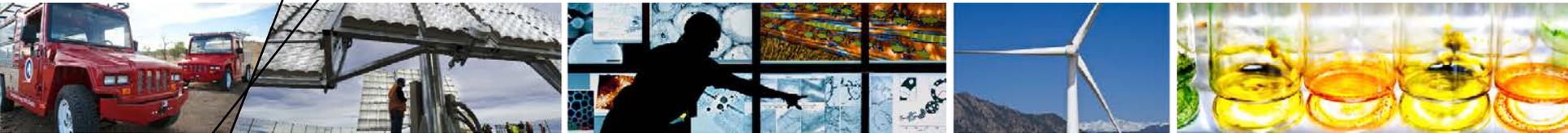


Renewable Energy Certificate (REC) Tracking Systems: Costs & Verification Issues



**Jenny Heeter, Renewable Energy
Analyst**

**National Renewable Energy
Laboratory**

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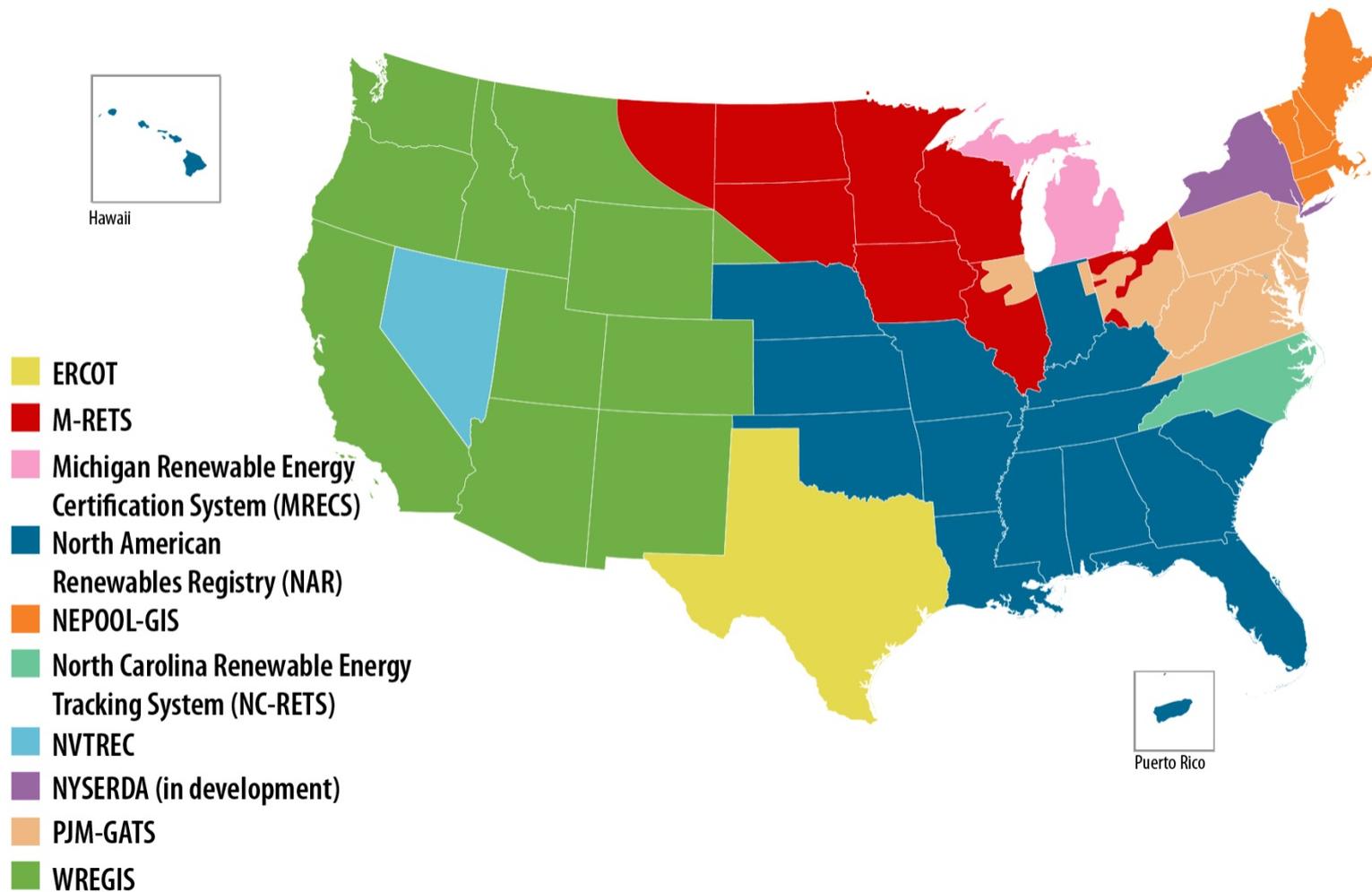
Purpose of this Document

This document provides information on REC tracking systems: how they are used in the voluntary REC market, a comparison of REC systems' fees and information regarding how they treat environmental attributes.

What are REC Tracking Systems?

- Renewable energy certificate “REC” tracking systems are electronic tracking systems that ensure that RECs are only “retired” once. “Retirement” of a REC means that the REC has been used by the owner; it can no longer be sold.
- Tracking systems work by assigning a unique serial number to each megawatt-hour of renewable energy generation, which constitutes a REC.
- Tracking systems were originally created to facilitate renewable portfolio standard (RPS) compliance, but increasingly, voluntary RECs are also utilizing REC tracking systems.
- Renewable generator participation in REC tracking systems is fairly high due to state RPS requirements that generators participate in REC tracking systems. So, if a generator wants to sell RECs to meet RPS compliance, it will in most states will be required to use a REC tracking system.

Tracking Systems are Regionally Based; Cover the Entire U.S.



Source: Updated from ETNNA 2011

Note: NAR covers states not covered by a APX, Inc. tracking system

Note: Nevada uses both NVTREC and WREGIS

Tracking Systems Simplify Green-e Audit

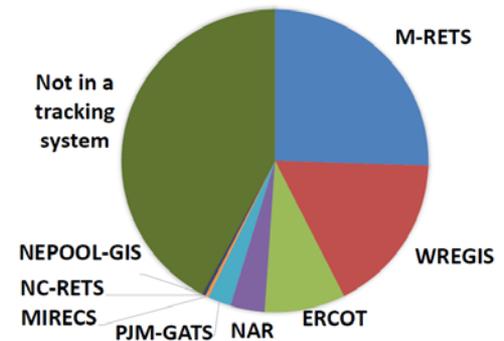
- The Center for Resource Solutions (CRS) administers Green-e programs.
- Participants in the Green-e program are audited annually to substantiate product purchases, sales, and claims. The audit is performed by an independent certified public accountant or certified internal auditor in accordance with a protocol established by Green-e.
- The auditor may utilize retirement reports available through REC tracking systems, which simplifies the audit process since it streamlines chain-of-custody tracking.
- More than 50% of 2012 Green-e Energy certified retail sales used a tracking system.



Green-e

Verified, **Certified**
Renewable Energy
and Greenhouse Gas
Emission Reductions

Use of Tracking Systems (by MWh)
Green-e Energy Certified Retail Sales, RY2012



EPA Green Power Partnership Strongly Encourages Third-Party Certification

- EPA's Green Power Partnership encourages organizations to purchase renewable energy. The GPP has more than 1,400 Partners, ranging from Fortune 500 companies to local, state, and federal governments, to colleges and universities. The GPP has minimum requirements to participate, such as the level of renewable energy purchasing.
- The GPP does *not require* the use of tracking systems or a third-party audit, but "...strongly encourages Partners to buy green power products that are certified by an independent third-party as a matter of best practice."



<http://www.epa.gov/greenpower/buygp/certified.htm>

Double Counting

- Third-party verification can provide assurance that RECs were not double counted and that non-energy benefits are included. Double counting occurs if RECs are used in both the voluntary market and to meet a renewable portfolio standard (RPS), or by two parties in the voluntary market.
- Double counting is a concern because if two parties each claim to be using the same renewable energy represented by a REC it undermines the credibility of RECs as a certification of renewable energy use – just as two people owning the exact same stock certificate would undermine the credibility of stocks as a certification that the bearer owns a share of a company.
- Tracking systems, through their governing documents, help address double counting by ensuring that RECs are not double counted within the REC tracking systems.

Environmental Attributes and RECs

- Most tracking systems provide means to ensure that the right to claim “environmental attributes” of a renewable energy generator are conveyed with the REC. Environmental attributes are the non-energy characteristics of a generator, including, for example, the direct emissions from the generator.
- If a generator is covered by a cap-and-trade system for a pollutant (criteria pollutants or carbon dioxide), that pollutant might not be included as an avoided emissions benefit in the associated REC.
- Worldwide, in most regions with a cap-and-trade system, a REC would not include the capped environmental attribute, because the cap does not adjust for REC purchases. Because overall emissions in the region are capped, purchasing a REC will not reduce GHG emissions because other sources make up for any change from renewable energy.
- However, California’s AB32/Cap-and-Trade program and New England’s Regional Greenhouse Gas Initiative do contain provisions to ensure that carbon benefits are retained by voluntary purchasers by adjusting the cap downward to account for the carbon impacts associated with RECs – buying a REC does lower GHG emissions via the cap adjustment.

REC Definitions Provide Clarity

- **REC definitions that explain the treatment of environmental attributes have been developed by Green-e and REC tracking systems.**
 - For the purposes of Green-e Energy, a REC must contain all of the environmental attributes associated with a unit of renewable generation, with the exception of cap and trade pollutants. See the Green-E Energy National Standard: http://www.green-e.org/getcert_re_stan.shtml#standard.
 - North American Renewables Registry (NAR) Whole Certificate: A Whole Certificate is one where none of the Environmental Attributes have been separately sold, given, or otherwise transferred to another party by a deliberate act of the Certificate owner. See the NAR Operating Procedures: <http://narecs.com/resources/index.htm>.

All Tracking Systems Address Double-Counting; All Except NC-RETS Ensure that Non-Energy Benefits are Not Sold Separately

Tracking System	Ensures against double-counting	Ensures non-energy benefits are not sold separately
WREGIS	Written into operating procedures: To ensure that double-counting does not occur, generating units participating in WREGIS must report 100% of their generation output from that generating unit in WREGIS. In order to register a generating unit in WREGIS, the account holder must attest that this unit is not registered in any other registry.	Yes
M-RETS	Written into operating procedures: To ensure that double-counting does not occur, generating units participating in M-RETS must report 100% of their generation output from that generating unit in M-RETS. In order to register a generating unit in M-RETS, the account holder must attest that this unit is not registered in any other registry.	Yes
NAR	Written into operating procedures: To ensure that double-counting does not occur, generating units participating in NAR must report 100% of their generation output from that generating unit in NAR. In order to register a generating unit in NAR, the account holder must attest that this unit is not registered in any other registry.	Yes
MIRECS	In operating procedures: To ensure that double-counting does not occur, Generating Units being registered in MIRECS must have 100% of their output tracked by MIRECS.	Yes
NC-RETS	In terms of use. Cannot register with another tracking system.	No
ERCOT	Only systems in ERCOT footprint can participate	Yes, but vague
NEPOOL-GIS	GIS creates a certificate for every MWh of renewable, non-renewable and import from an adjacent control area generation, every MWh of conserved energy and MA alternative credits which are derived from MWh and thermal output. For imports, defined in operating rules.	Yes
PJM-GATS	In terms of use, and check with NARR and other tracking systems, since some generators outside PJM are eligible in PJM.	Yes

Funding Mechanisms Differ

- REC tracking systems have different ways to recover their operational costs.
- Account holders and generators may pay fees, depending on the REC tracking system.
- However, some tracking systems are set up so that generators and/or purchasers pay nothing; fees are paid by utilities to cover the costs (see following two slides for details).

Fees for Account Holders and Retirements

Tracking System	Annual fee for account holders	Fees for REC retirement
WREGIS	\$1,500	\$0.005/REC to issue or transfer, \$0.01/REC to retire, reserve, or export voluntary REC
M-RETS	General account (\$2000 annually), Retail Purchaser account (\$1000 annually)	\$0.005/REC to issue, \$0.015/REC to retire
NAR	Project account (\$250 one-time registration), general account (\$750 one-time registration, \$2,000 annual subscription), retail purchaser account (\$1,000 annual subscription)	\$0.05/REC to issue \$0.01/REC to transfer \$0.10/REC to retire \$0.05/REC to export
MIRECS	Project account (\$250 one-time registration), general account (\$750 one-time registration, \$3,000 annual subscription), retail purchaser account (\$1,000 annual subscription), Non-profit wholesale power provider account (\$500 one-time registration, \$1000 annual subscription), additional fees for electric service providers.	None
NC-RETS	Fees paid by electric power suppliers based on retail sales	\$0.01/REC to export \$0.01/REC to retire voluntary REC
ERCOT	No fees	None
NEPOOL-GIS	Fees paid by electric power suppliers based on retail sales	None
PJM-GATS	Fees paid by electric power suppliers based on retail sales	\$0.01/REC to retire voluntary REC \$0.10/REC to retire for RPS compliance

WREGIS Fee Matrix and Definitions, under Join WREGIS: <http://www.wecc.biz/WREGIS/Documents/Forms/AllItems.aspx>

M-RETS <http://m-rets.org/resources/TOU-Appx-A-edited-for-2013-fee-reduction.pdf>

NAR: http://narecs.com/resources/downloads/NAR-Fee-Schedule_October2012.pdf

MIRECS: <http://www.mirecs.org/resources/MIRECS-Fee-Schedule.pdf>

NC-RETS: <http://www.ncrets.org/resources/downloads/NCRETS-Fee-Schedule.pdf>

PJM-GATS: <http://pjm-eis.com/~media/pjm-eis/documents/appendix-a-gats-fees.ashx>

Fees for Generating Units Vary

Tracking System	Fees for generating units
WREGIS	\$200 (Micro), \$250 (Small), \$850 (Medium), \$1,500 (Large)
M-RETS	Micro-generator project account (\$100 annually), Small generator project account (\$250 annually), Project account (\$500 annually)
NAR	\$50 annually (Micro - <40kW), \$500 annually and \$250 one-time registration (Small – 40kW-<1MW), \$1000 annually and \$500 one-time registration (Medium – 1 MW-<10MW), \$2,000 annually and \$1,000 one-time registration (Large - ≥10 MW)
MIRECS	\$100 annually and \$50 registration (Micro - <40kW), \$250 annually and \$100 one-time registration (Small – 40kW-<1MW), \$750 annually and \$350 one-time registration (Medium – 1 MW-<10MW), \$1500 annually and \$750 one-time registration (Large - ≥10 MW)
NC-RETS	None
ERCOT	None
NEPOOL-GIS	None
PJM-GATS	Annual fees: \$1,000 large brokers/traders/RE generators (>10MW); no fee for residential homeowners and aggregators with nameplate <10MW)

Generator Size or Type Restrictions

- **There are no restrictions on the size of generators eligible to participate in a REC tracking system.**
- **Third-party “aggregators” can handle REC tracking system registration and data inputs for multiple small renewables systems**
- **If a renewable electricity technology is not currently being tracked, it can easily be added to a REC tracking system.**

Use of Thermal RECs

- **Some state renewable portfolio standards (RPSs) allow for the use of thermal resources.**
- **Standards for measuring thermal output are in development. Once the thermal output is measured, it can be converted to an electric (MWh) equivalent.**
- **REC tracking systems are beginning to include thermal RECs. For example, PJM-GATS tracks solar thermal RECs used in Maryland and New Hampshire is developing a thermal REC program.**
 - In Maryland, solar thermal systems must be certified by the SRCC OG-300 reporting protocol or have an International Organization of Metrology compliant meter. For more information, see http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=MD55F.
 - New Hampshire legislation (SB 218) created a new renewable energy Class I subclass for thermal renewable energy under the New Hampshire RPS and the NH PUC is currently developing rules for accepting thermal RECs used to comply with the new subclass requirement. For more information see <http://www.puc.state.nh.us/sustainable%20Energy/Class%20I%20Thermal%20Renewable%20Energy.html>.

Contact information:

**Jenny Heeter
Renewable Energy Analyst
National Renewable Energy Laboratory
15013 Denver West Parkway
Golden, Colorado 80401**

jenny.heeter@nrel.gov

303-275-4366