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Australia

Rupert Doney
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

30/09/2021

RE: AEMC Transmission Planning and Investment Review (EPR0087) – Tesla submission

Dear Rupert,

Tesla Motors Australia, Pty Ltd (Tesla) welcomes the opportunity to provide a submission to the AEMC's Transmission Planning and Investment Review consultation paper. Our response focuses on the potential challenges with the RIT framework as it currently applies to non-network solutions, and in particular the barriers facing battery storage as a beneficial and enabling asset to support the transition of Australia's energy system.

We understand some barriers may relate directly to the RIT-T framework itself, whilst others arise due to misinterpretation and unfamiliarity that network service providers (NSPs) may have with the assessment of non-traditional solutions such as battery storage. We commend the AEMC for including these issues within scope of this review and believe all market bodies have an important role to play in their resolution.

The market is rapidly transitioning to high penetration renewable energy and NSPs are forecast to spend over $20 billion on new network infrastructure to support this transition over the coming decades, as outlined in AEMO's Integrated System Plan. It is important that this capital is deployed in the most economically and time efficient manner in order to avoid unnecessary congestion, reliability, and security risks. Having the right regulatory framework to appropriately assess non-network solutions will be critical to support these outcomes.

For battery storage options, we have observed complexities that appear to stymie the ability for NSPs to successfully procure these assets (or services from them) under the RIT-T, even when they are increasingly recognised as an efficient investment (and in the long-term interest of consumers) by market bodies, governments, and networks, with many valuable applications. We view the current ex-ante RIT-T framework as non-transparent, complex and outdated and as such, not 'fit for purpose' to support the timely and efficient delivery of transmission projects.

As immediate 'no-regrets' actions, **we recommend additional clarity is provided by the AER on how cost-benefit modelling is applied to non-network options, including through supplementary RIT guidelines that re-assess the appropriateness of the 'total-cost' approach.** This can ensure the full suite of benefits are captured and assessed against network options on an equal footing, supporting economic efficiency principles. This also recognises the time imperative given the quantum of infrastructure spend forecast in the next 10 years.

As a Stage 2 action, **we recommend the entire RIT framework is reviewed and re-calibrated to be 'fit-for-purpose' -** to ensure it removes the disconnect between modelled net benefits, and commercial, environmental and consumer realities. **Additional incentives may also need to be considered to enable non-network options to overcome higher regulatory barriers to entry** (noting extremely few non-network options have been successful through the RIT-T and RIT-D to date). Further justification for these views are included in the response that follows.

Sincerely,

Tesla Energy Policy Team
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Context

Tesla commends the AEMC for its self-initiation of this review and agrees with the AEMC's objectives and framing of the issue, to ensure –

> *"the regulatory framework can accommodate discrete investments of the size and scale required for the energy transition, and that it is sufficiently robust to effectively manage the uncertainty stemming from the pace of Australia's energy transition.*

A central element of supporting this outcome is ensuring appropriate and equitable treatment of all potential solutions that can address the network's identified need, recognising that underling the pace of the energy transition, is the pace of technology innovation, creating new opportunities to procure equivalent (or better) services from non-traditional network assets, such as battery storage. Tesla strongly supports the AEMC's objectives in this regard:

> *"Preserving neutrality between network and non-network options is central to the regulatory framework facilitating identification of the most efficient solution to an identified need (which may be network, non-network or a combination of network and non-network solutions)."*

Numerous studies have outlined the preferences for NSPs to focus on 'traditional' network-based capital investments, noting capital expenditure biases, lack of contestability, information asymmetries, misaligned incentives, cultural inertia, and institutional risk-aversion as possible explanations[1]. Our experience in navigating Australia's regulatory frameworks over recent years supports the validity of all these issues. We note a review of RIT-Ds by the AER highlighted only 1 successful non-network project since the RIT-Ds introduction in 2013, and similarly we are only aware of a single RIT-T (Powering Sydney's Future) that selected a non-network option - as an interim solution ahead of new network spend and by leveraging joint distribution network benefits. This is despite the increasing recognition and signalled intent for NSPs to deploy storage at scale across their service areas.[2]

The summary provided in the consultation paper captures these issues and provides a clear outline of the barriers arising in the transmission planning process. We strongly agree with the following exploratory statements presented as priority issues to be progressed through this review, i.e.:

- The benefits included in the current planning processes (i.e., the ISP and RIT-T) are not sufficiently broad to capture the drivers of major transmission investment
- There is a disconnect between what is required under the Rules and feasible in practice, and this disconnect warrants guidance on hard to monetise benefits
- There are barriers that prevent the equal treatment of non-network options under the RIT-T

However, we suggest these issues are not just limited to ISP related projects that may have additional uncertainty relative to business as usual but are equally relevant to all projects that satisfy the RIT thresholds.

Failing to update the RIT frameworks expeditiously will continue to frustrate the efficient investment in, and delivery of, new assets in the short term (driving higher costs for consumers and increased supply risk), and over longer timeframes will ultimately lead to a fragmentation of the national energy market itself. We are already seeing this play out with Victoria (NEVA) and NSW (Electricity Infrastructure Roadmap) derogating from the NER through state legislation to create the fit-for-purpose transmission planning processes needed to deliver their energy and emissions objectives and manage affordability, reliability, and security risks.

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[1] See HoustonKemp Report: Regulatory treatment of large, discrete electricity transmission investments, August 2020; and Simshauser et al paper noting: *"parametric uncertainty regarding aggregate demand, construction costs, policy, long-lead times and the consequences of irreversible investment commitment typically means transmission planners are in fact highly risk averse"*

[2] See TransGrid Wallgrove Battery; Powerlink's battery EOI; ElectraNet Network Vision 2021; Powercor Victorian REZ proposal; Victorian SIPS Big Battery (that derogated from RIT) with underlying cost-benefit modelling; Western Power distributed storage plan for WA; and strong pipeline of network procured battery storage across US markets (e.g. PJM and CAISO).

Battery storage benefits

Appropriate planning and integration of energy storage is vital for the long-term reliability, security and emissions reduction ambitions of the Australian energy market. This is now widely recognised by all market bodies: AEMC's recent Integrating Energy Storage draft determination is testament to the importance of storage; with AEMO's 2020 Integrated System Plan anticipating that up to 50GW of new large-scale renewable energy generation will be supported by almost 20GW of new storage capacity (per the step change scenario) to provide resource adequacy. This capacity will be made up of pumped hydro, large-scale battery energy storage systems, and distributed batteries, including virtual power plants (VPPs). This is in addition and as a complement to over $20 billion of network investment forecast as critical infrastructure by AEMO out to 2040[3].

For networks, there are three key applications where battery storage can competitively provide services:

	Traditional Approach	Battery storage role
Capacity Constraints	Expand substation; network upgrade; curtail renewables	Defer/complement network investment, reduce risk of load shedding / congestion with 'virtual transmission'
System Services	Syncons; Statcoms	Provide all inertia, system strength, voltage and network services via grid-forming battery inverters
Grid Protection & Resiliency	Network upgrade; synchronous plant back-up (diesel/gas generators)	Contingency and re-start protection; resiliency services (SIPS, SRAS) – e.g. Victoria Big Battery

Battery storage systems have proven their ability to provide all essential energy, system and network services with premium speed and accuracy. AEMO's latest white paper on advanced inverter technologies[4] highlights the importance of inverter-based technologies, grid-forming battery storage in particular, in supporting the transition to high penetration renewable systems, and the need for new assets to provide inertia, system strength, and voltage stability in place of a retiring synchronous thermal fleet. Tesla is actively working on two leading project trials to demonstrate its grid-forming capabilities through its Virtual Machine Mode (VMM): (1) Hornsdale Power Reserve (HPR) in South Australia; and (2) TransGrid's Wallgrove Battery.

Unlocking provision of all services (stacking wholesale market revenues with essential system and network services) is a necessary precursor to deploy storage at the scale required and will accelerate uptake and support development of new commercial models. This is being increasingly recognised by state-led energy policies, including NSW Government's 2GW storage target, and the Victorian REZ Development Plan to integrate 2.4GW of storage across the state. Whilst some market reforms are progressing to support this future (e.g. TransGrid's System Strength rule change), achieving these targets will require regulatory reforms and rule changes that ensure our network planning framework keeps pace with speed and scale of the transition already underway.

Despite the known and well demonstrated benefits of storage, having very few examples of non-network options ever being selected under the RIT-T and RIT-D clearly demonstrates the need for change.

[3] See AEMO 2020 Integrated System Plan, Section E2, Table 14 (pg 8)
[4] See AEMO White Paper – Application of Advanced Grid-scale Inverters in the NEM

Key Barriers in RIT-T

As central players in the electricity system, networks have inherent advantages and opportunities to support the efficient uptake and integration of storage – but barriers and myths prevail. To date, Tesla has observed non-network proposals encountering one or more of the following barriers through the RIT-T process:

Barrier	Example of NSP treatment	Tesla comment
1. Cost *"batteries are too expensive and won't be commercial till 2030s…"*	NSPs using outdated assumptions often view battery technology as more expensive than alternatives and rule out their consideration upfront Risk-aversion / unfamiliarity may also drive additional costs (e.g. inclusion of syncons when grid-forming inverters provide requisite system strength; high losses; or artificially short asset lifetime)	AEMO's Integrated System Plan has demonstrated the falling cost of battery storage and provides standard technology cost input assumptions that can be used to counter this issue.
2. Technical Feasibility *"batteries don't have technical capability to support…network strength / inertia"* *"battery systems were excluded on the basis they were not technically feasible"*	Some NSPs have previously excluded battery systems on the basis they did not have the capability to provide necessary grid services such as network system strength and/or inertia. The burden of proof lies with non-network option proponents to spend time, resources and budget on detailed modelling studies, ahead of being selected (i.e. all at-risk investment).	This issue should be resolved through in-market technical demonstrations, and the increasing confidence of AEMO in inverter-based technologies. Increasing storage deployments, (many supported by ARENA grants) will yield real network and system performance data. Several knowledge sharing reports focusing on the suite of services provided by battery storage (e.g. HPR and Wallgrove) will also clearly demonstrate feasibility of network services. AEMO's engineering framework and Advanced inverter white-paper will also inform grid-forming capabilities for newer services such as inertia, system strength and voltage stability.
3. Regulatory treatment *"regulations prevent us from owning or operating storage assets"* *"economic frameworks model storage negatively, even though we know they are commercial"*	NSPs face limited guidance material on the treatment of battery storage under the RIT cost/benefit framework – undervaluing the benefits and overinflating the costs. There is also a lack of clear guidance on how to treat hard to monetise benefits, and how to allocate costs where assets are shared and/or leased.	Ongoing confusion on application of RIT framework. Requires consistent and accurate interpretation of what costs and benefits to include to prevent ongoing irrational outcomes. **This AEMC Transmission Planning Review is key opportunity to support equitable outcomes and remove existing barriers and issues with RIT-T.**

Whilst the cost and technical feasibility barriers are being overcome through the irrefutable evidence of technology innovation, the AEMC's Transmission Planning Review will be critical in ensuring the regulatory barriers are captured and addressed as quickly as possible. The AER's involvement and support will be essential, and we support the 'market body advisory group' to be leveraged to ensure collaboration on actions and appropriate governance can be established.

RIT Economic Modelling Assessment Issues

On top of the documented drivers for preferring ‘traditional’ capex (i.e. misaligned incentives, cultural inertia, risk aversion, lack of contestability etc) NSPs face limited guidance material (e.g. case studies, examples, clear and consistent input assumptions) on how to properly assign value to storage under the RIT-T – leading to an undervaluation of the benefits and over-inflation of the costs.

In Tesla’s experience, the RIT assessment framework still presents as a ‘black-box’ to non-network option providers, with NSPs (and their economic consultants) modelling cost-benefit assessments based on a limited set of cost input assumptions (potentially out-dated or disadvantageous relative to actual specifications) – e.g. for battery storage: inflating capital costs, reducing asset lifetime, and lowering round-trip-efficiency.

On the benefits side, the array of benefits listed and considered within the RIT are not sufficiently broad to capture the true ‘real-world’ benefits that arise from otherwise commercially viable projects. In particular, the hard to monetise benefits are commonly excluded, even though they potentially make up a larger proportion of the benefits from non-network solutions relative to traditional network solutions. Tesla has observed the following specific issues:

- **Optionality**: whilst part of the framework, we are yet to see this value ever captured through standard models. We note this requires more complex, probabilistic modelling (to factor in load/generation uncertainty), but this may be warranted as it forms a key part of the value proposition for non-network solutions relative to network assets (e.g. rapid deployment of battery storage that can be deployed in months not years). It would also exclude the modularity value of batteries that can be scaled up or down as uncertain load and generation forecasts are realised (or not). We note that this uncertainty appears to be increasing with the rapid transformation of the energy sector. Fast deployable solutions such as grid-batteries or aggregated DER has demonstrated benefits to reduce network upgrade costs, accelerate timelines, avoid sunk costs, or defer the build out of major projects.
- **Market benefits**: battery storage has consistently demonstrated its ability to reduce prices in wholesale energy and frequency control ancillary service markets. NSPs following RIT-T guidance exclude these benefits on the basis of ‘wealth transfers’ between market participants, but this appears to completely negate the benefits from improved liquidity and/or the removal of price distortions in the market. There would also likely be reduced costs on other partiers (e.g. back-up plant).
- **Resiliency benefits**: Inter-regional resiliency and planning is another prime value opportunity – storage has proven capability to provide resiliency and system security within and across regions (e.g. virtual transmission, batteries providing system restart ancillary services etc.). Hornsdale Power Reserve has already evidenced its premium ability to support arresting frequency in multiple system security events - a clear example of the ongoing need for network investments in batteries and the wider role ‘virtual transmission’ capacity can play. It remains unclear how any of this value is currently captured through the RIT framework.
- **Ancillary market benefits:** we understand NSPs only typically model wholesale energy changes occurring in dispatch - considering FCAS a negligible class of market benefit. However, this is backwards for battery storage projects that currently see most of their value realised in FCAS markets. More detailed modelling would ensure the true value of these benefits can also be captured, even if it is more complex than energy only models.
- **Capital Cost Asymmetry:** battery storage can provide multiple services to multiple parties. We understand the AER has recently updated guidelines to address asymmetries between capex and opex solutions (i.e. regardless of ownership the total economic cost of solutions should be captured), however recent discussions with NSPs suggest this will disadvantage battery storage even further, which is disconnected from the reality of investment decisions – see examples below.

Collectively, these issues create significant distortions in outcomes. Failing to provide for a true assessment of the costs and benefits of non-network options is driving a significant disconnect between what is theoretically modelled in RIT-T rankings, and what is actually the most commercially viable and beneficial projects in practice.

EXAMPLE A

<u>Illustrative example of cost treatment for non-network proposal</u>

The following example highlights the irrational treatment battery storage projects face under the current interpretation of the RIT-T framework – demonstrating the need for AER / AEMC clarity:

Project assumptions (purely illustrative):

1. Identified network need for 50MW of capacity
2. Non-network solution proposed with oversized 100MW battery system (i.e. 50% portion providing network service, 50% participating in market – and for simplicity assume market operation has no impact on network performance)

Ownership and commercial model options:

a) NSP owns battery, incurs 100% capital cost, but receives lease payments from 3rd party to use 50MW portion (e.g. TransGrid Wallgrove battery model)
b) NSP leases battery, no upfront cost incurred, and pays 3rd party a network service (opex) lease payment for 50MW portion (e.g. SIPS contract between SA Government / ElectraNet and Hornsdale Power Reserve)

There is a clear disconnect between what the cost treatment would be vs should be for these proposals
From first principles, it would make sense to partition the battery into its network and market role – and assess the true costs and benefits according to the NPS's requirement (and noting precedent set by AER for the ElectraNet ESCRI battery).

However, Tesla's understanding is that the latest guidelines (example 20 in RIT-T guidelines) are being interpreted such that the total capital costs for the oversized 100MW battery must be included under both ownership models, whilst any lease payments that 3rd parties provide are excluded as they would be considered a 'wealth transfer' (i.e. if 100MW battery costs $100m, and a 3rd party provides $50m NPV lease payments, NSP must still book $100m cost under both models (a) and (b).

Whilst this view may align with theoretical economic cost principles, it appears to directly ignore the practical market benefits of non-network solutions that would be released by consumers, network businesses, and solution providers.

EXAMPLE B

<u>Illustrative Financial Comparison – battery storage vs synchronous condensers</u>

Using the latest RIT-T guideline interpretations described in Example A, suggests that an equivalent network asset (e.g. synchronous condenser), with no market participation benefits, no lease payment offsets, and fully network owned (100% of capital costs) would be assessed as having a higher theoretical 'net benefit' based on the RIT framework assumptions, even though it costs the NSP (and ultimately consumers) significantly more in reality. This approach also ignores the suite of other essential system and wholesale market services (and benefits) that could be provided from the same battery asset:

Description	125MVAr Syncon	100MW Grid-forming Battery	
Initial Term	20 years With additional sunk asset risk	20 years With optionality to extend	
Delivery timeframe	~2 years	**~1 year**	
Capital Cost (Real $m as at March 2021)	~$43.0m	~$112.0m	RIT-T assessed cost
Actual Net Annual Cost to Network	~$5m	**~$4m**	Lowest net present cost option
Services Delivered	Single-purpose technology No additional services Stranded asset risk	**Multiple applications** **Suite of network, essential system and energy services (energy, frequency, voltage, system strength etc.)** **Flexible and expanding role in market**	

EXAMPLE C

Case study: Broken Hill

The Broken Hill RIT-T 'project assessment draft report' (PADR) consultation process has been ongoing since 2019, with a recent re-start to ensure assessment includes 'total economic costs and benefits' for all solutions irrespective of ownership:

- We understand this is based on new AER guidance, where lease payments (to/from TransGrid) will be ignored, whilst the total capital cost of all solutions are included in the assessment (even if they are not actually incurred by TransGrid).
- This will have a clear and substantially negative impact on battery storage proposals that are inherently multi-use assets that can be partitioned to serve multiple value-generating roles to multiple parties (as noted in the examples above).
- Combined with the ongoing challenges of capturing the additional market service benefits that storage provides (reduced wholesale energy prices, mitigation of disorderly bidding, value of frequency and essential system services, optionality benefits etc), these non-network solutions become further disadvantaged.
- Finally, we understand the updated guidance suggests that existing diesel turbine assets have a sunk cost that can be excluded from the investment expenditure analysis, making any alternative solution inherently uncompetitive. This also links to a broader issue on how carbon emissions are captured (if at all) in the transmission planning and regulatory processes more generally.

This framework is clearly disconnected from reality, as it fails to recognise battery storage systems are commonly oversized and portioned to provide additional market benefits. i.e: if TransGrid own the storage system, they must model full capital costs of an oversized MWh capacity system (even if they only need 250MWh to serve Broken Hill's needs); and if a 3rd party own the system, TransGrid still must include the full capex of the entire system, ignoring the fact that in practice they would only be paying annual lease payments for a network service portion they need to reserve / have available.

The Broken Hill PADR provides an instructive (and live) example of the disconnect between economic modelling (underpinned by AER RIT guidelines), vs actual commercial and consumer realities that decision makers must incorporate and are required to enable optimal solutions that drive lowest-cost impacts to consumers over the long-term (i.e. uphold the principles of the NEO). Even if NSPs want to explore innovative solutions such as battery storage (e.g. TransGrid's Wallgrove Grid Battery), they will face intractable barriers unless these projects are pilots progressed outside the RIT-T, or leverage substantial external funding (e.g. government or ARENA).

EXAMPLE D

Case study: Improving stability in south-western NSW[5]

Another recently released PADR highlights a similar challenge for non-network options to be appropriately valued under the latest AER RIT-T guidelines.

The preferred solution is option 1A – a new 330 kV transmission line between Darlington Point and the new Dinawan substation, which is being constructed for EnergyConnect. It is the only option with positive expected net benefits on a weighted basis across all scenarios (aligning with the AEMO ISP scenarios). We make the following high-level observations:

- There was significant variance between option outcomes based on each scenario, with even Option 1A modelled to have net costs for the 'Central' scenario. This highlights just how sensitive modelling outcomes are to input assumptions.
- Conversely, the stand-alone battery storage solution was modelled to have a net cost outcome in all but the step-change scenario (despite having consistently the highest gross benefits).
- With this level of uncertainty, it implies optionality and deployment flexibility is inherently valuable (e.g. what is the least cost solution to address identified need, that may avoid a sunk cost for 25+ years from single-use assets). It also suggests further assessment is required to justify why battery storage costs are modelled as being so high to reduce the substantial gross benefit to result in a large net cost.
- We understand there is an additional (uncaptured) cost / risk to developing greenfield network solutions as they require more social licence, timing, community engagement and land requirements than significantly more compact, more

[5] See TransGrid PADR

innovative non-network options that can avoid many of these issues (e.g. virtual transmission). These costs/ risks will only increase as the transition accelerates and GWs of renewable, storage and billions in network investments gets deployed across the NEM in the coming decades, and may no longer be able to fall back on compulsory acquisition provisions used by NSPs historically.

Whilst the underlying EY modelling provides some additional transparency on the approach taken, it also raises additional interpretation questions on what is driving these outcomes:

- As the PADR outlines, *"market benefits of all options are primarily derived from avoided generator dispatch cost, avoided and deferred capital costs associated with new generation and storage capacity and lower transmission costs associated with connecting REZ"*
- So the modelling does not capture optionality, competition benefits, ancillary service benefits, and sensitivity to early coal retirements (which drive much of the avoided dispatch cost benefits of 1A). It also excludes the benefits of batteries to alleviate immediate flow constraints ahead of EnergyConnect on the basis these benefits are not material and time limited.
- Similarly, if VNI West commissioning is accelerated, then all network options would have a net cost, and it would appear there would be no sensible option. However, battery solutions are an order of magnitude lower cost than new transmission lines (both in absolute capex and in real 'lease model' terms). In reality, the battery option would not require full capital cost to be incurred by the NSP, and instead could be structured as a flexible lease payment to provide network services in addition to market participation (removing the stranded asset risk relative to other network only options).
- Despite being referred to, it is unclear how the additional market participant value (i.e. the capacity used for market participation) has been captured in the modelling, as this requires a complex forecast of wholesale market revenues and assumptions of bidding optimisation based on operator preferences.

As the PADR outlines (for all scenarios modelled), whilst "*the battery options are estimated to provide the greatest level of gross benefits of all options, the significantly greater capital cost of these options means that they also have significant net costs associated with them"*.

Again, this clearly demonstrates the barriers and disconnect with the RIT-T guidelines forcing *"the full capital and operating costs of the option"* to be included, potentially leading to inefficient investment decisions.

Process Issues

Asymmetric resourcing requirements vs reward

A final area that presents a challenge to non-network proponents is the RIT process itself. There is a clear unevenness in the ability for prospective parties to engage in opportunities – requiring proponents to scan across a significant volume of RIT-D/T announcements, follow consultation reports through the initial, draft and final stages, and (based on our recent experiences) invest heavily in ensuring assumptions are correct, ensure technology inputs are being factored into models correctly, dedicate significant engineering capacity to support NSP engineers integrate a non-network solution into existing models, and attempt to clarify and ensure appropriate treatment of the costs and benefits under the RIT framework.

We understand some of this burden will be alleviated by the AEMO centralizing the key assumptions and coordinating the initial element of the RIT-Ts for actionable Integrated System Plan projects. However, the intensive requirement on proponent's time and resourcing is still a key concern, particularly where the RIT-T may only be the first stage in determining a 'preferred option' before NSPs go to market and run additional competitive processes. In effect, this may provide additional context for why non-network proponents are dissuaded from participating in the process, despite having an optimal solution.

Material changes in project costs

Tesla also recommends additional governance and guidance to support NSPs seeking fair and transparent costs across all proposals – i.e. there appears a gaming risk, where some solution providers may strategically discount the actual capital and operational costs to gain preferred project status (i.e. win the RIT-T net benefits test), only to adjust cost estimates upwards at the contracting stage, citing 'external factors', and with the knowledge that NSPs and government policy makers may have already committed and be unwilling to reverse course, despite the cost escalations.

One potential solution to this is to use more general cost assumptions, for example leveraging the public and heavily consulted on AEMO Input Assumptions and Scenarios Report (which in turn relies on CSIRO's GenCost models for generation and storage build costs[6]). If any large discrepancies exist between these general $/kW or $/KWh metrics and solution proposal costs, they should be justifiable and explained in the PADR.

We welcome any further clarity the AEMC and AER can provide on these points of process.

Proposed Recommendations

Noting the significant quantum of network investment (over $20 billion forecast in AEMO's 2020 ISP) already progressing in order to be deployed and operational by the 2030s, Tesla recommends any high benefit, no- regret solutions or clear actions to the issues arising out of Stage 1 of this review be progressed rapidly and independently of the Stage 2 round of consultations, to avoid additional delay that would otherwise perpetuate inefficiencies and unnecessarily increase costs for consumers.

For example, if there is a clearly identified need and consensus on providing a guidance note to support assessment of non-network options, that action should be expedited immediately. The alternative of waiting until 2023 or later would clearly not be keeping pace with the energy transition, particularly given many of the large investment decisions for transmission are already occurring. Similarly, if there are complex issues that give rise to more significant overhaul of the RIT framework requiring much more detailed analysis, design and consultation, it seems unwarranted to hold up the simple elements that can be actioned independently for immediate gain.

We summarise our key recommendations below:

1. **Create supplementary RIT guidelines** - to ensure all appropriate market values (particularly those that are hard to monetise) are taken into account. For non-network proponents there can be a wide range of FCAS and other system security services that provide significant benefits, typically not captured under current RIT assessments. The AEMC / AER can provide additional insight and transparency on how these values should be included for non-network solutions, such as battery storage, through worked examples and additional guidance for NSPs.
    - **The AER can provide an immediate interim guidance note on the full list of benefits for non-network / storage projects – this would be extremely valuable to NSPs, consultants and solution proponents**
    - **Additional guidance on network ownership and/or procurement of storage services in particular will support future uptake of storage ahead of market reforms (e.g. system strength) and help address existing information and risk asymmetries**
2. **Clarity on cost benefit modelling** - building on the examples above, we recommend the AEMC work with the AER to provide further clarity on how costs and benefits are treated for non-network options to ensure efficient and fair assessment. This will be particularly important for projects that partition assets across multiple network

[6] See CSIRO GenCost 2021

and market roles, and/or have innovative commercial models regarding ownership and operation that apportion costs and services (e.g. leases).

- **Market bodies can help promote and work with government policy to provide support for innovative projects that may still be unfamiliar to NSPs as a pathway to unlock procurement of network services from lower cost non-network solutions (e.g. Victorian RDP process; or SIPS procurement)**
- **Longer term, if it is deemed the ex-ante RIT-T 'total economic cost' framework is unable to bridge the gap between commercial, environmental and consumer realities vs economic modelling outputs, different economic-market frameworks should be considered to ensure the speed and scale of network, non-network and combination investments can be progressed**

3. **Process improvement** – to ensure the most efficient long-term solution is progressed, it will be important to encourage both network and non-network option providers to engage in a streamlined, fair and transparent processes. Gaming risks can be partially mitigated with simple checks and balances utilising existing AEMO processes under the ISP. It may also be valuable to further workshop points of improvement with the AER, NSPs and industry participants to ensure incentives exist for non-network option providers to participate and can access consistent treatment across jurisdictions in the immediate term. In addition, updating the approach to contracting (e.g., avoiding heavy burden of engagement only to get to an EOI stage open to all proponents) may help to resolve inconsistencies with network solutions, remove additional disincentives for non-network providers, and ensure a transparent and more streamlined procurement process.

   - **The published assumptions underpinning AEMO's ISP should be used as guard rails for RIT-T assessments to ensure a suitable baseline for input cost assumptions**
   - **Additional / improved incentives may be warranted to ensure non-network solutions can overcome regulatory burden that is currently a barrier to entry, including earlier stage contracting approaches**