BraveTrace Position on the GHG Protocol Scope 2 Proposed Changes

Consultation period ending 31 January 2026

BraveTrace High-Level Position

The challenge for any international standard is that each country faces different risks, challenges, and opportunities depending on where they are in their renewable energy journey.

New Zealand is in a unique position - with a highly renewable electricity system that has been powered for decades by abundant hydro, geothermal, wind, and more recently solar resources. Our country's electricity generation has never been below 60% renewable, and today sits around 85%-90%. The growth in our renewable generation has been driven by the development of new grid-scale wind, solar, and geothermal projects - alongside the gradual retirement of significant portions of our thermal fleet over the last 15 years.

Our hydro stations, providing around 60% of total generation, sit at the heart of our highly renewable system. The storage and controllability of hydro generation allows the system to respond rapidly to fluctuations in wind and solar output, reducing hydro production at short notice during periods of high wind or solar generation, then ramping up again when those intermittent sources fall.

In effect, this "firming" function allows New Zealand to realise the benefits of excess wind and solar generation for hours, days, weeks or even months. The extra hydro storage retained during periods of high solar and wind generation can then be dispatched at times when thermal generation is required to meet demand. As a result, our hydro system ensures that almost all of our new renewable production is utilised and displaces thermal generation.

Thanks to the flexibility of our highly adaptable grid, achieving emissions reduction doesn't require the alignment of consumption to generation to avoid renewable curtailment. For us in New Zealand, the pathway to accelerating decarbonisation is understanding

consequential impact - the “actual” effect of a new generation source or technology on the grid’s emissions - and promoting renewable generation that is most effective at achieving this.

Assessment of consequential impact provides a much more direct and effective way to guide our pathway to decarbonisation. This is why we fully support the crucial work of the Action & Market Instrument (AMI) workstream for quantifying and reporting GHG impacts of actions.

Our experience operating the New Zealand Energy Certificate System (NZECS) has shown that focussing on simplicity and demonstrable impact is the most effective approach for New Zealand. Attempting hourly time-matching in our unique energy context would add unnecessary complexity while delivering minimal benefit. In contrast, focusing on consequential energy production, supported by premium Energy Attribute Certificates (EACs), provides a clear and efficient pathway to incentivise tangible, measurable actions to avoid emissions across the country.

Key Responses to the GHG Protocol Scope 2 Proposed Changes

It is important to recognise that BraveTrace supports alignment with the GHG Protocol; however, several proposals in the consultation are not practical or appropriate for New Zealand’s electricity context:

1. New Zealand operates a single synchronous grid. It is not made up of multiple synchronous grids, as suggested in the public consultation.
2. An hourly matching mandate is fundamentally inappropriate in a hydro-dominated system like New Zealand, and would add significant complexity and cost to the system without driving any additional emissions reductions.
3. The proposed definition of Standard Supply Service (SSS) could incorrectly classify major New Zealand generators as ineligible for EAC revenue, undermining a high-impact, well-functioning, and in-demand certification market.

We will submit our feedback (see detail and BraveTrace’s survey responses below) by completing the GHG Protocol Consultation Survey by 31 January 2026; We strongly encourage you to do the same.

1. BraveTrace Position On Multiple Synchronous Grids

New Zealand is not made up of multiple synchronous grids

New Zealand operates a single synchronous electricity grid, with both islands running at 50Hz and connected through the HVDC interconnector. Electricity flows between islands almost continuously, enabling:

- Shared generation resources
- Mutual instantaneous reserve support
- Coordinated frequency management

Over 98% of the time, there are no constraints or material price separation between islands - clear evidence of a unified national grid. Even when the HVDC is at maximum transfer capacity, electricity continues to flow between islands; the link is simply at full capacity, not disconnected. In fact, in the last 12 months the HVDC has never operated above 90% of maximum capacity in either direction in any half hour trading period - Source - Electricity Authority. New Zealand's geography - being made up of separate islands - may have led to that misunderstanding, but in reality the country operates a single, fully synchronised grid.

Seasonal and Hydrological Realities

New Zealand's hydro-dominated system has strong seasonal dynamics:

- Peak demand occurs in winter due to space heating and lighting needs.
- Peak hydro inflows occur in spring and summer when snowmelt and rainfall exceed outflows.
- Hydro generators manage storage carefully, when reservoirs have not yet been replenished by spring and summer inflows, to meet future demand spikes and maintain supply security.

Inter-island flows shift depending on hydrology: typically south-to-north when South Island hydro is plentiful or, in dry years, north-to-south when storage is low. These realities illustrate why emissions factors cannot meaningfully be tied to fixed geographic "grids". New Zealand generation and consumption are routinely interdependent between islands, and these patterns can shift substantially year to year depending on hydrology.

Conclusion

Approaches such as island-specific emissions factors or node-level matching would misrepresent the physics and operations of the New Zealand system and impose unnecessary complexity. While local procurement should be encouraged, it should not be mandated given New Zealand's fundamentally unified and interconnected grid.

2. BraveTrace Position on Hourly Matching

The GHG Protocol is proposing a major change: requiring market-based electricity reporting to match contractual instruments - such as EACs or PPAs - on an hourly basis. In light of how the New Zealand electricity system works and our role operating the NZECS, we believe that issuing and redeeming energy certificates in the exact same hour the electricity is consumed will add unnecessary complexity and would not create any material benefits.

Why hourly matching would fail New Zealand

New Zealand is unusual globally: around 60% of our electricity comes from hydro, and hydro storage already shifts renewable generation into the peak hours when thermal generation would otherwise run.

Hourly matching is designed for systems where renewable generation is intermittent and inflexible - such as solar and wind in fossil-heavy grids where renewables peak in low-demand hours (e.g. midday solar) and fossil generation dominates during peak demand. In those systems, hourly matching prevents organisations from using low-emissions certificates to cover consumption in high-emissions hours.

In New Zealand, hydro already solves that problem. The emissions profile is essentially the same with or without hourly matching, because the benefits hourly matching is designed to deliver are already achieved through the physics and operation of our hydro-dominant system. As a result, hourly matching would not reduce emissions further; it would only add administrative and contractual complexity.

In New Zealand, market price signals already drive behaviour in real time

While BraveTrace recognises the relevance of hourly time-matched EACs in jurisdictions where incentives are needed to encourage the right behaviours and outcomes for renewable generation investment and procurement, in New Zealand, however, our unique electricity market design and conditions already provide these incentives. Our market sends all the necessary price signals to ensure renewable generation investment is optimised and impactful - taking into account factors such as location and the ability to generate electricity when it is most needed. These price signals also support the adoption of battery technology and demand response. Therefore, introducing an hourly time-matching requirement for New Zealand would add administrative costs and burdens without providing any additional benefits beyond our existing market price signals. In fact, the added cost and complexity of time-matching are highly likely to reduce the use of EACs and PPAs, ultimately leading to less support for renewable generation in New Zealand.

These unique combinations of market settings and conditions are:

1. A detailed nodal pricing system with over 200 price nodes across 15 transmission regions, ensuring that new generation is optimally located. By comparison, Australia has over five times New Zealand's population but only five regional price nodes for the entire country.
2. Real-time pricing, with five-minute prices used to dispatch generation and flexible demand. These five-minute prices are then averaged in 30-minute prices, which are published for every node. Any oversupply during periods of high generation and/or low demand is reflected in real time prices, as is any undersupply under inverse conditions.
3. An established suite of trading products, including monthly and quarterly futures contracts extending 3-4 years out and Financial Transmission Rights (FTR's) between nodes. There is also a range of regularly traded Over-The-Counter (OTC) products, including peak, super-peak, day-ahead, non-standard shapes or nodes options, as well as any other bespoke products upon request. These products provide excellent price visibility of the various price risks for any new investments or changing market conditions, and enable both buyers and sellers to effectively manage these risks.
4. An established hydro system, with many catchments across the country providing approximately 60% of New Zealand's total generation. Our hydro generation is able to reduce during periods of low prices, such as times of high wind or solar generation coinciding with low demand, and increase in high price periods when the

inverse conditions exist. This hydro storage and flexibility effectively allow excess wind and solar generation to be shifted to periods when it is most needed, minimising 'renewable spill'. Consequently, any new wind or solar project will displace an almost equivalent amount of thermal generation in normal market conditions over the year, with only minor losses as the difference. This is vastly different from many markets without hydro or large-scale energy storage, where excess new renewable generation is frequently spilled and has minimal impact on thermal displacement.

Impact On Solar And Independent Generation

Hourly matching also creates significant barriers for solar. Solar farms cannot generate at night, so compliance would require contracting with multiple technologies or competitors. This is particularly challenging for small and independent solar generators - one of the most positive developments in New Zealand's electricity market over the past decade.

Seasonal patterns further complicate this issue. Electricity demand peaks in winter, while hydro inflows are highest in summer. Solar generation reduces summer hydro demand, allowing more water to be stored for winter use - effectively letting hydro act as a natural battery that mitigates system-wide risks. Moreover, in a dry year, it is preferable to retain every bit of storable hydro and to incentivise technologies such as solar batteries to help meet daily peak demand. Hourly matching fails to account for these system-level benefits and could even discourage new solar investment, despite solar being a highly predictable and valuable renewable resource.

Conflicts With Other Standards

There's also a potential conflict with frameworks like RE100's 15-year and SBTi's 10-year age rules. Hourly matching would incentivise organisations to obtain certificates for every hour of consumption, including night-time hours when solar or other intermittent generation is not producing. In New Zealand, filling these gaps would likely require older hydro certificates, creating regulatory confusion and forcing reporting entities to choose between compliance with hourly matching and compliance with age-restricted assets.

Accuracy vs. Emissions Reduction

From a reporting perspective, hourly matching may seem more accurate, but it does not improve emissions reduction in a hydro-rich system like New Zealand. Instead, it adds unnecessary complexity for both energy users and generators, risks discouraging

participation from the very actors we need to engage, and could slow investment in renewable energy.

Our Recommendation

To balance integrity and impact with feasibility, the GHG Protocol should recognise the unique characteristics of hydro-dominant electricity systems, and allow a range of approaches that best suit the grid. An example could be to introduce an **hourly matching exemption or threshold for countries where hydro generation represents 40-50% or more of total generation on an annual basis**. This would protect the role of hydro as the foundation of a high-renewable system, while avoiding rules that may undermine solar growth and independent generation.

Should exemptions or thresholds fail to be introduced by the GHG Protocol for countries with distinctive electricity profiles like New Zealand, and market-based hourly matching is still required, we recommend exemptions for organisations with annual consumption below 10 GWh/year. Without such an exemption, smaller organisations - often part of Scope 3 value chains - may simply opt out of carbon reporting as the requirement would be unnecessarily burdensome.

Conclusion

New Zealand already has the foundation of a highly renewable electricity system. Policies should support hydro, encourage solar, and preserve system flexibility. Hourly matching does not advance these goals in the New Zealand context and may actually hinder progress toward our climate goals.

3. BraveTrace Position on Standard Supply Service

In New Zealand, major generators such as Genesis Energy, Meridian Energy, and Mercury, are majority government-owned (51%) and collectively account for more than two thirds of the country's electricity retail market share. Under the current GHG Protocol consultation, these facilities could be classified as Standard Supply Service (SSS). If this occurs, they could potentially be ineligible to receive revenue for EAC renewable attributes, although energy users could still benefit from the renewable claims for market-based reporting. This approach would also create a significant distortion with other major generators operating in the market that are fully privately owned.

Definition Ambiguities

We note four key ambiguities in the current Standard Supply Service SSS definition when applied to the New Zealand market:

1. Our hydro stations were funded a long time ago by taxpayers, not electricity users. Therefore, they lack a defining characteristic of SSS resources: a traceable or mandatory financial relationship between customers of these stations and the electricity - or contractual instruments - used to supply their load. The relationship between the amount of tax paid and the amount of electricity consumed by an individual or entity is vastly different on a case by case basis. Under the proposed changes, energy intensive households and businesses would receive windfall benefits at the expense of low energy intensity users - many of whom have invested in efficiency initiatives or behind-the-meter generation like solar panels to reduce their grid offtake.
2. Additionally, we do not accept that infrastructure paid for by taxpayers should necessarily result in free products or services for taxpayers indefinitely. For example, given the GHG Protocol encourages EACs bundled with electricity, it would be inappropriate to require that EACs be provided for free while the electricity is not. Similarly, New Zealand has significant taxpayer funded infrastructure in roading, ferries, rail, and water - all of which charge users or beneficiaries rather than providing products or services at no cost. We don't see any sound economic basis for this proposal.
3. The New Zealand government has sold off the majority of these assets - 49% of Genesis Energy, Meridian Energy, and Mercury, and 100% of Contact Energy - and electricity from these suppliers is sold commercially. As a result, any claim to continued public entitlement is further weakened given the majority of these publicly built assets are now in private ownership.
4. Many of New Zealand's critical hydro assets are 50–100 years old, and significant private investment has already been made to maintain and upgrade them. The proposal ignores the substantial ongoing costs required to keep these stations operational, including maintenance, repairs, replacements, upgrades, staffing, resource consents, health and safety obligations, and compliance with new earthquake standards. Even more investment will be required in the future - costs that the proposal disregards entirely if these majority government-owned stations were captured under the proposed SSS changes.

Our Recommendation

We recommend clarifying the SSS definition to ensure that government-majority owned facilities in New Zealand retain EAC eligibility for voluntary claims. Excluding these generators would be inconsistent with New Zealand's market design and could undermine investment incentives which are particularly crucial for the maintenance and repairs of large existing hydro infrastructure.

Conclusion

Aligning with the GHG Protocol is desirable, but it must lead to maximal decarbonisation.

New Zealand's electricity system is already primarily renewable which makes our context fundamentally different from fossil-heavy grids that many of the proposed changes are designed for.

Notably, the proposed hourly matching requirement would not improve emissions outcomes in New Zealand. Instead, it would add significant cost, complexity, and barriers to entry, whilst not delivering any better outcomes and even slowing decarbonisation efforts.

To avoid this, we recommend that the GHG Protocol:

1. Introduces an hourly matching exemption or threshold for countries with high renewable penetration, such as the hydro-rich New Zealand system. This threshold for highly renewable systems would mirror the GHG Protocol's proposal to exempt organisations below a certain consumption from market-based hourly matching requirements, and
2. Prioritises consequential energy production, supported by premium Energy Attribute Certificates (EACs) that provide a clear and efficient pathway to incentivise tangible, measurable actions to avoid emissions across the country.

BraveTrace will complete the GHG Protocol Consultation Survey by 31 January 2026;
We encourage you to do the same.
BraveTrace's submitted responses are further below.

For questions or comments, please contact: enquiries@bravetrace.co.nz

GHG Protocol Scope 2 Public Consultation

BRAVETRACE SURVEY RESPONSES (January 2026)

Note:

- Question numbering begins at 18 to maintain consistency with the online survey. Questions 1–17 appear in the survey as the acknowledgment and demographics section.
- Only questions relevant to BraveTrace's answers are shown below. If not present, BraveTrace would have left the questions blank in the survey.

3.3 PROPOSED CHANGES TO SCOPE 2 DEFINITIONS

18. Please provide any feedback on the proposal to refine the definition of scope 2, to emphasize its role within an attributional value chain GHG inventory and clarify that scope 2 must only include emissions from electricity generation processes that are physically connected to the reporter's value chain, excluding any emissions from unrelated sources?
Please note that feedback on specific changes to the location- and market-based method can be provided in sections 4 and 5.

We support clarifying the scope 2 definition to stress its role as attributional inventory accounting linked to electricity generation within a reporter's value chain. This distinction separates inventory totals from broader impact claims, which are covered under Actions and Market Instruments. No further changes are needed. This approach aligns with New Zealand practice, where scope 2 is treated as inventory accounting (location and market based) and consequential claims are reported separately, if they are reported at all.

19. Please provide any feedback on the proposal to clarify the LBM definition to reflect scope 2 emissions from generation physically delivered at the times and locations of consumption, with imports included in LBM emission factor calculations where applicable?
Please note that feedback on specific changes to the location-based method can be provided in section 4

Please correct the country list: New Zealand is not made up of multiple synchronous grids.

New Zealand operates a single synchronous electricity grid, with both islands running at 50Hz and connected through the HVDC interconnector. Electricity flows between islands almost continuously, enabling:

- Shared generation resources
- Mutual instantaneous reserve support
- Coordinated frequency management

Over 98% of the time, there are no constraints or material price separation between islands - clear evidence of a unified national grid. Even when the HVDC is at maximum transfer capacity, electricity continues to flow between islands; the link is simply at full capacity, not disconnected. In fact, in the last 12 months the HVDC has never operated above 90% of maximum capacity in either direction in any half hour trading period - Source - Electricity Authority. New Zealand's geography - being made up of separate islands - may have led to that misunderstanding, but in reality the country operates a single, fully synchronised grid.

New Zealand's hydro-dominated system has strong seasonal dynamics:
- Peak demand occurs in winter due to space heating and lighting needs.
- Peak hydro inflows occur in spring and summer when snowmelt and rainfall exceed outflows.
- Hydro generators manage storage carefully, when reservoirs have not yet been replenished by spring and summer inflows, to meet future demand spikes and maintain supply security.

Inter-island flows shift depending on hydrology: typically south-to-north when South Island hydro is plentiful or, in dry years, north-to-south when storage is low. These realities illustrate why emissions factors cannot meaningfully be tied to fixed geographic "grids". New Zealand generation and consumption are routinely interdependent between islands, and these patterns can shift substantially year to year depending on hydrology.

In conclusion, approaches such as island-specific emissions factors or node-level matching would misrepresent the physics and operations of the New Zealand system and impose unnecessary complexity. While local procurement should be encouraged, it should not be mandated given New Zealand's fundamentally unified and interconnected grid.

20. Please provide any feedback on the proposal to clarify the MBM definition to retain its existing basis, quantifying scope 2 from contractually purchased electricity via contractual instruments, while specifying temporal correlation and deliverability when matching instruments to consumption?
Please note that feedback on specific changes to the market-based method can be provided in section 5.

Retaining contractual instruments as the MBM existing basis is appropriate. However, in

light of how the New Zealand electricity system works, requiring market-based electricity reporting to match contractual instruments on an hourly basis will add unnecessary complexity and would not create any material benefits.

Why hourly matching would fail New Zealand

New Zealand is unusual globally: around 60% of our electricity comes from hydro, and hydro storage already shifts renewable generation into the peak hours when thermal generation would otherwise run.

Hourly matching is designed for systems where renewable generation is intermittent and inflexible - such as solar and wind in fossil-heavy grids where renewables peak in low-demand hours (e.g. midday solar) and fossil generation dominates during peak demand. In those systems, hourly matching prevents organisations from using low-emissions certificates to cover consumption in high-emissions hours.

In New Zealand, hydro already solves that problem. The emissions profile is essentially the same with or without hourly matching, because the benefits hourly matching is designed to deliver are already achieved through the physics and operation of our hydro-dominant system. As a result, hourly matching would not reduce emissions further; it would only add administrative and contractual complexity.

In New Zealand, market price signals already drive behaviour in real time

While BraveTrace recognises the relevance of hourly time-matched EACs in jurisdictions where incentives are needed to encourage the right behaviours and outcomes for renewable generation investment and procurement, in New Zealand, however, our unique electricity market design and conditions already provide these incentives. Our market sends all the necessary price signals to ensure renewable generation investment is optimised and impactful - taking into account factors such as location and the ability to generate electricity when it is most needed. These price signals also support the adoption of battery technology and demand response. Therefore, introducing an hourly time-matching requirement for New Zealand would add administrative costs and burdens without providing any additional benefits beyond our existing market price signals. In fact, the added cost and complexity of time-matching are highly likely to reduce the use of EACs and PPAs, ultimately leading to less support for renewable generation in New Zealand.

These unique combinations of market settings and conditions are:

1. A detailed nodal pricing system with over 200 price nodes across 15 transmission regions, ensuring that new generation is optimally located. By comparison, Australia has over five times New Zealand's population but only five regional price nodes for the entire country.
2. Real-time pricing, with five-minute prices used to dispatch generation and flexible demand. These five-minute prices are then averaged in 30-minute prices, which are published for every node. Any oversupply during periods of high generation and/or low demand is reflected in real time prices, as is any undersupply under inverse conditions.
3. An established suite of trading products, including monthly and quarterly futures contracts extending 3-4 years out and Financial Transmission Rights (FTR's) between nodes. There is also a range of regularly traded Over-The-Counter (OTC) products, including peak, super-peak, day-ahead, non-standard shapes or nodes options, as well as any other bespoke products upon request. These products provide excellent price visibility of the various price risks for any new investments or changing market conditions, and enable both buyers and sellers to effectively manage these risks.
4. An established hydro system, with many catchments across the country providing approximately 60% of New Zealand's total generation. Our hydro generation is able to reduce during periods of low prices, such as times of high wind or solar generation coinciding with low demand, and increase in high price periods when the inverse conditions exist. This hydro storage and flexibility effectively allow excess wind and solar generation to be shifted to periods when it is most needed, minimising 'renewable spill'. Consequently, any new wind or solar project will displace an almost equivalent amount of thermal generation in normal market conditions over the year, with only minor losses as the difference. This is vastly different from many markets without hydro or large-scale energy storage, where excess new renewable generation is frequently spilled and has minimal impact on thermal displacement.

Impact On Solar And Independent Generation

Hourly matching also creates significant barriers for solar. Solar farms cannot generate at night, so compliance would require contracting with multiple technologies or competitors. This is particularly challenging for small and independent solar generators - one of the most positive developments in New Zealand’s electricity market over the past decade.

Seasonal patterns further complicate this issue

Electricity demand peaks in winter, while hydro inflows are highest in summer. Solar

generation reduces summer hydro demand, allowing more water to be stored for winter use - effectively letting hydro act as a natural battery that mitigates system-wide risks. Moreover, in a dry year, it is preferable to retain every bit of storable hydro and to incentivise technologies such as solar batteries to help meet daily peak demand. Hourly matching fails to account for these system-level benefits and could even discourage new solar investment, despite solar being a highly predictable and valuable renewable resource.

Conflicts With Other Standards

There's also a potential conflict with frameworks like RE100's 15-year and SBTi's 10-year age rules. Hourly matching would incentivise organisations to obtain certificates for every hour of consumption, including night-time hours when solar or other intermittent generation is not producing. In New Zealand, filling these gaps would likely require older hydro certificates, creating regulatory confusion and forcing reporting entities to choose between compliance with hourly matching and compliance with age-restricted assets.

Accuracy vs. Emissions Reduction

From a reporting perspective, hourly matching may seem more accurate, but it does not improve emissions reduction in a hydro-rich system like New Zealand. Instead, it adds unnecessary complexity for both energy users and generators, risks discouraging participation from the very actors we need to engage, and could slow investment in renewable energy.

Our Recommendation

To balance integrity and impact with feasibility, the GHG Protocol should recognise the unique characteristics of hydro-dominant electricity systems, and allow a range of approaches that best suit the grid. An example could be to introduce an hourly matching exemption or threshold for countries where hydro generation represents 40-50% or more of total generation on an annual basis. This would protect the role of hydro as the foundation of a high-renewable system, while avoiding rules that may undermine solar growth and independent generation.

Should exemptions or thresholds fail to be introduced by the GHG Protocol for countries with distinctive electricity profiles like New Zealand, and market-based hourly matching is still required, we recommend exemptions for organisations with annual consumption below 10 GWh/year. Without such an exemption, smaller organisations - often part of Scope 3 value chains - may simply opt out of carbon reporting as the requirement would be unnecessarily burdensome.

Conclusion

New Zealand already has the foundation of a highly renewable electricity system. Policies should support hydro, encourage solar, and preserve system flexibility. Hourly matching does not advance these goals in the New Zealand context and may actually hinder progress toward our climate goals.

3.6 PROPOSED CHANGES TO SCOPE 2 PURPOSES

21. Please provide any feedback on the proposed purposes of the location-based method.
Please note that feedback on specific changes to the location-based method can be provided in section 4.

In New Zealand, price signals already drive behaviour (nodal pricing and peak periods), so inventory granularity must be balanced with cost, feasibility and ensuring consistent approaches are taken across different assurance practitioners.

22. Please provide any feedback on the proposed purposes of the market-based method.
Please note that feedback on specific changes to the market-based method can be provided in section 5.

The market-based method is a voluntary procurement choice. In New Zealand, price signals already drive behaviour (nodal pricing and peak periods) in real time, and increased granularity in market-based calculation won't drive any behaviour change due to the highly renewable nature of our electricity (around 85% renewable on average, and has reached 97% in the past three months). See our response to Question 20 for more details.

In New Zealand, market price signals already drive behaviour in real time

While BraveTrace recognises the relevance of hourly time-matched EACs in jurisdictions where incentives are needed to encourage the right behaviours and outcomes for renewable generation investment and procurement, in New Zealand, however, our unique electricity market design and conditions already provide these incentives. Our market sends all the necessary price signals to ensure renewable generation investment is optimised and impactful - taking into account factors such as location and the ability to generate electricity when it is most needed. These price signals also support the adoption of battery technology and demand response. Therefore, introducing an hourly time-matching requirement for New Zealand would add administrative costs and burdens without providing any additional benefits beyond our existing market price signals. In fact, the added cost and complexity of time-matching are highly likely to reduce the use of EACs and PPAs, ultimately leading to less support for renewable generation in New Zealand.

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3. An established suite of trading products, including monthly and quarterly futures contracts extending 3-4 years out and Financial Transmission Rights (FTR's) between nodes. There is also a range of regularly traded Over-The-Counter (OTC) products, including peak, super-peak, day-ahead, non-standard shapes or nodes options, as well as any other bespoke products upon request. These products provide excellent price visibility of the various price risks for any new investments or changing market conditions, and enable both buyers and sellers to effectively manage these risks.
4. An established hydro system, with many catchments across the country providing approximately 60% of New Zealand's total generation. Our hydro generation is able to reduce during periods of low prices, such as times of high wind or solar generation coinciding with low demand, and increase in high price periods when the inverse conditions exist. This hydro storage and flexibility effectively allow excess wind and solar generation to be shifted to periods when it is most needed, minimising 'renewable spill'. Consequently, any new wind or solar project will displace an almost equivalent amount of thermal generation in normal market conditions over the year, with only minor losses as the difference. This is vastly different from many markets without hydro or large-scale energy storage, where excess new renewable generation is frequently spilled and has minimal impact on thermal displacement.

4.3 PROPOSED LOCATION-BASED METHOD UPDATES

4.3.1 Update to the location-based emission factor hierarchy

23. On a scale of 1-5, do you support the update to the location-based emission factor hierarchy to identify the most precise location-based emission factor accessible according to spatial boundaries, temporal granularity, and emission factor type (consumption or production)?
Scale of 1 (no support) – 5 (full support)
Pleased note this question only relates to the structure of the hierarchy, subsequent questions will address its intended use.

2 - Limited support

26. Please provide your concerns or reasons for why you are not supporting, if any (select all options that apply)

b. Concern about increased administrative burden and complexity from identifying the most precise emission factors accessible
c. Concern that the most precise temporal granularity "hourly" is too detailed
d. Concern that the most precise spatial boundary, "local boundary", is too narrow "

27. Please provide comments regarding your reasons for why you are not supporting (if any).

Treating New Zealand as multiple synchronous grids is incorrect; please amend tables/examples to reflect that New Zealand has one grid.

Local boundary is very narrow and risks inconsistent assurance outcomes with differing parties taking differing opinions on what is and is not appropriate as a local boundary. This will reduce comparability between reporters.

Our stakeholders believed that the use of hourly emission factors in calculation of LBM scope 2 would provide marginal additional benefits for users of reporting and would impose significant administrative burden and assurance costs on reporters. Scope 2 LBM is reported as an annual total regardless of the calculation method.

National consumption-based factors are the most appropriate spatial boundary; sub-national factors are not envisaged. Monthly emission factors could be made readily available (three months after the time period) but the provision of hourly accessible data would require significant investment by the Ministry of Business, Innovation and Employment (the government agency responsible for accessible emission factors). In a time of budget pressures due to cost of living, provision of funding to make this data available is not certain. Hourly factors exist in New Zealand but as a commercial product which would

not meet the definition of accessible. This will potentially result in reduced comparability between reporters.

Recommendations:

- Amend tables/examples to reflect that New Zealand has one electricity grid – it does not have multiple synchronous grids
- Tables/examples should be guidance only, the requirement should be "use the most granular boundaries for which accurate data is accessible"
- Ensure it is clear that 'accessible' is a key determinant, and that if emission factors are not accessible then there is no requirement to use them

29. Regarding regions that you operate in or have experience in, please provide comments on whether the LBM emission factor hierarchy allows you to identify an accessible emission factor that appropriately reflects how electricity is delivered in that region (please clearly identify the region you are referring to in your answer).

For New Zealand, the hierarchy should list "grid-wide/national (single synchronous grid)" as the most appropriate spatial boundary. Transpower, our national grid operator, advises "Local" boundaries (e.g., nodal) are operational pricing constructs and do not reflect distinct deliverable markets for the LBM.

4.3.2 Addition of definition for "accessible"

35. On a scale of 1-5 do you support the new definition of accessible: publicly available, free to use, and from a credible source? Scale of 1 (no support) – 5 (fully support)

4 - Strong support

40. Which entities should qualify as credible sources (select all options that apply)

a. Government agency
b. System operator
c. Recognized registry
d. Accredited statistics body
e. Independent methodology meeting minimum criteria (outlined in question 42)
f. Other (please specify and explain)

a. Government agency: MBIE/MfE
c. Recognised registry: BraveTrace NZECS (New Zealand Energy Certificate System)

BraveTrace has operated the NZECS registry since 2018:

- BraveTrace NZECS is widely adopted across New Zealand with more than 400 energy users and 50+ registered renewable production devices
- BraveTrace NZECS is globally recognised as the EAC system in common use for New Zealand by international frameworks including Climate Group RE100 / CDP

5.3 PROPOSED MARKET-BASED METHOD UPDATES

5.3.1 Scope 2 Quality Criteria 4

70. All respondents, please select your preferred exemption threshold per deliverable market boundary.

a. 5 GWhs
b. 10 GWhs
c. 50 GWhs

b. 10GWhs

71. On a scale of 1-5 do you support an update to Quality Criteria 4 to require that all contractual instruments used in the market-based method be issued and redeemed for the same hour as the energy consumption to which the instrument is applied, except in certain cases of exemption.

a. Scale of 1 (no support) – 5 (fully support)

1 - No support

74. Please provide concerns or reasons for why you are not supporting, if any (select all that apply)

a. More information is necessary to understand how investments not matched on an hourly basis will be accounted for and reported via the framework under development by the Actions & Market Instrument TWG
b. Hourly matching should follow an optional 'may' rather than a required 'shall' approach
c. Hourly matching should follow a recommended 'should' rather than a require 'shall' approach
d. Concern about negative impact on comparability, relevance and/or usefulness of MBM inventories
e. Concern that a phased implementation would be insufficient for development of the infrastructure necessary (e.g., registries, trading exchanges, etc.) to support hourly contractual instruments
f. Concern that administrative, data management, and audit challenges posed by this approach would place an undue burden and costs on reporters
g. Concern that requiring hourly matching does not create meaningful improvements to inventory accuracy
h. Concern that a requirement for hourly contractual instruments could discourage global participation in voluntary clean energy procurement markets
i. Other (please explain)

b. Hourly matching should follow an optional 'may' rather than a required 'shall' approach
d. Concern about negative impact on comparability, relevance and/or usefulness of MBM inventories
f. Concern that administrative, data management, and audit challenges posed by this approach would place an undue burden and costs on reporters
g. Concern that requiring hourly matching does not create meaningful improvements to inventory accuracy
h. Concern that a requirement for hourly contractual instruments could discourage global participation in voluntary clean energy procurement markets
i. Other (please explain) - See question 75

75. Please provide comments regarding your concerns or reasons for why you are not supportive.

Hourly matching will fail New Zealand

New Zealand is unusual globally: around 60% of our electricity comes from hydro, and hydro storage already shifts renewable generation into the peak hours when thermal generation would otherwise run.

Hourly matching is designed for systems where renewable generation is intermittent and inflexible - such as solar and wind in fossil-heavy grids where renewables peak in low-demand hours (e.g. midday solar) and fossil generation dominates during peak demand. In those systems, hourly matching prevents organisations from using low-emissions certificates to cover consumption in high-emissions hours.

In New Zealand, hydro already solves that problem. The emissions profile is essentially the same with or without hourly matching, because the benefits hourly matching is designed to deliver are already achieved through the physics and operation of our hydro-dominant system. As a result, hourly matching would not reduce emissions further; it would only add administrative and contractual complexity.

In New Zealand, market price signals already drive behaviour in real time

While BraveTrace recognises the relevance of hourly time-matched EACs in jurisdictions where incentives are needed to encourage the right behaviours and outcomes for renewable generation investment and procurement, in New Zealand, however, our unique electricity market design and conditions already provide these incentives. Our market sends all the necessary price signals to ensure renewable generation investment is optimised and impactful - taking into account factors such as location and the ability to generate electricity when it is most needed. These price signals also support the adoption

of battery technology and demand response. Therefore, introducing an hourly time-matching requirement for New Zealand would add administrative costs and burdens without providing any additional benefits beyond our existing market price signals. In fact, the added cost and complexity of time-matching are highly likely to reduce the use of EACs and PPAs, ultimately leading to less support for renewable generation in New Zealand.

These unique combinations of market settings and conditions are:

1. A detailed nodal pricing system with over 200 price nodes across 15 transmission regions, ensuring that new generation is optimally located. By comparison, Australia has over five times New Zealand's population but only five regional price nodes for the entire country.
2. Real-time pricing, with five-minute prices used to dispatch generation and flexible demand. These five-minute prices are then averaged in 30-minute prices, which are published for every node. Any oversupply during periods of high generation and/or low demand is reflected in real time prices, as is any undersupply under inverse conditions.
3. An established suite of trading products, including monthly and quarterly futures contracts extending 3-4 years out and Financial Transmission Rights (FTR's) between nodes. There is also a range of regularly traded Over-The-Counter (OTC) products, including peak, super-peak, day-ahead, non-standard shapes or nodes options, as well as any other bespoke products upon request. These products provide excellent price visibility of the various price risks for any new investments or changing market conditions, and enable both buyers and sellers to effectively manage these risks.
4. An established hydro system, with many catchments across the country providing approximately 60% of New Zealand's total generation. Our hydro generation is able to reduce during periods of low prices, such as times of high wind or solar generation coinciding with low demand, and increase in high price periods when the inverse conditions exist. This hydro storage and flexibility effectively allow excess wind and solar generation to be shifted to periods when it is most needed, minimising 'renewable spill'. Consequently, any new wind or solar project will displace an almost equivalent amount of thermal generation in normal market conditions over the year, with only minor losses as the difference. This is vastly different from many markets without hydro or large-scale energy storage, where excess new renewable generation is frequently spilled and has minimal impact on thermal displacement.

Impact On Solar And Independent Generation

Hourly matching also creates significant barriers for solar. Solar farms cannot generate at night, so compliance would require contracting with multiple technologies or competitors. This is particularly challenging for small and independent solar generators - one of the most positive developments in New Zealand's electricity market over the past decade.

Seasonal patterns further complicate this issue

Electricity demand peaks in winter, while hydro inflows are highest in summer. Solar generation reduces summer hydro demand, allowing more water to be stored for winter use - effectively letting hydro act as a natural battery that mitigates system-wide risks. Moreover, in a dry year, it is preferable to retain every bit of storable hydro and to incentivise technologies such as solar batteries to help meet daily peak demand. Hourly matching fails to account for these system-level benefits and could even discourage new solar investment, despite solar being a highly predictable and valuable renewable resource.

Conflicts With Other Standards

There's also a potential conflict with frameworks like RE100's 15-year and SBTi's 10-year age rules. Hourly matching would incentivise organisations to obtain certificates for every hour of consumption, including night-time hours when solar or other intermittent generation is not producing. In New Zealand, filling these gaps would likely require older hydro certificates, creating regulatory confusion and forcing reporting entities to choose between compliance with hourly matching and compliance with age-restricted assets.

Accuracy vs. Emissions Reduction

From a reporting perspective, hourly matching may seem more accurate, but it does not improve emissions reduction in a hydro-rich system like New Zealand. Instead, it adds unnecessary complexity for both energy users and generators, risks discouraging participation from the very actors we need to engage, and could slow investment in renewable energy.

Our Recommendation

To balance integrity and impact with feasibility, the GHG Protocol should recognise the unique characteristics of hydro-dominant electricity systems, and allow a range of approaches that best suit the grid. An example could be to introduce an hourly matching exemption or threshold for countries where hydro generation represents 40-50% or more of total generation on an annual basis. This would protect the role of hydro as the foundation of a high-renewable system, while avoiding rules that may undermine solar growth and independent generation.

Should exemptions or thresholds fail to be introduced by the GHG Protocol for countries with distinctive electricity profiles like New Zealand, and market-based hourly matching is still required, we recommend exemptions for organisations with annual consumption below 10 GWh/year. Without such an exemption, smaller organisations - often part of Scope 3 value chains - may simply opt out of carbon reporting as the requirement would be unnecessarily burdensome.

Conclusion

New Zealand already has the foundation of a highly renewable electricity system. Policies should support hydro, encourage solar, and preserve system flexibility. Hourly matching does not advance these goals in the New Zealand context and may actually hinder progress toward our climate goals.

5.3.2 Scope 2 Quality Criteria 5

83. On a scale of 1-5 do you support an update to Scope 2 Quality Criteria 5, to require that all contractual instruments used in the market-based method be sourced from the same deliverable market boundary in which the reporting entity's electricity-consuming operations are located and to which the instrument is applied, or otherwise meet criteria deemed to demonstrate deliverability to the reporting entity's electricity-consuming operations?

a. Scale of 1 (no support) – 5 (fully support)

3 - Moderate Support

86. Please provide reasons of concern or why you are not supporting, if any (select all that apply)

a. Proposed deliverability requirements do not improve alignment with GHG Protocol Principles
b. Concern that narrower market boundaries restrict companies' abilities to invest in areas where renewable energy development could yield the greatest decarbonization impact
c. Concern that narrower market boundaries could prompt a shift away from long-term agreements (i.e., PPAs) to spot purchases (unbundled certificates)
d. Sourcing contractual instruments within deliverable market boundaries should follow an optional "may" rather than a required "shall" approach
e. Sourcing contractual instruments within deliverable market boundaries should follow a recommended "should" rather than a required "shall" approach
f. Concern that the defined market boundaries do not align with mandatory or voluntary reporting requirements in your region
g. Support deliverability in principle, but the proposed market boundary for my region does not reflect deliverability
h. Market boundaries should be defined as the geographic boundaries of electricity sectors, which align with national, and under certain circumstances, multinational boundaries
i. Exemptions to matching within deliverable market boundaries should be allowed for markets lacking sourcing options
j. Other (please explain)

g. Support deliverability in principle, but the proposed market boundary for my region does

not reflect deliverability
h. Market boundaries should be defined as the geographic boundaries of electricity sectors, which align with national, and under certain circumstances, multinational boundaries

87. Please provide comments regarding your selected reasons for why you are not supporting

Please correct the country list: **New Zealand is not made up of multiple synchronous grids.**

New Zealand operates a single synchronous electricity grid, with both islands running at 50Hz and connected through the HVDC interconnector. Electricity flows between islands almost continuously, enabling:
- Shared generation resources
- Mutual instantaneous reserve support
- Coordinated frequency management

Over 98% of the time, there are no constraints or material price separation between islands - clear evidence of a unified national grid. Even when the HVDC is at maximum transfer capacity, electricity continues to flow between islands; the link is simply at full capacity, not disconnected. In fact, in the last 12 months the HVDC has never operated above 90% of maximum capacity in either direction in any half hour trading period - Source - Electricity Authority. New Zealand's geography - being made up of separate islands - may have led to that misunderstanding, but in reality the country operates a single, fully synchronised grid.

New Zealand's hydro-dominated system has strong seasonal dynamics:
- Peak demand occurs in winter due to space heating and lighting needs.
- Peak hydro inflows occur in spring and summer when snowmelt and rainfall exceed outflows.
- Hydro generators manage storage carefully, when reservoirs have not yet been replenished by spring and summer inflows, to meet future demand spikes and maintain supply security.

Inter-island flows shift depending on hydrology: typically south-to-north when South Island hydro is plentiful or, in dry years, north-to-south when storage is low. These realities illustrate why emissions factors cannot meaningfully be tied to fixed geographic "grids". New Zealand generation and consumption are routinely interdependent between islands, and these patterns can shift substantially year to year depending on hydrology.

In conclusion, approaches such as island-specific emissions factors or node-level matching

would misrepresent the physics and operations of the New Zealand system and impose unnecessary complexity. While local procurement should be encouraged, it should not be mandated given New Zealand's fundamentally unified and interconnected grid.

91. For regions not specified in the table Proposed methodologies for demonstrating deliverability: Deliverable Market Boundaries, please provide examples of market boundaries that uphold the principle of deliverability and balance integrity, impact, and feasibility of the MBM.

We request that New Zealand's boundary is clearly defined as a "single synchronous grid." Deliverability should be established on a national level for New Zealand, recognising that there is one interconnected grid, with HVDC inter-island connections and nodal pricing not constituting separate grids. Any mention of "multiple synchronous grids" in the context of New Zealand is not correct and as such should be excluded.

5.3.3 New guidance for Standard Supply Service (SSS)

97. On a scale of 1-5 do you support the new guidance for Standard Supply Service (SSS) and requirement that a reporting entity shall not claim more than its pro-rata share of SSS.
a. Scale of 1 (no support) – 5 (fully support)

1 - No support

100. Please provide concerns or why you are not supporting, if any (select all that apply).
a. Markets should self-determine how resources that fall under SSS are allocated to customers
b. Concern of regionally applicable challenges to implementation
c. Unclear how partial subsidies affect SSS classification
d. Unclear rules/definition of SSS
e. All contractual instruments should be eligible for voluntary procurement.
f. Other (please explain)

a. Markets should self-determine how resources that fall under SSS are allocated to customers
b. Concern of regionally applicable challenges to implementation
c. Unclear how partial subsidies affect SSS classification
d. Unclear rules/definition of SSS
f. Other (please explain) - See question 101.

101. Please provide comments regarding your selected reasons for why you are not supportive.

In New Zealand, major generators such as Genesis Energy, Meridian Energy, and Mercury, are majority government-owned (51%) and collectively account for more than two thirds of the country's electricity retail market share. Under the current GHG Protocol consultation, these facilities could be classified as Standard Supply Service (SSS). If this occurs, they could potentially be ineligible to receive revenue for EAC renewable attributes, although energy users could still benefit from the renewable claims for market-based reporting. This approach would also create a significant distortion with other major generators operating in the market that are fully privately owned.

Definition Ambiguities

We note four key ambiguities in the current Standard Supply Service SSS definition when applied to the New Zealand market:

1. Our hydro stations were funded a long time ago by taxpayers, not electricity users. Therefore, they lack a defining characteristic of SSS resources: a traceable or mandatory financial relationship between customers of these stations and the electricity - or contractual instruments - used to supply their load. The relationship between the amount of tax paid and the amount of electricity consumed by an individual or entity is vastly different on a case by case basis. Under the proposed changes, energy intensive households and businesses would receive windfall benefits at the expense of low energy intensity users - many of whom have invested in efficiency initiatives or behind-the-meter generation like solar panels to reduce their grid offtake.

2. Additionally, we do not accept that infrastructure paid for by taxpayers should necessarily result in free products or services for taxpayers indefinitely. For example, given the GHG Protocol encourages EACs bundled with electricity, it would be inappropriate to require that EACs be provided for free while the electricity is not. Similarly, New Zealand has significant taxpayer funded infrastructure in roading, ferries, rail, and water - all of which charge users or beneficiaries rather than providing products or services at no cost. We don't see any sound economic basis for this proposal.

3. The New Zealand government has sold off the majority of these assets - 49% of Genesis Energy, Meridian Energy, and Mercury, and 100% of Contact Energy - and electricity from these suppliers is sold commercially. As a result, any claim to continued public entitlement

is further weakened given the majority of these publicly built assets are now in private ownership.

4. Many of New Zealand's critical hydro assets are 50–100 years old, and significant private investment has already been made to maintain and upgrade them. The proposal ignores the substantial ongoing costs required to keep these stations operational, including maintenance, repairs, replacements, upgrades, staffing, resource consents, health and safety obligations, and compliance with new earthquake standards. Even more investment will be required in the future - costs that the proposal disregards entirely if these majority government-owned stations were captured under the proposed SSS changes.

Our Recommendation

We recommend clarifying the SSS definition to ensure that government-majority owned facilities in New Zealand retain EAC eligibility for voluntary claims. Excluding these generators would be inconsistent with New Zealand's market design and could undermine investment incentives which are particularly crucial for the maintenance and repairs of large existing hydro infrastructure.

5.3.4 Updated definition of residual mix emissions factors

113. On a scale of 1-5 do you support the updated definition of residual mix emission factors to reflect the GHG intensity of electricity, within the relevant market boundary and time interval, that is not claimed through contractual instruments, including voluntary purchases or Standard Supply Service allocations?
a. Scale of 1 (no support) – 5 (fully support)

3 - Moderate support

114. Please provide reasons of support, if any (select all that apply).
a. Establishes clear definition for residual mix emission factors
b. Improves accuracy and relevance of market-based reporting
c. Protects the integrity of market-based accounting by avoiding double counting of attributes within the MBM
d. Clarifies the market boundary a residual mix emission factor should be calculated for
e. Improves comparability and transparency across organizations and regions
f. Helps incentivize voluntary sourcing of contractual instruments
g. Provides an option for reporters without access to an hourly residual mix emission factor
h. Other (please explain)

a. Establishes clear definition for residual mix emission factors
b. Improves accuracy and relevance of market-based reporting
c. Protects the integrity of market-based accounting by avoiding double counting of attributes within the MBM
d. Clarifies the market boundary a residual mix emission factor should be calculated for
e. Improves comparability and transparency across organizations and regions
f. Helps incentivize voluntary sourcing of contractual instruments

115. Please provide comments regarding your selected reasons for support.

Since 2018, BraveTrace has operated the NZECS (New Zealand Energy Certificate System) and has annually published the residual mix emission factor for New Zealand. In addition to the annual Residual Supply Mix (RSM), BraveTrace is also publishing a pilot monthly RSM.

The BraveTrace NZECS is widely adopted across New Zealand with more than 400 energy users and 50+ registered renewable production devices. With over 2 million EACs redeemed in the last closed period (April 2024 to March 2025), BraveTrace's NZECS is globally recognised as the EAC system in common use for New Zealand by international frameworks such as Climate Group RE100 / CDP.

Through our work, we

- Support new independent generators to get projects off the ground
- Back Electrification & Decarbonisation funds for businesses and communities
- Incentivise further action by raising New Zealand's Residual Supply Mix (RSM)
- Enable traceable and verifiable claims with detailed BraveTrace reports
- Operate the NZECS digital platform for registrants and participants to access data
- Quantify the impact of user activities and decarbonisation programmes

Our registry expertise and rigorous system rules aligned with leading GHG emission reporting standards prevent any double-counting.

116. Please provide reasons of concern or why you are not supporting, if any (select all that apply).
a. Requiring a residual mix emission factor to be calculated per market boundary will further reduce availability of residual mix emission factors
b. Allowing reporters to use different temporal precision of residual mix emission factors within a deliverable market boundary will negatively impact comparability
c. Market boundaries used for calculating a residual mix emission factor should be defined as the geographic boundaries of electricity sectors, which align with national, and under certain circumstances, multinational boundaries
d. Markets should self-determine if Standard Supply Service is included in a residual mix emission factor
e. Increases administrative complexity of calculating a residual mix emission factor
f. Other (please explain)

d. Markets should self-determine if Standard Supply Service is included in a residual mix emission factor
e. Increases administrative complexity of calculating a residual mix emission factor
f. Other (please explain) - See question 117.

117. Please provide comments regarding your selected reasons for why you are not supporting.

BraveTrace removes all voluntary claims from the NZECS' residual mix emission factor calculations to prevent any double-counting and any double-claiming risks.

The SSS definition should be clarified to ensure that government-majority owned facilities in New Zealand retain EAC eligibility for voluntary claims. Excluding these generators would be inconsistent with New Zealand's market design and could undermine investment incentives which are particularly crucial for the maintenance and repairs of large existing hydro infrastructure.

118. In the regions/markets you follow, how close are certificate systems/registries/data providers to being able to publish residual mix emission factors within deliverable market boundaries? (For the US, please answer in regard to your preferred deliverable market boundary as outlined in Section 5.3.1 question 69.)

a. Scale of 1 (Far from ready) – 5 (largely ready)
b. Insufficient basis to assess

5 - Largely ready

119. Short comment (optional, ≤100 words): Name regions where this already works vs. does not, in your view.

BraveTrace's NZECS is New Zealand's first certification system, explicitly tracking around 7% of all electricity purchases. It serves 400+ corporate energy users, 50+ registered renewable generation devices, with over 2 million EACs redeemed last year. Recognised by RE100 and CDP as New Zealand's commonly used EAC system, NZECS combines registry expertise with leading best-practice system rules to prevent double counting. Since 2019, we have published New Zealand's annual residual mix emission factor, alongside a pilot monthly RSM. Recently, another EAC registry has operated in the country; its compliant transactions could be tracked on NZECS to strengthen New Zealand's RSM accuracy.

123. Please provide any additional feedback on residual mix emission factors.

In November 2025, BraveTrace submitted a recommendation to the New Zealand Ministry of Business, Innovation and Employment (MBIE) to formally recognise and integrate BraveTrace's Residual Supply Factor (RSF) into national guidance and procurement frameworks, reflecting its widespread use by market-based reporting businesses and assurance providers across New Zealand, in accordance with the GHGP Scope 2 Guidance on dual-reporting.

5.3.5 New requirement for use of fossil-based emission factors

124. On a scale of 1-5, do you support the requirement that for any portion of electricity consumption not covered by a valid contractual instrument and where no residual mix emission factor is available, a reporter shall apply a fossil-based emission factor?
a. Scale of 1 (no support) – 5 (fully support)

1- No support

127. Please provide reasons for concern or why you are not supporting, if any (select all that apply).
- a. Defaulting to fossil-based emission factors is overly conservative and may overstate actual emissions
- b. Organizations that lack access to residual mix data due to systemic or regional limitations may be disproportionately impacted
- c. Undermines comparability between organizations that can access residual mix data and those that cannot
- d. Misaligned with the definition and/or purpose of the MBM
- e. Other (please specify)

e. Other (please specify) - See question 128

128. Please provide comments regarding your selected reasons for why you are not supporting.

This question is not applicable, there is a residual mix emission factor available in New Zealand, widely used by carbon assurers and verifiers.

5.4 COMBINED QUESTIONS ON UPDATES TO THE MARKET-BASED METHOD

130. Are the proposed feasibility measures (e.g., use of load profiles for matching, exemptions to hourly matching, legacy clause, and phased implementation) sufficient to support implementation of the proposed market-based revisions at scale?
- a. Scale of 1 (insufficient) – 5 (highly sufficient)
- b. No basis to assess

2 - Somewhat insufficient

133. Please provide any additional comments on other feasibility measures (not outlined in questions 131-132) that need adjustment to support implementation of the proposed market-based revisions at scale. Note, any comments on exemptions to hourly matching and the legacy clause should be provided in sections 6 and 7.

The proposed feasibility measures for the market-based method, and more specifically the 'threshold exemptions', should introduce an hourly matching exemption or threshold for countries with high renewable penetration, such as the hydro-rich New Zealand system. This threshold for highly renewable systems would mirror the GHG Protocol's proposal to exempt organisations below a certain consumption from market-based hourly matching requirements. As detailed in previous questions, an hourly matching mandate is fundamentally inappropriate in a hydro-dominated system like New Zealand, and would add significant complexity and cost to the system without driving any additional emissions reductions. The GHG Protocol should support hydro, encourage solar, and preserve system flexibility. Hourly matching does not advance these goals in the New Zealand context and may actually hinder progress toward our climate goals.

134. Considering investor and assurance needs, how do the proposed market-based method revisions change the extent to which information is decision-useful to users relative to incremental cost and complexity for preparers?

a. No meaningful improvement (unlikely to change decisions/interpretations)
b. Minor improvement (noticeable but unlikely to change decisions)
c. Moderate improvement (could change some decisions/assessments)
d. Substantial improvement (likely to change decisions benchmarks)
e. Not sure / no basis to assess

a. No meaningful improvement (unlikely to change decisions/interpretations)

135. Please provide additional context for your answer to question 134.

The proposed hourly matching requirement would not improve emissions outcomes in New Zealand. Instead, it would add significant cost, complexity, and barriers to entry, whilst unlikely to change decisions/interpretations for preparers.

136. Considering investor and assurance needs, how do the proposed market-based revisions change the comparability of information relative to incremental cost and complexity for users?

a. No meaningful improvement (unlikely to change comparability/interpretations)
b. Minor improvement (noticeable but unlikely to change comparability)
c. Moderate improvement (could change some comparability/assessments)
d. Substantial improvement (likely to change comparability benchmarks)
e. Not sure / no basis to assess

a. No meaningful improvement (unlikely to change decisions/interpretations)

137. Please provide additional context for your answer to question 136.

The proposed hourly matching requirement would not improve emissions outcomes in

New Zealand. Instead, it would add significant cost, complexity, and barriers to entry, whilst unlikely to deliver improved comparability for users.

138. For questions 134-137, please provide the basis for your assessment (select all that apply).
- a. Direct empirical analysis (e.g., back-testing with hourly factors)
- b. Operational experience applying hourly MBM
- c. Professional judgment informed by literature/briefings
- d. General awareness (no direct analysis)
- e. Prefer not to say

c. Professional judgment informed by literature/briefings
d. General awareness (no direct analysis)

141. Please provide any additional comments on the anticipated change in costs for hourly-matched, deliverable EACs, PPAs, etc. relative to current practices. If applicable, please include comments if and how this would impact your procurement strategy for carbon free electricity?

Hourly-matched EACs would increase costs, complexity, and barriers to entry.

New Zealand hydro stations, providing around 60% of total generation, sit at the heart of our highly renewable system. The storage and controllability of hydro generation allows the system to respond rapidly to fluctuations in wind and solar output, reducing hydro production at short notice during periods of high wind or solar generation, then ramping up again when those intermittent sources fall.

In effect, this “firming” function allows New Zealand to realise the benefits of excess wind and solar generation for hours, days, weeks or even months. The extra hydro storage retained during periods of high solar and wind generation can then be dispatched at times when thermal generation is required to meet demand. As a result, our hydro system ensures that almost all of our new renewable production is utilised and displaces thermal generation.

Thanks to the flexibility of our highly adaptable grid, achieving emissions reduction doesn’t require the alignment of consumption to generation to avoid renewable curtailment. For us in New Zealand, the pathway to accelerating decarbonisation is understanding consequential impact - the “actual” effect of a new generation source or technology on the grid’s emissions - and promoting renewable generation that is most effective at achieving this.

Assessment of consequential impact provides a much more direct and effective way to guide our pathway to decarbonisation. This is why we fully support the crucial work of the

Action & Market Instrument (AMI) workstream for quantifying and reporting GHG impacts of actions.

Our experience operating the New Zealand Energy Certificate System (NZECS) has shown that focussing on simplicity and demonstrable impact is the most effective approach for New Zealand. Attempting hourly time-matching in our unique energy context would add unnecessary complexity while delivering minimal benefit. In contrast, focusing on consequential energy production, supported by premium Energy Attribute Certificates (EACs), provides a clear and efficient pathway to incentivise tangible, measurable actions to avoid emissions across the country.

146. Considering the full set of proposed revisions to the market-based method as discussed previously in this consultation, would the existence of a separate metric outside of scope 2 to quantify the emissions impact of electricity-related actions change your perspective on the proposed revisions?

a. Yes
b. Somewhat
c. No
d. I do not support the development of impact metrics outside the scope 2 inventory.

a. Yes

147. If you answer "yes" or "somewhat" to question 146, which of the following rationale captures your views (select all that apply).

a. Allows for continued investment in electricity projects outside of my deliverable market boundary
b. Provides a complementary metric to quantify actions such as energy storage or demand response
c. Causes less disruption of existing electricity procurement practices
d. Provides additional relevant information for users of GHG data
e. Provides additional approaches for target setting
f. Other (please specify)

b. Provides a complementary metric to quantify actions such as energy storage or demand response

c. Causes less disruption of existing electricity procurement practices

d. Provides additional relevant information for users of GHG data

e. Provides additional approaches for target setting

148. Please provide comments regarding your selected choices in question 147.

In New Zealand, price signals already drive behaviour (nodal pricing and peak periods) in real time, and increased granularity in market-based calculation won't drive any behaviour change due to the highly renewable nature of our electricity (around 85% renewable on average, and has reached 97% in the past three months). inventory granularity will add cost, a complementary Actions and Market Instruments metric for consequential impacts

will prevent over-burdening inventory accounting.

152. In your view, balancing scientific integrity, climate impact, and feasibility, what scope 2 revisions or combination of revisions are most appropriate? Please address each of the three core decision-making criteria: integrity, impact, and feasibility in your answer, and describe how the approach satisfies each criterion.

Integrity: in accordance with the GHGP Scope 2 Guidance on dual-reporting, for the market-based method, reporters should use the country's commonly used EAC system where one exists. The system should be publicly available, free to use, from a credible source, and recognised by global frameworks.

Impact: Prioritise consequential energy production, supported by premium EACs that provide a clear and efficient pathway to incentivise tangible, measurable actions to avoid emissions across the country.

Feasibility:

1. Introduce an hourly matching exemption or threshold for countries with high renewable penetration, such as the hydro-rich systems like New Zealand. This threshold for highly renewable systems would mirror the GHG Protocol's proposal to exempt organisations below a certain consumption level from market-based hourly matching requirements.
2. Allow markets to self-determine whether Standard Supply Service should be included in the country's residual mix emission factor.

6.3 HOURLY MATCHING EXEMPTION THRESHOLD

153. On a scale of 1-5 do you support allowing for exemptions to hourly matching using one of the options (1-4) described above?
Scale of 1 (no support) – 5 (fully support)

3- Somewhat support

154. Please provide your reasons for support, if any (select all that apply).

a. Reflects a reasonable balance of integrity, impact and feasibility as organizations under a threshold collectively contribute to fewer scope 2 emissions than the largest consumers
b. Encourages organizations under a threshold to continue to engage in voluntary procurement using an annual procurement approach
c. Provides a more equitable approach for reporting as hourly matching could be more challenging for organizations under a threshold
d. Reduces transition strain on the electricity market and hourly matching infrastructure.
e. Other (please provide)

a. Reflects a reasonable balance of integrity, impact and feasibility as organizations under a threshold collectively contribute to fewer scope 2 emissions than the largest consumers
b. Encourages organizations under a threshold to continue to engage in voluntary procurement using an annual procurement approach
c. Provides a more equitable approach for reporting as hourly matching could be more challenging for organizations under a threshold

155. Please provide any additional comments regarding your reasons for support.

Hourly matching will fail New Zealand

New Zealand is unusual globally: around 60% of our electricity comes from hydro, and hydro storage already shifts renewable generation into the peak hours when thermal generation would otherwise run.

Hourly matching is designed for systems where renewable generation is intermittent and inflexible - such as solar and wind in fossil-heavy grids where renewables peak in low-demand hours (e.g. midday solar) and fossil generation dominates during peak demand. In those systems, hourly matching prevents organisations from using low-emissions certificates to cover consumption in high-emissions hours.

In New Zealand, hydro already solves that problem. The emissions profile is essentially the same with or without hourly matching, because the benefits hourly matching is designed to deliver are already achieved through the physics and operation of our hydro-dominant system. As a result, hourly matching would not reduce emissions further; it would only add administrative and contractual complexity.

In New Zealand, market price signals already drive behaviour in real time

While BraveTrace recognises the relevance of hourly time-matched EACs in jurisdictions where incentives are needed to encourage the right behaviours and outcomes for renewable generation investment and procurement, in New Zealand, however, our unique

electricity market design and conditions already provide these incentives. Our market sends all the necessary price signals to ensure renewable generation investment is optimised and impactful - taking into account factors such as location and the ability to generate electricity when it is most needed. These price signals also support the adoption of battery technology and demand response. Therefore, introducing an hourly time-matching requirement for New Zealand would add administrative costs and burdens without providing any additional benefits beyond our existing market price signals. In fact, the added cost and complexity of time-matching are highly likely to reduce the use of EACs and PPAs, ultimately leading to less support for renewable generation in New Zealand.

These unique combinations of market settings and conditions are:

1. A detailed nodal pricing system with over 200 price nodes across 15 transmission regions, ensuring that new generation is optimally located. By comparison, Australia has over five times New Zealand's population but only five regional price nodes for the entire country.
2. Real-time pricing, with five-minute prices used to dispatch generation and flexible demand. These five-minute prices are then averaged in 30-minute prices, which are published for every node. Any oversupply during periods of high generation and/or low demand is reflected in real time prices, as is any undersupply under inverse conditions.
3. An established suite of trading products, including monthly and quarterly futures contracts extending 3-4 years out and Financial Transmission Rights (FTR's) between nodes. There is also a range of regularly traded Over-The-Counter (OTC) products, including peak, super-peak, day-ahead, non-standard shapes or nodes options, as well as any other bespoke products upon request. These products provide excellent price visibility of the various price risks for any new investments or changing market conditions, and enable both buyers and sellers to effectively manage these risks.
4. An established hydro system, with many catchments across the country providing approximately 60% of New Zealand's total generation. Our hydro generation is able to reduce during periods of low prices, such as times of high wind or solar generation coinciding with low demand, and increase in high price periods when the inverse conditions exist. This hydro storage and flexibility effectively allow excess wind and solar generation to be shifted to periods when it is most needed, minimising 'renewable spill'. Consequently, any new wind or solar project will displace an almost equivalent amount of thermal generation in normal market conditions over the year, with only minor losses as the difference. This is vastly

different from many markets without hydro or large-scale energy storage, where excess new renewable generation is frequently spilled and has minimal impact on thermal displacement.

Impact On Solar And Independent Generation

Hourly matching also creates significant barriers for solar. Solar farms cannot generate at night, so compliance would require contracting with multiple technologies or competitors. This is particularly challenging for small and independent solar generators - one of the most positive developments in New Zealand's electricity market over the past decade.

Seasonal patterns further complicate this issue

Electricity demand peaks in winter, while hydro inflows are highest in summer. Solar generation reduces summer hydro demand, allowing more water to be stored for winter use - effectively letting hydro act as a natural battery that mitigates system-wide risks. Moreover, in a dry year, it is preferable to retain every bit of storable hydro and to incentivise technologies such as solar batteries to help meet daily peak demand. Hourly matching fails to account for these system-level benefits and could even discourage new solar investment, despite solar being a highly predictable and valuable renewable resource.

Conflicts With Other Standards

There's also a potential conflict with frameworks like RE100's 15-year and SBTi's 10-year age rules. Hourly matching would incentivise organisations to obtain certificates for every hour of consumption, including night-time hours when solar or other intermittent generation is not producing. In New Zealand, filling these gaps would likely require older hydro certificates, creating regulatory confusion and forcing reporting entities to choose between compliance with hourly matching and compliance with age-restricted assets.

Accuracy vs. Emissions Reduction

From a reporting perspective, hourly matching may seem more accurate, but it does not improve emissions reduction in a hydro-rich system like New Zealand. Instead, it adds unnecessary complexity for both energy users and generators, risks discouraging participation from the very actors we need to engage, and could slow investment in renewable energy.

Our Recommendation

To balance integrity and impact with feasibility, the GHG Protocol should recognise the unique characteristics of hydro-dominant electricity systems, and allow a range of approaches that best suit the grid. An example could be to introduce an hourly matching exemption or threshold for countries where hydro generation represents 40-50% or more

of total generation on an annual basis. This would protect the role of hydro as the foundation of a high-renewable system, while avoiding rules that may undermine solar growth and independent generation.

Should exemptions or thresholds fail to be introduced by the GHG Protocol for countries with distinctive electricity profiles like New Zealand, and market-based hourly matching is still required, we recommend exemptions for organisations with annual consumption below 10 GWh/year (Option 1). Without such an exemption, smaller organisations - often part of Scope 3 value chains - may simply opt out of carbon reporting as the requirement would be unnecessary burdensome.

158. What evidence and/or reasoned rationale supports the need for exemptions (e.g., data access, costs, feasibility)?

It is crucial for the GHG Protocol to introduce an hourly matching exemption or threshold for countries with high renewable penetration, such as the hydro-rich systems like New Zealand where electricity demand peaks in winter while hydro inflows are highest in summer. Solar generation reduces summer hydro demand, allowing more water to be stored for winter use - effectively letting hydro act as a natural battery that mitigates system-wide risks. Moreover, in a dry year, it is preferable to retain every bit of storable hydro and to incentivise technologies such as solar batteries to help meet daily peak demand. Hourly matching fails to account for these system-level benefits and could even discourage new solar investment, despite solar being a highly predictable and valuable renewable resource.

159. Options 1, 3, and 4 introduce a GWh load threshold applied within a defined boundary. In section 5.3.1 question 70 you selected an exemption threshold of either of 5, 10, or 50 GWh per deliverable market boundary. If you prefer a GWh load threshold based on a different amount, propose a single threshold amount in GWh per boundary and explain why.

a. Threshold [enter number] GWh per [deliverable market boundary/site/other]
b. Preferred option selected in section 5.3.1, question 70

b. Preferred option selected in section 5.3.1, question 70

163. Which of the four draft eligibility options for an exemption to hourly matching reflect the most reasonable balance of integrity, impact and feasibility of the MBM? Apply the exemption threshold selected in question 159.

a. Option 1
b. Option 2
c. Option 3
d. Option 4
e. None of the above (please explain)

a. Option 1. Companies with annual consumption up to [**10**] GWh/year in a deliverable market boundary may use a monthly or annual accounting interval for Criteria 4 for all operations within that market boundary in accordance with the contractual instruments temporal data hierarchy.

165. Please provide additional comments regarding your answer to question 164, including the main reasons why it is the most appropriate and any geographic or industry specific considerations that influenced your response. (≤300 words).

Note that we do not support adding hourly matching requirements for the market-based method. We call for an hourly matching exemption or threshold for countries with high renewable penetration, such as the hydro-rich systems like New Zealand. However, if hourly matching requirements for the market-based method are introduced, we recommend establishing a threshold of at least 10 GWh per deliverable market boundary. Rationale: This approach aligns with the SBTi consultation, which proposes temporal matching to companies with annual electricity consumption of ≥ 10 GWh within a single region. As this criterion applies specifically to electricity-related emissions, it should remain proportionate to the scale of electricity consumption.

166. Should exemptions be time-limited (i.e. phased-out over time) or ongoing?

a. Time-limited (i.e. phased out over time)
b. Ongoing
c. Unsure
d. Do not support exemptions

b. Ongoing

169. In exercising the exemption, should the organization be considered in conformance with the Corporate Standard and Scope 2 Standard?

a. Yes, organizations using the hourly matching exemption should be considered in conformance
b. No, organizations using the hourly matching exemption should NOT be considered in conformance
c. A separate conformance level should be defined for companies exercising the exemption
d. Unsure
e. Other (please explain)

a. Yes, organizations using the hourly matching exemption should be considered in conformance

7.3 LEGACY CLAUSES CONSIDERATIONS

171. On a scale of 1-5 do you support introduction of a Legacy Clause to exempt existing long-term contracts that comply with the current Scope 2 Quality Criteria from being required to meet updated Quality Criterion 4 (hourly matching) and Quality Criterion 5 (deliverability)?
Scale of 1 (no support) – 5 (fully support)

5. Fully support

172. Please provide your reasons for support, if any (select all that apply).

a. Reflects a reasonable balance of integrity, impact and feasibility as existing long-term contracts reflect significant financial and operational commitments to energy resources
b. Encourages organizations with legacy contracts to continue to engage in voluntary procurement using an annual procurement approach
c. Provides a more equitable approach by ensuring that early adopters of Scope 2 Guidance are not disadvantaged
d. Helps maintain trust and market confidence in long-term contracts
e. Provides a pragmatic pathway for organizations to transition to updated Quality Criteria
f. Other (please provide)

a.Reflects a reasonable balance of integrity, impact and feasibility as existing long-term contracts reflect significant financial and operational commitments to energy resources
b.Encourages organizations with legacy contracts to continue to engage in voluntary procurement using an annual procurement approach
c.Provides a more equitable approach by ensuring that early adopters of Scope 2 Guidance are not disadvantaged
d.Helps maintain trust and market confidence in long-term contracts

173. Please provide any additional comments regarding your reasons for support.

Long-term Power Purchase Agreements (PPAs) and early adopters have played a critical role in enabling renewable energy development, as demonstrated by the New Zealand solar sector. In the absence of legacy provisions, changes to hourly or deliverability standards may compromise project financing and disadvantage initiatives with significant impact.

176. Which date should determine a contract's eligibility under a Legacy Clause?

a. Contract signed prior to implementation date of the Scope 2 Standard (post phase-in period)
b. Contract signed prior to publication date of the Scope 2 Standard
c. Other (please explain)
d. Do not support Legacy Clause

b. contract signed prior to publication date of the revised Scope 2 Standard

177. Please provide any additional comments regarding your response to question 176.

Incorporating a legacy clause is vital to acknowledge long-term PPAs and pre-existing arrangements established under the prevailing regulatory framework, which have been instrumental in advancing renewable projects such as solar financing. Key design considerations include eligibility limited to PPAs and long-term supplier contracts executed prior to the publication of the updated standard.

183. If a uniform effective date was applied rather than a legacy clause, what would be an appropriate date for organizations to be required to apply the updated quality criteria to all contractual instruments? (enter in 20XX).

2045 - Contracts signed in New Zealand typically span 7 to 20 years. Those who have already committed to help finance the build of new renewable energy sources should not be penalised.

End of survey