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8 March 2018

Dr. Kerry Schott  
Independent Chair  
Energy Security Board

*Submitted electronically*

Dear Dr. Schott,

NextGen Utilities, LLC (“NextGen”), an independent Consultancy and Energy Services provider with significant Australia and Overseas power markets expertise, makes this submission in response to the *National Energy Guarantee – Draft Design Consultation Paper* (“NEG Paper”) dated 15 February 2018.

In line with feedback provided to the ESB at the 26 February 2018 Public Forum in Sydney, NextGen considers the overarching framework as well as design elements of the Reliability Requirement and Emissions Requirement to be overly burdensome / complex to Market Participants and notes that the Overseas experience in several jurisdictions, most notably the United Kingdom, provide a proven and far more simplified blueprint than as currently envisaged within the NEG Paper’s contracting framework. NextGen also cautions against the requirement that contracts be ‘linked to physical capacity’ as it relates to impacts on market liquidity and market participants’ ability to hedge their portfolios. A detailed discussion of key observations and alternative mechanisms is outlined herein for the Energy Security Board’s (“ESB”) consideration.

### **STRUCTURAL CONSIDERATIONS**

The NEG Paper’s proposed requirement to have Retailers “reporting contracts of their choosing” under various approaches to demonstrate compliance with the Emissions / Reliability Requirements will impact on the entire contracting value chain underpinning the NEM. Key potential adverse impacts of the various proposed mechanisms on the NEG Paper may include:

- *Inadequate risk management instruments* – Consider a Retailer (or Generator) delta hedging its position by undertaking market buys / sells as market prices decrease / increase. Under the envisaged framework, inherent incentives (i.e., no ‘double counting’ provisions, infringement provisions, limited market depth) will exist for market participants to *not* minimise the riskiness of their portfolios thus resulting in increased Earnings at Risk and thus leading to higher premiums passed on to end-users;
- *Inefficient markets* – Consider a generator with a sold contracted position during a high volatility period experiences an unplanned outage and seeks to buy back its sold contracted position.

Whilst the Certification of Financial Contracts (Section 5.6.1) seeks to avoid double counting to “create a stronger link between the financial contract and the physical asset,” there is not a workable path to ensure that either the seller of the sold contract is not impacted above and beyond market-based cost of buying back those contracts, if any. In the case of the buyer of said contracts, there is also no clear scenario where a contract buyer who entered into an arms-length arrangement would remain ‘compliant’ whilst at the same time delivering actual physical asset / financial contract linkages as it pertains to the Emissions / Reliability requirements’ objectives. More saliently, a significant incentive arises whereby the seller of such contracts may have to buy back the sold contracted position from the original buyer for above market prices, without benefiting from market-based competition. Ultimately, costs to end users would rise and follow on impacts can be expected both to the seller / buyer;

- *Decreased liquidity* – The envisaged changes proposed under the NEG Paper will necessitate the creation of different ‘Contract Vintages’ to ensure the Emissions / Reliability requirement is met. The creation of new Contract Vintages will inevitably result in decreased liquidity across the already sparsely traded Swap and Cap Contracts, especially in SA and QLD. In addition, the linear relationship between volatility and collateralisation (i.e., ASX Futures) will continue to prove an entry barrier to new entrant Retailers. As such, Market Participants’ ability to ‘freely’ contract within the liquid period of the Forward Curve will fall significantly, creating additional execution and pricing risks (in addition to increased Capital at Risk arising from longer contracted holding periods under a Value at Risk methodology) which will require a corresponding increase in premia, ultimately passed on to the end-user;
- *Scope and Coverage* – The Guarantee will not directly address the provision of a range of services including system strength, inertia, ramping and flexibility, which are required for a secure system. A robust Reliability requirement should ultimately include the above range of services as the NEM continues to transform itself into a distributed generation heavy Grid. Specifically, the inclusion of certain Technology types (i.e., front of meter storage, synchronous solar photovoltaics) as explicit components as postulated in overseas market such as California have contributed to increased grid stability despite the profound impacts of the ‘duck curve’ and associated ramping; and,
- *Classification of Certain Technology Types as Non-Synchronous* – The Finkel Review<sup>1</sup> notes that “AEMO lacks sufficient visibility of [Distributed Energy Resources], which makes it difficult to manage the power system effectively.” As such, the ability for certain types of technology to act as dispatchable for the purposes of the Reliability Requirement is not so much a ‘technology gap’ as much as a data and preparedness gap as it pertains to AEMO’s current capability. Recent

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<sup>1</sup> Page 32, <https://www.energy.gov.au/sites/g/files/net3411/f/independent-review-future-nem-blueprint-for-the-future-2017.pdf>

experiences overseas suggest that “advanced power electronics and solar generation can be controlled to system-wide reliability...including active and reactive power<sup>2</sup>.” Similarly, ESCOSA recently announced<sup>3</sup> that a trial at Hornsdale 2 windfarm to provide FCAS was under way. NextGen advocates a framework whereby certain technology types can be ‘tested’ for eligibility into various Compliance markets (i.e., Emissions / Reliability Requirements) instead of the current approach which does not appear to provide a framework to underpin the development / grid integration of emerging technologies (i.e., synchronous PV);

- *Increased likelihood of market gaming* – Under a scenario where the Reliability Gap is triggered and Retailers able to ‘self-procure’ their share of the Reliability Gap (i.e., firing up back-up diesel generators), the possibility of doing so in a fashion benefiting its other positions arises. Consider a Generator with contract positions in VIC and SA and holding VIC-SA / SA-VIC Settlement Residue Auction Units. The firing up of diesel fired generators as a means of ‘self-procuring their share of the Reliability Gap’ may drive artificial constraining of interconnectors, thus artificially altering pricing at applicable trading intervals.

As a result of the above critical issues, NextGen advocates the use of a ‘Top Down’ model in lieu of the current ‘Bottom Up’ approach as it pertains to both the Emissions and Reliability Requirements in a fashion briefly alluded to in *Box 5.3 Book-Build Option* of the NEG Paper.

### **UK’S ENERGY MARKET REFORM – A PROTOTYPE FOR AUSTRALIA**

Whilst facing the same ‘Policy Trilemma’ as Australia (i.e., decarbonisation targets, lowest cost supply objectives, and reliability standards), the United Kingdom in July 2012 adopted a sweeping suite of Energy Market Changes, known as the Energy Market Reform (EMR). The two central aspects of the EMR reforms included the creation of a forward capacity market as well as the enactment of a Contracts for Differences (CfD) Scheme in relation to supporting renewable energy generation. The CfD’s central premise is that projects periodically compete for a finite pool of financial incentives, driving competition and more closely coupling (i.e., in comparison to certificate-based schemes such as the RET) physical assets and paper trading markets through the payoff structure of the Awarded CfDs<sup>4</sup>. This section focuses on the CfD Scheme enacted in the UK and postulates that this ‘Top Down’ Approach (i.e., modified version of Book-Build Option on NEG Paper) provides the market with increased liquidity, lessens operational complexities to Market Participants, lowers the risk of Market Participant ‘gaming’

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<sup>2</sup> *Demonstration of Essential Reliability Services by a 300 MW Solar Photovoltaic Power Plant*, California.  
<https://www.nrel.gov/docs/fy17osti/67799.pdf>

<sup>3</sup> <http://www.escosa.sa.gov.au/projects-and-publications/projects/electricity/electricity-generation-licence-application-hwf-2/electricity-generation-licence-application-hwf2>

<sup>4</sup> In the UK, CfD’s were awarded to renewable generators as a backstop for a period of 15 years. The ESB may wish to consider different contract tenors (i.e., covering a reliability gap period only, balance of RET, etc).



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and delivers the same Policy Trilemma objectives to Australians at lower cost arising from increased market competition associated with new generation.

### What is a CfD?

CfD's are intended to provide long-term revenue certainty to eligible generators. This allows investments to come forward at a lower cost of capital<sup>5</sup> and therefore at a lower cost to consumers. CfD's are envisaged as a private law contract between a yet to be determined counterparty (i.e., AEMO, Commonwealth of Australia Government, other) and the successful CfD Award recipient. In line with a revenue put option, CfD's should be designed to provide additional certainty and stability of revenues to CfD Award recipients by reducing their exposure to volatile wholesale prices whilst simultaneously protecting consumers from paying higher support costs when electricity prices are high. Additionally, CfD's can be designed so that it underpins the Tolling or Power Purchase Agreement with downstream PPA Providers (i.e., Retailers who provide a CfD Awarded Counterparty with a route to market in exchange for fees and / or extrinsic value arising from any off-take arrangements), thus driving additional hedge market contracting / liquidity. In line with the UK experience, it is not anticipated that the introduction of an Australian CfD Scheme would necessitate the interference with existing traded market constructs nor would it drive the creation of new 'competing' contract / compliance markets potentially eroding liquidity in existing Cap / Swap / Swaption markets.

### Policy Framework – CfD's

Structurally, Retailers collect moneys from end-users volumetrically via a Levy Control Framework which ultimately funds CfD Generators' competitively awarded incentives as follows:

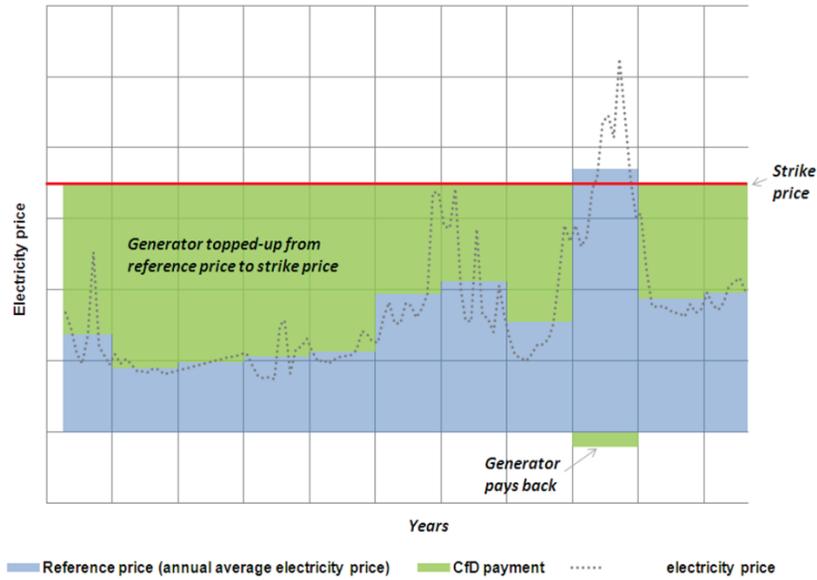


The Levy Control Framework may be adapted to account for potentially exempted EITE end-users. Furthermore, higher \$/MWh volumetric charges may be applied to (insufficiently hedged) 'large' end-users with Spot Price passthrough arrangements to incentivise 'physical hedging' and / or to disproportionately contribute to CfD Awards. Moreover, the ESB may also consider implementing lower \$/MWh volumetric charges to large end-users who have demonstrated an on-going ability to deliver demand response into the grid as an incentive to drive additional grid reliability.

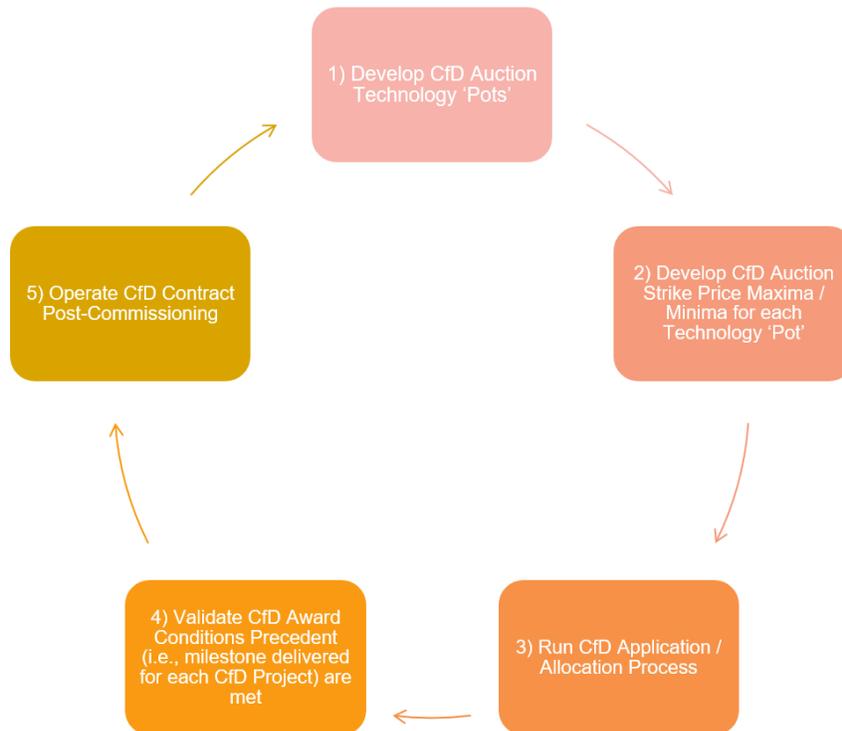
CfD Settlements and cashflows can be undertaken as a matter of course within AEMO's periodic Settlement Statements / Calendars and are predictable and true-up mechanisms in line with existing methodologies in place as follows:

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<sup>5</sup> Experience suggests that because revenues for a given Project are known ahead of time, Financing parties will typically accept lower debt service coverage ratios, thus making projects more competitive



Following the enactment of Governance constructs, the high-level steps the ESB may wish to consider as it pertains to the commencement of an Australian CfD Scheme may include:



1. *Develop CfD Auction Technology 'Pots'* – The overarching body responsible for the CfD Scheme would create Technology Pots (i.e., Pot 1 as dispatchable generation, Pot 2 as non-dispatchable generation). During this step, the capacity procured (may include additional eligibility characteristics such as ramping) at each Region for varying Tenors for each Pot would be announced to the market, ideally aligning Reliability Gaps and the Emissions Trajectory to Pot MWs / Contract Tenors whilst considering known new builds, retirements, outages and system constraints;
2. *Develop CfD Auction Strike Price Maxima / Minima for each Technology 'Pot'* – At this stage, likely through Cost of New Entrant (CONE) modelling approach and subsequent stakeholder consultation process, minimum and maximum CfD strike prices would be developed for each Pot. The Strike Prices would function as an investment signal to the market to drive new, fit for purpose (i.e., delivering on the same objectives as Reliability and Emissions Requirements) delivering installed capacity that directly ameliorates any Reliability Gap periods whilst simultaneously ensuring that Australia's adherence to its Emissions Targets / Trajectory is met;
3. *Run CfD Application / Allocation Process* – Eligible CfD Applicants would at this stage demonstrate qualifying Project Plans (i.e., development consent order, Interconnection agreements, planning permission, EPC contracts, etc) and compete for incentives allocated to each Pot. CfD Applicants would be able to submit 'flexible bids' comprising strike prices between Minima and Maxima, as well as varying Capacity amounts. An allocation mechanism (i.e., lowest \$/MWh) would be created to orderly award CfDs to successful Allocation process participants;
4. *Validate CfD Conditions Precedent Are Met* – During the step, an appointed administrative body would ensure CfD Award recipients are delivering agreed upon milestones during the Target Commissioning Window for each project. Crucially, 'minor and necessary' modifications should be supported (i.e., enable developer to 'oversize' project from a physical point of view); and,
5. *Operate CfD Contract Post-Commissioning* – With the CfD Awarded Project now operational, periodic contract management activities occur, including making / receiving payments, management of collateral, compliance with CfD Terms and Conditions and other customary activities.

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- ✓ *A relatively straightforward, Top Down Levy Control Framework based CfD-like regime should be considered by the ESB as a means of supporting the ‘right’ mix of generation in the NEM. This approach is operationally simple and through fit for purpose design and planning can deliver on the Objectives set out by the Reliability and Emissions Requirements in lieu of the complex and potentially market distorting Contracting Regime currently envisaged;*
  - ✓ *The CfD Structure presented herein maintains markets intact whilst driving additional market liquidity through off-take arrangements or intermediation with third parties (i.e., Retailers), whilst aligning with Demand Response Initiatives of the ESB;*
  - ✓ *Additional design elements may be incorporated to ensure alignment with Finkel Recommendation 6.8 & 6.9, ensuring adequate rewards are available to network providers for the avoidance of capital expenditures and microgrids / innovation related ‘avoided costs’ are captured, thus delivering lower ‘supply plus networks’ costs to end users;*
  - ✓ *Provides flexibility to the ESB and other entities (i.e., ARENA) as it pertains to the support of innovative and strategically significant generation technologies (i.e., via the creation of a Third Pot – Emerging Technologies) via the market based CfD Allocation Mechanism*
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In essence, the ESB should consider AEMO or another entity, subject to further governance considerations, not as a “procurer of last resort” but instead as a Policy Trilemma facilitator delivering lowest cost outcomes via a competitive bidding processes and innovation to ensure the ‘right’ generation mix is in place in Australia.

Finally, NextGen appreciates the opportunity to contribute to this consultation.

Kind regards,



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