Green-e® References and Endorsements

PUBLICATION DATE: MARCH 3, 2023

CRS™

Table of Contents

Introduction

References to Green-e® Certification Programs

There are many organizations that develop standards and certifications to support progress toward a clean energy future. These U.S./Canada National and International organizations and associations promote renewable energy use, energy efficiency, and/or actions that quickly and effectively reduce negative environmental impacts.

3rd party certification, as offered by CRS's Green-e® Programs, provides energy buyers with independent assurances that their purchase is making an important beneficial impact on the environment. Many standard setters, NGOs, and government agencies recommend Green-e® or "certification" in guidance, requirements, or choose it for their own purchasing.

Those organizations that reference Green-e® certification in public materials are collected in the pages that follow.

For more information about the Green-e® certification programs visit www.green-e.org

Green-e® International Citations

RE100

CDP
DISCLOSURE INSIGHT ACTION

U.S. GREEN BUILDING COUNCIL LEED USGBC

WORLD RESOURCES INSTITUTE

GREENHOUSE GAS PROTOCOL

GREEN RESTAURANT ASSOCIATION
DINEGREEN.COM

INTERNATIONAL LIVING FUTURE INSTITUTE℠

stars
a program of aashe
SUSTAINABILITY TRACKING, ASSESSMENT & RATING SYSTEM
Partner Organization

Certified B Corporation

ENERGY-EFFICIENT CODES COALITION

GLOBAL ELECTRONICS COUNCIL
Sustainability for a Connected Future

ICC DIGITAL CODES

SUSTAINABILITY ACCOUNTING STANDARDS BOARD
SASB

BSR®

CRS

RE100

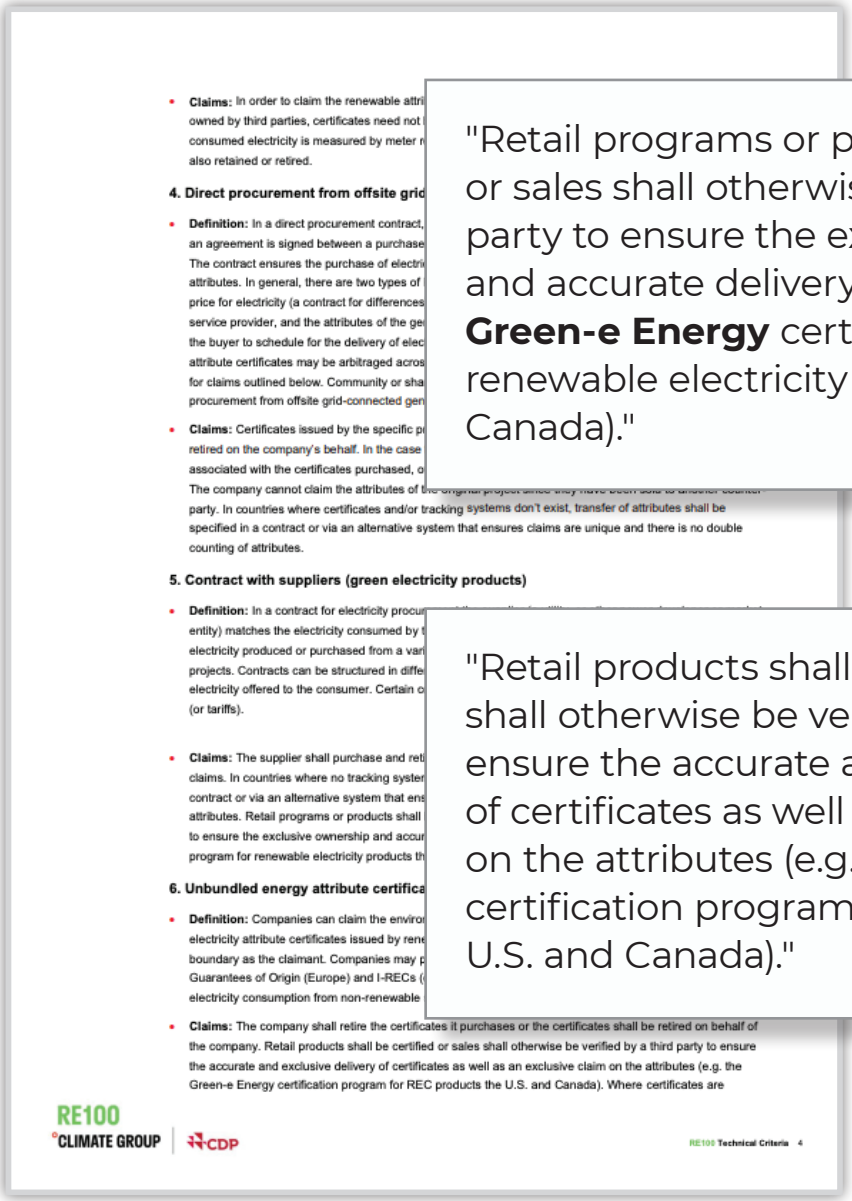
About RE100

- RE100 is the global initiative that brings together more than 350 corporations committed to 100% renewable electricity
- Members are present in 175 different markets
- Their demand surpasses 390 TWh per year

RE100

RE100 Technical Criteria

- The document "RE100 Technical Criteria" defines valid purchases of renewable energy
- Criteria are established by the RE100 Technical Advisory Group, in consultation with member companies, and with the approval of the RE100 Board of Directors
- To participate in the program, an independent verification is required, and in accordance with an available Standard



- **Claims:** In order to claim the renewable attri
owned by third parties, certificates need not
consumed electricity is measured by meter
also retained or retired.

4. Direct procurement from offsite gric

- **Definition:** In a direct procurement contract,
an agreement is signed between a purchase
The contract ensures the purchase of electri
attributes. In general, there are two types of
price for electricity (a contract for differences
service provider, and the attributes of the ge
the buyer to schedule for the delivery of elec
attribute certificates may be arbitraged acros
for claims outlined below. Community or sha
procurement from offsite grid-connected gen
- **Claims:** Certificates issued by the specific p
retired on the company's behalf. In the case
associated with the certificates purchased, o
The company cannot claim the attributes of
party. In countries where certificates and/or tracking systems don't exist, transfer of attributes shall be specified in a contract or via an alternative system that ensures claims are unique and there is no double counting of attributes.

5. Contract with suppliers (green electricity products)

- **Definition:** In a contract for electricity procu
entity) matches the electricity consumed by
electricity produced or purchased from a var
projects. Contracts can be structured in diffe
electricity offered to the consumer. Certain c
(or tariffs).
- **Claims:** The supplier shall purchase and reti
claims. In countries where no tracking syste
contract or via an alternative system that ens
attributes. Retail programs or products shall
to ensure the exclusive ownership and accur
program for renewable electricity products th

6. Unbundled energy attribute certifica

- **Definition:** Companies can claim the enviro
electricity attribute certificates issued by ren
boundary as the claimant. Companies may p
Guarantees of Origin (Europe) and I-RECs (
electricity consumption from non-renewable
- **Claims:** The company shall retire the certificates it purchases or the certificates shall be retired on behalf of the company. Retail products shall be certified or sales shall otherwise be verified by a third party to ensure the accurate and exclusive delivery of certificates as well as an exclusive claim on the attributes (e.g. the Green-e Energy certification program for REC products the U.S. and Canada). Where certificates are

RE100 CLIMATE GROUP | CDP

RE100 Technical Criteria 4

"Retail programs or products shall be certified or sales shall otherwise be verified by a third party to ensure the exclusive ownership and accurate delivery of attributes (e.g. the **Green-e Energy** certification program for renewable electricity products the U.S. and Canada)."

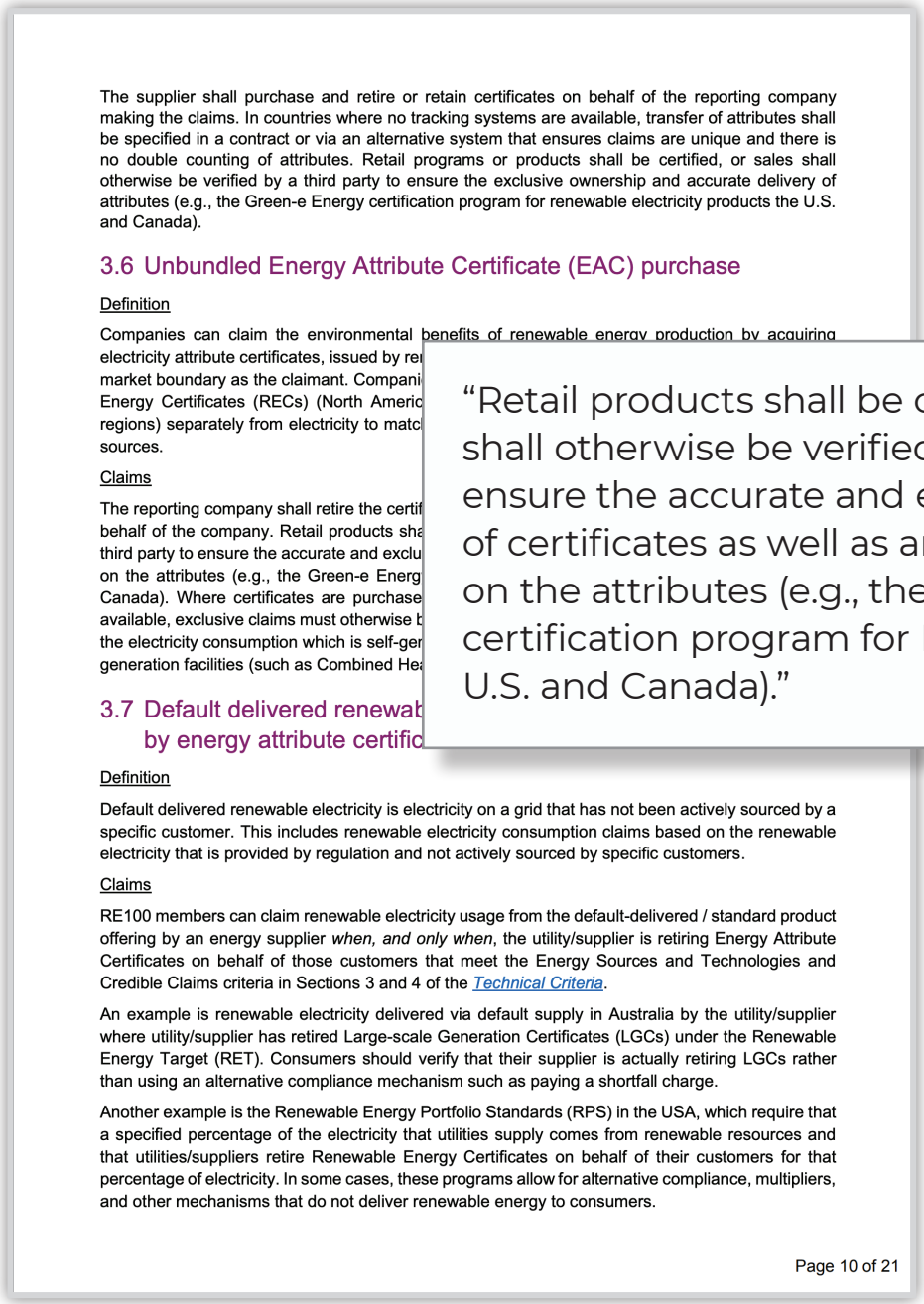
"Retail products shall be certified or sales shall otherwise be verified by a third party to ensure the accurate and exclusive delivery of certificates as well as an exclusive claim on the attributes (e.g. the **Green-e Energy** certification program for REC products the U.S. and Canada)."

CRS

RE100

RE100 Reporting Guidance 2022

- The document "RE100 Reporting Guidance 2022" defines how companies must report their progress.
- REC certification by a third party is required



The supplier shall purchase and retire or retain certificates on behalf of the reporting company making the claims. In countries where no tracking systems are available, transfer of attributes shall be specified in a contract or via an alternative system that ensures claims are unique and there is no double counting of attributes. Retail programs or products shall be certified, or sales shall otherwise be verified by a third party to ensure the exclusive ownership and accurate delivery of attributes (e.g., the Green-e Energy certification program for renewable electricity products the U.S. and Canada).

3.6 Unbundled Energy Attribute Certificate (EAC) purchase

Definition

Companies can claim the environmental benefits of renewable energy production by acquiring electricity attribute certificates, issued by re
market boundary as the claimant. Compani
Energy Certificates (RECs) (North Americ
regions) separately from electricity to matc
sources.

Claims

The reporting company shall retire the certif
behalf of the company. Retail products sha
third party to ensure the accurate and exclu
on the attributes (e.g., the Green-e Energ
Canada). Where certificates are purchase
available, exclusive claims must otherwise b
the electricity consumption which is self-ger
generation facilities (such as Combined Hea

3.7 Default delivered renewab
by energy attribute certific

Definition

Default delivered renewable electricity is electricity on a grid that has not been actively sourced by a specific customer. This includes renewable electricity consumption claims based on the renewable electricity that is provided by regulation and not actively sourced by specific customers.

Claims

RE100 members can claim renewable electricity usage from the default-delivered / standard product offering by an energy supplier *when, and only when*, the utility/supplier is retiring Energy Attribute Certificates on behalf of those customers that meet the Energy Sources and Technologies and Credible Claims criteria in Sections 3 and 4 of the *Technical Criteria*.

An example is renewable electricity delivered via default supply in Australia by the utility/supplier where utility/supplier has retired Large-scale Generation Certificates (LGCs) under the Renewable Energy Target (RET). Consumers should verify that their supplier is actually retiring LGCs rather than using an alternative compliance mechanism such as paying a shortfall charge.

Another example is the Renewable Energy Portfolio Standards (RPS) in the USA, which require that a specified percentage of the electricity that utilities supply comes from renewable resources and that utilities/suppliers retire Renewable Energy Certificates on behalf of their customers for that percentage of electricity. In some cases, these programs allow for alternative compliance, multipliers, and other mechanisms that do not deliver renewable energy to consumers.

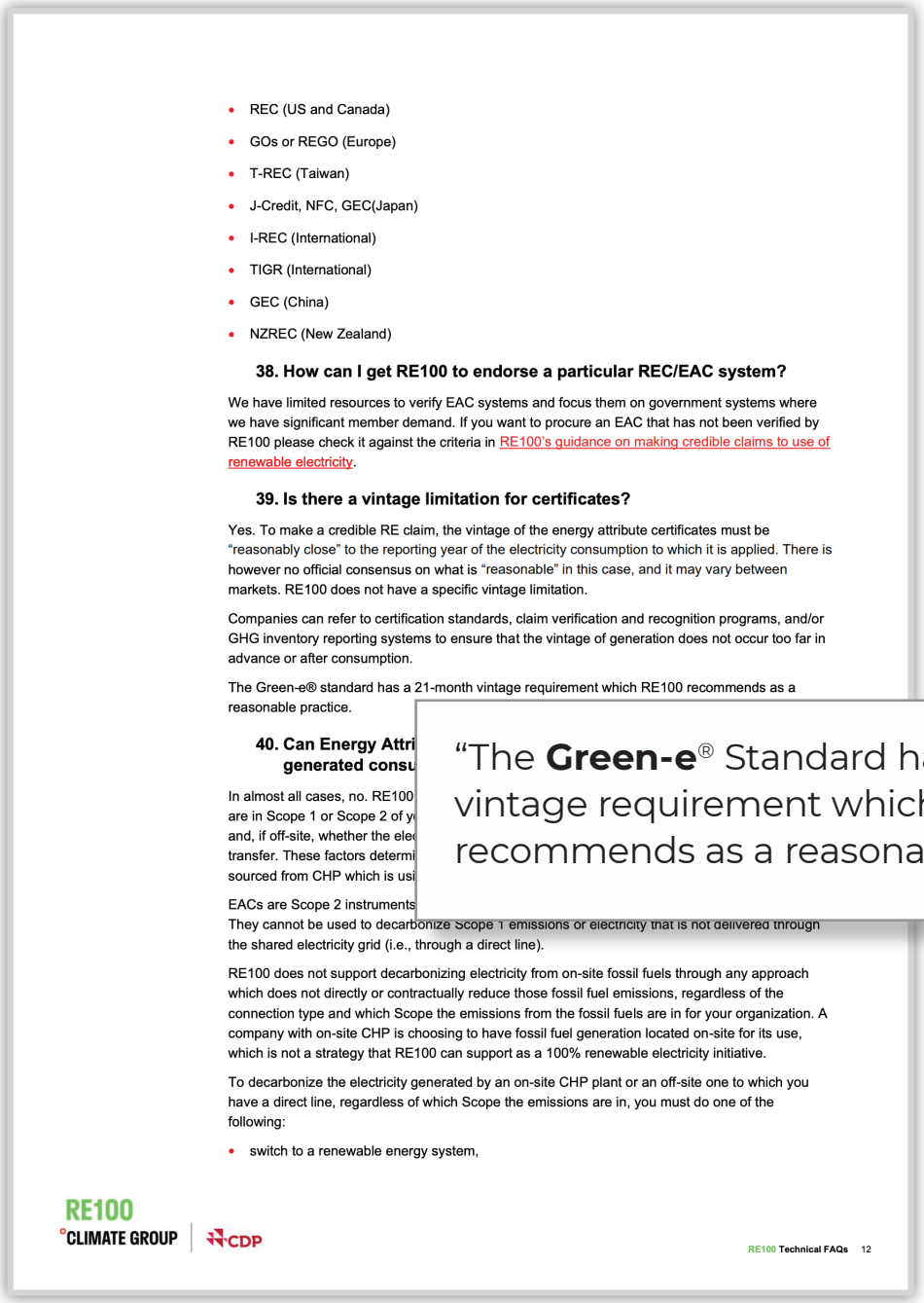
Page 10 of 21

"Retail products shall be certified, or sales shall otherwise be verified by a third party to ensure the accurate and exclusive delivery of certificates as well as an exclusive claim on the attributes (e.g., the **Green-e Energy** certification program for REC products the U.S. and Canada)."

RE100

RE100 FAQ

- The FAQ of the RE100 website references the Green-e® Standard when addressing vintage limitations for certification



- REC (US and Canada)
- GOs or REGO (Europe)
- T-REC (Taiwan)
- J-Credit, NFC, GEC(Japan)
- I-REC (International)
- TIGR (International)
- GEC (China)
- NZREC (New Zealand)

38. How can I get RE100 to endorse a particular REC/EAC system?

We have limited resources to verify EAC systems and focus them on government systems where we have significant member demand. If you want to procure an EAC that has not been verified by RE100 please check it against the criteria in RE100's guidance on making credible claims to use of renewable electricity.

39. Is there a vintage limitation for certificates?

Yes. To make a credible RE claim, the vintage of the energy attribute certificates must be "reasonably close" to the reporting year of the electricity consumption to which it is applied. There is however no official consensus on what is "reasonable" in this case, and it may vary between markets. RE100 does not have a specific vintage limitation.

Companies can refer to certification standards, claim verification and recognition programs, and/or GHG inventory reporting systems to ensure that the vintage of generation does not occur too far in advance or after consumption.

The Green-e® standard has a 21-month vintage requirement which RE100 recommends as a reasonable practice.

40. Can Energy Attri… generated consu…

In almost all cases, no. RE100… are in Scope 1 or Scope 2 of y… and, if off-site, whether the ele… transfer. These factors determi… sourced from CHP which is usi…

EACs are Scope 2 instruments… They cannot be used to decarbonize Scope 1 emissions or electricity that is not delivered through the shared electricity grid (i.e., through a direct line).

RE100 does not support decarbonizing electricity from on-site fossil fuels through any approach which does not directly or contractually reduce those fossil fuel emissions, regardless of the connection type and which Scope the emissions from the fossil fuels are in for your organization. A company with on-site CHP is choosing to have fossil fuel generation located on-site for its use, which is not a strategy that RE100 can support as a 100% renewable electricity initiative.

To decarbonize the electricity generated by an on-site CHP plant or an off-site one to which you have a direct line, regardless of which Scope the emissions are in, you must do one of the following:

- switch to a renewable energy system,

RE100 CLIMATE GROUP | CDP

RE100 Technical FAQs 12

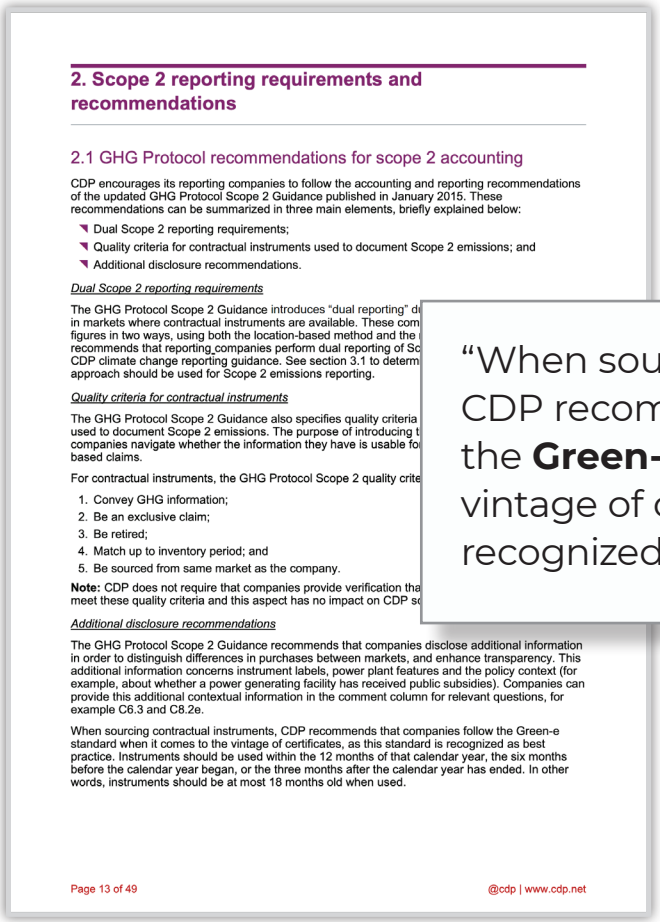
> "The **Green-e**® Standard has a 21-month vintage requirement which RE100 recommends as a reasonable practice."

CDP

- CDP manages the global environmental reporting framework ¨Carbon Disclosure Project¨
- More than 8,400 corporations have reported their environmental performance through CDP
- Almost a fifth of global greenhouse gas emissions are reported through CDP
- It is the richest and most complete inventory of corporate and city emissions in the world, providing transparency and accountability to investors and decision makers

CDP Technical Note: Accounting of Scope 2 emissions

- The guide ¨CDP Technical Note: Accounting of Scope 2 emissions¨ aims to explain how to report carbon emissions associated with electricity consumption
- It highlights how certifications complement tracking systems, adding quality and certainty to market participants



2. Scope 2 reporting requirements and recommendations

2.1 GHG Protocol recommendations for scope 2 accounting

CDP encourages its reporting companies to follow the accounting and reporting recommendations of the updated GHG Protocol Scope 2 Guidance published in January 2015. These recommendations can be summarized in three main elements, briefly explained below:

- Dual Scope 2 reporting requirements;
- Quality criteria for contractual instruments used to document Scope 2 emissions; and
- Additional disclosure recommendations.

Dual Scope 2 reporting requirements

The GHG Protocol Scope 2 Guidance introduces "dual reporting" d
in markets where contractual instruments are available. These com
figures in two ways, using both the location-based method and the
recommends that reporting companies perform dual reporting of Sc
CDP climate change reporting guidance. See section 3.1 to determ
approach should be used for Scope 2 emissions reporting.

Quality criteria for contractual instruments

The GHG Protocol Scope 2 Guidance also specifies quality criteria
used to document Scope 2 emissions. The purpose of introducing t
companies navigate whether the information they have is usable fo
based claims.

For contractual instruments, the GHG Protocol Scope 2 quality crite

1. Convey GHG information;
2. Be an exclusive claim;
3. Be retired;
4. Match up to inventory period; and
5. Be sourced from same market as the company.

Note: CDP does not require that companies provide verification tha
meet these quality criteria and this aspect has no impact on CDP s

Additional disclosure recommendations

The GHG Protocol Scope 2 Guidance recommends that companies disclose additional information in order to distinguish differences in purchases between markets, and enhance transparency. This additional information concerns instrument labels, power plant features and the policy context (for example, about whether a power generating facility has received public subsidies). Companies can provide this additional contextual information in the comment column for relevant questions, for example C6.3 and C8.2e.

When sourcing contractual instruments, CDP recommends that companies follow the Green-e standard when it comes to the vintage of certificates, as this standard is recognized as best practice. Instruments should be used within the 12 months of that calendar year, the six months before the calendar year began, or the three months after the calendar year has ended. In other words, instruments should be at most 18 months old when used.

Page 13 of 49 @cdp | www.cdp.net

> "When sourcing contractual instruments, CDP recommends that companies follow the **Green-e** standard when it comes to the vintage of certificates, as this standard is recognized as best practice."

CDP
DISCLOSURE INSIGHT ACTION

- Properties should not be disaggregated, e.g. it is not allowed for one party to count for the GHG emission factor and another party to count for the fact that it is renewable in origin;
- There is an auditable chain of custody, that is, all information can be verified or audited by users in the system and the whole system is audited by external parties, guaranteeing that the link between generation, distribution and final consumption is effectively established and that there is a permanent retirement/cancelation mechanism within the system; and
- The information in the system can be used to avoid the double counting of attributes.

These systems have taken different forms to adhere to the different regulatory obstacles in each country or region where they are active. The three tracking systems described below, and their subsequent energy attribute certificates, are examples of reliable mechanisms for attribute delivery and individual consumer claims.

In addition to the issuance, tracking of properties and guarantee of the chain of custody, there can be certification schemes that will testify for the appropriate use of an instrument for a given purpose. These certification systems (or labels) can be based on appropriate tracking systems and add important assurances and quality criteria. An example of certification is the Green-e energy[9] program in the USA.

North American REC Tracking Sys

Electricity markets in the Unites Stat
variety of geographically-defined trac
meet the needs of state-level renewa
and to facilitate electricity supply dis
entities in deregulated (competitive)
energy market participants. All of the
funded by governmental or quasi-go
regulatory compliance. North Americ
generation certificate tracking syster
generation(RECs). There are three a
States (NEPOOL GIS, NYGATS and
the systems in the US track generati
most states using tracking systems p
footprint.

European Energy Certificate Syst

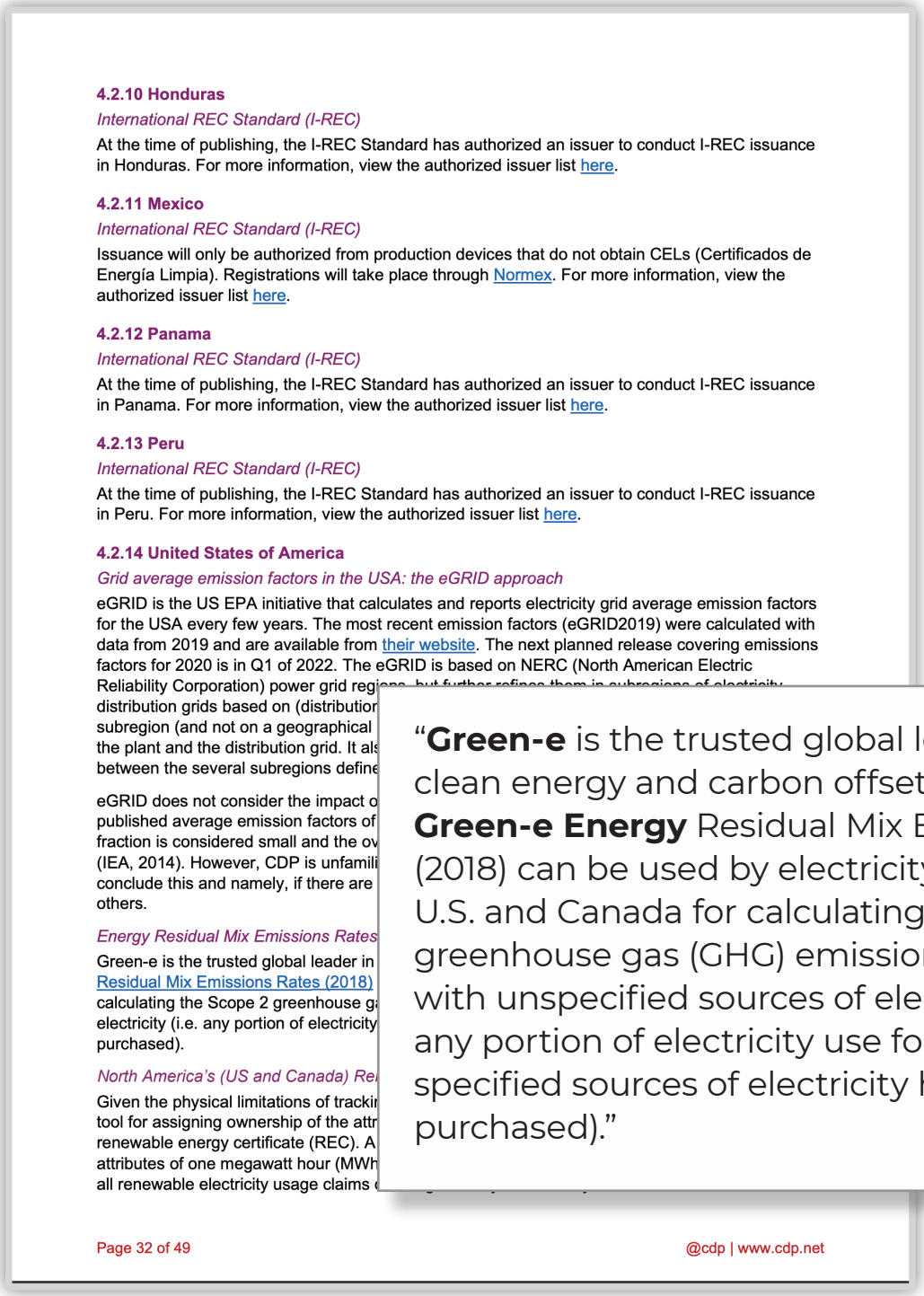
Guarantee of Origin certificates are a
energy from renewable sources to th
system implementation is embedded
mandate the necessary technical systems to ensure that the GO is a reliable energy attribute certificate. National adoption of the European Energy Certificate System [12]or EECS Standard by national GO issuers ensures the standardization of consumer claims and the robustness of the energy attribute certificate. EECS-adherent countries represent a large majority of the European Member States. Within EECS countries, certificates can be electronically transferred to any other EECS country for subsequent cancellation and proof of electricity consumption in that area. Most European countries, and all EECS-adherent countries, mandate that consumer electricity usage claims be verified by GO cancelation. These countries ensure electricity supplier products are

[9] https://www.green-e.org/programs/energy
[10] See a map of North American tracking systems here: https://resource-solutions.org/wp-content/uploads/2018/02/Tracking-System-Map.pdf
[11] The North American Renewables Registry is a privately developed and administered tracking system that offers certificate tracking to generators in regions where there is not a tracking system established by state agencies or a regional transmission or system operator.
[12] https://www.aib-net.org/eecs

> "In addition to the issuance, tracking of properties and guarantee of the chain of custody, there can be certification schemes that will testify for the appropriate use of an instrument for a given purpose. These certification systems (or labels) can be based on appropriate tracking systems and add important assurances and quality criteria. An example of certification is the **Green-e energy**[9] program in the USA."

CRS

CDP
DISCLOSURE INSIGHT ACTION



4.2.10 Honduras

International REC Standard (I-REC)

At the time of publishing, the I-REC Standard has authorized an issuer to conduct I-REC issuance in Honduras. For more information, view the authorized issuer list here.

4.2.11 Mexico

International REC Standard (I-REC)

Issuance will only be authorized from production devices that do not obtain CELs (Certificados de Energía Limpia). Registrations will take place through Normex. For more information, view the authorized issuer list here.

4.2.12 Panama

International REC Standard (I-REC)

At the time of publishing, the I-REC Standard has authorized an issuer to conduct I-REC issuance in Panama. For more information, view the authorized issuer list here.

4.2.13 Peru

International REC Standard (I-REC)

At the time of publishing, the I-REC Standard has authorized an issuer to conduct I-REC issuance in Peru. For more information, view the authorized issuer list here.

4.2.14 United States of America

Grid average emission factors in the USA: the eGRID approach

eGRID is the US EPA initiative that calculates and reports electricity grid average emission factors for the USA every few years. The most recent emission factors (eGRID2019) were calculated with data from 2019 and are available from their website. The next planned release covering emissions factors for 2020 is in Q1 of 2022. The eGRID is based on NERC (North American Electric Reliability Corporation) power grid regi
distribution grids based on (distributio
subregion (and not on a geographical
the plant and the distribution grid. It al
between the several subregions define

eGRID does not consider the impact o
published average emission factors of
fraction is considered small and the ov
(IEA, 2014). However, CDP is unfamili
conclude this and namely, if there are
others.

Energy Residual Mix Emissions Rates

Green-e is the trusted global leader in
Residual Mix Emissions Rates (2018)
calculating the Scope 2 greenhouse g
electricity (i.e. any portion of electricity
purchased).

North America's (US and Canada) Re

Given the physical limitations of trackin
tool for assigning ownership of the attr
renewable energy certificate (REC). A
attributes of one megawatt hour (MWh
all renewable electricity usage claims

Page 32 of 49 @cdp | www.cdp.net

"**Green-e** is the trusted global leader in clean energy and carbon offset certification. **Green-e Energy** Residual Mix Emissions Rates (2018) can be used by electricity users in the U.S. and Canada for calculating the Scope 2 greenhouse gas (GHG) emissions associated with unspecified sources of electricity (i.e. any portion of electricity use for which specified sources of electricity have not been purchased)."

CRS publishes annual Residual Mix Emissions Data for the U.S. each Spring (for the most recent complete data year). Data is publicly available at https://www.green-e.org/residual-mix

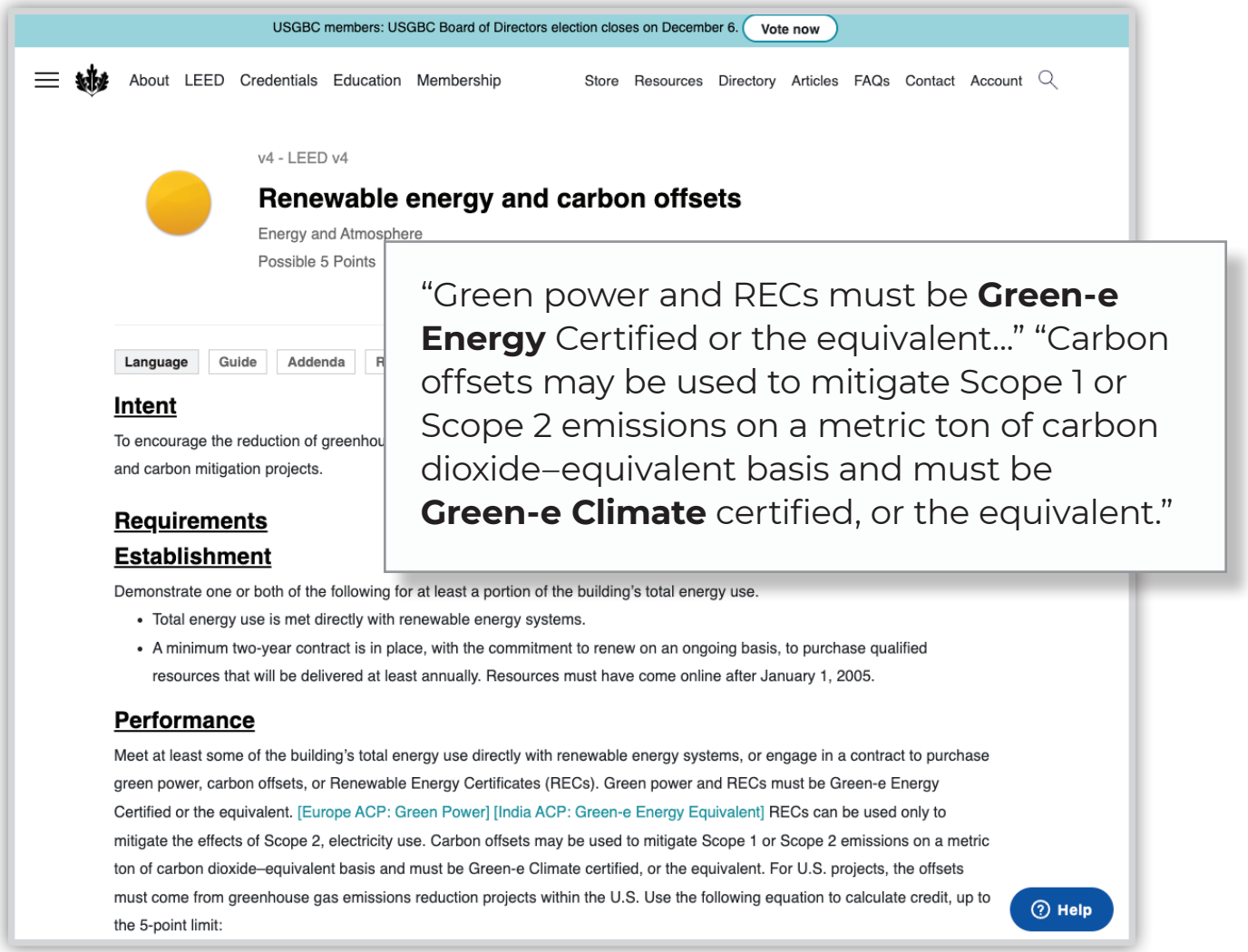
CRS

U.S. Green Building Council (USGBC) LEED

- The U.S. Green Building Council (USGBC) certifies over 100,000 buildings through LEED – the building design, operation, and construction certification program
- LEED is the world's leading certification for sustainable buildings

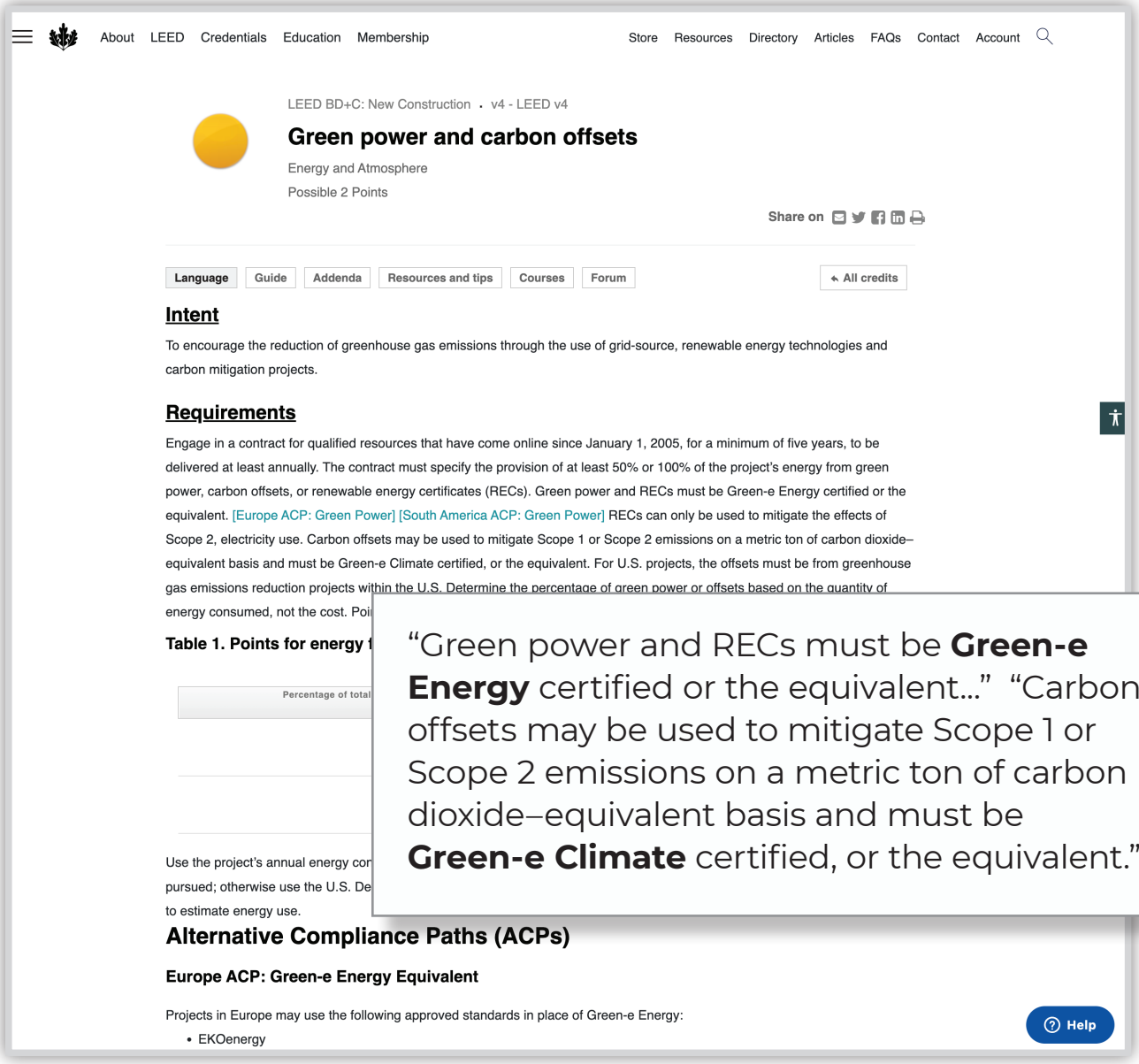
LEED v.4.1 Renewable Energy

- Green-e® Energy is referenced in LEED v4.1's "Renewable Energy" credit
- Green-e® Energy certification is required for all purchases from generators 6-15 years old, and for certain REC purchases from generators up to 5 years old.



LEED v.4 Green Power and Carbon Offsets

- Green-e® referenced in USGBC's "Green power and carbon offsets" credit in LEED v.4
- Sourcing of Green-e® Energy certified renewable energy and Green-e® Climate certified offsets is required



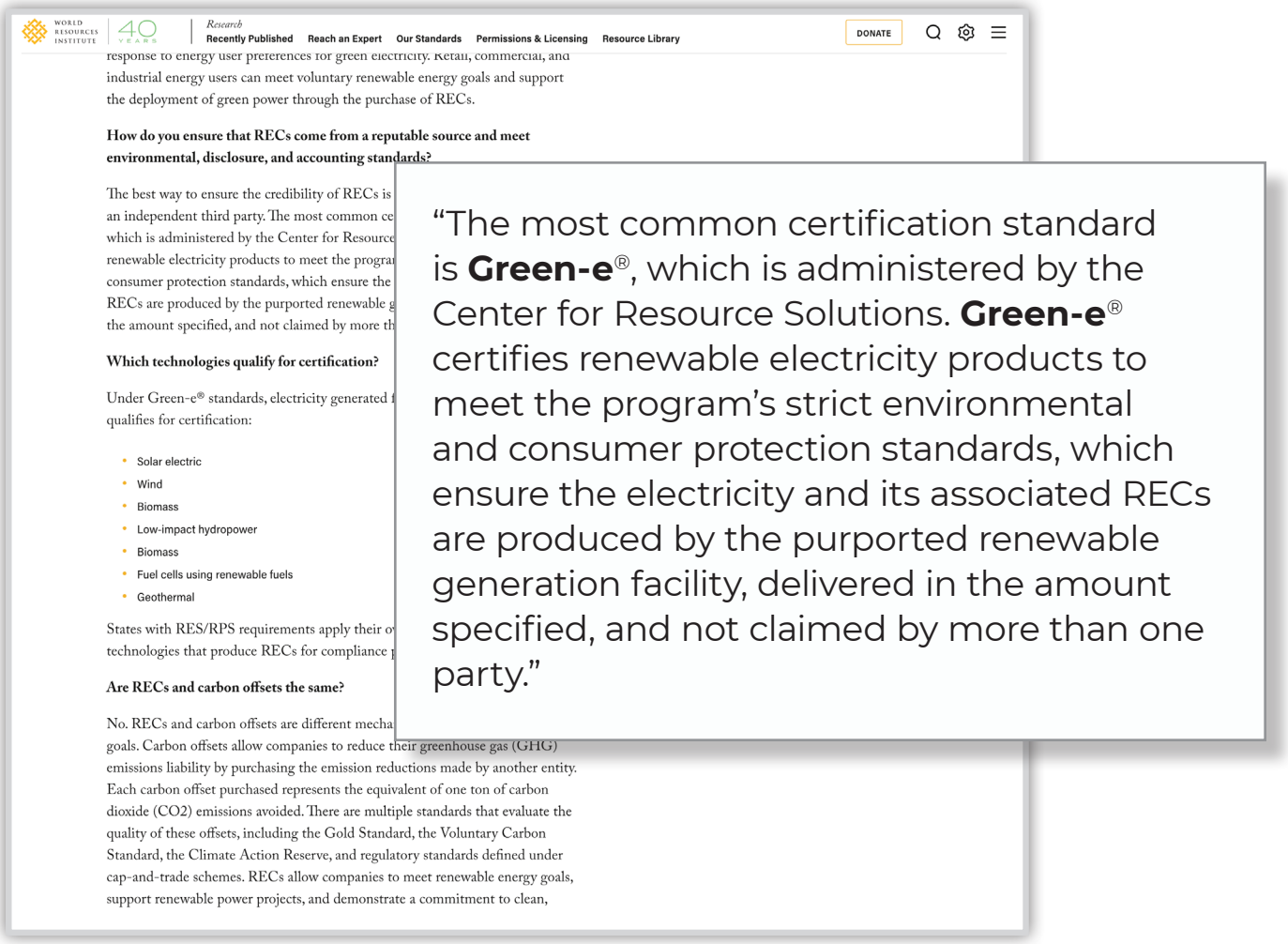
WORLD RESOURCES INSTITUTE

World Resources Institute (WRI)

- "WRI is a global nonprofit organization that works with leaders in government, business and civil society to research, design, and carry out practical solutions that simultaneously improve people's lives and ensure nature can thrive"
- 12 international offices
- Partners with 50 countries

WRI FAQ on Renewable Energy Certificates (RECs)

- In response to a question about sourcing RECs from a reputable source, WRI references Green-e®

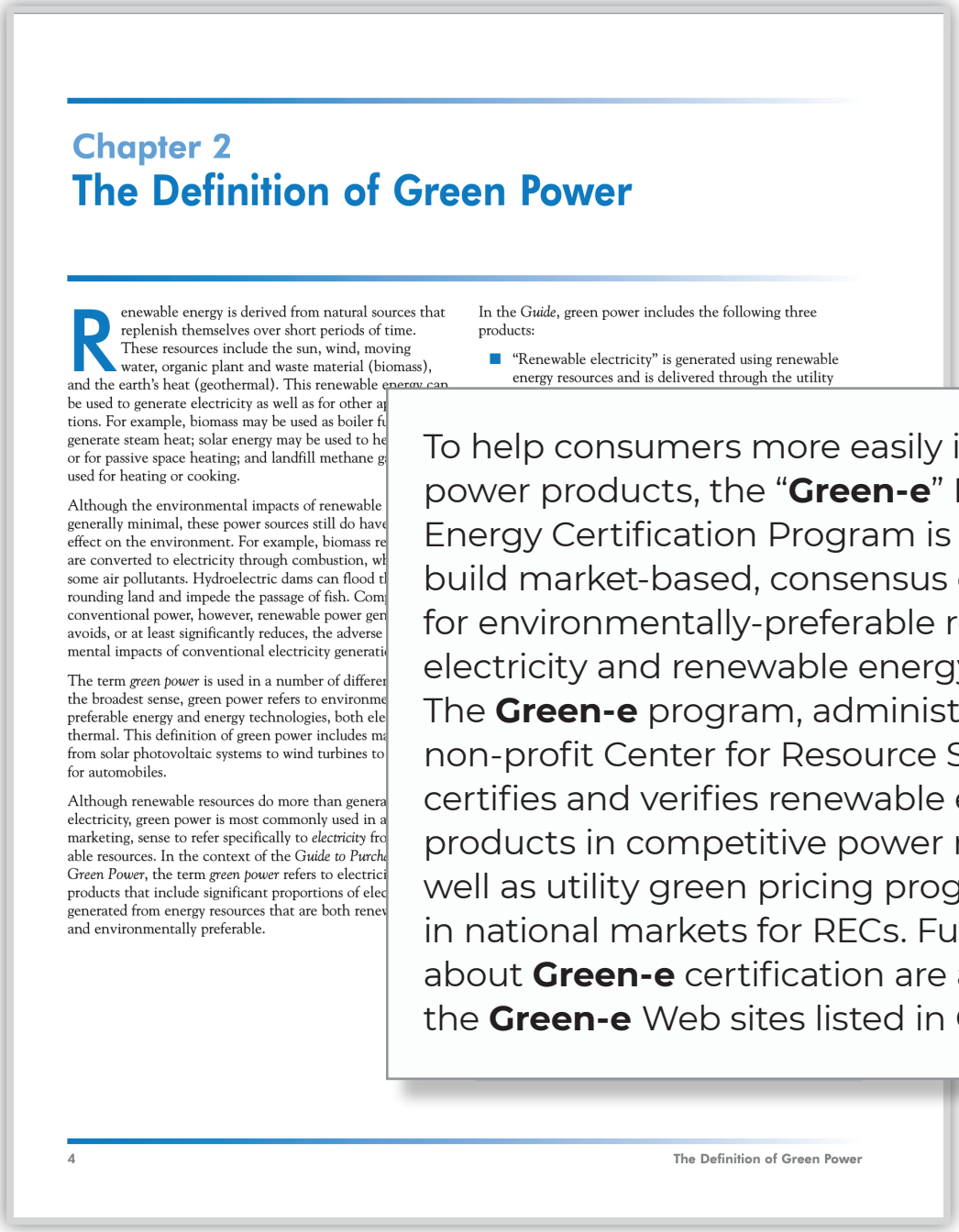


CRS

WORLD RESOURCES INSTITUTE

WRI Guide to Purchasing Green Power

- In WRI's "Guide to Purchasing Green Power", Green-e® is introduced and referenced as a certification program that identifies green power.



Chapter 2

The Definition of Green Power

Renewable energy is derived from natural sources that replenish themselves over short periods of time. These resources include the sun, wind, moving water, organic plant and waste material (biomass), and the earth's heat (geothermal). This renewable energy can be used to generate electricity as well as for other applications. For example, biomass may be used as boiler fu generate steam heat; solar energy may be used to he or for passive space heating; and landfill methane g used for heating or cooking.

Although the environmental impacts of renewable generally minimal, these power sources still do have effect on the environment. For example, biomass re are converted to electricity through combustion, wh some air pollutants. Hydroelectric dams can flood th rounding land and impede the passage of fish. Com conventional power, however, renewable power gen avoids, or at least significantly reduces, the adverse mental impacts of conventional electricity generati

The term *green power* is used in a number of differen the broadest sense, green power refers to environme preferable energy and energy technologies, both ele thermal. This definition of green power includes ma from solar photovoltaic systems to wind turbines to for automobiles.

Although renewable resources do more than genera electricity, green power is most commonly used in a marketing, sense to refer specifically to *electricity* fro able resources. In the context of the *Guide to Purcha Green Power*, the term *green power* refers to electrici products that include significant proportions of elec generated from energy resources that are both renev and environmentally preferable.

In the *Guide*, green power includes the following three products:

- "Renewable electricity" is generated using renewable energy resources and is delivered through the utility

4 The Definition of Green Power

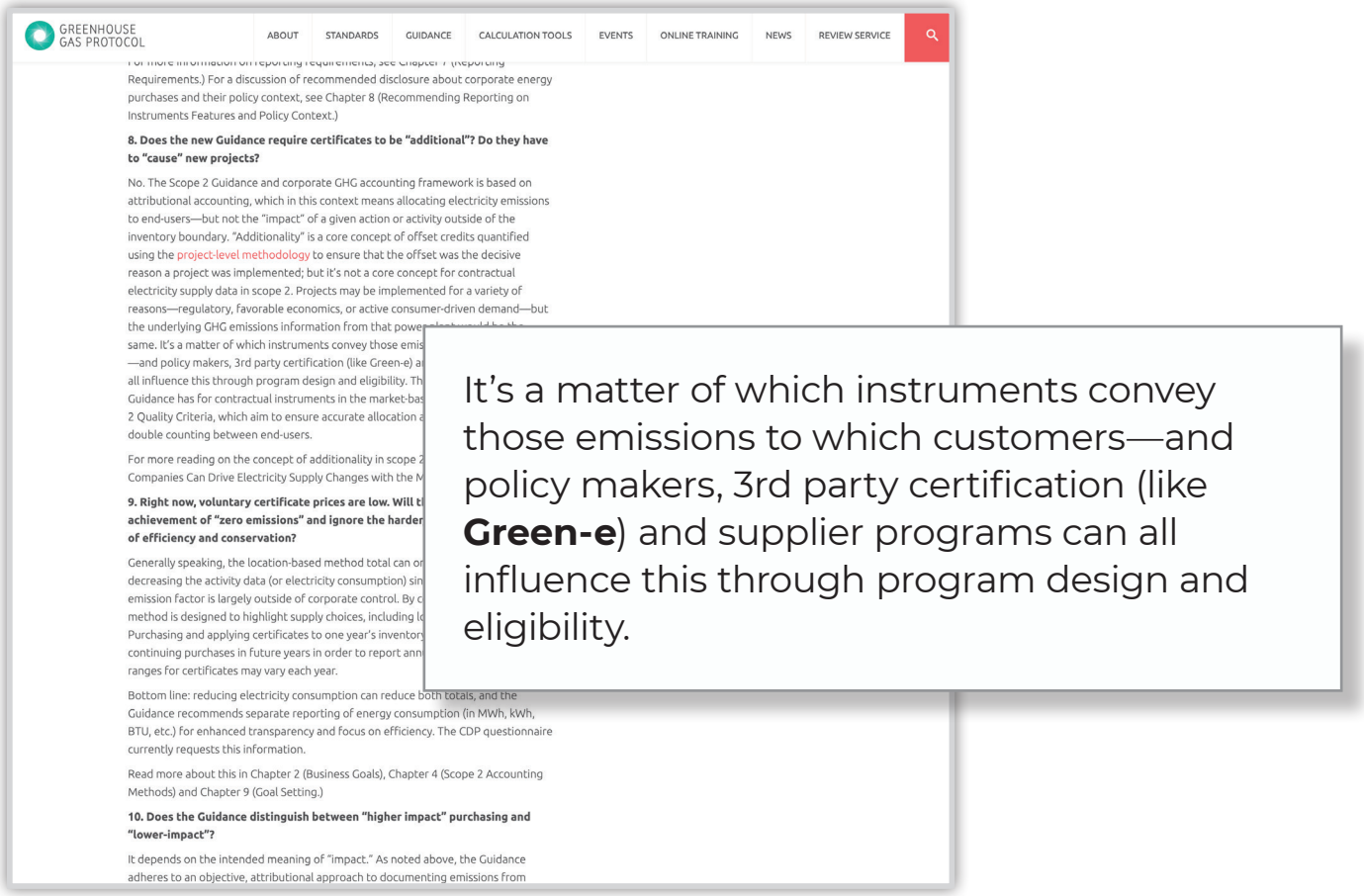
To help consumers more easily identify green power products, the "**Green-e**" Renewable Energy Certification Program is working to build market-based, consensus definitions for environmentally-preferable renewable electricity and renewable energy certificates. The **Green-e** program, administered by the non-profit Center for Resource Solutions (CRS), certifies and verifies renewable electricity products in competitive power markets, as well as utility green pricing programs and in national markets for RECs. Further details about **Green-e** certification are available from the **Green-e** Web sites listed in Chapter 10.

Greenhouse Gas Protocol

- The GHG Protocol is the **global standard for corporate CO2 emissions accounting** and mitigation measures
- Determines how to present accurate, complete, and transparent reports regarding corporate emissions
- Convened by the **World Resources Institute (WRI)**, and the **World Business Council for Sustainable Development (WBCSD)**, a coalition of 170 international companies based in Geneva
- **9 out of 10 Fortune 500 companies** that have reported to the CDP use the GHG Protocol

Greenhouse Gas Protocol Standard

- Green-e® referenced in "Top Ten Questions about the Scope 2 Guidance"

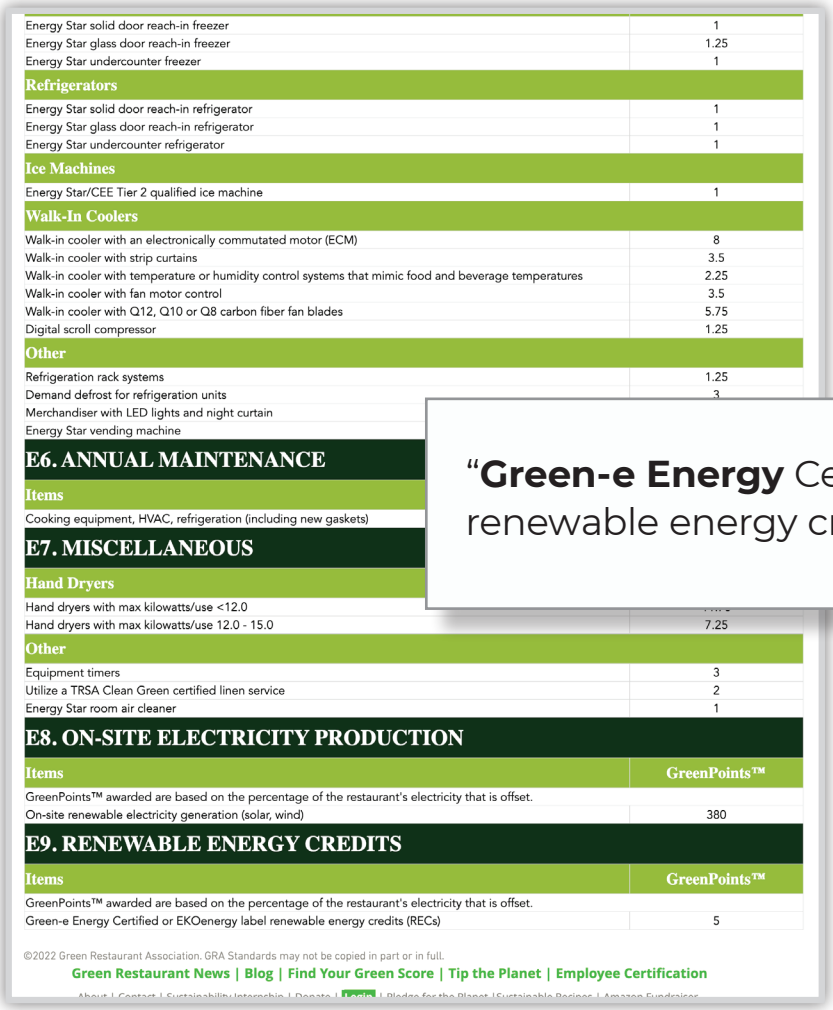


The Green Restaurant Association

- The Green Restaurant Association is a non-profit that certifies the transparency of restaurants' green claims
- "GRA has made it accessible for thousands of restaurants to become more environmentally sustainable in Energy, Water, Waste, Food, Chemicals, Disposables, & Building"

GRA Energy Standard

- Green-e® referenced in GRA's Energy Standard
- Participants can earn GRA's GreenPoints™ by sourcing from Green-e® Energy certified sellers



Energy Star solid door reach-in freezer	1
Energy Star glass door reach-in freezer	1.25
Energy Star undercounter freezer	1
Refrigerators	
Energy Star solid door reach-in refrigerator	1
Energy Star glass door reach-in refrigerator	1
Energy Star undercounter refrigerator	1
Ice Machines	
Energy Star/CEE Tier 2 qualified ice machine	1
Walk-In Coolers	
Walk-in cooler with an electronically commutated motor (ECM)	8
Walk-in cooler with strip curtains	3.5
Walk-in cooler with temperature or humidity control systems that mimic food and beverage temperatures	2.25
Walk-in cooler with fan motor control	3.5
Walk-in cooler with Q12, Q10 or Q8 carbon fiber fan blades	5.75
Digital scroll compressor	1.25
Other	
Refrigeration rack systems	1.25
Demand defrost for refrigeration units	3
Merchandiser with LED lights and night curtain	
Energy Star vending machine	

E6. ANNUAL MAINTENANCE	
Items	
Cooking equipment, HVAC, refrigeration (including new gaskets)	

E7. MISCELLANEOUS	
Hand Dryers	
Hand dryers with max kilowatts/use <12.0	
Hand dryers with max kilowatts/use 12.0 - 15.0	7.25
Other	
Equipment timers	3
Utilize a TRSA Clean Green certified linen service	2
Energy Star room air cleaner	1

E8. ON-SITE ELECTRICITY PRODUCTION	
Items	**GreenPoints™**
GreenPoints™ awarded are based on the percentage of the restaurant's electricity that is offset.	
On-site renewable electricity generation (solar, wind)	380

E9. RENEWABLE ENERGY CREDITS	
Items	**GreenPoints™**
GreenPoints™ awarded are based on the percentage of the restaurant's electricity that is offset.	
Green-e Energy Certified or EKOenergy label renewable energy credits (RECs)	5

©2022 Green Restaurant Association. GRA Standards may not be copied in part or in full.

Green Restaurant News | Blog | Find Your Green Score | Tip the Planet | Employee Certification

"**Green-e Energy** Certified or EKOenergy label renewable energy credits (RECs)"

INTERNATIONAL LIVING FUTURE INSTITUTE℠

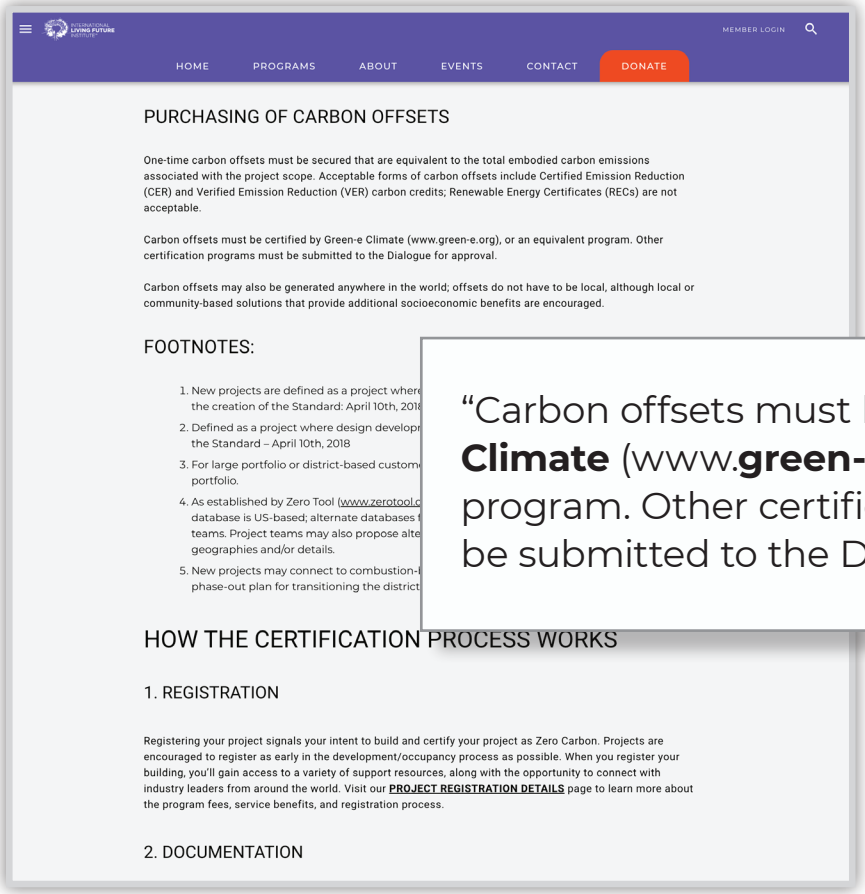
LIVING BUILDING CHALLENGE

International Living Future Institute And Their Living Building Challenge

- International Living Future Institute is is a non-profit organization offering green building and infrastructure solutions with a mission to lead and support the transformation toward communities that are socially just, culturally rich, and ecologically restorative.
- The Institute administers the Living Building Challenge, a building performance standard that puts itself forward as a philosophy, an advocacy tool, and a certification program.

International Living Future Institute Zero Carbon Certification

- Green-e® referenced in International Living Future Institute's "Zero Carbon Certification" Standard
- In purchasing carbon offsets, Green-e® Climate certification (or an equivalent program) is required



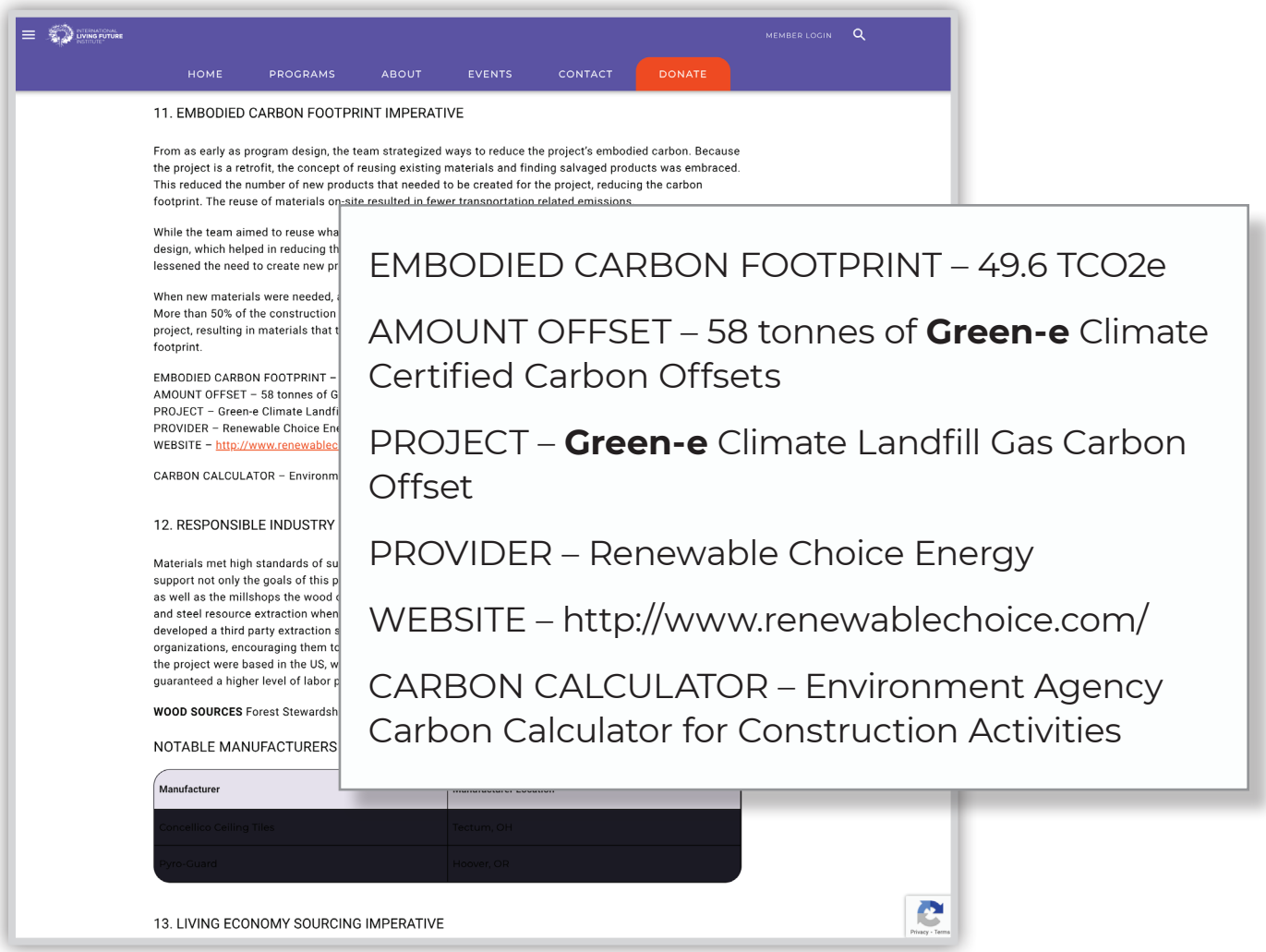
"Carbon offsets must be certified by **Green-e Climate** (www.**green-e**.org), or an equivalent program. Other certification programs must be submitted to the Dialogue for approval."

CRS™

LIVING BUILDING CHALLENGE

International Living Future Institute Example of Building Certification

- Green-e® referenced in International Living Future Institute's building certification of the NRDC's San Francisco office
- NRDC purchased Green-e® Climate certified carbon offsets

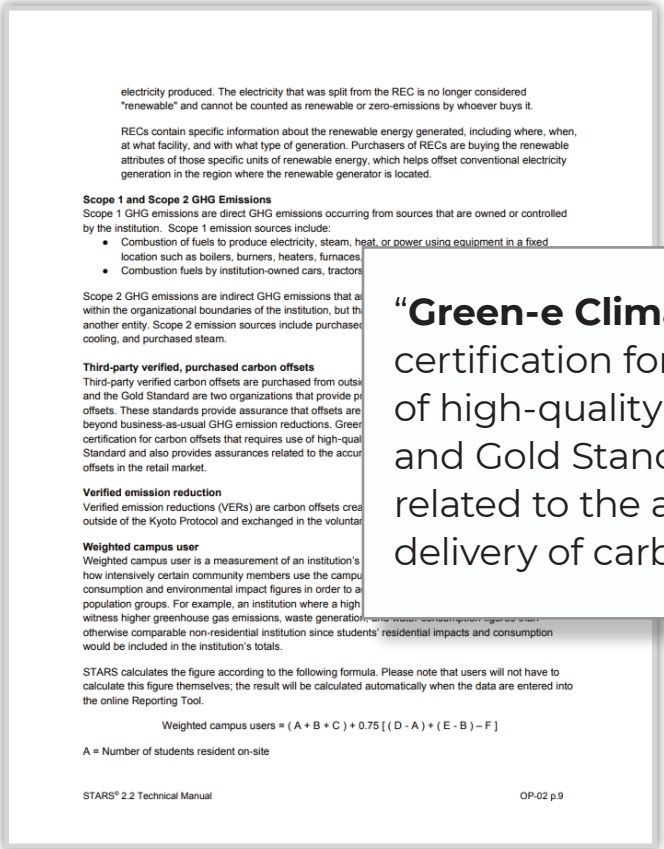


The Association for the Advancement of Sustainability in Higher Education's Sustainability Tracking, Assessment & Rating System (AASHE STARS)

- A project of the Association for the Advancement of Sustainability in Higher Education (AASHE), STARS is intended to engage and recognize the full spectrum of colleges and universities—from community colleges to research universities, and from institutions just starting their sustainability programs to long-time campus sustainability leaders
- Institutions that are pursuing a STARS Bronze, Silver, Gold or Platinum rating earn points for purchased RECs that are Green-e® Energy certified

AASHE STARS OP 2: Greenhouse Gas (GHG) Emissions

- Green-e® Energy and Green-e® Climate are referenced in points awarded for measuring and reducing Greenhouse Gas (GHG) Emissions (OP 2) in the Sustainability Tracking, Assessment & Rating System (STARS) v2.2



electricity produced. The electricity that was split from the REC is no longer considered "renewable" and cannot be counted as renewable or zero-emissions by whoever buys it.

RECs contain specific information about the renewable energy generated, including where, when, at what facility, and with what type of generation. Purchasers of RECs are buying the renewable attributes of those specific units of renewable energy, which helps offset conventional electricity generation in the region where the renewable generator is located.

Scope 1 and Scope 2 GHG Emissions
Scope 1 GHG emissions are direct GHG emissions occurring from sources that are owned or controlled by the institution. Scope 1 emission sources include:

- Combustion of fuels to produce electricity, steam, heat, or power using equipment in a fixed location such as boilers, burners, heaters, furnaces
- Combustion fuels by institution-owned cars, tractors

Scope 2 GHG emissions are indirect GHG emissions that a within the organizational boundaries of the institution, but th another entity. Scope 2 emission sources include purchase cooling, and purchased steam.

Third-party verified, purchased carbon offsets
Third-party verified carbon offsets are purchased from outsi and the Gold Standard are two organizations that provide p offsets. These standards provide assurance that offsets are beyond business-as-usual GHG emission reductions. Gree certification for carbon offsets that requires use of high-qual Standard and also provides assurances related to the accur offsets in the retail market.

Verified emission reduction
Verified emission reductions (VERs) are carbon offsets crea outside of the Kyoto Protocol and exchanged in the voluntar

Weighted campus user
Weighted campus user is a measurement of an institution's how intensively certain community members use the campu consumption and environmental impact figures in order to a population groups. For example, an institution where a high witness higher greenhouse gas emissions, waste generation otherwise comparable non-residential institution since students' residential impacts and consumption would be included in the institution's totals.

STARS calculates the figure according to the following formula. Please note that users will not have to calculate this figure themselves; the result will be calculated automatically when the data are entered into the online Reporting Tool.

Weighted campus users = (A + B + C) + 0.75 [(D - A) + (E - B) – F]

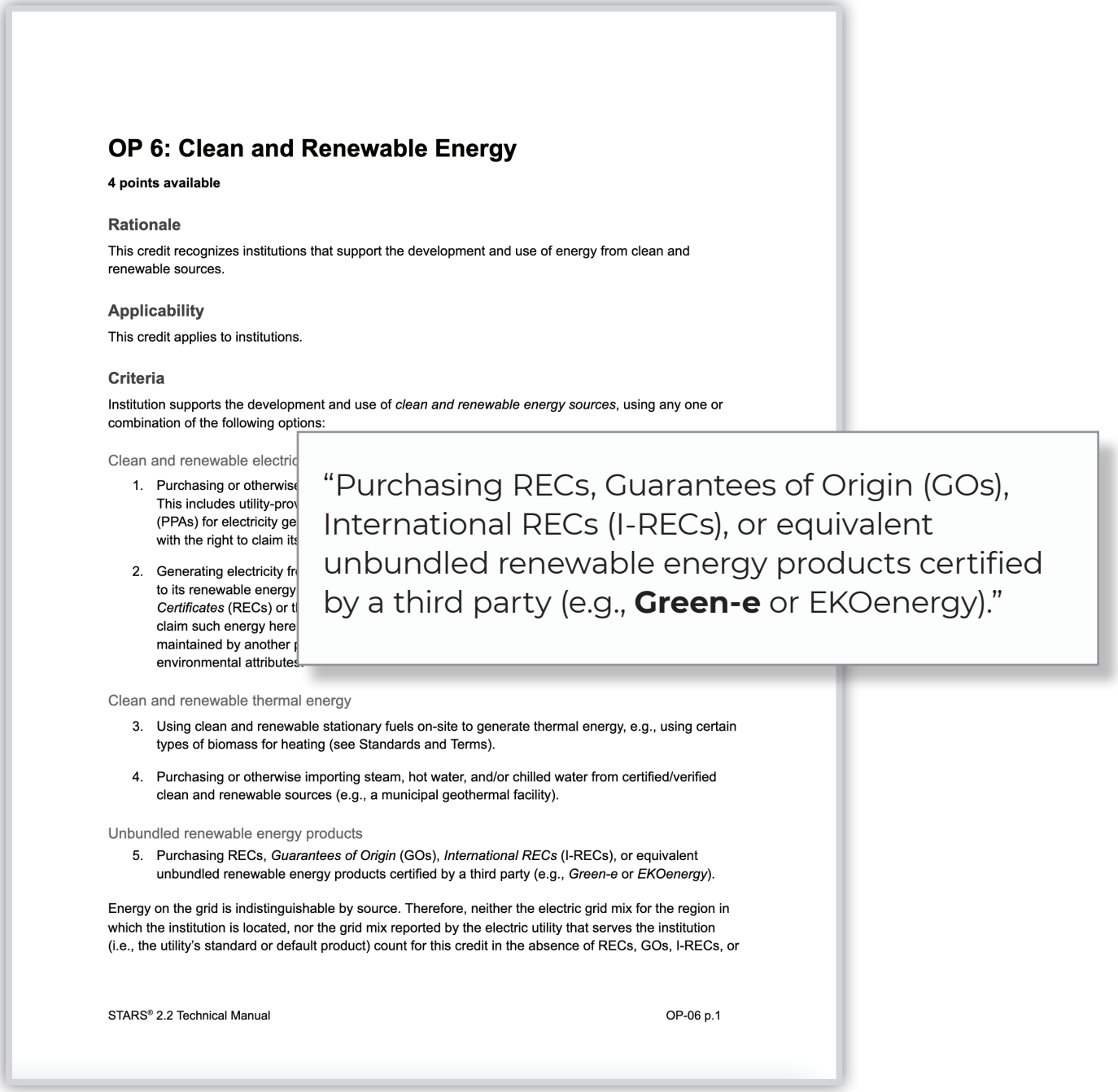
A = Number of students resident on-site

STARS® 2.2 Technical Manual OP-02 p.9

"**Green-e Climate** is a retail standard and certification for carbon offsets that requires use of high-quality offset project standards like VCS and Gold Standard and also provide assurances related to the accurate and exclusive sale and delivery of carbon offsets in the retail market."

AASHE STARS OP 6: Clean and Renewable Energy

- Green-e® Energy and Green-e® Climate are referenced in points awarded for generating, using, and/or purchasing Clean and Renewable Energy (OP 6) in the Sustainability Tracking, Assessment & Rating System (STARS) v2.2



OP 6: Clean and Renewable Energy

4 points available

Rationale

This credit recognizes institutions that support the development and use of energy from clean and renewable sources.

Applicability

This credit applies to institutions.

Criteria

Institution supports the development and use of *clean and renewable energy sources*, using any one or combination of the following options:

Clean and renewable electric

1. Purchasing or otherwise
   This includes utility-prov
   (PPAs) for electricity ge
   with the right to claim its
2. Generating electricity fr
   to its renewable energy
   Certificates (RECs) or t
   claim such energy here
   maintained by another p
   environmental attributes.

Clean and renewable thermal energy

3. Using clean and renewable stationary fuels on-site to generate thermal energy, e.g., using certain types of biomass for heating (see Standards and Terms).
4. Purchasing or otherwise importing steam, hot water, and/or chilled water from certified/verified clean and renewable sources (e.g., a municipal geothermal facility).

Unbundled renewable energy products

5. Purchasing RECs, *Guarantees of Origin* (GOs), *International RECs* (I-RECs), or equivalent unbundled renewable energy products certified by a third party (e.g., *Green-e* or *EKOenergy*).

Energy on the grid is indistinguishable by source. Therefore, neither the electric grid mix for the region in which the institution is located, nor the grid mix reported by the electric utility that serves the institution (i.e., the utility's standard or default product) count for this credit in the absence of RECs, GOs, I-RECs, or

STARS® 2.2 Technical Manual OP-06 p.1

"Purchasing RECs, Guarantees of Origin (GOs), International RECs (I-RECs), or equivalent unbundled renewable energy products certified by a third party (e.g., **Green-e** or EKOenergy)."

Standards and Terms

Clean and renewable energy sources
Consistent with th
sources include t
- Solar pho
- Geothern
- Low-impa
- Ocean-ba technolog
- Wind

And solid, liquid, a
- Energy cr not displa
- Agricultur
- Animal wa
- Landfill ga
- Untreated
- Other org

To qualify, a biofuel must fully meet Green-e criteria, for example by addressing potential social and environmental im
qualify if produce
technologies that
may qualify if pow
above. See the C
more information.

EKOenergy
EKOenergy is an international ecolabel for electricity. In addition to being 100 percent renewable, the energy sold with the EKOenergy label fulfills additional environmental criteria and raises funds for new renewable energy

Green-e
Green-e, a progra
program for renew
Climate is a volun
environmental-int
market. Green-e

Guarantees of o
A Guarantee of C
was produced fro

Imported electri
Imported electrici

STARS® 2.2 Techni

"Consistent with the **Green-e Framework for Renewable Energy Certification**, clean and renewable energy sources include the following systems ..."

"To qualify, a biofuel must fully meet **Green-e** criteria, for example by addressing potential social and environmental impacts."

"See the Center for Resource Solutions **Green-e Framework for Renewable Energy Certification** for more information."

"Green-e, a program of the Center for Resource Solutions, is an independent certification and verification program for renewable energy and greenhouse gas emission reductions in the retail market. **Green-e Climate** is a voluntary certification program launched in 2008 that sets consumer-protection and environmental-integrity standards for greenhouse gas (GHG) emission reductions sold in the voluntary market. **Green-e Energy** is an independent certification and verification program for renewable energy."

CRS

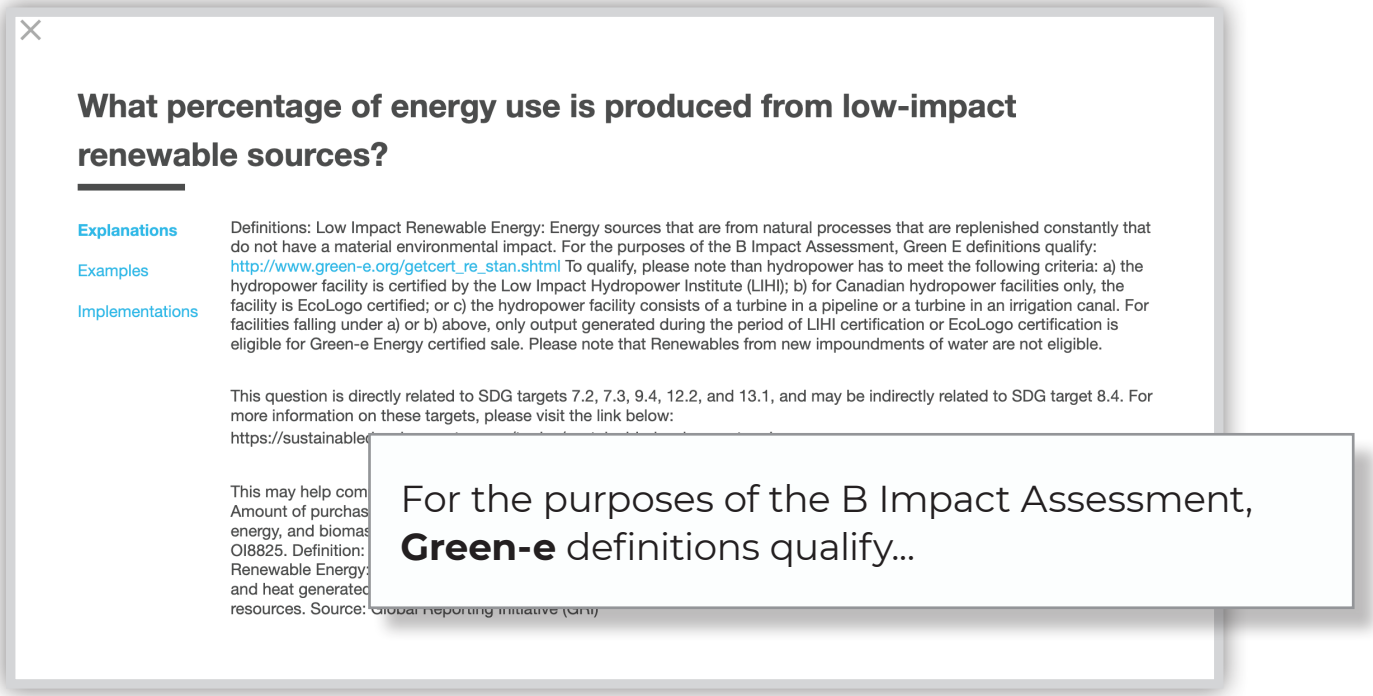
Certified B Corporation

B Corporation

- Certified B Corporations meet comprehensive and transparent social and environmental standards and legally expand their corporate responsibilities to include consideration of interests of all stakeholders, including employees, suppliers, community and the environment
- By becoming a B Corporation, companies leverage their leadership to influence the market beyond the success of their individual company, helping to build a new sector of the economy which harnesses the power of private enterprise for public benefit
- Over the long term, the growing B Corporation community builds constituency for the creation of mission-aligned capital markets and tax, investment, and purchasing incentives for B Corporations

B Impact Assessment

- Green-e® explained and referenced in the Explanation tab of the question “What percentage of energy use is produced from low-impact renewable sources?”
- In order to access this reference, an account must be created



ENERGY-EFFICIENT CODES COALITION

Energy Efficient Codes Coalition (EECC)

- Dynamic efficiency gains in the nation's model energy code can mean billions of dollars in utility bill savings for home and commercial building owners/occupants, more stable electricity grids, reduced reliance on energy imports and fewer greenhouse gas emissions. After uniting leaders in the policy, business, construction, utility, low-income advocacy and environmental arenas to win a 30% efficiency boost in America's model energy code, the 2012 International Energy Conservation Code (IECC), the Energy Efficient Codes Coalition is now campaigning to put future IECCs on a path of continued progress

Energy Efficient Codes Coalition 2024 International Energy Conservation Code

- Green-e® referenced in EECC's 2024 IECC section C405.15.4 Renewable energy certificate purchase

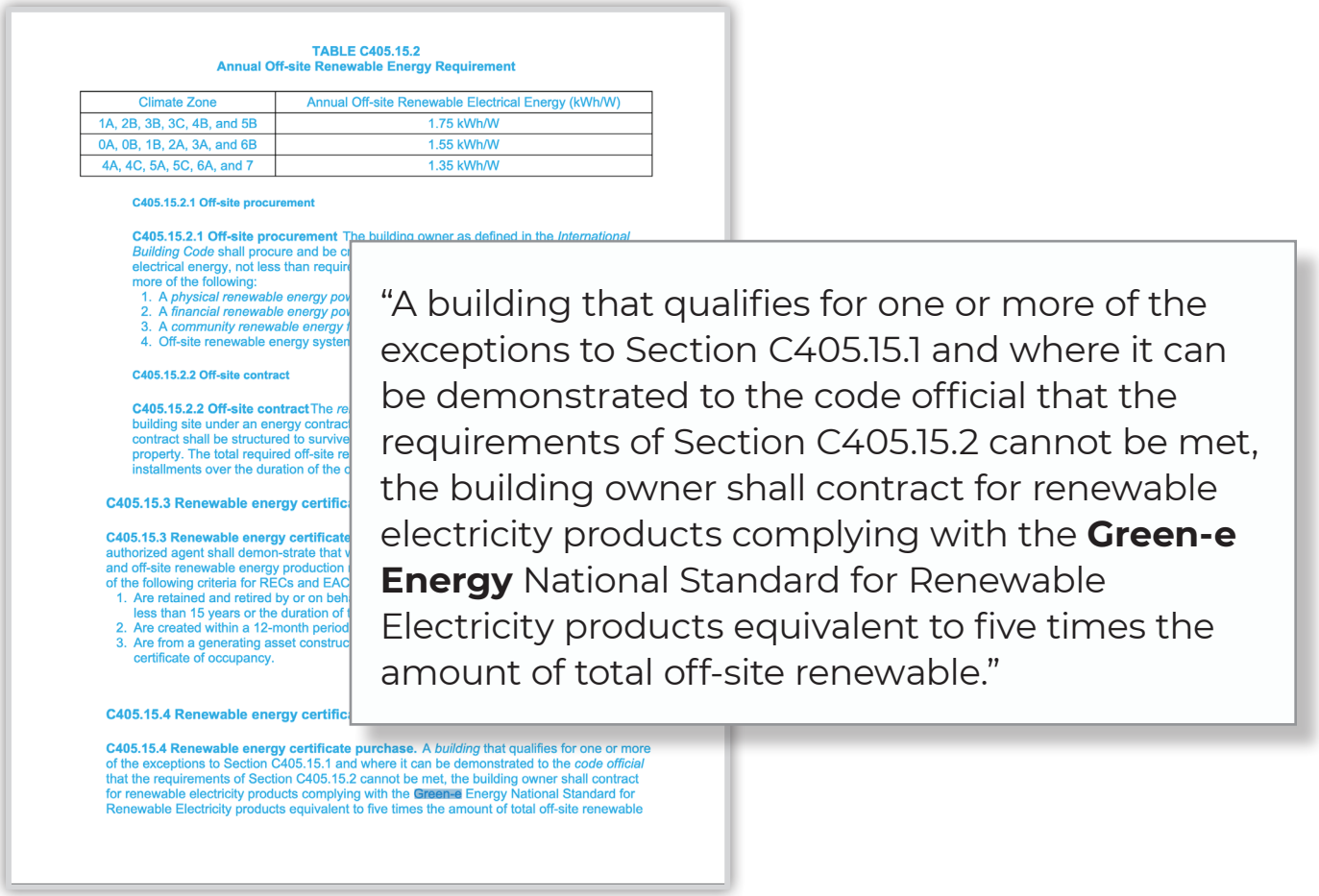


TABLE C405.15.2
Annual Off-site Renewable Energy Requirement

Climate Zone	Annual Off-site Renewable Electrical Energy (kWh/W)
1A, 2B, 3B, 3C, 4B, and 5B	1.75 kWh/W
0A, 0B, 1B, 2A, 3A, and 6B	1.55 kWh/W
4A, 4C, 5A, 5C, 6A, and 7	1.35 kWh/W

C405.15.2.1 Off-site procurement

C405.15.2.1 Off-site procurement The building owner as defined in the *International Building Code* shall procure and be cr
electrical energy, not less than requir
more of the following:
1. A *physical renewable energy pow*
2. A *financial renewable energy pow*
3. A *community renewable energy f*
4. Off-site renewable energy systen

C405.15.2.2 Off-site contract

C405.15.2.2 Off-site contract The re
building site under an energy contrac
contract shall be structured to survive
property. The total required off-site re
installments over the duration of the c

C405.15.3 Renewable energy certific

C405.15.3 Renewable energy certificate
authorized agent shall demon-strate that v
and off-site renewable energy production
of the following criteria for RECs and EAC
1. Are retained and retired by or on beh
less than 15 years or the duration of t
2. Are created within a 12-month period
3. Are from a generating asset construc
certificate of occupancy.

C405.15.4 Renewable energy certific

C405.15.4 Renewable energy certificate purchase. A *building* that qualifies for one or more of the exceptions to Section C405.15.1 and where it can be demonstrated to the *code official* that the requirements of Section C405.15.2 cannot be met, the building owner shall contract for renewable electricity products complying with the Green-e Energy National Standard for Renewable Electricity products equivalent to five times the amount of total off-site renewable

"A building that qualifies for one or more of the exceptions to Section C405.15.1 and where it can be demonstrated to the code official that the requirements of Section C405.15.2 cannot be met, the building owner shall contract for renewable electricity products complying with the **Green-e Energy** National Standard for Renewable Electricity products equivalent to five times the amount of total off-site renewable."

CRS

GLOBAL ELECTRONICS COUNCIL
Sustainability for a Connected Future

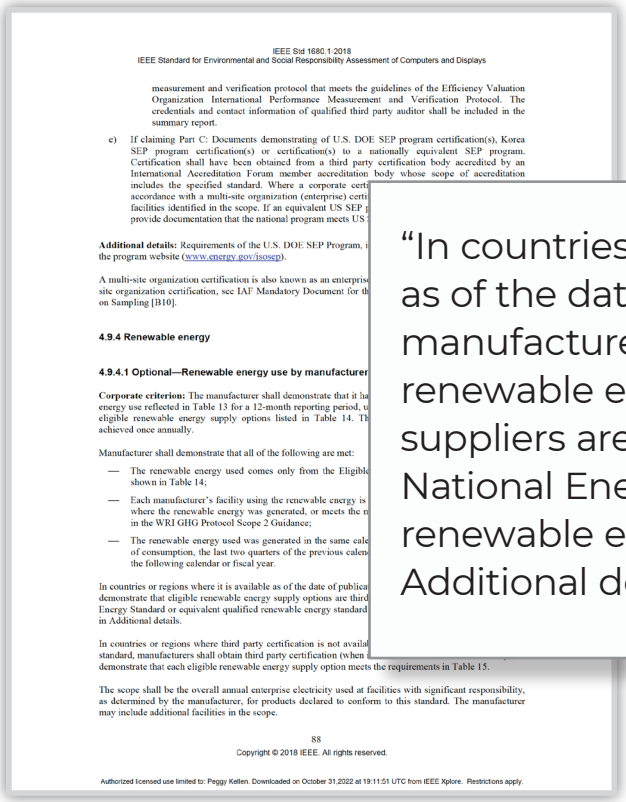
epeat™

Global Electronics Council

- The Global Electronics Council (GEC) is a nonprofit on a mission to increase the sustainability of how IT products are designed, manufactured and purchased
- Its EPEAT program, the leading global ecolabel for IT products, establishes leadership criteria that address a broad range of sustainability impacts, including climate change, and provides independent verification of manufacturers' claims

IEEE Standard for Environmental and Social Responsibility Assessment of Computers and Displays

- The EPEAT online Registry helps private and public large-scale purchasers around the world find more sustainable IT products
- EPEAT's Computers and Displays Category criteria requires manufacturers to demonstrate their renewable energy supply is third party certified to the Green-e® Renewable Energy Standard for Canada and the United States, or equivalent where not available


IEEE Std 1680.1-2018
IEEE Standard for Environmental and Social Responsibility Assessment of Computers and Displays

measurement and verification protocol that meets the guidelines of the Efficiency Valuation Organization International Performance Measurement and Verification Protocol. The credentials and contact information of qualified third party auditor shall be included in the summary report.

e) If claiming Part C: Documents demonstrating of U.S. DOE SEP program certification(s), Korea SEP program certification(s) or certification(s) to a nationally equivalent SEP program. Certification shall have been obtained from a third party certification body accredited by an International Accreditation Forum member accreditation body whose scope of accreditation includes the specified standard. Where a corporate certi
accordance with a multi-site organization (enterprise) certi
facilities identified in the scope. If an equivalent US SEP
provide documentation that the national program meets US

Additional details: Requirements of the U.S. DOE SEP Program,
the program website (www.energy.gov/isosep).

A multi-site organization certification is also known as an enterpris
site organization certification, see IAF Mandatory Document for th
on Sampling [B10].

4.9.4 Renewable energy

4.9.4.1 Optional—Renewable energy use by manufacturer

Corporate criterion: The manufacturer shall demonstrate that it ha
energy use reflected in Table 13 for a 12-month reporting period, u
eligible renewable energy supply options listed in Table 14. Th
achieved once annually.

Manufacturer shall demonstrate that all of the following are met:

— The renewable energy used comes only from the Eligibl
shown in Table 14;

— Each manufacturer's facility using the renewable energy is
where the renewable energy was generated, or meets the n
in the WRI GHG Protocol Scope 2 Guidance;

— The renewable energy used was generated in the same cale
of consumption, the last two quarters of the previous calen
the following calendar or fiscal year.

In countries or regions where it is available as of the date of publica
demonstrate that eligible renewable energy supply options are third
Energy Standard or equivalent qualified renewable energy standard
in Additional details.

In countries or regions where third party certification is not availal
standard, manufacturers shall obtain third party certification (when
demonstrate that each eligible renewable energy supply option meets the requirements in Table 15.

The scope shall be the overall annual enterprise electricity used at facilities with significant responsibility, as determined by the manufacturer, for products declared to conform to this standard. The manufacturer may include additional facilities in the scope.

88
Copyright © 2018 IEEE. All rights reserved.

Authorized licensed use limited to: Peggy Kellen. Downloaded on October 31,2022 at 19:11:51 UTC from IEEE Xplore. Restrictions apply.

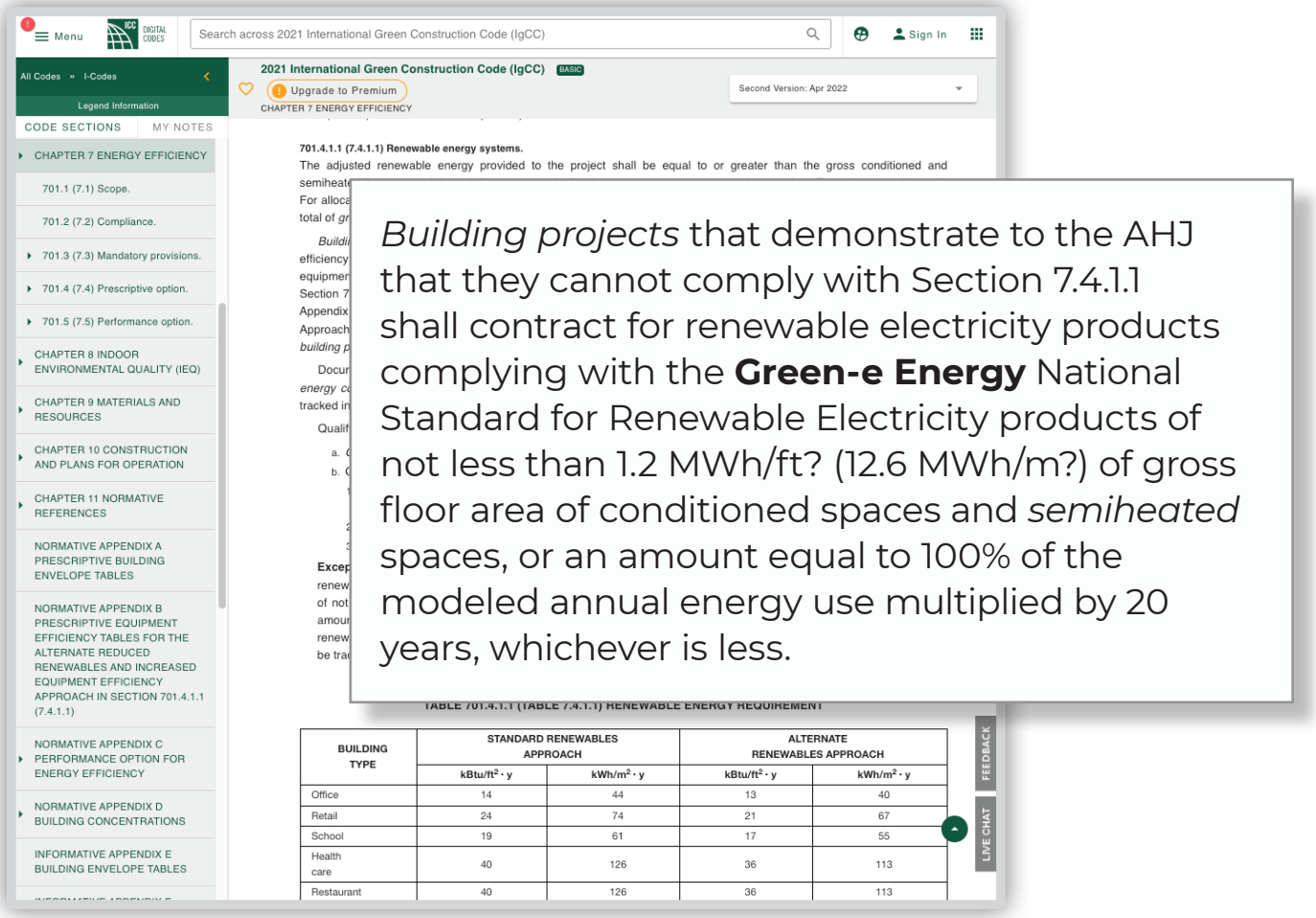
> "In countries or regions where it is available as of the date of publication of this standard manufacturer shall demonstrate that eligible renewable energy supply options used by their suppliers are third party certified to the **Green-e** National Energy Standard or equivalent qualified renewable energy standard (i.e., as listed in the Additional details section)."

International Code Council (ICC)

- International Code Council (ICC) is a member-focused association dedicated to developing model codes and standards used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures
- Many U.S. communities and global markets choose the ICC-published International Codes® (I-Codes®) as their adopted codes, or work with ICC on a custom version of the codes

2021 International Green Construction Code

- The 2021 International Green Construction Code references the Green-e® Energy Standard



Building projects that demonstrate to the AHJ that they cannot comply with Section 7.4.1.1 shall contract for renewable electricity products complying with the **Green-e Energy** National Standard for Renewable Electricity products of not less than 1.2 MWh/ft? (12.6 MWh/m?) of gross floor area of conditioned spaces and *semiheated* spaces, or an amount equal to 100% of the modeled annual energy use multiplied by 20 years, whichever is less.

TABLE 701.4.1.1 (TABLE 7.4.1.1) RENEWABLE ENERGY REQUIREMENT

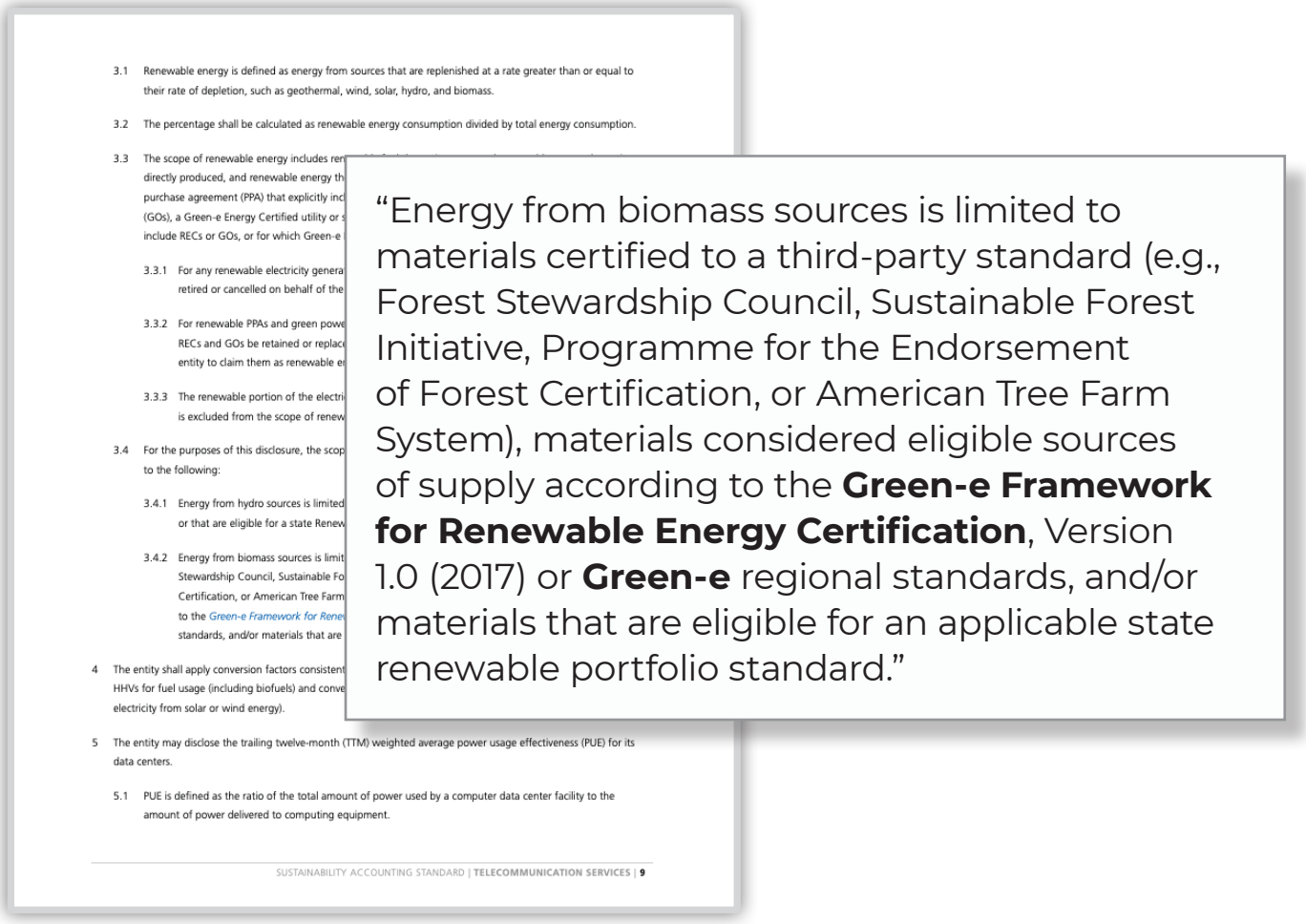
BUILDING TYPE	STANDARD RENEWABLES APPROACH		ALTERNATE RENEWABLES APPROACH	
	kBtu/ft² · y	kWh/m² · y	kBtu/ft² · y	kWh/m² · y
Office	14	44	13	40
Retail	24	74	21	67
School	19	61	17	55
Health care	40	126	36	113
Restaurant	40	126	36	113

Sustainability Accounting Standards Board (SASB)

- "SASB Standards guide the disclosure of financially material sustainability information by companies to their investors. Available for 77 industries, the Standards identify the subset of environmental, social, and governance issues most relevant to financial performance in each industry"

Telecommunication Services Sustainability Accounting Standard

- Green-e® is referenced under Accounting Metrics in the Environmental Footprint of Operations section of the Telecommunication Services standard.



3.1 Renewable energy is defined as energy from sources that are replenished at a rate greater than or equal to their rate of depletion, such as geothermal, wind, solar, hydro, and biomass.

3.2 The percentage shall be calculated as renewable energy consumption divided by total energy consumption.

3.3 The scope of renewable energy includes ren… directly produced, and renewable energy th… purchase agreement (PPA) that explicitly incl… (GOs), a Green-e Energy Certified utility or s… include RECs or GOs, or for which Green-e …

3.3.1 For any renewable electricity genera… retired or cancelled on behalf of the…

3.3.2 For renewable PPAs and green powe… RECs and GOs be retained or replac… entity to claim them as renewable e…

3.3.3 The renewable portion of the electri… is excluded from the scope of renew…

3.4 For the purposes of this disclosure, the scop… to the following:

3.4.1 Energy from hydro sources is limited… or that are eligible for a state Renew…

3.4.2 Energy from biomass sources is limit… Stewardship Council, Sustainable Fo… Certification, or American Tree Farm… to the *Green-e Framework for Renew…* standards, and/or materials that are…

4 The entity shall apply conversion factors consistent… HHVs for fuel usage (including biofuels) and conve… electricity from solar or wind energy).

5 The entity may disclose the trailing twelve-month (TTM) weighted average power usage effectiveness (PUE) for its data centers.

5.1 PUE is defined as the ratio of the total amount of power used by a computer data center facility to the amount of power delivered to computing equipment.

SUSTAINABILITY ACCOUNTING STANDARD | **TELECOMMUNICATION SERVICES** | 9

"Energy from biomass sources is limited to materials certified to a third-party standard (e.g., Forest Stewardship Council, Sustainable Forest Initiative, Programme for the Endorsement of Forest Certification, or American Tree Farm System), materials considered eligible sources of supply according to the **Green-e Framework for Renewable Energy Certification**, Version 1.0 (2017) or **Green-e** regional standards, and/or materials that are eligible for an applicable state renewable portfolio standard."

BSR

- "BSR™ is a sustainable business network and consultancy focused on creating a world in which all people can thrive on a healthy planet. With offices in Asia, Europe, and North America, BSR™ provides its 300+ member companies with insight, advice, and collaborative initiatives to help them see a changing world more clearly, create long-term value, and scale impact"

Documentation Requirements for Supplier-Procured Renewable Energy

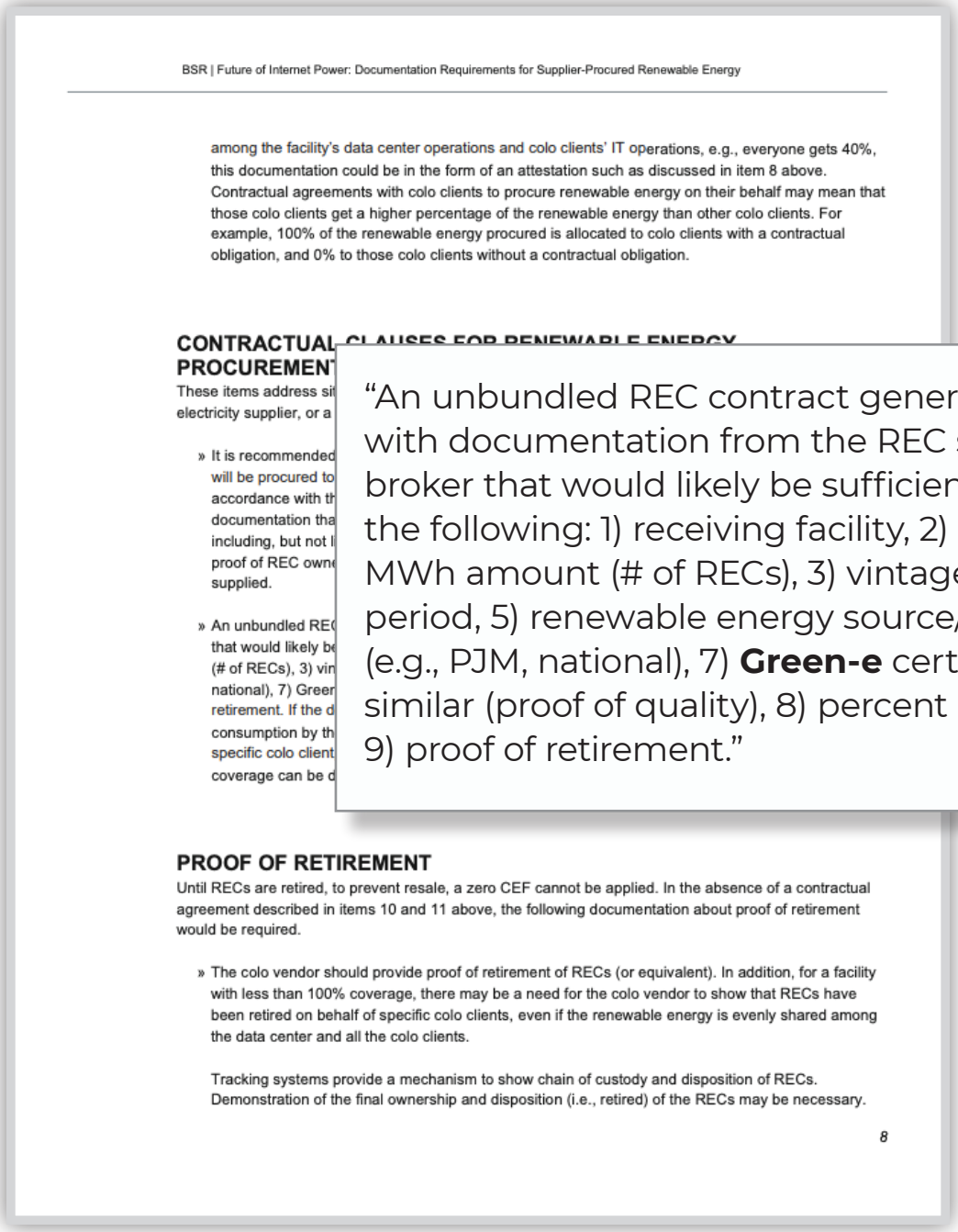
- Green-e® recommended by BSR for certain renewable energy procurement types

BSR | Future of Internet Power: Documentation Requirements for Supplier-Procured Renewable Energy

Renewable Energy Procurement Type	Unbundled RECs	Off-Site Generation			On-Site Generation	
		PPA / Sleeved PPA	Virtual PPA	Green Power Tariff	RECs Generated	No RECs Generated
Procurement Information	**Documentation Type**					
REC/GO Ownership by Colo	Document from REC provider	PPA contract terms	vPPA contract terms	Electricity supplier contract terms; invoice	Tracking system; Green-e certification	N/A
Allocation of RE/ REC/ GO to client if <100% (and if different than % coverage stated above) *Requires that client has specifically contracted with colo to procure renewable energy. Allocation ≠ transfer.*	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause)	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause); tracking system retirement on behalf of client	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause); tracking system retirement on behalf of client	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause	Likely not allowed; RE should be reflected ine facility's effective CEF based on behind-the-meter generation and consumption versus grid consumption
Generation (REC / GO) Vintage	Document from REC provider	Tracking system ledger	Tracking system ledger	Not required	Tracking system ledger; Green-e certification	
REC / GO Serial Number(s)	Document from REC supplier/broker (not required if documentation states % coverage)	Tracking system	Tracking system	Not required	Tracking system; Green-e certification	N/A
Evidence of Retirement / Cancellation	Document from REC supplier/broker	Tracking system; Green-e certification	Tracking system; Green-e certification	Not required	Tracking system; Green-e certification	N/A

11

BSR®



BSR | Future of Internet Power: Documentation Requirements for Supplier-Procured Renewable Energy

among the facility's data center operations and colo clients' IT operations, e.g., everyone gets 40%, this documentation could be in the form of an attestation such as discussed in item 8 above. Contractual agreements with colo clients to procure renewable energy on their behalf may mean that those colo clients get a higher percentage of the renewable energy than other colo clients. For example, 100% of the renewable energy procured is allocated to colo clients with a contractual obligation, and 0% to those colo clients without a contractual obligation.

CONTRACTUAL CLAUSES FOR RENEWABLE ENERGY PROCUREMENT

These items address sit
electricity supplier, or a

» It is recommended
will be procured to
accordance with th
documentation tha
including, but not l
proof of REC owne
supplied.

» An unbundled REC
that would likely be
(# of RECs), 3) vin
national), 7) Green
retirement. If the d
consumption by th
specific colo client
coverage can be d

PROOF OF RETIREMENT

Until RECs are retired, to prevent resale, a zero CEF cannot be applied. In the absence of a contractual agreement described in items 10 and 11 above, the following documentation about proof of retirement would be required.

» The colo vendor should provide proof of retirement of RECs (or equivalent). In addition, for a facility with less than 100% coverage, there may be a need for the colo vendor to show that RECs have been retired on behalf of specific colo clients, even if the renewable energy is evenly shared among the data center and all the colo clients.

Tracking systems provide a mechanism to show chain of custody and disposition of RECs. Demonstration of the final ownership and disposition (i.e., retired) of the RECs may be necessary.

8

"An unbundled REC contract generally comes with documentation from the REC supplier or broker that would likely be sufficient if it includes the following: 1) receiving facility, 2) specific MWh amount (# of RECs), 3) vintage, 4) coverage period, 5) renewable energy source/type 6) region (e.g., PJM, national), 7) **Green-e** certification or similar (proof of quality), 8) percent coverage and 9) proof of retirement."

BSR®

GHG Emission Accounting, Renewable Energy Purchases, and Zero-Carbon Reporting: Issues and Considerations for the Colocation Data Center Industry

Scenario 4:

- Vendor accounts all emissions related to both the Data Center Equipment and the client's IT Equipment as scope 2
- Client also accounts all emissions related to their IT Equipment as scope 2

Scenario 5:

- Client accounts all emissions related to both their IT Equipment and the Data Center Equipment as scope 2
- Vendor also accounts all emissions related to the Data Center Equipment as scope 2

Scenario 6:

- Vendor accounts all emissions related to both the Data Center Equipment and the client's IT Equipment as scope 2
- Client also accounts all emissions related to both their IT Equipment and the Data Center Equipment as scope 2

Aside from these six accounting scenarios, there is also the possibility of under-counting scope 2 or double-counting of scope 3. This would occur if neither party counts the emissions as its scope 2, and/or both count the emissions as their scope 3. Under GHGP, either of these scenarios should be also avoided.

Current scope accountin
interpretations of the GH
throughout the colo indu
current GHGP, under th
3 emissions.

B. THE IMPLICA

Not only is double-count
terms when a renewable
zero-carbon attribute of
current protocol does no
accounting for the same
only the party in "posses
zerocarbon claim. Other
renewable energy purch
and attestations.

Additionally, double-counting of renewable energy purchases by multiple companies accounting for the same emissions as scope 2 is addressed by the North America CRS Green-e Program.[7] CRS states in its Summary of WRI Scope 2 Guidance that "Green-e Energy specifically restricts double claims on

[6] GHGP Corporate Standard Accounting, p33.
[8] Scope 2 Guidance, p40.
[7] CRS Green-E Program, https://resource-solutions.org/programs/green-e/.

"Additionally, double-counting of renewable energy purchases by multiple companies accounting for the same emissions as scope 2 is addressed by the North America CRS **Green-e** Program.[7] CRS states in its Summary of WRI Scope 2 Guidance that "**Green-e** Energy specifically restricts double claims on renewable energy certificates (RECs)."

CRS™

Green-e® U.S./Canada Citations

EPA United States Environmental Protection Agency

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NRDC NATURAL RESOURCES DEFENSE COUNCIL

CANADA GREEN BUILDING COUNCIL · CONSEIL DU BÂTIMENT DURABLE DU CANADA

CAGBC | Canada Green Building Council

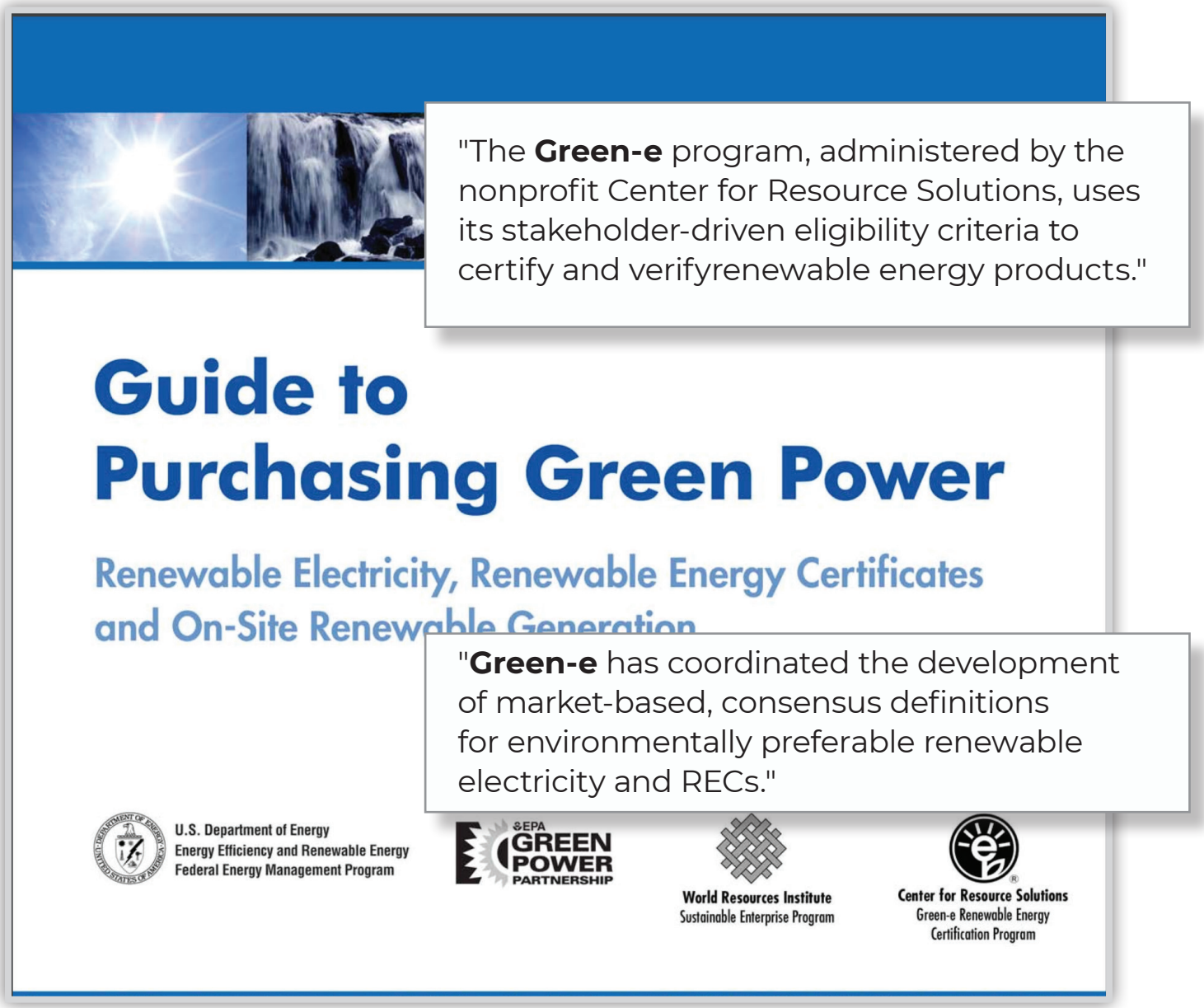
SUSTAINABLE PURCHASING LEADERSHIP COUNCIL

MeetGreen®

DEPARTMENT OF ENERGY · UNITED STATES OF AMERICA

U.S. Department of Energy Guide to Purchasing Green Power

- In U.S. Department of Energy's "Guide to Purchasing Green Power", Green-e® is introduced and referenced as a certification program that identifies green power.



CAGBC | Canada Green Building Council

Canada Green Building Council (CAGBC)

- "The Canada Green Building Council supports the building sector's transition to buildings that are better for people and the planet"
- CAGBC comprises of 1,100 corporate members and over 14,000 individual members
- "CAGBC provides the products and services the building sector needs to construct and manage buildings that are easier on resources, healthier for people, and more cost-effective"

Canada Green Building Council's Zero Building Design Standard

- Green-e® referenced in CAGBC's June 2022 Issue of Zero Carbon Building Design Standard

29 CAGBC | Zero Carbon Building – Design Standard Version 3 | June 2022

Onsite power generation s
generation equipment to t

OFFSITE

Offsite **renewable energy**
metering is an arrangeme
net-metered against (dedu
systems installed on adjac

GREEN POWER PR

Green power products in
kilowatt-hour of procured
of the zero-carbon balanc

To qualify under the ZCB-Design Standard **green power products** can be generated anywhere in Canada, however project teams are encouraged to consider local options first. **Green power products** must be generated from:

- Solar energy;
- Wind;
- Water (including low-i
- Qualifying biogas (see
- Qualifying biomass (s
- Geothermal energy.

Green power products p
ZCB-Design program's re
offset their operational en
requirements of the ZCB-

Not all forms of **green pow**
procurement of **green pow**
have been installed. The f
available and can explore the highest quality options first.

1. Power Purchase Agre
environmental attrib
for at least fifteen yea
used at the company-
Canada. All **PPAs** mu
II - Requirements for
from **green power** fa
2. Utility Green Power: U
associated **environm**
green power purcha

"All PPAs must be certified by either ECOLOGO or **Green-e**® Energy, or meet the requirements outlined in Appendix II - Requirements for Bundled Green Power Products that are not ECOLOGO or **Green-e**® Energy Certified. All power must be from green power facilities in Canada."

"All utility green power must be certified by either ECOLOGO or **Green-e**® Energy, or meet the requirements outlined in Appendix II - Requirements for Bundled Green Power Products that are not ECOLOGO or **Green-e**® Energy Certified."

"All RECs must be certified by ECOLOGO or **Green-e**® Energy and generated from green power facilities located in Canada."

United States Environmental Protection Agency (US EPA)

- The US EPA's main mission is to "protect human health and the environment"
- They have developed and enforced national standards and help those who cannot follow or comply with those regulations

Green Power Purchases at EPA

- Green-e® certification is referenced on the EPA's webpage about Green Power Purchases
- The EPA also recommends certification and verification in their "RECs: Making Green Power Possible" video.

EPA United States Environmental Protection Agency

EPA's Annual Energy Management Report: Fiscal Year 2020

- Green-e® referenced in the EPA's Energy Management Report in 2020
- The EPA procured 7 million kWh of Green-e® certified renewable electricity

EPA's FY 2020 energy intensity was 41.0 percent lower than the agency's FY 2003 energy intensity of 399,616 Btu per GSF. In absolute terms, EPA's FY 2020 energy consumption was 836.3 billion Btu. In FY 2020, energy intensity decreased because of teleworking during the COVID-19 pandemic and consolidation efforts at EPA facilities. Ventilation requirements in EPA laboratories could also change over time based on evolving air quality needs, which could impact the agency's future energy intensity.

Renewable Energy

EPA generates onsite renewable energy at facilities where practical and cost-effective. In FY 2020, onsite installations at nine EPA facilities generating wind, solar and geothermal power supplied EPA with 4.7 billion Btu, equivalent to 0.5 percent of the agency's energy use. EPA also purchased 360,000 kilowatt-hours (kWh) of renewable energy through one facility-level green power contract in FY 2020.

EPA initiated a procurement through the General Services Administration (GSA) for a total of 7 million kWh of Green-e certified renewable energy certificates (RECs) to supplement its onsite renewable generation. The RECs were generated between April 1, 2019 and December 31, 2020. Onsite renewable energy use and green power purchases covered 8.7 percent of the agency's FY 2020 total electricity use, met its EPAct renewable energy requireme 7.5 percent of agencywide electricity use b sources.

Water Conservation

In FY 2020, EPA's reported water intensity was 18.0 gallons per GSF, which is 11.3 percent lower than the agency's FY 2019 water intensity of 20.3 gallons per GSF and 49.7 percent lower than the agency's FY 2007 water intensity of 35.7 gallons per GSF (see Figure 2). In absolute terms, EPA's FY 2020 water consumption was 63.7 million gallons, compared to its FY 2007 water consumption of 136.5 million gallons. In FY 2020, EPA water consumption decreased due to teleworking during the COVID-19 pandemic and the consolidation of EPA's Golden, Colorado, facility into a nearby facility in the state in FY 2019, which historically had high water intensity.

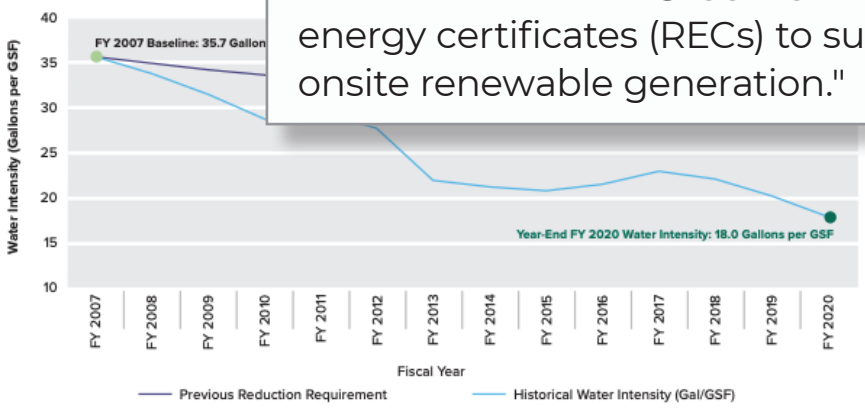
In FY 2020, EPA's water intensity performance was:

- **11.3 percent lower than FY 2019**
- **49.7 percent lower than the FY 2007 baseline**

Fleet Efficiency

In FY 2020, fuel consumption by EPA's non-fleet and other equipment decreased 98.9 percent compared to FY 2019. This decrease is due to reduced vehicle use required in FY 2020 as a result of the COVID-19 pandemic.

Figure 2. EPA's Annual Wat



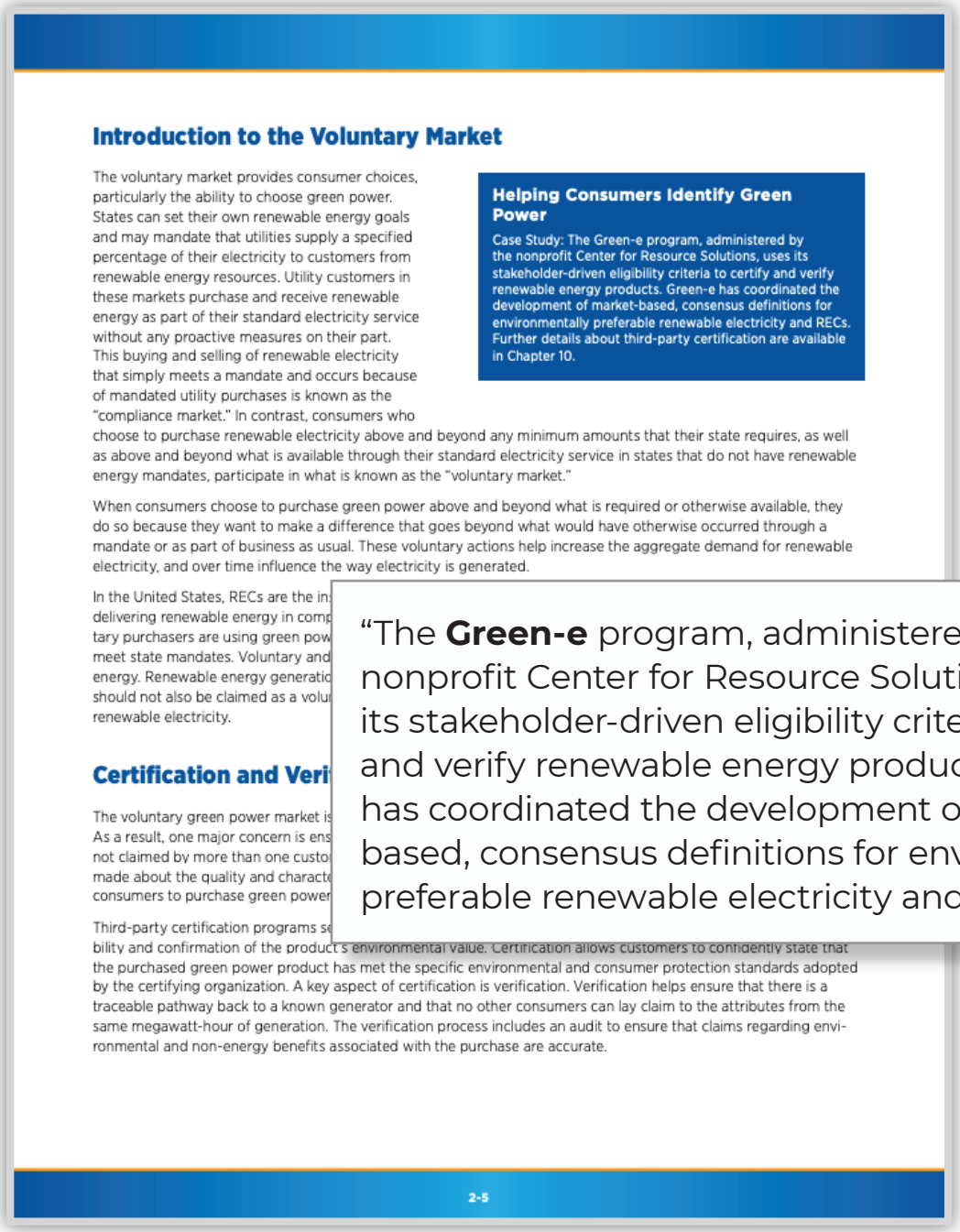
2

"EPA initiated a procurement through the General Services Administration (GSA) for a total of 7 million kWh of **Green-e** certified renewable energy certificates (RECs) to supplement its onsite renewable generation."

EPA United States Environmental Protection Agency

EPA's Guide to Purchasing Green Power

- Green-e® referenced throughout the EPA's Guide to Purchasing Green Power



Introduction to the Voluntary Market

The voluntary market provides consumer choices, particularly the ability to choose green power. States can set their own renewable energy goals and may mandate that utilities supply a specified percentage of their electricity to customers from renewable energy resources. Utility customers in these markets purchase and receive renewable energy as part of their standard electricity service without any proactive measures on their part. This buying and selling of renewable electricity that simply meets a mandate and occurs because of mandated utility purchases is known as the "compliance market." In contrast, consumers who choose to purchase renewable electricity above and beyond any minimum amounts that their state requires, as well as above and beyond what is available through their standard electricity service in states that do not have renewable energy mandates, participate in what is known as the "voluntary market."

Helping Consumers Identify Green Power

Case Study: The Green-e program, administered by the nonprofit Center for Resource Solutions, uses its stakeholder-driven eligibility criteria to certify and verify renewable energy products. Green-e has coordinated the development of market-based, consensus definitions for environmentally preferable renewable electricity and RECs. Further details about third-party certification are available in Chapter 10.

When consumers choose to purchase green power above and beyond what is required or otherwise available, they do so because they want to make a difference that goes beyond what would have otherwise occurred through a mandate or as part of business as usual. These voluntary actions help increase the aggregate demand for renewable electricity, and over time influence the way electricity is generated.

In the United States, RECs are the in
delivering renewable energy in comp
tary purchasers are using green pow
meet state mandates. Voluntary and
energy. Renewable energy generatio
should not also be claimed as a volu
renewable electricity.

Certification and Veri

The voluntary green power market is
As a result, one major concern is ens
not claimed by more than one custo
made about the quality and characte
consumers to purchase green power

Third-party certification programs s
bility and confirmation of the product's environmental value. Certification allows customers to confidently state that the purchased green power product has met the specific environmental and consumer protection standards adopted by the certifying organization. A key aspect of certification is verification. Verification helps ensure that there is a traceable pathway back to a known generator and that no other consumers can lay claim to the attributes from the same megawatt-hour of generation. The verification process includes an audit to ensure that claims regarding environmental and non-energy benefits associated with the purchase are accurate.

2-5

"The **Green-e** program, administered by the nonprofit Center for Resource Solutions, uses its stakeholder-driven eligibility criteria to certify and verify renewable energy products. **Green-e** has coordinated the development of market-based, consensus definitions for environmentally preferable renewable electricity and RECs."

CRS

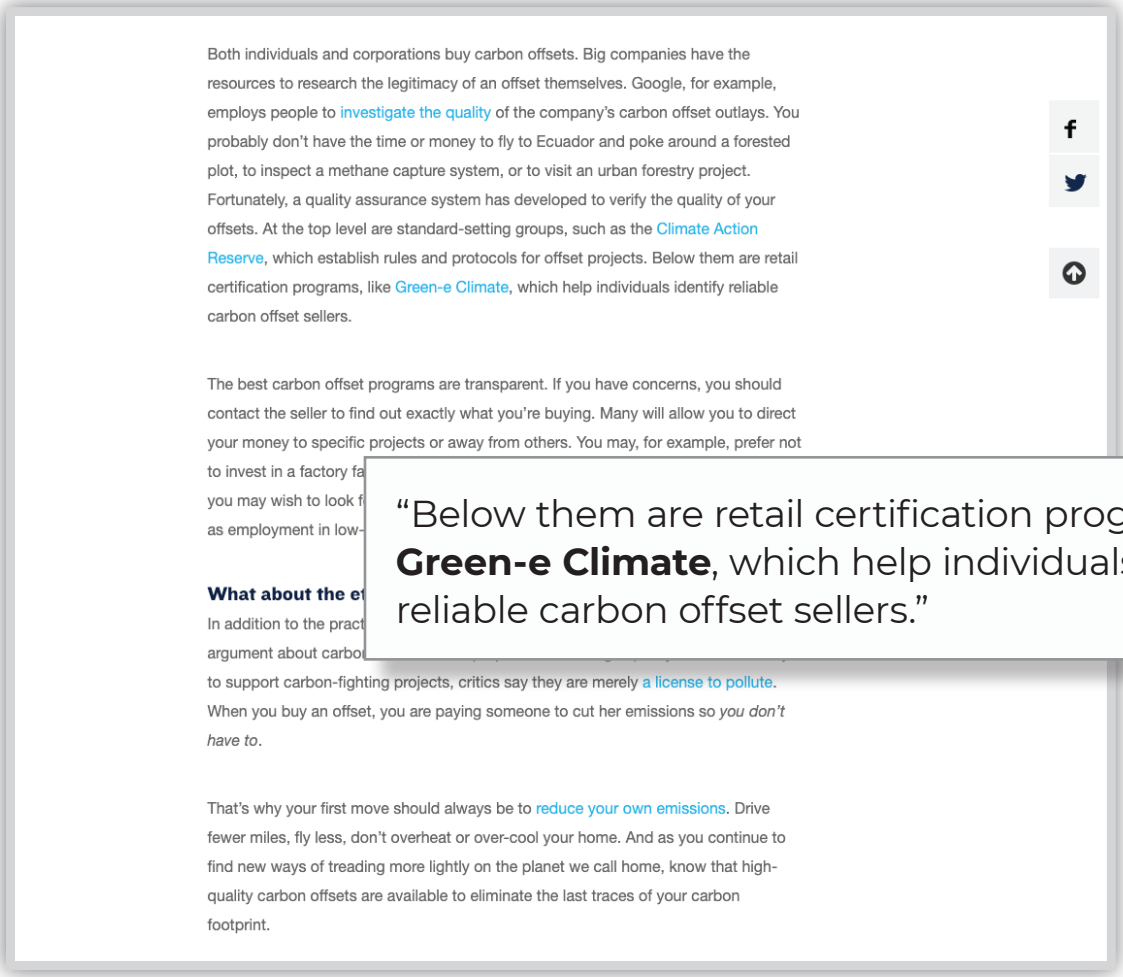
NRDC
NATURAL RESOURCES DEFENSE COUNCIL

National Resources Defense Council (NRDC)

- "NRDC works to safeguard the earth—its people, its plants and animals, and the natural systems on which all life depends"
- Currently has 6 programs
- More than 3 million members and 700 scientists, lawyers, and policy advocates with NRDC
- "Fighting polluters since 1970"

NRDC Article References

- Green-e® Climate referenced in article, "Should You Buy Carbon Offsets" written by Brian Palmer



Both individuals and corporations buy carbon offsets. Big companies have the resources to research the legitimacy of an offset themselves. Google, for example, employs people to investigate the quality of the company's carbon offset outlays. You probably don't have the time or money to fly to Ecuador and poke around a forested plot, to inspect a methane capture system, or to visit an urban forestry project. Fortunately, a quality assurance system has developed to verify the quality of your offsets. At the top level are standard-setting groups, such as the Climate Action Reserve, which establish rules and protocols for offset projects. Below them are retail certification programs, like Green-e Climate, which help individuals identify reliable carbon offset sellers.

The best carbon offset programs are transparent. If you have concerns, you should contact the seller to find out exactly what you're buying. Many will allow you to direct your money to specific projects or away from others. You may, for example, prefer not to invest in a factory fa
you may wish to look f
as employment in low-

What about the et

In addition to the pract
argument about carbo
to support carbon-fighting projects, critics say they are merely a license to pollute. When you buy an offset, you are paying someone to cut her emissions so *you don't have to*.

That's why your first move should always be to reduce your own emissions. Drive fewer miles, fly less, don't overheat or over-cool your home. And as you continue to find new ways of treading more lightly on the planet we call home, know that high-quality carbon offsets are available to eliminate the last traces of your carbon footprint.

"Below them are retail certification programs, like **Green-e Climate**, which help individuals identify reliable carbon offset sellers."

NRDC
NATURAL RESOURCES DEFENSE COUNCIL

NRDC Article References

- Green-e® certified RECs referenced in article, “NRDC’s Commitment to Green Starts with Its Offices” written by Melissa Denchak

including solar and wind.

Chicago

NRDC’s Chicago office was designed to

designs. Also LEED-certified, the office is located near train and bus lines, and its open floor plan, which reduced the amount

use, carbon footp
feature recycled,
philodendrons tha
which is to conne
productivity. Ener
electronics, lighting systems that adjust automatically to daylight conditions, and smart plug sensors that automatically power down electronics. The office offset renovation-generated carbon emissions with carbon credits and purchases of green power, in the form of Green-e certified Renewable Energy Credits.

> “The office offset renovation-generated carbon emissions with carbon credits and purchases of green power, in the form of **Green-e** certified Renewable Energy Credits.”

> “Carbon credits offset emissions caused by the renovation, and the office offsets its regular electricity consumption with **Green-e** certified Renewable Energy Credits.”

Santa Monica

NRDC’s LEED-certified office in Southern California is at the forefront of green building design. Centrally located in a

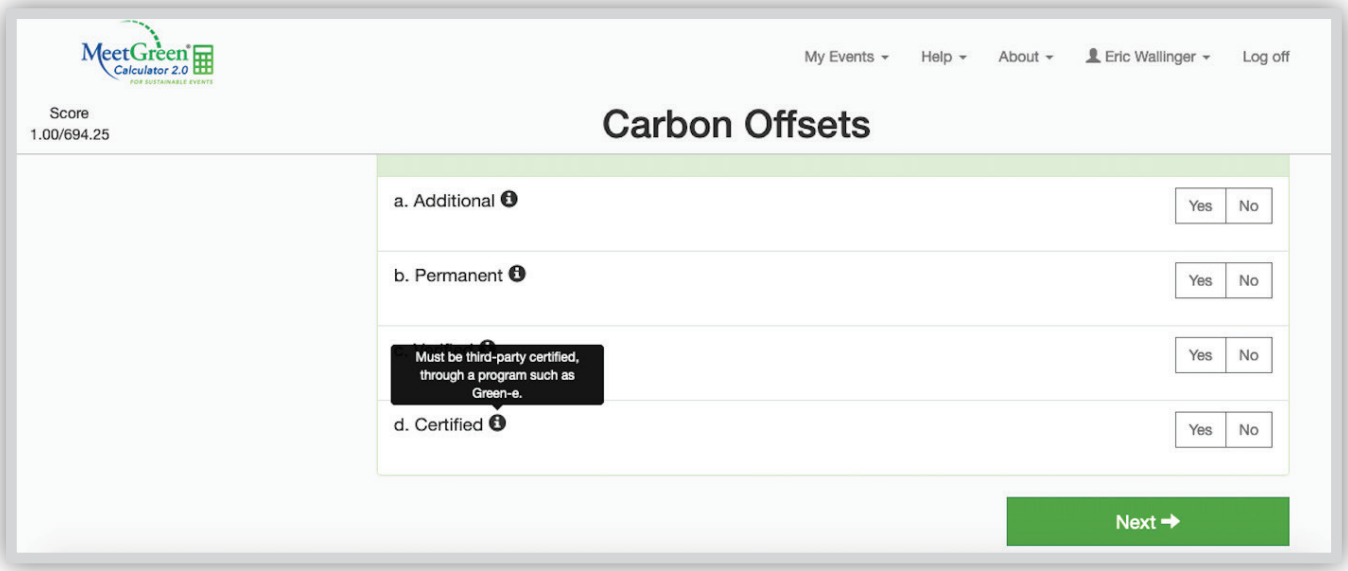
CRS

MeetGreen®

- MeetGreen® works with progressive global organizations to integrate sustainable practices and produce conferences and events rooted in sustainability
- With nearly 30 years of direct assessment experience in the built environment, MeetGreen assembled and refined one of the largest repositories of data on the planet regarding the convening of people, nuances of their choices and supply chains, as well as their associated wide-ranging environmental impacts

MeetGreen® Event Calculator

- In the MeetGreen® Event Calculator, Green-e® is referenced as an example of an acceptable third-party certification required for any carbon offset procured



"Must be third-party certified, through a program such as **Green-e**"

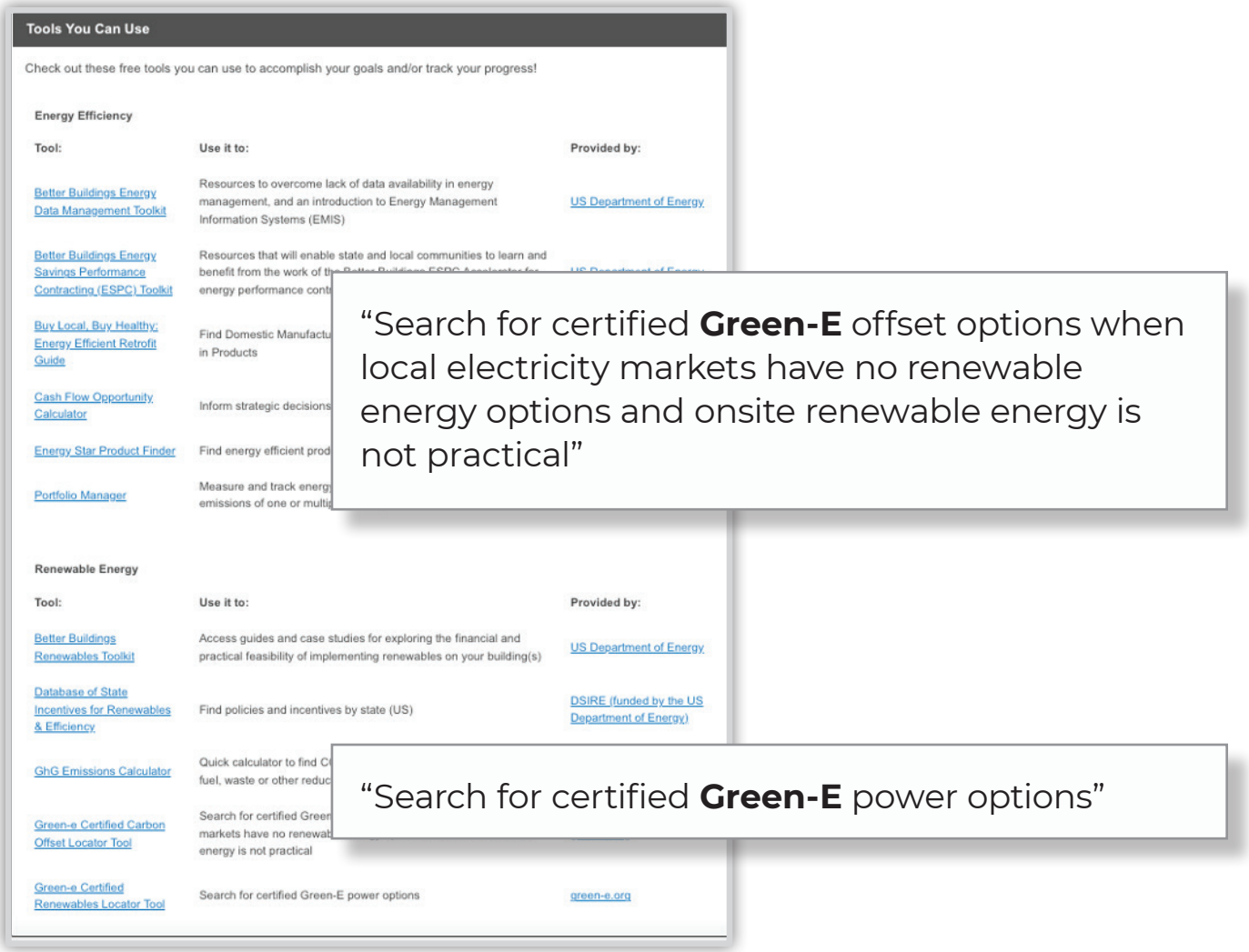
SUSTAINABLE PURCHASING LEADERSHIP COUNCIL

Sustainable Purchasing Leadership Council (SPLC)

- **Sustainable Purchasing Leadership Council** is a nonprofit organization with the mission to support and recognize purchasing leadership that accelerates the transition to a prosperous and sustainable future

SPLC Guidance for Leadership in Sustainable Purchasing

- SPLC's Guidance for Leadership in Sustainable Purchasing recommends purchasing Green-e Energy certified renewable energy for businesses that want to reduce the environmental impact of their electricity use
- It includes a section on reducing the impact of electricity use and recommends both implementing energy conservation measures and buying Green-e® Energy certified renewable energy



Tools You Can Use

Check out these free tools you can use to accomplish your goals and/or track your progress!

Energy Efficiency

Tool:	Use it to:	Provided by:
Better Buildings Energy Data Management Toolkit	Resources to overcome lack of data availability in energy management, and an introduction to Energy Management Information Systems (EMIS)	US Department of Energy
Better Buildings Energy Savings Performance Contracting (ESPC) Toolkit	Resources that will enable state and local communities to learn and benefit from the work of th	
Buy Local, Buy Healthy: Energy Efficient Retrofit Guide	Find Domestic Manufactu in Products	
Cash Flow Opportunity Calculator	Inform strategic decisions	
Energy Star Product Finder	Find energy efficient prod	
Portfolio Manager	Measure and track energ emissions of one or multi	

Renewable Energy

Tool:	Use it to:	Provided by:
Better Buildings Renewables Toolkit	Access guides and case studies for exploring the financial and practical feasibility of implementing renewables on your building(s)	US Department of Energy
Database of State Incentives for Renewables & Efficiency	Find policies and incentives by state (US)	DSIRE (funded by the US Department of Energy)
GhG Emissions Calculator	Quick calculator to find C fuel, waste or other reduc	
Green-e Certified Carbon Offset Locator Tool	Search for certified Green markets have no renewab energy is not practical	
Green-e Certified Renewables Locator Tool	Search for certified Green-E power options	green-e.org

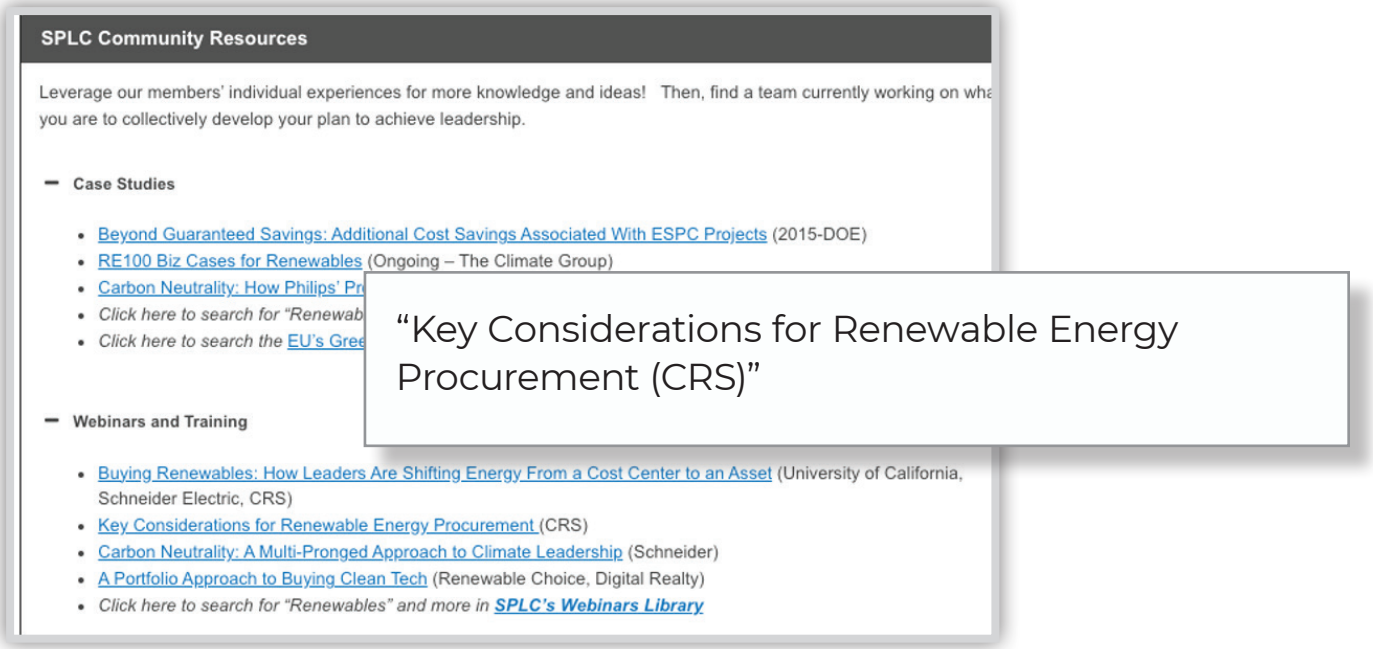
"Search for certified **Green-E** offset options when local electricity markets have no renewable energy options and onsite renewable energy is not practical"

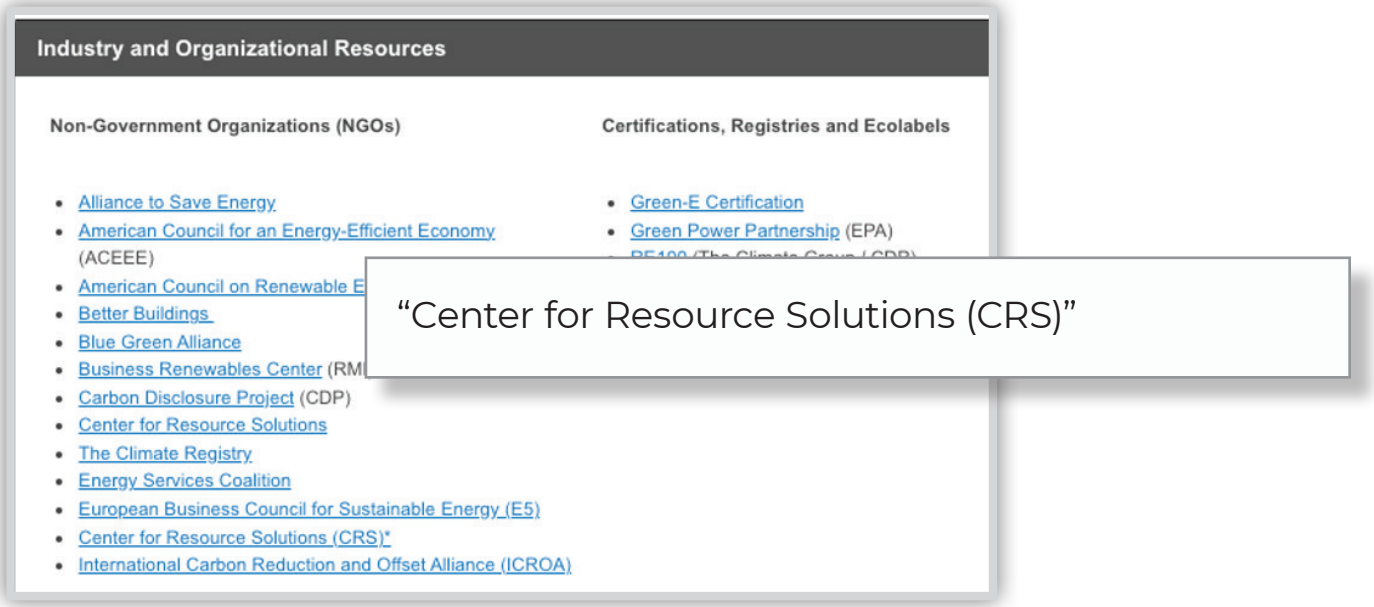
"Search for certified **Green-E** power options"

SUSTAINABLE PURCHASING LEADERSHIP COUNCIL

SPLC Guidance for Leadership in Sustainable Purchasing

- SPLC references CRS trainings, energy buyer educational support materials throughout
- It includes a section on reducing the impact of electricity use and recommends both implementing energy conservation measures and buying Green-e® Energy certified renewable energy





Contact

Michelle McGinty

SENIOR MANAGER, PROGRAM OUTREACH

michelle.mcginty@resource-solutions.org

415.568.4284

Chip Wood

DIRECTOR, STRATEGIC PARTNERSHIPS

chip.wood@resource-solutions.org

415.568.4287

CRS™

1012 Torney Ave. 2nd Floor; San Francisco, CA 94109

www.resource-solutions.org | 415-561-2100