



Energy

Green-e Renewable Energy Standard for Singapore

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CRS

center for
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I. Introduction

This Green-e™ Renewable Energy Standard for Singapore (“Standard for Singapore”) document provides Green-e Energy’s requirements for certified renewable electricity sales and consumption in Singapore.

The Green-e Energy certification program promotes the use of high-quality renewable electricity generation by providing environmental standards and consumer protection to support voluntary purchasing and use of renewable electricity. High-quality renewable energy standards and certification accelerate the development of renewable electricity generation and renewable electricity markets, and provide consumers a meaningful mechanism through which they can express demand for renewable electricity.

This Standard for Singapore document was developed as a Regional Standard under the Green-e Framework for Renewable Energy Certification (“Framework”), with input from local and international stakeholders, by the non-governmental organization Center for Resource Solutions (“CRS”) that administers the Green-e Energy program. For more information and background on Green-e Energy and the Framework, visit www.green-e.org.

Sellers and users of renewable electricity and Energy Attribute Certificates may apply to offer renewable energy certified under the Standard for Singapore or to certify eligible renewable energy usage by visiting the above website.

In the event of any conflict between the English version of any Green-e document and a translated version, the English version shall prevail.

A. Definitions

Green-e Energy publishes a glossary that defines many of the terms used throughout the Standard for Singapore and other Green-e Energy documents. The glossary is available at: www.green-e.org/glossary. In addition, certain specific definitions are provided below:

Contestable Consumer: An electricity user in Singapore that is able to select its electricity retailer. The Singapore Energy Market Authority maintains up-to-date criteria at www.ema.gov.sg/Electricity_Consumers.aspx

Energy Attribute Certificate (“EAC”): A contractual instrument that represents and conveys all attributes of renewable electricity generation, without requiring that the electricity itself be sold with the attributes. Such attributes include, but are not limited to: the renewable resource type used to generate the electricity; the location of the generation; the time of generation; the air emissions associated with generation (i.e. the emissions factor or rate); all other legally available environmental benefits of generation; and all other information relevant to using and claiming the benefits of generation. When a generator delivers electricity to the grid, it is able to sell these attributes bundled together in the form of an EAC to another party who draws electricity from the grid, as a means of tracking who is buying and using the renewable electricity. EACs as defined here are intended to be consistent with The World Resources Institute’s *Greenhouse Gas Protocol* for the purposes of greenhouse gas accounting and Scope 2 claims.

Energy Attribute Certificate Product: This refers to EACs when they are marketed to electricity consumers as a way to use renewable electricity, without retail electricity supply necessarily being provided to the user by the EAC seller. See also Section II.A.1 for definitions of different Renewable Energy Product types. Note that in EACs must be used to substantiate the delivery of any type of Renewable Energy Product, not only EAC Products.

Participant: Entities entering into a Green-e certification agreement with Center for Resource Solutions are referred to as “Participants” in this Standard for Singapore. Participants may be electricity retailers, sellers of renewable EACs, the sellers or purchasers under a renewable electricity power purchase agreement or entities undertaking other means of procuring and consuming renewable electricity; see Section II.B for further details. Each Participant

must have one or more contracts with CRS in order for their Renewable Energy Products to be Green-e certified. Only Participants may market and sell Renewable Energy Products as Green-e certified. Unless specifically permitted by CRS, marketing renewable energy as Green-e “eligible” or “certifiable” (or using similar words that imply certification where it does not exist) is not allowed.

Renewable Electricity Product: Retail electricity supply that is sourced from eligible renewable resources and offered to electricity consumers. Renewable electricity products are one type of renewable energy product that can be Green-e certified, and are distinct from EAC Products (which do not include electricity supply). See also Section II.A.2.

Renewable Energy Products: The renewable energy procurement options certified by Participants under the Standard for Singapore are collectively referred to as “Renewable Energy Products.” See Sections II.A and II.B for details of which product types are eligible. Renewable Energy Products include all EAC Products and Renewable Electricity Products. Note that each Renewable Energy Product type is distinct and may be subject to different rules in the Standard for Singapore.

B. Usage and Geographic Range of the Criteria

These certification criteria are intended to be used by Green-e Energy Participants with sales and/or use of renewable electricity and EACs that are generated in the country of Singapore. Participants must have an active contract of the appropriate type with CRS in order to claim certification under the Standard for Singapore, and must comply with all rules in order to maintain their ability to use the Standard for Singapore year-on-year.

II. Eligible Product, Consumer and Market Types

A. Renewable Energy Product Types

1. Energy Attribute Certificate Products: Sale or use of EACs, independent from electricity supply.
2. Electricity Products: Electricity purchasing where electricity and EACs are delivered and/or used together as the consumer’s electricity supply, such as a tariff or rate plan offered by an electric retailer.

B. Means of Renewable Energy Procurement

The product types in Section II.A above may be Green-e Energy certified when provided to users in the following ways, all of which require that the renewable attributes be conveyed to the consumer claiming to use renewable electricity:

1. From a third-party provider of Energy Attribute Certificates
2. As renewable electricity supply offered to contestable consumers by electricity retailers
3. As a power purchase agreement (“PPA”) directly between a generator and electricity user
4. Self-consumed from an owned on-site renewable electricity generator
5. Self-consumed from an owned off-site renewable electricity generator
6. Consumed from leased generation equipment that is installed on property owned by the electricity user

See also Section III.D.3 on eligibility of on-site generators providing electricity to the load on which it is installed versus exporting it to the grid.

C. Consumer Types

Certified Renewable Energy Products may be sold to any retail electricity consumer that is legally able to purchase that product type in Singapore. These consumer types include, commercial, industrial and institutional (“non-residential” consumers) and residential consumers.

Green-e does not endorse renewable electricity usage claims that are made by electricity users outside of Singapore that buy a Renewable Energy Product certified under the Standard for Singapore, unless the consumer is applying the purchase to electricity consumed within Singapore. Such claims may be allowed by other programs, however, so Green-e does not specifically prevent sales made to consumers outside of Singapore. See also Section V.C Consumer Disclosure.

III. Eligible Sources of Generation

The following criteria apply to all Green-e Energy certified Renewable Energy Products.

A. Renewable Resource Types

The following types of renewable electricity generation are eligible to be used in Green-e Energy certified Renewable Energy Products in Singapore. Other technology/resource types may be added in future in response to market demand, consistent with the Framework.

1. Solar, including photovoltaic and solar thermal electric
2. Wind
3. Geothermal

B. Vintage of Eligible Renewable Generation

A Renewable Energy Product certified under the Standard for Singapore may include only renewable electricity that is generated in the six months before the calendar year in which the Renewable Energy Product is sold, the calendar year of sale or the first three months of the following calendar year.

C. Generator Age and “New Date”

In order for the output of a renewable electricity generator to be eligible for use in a Green-e Energy certified transaction made in a particular year (January 1 – December 31), the generator must meet at least one of the following conditions in relation to the applicable New Date (defined below):

1. The generator was first placed in operation on the grid on or after the applicable New Date;¹
2. The generator is a separable improvement to or enhancement, made on or after the applicable New Date, of an existing operating generator that was first placed in operation prior to the applicable New Date, such that the proposed incremental generation is contractually available for sale and metered separately from the existing generation at the generator.

1. Test electricity put onto the grid before a generator’s official operational date can be eligible for use in a certified Renewable Energy Product.

The New Date that is applicable to a given year of sale of a Green-e Energy certified Renewable Energy Product is shown on the following table, with the New Date continuing to advance by one year each year after 2031:²

Year Certified Renewable Energy Product is Sold	Applicable New Date
2017–2028	2014
2029	2015
2030	2016
2031	2017

Long-term purchases or use of renewable electricity or EACs, where the purchase contracts were executed between the generator and purchaser of the certified Renewable Energy Product within 12 months of the date that a generator first met one of criteria 1–2 above and where the term extends beyond 15 years, may be allowed to remain eligible for the entirety of the contract term or 30 years, whichever is shorter.

D. Location of Eligible Generators

1. Geographic Location

Generators providing electricity or EACs for certified Renewable Energy Products must be located within Singapore. Generators located in other countries in the region, including those importing electricity into Singapore, may be considered for future versions of the Standard for Singapore or a separate certification standard covering a broader region.

2. Grid-Connected Generators

a. Renewable Energy Products that are sold by a Participant to another entity (Section II.B.1.–2.)

All eligible generators must be grid tied (this could include connection to a microgrid that is able to connect to the grid), and off-grid tied generators are not eligible. Generators that are part of a microgrid that is not connected to the grid may only be used for certified Renewable Energy Products sold to consumers in the same microgrid.

b. Renewable Energy Products used and certified by the Participant itself (Section II.B.3.–6.)

Generators must be:

- i. Electrically connected to a grid; or
- ii. Part of a microgrid to which the Participant is connected; or
- iii. Electrically connected only to the Participant (including when the Participant is not connected to the grid). The generator may be consumer-sited or not.³

3. Consumer-Sited Generators

With the exception of certain generation from generators built under SolarNova tenders (see Section IV.B.1), generators located co-located with electricity load are eligible for all Renewable Energy Product types. See also Sections III.D.2 on grid connection and IV.C on claims.

2. For example, a certified Renewable Energy Product sold in 2028 would have to use generation from generators that came online during or after 2014. The next year, in 2029, the New Date would increase to 2015, and any generators built in 2014 would no longer be eligible.

3. The Singapore Energy Market Authority maintains rules on locating such “embedded generators” on- and off-site.

E. Electricity Products that Combine EACs and Undifferentiated Electricity

EACs are allowed to be combined with undifferentiated or system mix electricity for sale as a certified Renewable Electricity Product if all of the following conditions are met:

1. The emission rates per kWh for SO₂, NO_x,⁴ and CO₂ for the electricity delivered with the EACs is lower than or equal to the average emissions rates⁴ of consumed power of either:
 - a. The default retail electricity supply provided by Singapore Power; or
 - b. Singapore; and
2. The electricity delivered with the EACs cannot include any specific purchases of nuclear power in the non-renewable portion of the Renewable Energy Product, beyond what is contained in system power (e.g. the Renewable Energy Product may not include differentiated nuclear power); and
3. For the electricity from which the EACs were derived, there are processes, policies and/or other methods in place with the electricity retailer and/or by the relevant government entity(ies) assuring that such electricity is not marketed or represented as renewable electricity that is delivered to retail electricity users.

While any electricity that meets the above criteria will qualify, the residual mix of Singapore may explicitly be used to satisfy the non-eligible portion of a Green-e Energy certified Renewable Electricity Product.

If criteria 1–3. above cannot be met, then the Renewable Energy Product will either need to be marketed as an EAC product or the Participant must purchase generation for the product through bundled renewable electricity purchases where the Participant procures and sells the electricity and the attributes from the same generator.

F. Emissions Limits

All generation facilities must be in compliance with all applicable local, sub-national, national and regional laws/rules regarding emissions limits and other relevant emissions-related criteria.

G. Parasitic Load

Renewable electricity consumed as parasitic load (load that contributes to the process of electricity generation) of an eligible generator is not eligible.

IV. Renewable Energy Product Specifications

A. Fully Aggregated Renewable Generation Attributes

To the extent allowable under Singapore's legal and regulatory structures, all attributes that can be owned that are associated with the electricity generation must be aggregated in a certified Renewable Energy Product. None of the attributes of generation may be sold off, transferred, or claimed elsewhere or by another party. There must be a legally enforceable contract, instrument (e.g. EAC), or collection of contracts and/or instruments in place to substantiate the

⁴ Emission rates of default retail electricity supply should be based on the most detailed and recent data provided by the relevant government-approved body that collects and publishes such data, unless one or more of Singapore's transmission system administrators, electric retailer oversight body(ies) or other authorities makes more up-to-date and accurate information available. Emission rates will be checked during annual verification.

exchange and exclusive ownership of the attributes of renewable electricity generation. These attributes include, but are not limited to, all the greenhouse gas (“GHG”) emission benefits associated with the megawatt-hour (“MWh”) of renewable electricity when it was generated, including avoided carbon dioxide (“CO₂”) benefits. If a generator receives carbon offsets for an amount of renewable electricity generation,⁵ those offsets must be retired on behalf of the certified sale of that renewable electricity / those corresponding EACs.

1. Energy Attribute Certificates

Energy Attribute Certificates must be included and retired/cancelled by or on behalf of the retail user of a Green-e Energy certified Renewable Energy Product.

3. Carbon Legislation/Regulation

At the time of publication there is no carbon cap or other carbon legislation in Singapore related to claiming the carbon attributes of renewable electricity consumption. In the event that a relevant carbon scheme is implemented in Singapore, then Section IV.A.2 of the Framework will apply and will be incorporated into the Standard for Singapore appropriately.

B. Regulatory Surplus: Renewable Quotas, Targets, Other Mandates and Incentives

The rules and concepts contained in Section IV.B of the Framework apply to the Standard for Singapore. If and when other policies covering the electricity are developed in Singapore such policies will be evaluated against the Framework.

Green-e Energy certified Renewable Energy Products must be comprised of eligible renewable generation over and above any amount required by national requirements or legislation. Green-e Energy does not certify renewable electricity or EAC sales that result in double counting, including double counting between compliance and voluntary markets.

1. SolarNova

For generators built under tenders for the SolarNova program, only the electricity that is exported to the grid and metered at the point of interconnection with the grid is eligible under the Standard for Singapore, so long as all other applicable criteria are met, including those in Sections III.D.3 and IV.C.

C. Double Counting, Double Selling, and Double Claiming

A given amount of eligible renewable electricity and any associated attributes can be applied to an electricity consumer’s claim of using renewable electricity only once.⁶ Renewable electricity or attributes that can be reasonably attributed to a party other than the user of a certified Renewable Energy Product may not be used in Green-e Energy certified Renewable Energy Products. Examples of prohibited double uses include, but are not limited to:

1. When the same MWh or attributes are sold to more than one party, or any case where another party has a conflicting contract for the attributes or the renewable electricity;

5. Examples include Certified Emissions Reductions issued for the generator under the Clean Development Mechanism of the Kyoto Protocol or a voluntary carbon offset standard for which the generator has registered.

6. For further resources on double claims, see resource-solutions.org/learn/rec-claims-and-ownership/.

2. When the same MWh is claimed by more than one party, including any expressed or implied environmental claims made pursuant to electricity coming from a renewable electricity resource, environmental labeling or disclosure requirements. This includes representing the electricity from which attributes are derived as renewable if the EACs are not also owned and retired/cancelled;⁷
3. When the same MWh is used by an electricity provider or other entity to meet a delivery or consumption mandate for renewable energy and is also used in certified sales, transactions, or consumption under Green-e Energy; or
4. When another party uses one or more attributes of the renewable generation (See Section IV.A. on Fully Aggregated Renewables for details). This includes when a MWh or associated attributes are sold as a Renewable Energy Product to one party, and one or more attributes associated with the same MWh of generation (such as CO₂ reduction or offset) are sold to another party.

In all cases, the relevant government agency(ies) in Singapore must be notified by or on behalf of the Participant in writing at least annually of all generation used in Green-e Energy certified Renewable Energy Products. A renewable energy tracking system or other infrastructure that already provides this information to the relevant agency(ies) may satisfy this requirement if approved by Green-e Energy.

D. Minimum Purchase Quantity

Green-e Energy certified Renewable Energy Products sold to non-residential electricity consumers have no minimum purchase quantity requirement. However, non-residential purchasers seeking guidance on environmental claims or having interest in using the Green-e logo to promote their purchase may participate in the Green-e Marketplace Program when available in Singapore: www.green-e.org/marketplace.

Green-e Energy certified Renewable Energy Products sold to residential electricity consumers must contain at least the following minimum amounts of Green-e Energy eligible renewable energy:

1. EACs: When sold on a one-time basis to a residential electricity consumer, the minimum allowable purchase quantity is 50 kilowatt-hours (“kWh”). If sold on an ongoing basis to a residential electricity consumer, the minimum allowable purchase quantity is 50 kWh per month.
2. Renewable electricity programs that provide certified renewable electricity in kilowatt-hours: 50 kWh per month.
3. Renewable electricity programs that offer a percentage of electricity delivered as certified renewable: Must provide at least 25% of electricity usage with eligible new renewables. If a Participant offers the option to provide less than 50% of a residential electricity consumer’s electricity use, they must also offer a 100% option to residential electricity consumers.
4. Products sold as kilowatts of capacity from a facility or as shares of a facility: Each month, such Renewable Energy Products must deliver at least 50 kWh, averaged over a calendar year.

⁷ An example of such representations includes use of the renewable energy in calculating product or portfolio resource mixes for the purpose of marketing or disclosing to electricity end-users when the attributes have been sold off or claimed separately.

C. Criteria for the Non-Eligible Portion of a Renewable Electricity Product

For Renewable Electricity Products that provide less than 100% of a consumer's load with eligible renewable electricity, the portion of such products that is not composed of eligible renewable electricity must meet the criteria for electricity in Section III.E.1–2.

V. Additional Criteria

A. Third-Party Verification

Green-e Energy requires that certified Renewable Energy Products undergo an annual verification process to substantiate certified product-related purchases, sales, and claims. The Green-e Energy Participant must employ an independent qualified auditor to conduct this verification in accordance with verification procedures supplied by Green-e Energy. Required auditor qualifications are specified in the Green-e Energy Singapore Verification Requirements. The results of the verification and selected supporting documents must be made available to the Center for Resource Solutions and verification is not considered completed until all materials are submitted and accepted as complete and final by Green-e Energy. All audit costs are the responsibility of the Green-e Energy Participant undergoing verification.

B. Use of Renewable Energy Tracking Systems

Except for the specific case listed in this section, Green-e Energy certified Renewable Energy Products must be supplied and substantiated by renewable MWh tracked in a renewable energy tracking system that is approved by Green-e Energy. Green-e Energy provides a list of approved tracking systems and the criteria under which they are evaluated at www.green-e.org, along with any additional requirements for the use of such systems. The use of tracking systems is not required for Green-e Energy certified products and Participants only if the retail electricity consumer is claiming all EACs generated by the generator during the period of certification, all generation is validated by attestations and third-party verification records, and the generator is located on property that is owned by either:

1. The retail electricity user claiming the renewable electricity (including EACs); or
2. Another party, and the generator has a physical electrical connection only to the user claiming the certified renewable electricity (including EACs).

For all eligible generation used toward a Green-e Energy certified Renewable Energy Product, if not exempted by an exception above, each Green-e Energy participant must use an account in an approved tracking system to substantiate the participant's certified sales in a given calendar year following procedures in the Green-e verification protocols. If the Participant's total certified sales volume is less than or equal to 10,000 MWh for that calendar year, then another tracking system account holder may retire EACs on behalf of the Participant's certified sales.

All costs associated with use of any approved tracking system are the responsibility of tracking system users. Tracking systems seeking approval under the Standard for Singapore will be assessed by CRS against the applicable criteria in the Framework.

C. Consumer Disclosure

Participants must disclose product information (including price, terms, and conditions; a product content label, and that the Renewable Energy Product is certified under the Standard for Singapore) to each consumer prior to their

purchase of the Renewable Energy Product, and make additional disclosures in the case that the Renewable Energy Product changes during the term of the purchase agreement with the affected consumer. Disclosure will be required and detailed in the applicable Green-e Energy Code of Conduct.

VI. Governance and Revisions to the Standard

The Standard for Singapore is a dynamic document and may be updated over time to accommodate changes in renewable electricity markets, policy changes that affect renewable energy, and/or innovations in renewable energy technology, as well as to reflect relevant changes in the Framework. Please see Section VI of the Framework for details on Governance and on the impacts of changes to Green-e rules, which also apply to the Standard for Singapore.

Details of the standard-setting process and of how to submit comments or grievances are available at: www.green-e.org/about/standard-setting.

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