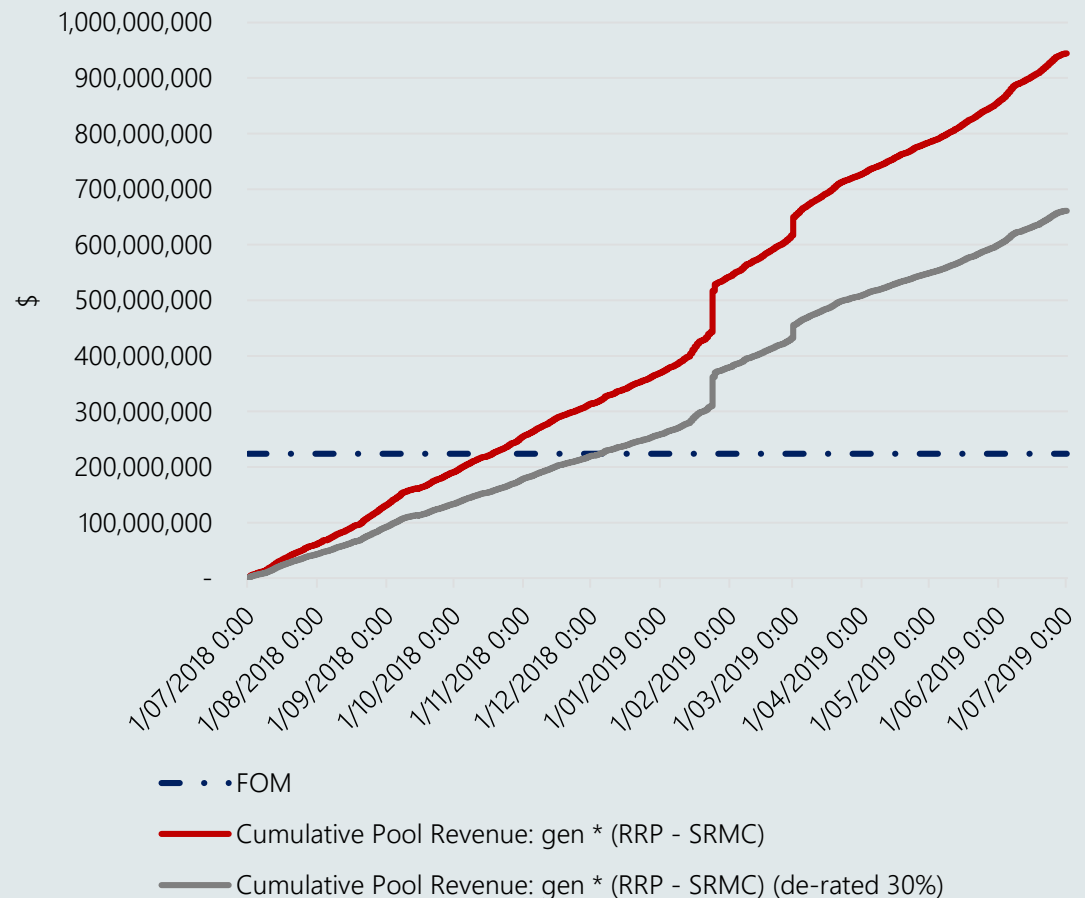
FY19 case study: actual generation and received pool revenue - SRMC



# A pure revenue sufficiency approach (2):

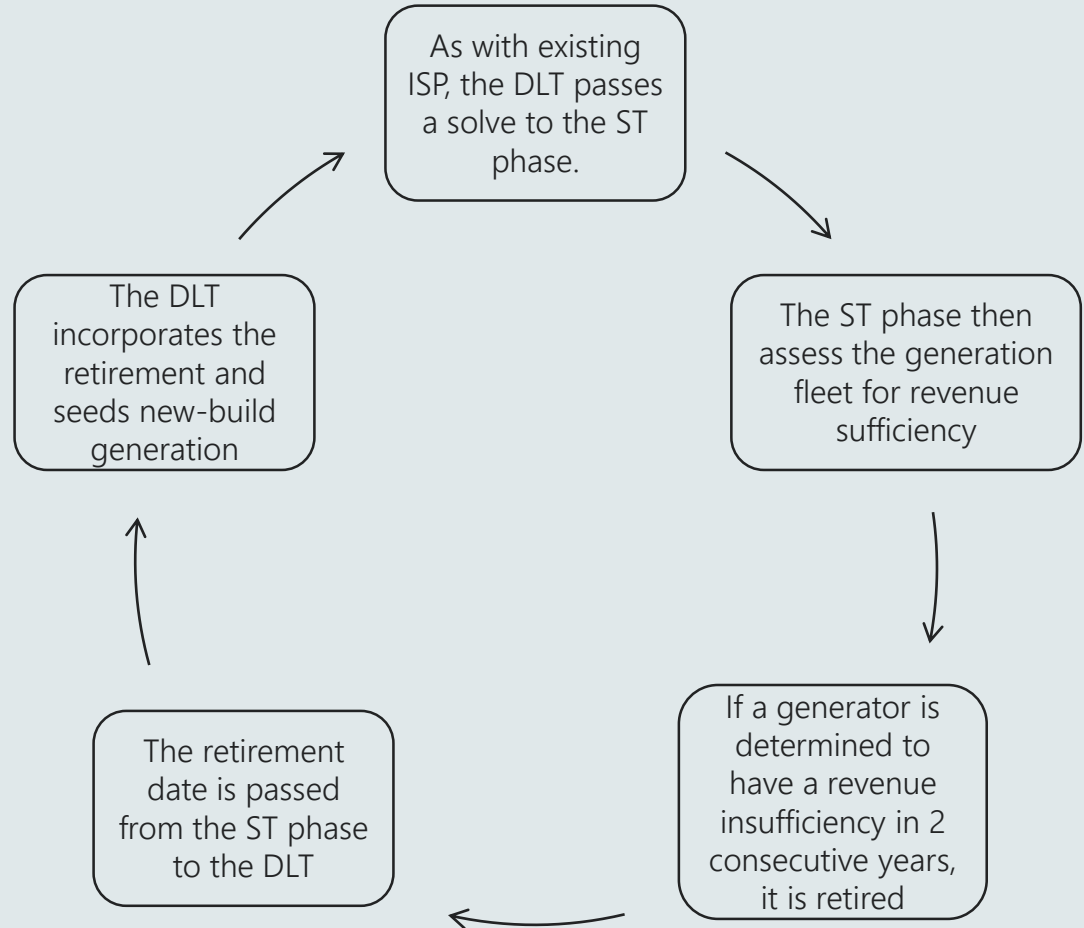
- The example, to the right, shows how a reduction in capacity factor (arbitrarily selected 30% de-rate) reduces the net pool revenue less costs, moving back the time it takes for the generator to cover its fixed cost base.
- A similar effect would be observed with a reduction in wholesale pool prices or an increase in costs. - and the reverse is also true. This method would allow for AEMO to dynamically consider the revenue sufficiency for the NEM generation fleet.
- There are limitations to this approach however – there are other factors beyond revenue sufficiency that may indicate plant-at-risk. (See later slides).

FY19 case study actual generation and received pool revenue - SRMC



# Potential application in the ISP

- Methodological approach to incorporating revenue sufficiency considerations into the ISP.
- Is the selection of 2 consecutive years of revenue insufficiency appropriate in the Australian context?
- Should all uneconomic plant be removed simultaneously, or should we continually iterate by removing the most uneconomic plant first?



Once uneconomic plant is retired, the revenue of the remaining plant will improve.

# Factors beyond revenue sufficiency which influence retirement

- Technical end of life
- Fuel availability
- Portfolio considerations
- Rehabilitation liability
- Ancillary service revenue
- Opportunities and risks of flexible operations regime (e.g. de-synchronise for solar noon, reductions in minimum stable load).
- Capital availability / social license for mine extension etc.
- First mover disadvantage (i.e. once a plant retires, revenue for remaining plants increases in the short-term).
- What other factors are relevant?

# Summary and final questions

- Stakeholders broadly agreed that the proposed consideration of economic retirement due to revenue insufficiency would be a useful addition to the ISP analysis.
  - Several participants pointed out that retirement decisions are influenced by a number of different factors, and not all these factors are included in market models.
  - Revenue sufficiency, whilst valuable, does not constitute a comprehensive and holistic plant-at-risk exercise.
- The FRG is requested to consider whether:
    - AEMO's approach to the revenue sufficiency can be improved. If so, how?
    - Beyond revenue sufficiency, what other approach to considering plant-at-risk would improve the ISP?
    - What data is currently not accessible to AEMO which would improve forecast quality and integrity?

