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Access Schemes are a key part of the NSW Government's work to coordinate and encourage investment in Renewable Energy Zones (REZ) and realise the objectives of the Electricity Infrastructure Roadmap and enabling legislation. The Central-West Orana REZ Access Scheme will be the first of its kind in the National Electricity Market.

The Department has published the Central-West Orana Renewable Energy Zone Issues Paper (the Issues Paper) to facilitate consultation on the access scheme models being considered for the Central-West Orana REZ. This form is for use by stakeholders who wish to make a submission on the Issues Paper to provide feedback to the Department. This form is not required to have your say on the Issues Paper - the Department also welcomes free form submissions.

Submission response options

We encourage stakeholders to use this form to respond to the specific questions raised in the Issues Paper. This will help us interpret and incorporate your responses into our decision making process.

We also welcome free form submissions and responses instead of, or in addition to, this submission form.

Please email your submission form and/or free form response to: rez@planning.nsw.gov.au with 'CWO REZ Access Scheme Issues Paper' in the subject line. Please identify if you would like your submission to be confidential or anonymous.

Disclaimer

The Department encourages publication of submissions to build transparency in the decision-making process and ensure that a variety of views are understood by the public and relevant stakeholders.

Providing submissions is voluntary, is not assessable, and will not impact an entity's participation in, or be used in the assessment of, any future procurement or competitive process regarding the Central-West Orana REZ or other NSW Government programs.

All submissions will be made publicly available on the Department's website unless a submission author indicates a preference below for confidential treatment. In the absence of an explicit declaration to the contrary, the Department will assume that all information can be made public.

The Department may disclose appropriate confidential information provided by stakeholders to:

- the NSW Minister for Energy and Environment or Minister's office
- the NSW Ombudsman, Audit Office of NSW or as may be otherwise required for auditing purposes or Parliamentary accountability
- directly relevant Department staff, consultants, professional service providers and advisers
- other parties where authorised or required by law to be disclosed.

Participants should also be aware that provisions of the *Government Information (Public Access) Act 2009 (NSW)* may apply to any documents submitted (and information should be submitted on that basis) and to any summary report compiling key information and feedback.

Submissions may also be shared with the Australian Energy Market Operator, Australian Energy Market Commission, Australian Energy Regulator, the Energy Security Board, TransGrid, the Clean Energy Finance Corporation, Australian Renewable Energy Agency, Essential Energy, Endeavour Energy and AusGrid to better understand and respond to issues raised. Please make

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clear in your form response below or otherwise in your submission if you do not want your submission to be shared with the above parties.

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Submission type	<input type="checkbox"/> Individual <input checked="" type="checkbox"/> Organisation <input type="checkbox"/> Other Click or tap here to enter text.
Approving author name	K an Wentrup
Organisation	UPC \ AC Renewab es
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Stakeholder group	<input checked="" type="checkbox"/> Energy generation <input checked="" type="checkbox"/> Energy storage <input type="checkbox"/> Ancillary services <input type="checkbox"/> Electricity distribution provider <input type="checkbox"/> Transmission provider <input type="checkbox"/> Energy industry/market body <input type="checkbox"/> Financial institution of financial services <input type="checkbox"/> Consumer advocacy <input type="checkbox"/> Government <input type="checkbox"/> Individual <input type="checkbox"/> Other (please specify) Click or tap here to enter text.

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Confidentiality and submission publication preferences

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Some confidential submissions may be shared with the Australian Energy Market Operator, Australian Energy Market Commission, Australian Energy Regulator, the Energy Security Board, TransGrid, the Clean Energy Finance Corporation, Australian Renewable Energy Agency, Essential Energy, Endeavour Energy and/or AusGrid to better understand and respond to issues raised. Would you like your submission to be kept confidential from these parties?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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Questions

The fillable fields for answers to these questions will expand to accommodate the length of your response.

1. Objectives and evaluation

Question 1: If the CWO REZ Access Scheme delivers on the proposed objectives and benefits, how would connecting projects value connecting under this Scheme rather than elsewhere under current NEM network access arrangements? Should proposed benefits be given weightings, and if so, what should these be?

- Better coordination of investment in itself will not mitigate risk of curtailment/MLF reduction if the curtailment occurs due to projects connecting outside of the REZ. To improve this aspect, UPC encourages the NSW Government to take the time to identify potential curtailment issues outside the REZ during the development of the Access Scheme and incorporate specific measures to address these, thereby further encouraging investment.
- Curtailment risk outside the REZ will likely be seen to be a risk by financiers, so the NSW Government must recognise the potential for this to discourage participants from placing a high value on the capacity rights to be auctioned off. Put simply, if the capacity rights are not “fully firm”- both within and outside of the REZ - then they may be seen to have limited value and investors will be reluctant to pay for them.
- UPC\AC has previously shared information with DPIE regarding specific relatively low cost augmentations that could be made to the 500kV network located West and North-West of Sydney (i.e. between the CWO REZ and the Regional Reference Node). Further, the Government could direct TransGrid to assess the cost of removing the remaining limitations on the 500kV network by completing the “loop”, which would come at a more significant cost.
- If these augmentations outside of the REZ are not considered to be cost-effective to enable the REZ participants to have guaranteed protection against curtailment, some form of protection scheme should be considered further that compensates purchasers of firm access rights, at least for a period of time, to enable the desired investment.
- Better coordination of investment in connection assets should reduce costs for participants in the REZ, compared with each generator paying for its own connection assets, leading to efficient utilisation of shared network assets. This should lead to reduced capital costs/MW installed due to less investment in/duplication of connection assets, by replacing multiple private lines, substations

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	with a shared transmission link / connection hub for example.
Question 2: What, if any, additional benefits should the CWO REZ Access Scheme deliver to provide value to connecting generation and storage projects?	Click or tap here to enter your answer to question 2.
Question 3: Do you agree with the proposed evaluation criteria? What, if any, additional criteria should be considered?	Click or tap here to enter your answer to question 3.

2. Access scheme models

<p>Question 4: Which of the shortlisted models presented is preferred? Which best balances the need to deliver value to investors with the need to maximise utilisation of the REZ, and together achieve the access scheme's objectives?</p> <p>In particular, does the 'non-firm' connection right, under Option 1 provide sufficient certainty to investors to be of value? If it does not, is this outweighed by the increased utilisation of the REZ that would result under such non-firm connection rights?</p>	<ul style="list-style-type: none"> On balance, Option 2b is our preferred option. The main driver for this is UPC considers it is the best option to maximise development of renewables in the REZ. It will allow a greater mix of technology to be developed in the REZ and provides financial compensation for any curtailment that should assist with financing projects. If well-designed and the access rights are considered "fully firm", financiers will have greater confidence that there is a mechanism to manage congestion risk. See our earlier comments about the need to consider a way to address congestion risk outside of the REZ – without this, there is a significant risk that financiers will undervalue Tier 1 rights. While Option 1 would be the simplest and quickest model for implementation there is the risk that the task of matching project capacity, generation profiles and transmission capacity would be more difficult and either lead to over investment in transmission (i.e. gold plating) or, in the other extreme, higher than anticipated curtailment if the transmission capacity is insufficient for the as-built generation mix.
<p>Question 5: Are there other access models that you consider would be superior to the shortlisted models in this paper? If so, what are these models, and what are their strengths in comparison to the shortlisted models?</p>	<p>The NSW Government is advised to consider examples of systems overseas (e.g. Germany) where renewables are given preferential and guaranteed access to the network in general. That is, if there is congestion renewables are dispatched first, and coal plants are run back. While we understand that the main focus is on the access regime within the REZ, it is obvious that encouraging investment could go further if the Government also addresses congestion risk outside of the REZ.</p>

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<p>Question 6: How could the characteristics of either Option 1, 2A or 2B be adjusted to improve them in a manner that achieves the access scheme's objectives?</p>	<ul style="list-style-type: none"> Consideration is required on how the eventual option would integrate with the COGATI reforms or ESB's post-2025 market design process, particularly if the overarching market framework moves to other models other than those implemented in a REZ. While we think that the Access Scheme implemented for the CWO REZ should as best as possible dovetail into the broader future NEM access framework, we also believe that the NSW Government should not be afraid to "go it alone" if there is no clear sign of momentum of the latter by say the end of 2021. The demonstration effect and learnings from designing and setting rules in place for the CWO REZ Access Scheme and running the initial capacity auctions could be beneficial in itself.
<p>Question 7: Characteristics such as more granular access rights (for example, rights defined in five-minute intervals) and tradeable rights can provide flexibility to access right holders, but also make the access scheme more complex. How should the trade-off between flexibility for access right holders and simplicity of the access scheme be assessed? Which better achieves the access scheme's objectives?</p>	<ul style="list-style-type: none"> UPC does not consider that more granularity (i.e. 5 minutes) is needed in this model and hence setting the time period to a 30 minute or even 1 hour interval should be sufficient (i.e. Option 2b). A flat 24 hour right (i.e. Option 2a) risks the rights being under-utilised and less valued in the auctions because it would force wind and solar farms (and potentially storage) to hold access rights for periods that are not needed. Access rights auctions should be limited to market participants (i.e. avoid financial institutions, brokers etc buying them up). Trading in the secondary market could be more flexible.
<p>Question 8: If not nameplate capacity, what is the appropriate level of capacity that should be used to determine requirements for access rights coverage that would better achieve the scheme's objectives? If a Probability of Exceedance (POE) value is used, what process should be used to verify this?</p>	<ul style="list-style-type: none"> Nameplate capacity is probably the best approach that aligns to the connection application and approved connection capacity in generator connection agreements. It is noted that a requirement of the Generator Performance Standards is that generators must be able to maintain Continuous Uninterrupted Operation (CUO), and as such the nameplate capacity of the generator has some "headroom" built into it, which cannot be counted towards the maximum transfer capability of the plant. This should also be reflected in the nameplate ratings assumed for the overall REZ capacity rights auctions.
<p>Question 9: How should the allocation of access rights to hybrid (storage plus generation) assets be approached? What 'shape' of access rights would suit a hybrid asset? How could projects</p>	<ul style="list-style-type: none"> Hybrid generators would be particularly suited to Option 2b as this gives the maximum flexibility for the owner to "sculpt" the access rights it procures to the intended dispatch profile

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<p>which use some of their maximum capacity 'behind the meter' be accounted for in determining the appropriate level of capacity for access rights coverage?</p>	<p>(regardless of what combination of generator + storage).</p> <ul style="list-style-type: none"> For a hybrid generator, if the maximum transfer/export capability of the asset covers both the generator and the storage (e.g. 100 MW solar farm + 50MW battery) then the combined total (150MW) should determine the assess rights required. Some hybrid plants may be configured differently, such that the battery helps to make up for dips in generation, but is not in addition to the maximum nameplate capacity of the generator. Behind the meter charging should logically only be treated in a special way if the battery system is not able to charge from the grid at all (e.g. would be relevant for a DC-couple system).
<p>Question 10: Is there a minimum term (in years) for which access rights would need to apply to benefit project finance?</p>	<ul style="list-style-type: none"> Ideally the access rights should be for the life of the asset, which is 20 - 30 years in the financing sense. At a very minimum, financiers would be likely to require 10 years of certainty in order for the Access Scheme to support project financing.

Option 1: Limited physical connection model

<p>Question 11: Under Option 1, connected generation capacity could be capped above the capacity of the REZ Shared Network. How should generation and storage capacity be set or capped to optimise REZ Shared Network utilisation without introducing too much constraint risk?</p>	<ul style="list-style-type: none"> UPC agrees that this is the simplest model, although the difficulty will be in matching project capacity from different technologies with transmission capacity. It is difficult to see how storage would be integrated into this model unless it was integrated with individual renewable projects which may not be the optimum outcome. Once the transmission assets are built, regardless of whether the capacity is overutilized relative to expectations or utilized as intended, it should not be possible for new generators to connect without them paying for further augmentation to remove any risk of curtailment. If there is congestion as a result of overutilization of the transmission system compared with the participants' expectations, the Government's intention seems to be that the associated costs will be borne by participants (who would not be compensated) – this represents a significant risk to participants and could be a disincentive to invest. (Unless there is a high degree of confidence the TNSP and scheme regulator has got it right in terms of design).
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<p>Question 12: How could network capacity be allocated between different generation types? Should it, for example, be based on a particular, pre-defined generation profile (“shape”) for different types of generation technologies?</p>	<ul style="list-style-type: none"> Allocation on a defined profile would seem to be the most appropriate way, although wind generation profiles aren’t “generic”. This may result in some potential curtailment risk for wind generation where a plant’s actual generation does not match its “generic” profile. Unlike Option 2, Option 1 does not allow for this mismatch to be traded and the overall inefficiency of utilization to be reduced accordingly.
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Option 2A and 2B: Financial compensation models

<p>Question 13: How would 24-hour access rights impact the value and efficiency of a financial compensation model? If access rights were defined as flat, 24-hour, access rights, would access right holders be incentivised to firm up their generation to make efficient use of the access rights (either technically, or commercially with sharing arrangements)? If not, what adjustments would need to be made to the access scheme design to incentivise this?</p>	<ul style="list-style-type: none"> As indicated the preference would be for a more defined time frame (i.e. Option 2b) to allow for more flexibility in allocation of capacity rights and to facilitate secondary trading to maximise the capacity available in the REZ. Option 2b would give participants the greatest flexibility to match their access rights with the actual generation profile and dispatch strategy of each technology/asset, even if there is some mismatch between what is anticipated and what actually occurs. It is difficult to foresee how a secondary market could emerge for a “portion” of a 24 hour access right (i.e. sell off the rights for the unneeded time period). Trading of access rights is seen as a critical element for improving the overall efficiency of the Access Scheme. If the Government has a strong preference for minimising complexity in design, there may – as a compromise - be value in further considering the option of defining a small number of differentiated access rights - e.g. one suited to a day time solar profile, another suited to a typical wind profile (or profiles) and possibly some flat 24 hr rights.
<p>Question 14: Would currently available information, including solar and wind forecasts for corresponding Tier 1 generators, be sufficient for Tier 2 access right holders to make a reasonable assessment of the risk of being constrained off? Or would additional data need to be available to achieve this?</p>	<ul style="list-style-type: none"> It is likely that some additional information around Tier 1 capacity requirements would need to be available to Tier 2 rights holders so they could assess curtailment risk. The level of detail may need to be consolidated to protect confidentiality rights of individual projects. It is worth considering how much if at all auction participants would value Tier 2 rights, since they really are not firm. A poor outcome would be over-subscription of Tier 1 rights (pushing up prices) and a zero valuation of Tier 2 rights.

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<p>Question 15: With reference to Appendix B, to what extent should curtailment (and therefore the compensation mechanism) take bid price or market settlement price into account? In particular, what would be the downside to limiting compensation to only the bids from Tier 1 access right holders that are below the market settlement price?</p>	<ul style="list-style-type: none"> At face value UPC agrees with the suggested approach and doesn't see any material downside.
<p>Question 16: In what ways could the proposed models and compensation mechanism design result in changes to the bidding strategies of Tier 1 and Tier 2 access right holders? Would this be expected to have a material impact on the NSW market?</p>	<ul style="list-style-type: none"> It is worth considering further whether the compensation mechanism could encourage under-bidding of price, to ensure that REZ-based generators are dispatched and then compensated for any congestion. Much in the same way that many PPA holders currently bid \$0/MWh to ensure they are dispatched in the NEM. As long as the REZ-based generators think they are not setting the marginal price in the NEM in a given trading interval, they would all (Tier 1 and Tier 2 rights holders) logically tend to bid \$0/MWh. Hence, UPC doesn't consider that the mechanism will material change bidding behaviour and have a material impact on market outcomes but this should be considered further in detail, with detailed modelling of generator bidding behaviour.
<p>Question 17: There could be circumstances in which the revenue earned by Tier 2 access right holders will not equal the revenue lost by the Tier 1 access right holders through subsequent curtailment. This includes instances of intra-REZ constraints, and when MLFs for Tier 2 generators are systematically lower than for Tier 1 generators. What are the other circumstances, if any, in which potential 'compensation inadequacy' may occur? How material is this risk for Tier 1 access right holders in comparison to the open-access regime?</p>	<ul style="list-style-type: none"> Intra-REZ constraints and curtailment could be a real issue depending on what happens in the network – e.g. might not be just related to thermal limitations (see recent experience with curtailment of solar farms for frequency oscillations). In such circumstances it is even possible that the Tier 2 rights holders are not to blame and would not be held accountable for the curtailment of Tier 1 rights holders. The impact on MLF for some projects located in less favourable locations within the REZ may be a material issue that will create risk for Tier 2 access rights holders, which is another factor that may limit the value of such rights.
<p>Question 18: Does this Issues Paper identify the key risks associated with the Financial Compensation Models? Can the risks be sufficiently managed through the design features of the models and the proposed compensation mechanism referred to in this Issues Paper?</p>	<ul style="list-style-type: none"> In general UPC consider the key issues have been considered but with all options the biggest challenge will be getting the cap level right. There is a risk that if they are too short term, or do not adequately protect against curtailment outside of the REZ, the firm access rights will not be considered by financiers to be bankable. It should be clarified that the regulator should not be able to intervene in the market by say

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	<p>reducing or withdrawing the rights once allocated, aside from application of the “use it or lose it” provisions for example.</p> <ul style="list-style-type: none"> • If the MLF risk within a REZ is significant, as per the previous Question, then the risk of the payments from Tier 2 rights holders being inadequate could be quite significant. i.e. the rights would become an imperfect hedge and lenders may not fully value them in a financing. • Perceived unbankability or uncertainty in general will tend to reduce the valuation of rights.
<p>Question 19: How would the implementation of the financial compensation models impact existing contracts, such as PPAs? Could the compensation mechanism be appropriately accounted for in the design of new contract structures?</p>	<ul style="list-style-type: none"> • It is possible that for existing PPAs for a project within a REZ that if the access scheme was to force the participants to purchase access rights that the PPA would be subject to a change of law provision. The terms of this may vary considerably, but some form of cost sharing principle may exist between the seller and buyer. Without this, the Access Scheme may make the PPA uneconomic for one or another party, if they are forced to bear all of the cost. • A bigger issue may arise if the overall cap is inadequate in which case there may be curtailment as a result of the REZ even if the generator purchases access rights. The PPA may have penalties that arise for failure to dispatch a certain amount of energy (payable to the buyer). In a worst case, the seller might lose the PPA altogether in that scenario. The Government should consider this risk carefully. • New PPAs should be able to accommodate the arrangements, provided that there is adequate detail and certainty before the negotiations start.

Other models considered but not progressed

<p>Question 20: The NSW Government is not proposing to progress the Limited NEM Bidding and REZ Locational Marginal Pricing models further at this time. Are there elements unique to these two models which should be considered for integration into the models that have been shortlisted?</p>	<p>Click or tap here to enter your answer to question 20.</p>
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3. Access scheme design issues

<p>Question 21: How valuable is the ability to trade access rights, and in what circumstances would this be useful?</p>	<ul style="list-style-type: none"> • UPC considers trading to be a critical element of Option 2. Without this, the model would not be as efficient or effective in achieving the objectives and benefits. Market participants
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	and intending market participants should be able to access the primary market exclusively and freely trade in a secondary market (i.e. generators, storage providers).
Question 22: To what extent would flexibility to trade access rights increase the value of access rights for their holders? How flexible and unrestricted would access rights trading need to be to provide value?	<ul style="list-style-type: none"> In theory, trading of access rights should not change the way that they are valued. However, the downside of not allowing trading is that some parties may tend to engage in hoarding or speculating, both of which would lead to inefficient outcomes, and would discourage investment if they have the effect of pushing up prices or suggest to financiers that the market is susceptible to manipulation. At a minimum the primary auctions and ideally also secondary trading should be restricted to electricity market participants (generators, storage providers) over financial market participants (banks, trading houses, brokers). The latter will be more likely to hoard or speculate on access rights because they have no inherent need for them. Intending participants, i.e. developers of projects that have registered their intentions to become market participants with AEMO, should also be allowed to purchase in the primary auctions and trade in the secondary market.
Question 23: Would the introduction of a central access rights trading platform be of benefit to access right holders? If so, why? If beneficial, then which party would be best placed to design, maintain and operate this trading platform?	<ul style="list-style-type: none"> Probably beneficial if secondary trades are allowed, as away of preventing fraud and confusion. In such a case the NSW Government should explore the options to have this managed by existing exchanges – for example the ASX.
Question 24: For generation projects connecting to the REZ, how important is it that storage is required to purchase access rights (i.e. that total connecting storage capacity is limited)? If storage was not to be required to purchase access rights, how high is the risk of storage competing with (i.e. curtailing) generation dispatch?	<ul style="list-style-type: none"> Investors in storage assets will have different revenue models and hence different operational profiles, so it is hard to predict the risk that storage will try to compete with generation at times of congestion. For example, a battery or pumped hydro project that relies on arbitrage between high price and low price events might naturally be expected to avoid dispatching energy if the price is low due to the over-supply of solar during the day (with congestion present). However, if the price is high, due to something happening outside of the REZ (e.g. a coal unit is offline or an interconnector is down), then the storage assets will want to take advantage of the high price. That asset would logically want to hold access rights and it would be important for generation projects to know that a competing storage asset holds rights in that case. Similarly, stand-alone batteries intended for

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	<p>grid-support services may need access rights in order to honour contracts with AEMO or TNSPs. The Government should consider the potential coincidence of when such services are likely to be needed and the presence of congestion.</p> <ul style="list-style-type: none"> Storage within a generation portfolio would be less likely to out-compete generation, since this is an overall more expensive way of delivering the same amount of energy (a battery's economics include the costs of charging). However, depending on the contracting arrangements and the operational parameters of the plant, a hybrid (e.g. solar + battery plant) generator may need to hold rights to cover specific hours when the battery is intended to be discharged.
<p>Question 25: Would proponents of storage projects value firm access rights? In the financial compensation models, how would storage operations differ under Tier 1 versus Tier 2 access rights? How could an access scheme provide sufficiently flexibility for storage to connect in future as technology costs come down and the market evolves?</p>	<ul style="list-style-type: none"> Any opportunity to secure and protect against curtailment would be valued by most market participants including storage. Although whether this needs to be Tier 1 or 2 rights will be dependent on the level of curtailment at times when storage assets intend to dispatch (i.e. high prices). It may be safe to assume that at least some of the storage assets would value Tier 1 rights lower than solar or wind projects if their business case is driven by a lack of renewable resources, in which case Tier 2 rights would be sufficient. Given storage will derive its value from arbitrage, PPA shaping, network support and ancillary services, it would only be in circumstances when prices are high and curtailment is occurring, that would lead to a desire to have Tier 1 access rights. As stated above, however, there are circumstances where the REZ could have curtailment (even without storage discharging) and this coincides with high prices in the market (i.e. failure of assets outside of the REZ). The Government should take time to carefully analyse whether this scenario is likely and significant enough to drive the need for Tier 1 rights for storage.. Even if the conclusion is that Tier 2 rights are likely to be more appropriate for storage, storage should assets including Pumped Hydro and batteries should have the ability to purchase Tier 1 access rights in the auctions if the owners require these in order to finance the assets. If the owner of a hybrid project – e.g. solar and battery plant – is selling a shaped PPA profile it is possible that they can trade / hedge their position in the market to cover days when there is so much generation being dispatched that the storage isn't needed to supply the energy contracted under the

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	PPA. (i.e. source it elsewhere, or “buy” rather than “make” the energy). This will, however, depend on the profile of the generation mix (won’t be possible unless there is sufficient diversity of technologies).
<p>Question 26: Would prevailing market signals provide sufficient and appropriate incentive for storage to operate in a manner that is aligned with the needs of the REZ? If not, then what REZ-specific types of incentive mechanisms should be considered to incentivise load and storage to consume electricity when the REZ Shared Network is congested?</p>	<ul style="list-style-type: none"> The only scenario where there would be a conflict in market signals and the desire to “charge” storage would be if prices in NSW were high, because there was something happening outside the REZ – e.g. a coal unit offline - and demand in the NEM region was high, while all of the CWO REZ generators are dispatching at full output and hence within the REZ there is some curtailment. Storage dispatch will not be needed, but the high prices would incentivise this, whereas the overall system would benefit from storage opting to charge/pump in the REZ instead, to help absorb the excess generation output. UPC notes the ESB has proposed to create an incentive for storage to charge for free at times of congestion (and get paid \$0/MWh for discharging when congestion is present). UPC considers that creating an incentive for batteries to charge when there is congestion has merits, but is cautious about putting forward a definitive position on the right mechanism. Preventing storage assets from being able to take advantage of high price events, rather than allowing them to purchase and hold Tier 1 rights if they choose to do so, seems anti-competitive and would act as a disincentive for investment in storage, which is undesirable. The NSW Government is encouraged to undertake further considered analysis on this issue and consult with industry prior to finalising its preferred approach.
<p>Question 27: If an incentive mechanism for storage is implemented how should the costs of this arrangement be recovered?</p>	<ul style="list-style-type: none"> UPC considers that in principle the beneficiaries of the “soaking up of excess generation” resulting from storage being incentivized to charge during congestion include both generators and customers, since it helps improve the overall utilisation of the system, which should help reduce prices - other things being equal. If storage is simply given an incentive to charge at times of congestion by allowing assets to do so for free, this might be simpler than paying the owners of storage assets.

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<p>Question 28: How should the treatment of storage under the CWO REZ Access Scheme account for differences between long-duration storage and fast-firming technologies?</p>	<ul style="list-style-type: none"> The issues raised in the treatment of storage in the REZ Access Scheme are particularly complex and the NSW Government is encouraged to take time to consider these in detail. Long duration storage – i.e. pumped hydro energy storage (PHES) – is unlikely to be financed without firstly a long term revenue contract and secondly access rights. The access rights would logically need to cover a 24 hour period but would logically tend to coincide with times of low solar and wind output. That said, see the earlier comments about taking advantage of high price events – preventing PHES asset owners from doing so would discourage investment. Depending on the terms of the LTESAs that the Government intends to write with PHES assets it may be possible to guarantee their revenue underwriting irrespective of the congestion risk, if they are not holders of Tier 1 rights. In that case, the Tier 2 rights would be sufficient. Fast-firming battery technologies on the other hand would logically offer: <ul style="list-style-type: none"> firming services – which may be different Government contracts to help meet the firming needs of the system (either physically or financially), i.e. firmed generation. firming or shaping of commercial PPAs (see comments above), and grid support services - frequency, synthetic inertia etc (which may not require dispatch of energy per se). To meet obligations under these contracts it is possible that Tier 1 access rights will be needed – it depends on the nature of the revenue model, financing and the coincidence of the congestion and demand for those services.
<p>Question 29: How should load be integrated into REZs and what types of incentives (if any) would be needed to attract load to connect to the REZ Shared Network?</p>	<ul style="list-style-type: none"> UPC considers that encouraging loads to connect to the REZ is desirable, as it would not only improve MLFs and reduce congestion, but would also help finance and establish bulk supply points which can make grid connection costs lower/more effective. A separate incentive managed by Government outside of the Access Scheme would be the best way to encourage this.
<p>Question 30: Would additional incentives be necessary, beyond market-based commercial incentives, to encourage storage/load to</p>	<ul style="list-style-type: none"> Possibly needed (as per comments above), however, it does not make sense to encourage storage to charge or load to draw more energy if system reliability or security of

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increase their electricity use during periods of REZ network congestion?	supply is at risk. Whereas if there is congestion in the REZ and there is an overall need for more energy in the NEM or in the NSW region this would make sense.
Question 31: If an incentive mechanism for load is implemented how should the costs of this arrangement be recovered?	<ul style="list-style-type: none"> UPC considers this would be best incentivised outside of the Access Scheme (e.g. direct Government-funded incentives for connecting load to the REZ).
Question 32: How should the potential impact of changes in distribution load and embedded generation on the CWO REZ hosting/export capacity be incorporated into the REZ Access Scheme design and implementation?	<ul style="list-style-type: none"> For embedded generation, consistency with the 5MW AEMO threshold should apply – any generation of 5MW or above must be covered by the REZ capacity cap and hold access rights. Small scale embedded generation such as rooftop PV and mini-generators below 5MW could be accounted for by including a realistic forecast in the design of the network assets. As a general principle, if there is congestion Tier 1 (and Tier 2 access rights holders if they have paid for their rights) should get dispatched first before embedded generators that have not paid for any access rights.
Question 33: Should non-scheduled generation and exempt generators be required to hold access rights under the CWO REZ Access Scheme, and/or should the total capacity of non-scheduled generation or generation from exempt generators permitted to connect be capped? Is there an alternative approach to the treatment of non-scheduled generation or generation from exempt generators which should be considered?	<ul style="list-style-type: none"> See comments above. Generators equal to or above 5MW in size should be required to participate in the access regime.
Question 34: If 'use it or lose it' provisions were introduced, how should the utilisation requirements be set/measured? What exemptions or concessions should be considered?	<ul style="list-style-type: none"> UPC strongly supports use it or lose it provisions, to prevent "squatting" on access rights or anti-competitive behaviour. The NSW Government should develop rules to ensure these issues are minimised but should consider legitimate exclusions such as force majeure events, issues on the shared network or imposed by the TNSP or AEMO that are outside of the generator's control and a reasonable grace period for delays in constructing and connecting a plant. Where a plant can demonstrate a path to resolving issues and the need to retain the access rights then this should be considered in this process.

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<p>Question 35: If an access right holder was required to return some or all of its access rights under the ‘use it or lose it’ provisions, how should these provisions be structured?</p>	<ul style="list-style-type: none"> This could be done by reissuing the access rights in subsequent auctions. It would be good for the market to get some sort of advance notice so that proponents can plan ahead. There is the potential for a regular (i.e. quarterly) release of information on “access rights held” vs “actual dispatch” to all participants in the REZ to improve transparency and improve the effectiveness of the REZ.
<p>Question 36: What impact do you consider capping of connection in a REZ, and the proposed access scheme models, will have on reducing the risk of volatile MLFs? Are additional measures warranted? If so, what measures?</p>	<ul style="list-style-type: none"> It will help, insofar that the issues are contained within the REZ. To the extent that something occurs outside of the REZ between the generation source and the node – e.g. additional generators connecting downstream of the REZ, or loads shutting down, or interconnector flows changing, then it will not prevent MLFs from changing. As stated above, a level of protection for a limited period of time from major congestion on the network between the REZ border and the node is recommended for this reason. Conceptually, this could be at a minimum long enough for the debt to be repaid on a project financed asset. Careful consideration of intra-REZ issues resulting from connection asset design and configuration, redundancy in the system, technology specific issues etc is also needed.
<p>Question 37: What are your views on the appropriateness of the principles for managing the interface between the CWO REZ Access Scheme and common DCAs/DNAs? How could consistency between the CWO REZ Access Scheme and access policies on DCAs and DNAs best be achieved?</p>	<ul style="list-style-type: none"> The proposed approach articulated in the paper on pages 47 – 48 seems appropriate provided that subsequent generators and storage projects connecting to the DNA augment both the DNA and the REZ Shared Network to ensure that they do no harm to the power transfer capability available to existing connected projects.

4. Other coordination initiatives

<p>Question 38: Would a process to coordinate connection assets for multiple projects be of interest? If so, what coordination initiatives would be of interest?</p>	<ul style="list-style-type: none"> If what is meant by this is to coordinate shared assets such as a connection “hub” (substation) or “spur line” which comes off the main REZ T-Link, which could enable a more efficient connection of 2 or more projects, then this is encouraged. It would help with cost-efficiency.
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<p>Question 39: Given the unique nature of connecting to coordinated REZs, such as the CWO REZ, the barriers to coordination of connection assets may be reduced. What further barriers to coordination will still need to be overcome, and how could this be achieved?</p>	<ul style="list-style-type: none"> Confidentiality rules have been a barrier in the past, which have limited the ability of a TNSP to coordinate effectively amongst participants. UPC\AC cautions against imposing any obligation on generators to work together. However, the Government could consider running an “open season” whereby well in advance of the auction for the access rights being launched, TransGrid or the relevant authority calls for expressions of interest for connection to certain parts of the T-Link, in order to more efficiently design the relevant connection solution to be made available to multiple proponents. Proponents should be free to propose an alternative connection solution if they wish to.
<p>Question 40: What opportunities exist for the NSW Government to improve connection processes in the CWO REZ? What improvements would deliver greatest value?</p>	<ul style="list-style-type: none"> The relevant authority must provide proponents with adequate information well in advance of the capacity auction itself, so that transmission studies can be undertaken with the right assumptions (grid infrastructure design, key characteristics of network assets, system strength-related assumptions, any centralised services such as provision of fault current/inertia etc). Given the CWO REZ timeframes this is critical. E.g. otherwise would every individual generator would need to assume that it has to solve a system strength issue on its own. On the other hand, the notion that the NSW Government will be able to somehow fix the detailed connection application process under section 5 of the NER by adding any additional layers of process or introducing any another elements to the process is strongly discouraged. However well intentioned, it is unlikely to make connection any easier for proponents due to the existing complexity of the process and the delays and scrutiny applied by AEMO/TNSPs.
<p>Question 41: What, if any, additional connection challenges could be created under the CWO REZ Access Scheme? How could these be mitigated?</p>	<ul style="list-style-type: none"> One specific issue related to system strength is that it is impossible for proponents to do wide area network modelling of system strength in PSCAD because only the TNSP/AEMO have these models. One idea is the NSW Government could help by directing TransGrid to undertake initial modelling and then share the results of that, along with other key information as outlined above, including any assumptions for centralised system strength services to be provided to the REZ, so that proponents can properly assess the viability of their projects well in advance of any

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	capacity auctions. While UPC notes that the AEMC has recently announced changes to the “do no harm” rules, it remains to be seen how system strength will be coordinated by TNSPs and what obligations will be placed on project proponents.
<p>Question 42: What value could be delivered to generation and storage projects through centralised approaches to connection and system services, and what are the trade-offs? For example, would projects be willing to forego optionality around aspects of their project through requirements like minimum equipment standards, to reduce costs and the risk of potential delays to commissioning?</p>	<ul style="list-style-type: none"> Project proponents should not be forced to adopt any “one size fits all” technologies – for example, do not force each project to incorporate batteries, syncons, grid forming inverters etc. as this would be highly inefficient and unnecessary. Ideally, there would be some centralised services, for example for the provision of system strength to the REZ, that are coordinated by TransGrid and the REZ regulator, but not monopolized by one entity. It would be more efficient that the provision of these services is tendered to the market. Provided that clear and appropriate contract terms are put in place and a transparent, competitive process is run, the market should be able to deliver these services effectively. As stated above, the other key requirement for efficient implementation of the REZ is the provision of adequate information in advance of when it is needed so that proponents can make informed assumptions in their grid modelling and financial modelling

5. Open comment

<p>Question 43: Are there any other matters you wish to raise relevant to this issues paper?</p>	<p>Click or tap here to enter your answer to question 43.</p>
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