



Minutes

Transformation Design and Operation Working Group – Meeting 11

Time: 9.15am – 11.45pm
Date: 29 April 2020
Venue: Online meeting via teams

Attendees:

Name	Organisation	Name	Organisation
Aditi Varma (Chair)	ETIU	Patrick Peake	Perth Energy
Andrew Stevens	Perdaman	Paul Arias	Bluewaters
Aden Barker	ETIU	Peter Huxtable	Water Corporation
Ben Rose	Individual	Ashwin Raj	ETIU
Bobby Ditric	Lantau Group	Rajat Sarawat	ERA
Brad Huppatz	Synergy	Rhiannon Bedola	Synergy
Bronwyn Gunn	ETIU	Rodney Littlejohn	Tersum Energy
Oscar Carlberg	Alinta	Ross Davies	Western Power
Chris Knight	Yancoal	Shannon Hewitt	Future Grid Energy
Chris Wallace	Clean Tech Energy	Simon Middleton	AEMO
Clayton James	AEMO	Adam Stephen	Alinta
Dermot Costello	Clean Energy Council	Steve Gould	Community Electricity
Dev Tayal	Tesla	Tim Robinson	RBP Consulting
Dimitri Lorenzo	Bluewaters	Troy Santen	Stellata
Drew Harris	Simcoa	Adnan Hayat	ERA
Elizabeth Walters	ERA	Vincent Blondeau	Kleenheat
Emma Rowe	Department of Treasury	Wendy Ng	ERM
Erin Stone	Point Global	Wesley Medrana	Synergy
Gavin White	ERA	Gareth Williams	Alinta
Geoff Gaston	Change Energy	Rebecca White	ETIU
Geoff Glazier	Merz Consulting	Ben Connor	Synergy
Mena Gilchrist	ETIU	David Miles	Simcoa
Glen Carruthers	Western Power	Duncan Mackinnon	Energy Council
Graham Pearson	Australian Energy Council	Ignatius Chin	EMCA
Dora Guzeleva	EPWA	Iulian Sirbu	Infinite Energy
Irina Stankov	ERA	Jonathan Chambers	Synergy
Jake Flynn	ERA	Lynda Venables	Synergy
James Townsend	Lacour Energy	Matthew Fairclough	AEMO
Jason Froud	Synergy	Sonia Lokar	Alinta
Jo-Anne Chan	Synergy	Teresa Smit	AEMO
Joel Earnest	Department of Treasury	Neil Hay	Western Power
Judy Hunter	Western Power	Stephen Eliot	RCP Support
Justin Ashley	Synergy	Erik King	ERA
Steve Kruit	ETIU	Alex Cruikshank	Oakley Greenwood

Sam Lei	Alinta	Jenny Laidlow	RCP Support
Leon Kwek	AEMO	Tom Frood	Bright Energy Investments
Liz Aitken	Perth Energy	Dean Frost	Western Power
Luke O'Callaghan	Lavan Legal	James Swanson	Sapere Research
Mark Riley	AGL	Kris Lynch	Alinta
Martin Maticka	AEMO	Kae Choo	EY
Mike Thomas	Lantau Group	Linda Thevenot	Lacour Energy
Mark Timson	Energy-Tec	Quentin Jeay	Kleenheat
Natalie Robins	ERA	Sarah Silbert	AGL
Noel Schubert	ERA	Sabina Roshan	Western Power
Angeline Ong	ETIU	Sarah Rankin	Moonies Hill Energy
Jacinda Papps	Alinta		

Meeting minutes should be read in conjunction with meeting slides.

Item No.	Issue
1.	Agenda, ground rules and virtual meeting protocols
Slide 1-3	Aditi Varma (Chair) from ETIU opened the meeting and addressed the meeting agenda, ground rules and virtual meeting protocols.
1.	Actions from last meeting
	<p>The Chair provided an update on the 4 actions arising from TDOWG meeting 10 on 6 April 2020:</p> <ul style="list-style-type: none"> • Several market participants had requested clarification on a letter they had received from Western Power requesting information on the technical capability of their generation systems. Glen Carruthers (GC) from Western Power advised that the letter was not related to the WEM reforms. Western Power and AEMO were seeking information on generator settings and ride-through capability to ensure the system could withstand any future incidents, such as a recent incident where fires on several lines had caused line trips, and the South Australia blackout, where generator settings had caused several generators to trip. • The Chair provided clarification on the roles of Western Power and AEMO in modelling the available capacity in different parts of the network, to provide information for new generators. This had since been clarified in the Network Access Quantity (NAQ) Information Paper, available on energy.wa.gov.au. Ashwin Raj (AR) from ETIU clarified that the assigning of NAQ and NAQ modelling would be AEMO's responsibility, but Western Power would retain other existing modelling responsibilities as part of the connection process. • The Chair informed TDOWG that the treatment of existing facilities changing their configuration was still under consideration and would be discussed at a later meeting. • Aden Barker (AB) from ETIU provided an update on stand-alone power systems (SPS). AB had spoken to Kathryn Barrie at EPWA, who had informed that EPWA had been in contact with Western Power, Synergy and Horizon Power, as well as several private SPS providers, in preparing advice for the Minister for Energy. That advice had not yet been finalised, but there would subsequently be consideration of several options for SPS delivery, with the intention being to release a discussion paper within the next couple of months (noting that COVID-19 had already caused delays to the project and may continue to do so). In the meantime EPWA would be happy to meet with any market participants who would like to discuss individually. <p>Action: ETIU to provide update on the treatment of existing facilities changing their configuration at a future TDOWG meeting.</p>

2.	Rate of Change of Frequency (RoCoF) Limits for the SWIS
Slide 1-2	<p>Leon Kwek (LK) from AEMO presented on AEMO's approach to setting safe RoCoF limits in the new market.</p> <ul style="list-style-type: none"> The Market Settlements Information Paper had stated that prior to market start, AEMO would determine an upper RoCoF ride-through limit, above which no RoCoF Control service would be required. The slide pack aimed to collate all the information TDOWG would require to understand AEMO's approach to determining the initial safe RoCoF limit. Slides would be circulated after the meeting for TDOWG members to refer to in their own time.
Slide 3	<p>LK presented on the recent example of National Grid in the UK, who had recently contracted 12.5GWs for stability services for 6 years at a price of £328m (\$640m AUD).</p> <ul style="list-style-type: none"> The UK had a major load-shedding event in late 2019 with a 1GW contingency (~2% of system load). The WEM could potentially have a much larger problem because its largest credible contingency is around 8.5% of system load. Due to the size of the potential market, the WEM would require a more sophisticated approach than contracting for the service.
Slide 4-8	<p>LK presented the item agenda, key references, and the glossary and framework for the Frequency Control Service.</p> <ul style="list-style-type: none"> The technical reports on slide 6 give a detailed summary of current industry knowledge and best-practice for safe RoCoF limits.
Slide 9	<p>LK presented a chart demonstrating the concept of a secure operating zone.</p> <ul style="list-style-type: none"> The vertical 'Primary Reserves' axis represented the current Spinning Reserve service (Contingency Reserve in the new market). The horizontal inertia axis represented RoCoF. '6s response' was the equivalent of the NEM's Contingency Raise service. If a certain amount of response could be provided in the '2s and 6s response' band, then the operating zone would increase in size. The vertical 'RoCoF Limit (Hz/s)' line represented the baseline level of inertia required for system stability, regardless of the amount of primary reserves available. If a contingency occurred when system inertia was below the RoCoF Limit, then a generator tripping could cause a cascading effect on other generators, leading to system failure.
Slide 10-13	<p>LK presented on the use of speed factors for individual facilities to allow for a single market for Contingency Raise, and the decision to define a separate RoCoF Control service in terms of physical inertia.</p>
Slide 14	<p>LK presented on the decision to define the RoCoF Control service in terms of inertia and separate it from fast frequency response services.</p> <ul style="list-style-type: none"> Speed of response has communications and measurement issues, meaning that in practice inverter-based technologies need around a second to respond. This would not be impossible to fix but would be very difficult. Inverter-based technologies would still be credited for fast response through the Contingency Reserve service. <p>Questions:</p> <ul style="list-style-type: none"> GC: How are you measuring inertia? Currently I believe you are estimating it and basing your estimate of RoCoF on your inertia estimate? <ul style="list-style-type: none"> LK: A simplistic estimate based on the number of generators on the system is currently used. This is accurate enough for frequency control and to create a meaningful market. GC: It is still highly inaccurate and will need to be refined down the line due to the amount of money in the market. Will need proper measurement of inertia. LK: That's true, but the general rule is to start as simple as possible. If that proves not to work then we can introduce more complexity. Drew Harris (DH) from Simcoa: There appears to be little consideration of automated load shedding. Simcoa has been providing this service for many years with a 500ms response, and this is configurable. Will this service still be available for Simcoa to provide?

	<ul style="list-style-type: none"> ○ LK: Yes, we definitely want that. We recognise that load shedding is one of the most ideal responses. Facilities could be accredited for how quickly they could provide a response, with a performance bonus of some sort. • Tom Froud (TF) from Bright Energy Investments: I understand that the ARENA Hornsdale upgrade was to investigate inertia response - have any conclusions come from that project, and have you been in contact with the project team? <ul style="list-style-type: none"> ○ LK: Yes, we have made contact with them, along with SMA and Tesla. We're asking the questions but are yet to see confirmed data. It seems promising but still unknown if it makes commercial sense.
<p>Slide 15-18</p>	<p>LK presented on the RoCoF Limit definition.</p> <ul style="list-style-type: none"> • For Contingency Raise, generator headroom is the primary service being provided, with speed of response also being a contributing factor. RoCoF is provided by generator availability (the amount of headroom is inconsequential). • The base units for RoCoF are Hz/s, measured over a 500ms timeframe. • The worst recorded case in the SWIS was 0.44Hz/s. There have been no known system failures worldwide at 0.5Hz/s, so this can serve as the baseline for safe operation. • AEMO does not have information on the ability of systems to withstand RoCoF above 0.5Hz/s, so the safe limit will need to be set as low as possible in the first instance, and gradually increased over time if possible (given that setting the limit too high could cause total system failure). • At 3Hz/s, the service could probably be eliminated entirely (4Hz/s is achievable for inverter-based technologies). <p>Questions:</p> <ul style="list-style-type: none"> • Mark Riley (MR) from AGL: Does the service definition include the provision of the service time – if a battery can run for 15 minutes, and then needs charge time - what service are you getting? <ul style="list-style-type: none"> ○ Clayton James (CJ) from AEMO: The service definition for contingency raise includes a sustain time. It is intended that this be 15 minutes for the SWIS. ○ MR: I meant is the provider meant to be able to provide the next 15 min immediately or can they have a down time? ○ CJ: They don't have to be available for the next 15 minutes immediately, but if they did have down time they wouldn't be accredited for the service while they were down. This would need to be factored into dispatch.
<p>Slide 19</p>	<p>LK presented on limit considerations.</p> <ul style="list-style-type: none"> • AEMO is presented with a “chicken-egg” problem: it doesn't know what the actual safe limit is, and the only way to find out is through a live demonstration. If that demonstration takes place on the wrong side of the limit then the whole system could be brought down. <p>Questions:</p> <ul style="list-style-type: none"> • Geoff Glazier (GG) from Merz Consulting: Have AEMO reviewed the RoCoF results on smaller systems such as the NWIS that experience higher RoCoF levels? <ul style="list-style-type: none"> ○ CJ: We'd be happy to take a look at any NWIS data that may be available. ○ LK: We did not have access to any NWIS data, but we're keen to get data wherever we can. We have used South Australian data to inform our analysis, but references to previous system events have not gone into the level of detail we require. • Brad Huppertz (BH) from Synergy: We need to be cognisant that getting on the 'wrong side' of the RoCoF limit can cause catastrophic equipment failure. • GC: Using information from Ireland and the UK is useful but these systems are far bigger and stiffer than ours, particularly given the geographic area we cover. Should we not be analysing our own system? South Australia is currently planning to 3Hz/s. <ul style="list-style-type: none"> ○ Chair: There's only limited information available from other jurisdictions anyway. ○ GC: This is a very new problem, I understand the conservatism but it's going to be difficult or costly to achieve 0.5Hz/s on a small system which sometimes has less than 1GW system load. It will be interesting to see what South Australia are doing because they're probably ahead of most places on this issue. ○ LK: We've used the UK because data is readily available. We will try find the best information we can, and we can make it fit-for-purpose once the baseline is established. ○ CJ: We're designing something new, and there will be a trade-off between cost and going too hard too early. We're trying not to introduce a high cost service right away, and are aiming for a measured approach that eases the service in at low cost without crashing the system.

	<ul style="list-style-type: none"> ○ LK: We'll start at 0.5Hz/s and can gradually move up from there. We certainly wouldn't be comfortable jumping straight to around 3Hz/s. 0.5Hz/s is deliberately conservative but we'll make the case shortly for why it's a good starting point.
<p>Slide 20-27</p>	<p>LK presented on contingency size and inertial reserves.</p> <ul style="list-style-type: none"> • Larger contingency sizes reduce the size of the safe operating zone. • Moving from a 0.5Hz/s limit to 1Hz/s would open up a much broader safe operating range, allowing for much lower inertia on the system. • Historically, the SWIS has been beyond the 0.5Hz/s limit only around 0.1% of the time. • 1Hz/s is well beyond what has been observed to date. If the safe zone could eventually be pushed out to that level then the RoCoF Control service would likely no longer be required.
<p>Slide 28-31</p>	<p>LK presented on generators' RoCoF ride-through capability.</p> <ul style="list-style-type: none"> • AEMO will aim to incentivise generators to provide a self-assessment of facility RoCoF ride-through capability. • If facilities could demonstrate higher RoCoF tolerance then they would be exempted from paying for the service. • Slide 31 provides a practical turbine governor example that would be highly relevant for thermal generators. <p>Questions:</p> <ul style="list-style-type: none"> • TF: Is the same self-assessment and declaration being used/proposed in the NEM? <ul style="list-style-type: none"> ○ LK: No, but we're catching up regularly with NEM AEMO to update them on our proposals and receive their input.
<p>Slide 32-33</p>	<p>LK presented on the proposed RoCoF limit schedule.</p> <ul style="list-style-type: none"> • Phase 1 (Market Start): Operate within known safe 0.5Hz/s limit. • Phase 2 (+ 2-5 years): Move to 1Hz/s, with cost allocation moving to dynamic dispatch input. <p>Questions:</p> <ul style="list-style-type: none"> • Oscar Carlberg (OC) from Alinta: Will the service only be procured where we are outside this RoCoF safe limit? <ul style="list-style-type: none"> ○ Leon, Yes, 100%. In the early days we expect that to only be hours per day (or less – maybe only hours per year). • Patrick Peake (PP) from Perth Energy: What if a generator cannot cope with 1Hz/s? Does it just have to trip off? <ul style="list-style-type: none"> ○ No, the 1Hz/s limit in phase 2 pertains to loads and the cost allocation for the service. If a synchronous generator's tolerance was 0.6Hz/s, then AEMO would dispatch to 0.6Hz/s and the service would be procured to the level required to maintain system stability. The 1Hz/s limit would be relevant for cost allocation for loads. • GC: When you refer to non-declared loads does this mean market registered loads? <ul style="list-style-type: none"> ○ LK: Not a market term, this just means any loads that haven't declared (mostly residential in practice). • OC: Given the experience in Ireland and the proposed way of measuring inertia, will inverters and storage facilities be allowed to provide inertia (RoCoF control) in the market, or only conventional synchronous generation e.g. turbines? <ul style="list-style-type: none"> ○ LK: The decision at this point is to open the service to synchronous generation only (slides cover that). ○ Chair: The service hasn't been defined to deny them but physically they just can't. ○ GC: In the UK and Ireland wind provides it. This hasn't been considered in Australia yet. ○ CJ: They will be able to provide contingency response, just not the physical inertia required for RoCoF. ○ Leon – It isn't out of the question, but it isn't ready just yet. We'll keep an eye on it for the future. • GG: RoCoF service is for the sub 0.2-0.5 second response time. Currently only inertia can provide this.
<p>Slide 34</p>	<p>LK provided a summary of the presentation. The Chair thanked TDOWG and asked for any questions or comments to be sent to TDOWG@energy.wa.gov.au, noting that more work was still to be done on</p>

	providing information about accreditation of ride-through capability, and examples on RCS settlement which would be brought to TDOWG at a later date.
3.	Storage participation in the Reserve Capacity Mechanism (RCM)
Slide 1-3	<p>Bronwyn Gunn (BG) from ETIU introduced the agenda for the presentation.</p> <ul style="list-style-type: none"> • ETIU would go to the Taskforce at the end of May with design principles for storage participation in the RCM. • Detailed design in consultation with industry would follow through to July. • The presentation would focus on a high-level policy principles that would be taken to Taskforce – seek to defer matters of detailed design in the interests of time <p>Action: ETIU to take design principles for capacity accreditation for storage to the Taskforce at end of May, with further consultation with industry to follow from May until July.</p>
Slide 4-7	<p>BG presented on the current capacity accreditation methods and obligations for Scheduled Generators, Intermittent Generators and Demand Side Providers and the issues with applying these to storage. Noted that:</p> <ul style="list-style-type: none"> • Storage wouldn't meet the current fuel supply, transport and availability obligations for Scheduled Generators. • Assumptions for Intermittent Generators about output in adjacent trading intervals being correlated do not necessarily translate as well to storage given controllability. It is also reasonable to impose some obligations on storage facilities given their controllability. • Do not want to treat storage facilities like a load/demand side provider for the purposes of capacity accreditation <p>Questions:</p> <ul style="list-style-type: none"> • Noel Schubert (NS) from the ERA: The new Relevant Level Methodology (RLM) can be used for storage – I suggest you talk to Matt Shahnazari at the ERA. <ul style="list-style-type: none"> ○ Chair - Thanks Noel, we'll pass that advice back to Bronwyn and Ash.
Slide 8-12	<p>BG presented on an alternative method for accrediting storage facilities:</p> <ul style="list-style-type: none"> • Derating: Determining the nameplate capacity by assessing the maximum output of a facility the duration over which they can sustain that. Then applying derating factors to facilities of different duration to account for the different contributions that resources of different durations make to system reliability. • Noted that the premise behind derating is that a facility that has a limited duration can only help to service demand for a portion of a peak event –the longer duration the more of the peak event it can help service. In terms of how this would apply in WEM – the greater portion of peak event that a storage facility can service the more they should get paid in capacity revenue. • BG discussed examples of derating factors from the UK and Ireland, • ETIU will recommend the de-rating approach to the Taskforce and consult with industry on the methodology that should be used to implement it. Noted that regardless of the methodology that is chosen, the derating factors for resources of different durations will need to be based on an analysis of what peak events look like in the SWIS and the corresponding contribution that storage facilities of different durations make to meeting that. • The current thinking is that the methodology would be described in the WEM Rules and the exact derating factors would be calculated periodically by AEMO, as is the case with the RLM. This would aim to provide certainty to market participants about how their derating factor would be calculated, but allow for actual factors to change in response to market conditions.
Slide 13-15	<p>BG discussed Reserve Capacity Obligation Quantity (RCOQ).</p> <ul style="list-style-type: none"> • BG noted that an RCOQ is a mechanism to ensure that facilities who have been assigned capacity credits make that capacity available to the market. Certainty about availability of capacity is necessary to ensure the Planning Criterion can be met. • An RCOQ requires facilities to bid energy into the market (at a level equal to or greater than their capacity credits) and to respond if dispatched. If a facility fails to do either of these things it will have to pay capacity refunds • In considering this issue, the ETIU has been considering the balance between ensuring that obligations are in place that provide certainty that capacity that has been taken into account in AEMO's assessment of whether it can meet the planning criterion is available when its needed,

but also recognising the storage facilities cannot be available all the time and can provide a valuable range of services in the market.

- To one end of this spectrum is complete flexibility, which might look something like AEMO setting the RCOQ on a day by day or week by week basis based on system conditions. To the other end is a fixed RCOQ more akin to demand side providers, where a facility is told in advance when that it has an RCOQ during a certain window every day for the capacity year.
- In weighing this up, the ETIU have tried to consider the benefits to both participants and AEMO at both end of the spectrums. Flexibility offers some benefits to rapidly change requirements based on system conditions, but requires more analysis by AEMO on an ongoing basis and can also make it more difficult for participants to manage their operations if their requirements are not known in advance. A more fixed obligation doesn't offer those more dynamic benefits but offers more certainty to both participants and AEMO in operational planning.
- The ETIU will propose to Taskforce that storage facilities will have an RCOQ for a limited, defined number of hours per day. During this window, facilities would either be obliged to make energy available to the market and respond if called, or pay refunds if they were unable to do so.
- Obligations would be determined and advised in advance, and may change (in terms of the time of day of the obligation, not the absolute length of time) on a seasonal basis to reflect changing load profiles and associated need for capacity. The ability to change the obligations on a shorter-term basis to respond to changing or unexpected system conditions would not be ruled out but considered in detailed design.
- Reiterated that an RCOQ requirement does not mean storage facilities would be centrally controlled or dispatched out of merit.
- Noted that in the new market, facilities with Capacity Credits (storage or otherwise) that are accredited to provide ESS could bid into both the energy and ESS markets, and if they were dispatched for ESS they would still be deemed to have met their RCOQ as they were available for energy dispatch if needed.

Questions:

- Liz Aitken (LA) from Perth Energy: The rate of return on capital costs is dependent on price arbitrage for storage facilities – how will the time of day settings for RCOQ take into account that perhaps storage facilities will want to charge at the times of day where prices are low and discharge where prices are high?
 - BG: We envisage that RCOQ would correlate with pricing peaks, as AEMO will want storage facilities to be available during peak times which is typically when prices are higher.
 - LA: This is theoretically true but very dependent on forecasting. If the forecast is wrong where are the flexibility allowances for that? Wouldn't it be better to say that they need to be available for X hours per day, regardless of when it is?
 - BG: We are talking about the RCM in particular here, and storage facilities, batteries in particular, have the flexibility to make choices based on energy revenue, RCM revenue/refunds, ESS etc. We need a capacity-specific obligation to ensure storage capacity is available when it is actually needed to meet demand. Without this, batteries may make decisions about when to charge or discharge based on revenues in other market such as ESS.
 - LA: I agree but that requires accuracy from AEMO. Batteries are extremely marginal at present because RCM payments for storage are very low. The business case hinges on ESS revenue, rather than capacity revenue. We may not get batteries in the system at all if the revenue streams aren't there to support them.
 - BG: noted the issues raised and took the comments on notice.
- DH: The 8am - 8pm time frame for minimum RCM obligations is becoming more irrelevant as the impact of solar is increasing.
 - BG: This is a reasonable point but the scope of work for this project is to incorporate storage into the RCM. Expanding the scope to review other issues with the RCM may jeopardize the ability to do that. That's not to say it couldn't be addressed at a later date in response to a rule change request.
- MR: There is also the issue of output vs duration, which could be dynamic.
 - BG: A storage facility could go to AEMO and nominate the maximum output and duration for which that maximum output can be sustained. That would be the basis upon which RCOQ would be assessed.
- MR: AEMO may want flexibility for system security purposes.

	<ul style="list-style-type: none"> ○ BG: We want to speak to industry participants one-on-one about the relative benefits of providing more flexibility to AEMO as a part of detailed design ● Rhiannon Bedola (RB) from Synergy: How do you imagine refunds would work for batteries? <ul style="list-style-type: none"> ○ BG: I'll be addressing that next
<p>Slide 16</p>	<p>BG presented on reserve capacity refunds.</p> <ul style="list-style-type: none"> ● BG noted that refunds for demand side providers are adjusted to reflect their more limited availability requirements. ● ETIU proposes that storage facilities would have refunds calibrated to reflect that they will also have fewer availability requirements. Exact nature to be determined once RCOQ are settled.
<p>Slide 17-19</p>	<p>BG discussed treatment of hybrid storage/generation facilities.</p> <ul style="list-style-type: none"> ● Noted a hybrid facility could be a conventional generator/storage combination, or an intermittent generator/storage combination ● ETIU proposed that for either, the two components of the facility would be assessed separately using the relevant accreditation methods, and the sum of the certified reserve capacity from each of those individuals assessments would be the total eligibility for capacity credits, which will be assigned within the network access quantity framework that has been developed as part of the Energy Transformation Strategy. ● For hybrid intermittent/storage facilities, this approach will require breaking up historical output behind the meter for RCM accreditation purposes, as the RLM cannot be calculated without knowing what the intermittent component's historical output was – taking the output at the connection point would include the battery output. There are several options for doing this, and this will be explored further in detailed design. ● If the facility is awarded capacity credits, then the RCOQ for each component would apply at the relevant times. For example, for a conventional generation/storage hybrid facility, the RCOQ associated with the scheduled generation component would apply at all times, whereas the RCOQ associated with the storage component would apply in relevant intervals. ● RCOQ would be summed and apply to the facility as a whole for each interval. If an aggregated facility was meeting the sum of its individual RCOQ requirements in their entirety then the facility would be deemed to have met its overall requirements. If not, then refunds would apply. <p>Questions:</p> <ul style="list-style-type: none"> ● Jenny Laidlaw (JL) from Rule Change Panel Secretariat - Would you need separate metering for separate accreditation <ul style="list-style-type: none"> ○ LA: Good question - will the definition of a facility be changed? Not just in terms of registration, but also dispatch: currently if there are several connections behind a single meter, their dispatch is aggregated. ○ BG: Hybrid facilities will be registered in accordance with the principles set out in the registration framework paper. The mechanism for separately accrediting different elements of a hybrid facility may require changes to the rules, and probably some definitions to link accreditation requirements too, but the new registration framework should be flexible enough to allow for it to be done, given that registration and capacity accreditation will no longer be formally linked. Regarding dispatch, a facility would bid as the aggregated facility would usually, but if it didn't meet its RCOQ as a whole then it would pay refunds. ○ LA: I may discuss this with you offline, there could be some issues to work through. ● Andrew Stevens (AS) from Perdaman: The sum of the facility Certified Reserve Capacity (SG_CRC plus ESS_CRC) may be greater than the facility DSOC. Would CRC therefore be capped at min [SG_CRC plus ESS_CRC, DSOC]? <ul style="list-style-type: none"> ○ BG: A facilities certified reserve capacity does not automatically translate to Capacity Credits. In practice facilities would not be assigned Capacity Credits above their DSOC/above what the NAQ framework allows for. As RCOQ would only apply up to the level of assigned Capacity Credits, not certified reserve capacity this would not be an issue. ● Dev Tayal (DT) from Tesla: Is there any consideration for RCM to value flexibility characteristics that different assets provide? - i.e. uplift for storage to recognise ability to rapidly respond (increasingly important as demand/supply becomes more dynamic). <ul style="list-style-type: none"> ○ BG: Within the RCM framework we've been looking at the ability of storage to provide energy at peak times (which is the purpose of the RCM as currently constructed).

	<p>Storage is also able to find value in other markets providing other services, where those characteristics such as flexibility will be compensated.</p> <ul style="list-style-type: none"> • DH: Solar and wind should not be able to attract Capacity Credits as their output cannot be guaranteed. If storage is installed, then it is the capacity of the storage facility that determines the guarantee of energy able to be served. <ul style="list-style-type: none"> ○ The purpose of the RLM is to estimate what an intermittent facility is likely to be able to provide at peak times, based on historical output, and adjust their capacity credits accordingly. For hybrid storage/intermittent facilities, we will split up the two components behind the meter from an accreditation and RCOQ perspective to reflect that storage has greater control over its output. • RB: If a hybrid facility has total certified capacity larger than its DSOC, how would capacity credits be apportioned between the different components? This will affect what the RCOQ obligations are. <ul style="list-style-type: none"> ○ BG: Good question, we would need to work through that issue with industry. Taken on notice. • JL: What effect will there be on STEM obligations? <ul style="list-style-type: none"> ○ BG: That will also require consideration. Taken on notice. <p>Action: ETIU to determine how to apportion RCOQ for hybrid facilities where total capacity exceeds the DSOC.</p> <p>Action: ETIU to determine the effects of RCOQ for hybrid facilities on STEM obligations.</p>
<p>Slide 20-21</p>	<p>BG presented on IRCR for storage facilities.</p> <ul style="list-style-type: none"> • Market participants (including storage facilities) that consume during relevant intervals will incur an IRCR. Consideration will need to be given to circumstances where a facility is instructed or directed to consume during a peak. <p>Questions:</p> <ul style="list-style-type: none"> • DH: Will a facility providing capacity and attracting Capacity Credits still attract an IRCR? <ul style="list-style-type: none"> ○ BG: Yes, this is entirely possible. If a facility gets Capacity Credits but is consuming at peak intervals then it would incur an IRCR.
<p>Slide 22-23</p>	<p>BG presented on the review mechanism for the treatment of storage in the RCM.</p> <ul style="list-style-type: none"> • A requirement to review the arrangements would be added to the WEM Rules. <p>BG thanked TDOWG and asked for any questions or comments to be sent to TDOWG@energy.wa.gov.au, noting that the next step was for ETIU to go to the Taskforce with its recommendations, after which there would be further consultation with industry between May and July. ETIU would be reaching out to market participants but they were welcome to contact ETIU in the interim.</p>
	<p>The Chair closed the meeting, noting that the planned final agenda item on the development of Market Procedures would instead be discussed at the next WEM Reform Implementation Group meeting on 7 May 2020.</p> <ul style="list-style-type: none"> • The Chair noted that the Taskforce had met on 24 April 2020 and had endorsed the next set of Taskforce papers for publication, including papers on the supplementary procurement mechanism for ESS, GPS compliance and the monitoring and compliance framework for the new WEM. • The Chair noted that the governance of constraint equations amending rules had been endorsed by the Taskforce and would be put on the EPWA website for a week for industry to note amendments made following previous consultation, prior to them being taken to the Minister for Energy for implementation. • The Chair reminded TDOWG that another TDOWG meeting would be held the next day, on 30 April 2020, with Jai Thomas from ETIU presenting on the DER Roadmap. • The Chair noted that slides would be made available shortly and asked for any extra questions to be sent to TDOWG@energy.wa.gov.au.