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Electricity Authority / Commerce Commission
Energy Competition Task Force

By email: TaskForce@ea.govt.nz

Submission of Harmony Energy - Initiative 1A: Working Paper “Entrant generators – context, headwinds and options for power purchase agreements”

Harmony Energy is a UK-headquartered business that develops, owns and operates utility-scale battery energy storage, solar farms and wind assets. It operates in the UK and several European countries and has an established local team in the New Zealand market.

In New Zealand, Harmony Energy has recently announced the successful financial close and commencement of construction of the Tauhei Solar Farm project. At the time of commissioning in late 2026, the Tauhei project is expected to be New Zealand’s largest solar farm at 202 MWp, constructed on 182 hectares near Te Aroha in the North Island. The solar farm will generate 280 gigawatt hours of electricity per year, which is enough renewable electricity to supply the equivalent of approximately 35,000 New Zealand homes.

The Tauhei Solar farm project is supported by a power purchase agreement with a large NZ gen-tailer, who will purchase 100% of the output for the first 10 years of operation. That PPA is key to the successful project financing of the project. Harmony Energy conducted a market testing exercise with multiple prospective energy buyers in 2024 so has very recent experience of the NZ PPA market.

Outside of the Tauhei solar farm, Harmony Energy has secured a further nine solar / BESS projects in NZ that will bolster NZ’s clean energy capacity and energy security. Three of these projects have been granted resource consents. Securing PPA’s with investment grade off-takers will also be key to the successful project financing and construction of these projects.

Harmony Energy would be happy to expand on this written submission in discussion with the Energy Competition Task Force.

Please note this submission was prepared without regard to the Task Force’s “Level Playing Field Measures” options paper released on 27 February 2025. Harmony Energy will submit separately on that options paper.

1. Is there any other related work that you think is relevant to our consideration of PPA issues?

1.1. Yes – two issues:

1.1.1.Regulation of PPA’s as derivatives under the Financial Markets Conduct Act 2013; and

1.1.2.Dispatch services.

Financial Markets Conduct Act 2013 (FMCA)

1.2. As the working paper notes, PPA’s are typically structured as a contract-for-difference. But the working paper does not recognise one important regulatory consequence of this – namely that PPA’s are regulated as a derivative under the FMCA.

- 1.3. The FMCA regulates offers of financial products, which includes derivatives. As the PPA is a derivative, Part 3 of the FMCA imposes disclosure obligations on the issuer of a financial product unless one of the exclusions in Schedule 1 to the FMCA applies.
- 1.4. The disclosure obligations are intended to protect retail investors and are fairly onerous. The disclosure obligations are of limited value in the context of a PPA negotiated between two commercial entities, yet the exclusions in schedule 1 to the FMCA are not readily applicable to many PPA's. For example:
 - 1.4.1. A renewable project development will typically be undertaken by a project-specific special purpose vehicle (SPV). This means the SPV as the energy seller under the PPA is unlikely to meet the exclusion available to a "wholesale investor" that is "large". At the time the PPA is signed (i.e. before the project assets are constructed), the SPV itself is unlikely to have a large enough balance sheet to qualify as "large".
 - 1.4.2. While the SPV may be able to qualify as a "wholesale investor" if it is "controlled" by an investor that is "large", the SPV may be a 50/50 joint venture between two parties. Inexplicably this exemption is not available for a 50/50 joint venture where control is evenly balanced between two investors, even if both of those investors would individually qualify as "large". This appears to be quite simply an error in the drafting of the FMCA.
 - 1.4.3. There is an exemption for a PPA seller as a "wholesale investor" if the notional value of the derivative is at least \$5 million. Yet it is not at all clear how to calculate the "notional value" of a PPA contract-for-difference against wholesale electricity market pricing set per node per 30-minute trading periods and for intermittent generation. There are no guidelines or regulations provided by the FMA on this question. The purpose of the \$5 million threshold is surely to provide that high-value derivative contracts should be treated or assumed as being transacted between wholesale investors under the FMCA. Yet the exemption is effectively nullified for electricity PPA's due to the lack of guidance as to how "notional value" should be determined.
- 1.5. We appreciate that financial market regulation is beyond the remit of the Task Force, but consider it would be helpful if these issues could be raised by the Task Force with the Financial Markets Authority for further consideration.

Dispatch Services

- 1.6. The working paper only briefly notes at paragraph 3.14 that PPA's "can...potentially" be supported by use of an agent to manage ongoing metering, network access, and wholesale market participation obligations. This is missing the point that a PPA seller *must* meet Code requirements for bid, offer, dispatch and reconciliation obligations in order for the electricity to be dispatched into the wholesale market. For new entrant generators, access to these dispatch services is not straightforward. The ICT requirements for outsourcing dispatch services are an additional hurdle or potential barrier to market entry for new generators. A new entrant generator structured as an SPV with only one generating asset may not have sufficient scale to efficiently and economically self-perform dispatch services.
- 1.7. Gen-tailers perform their own dispatch services, and in NZ the current potential market for such services to be provided by smaller or independent service providers is extremely shallow.
- 1.8. In our experience gen-tailers, despite having established dispatch functions:
 - 1.8.1. do not readily offer to perform dispatch services when providing price proposals as a PPA buyer; and/or

1.8.2. do not provide transparent pricing for dispatch services for what should, for a gen-tailer, be a revenue contribution to an existing overhead cost with no, or minimal, additional incremental cost.

1.9. A broader market for dispatch services would assist participation of a wider pool of sellers in the PPA market.

2. Do you have any suggested additions or modifications for PPA terms and concepts?

2.1. Relative to the points made above regarding dispatch services, we suggest that the Task Force develop standard terms and concepts for dispatch services and include these in its on-going analysis of the PPA market.

3. Do you agree with our definition of PPAs?

3.1. Yes.

4. Have we correctly identified buyer and seller motivations for PPAs?

4.1. Yes.

5. Have we correctly identified how PPAs may fit with other contracts?

5.1. Yes – but as noted above, additional consideration should be given to the market for dispatch services agreements.

5.2. An additional contract linkage is that between the PPA and the contracts for construction and financing of the underlying generation project. PPA pricing versus the levelized cost of energy is a question not only of price, but also of risk allocation relative to price. For example:

5.2.1. The level of liquidated damages that the PPA buyer seeks for either delays in commencement of commercial operation of the new generation and/or for volume shortfalls in energy generation are key issues effecting the cost of the project. The developer of the project will attempt to back as much of this risk as possible into the construction contract and insurance, but that has limits and comes at a cost. When that cost becomes too great the project may become unviable.

5.2.2. The level of security (e.g. bank guarantees) that the PPA buyer seeks as security for the PPA seller's exposure to these risks will also increase the overall cost of financing the project.

5.3. There can be a significant disparity between prospective PPA buyers as to their positions on such risk allocation. A headline PPA price may at face value have the potential to support viable financing of the project, but may become unviable taking into account the costs of risk allocation.

6. Do you agree with our characterisation of how PPAs may impact system evolution?

6.1. This section of the working paper is an inconclusive view of some of the broad economic considerations in play. Harmony Energy endorses the comments in paragraph 3.33 about the positive impact PPA's can have on system expansion.

6.2. No consideration seems to be given to role of PPA's supporting development of renewable energy and therefore accelerating the rate of decarbonisation of the energy system. This is an important economic benefit that should be recognised. Decarbonisation has economic benefits when environmental costs of thermal generation are properly considered. It also has economic benefits in reduced generation costs in avoided thermal fuels, including balance of payment benefits for the NZ economy in reduced importation of thermal fuels.

6.3. The working paper notes: "*Nodal prices reflect the economic value of production at a given time and place, given all of the factors that feed into demand and supply. Contract prices,*

including for PPA's, in turn reflect expectation of future nodal prices. So, at one level, PPA's should not alter system expansion and evolution at all in a workably competitive market."

- 6.4. For energy buyers and sellers to form a view about future nodal prices is complex. For a PPA to support project financing of a new generation project the PPA will likely have a term of at least 10 years, and taking a view of future nodal pricing on such time frames is not easy, particularly for intermittent renewable energy. The complexity continues to mount due to the uncertainties in the demand and supply side of the current energy transition, with uncertain rates of growth of intermittent generation and declines in thermal generation, thermal fuel pricing, the effect of dry years and wet years on hydrogeneration, and the impact of grid constraints on the dispatch volume of electricity. That is a very complicated landscape for a prospective corporate PPA buyer to navigate.
- 6.5. The working paper recognises these causes of uncertainty in section 4: "PPA headwinds".
- 6.6. There is a significant disparity of information about future nodal prices among different categories of market participants. Established market participants, like gen-tailers, have sophisticated future price curve models that are capable of modelling multiple scenarios and that are regularly evaluated and updated. Corporate energy buyers, and new entrant generators, typically do not have these information benefits and the barriers to obtaining them are fairly high.
- 6.7. The point of highlighting these information disparities is that the feedback loop between nodal prices and investment via PPA's is highly complex and prone to distortion, and that distortion and complexity effects some categories of market participants more than others, particularly when differential access to firming and hedging products is also considered.
- 6.8. The risks and uncertainties of future prices also highlights the importance of access to firming and price hedges for the cost of that firming. Demand for firming capacity will increase as intermittent (renewable) generation increases. Yet intermittent generation, as a contribution to base load at an efficient cost, also has a role to play in freeing up or preserving firming generation to service peaks.

7. Have we correctly identified and understood PPA headwinds?

- 7.1. Yes. The working paper has a well developed view of the buy-side, sell-side and market structure challenges for PPA's.
- 7.2. As the PPA is central to project financing, the PPA-supply side headwinds noted in paragraph 4.15 of the paper (project credibility and project pricing) are typically mitigated through due diligence by both equity investors and project lenders. Technical and financial due diligence of such projects is detailed and exacting.

8. Do you agree with the potential benefits we have identified?

- 8.1. Yes, but as noted above, these benefits should also recognise that increased PPA activity would support decarbonisation of the energy system via new sources of renewable generation. Decarbonisation has economic benefits when environmental costs of thermal generation are properly considered. It also has economic benefits in reduced generation costs in avoided thermal fuels, including balance of payment benefits for the NZ economy in reduced importation of thermal fuels.
- 8.2. As PPA's for new build generation will typically be for renewable generation, we don't understand why the paper does not place any significance on decarbonisation as a benefit.

9. Do you agree with the potential risks we have identified?

- 9.1. Yes, these are all potential risks of regulatory intervention. But we hope that a properly considered view the benefits, concentrations of market power in the current market structure, the causes of the market disruptions in 2024, the increasing importance and concentration of

firmiting resources, and the likelihood of such further disruptions in future, will weigh in favour of regulatory intervention that steps beyond only information or facilitation measures.

10. Do you agree with the potential options we have identified?

10.1. Of the options listed in the working paper:

Option	Harmony comments
PPA templates	<p>Harmony supports a PPA template for corporate PPA buyers, and that considers the PPA inter-face for firmiting and sleeving.</p> <p>This should support growth of the corporate PPA market.</p>
Matching service (bulletin board)	<p>Harmony supports development of a PPA bulletin board or “market place” to provide a forum for potential PPA buyers to advertise their needs, PPA sellers to advertise development opportunities, and providers of sleeving and firmiting to find potential customers.</p>
Procurement resources	<p>Harmony supports development of procurement resources that address the ‘sophistication’ component of the PPA demand headwind. These should include:</p> <ul style="list-style-type: none"> • Availability of templates. • The interplay of PPA’s with firmiting and sleeving services. • Guidance on availability of price hedging options.
Demand information	<p>Harmony supports this initiative. See comments above in response to question 6 about nodal price forecasting and the complexity of this and its “chilling effect” on prospective corporate PPA buyers.</p> <p>The more widely available future market price reports in the NZ market prefer to avoid these complexities by making highly simplified assumptions about the number, type, scale and time with which new sources of generation will be built. One widely used report assumes that all new generation projects that have a place in Transpower’s grid connection que will be built in accordance with the time frames allocated to those connections in the que and as announced by the developer or sponsor of the project. This does not recognise the reality that many such projects will not be built at all, or built only on reduced scale or after lengthy delays. This is the reality for a myriad of reasons – consenting, grid constraints rendering a project uneconomic, or availability of resources (construction, finance etc) to build the project.</p> <p>Improved access to more sophisticated and independent demand and market price forecasts here would support the “sophistication” headwind on the PPA buy side.</p>
Pooling service	<p>Harmony supports a pooling service focussed on aggregating <i>demand</i> for corporate PPA buyers of sources of new generation, coupled with a form of “off-taker guarantee” for credit risk protection against PPA buyer default.</p>

	<p>Pooling of PPA buyers who are above a certain level of credit rating, yet still below investment grade would help dissipate risk by the make-up of the pool.</p> <p>The government agency providing the off-taker guarantee could further dissipate risk through the ability to on-sell energy if aggregated pool demand drops below forecast levels (e.g. due to insolvency or other exit of a PPA buyer from the pool).</p> <p>While this would be a form of subsidy, the market and system benefits of new generation could warrant this. There could also be an associated underwriting fee or charge.</p>
Process and pricing scrutiny	<p>Harmony supports both process and pricing scrutiny of PPA firming and sleeving, and considers this is warranted as against the market power concentration of gen-tailers.</p> <p>This could take the form of process and pricing principles for gen-tailers to facilitate access to PPA firming and sleeving, and confidential disclosures to the EA about the price and volumes offered for firming and for the costs of sleeving services as a form of monitoring against the those principles.</p> <p>Harmony considers this level of regulatory intervention is warranted in view of the “foreclosure” headwinds and risks noted in the paper relative to the market power concentration of gen-tailers and the fact that new entrant generators compete with gen-tailers. Voluntary codes of conduct are unlikely to be sufficient to prompt a fast market response.</p>
Flexibility trading	<p>Harmony supports further work in this area, but notes the paper does not outline clearly the nature of this option. Market and regulatory initiatives that provide PPA buyers with improved confidence of the price, terms, and contract tenures with which they can access firming and hedging products would support growth in the PPA market.</p>
Allocation of firming resources	<p>Harmony supports initiatives to allocate firming resources. Acknowledging the paper’s concerns about potential chilling impacts for non-PPA investment in generation (presumably by gen-tailers), then a proportionate cautious approach would be a prioritised and rapid implementation of non-allocation options coupled with:</p> <ul style="list-style-type: none"> • a definition of “success” for those non-allocation options as a threshold for potential allocation options to be considered unnecessary; and • further work on potential market allocation options in the interim.

11. Do you agree with our comments on potential options?

11.1. See comments above in response to question 10.

11.2. Absent from the paper is consideration of the potential for centralised government procurement of electricity to support the PPA market for new build, independent generation. This could be a comparatively rapid piece of work to aggregate electricity demand from government agencies and departments and to procure PPA’s from independent sources of new generation, with firming provided by established generators. Central government agencies such as MBIE are already skilled in centralised procurement and should be capable of implementing such a procurement.

- 11.3. Also absent from consideration of the options is a form of renewable energy certificate for new build renewable generation. This could support growth of corporate PPA's as an economic benefit that could be allocated to either the PPA seller or the PPA buyer. It is a form of subsidy, but one most closely linked to the benefit being "purchased" – being new built renewable energy contributing to the base load, with the mix of environmental and economic advantages this brings.
- 11.4. Removing vertical integration would also doubtlessly assist a market for PPA's for new generation by providing new entrant generators with more direct and easier access to transact PPA's with the retail books of larger retailers. We appreciate that market disaggregation would be a major regulatory undertaking, all be it one that would bring NZ's market closer in-line with electricity market structures in many OECD countries.
- 11.5. Of the additional options noted in the paper as "not for further development":

Option "not for further development"	Harmony comments
Socialising prudential risk	<p>A shallow pool of large volume corporate PPA buyers, and their relative credit strength, is a critical headwind to the PPA market and socialising the credit risk of corporate PPA buyers should be properly considered further. PPAs are not available to small to medium enterprises because of their limited energy consumption, yet SME's make up a significant proportion of commercial energy buyers in NZ. This makes PPAs for SMEs typically complex deals with higher transaction costs and a relatively higher credit risk associated.</p> <p>See also the comments above in response to question 10 and "Pooling services".</p> <p>See also comments above at paragraph 11.2 above regarding centralised government procurement of PPA's from new sources of independent generation.</p>
Socialising revenue risk	<p>This should also be properly considered. We acknowledge that setting PPA price floors could have risks for over build and sub-optimal generation mix. But there are potential options to mitigate such risk. For example:</p> <ul style="list-style-type: none"> - Price floors for part (but not all) of a new build project's capacity. This would still require full market rigour over the balance of the project's capacity and finance case, but would help reduce project financing costs and support more flexible finance terms. - Caps on the volumes of generation technology types that can access price floors. - Access to price floors should not be committed or reserved until the time that a new build project achieves full financial close and is fully ready to commence construction. It should be a benefit available to new entrant generation that can be quickest to market. <p>A variant on PPA price flooring could be price subsidisation via a form of renewable energy certificate for new built</p>

	renewable energy generation. See comment at paragraph 11.3 above.
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12. Do you have a view on the most promising options?

- 12.1. There seems to be little weight or emphasis placed on urgency and time of implementation in the working paper. The most promising options for rapid implementation are: process and price scrutiny for firming (and, we suggest, sleeving); pooling of demand (including centralised government procurement); improved demand (price) forecasting information for a wider range of market participants; and access for PPA buyers to a wider range of hedging products.
- 12.2. Options for market allocation of firming and for socialising PPA risks can continue to be assessed, and of those options Harmony considers that a PPA price flooring mechanism and/or price subsidisation tool (such as renewable energy certificates) should be prioritised.

Harmony Energy