



**Information Sheet
on
New Zealand Energy Attribute Certificates**

March 2024

Information sheet on New Zealand Energy Attribute Certificates

What are Energy Attribute Certificates?

Energy Attribute Certificates (EACs) are an internationally recognised mechanism by which the renewable attributes of an energy production facility may be sold to an **Energy User**¹ seeking to claim that its energy consumption is renewable (or zero carbon).

In many markets around the world the use of EACs is mandatory. In New Zealand, the trading of EACs is voluntary, and is driven by energy consumers using them to achieve their carbon reduction goals and by energy producers using them to support their renewable energy initiatives.

The New Zealand Energy Certificate System (NZECS)

The New Zealand Energy Certificate System (NZECS) enables the buying and selling of EACs in New Zealand, referred to as Energy Certificates (NZ-ECs). The NZECS comprises Rules that govern its operation and a Registry that stores NZ-EC information and enables NZ-ECs to be issued, transferred, and redeemed.

The NZECS is designed to be fully consistent with international standards for reporting greenhouse gas emissions, such as the Greenhouse Gas Protocol and ISO 14064-1, that recognise the use of NZ-ECs as one of the most rigorous approaches to market-based reporting. Consistency with these standards has been verified by an independent third party².

The NZECS is administered, operated, and developed by BraveTrace. BraveTrace was incorporated in 2018 and is guided by a board of expert advisors from the energy, law, and business sectors.

The market for NZ-ECs In New Zealand

The NZECS has been designed to enable the buying and selling of NZ-ECs for both renewable electricity and renewable gas in New Zealand.

Electricity NZ-ECs

The first electricity NZ-ECs were bought and sold in 2019, and the traded volume has increased from 50 GWh in 2019/2020, 230 GWh in 2020/2021, 735 GWh in 2021/22, to 1,265 GWh in 2022/23. There continues to be a strong and developing market for electricity NZ-ECs in New Zealand, driven by increasing interest from a broad range of electricity consumers, existing generators, and new entrant generators considering options to sell NZ-ECs in the future. Other **Parties** are providing a range of services to the market, such as retailers selling NZ-ECs to their electricity supply customers. Intermediaries and brokers are helping to facilitate trading by acting on behalf of local electricity consumers and international companies with electricity consumption in New Zealand.

Gas NZ-ECs

¹ Words in bold are key terms – see Key Terms on page 7 for definitions.

² Energy Certificates and Reporting - A guide commissioned by NZECS and prepared by thinkstep-anz, see: <https://bravetrace.co.nz/resource/energy-certificates-and-reporting-a-guide-commissioned-by-nzecs/>

BraveTrace enabled trading in NZ-ECs for renewable gas from 1 October 2022³. Renewable gas may be in the form of biomethane produced from biogas, hydrogen produced from low- or zero-carbon processes such as electrolysis, and other forms such as synthetic gas. There is considerable potential for developing renewable gas in New Zealand, and strong interest from gas consumers and producers in buying and selling gas NZ-ECs when they become available. Other **parties** are also taking an interest in the development of gas NZ-ECs, such as the gas market regulator (Gas Industry Company) and the major distributor of gas in New Zealand (First Gas).

What are the benefits of buying (or selling) NZ-ECs?

There are a range of benefits realised through the buying and selling of NZ-ECs. These include the following:

- Revenue from the sale of NZ-ECs will provide additional funding for the development of renewable energy production and other decarbonisation activities;
- Purchasing NZ-ECs enables organisations to commit to supporting renewable energy and reducing their reported greenhouse gas emissions; and
- Full coverage of emissions from the grid for companies that choose not to purchase NZ-ECs is accounted for by applying the Residual Supply Mix (RSM).

Key principles of the NZECS

There are three important principles that help ensure that the NZECS is providing value: the introduction of choice, the avoidance of double-counting, and the promotion of impactful purchasing behaviour.

Introduction of choice

Within traditional energy market arrangements, consumers are unable to choose particular types of energy production to support their goals of purchasing renewable energy, carbon zero energy, or other valued attributes. For example, an electricity consumer that is connected to a local distribution network or directly to the national grid will be consuming electricity that is sourced from a mixture of both renewable and non-renewable generation. If that consumer would like to demonstrate its support for renewable energy, then it can achieve this by purchasing NZ-ECs from a renewable generator.

NZ-ECs are typically sold in one of two forms. The first form is as bundled NZ-EC, where the energy consumer purchases its physical energy bundled with the purchase of NZ-ECs. This may be achieved by an energy consumer selecting a 'green' tariff offered by an energy retailer that effectively includes the sale of physical energy combined with NZ-ECs. The second form is unbundled NZ-ECs, where energy is purchased separately from the NZ-EC, usually from different **Parties**. The NZECS supports the trade of both bundled and unbundled NZ-ECs.

NZ-ECs provide considerable choice to an energy consumer. Once the energy consumer has determined the production attributes that best support its sustainability goals, it can then consider buying NZ-ECs from a number of energy brokers, energy retailers or energy producers with those attributes. The energy consumer may take other factors into consideration, such as purchasing NZ-ECs from a party that has committed to using NZ-EC income for a particular purpose, is located close to it or has similar interests in supporting a local community. Additional value may be derived by

³ If you are interested, you can find out more here: <https://bravetrace.co.nz/renewable-gas/>

both parties agreeing to publicise their NZ-EC transaction and thereby demonstrate their support for sustainability outcomes to their stakeholders.

Avoidance of double counting

The renewable and/or carbon zero attributes of energy production should only be sold once, otherwise the environmental impact of energy production is underestimated. This outcome is referred to as double-counting. A participating energy producer is required to declare that the renewable attributes of its **Production Device** have not already been claimed by another **Party**.

To further ensure that double-counting does not occur, BraveTrace calculates and publishes the national RSM – an adjusted national supply mix that takes into account the volume of electricity that has been certified using electricity NZ-ECs.

Through these two activities, the NZECS provides a full ledger of relevant energy attributes for all consumers in the country.

Promotion of impactful purchasing behaviour

All purchases of NZ-ECs result in system benefit, through further advancing active purchasing behaviours, decreasing the occurrence of double counting and by contributing additional financial support for renewable energy. However, the ability for different NZ-EC purchases to offer different levels of impact is a key design feature of the NZECS, and one that can be used by energy producers to gain support for more ambitious energy projects.

There are no standards governing what a generator does with the income received from selling NZ-ECs. Energy consumers are keen to understand the consequence of their NZ-EC purchases however⁴, and BraveTrace is committed to supporting the provision of this information in a consistent and reliable manner.

⁴ Toitū Envirocare has released criteria that reflect their desired level of impact and which need to be met in order for Toitū to accept NZ-ECs for use within their carbon zero and carbon reduce programmes - <https://www.toitu.co.nz/news-and-events/news/measure/accounting-for-energy-certificates>

What makes up an NZ-EC?

An NZ-EC is a tradable commodity, comprised of the following elements:

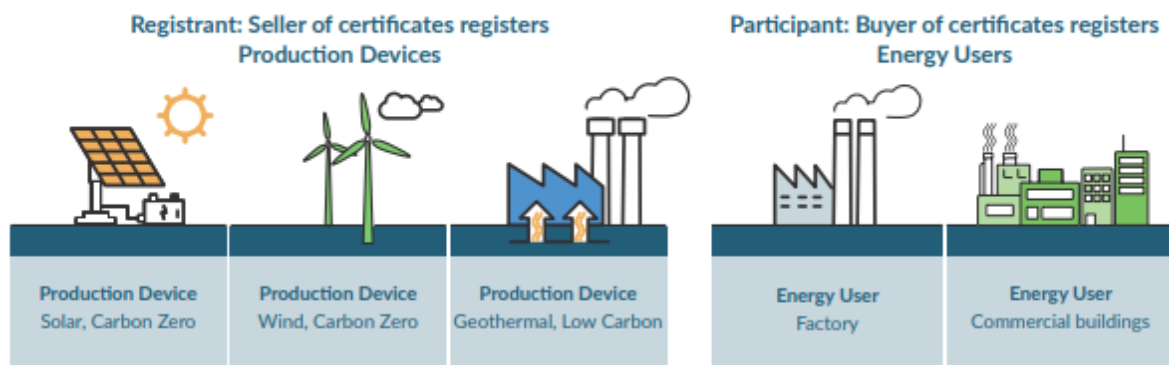
- **Price:** \$/MWh (NZD)
- **Vintage:** Typically, but not always, the **Production Year** ending 31 March. An NZ-EC issued from a **Production Device** in a particular **Production Year** may only be redeemed against an **Energy User's** consumption in the same **Production Year**.
- **Volume:** MWh of energy - produced and exported or injected into the national grid or pipeline. Typically, NZ-ECs settle on an annual basis (i.e., MWh per **Production Device** per **Production Year**). However, it can also be calculated over shorter durations, e.g., monthly. The volume may be either fixed or a forecast of the **Energy User's** consumption.
- **Fuel source:** The source of energy, typically either wind, solar, hydro or geothermal, that is converted to electricity by the **Production Device**.
- **Production Device type and technology:** A description of the **Production Device** type and technology. For example, a solar **Production Device** type may be either photovoltaic or concentrating solar-thermal power. The **Production Device** technology may be a rooftop solar installation, or ground-mounted, with either a fixed inclination or motorised, with either single or dual axis tracking.
- **Location:** Location of the **Production Device** within New Zealand and its proximity to the **Energy User**.
- **Associated emissions:** The volume of greenhouse gases emitted by the **Production Device per MWh of energy produced** (commonly referred to as the emissions factor). For example, the emission factor for solar, wind and hydro **Production Devices** are typically zero, whereas the emissions factor for a geothermal **Production Device** is typically greater than zero, although specific to the facility.
- **Other attributes:** A description of any other production attributes of potential value to an **Energy User**, for example, whether the **Production Device** has any associated social benefits.
- **Impact:** Any statement from the **Seller** on how it intends to apply the NZ-EC revenue in order to achieve consequential impact, such as how it will support further investment in renewable generation, other decarbonisation efforts, or other projects with social or environmental benefits.

Over time, additional information around associated benefits of the generated electricity will be available via the NZ-EC.

The process for buying or selling an NZ-EC

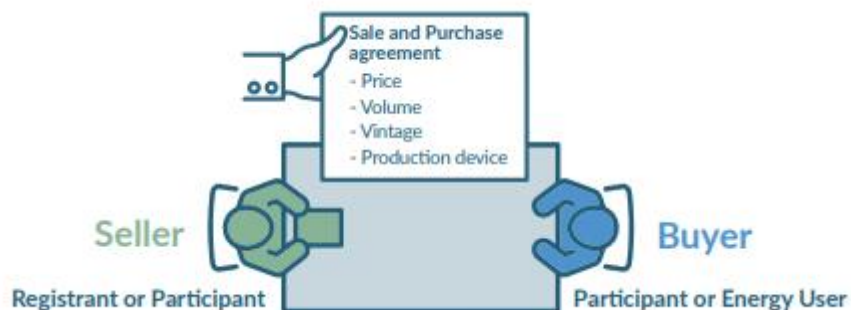
The process for buying or selling an NZ-EC comprises three key steps: register, trade and operate. These steps are described in more detail below:

Register



Both the **Seller (Registrant)** and the **Buyer (Participant)** need to register with BraveTrace to operate on the NZECS Registry⁵. The **Registrant** registers the **Production Device(s)**, and the **Participant** registers the **Energy User(s)**. The registration of a **Production Device** also requires a physical site audit to verify key production information.

Trade



Agreement between **Parties** to sell and buy NZ-ECs is typically reached through bilateral negotiation and documented using a sale and purchase agreement⁶. This step can occur at any time, as long as it takes place within the **Production Year** timeframe for transactions relating to that **Production Year** – preferably well in advance of 30 April of the following **Production Year**. The following points relate to this step in the process:

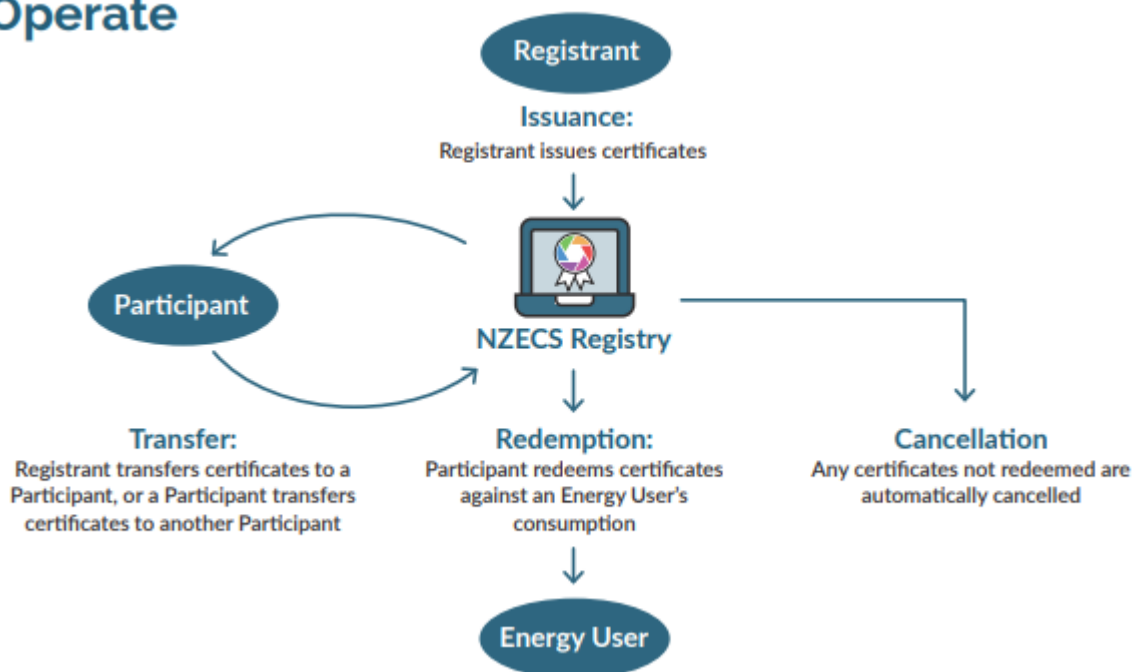
- The sale and purchase agreement is completed between the **Buyer (Participant or Energy User)** and the **Seller (Registrant or Participant)**. This can be based on a template sale and purchase agreement available from BraveTrace.
- The **Seller** and **Buyer** may agree either fixed or forecast consumption volumes.

⁵ A list of registered Participants and Registrants is available, see: <https://bravetrace.co.nz/system-users/>

⁶ BraveTrace has developed a template sale and purchase agreement that you may choose to use, see: <https://bravetrace.co.nz/resource/template-sale-and-purchase-agreement/>

- When the sale and purchase agreement is based on a forecast consumption volume, the actual redemption of NZ-ECs will be revised based on the actual consumption once this is known. This enables the **Energy User** to support renewable energy for 100% of the volume of electricity it consumes over the Production Year.
- Where it is a fixed volume arrangement, the **Energy User** may choose to buy more NZ-ECs where actual consumption is less than the agreed fixed volume or sell excess NZ-ECs where actual consumption is greater than the agreed fixed volume.
- The **Buyer** and **Seller** may agree that NZ-ECs are issued and redeemed annually at the end of the **Production Year**, or on a more frequent basis, such as monthly.
- The **Buyer** and **Seller** may agree to transact NZ-ECs over one **Production Year** or over multiple **Production Years**.

Operate



The remaining step is operational, it involves using the NZECS to issue, transfer and redeem NZ-ECs. These actions are described below⁷:

- **Issuance:** An NZ-EC is issued by a **Registrant** using the NZECS Registry. The maximum volume of NZ-ECs that may be issued for a **Production Device** is equivalent to the volume of electricity produced by that **Production Device**.
- **Transfer:** NZ-ECs may be transferred using the NZECS Registry from a **Registrant** to a **Participant**, or from a **Participant** to another **Participant**
- **Redemption:** A **Participant** that holds NZ-ECs in its NZECS Registry account may redeem those NZ-ECs against the electricity consumption of an **Energy User** that it has registered.
- **Cancellation:** At the conclusion of the Production Year, any NZ-ECs that have been issued but not redeemed are cancelled to ensure inclusion in the RSM calculation.

⁷ The NZECS Rules cover these operational actions in detail, see: <https://bravetrace.co.nz/resource/rules-governing-the-certification-of-electricity-production/>

How much will I earn from the sale of NZ-ECs?

Ultimately, the sale price of an NZ-EC will be determined by negotiation between the **Buyer** and **Seller**. However, an indication of price can be derived from looking at the current cost of carbon. We refer to this indicator as the *carbon removal cost of grid electricity*. Because the **Buyer** aims to consume electricity with no associated carbon emissions (i.e., it will be zero-carbon), the price of a carbon offset provides the basis for an approximate indicator of the price for an NZ-EC. The appropriate price for carbon in New Zealand is represented by the cost of an NZU⁸, New Zealand's primary carbon unit. So, for example, if NZUs were trading at \$60 and the average level of carbon intensity of the New Zealand electricity system was 100kg carbon dioxide per MWh, this would equate to an indicative NZ-EC price of \$6/MWh. A range of other factors such as volume, term of contract and the premium attributes of the **Production Device** may also be factors influencing the agreed price.

How do I account for NZ-ECs in my carbon reporting?

One of the first tasks for an organisation who wants to voluntarily reduce their environmental impact is to understand their business and what their greenhouse gas emissions are. Whether manufacturing products or an office-based business, one of the biggest sources of emissions is often energy use. Once energy use has been reduced as much as possible via energy conservation and improved energy efficiency, the nature of the remaining energy consumption can be addressed.

Where it is not possible for an organisation to self-generate renewable electricity, or connect directly to a renewable generator, purchase of NZ-ECs is the next best way for organisations to report electricity (scope 2) emissions as zero⁹. Buying NZ-ECs is a credible way of claiming the production characteristics of a particular generation facility, enabling an organisation to report their energy consumption as having these attributes.

Use of NZ-ECs in this way is an alternative to reporting energy consumption emissions using the grid-average emissions factor. Even those **Parties** who do not actively purchase NZ-ECs will benefit from a more accurate supply emissions factor due to the availability of the RSM (explained below). This approach is supported in the latest GHG reporting standards, referred to as dual reporting.

What is the Residual Supply Mix?

BraveTrace has, as one of its core objectives, the goal of increasing information and understanding of the way energy is generated in New Zealand. To this end, we make sure that generation attributes claimed via the purchase of NZ-ECs are not also claimed by other **Parties** (avoidance of double counting as described above). The mechanism by which we do this is called the Residual Supply Mix, or RSM.

The RSM describes the nature of electricity used by reporting energy consumers who do not purchase NZ Energy Certificates directly from generators. It is a key part of how greenhouse gas emissions are accounted for in New Zealand.

⁸ <https://www.epa.govt.nz/industry-areas/emissions-trading-scheme/about-the-nzets/terms-used-in-the-ets/>

⁹ If you are interested to find out more see the paper on *The Role of Energy Attribute Certificates in Greenhouse Gas Emissions Reporting* available here: <https://bravetrace.co.nz/resource/the-role-of-energy-attribute-certificates-in-greenhouse-gas-emissions-reporting/>

The RSM figures for 2019/20, 2020/21, 2021/22 and 2022/23 are described below:

Production Year (1 April to 31 March)	2019/20	2020/21	2021/22	2022/23
National electricity generated (MWh)	42,273,518	41,490,913	41,881,730	41,519,448
Total volume of NZ-ECs transacted	51,577	228,741	734,700	1,265,475
National Supply factor (kg co2-e/MWh)	99.16	124.00	108.83	67.50
Residual Supply Factor (kg co2-e/MWh)	99.28	124.69	110.77	69.62
Difference (%)	0.12	0.58	1.77	3.14

What are the administrative costs of buying or selling NZ-ECs?

The following NZECS fees will remain in effect until 31 March 2024. The fees are subject to change, with any changes coming into effect on 1 April 2024 and previously notified by 1 January 2024.

Registrant: The fees for participating in the sale of NZ-ECs as a **Registrant** is set out in detail within the Registrant User Agreement. These fees are summarised below (all prices are NZD excluding GST):

- NZECS Registrant trading account creation: \$500 one-off cost
- Trading account administration: \$150 annually per generating company, first payable after one year of trading
- Production Device registration, including site audit - \$2,500, once only per device
- Production Device administration: \$300, annually per device, first payable after one year of registration
- 5-yearly Production Device audit: \$1,500, every 5-years per device
- Issuance of NZ-EC: \$0.24/MWh
- Transfer of NZ-EC: no charge.

Participant: The fees for participating in the trade of EACs as a **Buyer (Participant)** are set out in detail within the Participant User Agreement. These fees are summarised below (all prices are NZD excluding GST):

- NZECS Participant trading account creation: \$500 one-off cost
- Trading account administration: \$150 annually, first payable after one year of trading
- Standard-ICP Energy User registration: \$300, payable at the time of registration
- Sub-ICP Energy User registration: \$300, payable at the time of registration
- Redemption of NZ-EC: \$0.24/MWh
- Annual Energy User administration: \$300, first payable after one year of registration
- Transfer of NZ-EC: no charge.

Additional information

The following additional information can be supplied on request:

- NZECS Registrant User Agreement
- NZECS Participant User Agreement
- Sale and Purchase Agreement template (this may be used as a basis for agreement, or the **Parties** may use their own agreement)
- NZECS Rules: Version 2.4 (these rules cover the operational elements of the process)
- Production device audit form
- Energy User registration form.

Additional information is also available on the BraveTrace website: <https://bravetrace.co.nz/>

Key terms

Buyer:	A generic term used interchangeably with ' Participant ' or ' Energy User '. This is typically the term used in NZ-EC sale and purchase agreements.
Energy Attribute Certificates (EACs):	A mechanism by which the renewable attributes of an energy production facility may be sold to an Energy User seeking to claim that its energy consumption is renewable (or zero carbon).
Energy User:	The consumer of the energy for which NZ-ECs are issued, transferred, and redeemed.
National Supply Factor (NSF):	The emissions factor of the National Supply Mix.
National Supply Mix (NSM):	The total mix of electricity generation supplying New Zealand's domestic demand.
New Zealand Energy Certificates (NZ-ECs):	EACs in New Zealand.
New Zealand Energy Certificate System (NZECS):	A system that enables the issuance, transfer, and redemption of NZ-ECs.
Participant:	The Party that registers with BraveTrace to purchase NZ-ECs on behalf of the Energy User (this may be the Energy User).
Party (parties):	A collective term for all the parties involved in trading NZ-ECs or the energy markets more broadly.
Production Device:	The technology by which renewable energy is generated, e.g., solar, wind, hydro, or geothermal.
Production Year:	1 April to 31 March.
Registrant:	The Party that registers with BraveTrace to sell NZ-ECs to the Energy User – typically the energy generator or gas producer.
Residual supply Factor (RSF):	The emissions factor of the RSM.
Residual Supply Mix (RSM):	The mix of electricity generation minus volumes transacted within the NZECS.
Seller:	A generic term used interchangeably with Registrant or Participant . This is typically the term used in NZ-EC sale and purchase agreements.

If you are interested to find out more about the NZECS and NZ-ECs then please get in touch:

Email: contact@bravetrace.co.nz

Web: <https://bravetrace.co.nz/>

Produced March 2024