Capacity Refunds

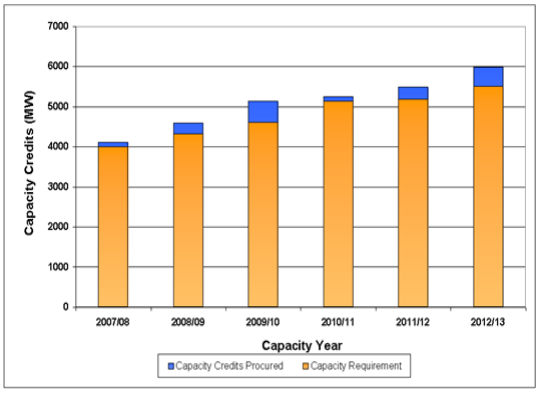
Background

- **The WEM design includes distinct capacity and energy payments**
- **The capacity payment regime is designed to closely manage reliability of the power system and includes:**
  - *A capacity standard under which the IMO ensures a minimum level of capacity is installed on the SWIS*
  - *Strong incentives to commission on time*
  - *Requirements to present all accredited capacity to market unless it is withdrawn under for maintenance approved by the System Manager*
  - *Capacity credits awarded to accredited providers of capacity (generation or demand side)*
  - *Monthly capacity payments to accredited capacity (or equivalent rebates to contracted customer loads)*
  - *A requirement for accredited capacity to refund part of the capacity payments in the event capacity is not presented to market*

All reliability measures have improved and exceeded requirements since the WEM was launched

- There have been no instances of loss of load due to lack of investment since the WEM was launched
- Reliability, measured by level of reserve:
  - *has equalled or exceeded the minimum required*
  - *As accredited capacity has met or exceeded the minimum required*
- Available capacity factors for generators has progressively improved
- Forced outage rates have fallen

Capacity exceeded requirements



Purpose

The remainder of this slide pack reviews the operation of the Capacity Refund arrangements

A guiding principle in review and consideration of any consequential change to the Capacity Refund arrangements (or indeed any component) has been that the benefits of the existing arrangements should not be compromised

Capacity payments and reliability in the SWIS (1)

- The capacity mechanism in the WEM is akin to a contract with the IMO (on behalf of customers)
- Like any contract it involves:
  - *A payment for provision of a service*
  - *Terms and conditions (including about quality of service and an obligation to participate in coordinated maintenance)*
- Also like many contracts the net payment is lower if the full service is not delivered
- The net payment for capacity is comprised of an upfront monthly payment and refunds in the event full service is not provided

Capacity payments and reliability in the SWIS (2)

- The upfront payment is based on the capex of peaking capacity:
  - *This is consistent with first principles analysis when accompanied by an energy payment based on the marginal cost of dispatch (on the basis the STEM /balancing price is a benchmark for marginal cost)*
- The detailed terms and conditions for the capacity "contract" create incentives for:
  - *on time commissioning*
  - *presentation of all capacity to market unless a reduction for outage has been approved by SM*
- The minimum system wide level of capacity is determined by the IMO to meet the Planning Criterion in the Rules

Delivering a market design that has a relatively closely managed level of reliability and has exhibited high reliability

The role of capacity refunds in the SWIS (1)

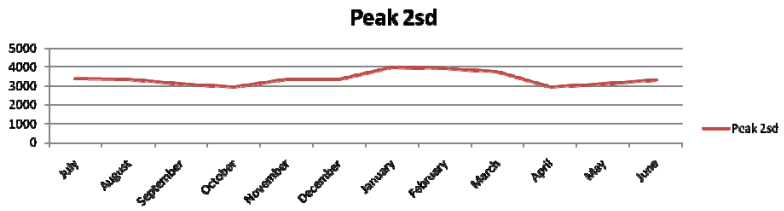
Capacity refunds:

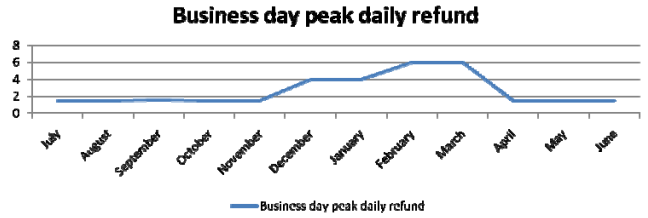
- "clawback" part of the upfront payment for non delivery
- are currently set in a table in the market rules and vary by time of year and time of day
- The profile of refund values broadly reflects the profile of typical/worst case demand at the different times of day and year

The role of capacity refunds in the SWIS (2)

- The impact of refunds therefore varies with likely risk of load shedding for the typical/worst case demand conditions
- This incentive is likely to be effective for medium to long term planning before actual conditions can be known
  - *Participants will be driven to ensure highest reliability at the times of highest refund (i.e. Over times of expected peak demand)*
  - *In practice reserve has been equal to or better than required*

Refund v demand



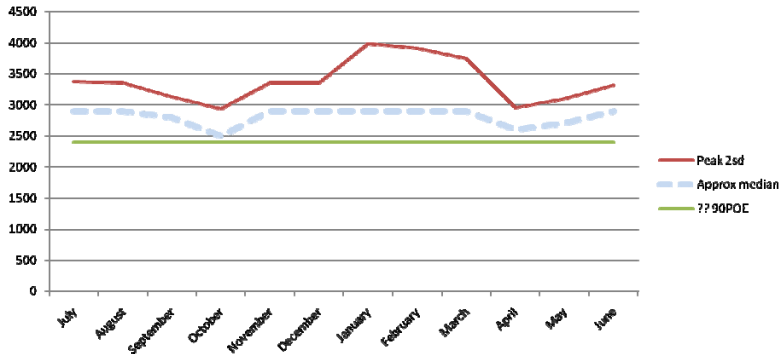


The role of capacity refunds in the SWIS (3)

- **However, because it is a fixed schedule refunds cannot:**
  - *<u>decrease</u> in response to short term variations such as for mild weather in the middle of summer; nor*
  - *<u>increase</u> for overlapping forced outages of generating plant in shoulder and off peak times when the schedule sets lower refund rates*

Although energy prices will reflect these conditions

Demand v refund



What is the impact of not reflecting short term variation in reserve? (1)

First we must assume that participants will behave differently in the face of different refunds.

This is the basis of the refund schedule at present so it is not a new assumption.

What is the impact of <u>not</u> reflecting short term variation in reserve? (2)

Participants do not see a (capacity based) price signal about when to undertake short term maintenance (e.g. in a mild break in the middle of summer)

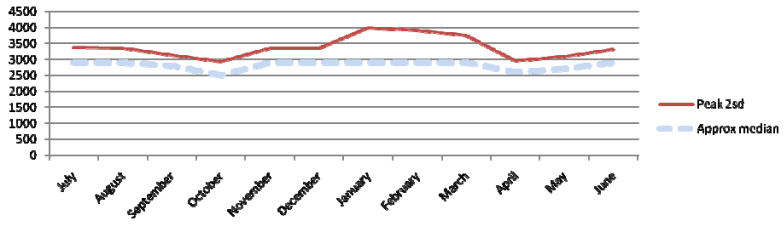
- ***Outages that involve a reduction in capacity require SM approval.***
  - Providing SM approves a short term outage, maintenance to enhance reliability at these times can occur without exposure to refund (but will incur energy related costs)
- ***Work within a generator to enhance reliability that does not involve a reduction in capacity :***
  - does not need SM approval,
  - does not result in a capacity refund and does not incur energy costs
  - but does increase the risk of unplanned reduction in capacity
  - it is obviously far preferable for the work to occur when there is least financial and reliability risk.
  - energy prices will create a partial incentive for appropriate timing
  - an <u>unnecessarily</u> high capacity refund will inefficiently counteract it.

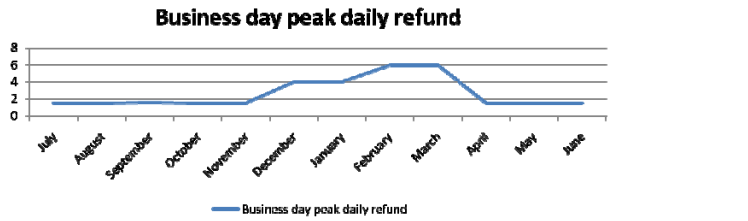
What is the impact of not reflecting short term variation in reserve? (3)

The refund at times of "unseasonal" low reserve, for example due to overlapping generator failures in shoulder and off peak periods, will be unable to reflect the (unexpectedly) low reserve

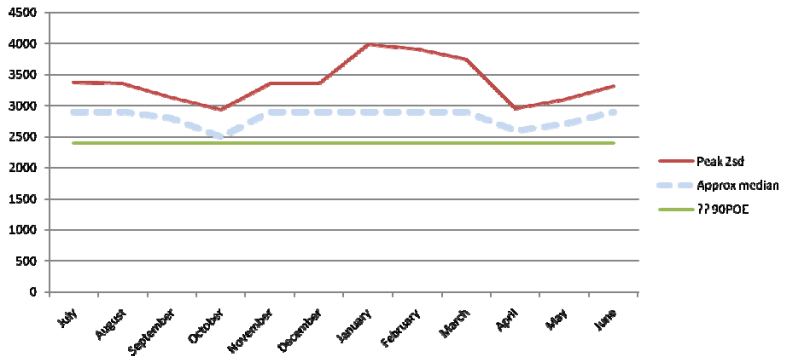
- *As result generators will not see incentives to act to enhance reliability and capacity such as changing maintenance plans*

Refund v demand





Refund v demand



What is the impact of not reflecting short term variation in reserve? (4)

An opportunity to increase the credibility of the design of the WEM by ensuring incumbents and in particular potential new investors will see the most rational price signals, is missing

Note: Refunds already vary across the year but there is potential to make them more consistent with the dynamic nature of the underlying fundamentals – the key question that has to be answered is whether such a change would be a net gain

Possible negative impacts (1)

Will a lower refund at times reduce incentives to present maximum capacity at peak times or to undertake on-going maintenance?

Noting that the level of reserve for summer periods (peak demand) should be approximately equal to the IMO reserve standard, generators will face a similar risk each summer; and

Assuming that any revised capacity refund under low reserve conditions is similar to the refund that currently applies in summer peak periods, then generators will face the same financial risk on peak days as they do now.

Generators will thus see the same incentive to avoid reduction in capacity on peak days.

Possible negative impacts (2)

Will a lower refund at times reduce incentives to present maximum capacity at peak times or to undertake on-going maintenance?

e.g. will the potential for a lower refund on some days in summer affect preparations ahead of summer?

Technically yes, at the margin, but in practice no:

- *The probability of randomly occurring forced outages will be the same on all days.*
- *Will the potential for a lower refund on some days in summer change the behavioural incentive to minimise risk of forced outages in summer by a suitable maintenance regime before summer? Most unlikely.*

Subject to the detailed design, no other potential loss of incentive is seen.

- *In fact the potential for (somewhat) higher refund if off peak contingencies arise will mean closer attention to on-going maintenance – for discussion*