



Project: NECCA

Lumea – RFC Process
Knowledge Sharing Report 2

June 2021

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Abbreviations

Term	Definition
AEMO	Australian Energy Market Operator
AEMC	Australian Energy Market Commission
ARENA	Australian Renewable Energy Agency
BESS	Battery Energy Storage Systems
CAA	Capacity Allocation Advisor
CF	Connection Fee
COGATI	Coordination of Generation and Transmission Investment
DCA / DNA	Dedicated Connection Asset / Designated Network Asset
DPIE	Department of Planning, Infrastructure & Energy
EOI	Expression of Interest
ESB	Energy Security Board
FID	Final Investment Decision
KSR	Knowledge Sharing Report
KWM	King & Wood Mallesons
Lumea	(formally known as TGS)
MHC	Marchmont Hill Consulting
MUFG	Mitsubishi UFJ Financial Group Bank Ltd.
NECCA	New England Connection Capacity Auction
NEM	National Electricity Market
NEMDE	National Electricity Market Dispatch Engine
NETI	New England Transmission Infrastructure
NSW	New South Wales
OCM	O'Connor Marsden & Associates
PIAC	Public Interest Advocacy Centre
RE	Renewable Energy
REZs	Renewable Energy Zones
RFC	Request for Capacity
RIT-T	Regulatory Investment Test for Transmission
T/L	Transmission Line
TNSP	Transmission Network Service Provider

Executive Summary

The New England Transmission Infrastructure (NETI) is a proposed unregulated transmission infrastructure investment with the capacity to accommodate 1400 MW of new Renewable Energy connection capacity.

The New England Connection Capacity Auction (NECCA) was designed and developed as a commercial mechanism to test market preparedness to support the development of the NETI.

Following a highly successful Expression of Interest process, and the shortlisting of a subset of developers, the Non-Binding Bids phase has been concluded. This Non-Binding Bids phase sought offers from shortlisted parties for connection capacity, substantially on the basis of:

- an indicative NETI design;
- supporting commercial contract structures captured in well-formed term sheets (Project Agreement Term Sheet; Capacity Deed Term Sheet), and
- MLF and constraint modelling studies.

The offers received demonstrates clear market interest and willingness to participate in a commercial process to build enabling transmission capacity at scale, and to allocate that capacity to project developers on the basis of a priced Connection Fee.

Important details will now be addressed in subsequent stages of the project (e.g. risk allocation between all parties, property considerations, coordinated connection application processes, etc.) through a Binding Bids and NETI development phase.

This Knowledge Sharing Report # 2 provides a summary of the key insights to date, with a particular focus on the lessons learned during the recently completed Non-Binding Bids phase.

1. New Brand Lumea and its impact on Project NECCA

Lumea, is the commercial arm of TransGrid. It is the new brand name for TransGrid Services and our Business Growth team. NECCA is a TransGrid Services project and as such, it now comes under the Lumea brand.

Lumea symbolises the illumination of new ideas through a fresh way of thinking. It represents our ambition to light the way in accelerating the energy transition and reflects our commitment to providing the bespoke solutions required to effect that transition. There is no impact on the project and the business based on the Brand change.

2. Project Purpose and Learning Objectives

2.1 Project Purpose

The purpose of the project is to create a replicable commercial transmission investment model for the NEM by testing the preparedness of the market to financially support the development of additional transmission capacity in return for defined access, certainty and other rights, within a framework of obligations.

The targeted final deliverables from this process will be executed contracts between successful project proponents connecting to the new transmission infrastructure and Lumea. The executed contracts provide legally enforceable commercial commitments from parties to provide privately sourced investment in this new unregulated network transmission asset and ultimately deliver renewable power to the NEM through the development of this infrastructure.

2.2 Learning Objectives

This project represents an opportunity to explore commercial innovation in the National Electricity Market (NEM) to undertake new transmission infrastructure development quickly and at scale.

The process will deliver strong learnings for the broader reform process and the advancement of large transmission infrastructure in the NEM. Regardless whether this project is successful as desired (i.e. it naturally reaches financial close based on sufficient renewable energy proponent commercial interest), or if it encounters stumbling blocks (e.g. insufficient initial interest to commit to the investment).

2.3 Key Questions to Address

The process has been designed to address various questions. At this stage in the process, answers are emerging for some of these, although the latter stages of work will be required before they can be completely addressed. Some of the more significant questions include:

- What value will renewable energy generators put on transmission capacity with defined access and other rights and performance characteristics?
- What commercial and contract terms would be associated with that access?
- What capacity allocations (i.e. MW size) would be of interest to the market?
- What are the potential costs and benefits associated with planned development of renewable energy capacity, including from:
 - Planning optimised connection infrastructure?
 - Potentially sharing any support infrastructure or services required, such as system strength assets (e.g. synchronous condensers) and energy storage?
- What are the barriers to the broader application of a commercial model for the development of privately financed, unregulated transmission infrastructure in the NEM?
- What contracts are required to underpin the NECCA and NETI (e.g. access agreement, NETI project agreement, capacity deed)? And what are the key terms of the contracts offered by Lumea (e.g. duration, transferability, etc.)? How are the rights in the contract protected through time, including if there are changes within the wider regulated transmission network?
- Is the concept of an obligation on proponents to develop renewable energy in line with their secured rights in a defined timeframe acceptable? For example no trading of rights (secondary markets), and the loss of rights for failure to meet development milestones.

- What happens in the circumstance where there is commercial interest from proponents but either it is insufficient to warrant the transmission investment, or the interest will not commit without some financial under-pinning?
- What is the appropriate risk allocation amongst the involved parties regarding a REZ development?
- What arrangements need to be put in place to ensure that all commercial parties can make a Financial Investment Decision for their respective investments (Lumea for the enabling infrastructure and project proponents for their respective generation projects), in a coordinated manner?

3. Overview of Process to Date

3.1 Expression of Interest (EOI)

Lumea released the first phase of the NECCA process, the EOI, on 17 June 2020. The EOI called for expressions of interest from renewable power developers to participate in the initiative, and connect into the grid through the new proposed New England Transmission Infrastructure (NETI).

The EOI process has now been concluded. It achieved a strong market response, as summarised below:

Number of parties sent EOI documentation	76
Number of submissions received	18
Total capacity of submissions received (max)	6,900 MW
NETI capacity (max)	1,400 MW
Percentage subscribed	~500% (oversubscribed)

Of the 18 submissions received, 10 participants were shortlisted to take through to the Request for Capacity (RFC) stage of the NECCA process. Depending on final configurations, the requested capacity from the short-listed participants was considerably greater than 3,000MW, materially exceeding the 1,400 MW NETI capacity.

3.2 Pre-Request for Capacity: to December 2020

The following key activities were undertaken after the EOI phase and prior to the release of the Request for Capacity (RFC):

- Evaluated 10 participants for RFC phase as per the evaluation criteria developed and as agreed by the Capacity Allocation Advisor/Finance Advisors (MUFG) with input from Lumea, Auction Design (MHC), Probity (OCM), Legal (KWM) and Community Engagement team (Lumea);
- Workshops were held with the Project team (Lumea, MUFG, KWM and OCM) and individually with all participants shortlisted for the RFC stage to seek a better understanding of each project and its viability. It also provided an opportunity for participants to get clarity on the RFC process and the expectations of them and areas that could be improved;
- A Q&A document was compiled containing the questions raised during the workshops. This was shared with shortlisted participants;
- The Project team (Lumea, MUFG, OCM, MHC and KWM) developed RFC Documentation;
- The development of Contract structure Term Sheets and regulatory arrangements (KWM) to enable the NETI as user funded infrastructure providing firm access was a significant undertaking, addressing the regulatory and approval arrangements which evolved during the course of the contract design (i.e. the AEMC's 'Connection to Dedicated Connection Assets' Rule change proposal, which remains open at the time of writing);

- Engaged Independent consultant (Acil Allen) to support the definition of the Service Offering for inclusion in RFC Term Sheet i.e. advice on market interface and provide options for connecting the New England Transmission Infrastructure (NETI) and its market participants (users) to the shared grid;
- Acil Allen was also engaged to provide indicative marginal loss factor (MLF) projections, curtailment projections and settlement residue projections for 1400MW of new solar farm projects (in aggregate the NECCA project or the projects) on the NETI. The projections were shared with the shortlisted participants on a non-reliance basis for the purpose of their non-binding bids;
- The key documents developed and shared with RFC participants were:
 - **RFC Process letter** – outlined details regarding the RFC phase including timeline, deliverables, forms of engagement, and outcomes.
 - **Information Memorandum** - outlined details regarding project background, technical specification including property acquisition, Environmental and project approvals, Transmission Line Alignment, sub-station location, System strength analysis and Generator Performance Standards.
 - **NECCA Project Agreement Term Sheet** – sets out the rights and obligations of Lumea and each project proponent regarding the development, construction and commissioning of the transmission infrastructure that comprises the NETI. It outlines the sequencing and staging of conditions precedent, financial close and other thresholds for reaching FID and protections for parties as they relate to each of those stages.
 - **NECCA Capacity Deed Term Sheet** – sets out the Access Service to be provided, the relevant commercial arrangements, the availability regime and compensation for failures to provide the Access Service and how the NETI will be operated and maintained.
- A Stakeholder Consultation Group (SCG) Meeting was held to share perspectives on key steps in the process including the EOI and RFC auction processes, and the key rights and obligations, which underpin the auction;
- Engaged with Department of Planning, Industry and Environment (DPIE), to classify the Project as State Significant infrastructure (SSI); an SSI application to the Minister was developed and submitted;
- Worked with AEMO and TransGrid Planning to develop a Generator Performance Standard process to coordinate potential of multiple generators connecting simultaneously to the NETI;
- Given the strong regulatory and government support for developing RE zones, Lumea has been exploring a number of models which can be used, each of which will require discussions with relevant regulators to ensure it meets the commercial objectives and is also consistent with broader regulatory objectives, for example system security and accountability. The Draft DCA rule change as published and consulted on by the AEMC has been selected as the logical regulatory model which Lumea has included in the contract structure and offer to the RFC Participants;
- Briefed key stakeholders including NSW/Commonwealth governments and local councils.

3.3 Request for Capacity – Stage 1 (Non-Binding Bids): December 2020 – February 2021

The Request for Capacity (RFC) was released on 18 December 2020. The first part of the RFC phase (2a) involved inviting the 10 participants shortlisted to provide non-binding bids, which were assessed with the intent of:

- Confirming the levels of proponent interest;
- Capturing feedback and adjusting the model as required; and

- Further refining the shortlist to select parties to progress to the binding bid phase.

Participants were invited to submit non-binding bids consisting of:

- An all-inclusive Connection Fee (\$/MW_{AC}) to take up capacity in the NECCA, and
- Comments to the proposed contractual arrangements as captured in the NECCA Project Agreement Term Sheet and the NECCA Capacity Deed Term Sheet, which will govern connection to the NETI.

A number of workshops and on-on-one meetings were held in February-March 2021 to provide bidders with the opportunity to pose questions and provide feedback as non-binding bids were developed.

The results of the non-binding bids phase are summarised below:

Number of proponents invited to provide non-binding bids	10
Number of non-binding bids received	8 (of which 7 were compliant ¹)
Total capacity of compliant non-binding bids received (max)	>>2,000 MW
Number of proponents selected to proceed to binding bid phase	4
Total Capacity of non-binding bids selected to proceed to the binding bid phase	>1400MW (i.e. > NETI maximum capacity)

3.4 Next Phase of Work

It was originally envisaged that the next phase in the NECCA involve progressing the selected proponents directly into a binding bids phase (i.e.RFC Stage 2). The selected proponents would have the opportunity to submit a binding proposal to secure capacity on the NETI, which would be allocated by an auction process, based on (among other factors) the Connection Fee bid.

However, it became clear to all parties that binding bids submitted without the completion of a further development phase would necessarily be heavily caveated due to residual uncertainties eg. project approval, property acquisition etc.. It was considered that those uncertainties, and the associated caveats that would flow into binding bid documentation, would make it difficult to confidently select the final cadre of participants to receive a nominated capacity allocation. This uncertainty could be addressed by undertaking some significant further work.

In particular, this development work will include:

- Property and easements
- Project Approvals
- Community engagement
- Consideration and outcomes of AEMC and other rule changes

¹ One bid non-compliant due to material differences to project submitted during EOI.

- NETI project design
- GPS studies
- MLF studies
- Contract design
- Process for FID coordination
- Process for the efficient development and completion of Connection Agreements.

Given this, Lumea is introducing a 'Development Phase' to progress the NECCA process. This is a necessary and material change to the original approach – and a key insight in its own right.

Further detail about this new phase is provided in Section 7.

4. Stakeholder Perspectives on Model and Process

4.1 Process for Capturing Stakeholder Perspectives

MHC conducted interviews with a range of stakeholders involved in the NECCA process. This included all project proponents brought into non-binding bid phase, a selection of proponents that are not active in the non-binding bid phase, and all project participants, thereby ensuring a breadth of views were captured.

A summary of the stakeholders interviewed is provided below:

Stakeholder	Number of Interviews
Project proponents (confidential)	5
Lumea	2
King & Wood Mallesons (legal)	1
OCM (procurement)	1
MUFG (Capacity Auction Advisor, CAA)	1

Prior to conducting each stakeholder session, MHC emphasised that these interviews were outside of the bid assessment process, that views would be confidential and comments would not be attributed to any proponent. This was particularly important for those project proponents which submitted a bid and were still involved in the competitive capacity auction process. This resulted in feedback that MHC considers a true reflection of stakeholder views.

Interviews were structured to capture stakeholder views against the following five areas of the NECCA process:

- Overall Proponent Drivers for Participation in NECCA (Section 4.2)
- Commercial / Market Perspectives (Section 4.3)
- Technical Design Perspectives (Section 4.4)
- Regulatory Perspectives (Section 4.5)
- Project Development Process Perspectives (Section 4.6)

The key messages within each of these areas are described in the following sections.

Interviews were conducted via teleconference during April/May, 2021.

4.2 Overall Proponent Drivers for Participation in NECCA

The main drivers for participants' participation in the NECCA process were:

- A desire to explore different ways to connect projects given current challenges in the traditional connections process such as extended connection timeframes and other project risks (e.g. changing GPS standards, cost of systems strength requirements);
- The NETI model provides some protection against future developments impacting constraints and MLFs (“an upper limit on competitive dynamics”). Although it was noted this applied only within the NETI. Future projects developed outside the NETI still presented a risk;
- The relatively low cost (direct expenses and time) required to submit a non-binding bid (“we might as well throw our hat in the ring”). Some proponents expressed that bid costs were expected to increase as the process progresses to the binding bid phase;
- The opportunity to work collaboratively with Lumea and to learn about new initiatives such as the NETI and to play a role in their design. Some suggested that the NETI is a “mini version” of where they see the wider grid going in terms of access rights;
- Some proponents were already considering projects in the area and considered being outside the NETI may result in the project not operating “on a level playing field” with projects inside the NETI;
- The NECCA represents an opportunity to connect in a cost efficient and timely manner, given the plan to strategically coordinate development and connection activities;
- The NETI opportunity just forms part of their normal process to build a pipeline of potential projects.

Summary Findings / Insights

- Participation partly driven by current challenges with access to the shared transmission infrastructure and the existing (conventional) connections process.
- Participation to date has required minimal time/cost commitment from proponents.
- Opportunity to connect new resources at a commercial scale, with the prospect of high performing transmission infrastructure (i.e. NETI).
- Proponents remain acutely aware of residual risks, such as impacts from projects outside the NETI.

4.3 Commercial / Market Perspectives

Risk Allocation

Risk allocation between the parties was a topic of particular interest with a clear focus on commercial risk allocation. Note risk allocation was only addressed in detail during the RFC phase of the process.

The observations below reflect the views provided by proponents engaged in the NECCA process. There is an observable variation among the proponents on their views of the nature and extent of these risks.

Proponents highlighted a number of perceived ‘mismatched’ risk allocations under the proposed model. The main risks raised by proponents as potentially being problematic were:

- **Financial Investment Decision (FID) risk:** Several proponents raised issues with being asked to secure FID before Lumea, particularly while the milestone for Lumea to achieve FID was not sufficiently well defined. Some also raised the issue of needing to incur significant development costs (for example to conduct grid connection studies) while Lumea retained the right to withdraw from the project. Possible solutions raised to resolve the FID concerns were:

- Altering the point in time of Lumea FID;
- Proponents' security is reimbursable in the event that the NETI does not proceed; and
- A 'marrying' of respective FIDs for Lumea and proponents, together with transparency about the conditions for FID for both parties and agreed timeframes / processes.
- **Security guarantee risk**: Proponents were unsure whether their business protocols would allow them to put up security at such an early stage (pre-financial close), particularly while the conditions for getting their security back remain subject to further discussion.
- **Uncapped cost variation risk**: Most proponents were not comfortable with Lumea having the ability to pass on all excepted risk costs and time implications. As alternatives, a cost sharing arrangement or a cost cap were proposed as ways to deal with variations that need to be undertake for the NETI.
- **'First mover' MLF and constraint risk**: A concern that foundation proponent projects could be disadvantaged in terms of MLFs and constraints by subsequent projects developed both within and outside the NETI. Some ideas proposed to address this risk included a period of certainty ('grace period') during which they would be compensated if the MLF did change, or the offer of "more flexibility and features" for foundation proponents to offset the risk.
- **TransGrid / Lumea interface risk**: Proponents see interface risk between the parcels of work for which TransGrid is responsible and those for which Lumea is responsible. This related in particular to proponent exposure to additional costs due to delays by either TransGrid or Lumea which impeded timely connection of the proponent's project despite the proponent being "on time". There were calls for TransGrid/Lumea to provide a "wrap" for all Lumea and TransGrid caused delay risks.
- **Availability threshold risk**: Proponents appreciate the need for an appropriate level of maintenance, however the proposed availability threshold (97.5%) was considered low given the breadth of the 'Excused Trading' definition. The availability threshold (and the penalties on Lumea for exceeding this) would need to be finalised during the negotiation phase. The lower the availability threshold, the harsher the penalties for exceeding it would need to be.

The broad view across proponents was that Lumea may have to move on a number of the above – and in particular the FID timing and uncapped cost variation risk. Notwithstanding, the view of other organisations supporting the NECCA process (i.e. non-proponents) was that none of these risks present 'deal breakers' and therefore do not present a risk to the overall viability of the NECCA process or the NETI infrastructure.

Shape of Access Rights

Proponents were broadly neutral on the topic of whether access rights should be for a full 24 hour period or allocated to specific intervals during the day. Proponents had performed modelling that showed no material differential value between procuring a solar profile access versus 24 hour access. This was reflected in some of the non-binding bids received, with some proponents offering the same Connection Fee for 24 and 12 hour access. This is particularly noteworthy given the prevalence of proposed solar generation projects which in the absence of energy storage display a diurnal generation profile. The broad conclusion drawn was that a 24 hour shape would preserve the option to include a battery in future and allow solar projects to take advantage of non-solar hours.

Only one proponent responded that rights allocated on an interval basis would be preferred as it would allow for better utilisation of the network by giving more access to competing players. The complexity of a framework with such granular rights and how practical it would be to implement would however be key issues to work through.

Model Implications for Offtake Contracting

An extended NECCA process and NETI development timeframe was communicated as a key risk given that many PPAs now have sunset dates that include liquidated damages. Certainty on the NETI construction timeline is therefore highly impactful, with a view that Lumea would need to project manage the NETI differently to the construction process of regulated transmission infrastructure.

Another PPA-related risk raised by proponents was that because all NETI projects would be progressing to broadly similar timelines, and would therefore be looking to agree and finalise PPAs at broadly similar times, this may impact the PPA demand – supply balance. This was not considered a material risk.

Minimum Term

Proponents were relatively aligned in their view that access rights should apply for 30-35 years to align to the life of the generation plant. While the NETI can be designed for a longer useful life (some suggested 50-60 years) proponents were not factoring operation beyond 30-35 years in their modelling. Beyond this it was largely assumed that another capacity auction process would take place.

Summary Findings / Insights

- The allocation of risks in the current proposed model may not ultimately be workable to proponents. Proponents will request Lumea adopt an amended risk allocation, in particular the timing of the Lumea FID. Subject to Lumea negotiating these views, the requests did not present ‘deal breakers’. More risk sharing (upside and downside) between proponents and Lumea will need to be explored as part of finalising the contracts.
- Slippage in NETI development timing is a key contracting risk given that many PPAs have sunset dates that involve liquidated damages.
- Proponents were broadly neutral on the topic of access rights shape (24 hours, 12 hours, other).
- Access rights should apply for 30-35 years to align to the life of the generation plant.

4.4 Technical Design Perspectives

Investment Model for system Strength Assets

Proponents viewed that investment in shared assets to support system strength (e.g. synchronous condensers) would be best provided by the TNSP, and paid for by proponent via access fees. This view aligns with the recent draft AEMC rule change (“*Efficient management of system strength on the power system*”²) which applies to connections to the broader grid, whereby system strength requirements are the responsibility of network providers and generally paid by developers.

More important for proponents than who funds system strength assets was that system strength requirements be identified early. Several had experience in other connections processes of these requirements coming late in the process, and creating implementation challenges, while adversely impacting the expected investment case.

Investment Model for Potential Battery Energy Storage System (BESS)

In contrast to system strength (above), BESS was viewed as being best delivered directly by the generators. The main reason for this was that batteries would be used by generators for profit-seeking purposes, e.g. energy arbitrage, FCAS. The complications of agreeing arrangements for how a BESS might be contracted

² Efficient management of system strength on the power system, AEMC. Accessed online May 11, 2021 at: <https://www.aemc.gov.au/rule-changes/efficient-management-system-strength-power-system>

across a number of commercial proponents was considered too problematic and impractical.

Marginal Loss Factors (MLFs) and Constraints

Further detail around the final transmission route is needed before a full understanding of MLFs within the NETI is possible, with proponents expressing that this being at such an early stage presented difficulties in developing bids. The treatment of this risk by developers is uncertain.

While the model provides some protection against future developments impacting constraints and MLFs through the access policy arrangements, it was noted this protection only applied within the NETI. Outside the NETI, current and future congestion was raised as a key unknown impacting proponents' financial forecasts and bids submitted. We note however that this is a NEM-wide challenge, not just for the NETI or REZs more broadly.

An important element of the proposed technical configuration is that it allows for an individual MLF to be applied to each generator, rather than a single MLF applied across the NETI. Likewise for constraints, individual generators can be constrained rather than the whole NETI. This is subject to the final regulatory model.

Technical Configuration

Proponents were broadly supportive of the proposed technical configuration as provided. Some comments that may need to be clarified for bidders before binding bids seemingly potentially reflect some misunderstandings or misinterpretation, but nonetheless include:

- Some discrepancy of information provided. For example, the MLF analysis performed was based on a 1,400 MW NETI capacity, however the design configuration for the initial phase only considered ~900MVA transformer analysis.
- Concerns that the Winton-Tamworth power flow would involve some projects subsidising others.
- Greater clarity on whether development of the NETI will be staged – i.e. will it be 1,400 MW from start?
- The radial line configuration may not be optimal as energy will likely only flow in one direction.

Summary Findings / Insights

- At this point in the process, the developer view is that shared system strength assets would be best provided by TG, if and as required.
- Battery Energy Storage System (BESS) is best delivered directly by the generators given that it would be deployed largely for individual generator profit seeking.
- Further detail around the final line route is needed before a fuller understanding of MLFs within the NETI. However, the main MLF / constraint risk exists outside the NETI.
- Proponents were broadly supportive of the proposed technical configuration, but some questions need to be addressed.

4.5 Regulatory Perspectives

Physical versus Financial Access

There was no clear preference for the type of access rights across proponents interviewed, with the overall view being that it did not make any material difference to generation projects in the context of the NECCA, the likely VRE developed (i.e. 100% solar) and 24 hour access rights. The pros and cons raised for each model are summarised below:

	Advantages	Disadvantages
Physical access rights	<ul style="list-style-type: none"> For radial networks (like NECCA) physical rights are fine – i.e. generators will have confidence about access arrangements. Simple to understand. 	<ul style="list-style-type: none"> Less liquid than financial rights.
Financial access rights	<ul style="list-style-type: none"> More liquid than physical rights. 	<ul style="list-style-type: none"> Presents new risks, more difficult to understand. AEMC received a lukewarm response to financial rights from the Working Group and broader market.

In other locations with a mixture of variable renewable energy sources other access arrangements may warrant further detailed exploration. However, in the context of a radial asset being developed, effectively to support a predominantly solar resource base, physical firm access and 24 hour rights were deemed attractive by proponents.

Implications of Draft AEMC Designated Connections Assets (DCA) Rule Change

As previously noted, at the time of writing this report, the final AEMC DCA rule change has not yet been made. All commercial Term Sheets and other regulatory arrangements were developed for the NECCA on the basis of the draft DCA rule change that was issued in November 2020. These will be subject to change once the Final Rule change is confirmed (scheduled for July 2021) and it is hoped that the transition from Draft to Final will not materially or adversely affect the foundations of the NECCA model.

The AEMC’s draft rule change proposes that any new qualifying asset added to the transmission system is to be operated and maintained by the Primary TNSP (like the NETI). The draft rules provide that these “designated network assets” (DNAs) can be contestably owned and constructed by third parties (i.e. other than Primary TNSP) with operation and maintenance being provided by the Primary TNSP for the DNAs. In the case of the NETI, the Primary TNSP would be TransGrid, while the DNA would be developed and owned by Lumea.

Feedback on the implications for the NETI of this draft rule change was reserved on the basis that the rule change remained a draft, with material detail still to be determined. Some proponents mentioned they would not be comfortable submitting a binding offer without the detail being finalised, although it was hoped this will occur prior to the next stage of the NECCA process.

The network operating agreement between TransGrid (the Primary TNSP) and Lumea was viewed as workable, although some stakeholders noted that funding banks will likely require security to be granted over the network operating agreement.

Summary Findings / Insights

- Proponents are supportive of the proposed physical firm access arrangements for the NECCA, but we are open to exploring financial firm access in other settings.
- From the developer’s perspective, the draft DCA rule change was workable. This will be need to be re-visited once the final rule change is known.
- No clear preference for the type of access rights (physical versus financial) noting financial transmission rights have not been well received by the broader market.

- Implications of draft DNA rule change appear minimal, although proponents may require the rule change to be finalised prior to submitting binding offers.

4.6 Project Development Process Perspectives

Project Batching

Looking ahead, the opportunity for a 'batching' approach to the connection process (i.e. where multiple projects are generally concurrently assessed for connection with respect to their Generator Performance Standard) received support from proponents.

The benefits of batching to proponents are material and include:

- **Efficiency:** Working as a single group of proponents, while protecting the necessary commercial confidentialities, should be more efficient than each developer working independently
- **Timely:** Presumably a batch would be afforded a level of priority in its assessment by the NSP and AEMO, and
- **Practicality:** A stable group of developers which collectively absorb the entire thermal capacity of the NETI, and which around there are restraints on the addition of other generation capacity (through the Access Regime), means that this assessment should be completed just once. The observable looping which some developers experience in the open access network when agreeing connections agreements should be avoided.

Proponents however raised a number of outstanding questions / risks regarding the batching approach, including:

- **Concerns with sharing of commercially sensitive information:** Proponents within the NETI will need to collaborate and share data, but there are confidentiality implications.
- **Implications if a developer is unable to proceed at the speed of other developers in the batch:** Batching would involve all proponents proceeding to a similar timeframe, however projects could not be held back by a laggard developer – they would need to exit (see 'Sunset period' below). Questions were raised about the implications of this on the timing of the project, impacts on the modelling of remaining projects and whether the exiting project would lose some or all of its security.
- **Batch entry criteria:** Some proponents requested that Lumea take a 'hands on' approach to batching to ensure "credible" projects are selected; this can be addressed through the assessment of binding bids. This particularly involved expectations on the capabilities of key technologies (such as inverters) to reduce the risk of the batch being slowed by a project not achieving GPS requirements due to low quality equipment.

An alternative to batching that was briefly mentioned was an "ordered queuing system".

Sunset Period

There was broad support for a sunset clause to be included in agreements whereby access rights are returned (or sold) if project milestones are not met. This would be particularly applicable if a batching approach was pursued (see above) to ensure projects are not held back by a laggard developer.

Further detail needs to be provided regarding the sunset period – and in particular the implications on their security. Proponents would have issues with their security being at risk, particularly if a sunset clause was triggered by events outside of their control – for example delays caused by Lumea.

An alternative to a "use it or lose it" sunset clause would be to allow developers to sell their project to another developer, although this is not favoured in the NECCA design.

Role of the Capacity Allocation Advisor (CAA)

The inclusion of the CAA in the process was received positively by proponents as providing a material depth of specialist commercial / financial skills that are not typically sustained in TNSPs. In particular involving a party that understood the commercial challenges faced by project proponents was valued highly. The presence of the CAA also signalled to the market a degree of independence in the auction process and a commitment by Lumea to the project.

Nonetheless, particular proponents requested the opportunity to engage with Lumea to pose technical questions during the bidding process. In future it would be worthwhile involving key Lumea technical resources more heavily in bid workshops and meetings.

The CAA role is likely best suited to providers in the financial services / investment banking industry given that REZ projects have elements of greenfield financing and a sell-side process – both which would typically involve the appointment of a separate financial advisor. For this reason, it is likely to be more appropriate for each REZ operator to select its own CAA, rather than for a regulatory body to select a single CAA that operates across all REZs, or across the jurisdictional area of any single PTNSP.

Summary Findings / Insights

- The 'batching' approach received general support, although with a number of outstanding questions / risks regarding sharing of commercially sensitive information, implications of a slower developer, and batch entry criteria,
- Inclusion of the CAA in the process was received positively, noting proponents' desire to have access to engage with Lumea to pose technical questions during the bidding process.
- The CAA role is best suited to specialist financial services / investment banking providers, with each REZ operator able to select its own CAA.

5. Key Learnings Following the Non-Binding Bid Stage

5.1 Key Learning 1: The concept of using an auction process to efficiently allocate capacity access rights in exchange for co-investment in network assets is proven – but the real test is to come

The competitive dynamics created by the auction process to date have led to strong outcomes for the NECCA, in turn supporting its underlying commercial model of allocating connection capacity access rights in exchange for co-investment in network assets.

Bids received during the non-binding stage of the RFC are sufficiently strong to demonstrate favourable economics for all parties (i.e. both Lumea and proponents are sufficiently aligned for a joint investment decision to proceed) and to maximise the economic benefit of the NETI across all participants.

Further, there also appears to be sufficiently strong demand from the developer community to co-invest in network assets in exchange for access rights, as evidenced by the capacity volume of bids received exceeding the 1,400 MW NETI design capacity.

While the high level concept has been proven based on the process undertaken to date, it is important to note that bidding to this point for proponents has been non-binding and a relatively inexpensive exercise. The robustness of the model and economics will be fully tested as the NECCA progresses to the Development Phase and ultimately to the point where binding bids are secured from proponents, including finalisation of risk allocation as part of the contract negotiation and finalisation.

5.2 Key Learning 2: A closer, more collaborative engagement between Lumea and proponents is needed to refine and optimise technical and commercial details

During the non-binding bids stage, it became apparent to all parties that significant further work needed to be undertaken before securing binding bids and executing contracts. In particular greater detail is needed to be worked through in technical areas (e.g. NETI technical design, GPS coordination, MLF studies) and commercial areas (e.g. FID coordination, contract design, risk allocation).

Working through these will require a collaborative approach with short-listed proponents to ensure an optimal overall design (e.g. substation location; battery energy storage; project design) and therefore NECCA economics.

This optimisation lies at the very heart of the NECCA design concept – ensuring that every aspect of the technical design minimises cost within the required technical specifications, including those set by TransGrid and AEMO for operational performance characteristics of all connecting generation. Therefore, provided the optimised economic NETI costs plus the Connection Fees paid by proponents are less than the costs which would otherwise be incurred by those proponents in the shared network (all risk adjusted), then investment would logically proceed.

A key challenge will be to retain sufficient competitive tension in the NECCA process as it progresses to a more collaborative way of working. This collaboration needs to take place not just between proponents and Lumea (and supporting parties including independent consultants), but potentially also between proponents themselves.

5.3 Key Learning 3: Risk allocation in a competitive model

The development pathway for the NETI which represents an unregulated transmission asset involves a substantially different relationship between than which exists between a traditional TNSP (regulated entity focussed on regulated assets) and a market of willing developers. The NECCA has shown that significant effort needs to be placed in defining realistic risk envelopes for all parties, and assigning risk to each participant in the process.

In the case of the NECCA, particular risks which will need careful consideration during the development and binding bid phases include security and bonding arrangements, the management of variation risks, the availability threshold, and most importantly the arrangements for Financial Investment Decision by Lumea, in a collaborative and coordinated model while retaining a level of competitive tension between proponents for capacity in the final stages of rights allocation.

5.4 Key Learning 4: The need for a Development Phase

In the original project design, it was envisaged that the process would quickly transition from non-binding bids into the binding bid phase.

A key learning is that, with the competitive allocation of connection access rights to a now highly refined short list of project developers, it is essential that the parties work collaboratively to optimise the NETI design (i.e. least cost within defined operational and performance parameters), with the objective of delivering the best possible commercial outcomes for all, and improving the probability that a commercial model can be used to substantially or even fully fund enabling transmission infrastructure.

This identified development phase, which is explored in chapter 7 of this report, recognises this reality.

In an environment of significant change and therefore some uncertainty, notably in relation to the development of renewable energy zones including in New South Wales, and the further details of the NECCA and NETI design to be finalised, the preferred path forward is one where the involved parties work collaboratively to progress the next stage of the process.

6. Community Consultation

To this point in the process, community consultation by Lumea has been localised with high level briefings provided to landholders and local Councils.

As the process proceeds and, in particular, the specific location of key assets (as well as project approvals and easement selection) being developed by Lumea is finalised, this element will take on a much higher level of significance. This is explored in section 7.

7. Upcoming Work: Development Phase

The competitive, non-binding bids phase of the RFC has been highly successful in creating a strong list of proponents and pricing access through a Connection Fee. This stage is now complete.

However, as is evident from the perspectives captured in Section 4, it has become clear to all parties that it will not be possible to secure binding bids (and execute contracts) without significant further work being undertaken. In particular this includes:

- Property acquisitions and easements
- Community engagement
- AEMC rule change implications and outcomes
- NETI project design
- GPS coordination process
- MLF studies
- Contract design
- Process for the efficient development and completion of Connection Agreements (e.g. potentially a batched connection process)
- Process for FID coordination

Further, these matters are best addressed collaboratively with short-listed proponents to ensure an optimal overall design (e.g. substation location; project design) and therefore NETI economics. The NECCA needs to transition from the application of the first NECCA design principle ('competition') to now introduce the second design principle ('collaboration'), while retaining competitive tension in the final pricing and allocation of capacity.

Given this, Lumea is introducing a 'Development Phase' to progress the NECCA. This is a necessary and material change to the original approach, and indeed a key insight in its own right.

The key activities to be conducted during the Development Phase include:

- Close engagement with the short-listed proponents on all key aspects of the NECCA including community engagement NETI project design, GPS coordination, legal terms, FID coordination, property options, etc.
- Planning approvals, land access and tenure, financing, revision of regulatory arrangements reflecting the final DCA rule change position of the AEMC, state planning considerations, Commonwealth approvals (as required), and the bidding and contract development including all binding contract arrangements across parties.
- Progressing iteratively toward FID, and contract execution.

The duration of the Development Phase is estimated as 12-18 months.