

**Balancing Review
Industry Workshop**
Market Rules Design Team

Agenda

Welcome

1. *Review context*
2. *Today's objectives and scope*
3. *High level options*
4. *Development pathways decision*
5. *System Management presentation*
6. *Discussion of options*
7. *Break-out sessions*

Lunch

8. *Answers to questions*
9. *Further open questions*
10. *Next steps*

Review Context

Review context

Our Market

- *Capacity and Energy Market*
- *Day Ahead bilateral nominations and STEM trading*
- *Net settlement*
- *Hybrid commitment and dispatch (net and gross elements)*
- *Verve Energy – principal balancer*
- *Vesting contract between Verve Energy and Synergy*
- *Initially limited penetration of IPP and retailers*
- *Drivers:*
 - Encourage investment
 - Significance of reliability objective for Government
 - Maintain existing bilateral contract structures

Review context

Verve Energy Review Report (August 2009)

- *Tariffs and charges need to be set at commercial levels;*
 - *Reliability arrangements need to be enhanced (Generation Outlook);*
 - *Whole of sector Climate change strategy required;*
 - *Market Design Issues need to be readdressed (further reform); and*
 - *Contract arrangements between Verve and Synergy require revision.*
-
- **Minister of Energy commissioned Mr Peter Oates to lead a team to implement the recommendations of the Review**
 - **Three Working Groups formed to review:**
 - The Vesting contract between Synergy and Verve;
 - The Market Rules; and
 - A Generation Outlook.

Review Context

The case for changing the market rules

Market Rules Evolution Plan priorities

1. *Balancing mechanism*
2. *Aspects of Reserve Capacity mechanism*
3. *STEM*
4. *Gas & electricity nom's alignment*
5. *Ancillary services markets*

Verve Energy (Oates) Review – short term matters only

- *Participation in balancing*
- *Market incentives for efficiency:*
 - *price formation*
 - *cost allocation*
- *Market information (including scarcity/emergency response)*



Market review design team (MRDT)

Review context

Allan Dawson (IMO)
Greg Thorpe (Oakley Greenwood for Peter Oates)
Phil Kelloway (System Management)
Troy Forward (IMO)
Jim Truesdale (Concept Consulting for IMO)
Jacinda Papps (IMO)

Market Rules Design Team (MRDT)

- Market centric solutions which neither favour nor discriminate against Verve
- Progress and Delivery
 - Team is meeting for 1 ½ -2 days every two weeks
 - First Concept paper delivered to MAC in April
 - Second Concept paper delivered in May
- MRDT coordinates its interactions with stakeholders through IMO's existing arrangements (e.g. MAC)



Objectives and Scope



Objectives and Scope

- Today's objective
 - *Information and Q&A*
- What is not on the table today
 - *Long term design issues (e.g. Capacity Credits)*
 - *Bilateral market concept*
 - *Capacity market concept*
 - (consistent with terms of reference)

High Level Options

High Level Options

- Conceptually the broad range of options spans
 - *Enhancements to current hybrid design*
 - *Moving to gross or net dispatch arrangement*
- A high level explanation of these concepts follows
 - *Stylised form to illustrate possible development pathways*
 - *More detailed discussion of design options later*

Hybrid design

- Market designs are typically net or gross
- WEM is a 'bespoke' design - elements of gross and net dispatch

- **IPPs (net dispatch)**

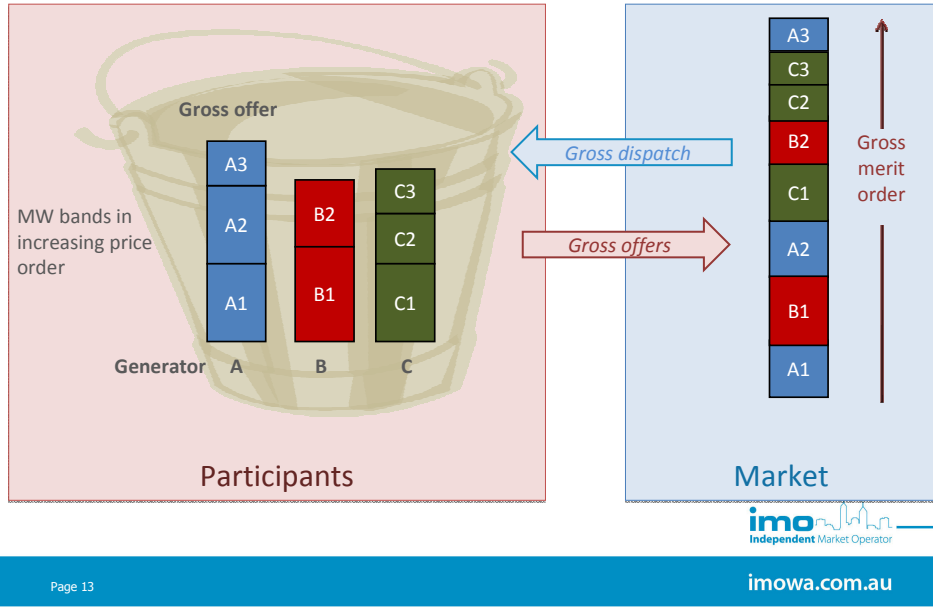
- Develop/ implement own resource plans
- SM may dispatch off plan for security or to avoid liquids

- **Verve (gross dispatch)**

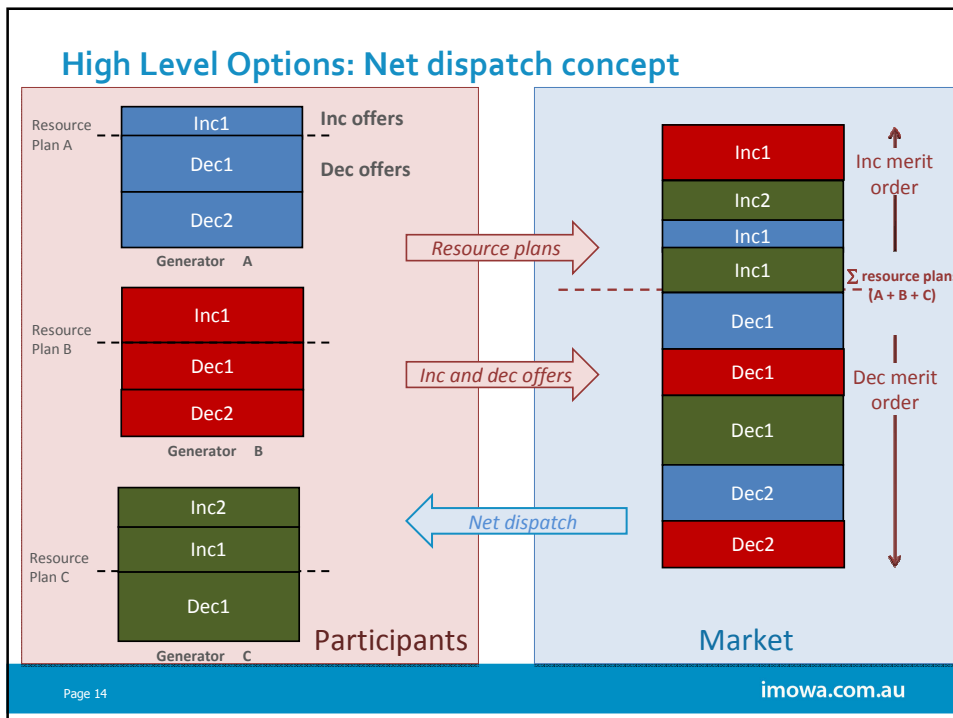
- SM develops pre-dispatch schedule
- SM dispatches all facilities to balance system

- Our analysis indicates that balancing role under existing rules:
 - Requires a close relationship between Verve and SM
 - This relationship is critical to the functioning of the current design
 - Would have significant impact (cost and time) to alter
- Critical component of cost benefit analysis

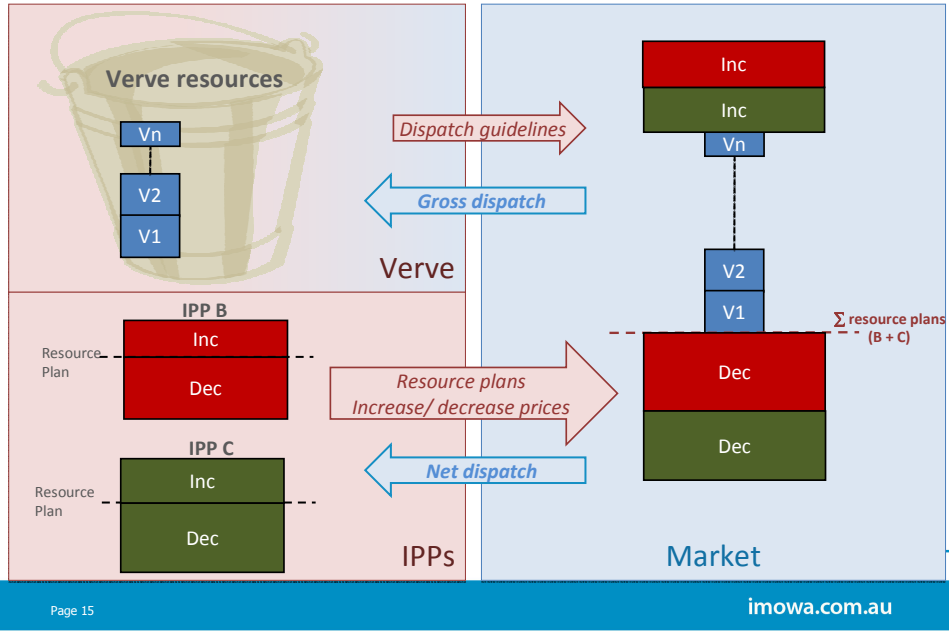
High Level Options: Gross dispatch concept



High Level Options: Net dispatch concept



High Level Options: Hybrid dispatch concept (current)



Development Pathway Decision

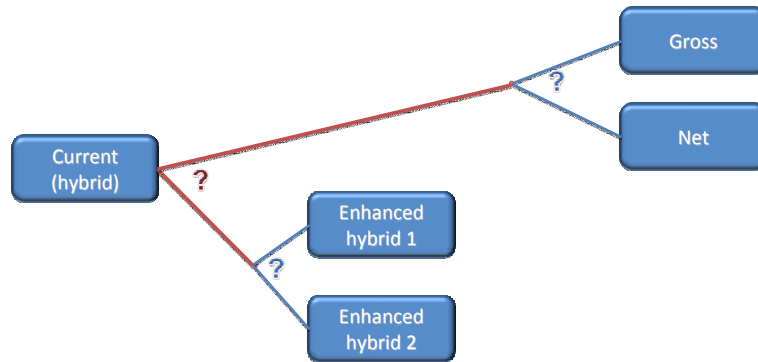
Development pathway decision

- “Fork in the road”
- MRDT identified options to:
 - *Enhance current hybrid design; and/or*
 - *Adopt (now) mature industry standard approaches*
- Fork in the road decision about the strategy for evolution of the design

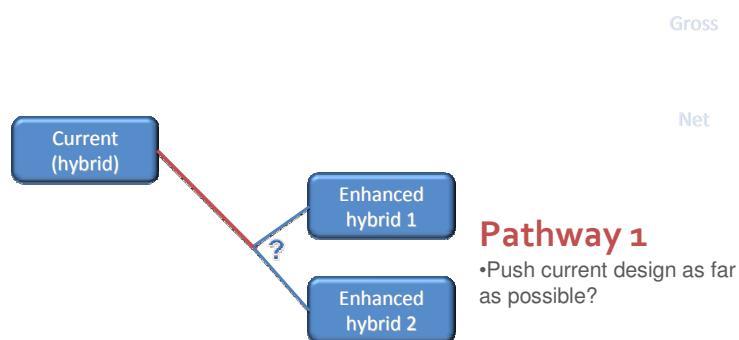
Development pathway decision

- Choice of pathway must balance:
 - *Efficient outcomes*
 - *Transparency*
 - *Cost reflective prices*
 - *Scale....cost effective for SWIS*
 - *Investment credibility to new entrant investors*
 - *Pragmatic and timely advance*
- All will be factors in an assessment against the formal market objectives

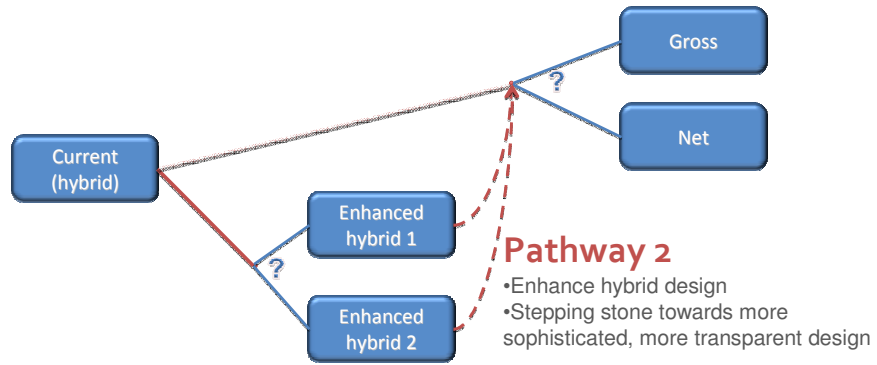
Development pathway decision – Fork(s) in the road



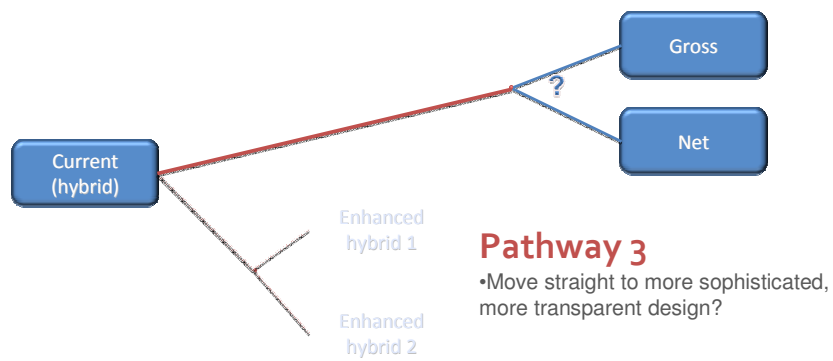
Development pathway decision – Fork(s) in the road



Development pathway decision – Fork(s) in the road

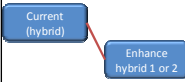


Development pathway decision – Fork(s) in the road



Development pathway decision: Potential trade-offs?

Pathway 1



- Retains complexity and special SM / VE relationship
- Likely ongoing calls for further change, regulatory/policy uncertainty, new entrant concerns?
- Limited time and cost to deliver

Pathway 2



- Address immediate/ Oates issues and timetable
- Retains option for future gross or net but no need to choose immediately
- Allows cost to be staged
- Possible loss of momentum and risk to further reform?

Pathway 3



- Significant commitment now of time, effort, expense
- Need to decide gross or net now

System Management Presentation

Market Rules Design Team Workshop



DMS#7118195

Operation of the SWIS

- Discuss the physical activities in SWIS operation
- Operating the SWIS involves interaction of:
 - Unit Commitment
 - **Dispatch** (Balancing)
 - Ancillary Services
- System Management's (SM) focus is on
 - Security (peaks and troughs)
 - Not hinder efficient use of resources (e.g. adherence to economic merit order)
- SM sees need to act soon (overnight, windfarm issues)

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Definition of Balancing

- Balancing is meeting difference between WEM scheduled energy and actual energy
- Balancing Service
 - Generators balance by instruction from SM
 - Instructions can be block load or via AGC
 - Provided by Verve under normal operation
 - IPP merit order dispatch only used if Verve margins exhausted
- Balancing requirements
 - Maintains economic dispatch as defined in the market rules
 - Maintains Load Following margins on Load Following generators
 - Constrained by unit commitment timeframes

Implications for Load Following

- There is a relationship between Balancing and Load Following Ancillary Service (LFAS)
- Load Following Ancillary Service produces balancing energy (an energy imbalance)
- Solutions to Balancing are not solutions to LFAS

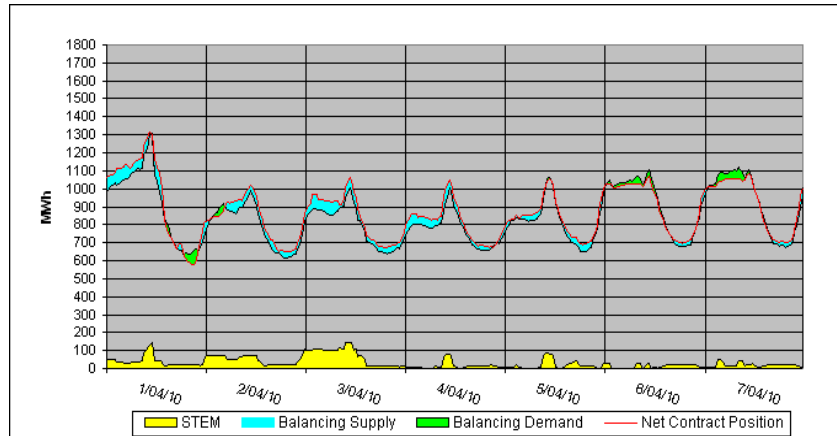
Solution to LFAS

- SM recent procurement of LFAS showed
 - Dissatisfaction with pricing model (discount to Verve)
 - Price risk due to uncertain MCAP
- Insufficient time to go to co-optimised AS market at this stage
- SM exploring solution to resolve pricing issues which prevent competitive procurement
- Cost allocation important

Balancing Volume Issues

- Bilateral outcomes from STEM and Balancing lock in IPP volumes
- Market Rules and Vesting don't appear to incentivise accurate bilateral contact position ([see graph](#))
- Variations in Load Forecast, Wind Forecast and variation in Resource Plan create balancing volumes in both directions
- Current market balancing rules do not provide economic outcomes (e.g. overnight coal thermal de-commitment)

Balancing Requirement



Balancing Supply represents cases in which the total contract position is greater than the demand and customers must supply energy back to balancing.

Problems with Balancing Support Contracts

- Either SM or Verve can be contracting party
- BSCs appear to be unattractive to gen. counterparties
- BSCs with SM currently unworkable
 - SM doesn't have funding in Allowable Revenue
 - How can SM prudently contract for BSC without a discount against MCAP?
- If SM contracts then will need to be funded

Linkage between commit and dispatch

- Commitment is calling for a generator to startup or shutdown
- Must make call prior to startup or shutdown lead time (can be up to 14 hours for IPP and 16 hours for coal thermal)
- Dispatch commences once the generator synchronised and reaches minimum dispatchable load
- If generator is a balancer then must be online first
- Dispatch is loading or unloading generator according to marginal price/merit.

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Commitment Issues

- IPPs self commit in accordance with their resource plan
- SM commit over market if security issues arise from Security Constrained Unit Commitment
- SM advise market if need to intervene
- WEM doesn't recognise **must run** concept but **must run plant does exist** in SWIS
- SM and generator need sufficient time to call slow start plant (coal thermal, cogen)
- If SM misses commit time gate then can only make dispatch decisions
- Corollary is that need to make timely commit decisions to ensure SWIS security
- Commitment decision deadline is often on the current trading day but affects current and next trading day (is well before the start of the trading day)

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SM things to keep in mind

- **Operational issues occur overnight**
 - Over contracting, insufficient decommitment
 - Windfarms increase base load and load following demand
 - Overnight merit plant mix is least flexible for LFAS
 - Keep low merit plant on for LFAS (turn off high merit)
 - Potential uneconomic commit / dispatch outcomes if de-commit coal thermal while margin is on IPPs
- **Pricing considerations**
 - Plant mix signals (Reserve Capacity)
 - Dispatch interacts with commitment (timing and plant mix)
 - BSC cost allocation if tweak options adopted

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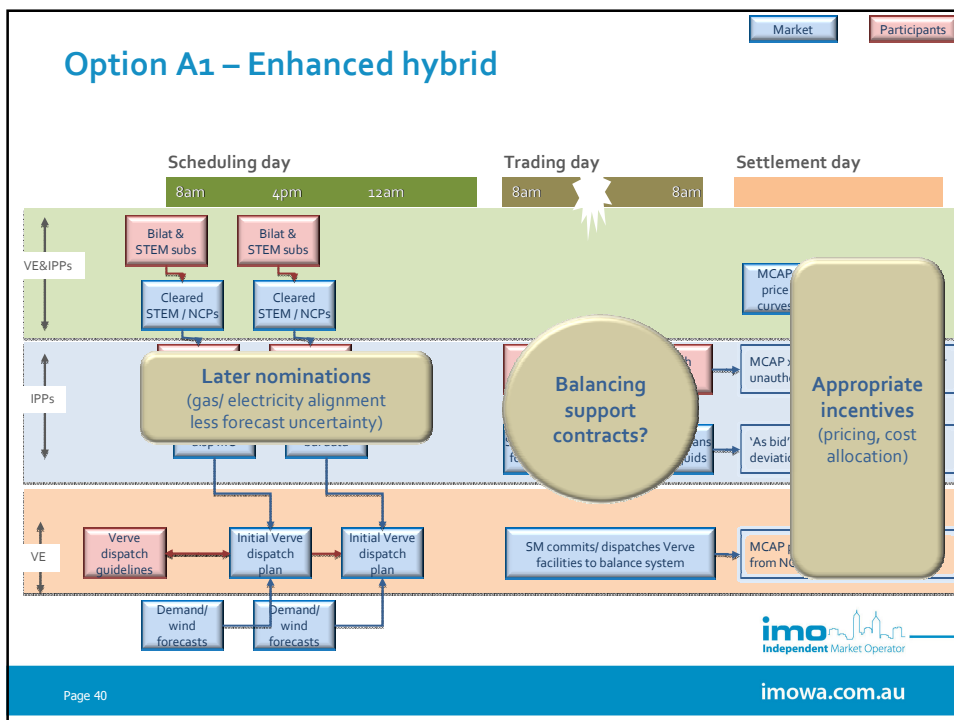
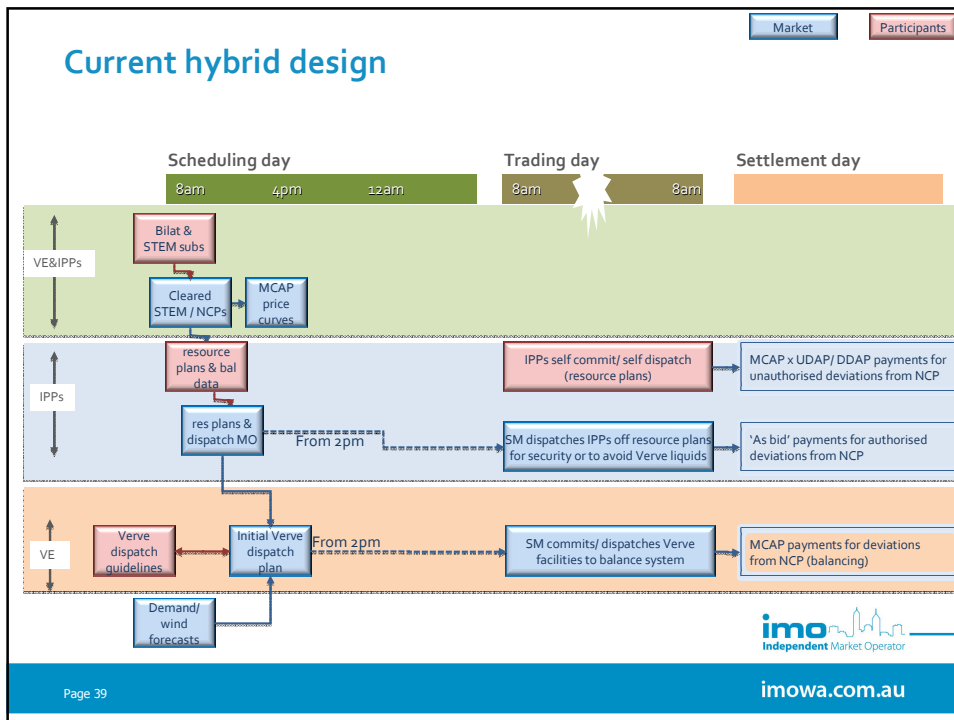
Discussion of Options

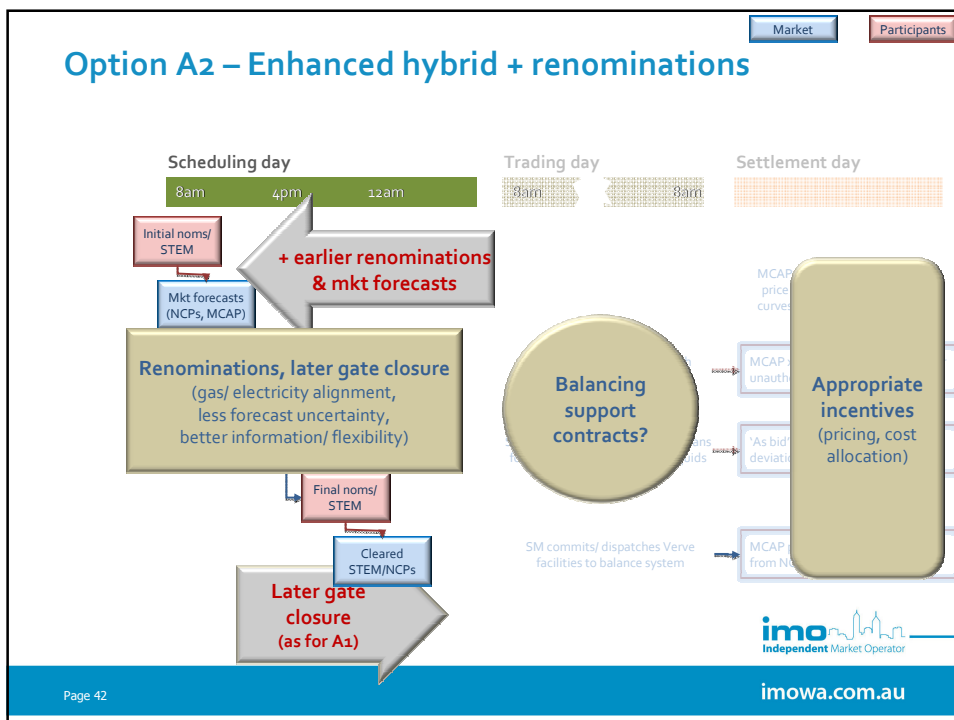
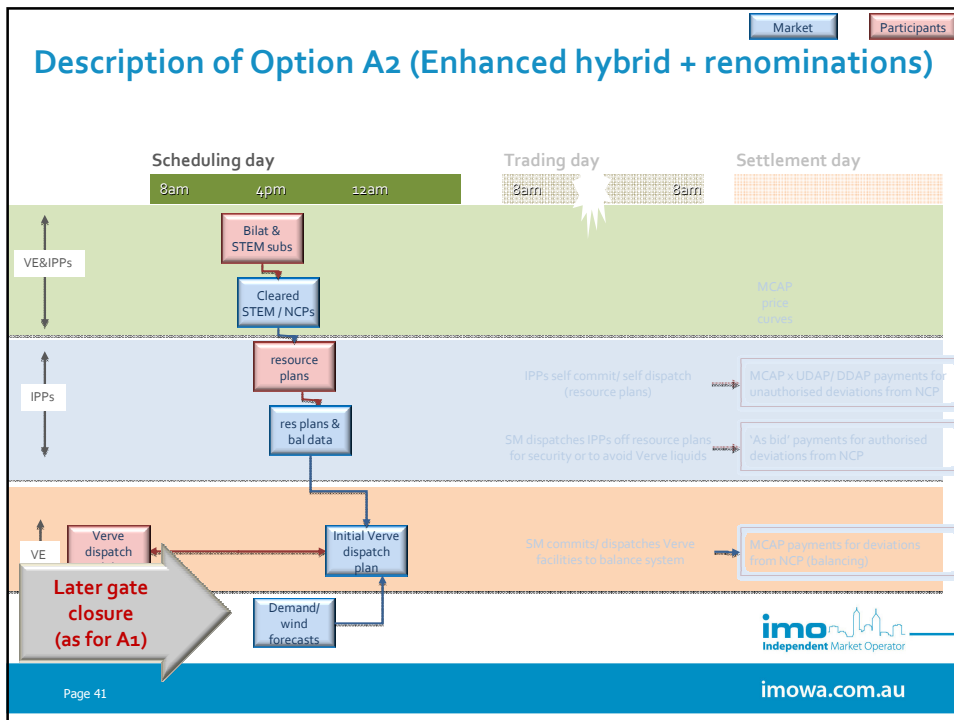
Discussion of Options – Overview

- Core design assumptions
- Overview of current design
- Options A1 & A2 (enhanced hybrids)
 - *Basic market cycles*
 - *Hybrid pricing and incentives*
 - *Participation in balancing*
- Options B (net dispatch) & C (gross dispatch)
 - *Basic market cycles*
- Distinguishing features of options

Core Design Assumptions

- **Rational contracting behaviour:**
 - *Including that:*
 - Vesting contract offers no special advantage or disadvantage to Verve or Synergy within STEM or Balancing
 - All contracts will be compatible with bilateral market design
- **Only address legitimate short term market design issues**
 - *e.g. recognise implications of gas market timelines but can't change gas timelines*
 - *Not addressing longer term capacity market issues (such as capacity refunds) in this phase*
- **All options to include (possibly in different forms)**
 - *Amendment of formation of STEM/balancing price*
 - *Amendment of cost allocation/incentives*
- **Avoiding unnecessary complexity/ improving transparency**





Hybrid pricing and incentives

- **Balancing price formation**
 - *Balancing price calculated from MCAP price curve*
 - *MCAP formation should be limited to balancing resources*
- **Market must signal over supply / de-commitment costs**
 - *Negative MCAP is practical in oversupply situation (permissible now but...)*
 - *Ought to be incentives for customer nominations and IPP resource plans, but currently:*
 - *IPPs are indifferent if sitting on resource plans*
 - *IPPs have no market cost exposure above their resource plans (off-peak UDAP = 0)*
 - *IPPs have incentives to drop below resource plan (off-peak DDAP = 1.1 x MCAP)*
 - *although would be 'unauthorised deviation' and subject to capacity refund*
 - *care needed here (next slide)*
- **Assessing potential pricing distortions generally taking account of:**
 - *DDAP /UDAP multiplier incentives*
 - *Pay as bid pricing in relation to Balancing Support Contracts*
 - *Interactions with capacity refunds*

Capacity refund interactions

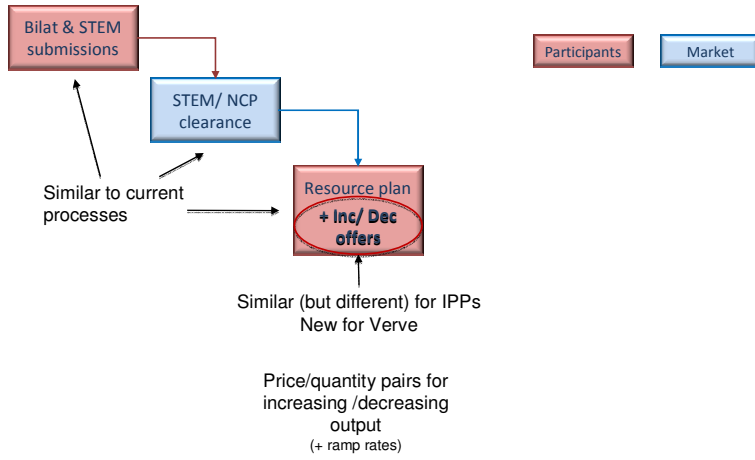
- **Capacity credit rules are equivalent to a contract with IMO**
 - *In return for a regular payment but subject to claw back in the event of non delivery*
 - *Participant agrees to present specified capacity to market at all times unless prior agreement made (i.e. SM approval of outage)*
- **Payment and claw back will be efficient if they reflect incremental cost to customers of incremental capacity**
- **Potentially dangerous to change the balance between capacity payment, claw back amount or conditions without careful analysis**
- **Issue is to be considered further in later phase**

Participation in balancing

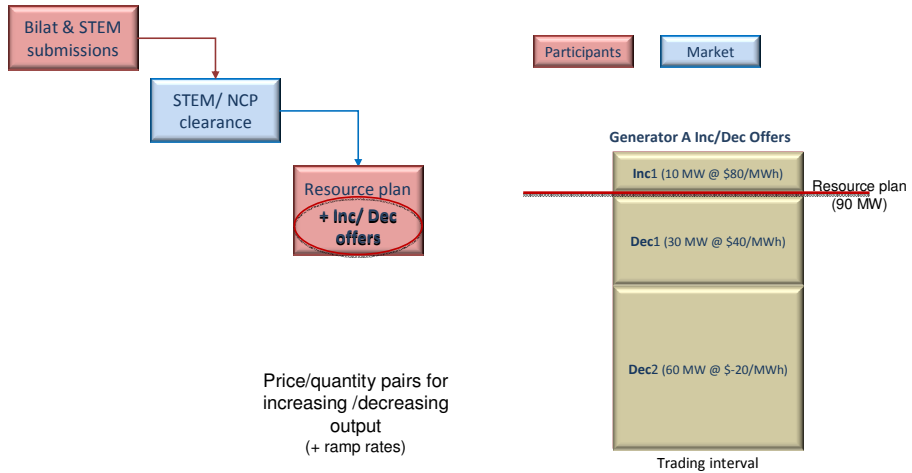
- Wider participation is clearly ideal
 - *Problematic under hybrid design*
 - *Unreasonable/ impractical burden on System Management under current arrangements*
- MRDT has identified best opportunities through balancing support contracts (BSCs)
 - *Especially minimum demand periods*
 - *Considering options/ criteria to enable BSC options to be called by SM and priced relative to MCAP balancing price curve*
 - *Leverage off existing rules (that provide for BSCs) as much as practical*
 - But need to ensure prices are appropriate and costs allocated appropriately
- Subject to costs and potential benefits assessments

Description of Option B (Net Dispatch)

Option B: Basic Net Dispatch Market Cycle



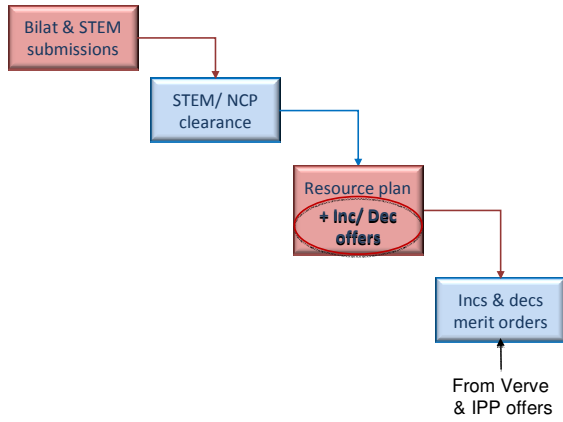
Option B: Basic Net Dispatch Market Cycle



Option B: Basic Net Dispatch Market Cycle

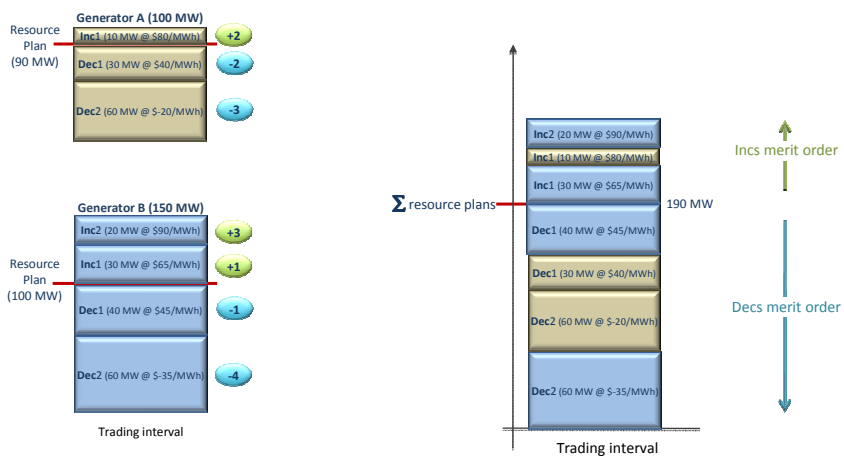
Participants

Market



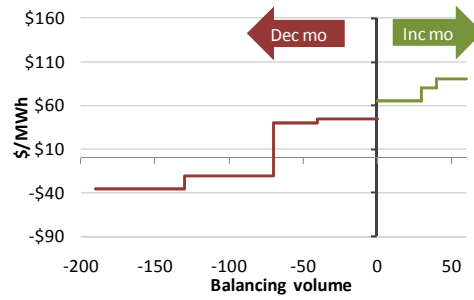
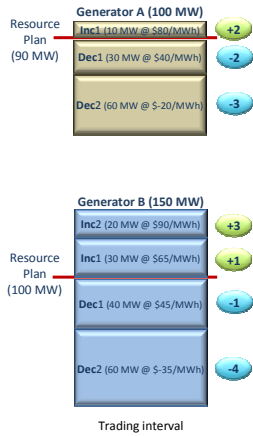
imo
Independent Market Operator

Option B: Basic Net Dispatch Market Cycle



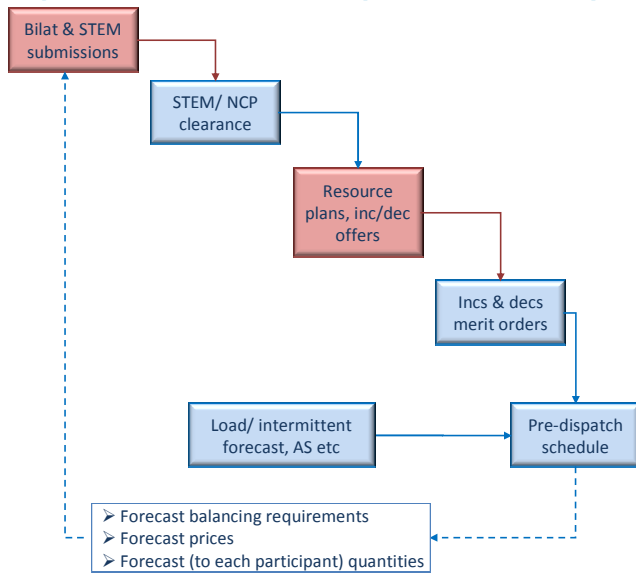
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Option B: Basic Net Dispatch Market Cycle

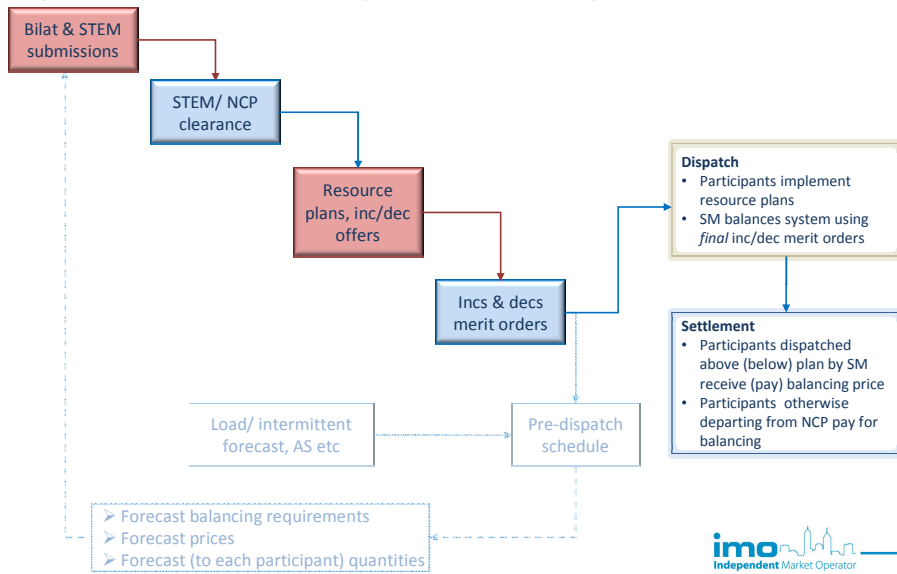


Option B: Basic Net Dispatch Market Cycle

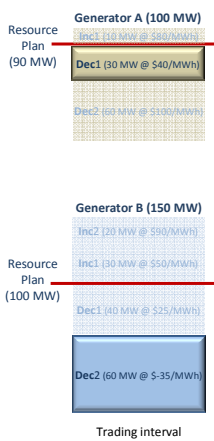
Participants Market



Option B: Basic Net Dispatch Market Cycle

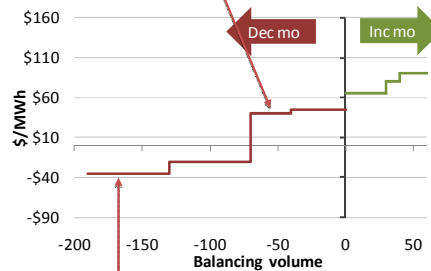


Option B: Basic Net Dispatch Market Cycle



Generator A Dec 1 offer

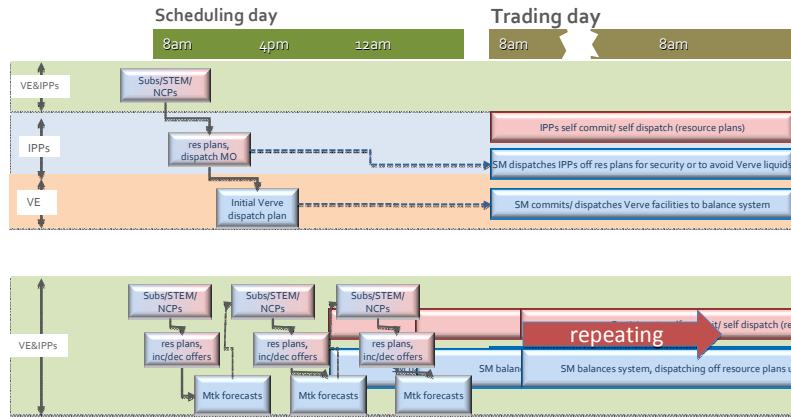
- Indicates preference to buy at balancing price of \$40/MWh rather than generate
- i.e. would cost more than \$40/MWh to generate



Generator B Dec 2 offer

- Indicates prepared to shut down unit if balancing price \leq negative \$35
- Would receive balancing payment

Option B: Net Dispatch Market Timelines



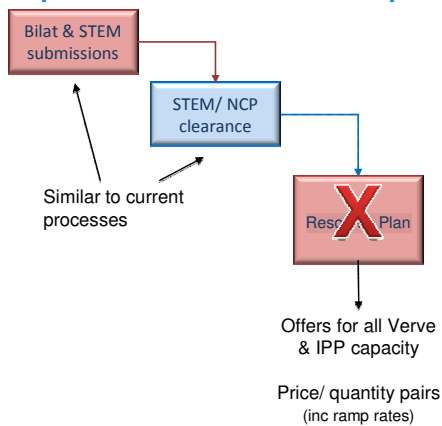
Shorter/ rolling gate closure

Description of Option C (Gross Dispatch)

Option C: Basic Gross Dispatch Market Cycle

Participants

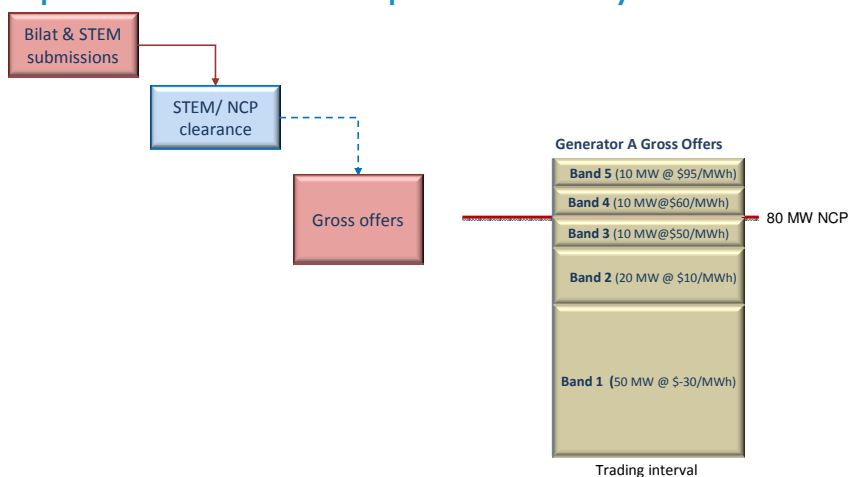
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Option C: Basic Gross Dispatch Market Cycle

Participants

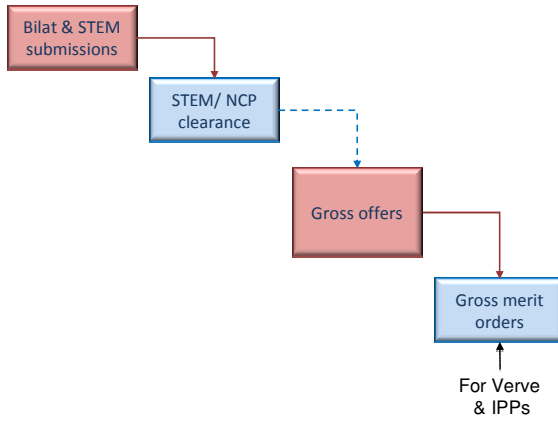
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Option C: Basic Gross Dispatch Market Cycle

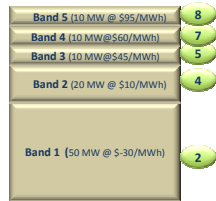
Participants

Market



Option C: Basic Gross Dispatch Market Cycle

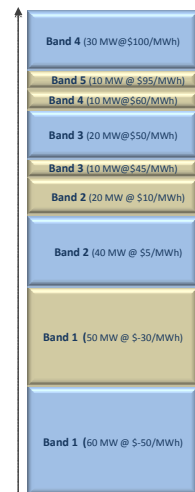
Generator A Gross Offers (100MW)



Generator B Gross Offers (150MW)



Trading interval

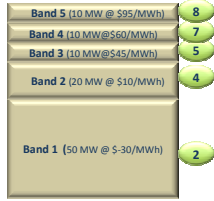


Gross merit order

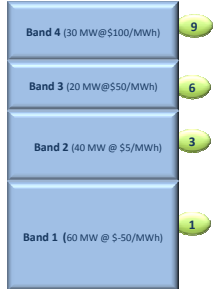
Trading interval

Option C: Basic Gross Dispatch Market Cycle

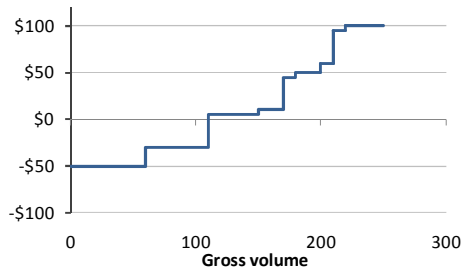
Generator A Gross Offers (100MW)



Generator B Gross Offers (150MW)



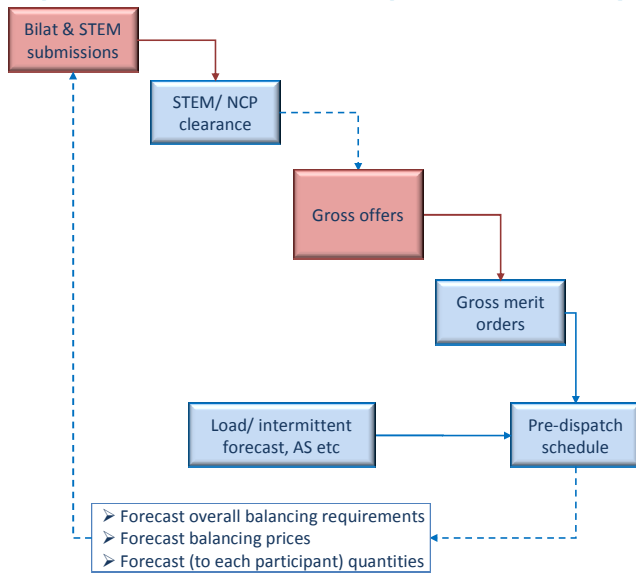
Trading interval



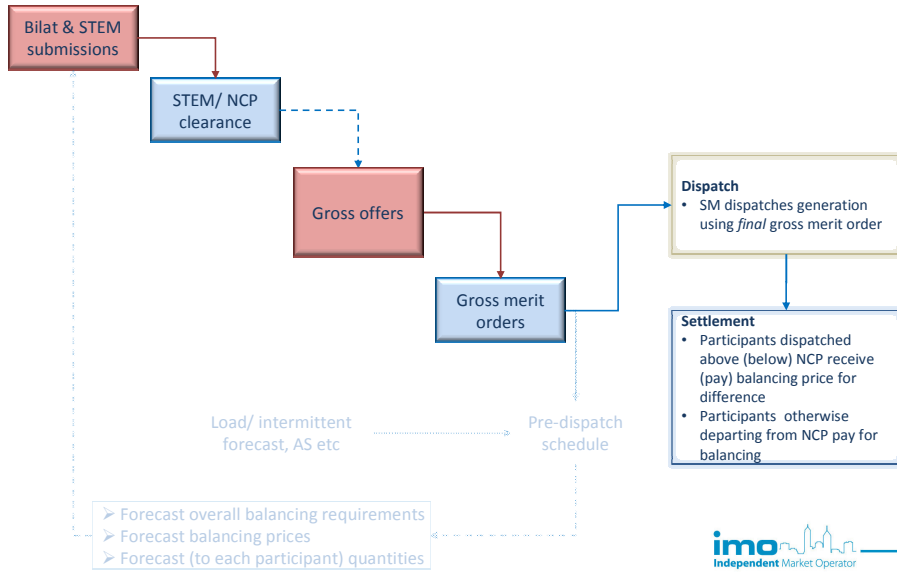
Option C: Basic Gross Dispatch Market Cycle

Participants

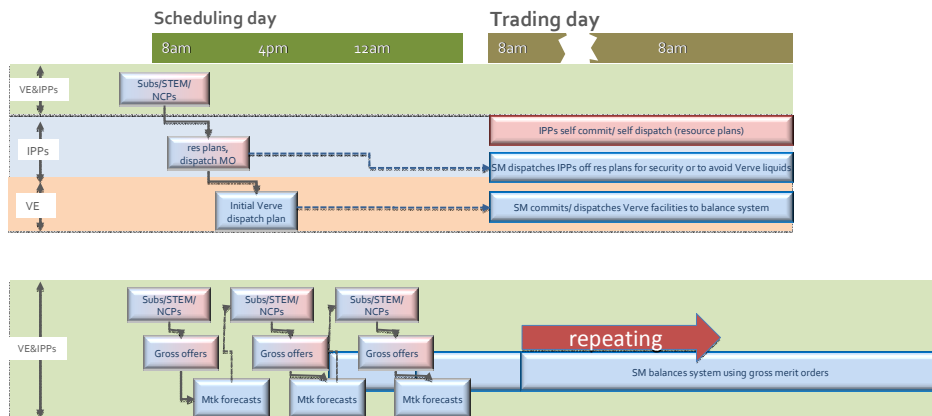
Market



Option C: Basic Gross Dispatch Market Cycle



Option C: Gross Dispatch Market Timelines



Shorter/ rolling gate closure

Distinguishing features of options

- In principle, gross or net dispatch could achieve:
 - *Same treatment of all participants*
 - *Greater separation/ clarity/ transparency regarding SM and Verve roles*
 - *Full participation in balancing/efficient dispatch*
 - In practice, net dispatch efficiency is more dependent on contracting arrangements/ flexibility
 - *Appropriate incentives through pricing and allocation of costs*
- Under normal circumstances, less SM/ VE flexibility under gross or net dispatch
 - *But SM right to intervene for security must be preserved under all options*
- Market scheduling/ dispatch/ pricing systems:
 - *Well developed for gross dispatch markets*
 - including co-optimised frequency reserves/ regulation markets
 - *More tailored/ bespoke requirements for net dispatch*
 - *Internalised scheduling/ dispatch systems under hybrid*

Distinguishing features of options (cont'd)

- Net dispatch is very dependent on participants establishing efficient contracting positions through trading and re-nominations
 - *Dispatch proceeds according to resource plan if nothing changes*
 - *Dispatch is efficient only if those plans themselves are efficient and dispatch rules allow for efficient adjustments (balancing)*
- Efficiency of gross dispatch is decided at time of dispatch
 - *Efficiency is dependent on pricing submitted for dispatch (and volumes)*
- Enhanced hybrid options (A1 and A2) can largely redress highest priority deficiencies around pricing but WEM remains a hybrid design

Break-out Sessions

Break out sessions

- **Process**
 - *Facilitated development of questions, comments*
 - *Return for lunch break and facilitators collate*
- **Issues**
 - *Including note of pre meeting input*
- **Questions and answers**

Responses to questions

Further open questions

Next steps