Midwest Renewable Thermal Tracking System

Operating Procedures

Effective 1/1/2020

Table of Contents

Section 1: Introduction

This document serves as a comprehensive introduction to the Midwest Renewable Energy Tracking System (M-RETS). M-RETS staff organized this document to help lead Users through registration and use of the System.

M-RETS offers a comprehensive list of training documentation through the web application. Users can find detailed walkthroughs of features here: https://help.mrets.org/. M-RETS also offers custom web-based training modules for Organizations. To request training, please contact systemadmin@mrets.org.

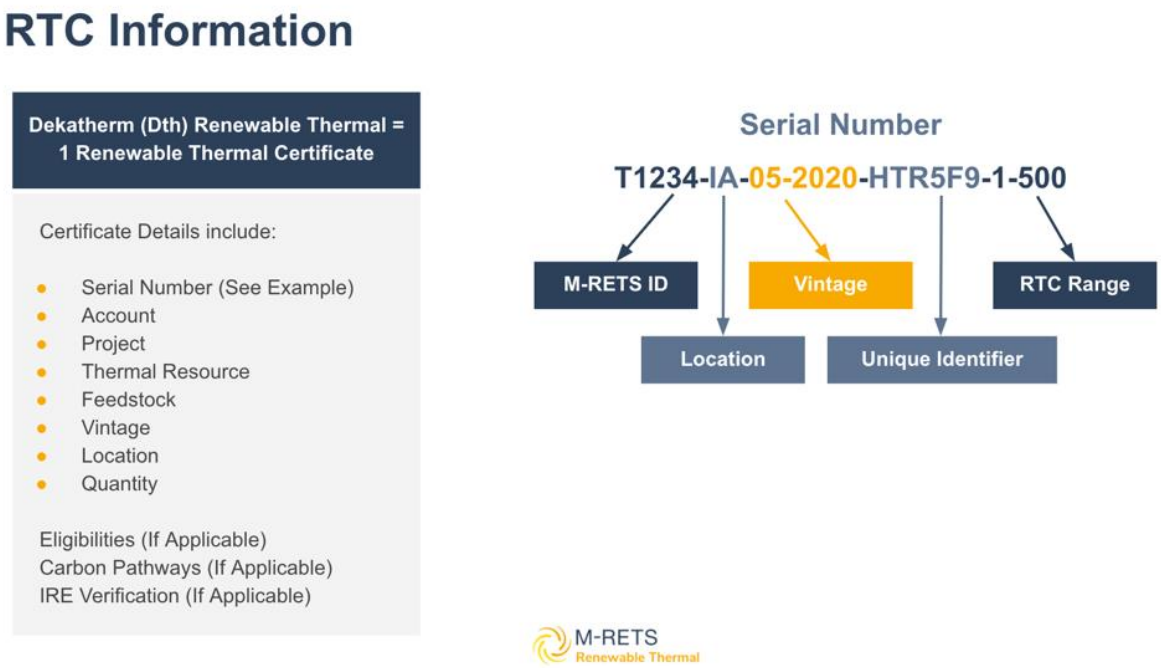
M-RETS staff was all involved with the creation and editing of these Operating Procedures. At the time of creation, M-RETS staff consisted of:

Benjamin Gerber, President & Chief Executive Officer
Tanya Gajewska, Chief Administrative Officer
Rosie Hoyem, Program Manager
Sean Darling, Technical Program Coordinator
Alex Aspell, Developer
Jackie Baldwin, Software Engineering Manager

Section 1.1: What is an RTC?

A Renewable Thermal Certificate ("RTC") is a unique representation of the Environmental Attributes associated with the production and use of one dekatherm ("Dth") of renewable thermal energy.[1] Below is a depiction of what an RTC looks like in the M-RETS RTC system.

Figure 1: Anatomy of an RTC



Figures 2-4 represent the general pathway for the different currently recognized RTC pathways: Common carrier pipeline-injected RNG, Behind-the-Meter Renewable Thermal Fuel, Combined Heat and Power Using Renewable Thermal Fuels. Figure 4 would also serve to acknowledge the other methods M-RETS recognizes that utilize a more straightforward pathway such as solar thermal, geothermal, air source, ground, and water source thermal pumps, etc. If M-RETS does not list a recognized renewable thermal process, please contact the M-RETS System Administrator (**systemadmin@mrets.org**) to learn more and suggest an addition.

Figure 2: RTC Process for RNG Generators

[1] M-RETS uses a book-and-claim accounting process. Book-and-claim refers to the decoupling of the physical commodity from the environmental attributes. The environmental attribute is then tracked by the M-RETS without regard to actual physical traceability.

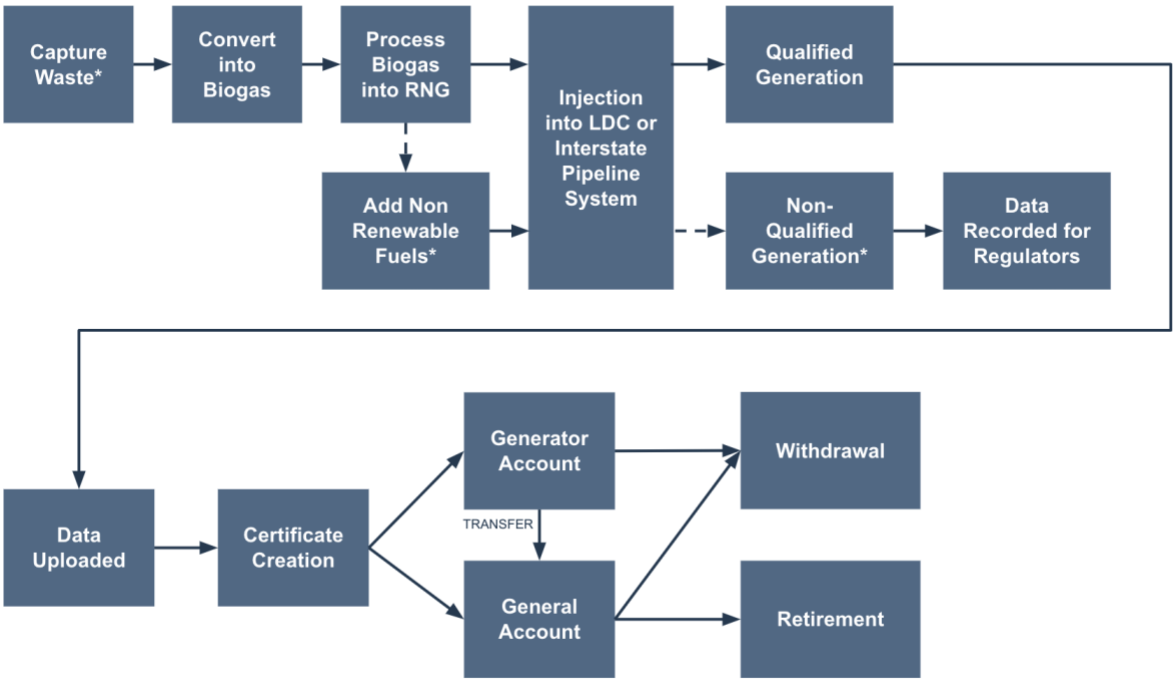

Capture Waste*
Convert into Biogas
Process Biogas into RNG
Injection into LDC or Interstate Pipeline System
Qualified Generation
Add Non Renewable Fuels*
Non-Qualified Generation*
Data Recorded for Regulators
Data Uploaded
Certificate Creation
Generator Account
TRANSFER
General Account
Withdrawal
Retirement

Figure 3: RTC Process for Behind-the-Meter Renewable Thermal Fuel

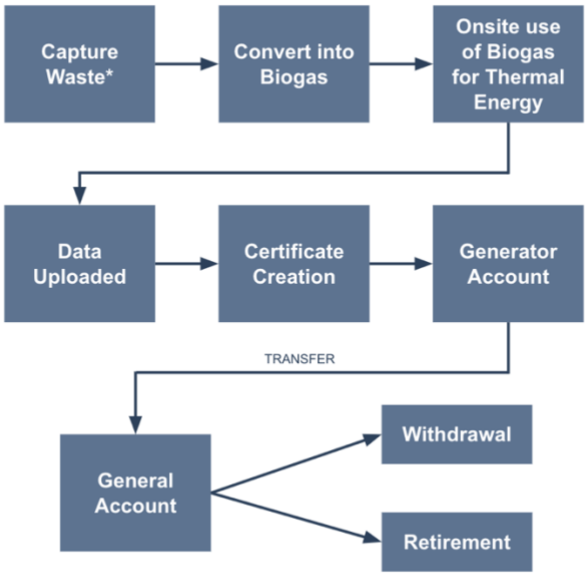
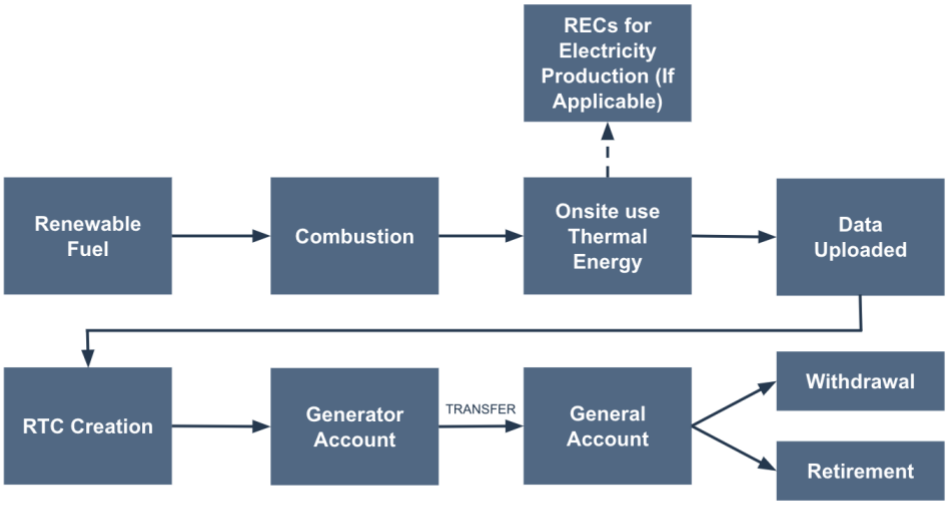


Figure 4: RTC Process for Combined Heat & Power Using Renewable Thermal Fuels



Section 2: Privacy and Security

Except where explicitly granted within the Operating Procedures, Terms of Use, or by Separate Agreement, M-RETS holds all User information strictly confidential. However, M-RETS provides public reports that include aggregate data available through the public area of the M-RETS website. M-RETS will not disclose any information unless provided comprehensive verification, except if the requesting party is identified as a State or Provincial Regulator. You can find more information about confidentiality in the M-RETS Terms of Use, Section 11.

M-RETS requires Users to create a secure password with a minimum of 12 characters. M-RETS expressly prohibits the sharing of User credentials. M-RETS requires every person that logs into the System to have their separate User login credentials. M-RETS tracks the specific activities of each User through the unique User ID and password. Failure to adhere to these security recommendations and the Terms of Use can lead to loss of access to M-RETS.

M-RETS supports—and strongly encourages—the use of multi-factor authentication ("MFA").[2] MFA is an opt-in process for Organizations for the time being. Our implementation will support receiving the MFA key via SMS, authenticator app, or phone call. Our goal is to make it as flexible as possible, however, to maintain the security of M-RETS and our users we reserve the right to require all users to adopt MFA. If you have any concerns or thoughts you would like to share, please contact systemadmin@mrets.org.

Section 3: Establishing an M-RETS Organization

Participation in M-RETS is voluntary, though some states or provinces may require participation in M-RETS for purposes of regulatory program compliance. Any party that registers with M-RETS and pays the applicable fees may establish an Organization in the System. There is no limit to the number of separate Organizations a company or individual may establish. Registrants will provide necessary Organization registration information, such as username, address, contact info, etc. to M-RETS through a secure webpage on M-RETS. The registrant must pay all required fees specific to the Organization type subject to the M-RETS Terms of Use. An Organization in M-RETS will remain active until Inactivated (See Section 3.2: Inactivating an Organization).

M-RETS will check all Organization registration or modified existing Organization entries for completeness. An error message will flag mandatory fields not completed by the registrant.

Each Organization shall pay an Annual Subscription Fee. A renewal fee will be due in the month of registration of each subsequent calendar year. The Subscription Fee will be based upon the type of Organization subscribed. Below is a visual representation of the subscription types with more detailed information. Please note that for billing purposes M-RETS will use the prices listed on the website.

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[2] The U.S. Commerce Department National Institute of Standards and Technology ("NIST") defines MFA as," Authentication using two or more factors to achieve authentication. Factors include: (i) something you know (e.g. password/personal identification number (PIN)); (ii) something you have (e.g., cryptographic identification device, token); or (iii) something you are (e.g., biometric). *See* NIST Computer Security Resource Center, https://csrc.nist.gov/glossary/term/Multi_Factor_Authentication (last accessed June 2, 2021).

I'm looking to…	Generator Only	General Subscription	Independent Reporting Entity (IRE)
Upload RTC Generation	X	X	X
Hold RTCs	X	X	
Transfer RTCs	X	X	
Accept RTC Transfers		X	
Withdraw RTCs	X	X	
Retire RTCs	X	X	
Retire RTCs for State RPS Compliance			
Create Accounts for My RTCs	X	X	
Create Programs		X	
Participate in Programs	X	X	

If a subscriber fails to pay their annual Subscription Fee within ninety (90) days of issuance, M-RETS shall close the Organization's access to the System. A User that wishes to reactivate an Inactive Organization due to failure to pay shall be required to pay the full annual Subscription Fee as well as an additional reactivation fee equal to 65% of the current Subscription Fee applicable to the closed Organization.

- **Generator Registration Fee: $1,500/one-time fee** (M-RETS may waive this fee if and only if the Generator meets certain conditions)
    - M-RETS requires every Generator to pay a $1,500 one-time registration fee. This fee accounts for the cost of verifying the registration information prior to certificate issuance. However, Generators that register and use an Independent Reporting Entity for the full first year of generation information may have this fee waived if the Independent Reporting Entity verifies through a signed legal attestation that all the information submitted through the registration process is true and correct.

- **Generator Only: No Annual Subscription Fee**
    - This Type of Organization can register one or more renewable thermal Generators and have certificates issued to it for its Generators. A Generator Only Account can hold, make outgoing transfers, and withdraw certificates only if they are to be used in another regulatory scheme such as the California Low Carbon Fuel Standard, United States Environmental Protection Agency Renewable Fuel Standard.[3] While Generator Only

[3] It is up to the appropriate regulatory bodies such as the California Air Resources Board or the United States Environmental Protection Agency whether they will allow a generator to withdraw credits from M-RETS to use in their respective programs. M-RETS makes no guarantees that this will be allowed or that the program will not change their rules in-between when certificates were uploaded and when they are withdrawn.

Accounts do not have annual fees, there may be fees associated with withdrawing certificates.

- **General Subscription: $2,200/year**
  - This type of Organization can hold, transfer (outgoing and incoming), retire, and withdraw Certificates as well as register and maintain Generators and have Certificates issued to it for its Generators. This Organization type is the only type that can retire Certificates for compliance with any State or Provincial Compliance programs that utilize MRETS.

- **Independent Reporting Entity (IRE): No Fee**
  - Independent Reporting Entity is the control area operator, interconnecting utility, scheduling coordinator, or an independent third-party meter reader and is not affiliated with the owner of the Generator for which the entity is reporting; or the control area operator or interconnecting utility and that is affiliated with the Generator owner, but having sufficient segregation of duties such that the person performing the IRE duties does not have access to transfer or retire Certificates created for that Generator. An IRE must enter into an agreement with M-RETS describing the terms and conditions under which the IRE agrees to conduct business with M-RETS and must report data in accordance with the standards set forth in these Operating Procedures.

- **Program Administrator/Government Regulator: No Fee**
  - State regulators, including but not limited to public utility commission and public service commission staff and voluntary market program administrators (e.g., Green-e) may be granted a Program Administrator/Government Regulator Organization. To find out if an Organization qualifies please contact M-RETS at systemadmin@mrets.org.

Section 3.1: Billing Information

It is the Organization's responsibility to make sure billing information is up to date and correct. Users may change billing information at any time. Information on how to add or update billing contact information can be found here.

The Organization Information tab holds billing information where Users can access Organization invoices. Information on how to view invoices can be found here.

M-RETS accepts payment in the form of checks, wire transfers, or ACH transfers. Organizations must send requests for Vendor Authorization Forms and W-9s and/or billing questions to Tanya Gajewska at tanya@mrets.org.

Checks may be mailed to:

Midwest Renewable Energy Tracking System, Inc.
M-RETS Operating Procedures
Lockbox 446023
PO Box 64079
St Paul, MN 55164-0703 (please always include the dash and 0703 after the zip code)

Wire transfers or ACH transfers may be routed to:

Midwest Renewable Energy Tracking System, Inc.
Bremer Bank
225 6th Street South Suite 200
Minneapolis, MN 55402
USA
(Remittance Address and Routing Number can be found on the invoice)

1. Fees must be paid in US dollars.
2. Please include invoice number, Organization name, and M-RETS on check payments.
3. Please include the invoice number(s) on the wire transfer.
4. Payments may be made via wire transfer or check.
5. Please include including currency and/or wire fees to the amount paid. The generated invoice does not include any wiring fees levied by the bank.

Note: payments may take up to 2 business days to be reflected in the Organization.

Section 3.2: Inactivating an Organization

A User with the appropriate permissions may begin the Organization Inactivation procedure by notifying M-RETS (systemadmin@mrets.org) in writing from the email associated with a User that has the requisite permission. The User shall furnish the data that M-RETS should place the Organization into Inactive status. Any Generator assigned to the Organization will become Inactive and may not produce any further RTCs. Moreover, any Active RTCs will be inaccessible at the time the Organization becomes Inactive.

Section 4: The Tracking System

Section 4.1: Users

Users may create additional Users within their Organization by accessing the Organization Information tab within the System.

M-RETS expressly prohibits the sharing of User credentials. M-RETS requires every person that logs into the System to have their own separate User login credentials. M-RETS tracks the specific activities of each User through the unique User ID and password.

More information about confidentiality can be found in the M-RETS Terms of Use.

Section 4.1.1: User Permissions

Every User in M-RETS has customizable permissions. Users can be set as Manage, Read Only, or No Access. Only a User with Manage permissions for the Organization or M-RETS can change permissions. The abilities of each level are as follows:

- Manage: Ability to view and edit the topic
- Read Only: Ability to solely view the topic
- No Access: Inability to view or edit the topic

Section 4.1.1.1: Organization Permission

In M-RETS, 'Organization' refers to the Organization Information, Billing Contact Information, and User List.

Section 4.1.1.2: Transactions Permission

In M-RETS, 'Transactions' refers to incoming and outgoing transfers of Certificates. A User with 'Manage' permissions will be able to transfer as well as accept incoming transfers of Certificates.

Section 4.1.1.3: Generators Permission

In M-RETS, 'Generators' refers to Projects and Generators. A User with 'Manage' permission will be able to create new Generators, edit current Generators, and mark Generators inactive.

Section 4.1.1.3: Billing Permission

In M-RETS, 'Billing' refers to the invoicing System. A User with 'Manage' permissions will be able to view and save invoice details.

Section 4.1.1.4: API Permission

In M-RETS, 'API' refers to the application programming interface. Any User that intends to connect and use our API will need Manage permissions.

Section 4.1.1.5: Generation Permission

In M-RETS, 'Generation' refers to the submittal and issuance of Certificates. A User with 'Manage' permissions will be able to submit generation information for issuance.

Section 4.1.2: Notification Settings

M-RETS allows Users to opt in to email notifications when certain changes occur to their Organization. By default, M-RETS disables email notifications. M-RETS encourages Users to enable email notifications in their settings. An informational walk-through on notification settings is on the integrated help system.

There are three notification settings:

1. Transfers
2. Issuances
3. Retirements

Section 4.1.3: Notification Categories

Section 4.1.3.1: Transfers

This setting automatically emails Users upon initiation and completion of a transfer.

Example:

Hello,

An external certificate transfer for your organization is currently pending.

TRANSFEROR: (Organization A)
TRANSFEREE: (Organization B)

Total Certificates: 50

Transaction Details:

Project	***Fuel Type***	***Vintage***	***Facility name***	***Quantity***	***Serial Number***
M4321	*Renewable Natural Gas*	*01/2021*	*North RNG*	*50*	*4321-MN-01-2021-A5GH6-1 to 50*

To complete the transfer, (Organization B) must accept it by signing into M-RETS and visiting the Pending Transaction section

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Section 4.1.3.2: Issuance

This setting emails Users upon generation submittal.

Example:

Organization: (Organization A)

The following RECs have been issued:

Generator	***M-RETS ID***	***Vintage***	***Quantity***	***Serial Numbers***	***Account***
Deer Track Park Landfill - Unit 367	*M119*	*02/2021*	*2695*	*119-WI-02-2021-A2858078 - 1 -2695*	*2021 Default*

Section 4.1.3.3: Retirements

This setting emails Users upon retirement of a Certificate.

Example:

> *Dear [User],*
>
> *A Certificate Retirement transaction was successfully processed for [Organization A].*
>
> *Transaction Details:*
>
> *[Certificate Quantity] Certificates have been retired to [Retirement Account]([Account ID]) for project [Project Name] with Resource Type of [Resource Type]] and Feedstock [Feedstock Type] and Vintage of [Vintage Date]. The serial number range for these retired Certificates is [Serial Number].*
>
> *The reason for the retirement is [Retirement Category]: Retirement Reason*
>
> *If you have any questions, please contact us at systemadmin@mrets.org.*

Section 4.1.4: Inactivating Users

It is the Organization's responsibility to make sure the User list is current. This includes inactivating Users when they leave the company or no longer require access. This also includes adding Users to replace Users that have left the Organization. Failure to do this can lead to significant delays in accessing an Organization.

To reinstate access to M-RETS, the Organization shall be required to present specific evidence that the managing employee is no longer with the Organization and the Organization maintains no other way to reset the password (e.g., accessing the former employee's email and utilizing the password reset function). M-RETS reserves the right to set the level of specific evidence, including but not limited to affidavits from executives maintaining the circumstances surrounding the departure of the employee and failure to transfer access to another User within the Organization.

Organizations may inactivate a User at any time for any reason. M-RETS may inactivate a User for failure to adhere to the Operating Procedures or Terms of Use.

Section 4.2: Accounts

M-RETS supports three Account types: Active Accounts, Retirement Accounts, and Withdrawn Accounts. Users can transfer Certificates to specific Accounts manually or automatically upon upload. Each Account has a unique identification number, like a banking system. Users may attach aliases to Accounts for ease of reference (e.g., by state, by product name, etc.).

Section 4.2.1: Active Accounts

An Organization can have one or more Active Account(s). An Active Account is the holding place for all active M-RETS Certificates. M-RETS Certificates in Active Accounts are liquid and an Organization—depending on the type—may be able to transfer, retire, or export the Certificates.

If the Account has a Generating Unit(s) associated with it, the Active Account will be the first point of deposit for any M-RETS Certificates created that are associated with the Generating Unit(s) ID number.

Section 4.2.2: Deposits to the Active Account

There are three ways that M-RETS Certificates are deposited in an Active Account.

1. The Certificates can be deposited into the Account by M-RETS based on verified generation data from a Generating Unit associated with the Active Account or through an adjustment approved by M-RETS in accordance with the Operating Procedures.
2. The Organization can transfer M-RETS Certificates into their Active Account from another of the Organization's Active Accounts.
3. The Organization can accept a transfer of Certificates from another M-RETS Organization.

Section 4.2.3: Transfers from the Active Account

There are three ways to withdraw or remove M-RETS Certificates from an Active Account:

1. Transfer the M-RETS Certificates to another of one's own Accounts (e.g., retirement), or
2. Transfer the M-RETS Certificates to multiple of one's own Accounts, or
3. Transfer the M-RETS Certificates to the Active Account of another M-RETS Organization.

Section 4.2.4: Functionality of an Active Account

In addition to being able to deposit and withdraw M-RETS Certificates from the Active Account, Organizations may view and sort their Certificates by several Certificate fields, generate reports about their Account, create additional Active Accounts, and transfer active M-RETS Certificates between Active Accounts.

Section 4.2.5: Retirement Accounts

There is no limit to the number of Retirement Accounts an Organization may establish. A Retirement Account is a repository for M-RETS Certificates that the Organization wants to designate as retired. An Organization may want to retire Certificates for any number of reasons, including, but not limited to demonstrating compliance with a renewable mandate, retiring Certificates on behalf of "green gas" customers, or making claims about the air quality benefits of the Certificates. M-RETS Certificates in a Retirement Account are no longer transferable to another party and serve as an electronic proof of retirement.

Retirements are effective immediately upon completion of the transaction. Once an M-RETS Certificate is retired to a Retirement Account, M-RETS prevents the transfer of those Certificates into any other Account, including another Retirement Account (i.e., if an Organization has multiple Retirement Accounts). The Retirement Account is effectively the last resting place for an M-RETS Certificate.

Section 4.2.6: Deposits to the Retirement Account

See Section 4.5.3: Certificate Retirement

Section 4.2.7: Functionality of the Retirement Account

Retirement Accounts exist to hold Certificates permanently removed from circulation. The purpose of the Retirement Account is to demonstrate that those Certificates are subject to a voluntary or compliance claim. Once an Organization completes the retirement, they cannot later change the retirement reason. This prevents the Certificate from being subject to a double claim. If, however, the Organization contacts M-RETS in writing within 24-hours from the time the Organization indicated the reason for retirement, M-RETS may grant a variance.

M-RETS will grant a variance within the 24-hour notice period when there is no likelihood a Certificate was claimed to be retired for multiple reasons and M-RETS does not suspect any nefarious intent or impropriety. If M-RETS believes there is any chance of double-counting, they shall deny the request for a variance.

If an Organization notices an error in the selected retirement reason outside the 24-hour window, the Organization may contact M-RETS (systemadmin@mrets.org) in writing and ask that M-RETS grant a variance.[4] M-RETS shall review all request made outside of the 24-hour window and may grant a variance if they determine that the request is made in good faith and: that the Organization submitted their request for a variance in writing within a reasonable amount of time after discovering the error, that there is a legitimate reason for the change, and that there is no likelihood a Certificate was claimed to be retired for multiple reasons. M-RETS may submit the variance request—or send an email outlining the circumstances—to a state or provincial regulator should there be concern compliance with the variance request could result in potential double-counting.

M-RETS has a pull-down menu of options for acceptable retirement reasons that the Organization must select to complete the retirement. The options will be consistent with regulatory programs and any voluntary programs or voluntary market activities. Users shall notify M-RETS if they would like to add a new type of voluntary or compliance retirement reason.

Section 4.2.8: Functionality of the Withdrawn Account

Withdrawn Accounts exist in M-RETS to hold Certificates permanently removed from circulation. Certificate Owners may only Withdraw if after upload the Certificate Owner decided to use the Certificates in a Program that does not officially recognize M-RETS. Once an Organization completes the Withdrawal, they cannot later upload the same generation information. This prevents the Certificate from being subject to double-counting. However, if the Organization contacts M-RETS in writing within 24-hours from the time the Organization indicated the reason for Withdrawal, M-RETS may grant a variance.

M-RETS may grant a variance within the 24-hour notice period when there is no likelihood a Certificate could be subject to a claim in a system or through paper attestation or other means outside M-RETS. Moreover, M-RETS will only grant a variance if the System Administrator does not suspect any nefarious intent or impropriety. If M-RETS believes there is any chance of double-counting, they shall deny the request for a variance.

[4] Documentation for a Variance Request can be found here along with a checklist found here.

If an Organization notices an error in the Withdrawal reason outside the 24-hour window, the Organization may contact M-RETS (systemadmin@mrets.org) in writing and ask that M-RETS grant a variance.[5] M-RETS shall review all request made outside of the 24-hour window and may grant a variance if they determine that the request is made in good faith and: that the Organization submitted their request for a variance in writing within a reasonable amount of time after discovering the error, that there is a legitimate reason for the change, and that there is no likelihood a Certificate could be claimed outside of M-RETS in a way that subjects that claim to double-counting or results in inadequate or poor data quality within M-RETS (e.g., the reason for withdrawal changes as the Certificate is intended for a different system than initially notated within M-RETS). M-RETS may submit the variance request—or send an email outlining the circumstances—to a state or provincial regulator should there be concern compliance with the variance request could result in potential double-counting or M-RETS providing inaccurate data.

M-RETS has a pull-down menu of options for acceptable Withdrawal reasons that the Generator Owner must select to complete the Withdrawal. The options will be consistent with regulatory programs and any voluntary programs or voluntary market activities. Users shall notify M-RETS if they would like to add a new Withdrawal reason.

M-RETS will work with market participants to determine Withdrawal types. For example, it could be to Export the RTC to another country or system.

Section 4.2.9: Account Status

M-RETS classifies Accounts with the following statuses: Open, Closed, Archived, and Frozen.

Section 4.2.8.1: Open

An ‘Open’ status denotes the Account is ready to use and Users may Transfer or Retire Certificates to this Account. This status applies to both Active and Retirement Accounts.

Section 4.2.8.2: Closed

An Active Account can be set to a status of ‘Closed’ when no longer needed. Before closing, the Account must contain zero Certificates. Thus, the User must Transfer or Retire all Certificates from the Account prior to closing. An Account with a ‘Closed’ status denotes the Account can no longer accept Transfers. This status only applies to Active Accounts.

Section 4.2.8.3: Archived

When an Organization no longer needs a Retirement Account, it can be set to a status of ‘Archived’. An ‘Archived’ status denotes the Account cannot accept further Retirements. However, Retired Certificates remain in an ‘Archived’ Account. This status only applies to Retirement Accounts.

Section 4.2.8.4: Frozen

[5] Documentation for a Variance Request can be found here along with a checklist found here.

When a Retirement Account is part of a Program that has closed, it is set to a status of 'Frozen'. A 'Frozen' status denotes the Account cannot accept further Retirements. However, Retired Certificates remain in a 'Frozen' Account. This status only applies to Retirement Accounts.

Section 4.3: Generators

M-RETS defines renewable generation as energy generated by a facility that any state, province, or territory participating in M-RETS considers renewable by law or policy. M-RETS issues one electronic Certificate for each dekatherm ("Dth") of renewable energy[6] produced by Generators registered and approved in M-RETS. [7] To ensure that double-counting does not occur, Generators participating in M-RETS must report 100% of their generation output in M-RETS. M-RETS maintains this requirement even if the Generator sells the remaining volumes into a regulatory program (e.g., a state Low Carbon Fuel Standard ("LCFS") or the EPA Renewable Fuel Standard ("RFS") that may not use MRETS). [8] A Generator that sells any volume into a voluntary or regulatory program that does not utilize M-RETS in an official or unofficial capacity must use an IRE for all data reported to M-RETS. Data on generation for non-M-RETS programs will remain only visible to the Generator Owner and recognized regulatory staff.

Any Generator that produces non-electric thermal energy within North America may register in the M-RETS Renewable Thermal Registry. This includes, but is not limited to: biogas, renewable natural gas ("RNG") also known as biomethane, solar thermal, renewable gas (i.e. hydrogen produced using renewable energy),[9] heat produced by a combined heat and power system using recognized renewable feedstock (e.g., biomass, wood waste, etc.), ground source heating and cooling pumps,[10] and geothermal energy. Organizations may create and retire Certificates if, and only if, the end-use is for a recognized vehicle fuel program such as the LCFS or RFS and those programs publicly declare their acceptance and recognition of M-RETS as an official compliance tool. Any other Generator may request to participate, however, that request is subject to approval by the M-RETS Board. Other states, provinces, territories, countries, or Generators outside of North America may request to use M-RETS subject to the approval of the M-RETS Board.

Any generator that delivers non-electric renewable energy into North America may register in the M-RETS Renewable Thermal Registry. Any other generator may request to participate, however, that request is subject to approval by the M-RETS Board. Other states, provinces, territories, countries, or generators outside of North America may request to use the M-RETS system subject to the approval of the M-RETS Board. In addition, M-RETS will track other generation forms (e.g., geothermal) or other Environmental Attributes.

Section 4.3.1: Generator Registration

All Generator Owners must first establish an Organization subscription and then register the Generating Unit(s) with M-RETS. As part of the Generator Registration Agreement, the User must attest

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[6] As defined in these Operating Procedures.

[7] The Energy Information association defines Dekatherm ("Dth") as: "Ten therms or 1,000,000 Btu. https://www.eia.gov/tools/glossary/index.php?id=D.

[8] *See* the California Air Resource Board LCFS as an example https://ww3.arb.ca.gov/fuels/lcfs/lcfs.htm.

[9] M-RETS may require proof that RECs were retired to account for the electricity used to produce the hydrogen. *See* https://www.energy.gov/eere/fuelcells/hydrogen-resources for more information about renewable hydrogen.

[10] *See* https://www.energy.gov/energysaver/heat-and-cool/heat-pump-systems/geothermal-heat-pumps.

that this Unit is not registered in any other Registry. Generating Units that are jointly owned must privately appoint a single Organization where the Generator will reside.

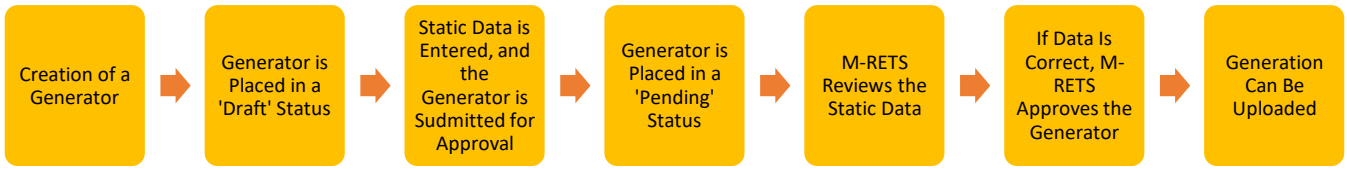
To register the Generating Unit(s), the owner of the Generating Unit or the Responsible Party must submit to M-RETS the following:

1. A completed online Generator registration form containing information related to the characteristics of the Generating Unit and associated meter.
2. If applicable: A completed Schedule A from the M-RETS Terms of Use outlining the Generator Owner's Designation of Responsible Party.
3. Any documentation requested by M-RETS to verify the registration information
    a. It is helpful for generators to include a generator interconnection agreement if the generator is connected to a natural gas pipeline or a natural gas distribution network.
    b. Providing any local, state, or provincial documentation or permits that can help substantiate the generator registration data.
4. If this generator will use an IRE

The Generator registration process will include both mandatory and optional data entry and M-RETS shall verify all data prior to making a Generator Active.

NOTE: Registration with M-RETS does not imply or confer acceptance into or eligibility for any state's Renewable Portfolio Standard program.

A Visual Guide to the Generator Registration Process



Section 4.3.1.1: Static Data in M-RETS

Static data fields describe the physical attributes of the Generating Unit. Users provide this data to M-RETS during the Generator registration process, and the subsequent update processes described below.

M-RETS shall verify all static data before including it in the System. M-RETS reserves the right to ask the generator owner for more information at any time during or after the registration phase. In addition, M-RETS may conduct site visits to further verify the information as needed.

Section 4.3.2: Verification of Static Data Submitted During Generator Registration

Upon completion of the Generator registration process, the User represents and warrants to M-RETS that all information for this Generator shall be true, complete, and correct to the best of its knowledge, information, and belief. Any changes after submission may result in a delay in the approval process. The Generator approval process begins once the Generator is submitted from a draft status.

In the event data submitted is inaccurate or if there is a discrepancy between the information submitted during the online registration process and the materials provided to verify the information, M-

RETS will notify the registrant of the issue. A process of either correcting the data in the online registration form, withdrawing the registration, or providing proof that the information on the registration form is correct will ensue between M-RETS and the registrant until M-RETS is satisfied that the information provided meets M-RETS approval standards.

M-RETS may waive the one-time generator registration fee of $1,500 if the generator commits to using an IRE for the first full year of generation information. Furthermore, the registrant must submit a signed legal attestation by the IRE that the IRE reviewed the information contained in registration and that it is true and correct to the best of the IRE's knowledge.

Section 4.3.3: M-RETS Interaction with State Commissions and Certification of Facilities for State Programs

M-RETS shall be responsible for verifying any information submitted to M-RETS during the Generating Unit Registration Process. Each state will be responsible for determining whether a Generating Unit qualifies for a state program. The State Commissions may use the information collected and verified by M-RETS to conduct this determination.

State utility regulatory commissions have the option of asking M-RETS to send them an electronic version of the registration information for all Generating Units in their jurisdiction or claiming to be eligible for any state programs. If the state commission has exercised this option, M-RETS will send an electronic message to the designated contact at the state commission each time M-RETS registers and verifies such a Generating Unit. The state commissions reserve the right to conduct site visits or request additional information from a Generator to determine whether the facility meets all the requirements.

Section 4.3.4: Multi-Feedstock Generator

A multi-feedstock Generator can produce energy using more than one feedstock type, where the quantity of each of the feedstock used is greater than 1% annually on a total input basis. This is often the result of Anaerobic Co-Digestion, where one or more feedstocks are added to the Anaerobic Digestion process to increase yields. [11] A multi-feedstock Generator can be a Generating Unit that uses a renewable feedstock with a non-renewable feedstock or one that uses multiple types of renewable feedstocks. Such facilities must register with M-RETS as a multi-feedstock Generator. A Generator that uses 1% or less of a second feedstock may elect to register as a single feedstock Generator if they would like Certificates issued for the second feedstock type. If the Generator Owner or M-RETS cannot measure or calculate the relative quantities of renewable energy production from each feedstock, the generator is not eligible to register as a multi-feedstock Generating Unit in M-RETS.

M-RETS only creates Certificates for energy produced from a renewable feedstock. Each Certificate issued for a Multi-Feedstock Generating Unit will reflect only one Feedstock and Resource Type. The total number of Certificates issued for a Feedstock in a reporting period will be proportional to the output from that Feedstock for that reporting period.

[11] **Co-digestion** is used to increase methane production from low-yielding or difficult-to-digest materials (i.e., feedstocks).

The Generator or its user must maintain supporting documentation related to the derivation of the proportion of energy output per Feedstock for each Reporting Period, at the generation facility for a minimum of two years from the date of submission to M-RETS. M-RETS may require copies of such calculations and supporting documentation will be subject to audit by M-RETS, state regulators, or their agents. M-RETS shall treat as Confidential Information all data submitted to or audited by M-RETS subject to the requirements of this paragraph not contained in reports available to the public.

Section 4.3.4.1: Allocating Output for Each Feedstock

Upon registration, all multi-feedstock generators must submit to M-RETS a report prepared by a licensed professional engineer containing documentation for measuring and verifying the quantities of each Feedstock. M-RETS will share this documentation with state or provincial regulators upon request of the regulator.

For purposes of creating M-RETS Certificates reflecting the Feedstock mix of multi-feedstock Generating Units, the proportion of Certificates attributable to each Feedstock shall be determined consistent with reports provided by the licensed professional engineer. M-RETS reserves the right to require any Multi-Feedstock Generator to use an IRE.

Section 4.3.5: Annual Review of Generators

M-RETS requires Users to update/review Generators once a year during the month of January to ensure correct information. M-RETS will email Users with the requisite permissions as well as prompt them within the System to complete the review.

M-RETS requires Users confirm that they represent and warrant to M-RETS that all information for their Generator shall be true, complete, and correct to the best of their knowledge, information, and belief.

M-RETS requires that Organizations review and accept all Generator data by January 31st. Failure to complete the annual review for each Generator in an Organization by January 31st each year will result in the loss of access to the Organization until a User with proper permissions reviews and confirms all of the data for every Generator in the Organization.

Section 4.3.6: Changes to Static Data

In addition to the annual update, Users must notify M-RETS of the following that have the effect of changing static data tracked by M-RETS within 30 calendar days of the effective date and/or knowledge of the change:

a. A change in feedstock and/or Resource type at a Generating Unit, and the date on which the change occurred.
b. A change in Generating Unit ownership (*See* Section 4.3.10: Changing the Organization to which the Generator is Associated).
c. A change to Generator eligibility for any programs or certification tracked by M-RETS. A User may remove an eligibility at any time.
d. A change to any of the “essential generating characteristics”.

These changes will put the affected generator into Pending Status. Before M-RETS places the Generator back into Active status, thus updating the static data, M-RETS will verify the Generator meets the changes, such as Program eligibility requirements. In the case where a state requires preapproval, M-RETS will require the appropriate documentation and reserves the right to verify this information with the appropriate state, province, or independent certification body.

M-RETS can remove Generators for cause, including willful misrepresentation of static data. M-RETS may rely on the M-RETS dispute resolution process (See M-RETS Terms of Use) to address such situations, and M-RETS will accept no liability for Generator misrepresentations. M-RETS reserves the right to take appropriate action in consultation with the M-RETS Board to respond to willful misrepresentation of static data, including but not limited to withholding issuing Certificates, inactivating an Organization associated with a particular Generating Unit, or withholding participation in M-RETS for Generating Units that have willfully misrepresented static data.

Section 4.3.7: Generator Inactivation

To ensure data integrity, unused or retired Generators are set to an 'Inactive' status. Only M-RETS can Inactivate a Generator. Setting a Generator to Inactive prevents any subsequent generation uploads and Certificate creation by the Generator. Inactivating a Generator does not affect previously issued Certificates.

Section 4.3.8: Generator Suspension

If M-RETS has cause to suspend the Generating Utility's participation in M-RETS, Certificate production will cease until M-RETS approves a reinstatement of the Generator. Suspension of a Generator does not affect Certificates previously issued in accordance with the M-RETS Terms of Use and Operating Procedures.

Section 4.3.9: Generator Termination

If M-RETS has cause to permanently terminate the Generating Utility's participation in M-RETS, M-RETS will cease any further production of Certificates, and the Generator will be inaccessible. Termination of a Generator does not affect Certificates previously issued in accordance with the M-RETS Terms of Use and Operating Procedures.

If the Generator Owner wants to remove a generating unit from M-RETS, they shall notify the M-RETS System Administrator via email from an email account registered in that Organization with Manage Project privileges with the following information:

- The date the generating unit should be/will be removed from the M-RETS tracking system; This is the same as the final date of generation for which certificates are to be issued, and
- The name of the Reporting Entity, and
- Provide M-RETS with notice whether the Generator is moving to another tracking system and allow M-RETS to release any relevant information about the generator to the tracking System Administrator.

M-RETS will issue Certificates for any generation that occurs prior to the date of generating unit termination as instructed by the Generator Owner. Because of the lag time between generation and Certificate issuance, this may mean that Certificates will be issued and deposited after the termination date, but only for generation that occurred prior to the termination date. Certificates will be issued for generation that occurred prior to the termination date, but whose meter reading came in within 62 days after the termination date. M-RETS will not issue Certificates for generation that occurs after the termination date.

Section 4.3.10: Changing the Organization to which the Generator is Associated

If the Generator Owner or Responsible Party ("Transferor") wants to change the Organization to which a Generating Unit is associated, they can do so by requesting the change from M-RETS in writing or via email.

The Transferor must confirm the following:

a. The Organization Name and Organization I.D. of the Transferor.
b. The Generator Name and M-RETS I.D.
c. The effective date of the change and the last vintage that should be issued to the Transferor.

The Transferee must confirm the following:

a. The Organization Name and Organization I.D.
b. The Generator Name and M-RETS I.D.
c. The Account Name and Account I.D. to which the Generator will initially issue Certificates upon competition of the change.
d. The effective date of the change and the first vintage that should be issued to the Transferee.
e. Any changes to the static Generator data (e.g., new Reporting Entity, Eligibilities).

Certificates from generation that occurred up to the day the Organization change takes effect will be issued into the Organization that the Generating Unit was associated with at the time the generation occurred.

For example, if the Generator owner changes the Organization to which a given Generating Unit is associated from Organization A to Organization B, and the change is effective on March 1, then the Certificates from generation uploaded prior to March 1 will be deposited into Organization A.

There cannot be any lapse in time where the Generator is not associated with an M-RETS Organization. If there is a period when the Generator is not associated with an M-RETS Organization, M-RETS will treat this as an Inactivation/Reactivation of the Generator instead of a change of Organization.

Any fractional remainder dekatherms will transfer to the new owner of the Generator.

Section 4.3.11: Assignment of Rights of Registration – Designation of Responsible Party

The owner of a Generating Unit or Responsible Party may assign the right to register the Generating Unit(s) in M-RETS to an M-RETS Organization for the purposes of allowing that party the ability to control and manage the disposition of any M-RETS Certificates resulting from the operation of the Generating Unit(s). This assignment of registration rights will give the designated Organization full and sole management and authority over the transactions and activities related to the Generating Unit

within M-RETS. For the purposes of M-RETS, this party is the Responsible Party for that Generating Unit.

M-RETS will require both parties to confirm an assignment of registration rights and the date the assignment will be effective, and the termination date if applicable.

Section 4.3.12: Termination of Rights of Registration

The Generator Owner or the Responsible Party may terminate the Rights of Registration subject to confirmation by M-RETS that both the Generator Owner and Responsible Party agree to the termination. The User will file the Generating Unit Termination form with M-RETS. The form specifies who the new Responsible Party with the Rights of Registration is and the date the change in registration will occur. Termination of Rights of Registration has the effect of deregistering the Generating Unit from M-RETS. Thus, no new Certificates will be issued from that generating upon the effective date of the termination. *See* Section 4.3.10: Changing the Organization to which the Generator is Associated for additional information.

Section 4.3.13: Changing Rights of Registration

When changing the Rights of Registration, the disposition of the Certificates from that Generating Unit will follow the rules in Section 4.3.11: Assignment of Rights of Registration – Designation of Responsible Party. This function applies equally to the Generator Owner or a Responsible Party, meaning that the Responsible Party can change the Rights of Registration to another party.

When changing the Rights of Registration, M-RETS will confirm that both parties (the Generator Owner or current Responsible Party and the new Responsible Party) agree to the change. If the Generator Owner or Responsible Party wants to change the Organization to which a Generating Unit is associated, they can do so by filing the Generating Unit Transfer Form with M-RETS. The form specifies who the new Responsible Party with the Rights of Registration is, and the date the change in registration will occur. There cannot be any lapse in time where the Generating Unit is not associated with an M-RETS Organization. If there is a period when the Generating Unit is not associated with an M-RETS Organization, M-RETS will treat this as a deregistration/re-registration of the Generating Unit. A Unit that is deregistered and re-registered may have the Generating Unit Registration Fee waived unless there are significant modifications to the Generating Unit data.

The User must also review—and update if necessary—the basic Generator Registration data when the Right of Registration is changed from one party to another.

Section 4.4: Generation

See Figures 1-4 for a graphic representation of the RTC generation process. Any user with Generation Submittal permissions can submit Dth data into M-RETS. Each time M-RETS receives generation data for a generator, the date and quantity of Dths are posted to the Generation Log. Any fractional remainders will not issue certificates but will roll over to the next month of generation. Once uploaded, data will be labeled with one of the following:

- **Accepted**: Applies to all generation less than 1 Dth reported to M-RETS. The system will add this data to the subsequent month of generation for issuance.
- **Issued**: Applies to all generation 1 Dth or greater and indicates the Certificates are now active.
- **Pending**: Generation that fails feasibility and therefore needs M-RETS approval; or generation waiting to receive a 'Feedstock' allocation from a multi-feedstock generator. Pending Generation is not issued and therefore not represented by Active certificates.

Section 4.4.1: Generation Upload Process

An IRE or User must upload generation through the M-RETS portal. Users may upload all their generation for the whole month or in partial months as long as a whole month is uploaded. During the upload process, users must provide the Generator, vintage, Dth, and a complete allocation of Dth generated. During the upload, Users must declare whether the generation is 100% from renewable sources, or if the Generator used non-renewable sources.

Certificates created by Generators that Self-report (i.e. Generators that do not use an IRE) must also submit with the generation information an invoice, receipt, or other official documents that identify the Dth of gas injected.[12] M-RETS reserves the right to reject the Generators documentation if there is any reason to suspect the documentation provided is altered, fraudulent, or suspicious. M-RETS also reserves the right to confirm with the entity that issues the document(s) that they are legitimate and not altered in any way. M-RETS may—but is not required to— contact the Generator Owner prior to confirming with the entity. However, M-RETS will try to work out any issues with the Generator Owner prior to confirming the validity of the documentation with the issuing entity.

M-RETS will also accept generation data via the M-RETS API directly from the Injection Point. Data received through an automated process does not require the same level of documentation as Self-Reporting Generators. Generators should work with M-RETS during the registration process to coordinate access to the API as well as connecting the proper points of contact between the common carrier pipeline or local distribution system operator and M-RETS.

Section 4.4.2: Measurement of Generation and Adjustments (Qualified & Non-Qualified Generation)

For Generating Units that interconnect to a local gas distribution system M-RETS will measure the output from each Generating Unit at the point of interconnection between the Generating Unit and the local gas distribution system. If the Generating Unit interconnects to the common carrier interstate pipeline transportation system, M-RETS will measure the output from each Generating Unit at the meter located at the injection point.

Generators must report 100% of the gas injected into the system from the Generator at the injection point, even if the gas will not be tracked in M-RETS. This ensures that M-RETS can serve as a central repository for programs, including those not affiliated with M-RETS, to ensure against double-counting. M-RETS will not create certificates for the generation entered and designated as not being tracked on M-

[12] If the documentation does not use Dth, the documentation must include values that would allow the M-RETS System Administrator to determine the Dth value. If this is not possible the Generator must work this out with the M-RETS System Administrator prior to uploading.

RETS. Generation that does not qualify for certificate issuance is called Non-Qualified Generation. Non-Qualified Generation includes Generation intended for a program that does not recognize M-RETS or is not considered renewable (e.g., non-renewable additives). Qualified Generation is any generation that qualifies for certificate issuance.

While entering generation information into the user interface, IRE's or Self-Reporting Generators must designate the exact number of certificates or the percentage of the injected gas sought for certificate generation on M-RETS. For example, if a Generator injects 100 Dth at the interconnection through the reporting period the IRE or Self-Reporting Generator must report 100 Dth. If the Self-Reporting Generator or IRE plans to sell 50 Dth into M-RETS and 50 Dth into the EPA RFS Program which is not currently recognized by the EPA as a nominated tracking system, M-RETS will only Issue 50 Dth. However, the system will maintain a record that 100 Dth were injected and will list to anyone with a Regulator/Program Administrator Account where the Dth went according to the information provided by the IRE or Self-Reporting Generator. In this example, it would show that the remaining 50 Dth as Non-Qualified Generation went to the RFS.

M-RETS will require RNG generators to utilize a revenue quality meter. However, M-RETS will consider registering RNG projects that lack a revenue quality meter at the request of the participant. If M-RETS does allow for the registration of projects with a non-revenue quality meter that will be clearly denoted on the Public Generator Report and/or on the actual certificate.

Section 4.4.3: Initial Reporting and Reporting Historic Generation Upon Generator Approval

Upon registration and subsequent approval, Generators have 90-days from the Generator Approval date to upload historic generation into the M-RETS System. M-RETS will allow generation within the first 90 days of a generator's approval up to 11 years from the year of registration. If a generator registers in January 2020, M-RETS will accept generation submitted within 90 days of approval going back to the year 2009. Any generation uploaded past the 90th day from registration or more than 11 years back requires a Variance Request and if there is a program eligibility may require sign-off from the appropriate regulator.

Section 4.4.4: Generation Data Submittal Time Restrictions

To encourage timely reporting, M-RETS enabled automatic validations to generation uploads. Users have 62-days from the generation end date to upload generation. M-RETS must approve any generation outside of this range Failure to adhere to these ranges may lead to delays in receiving Certificates.

Section 4.4.5: Requirements of Independent Reporting Entity (IRE) and Self-Reporting Generators

M-RETS will accept generation data from either an IRE or a Self-Reporting Generator. M-RETS will maintain a list in each IRE's Organization of the Generating Units for which the IRE is reporting. M-RETS will outline the protocols for the collection of information such as data format, communication

protocols and timing, and security requirements for data collection. M-RETS will update this document when any changes are made that may impact the data collection process. To minimize the impact of document changes, this document is a general template that outlines a common approach and set of standards.

The Reporting Entity Terms of Use contain the specific data collection parameters for each reporting entity. M-RETS will work with the personnel from the IREs to verify the information and address specific requirements of each reporting entity. M-RETS reserves the right to audit the Dth data totals submitted at any time.

Section 4.4.6: The Addition of Non-Renewable Fuels – Non-Qualified Generation

M-RETS recognized that in some cases non-renewable fuels or gas may be blended with renewable fuels or gas (e.g., to achieve a specific heating value and/or meet other pipeline specifications). M-RETS will not create certificates for any Dth values that are added, regardless of the reason. Therefore, M-RETS considers Non-Renewable Fuels added to RNG Non-Qualified Generation. The non-renewable fuels will not receive certificates, however, M-RETS will include them as a non-renewable fuel in the Generation Entry. This will ensure there is a record and that the injection documentation matches the generation values.

Self-Reporting Entities and IRE's must document to M-RETS through the generation upload process the Dth value of the non-renewable fuels or gas blended with the renewable fuels that qualify for M-RETS. The value may be reported as a specific Dth value or as an overall percentage. Prior to submitting generation data, IRE's and Self-Reporting generators certify that they have acknowledged any non-renewable fuels or gas that were blended.

Section 4.4.7: Carbon Pathways

M-RETS supports tracking one or more Carbon Pathways that provide a Carbon Intensity ("CI") tracking. While tracking CI **is not** mandatory, M-RETS encourages generators to submit and track a CI whenever practicable. CI values are expressed in grams of carbon dioxide equivalent per megajoule of energy (gCO_2e/MJ) as well as (gCO_2e/Dth). M-RETS supports either a Full Lifecycle CI or a Partial Lifecycle CI.

1. **Full Lifecycle Carbon Intensity** - takes into account the GHG emissions associated with all of the steps of producing, transporting, and consuming a fuel.

2. **Partial Lifecycle Carbon Intensity** – takes into account the GHG emissions associated with all of the steps of producing a fuel up to the Injection Point or interconnection into the distribution system or interstate transportation system.

Lifecycle CI scores for RNG require an assessment of all sources and sinks of GHGs—from production to end-use—and dividing these emissions by the energy in the gas at a specific point in that lifecycle. The resulting value is measured on a carbon dioxide equivalency basis. This is important because

Methane is a short-lived climate pollutant that, according to the Intergovernmental Panel on Climate Change, is up to 84 times as potent a GHG as carbon dioxide.[13]

The benefits of using lifecycle CI accounting are that it captures the upstream methane reduction benefits of renewable thermal projects and reduces the GHG value for project proportionate to the distance the thermal resource must travel (e.g., transportation associated emissions including pipeline leakage) and whether the end-use has any associated emissions (e.g., thermal combustion). This feature allows M-RETS users to maximize GHG emission reductions should users seek to do that.

Upon retirement, users may select an existing partial or full lifecycle CI to select. The selected CI will remain as part of the permanent retirement record. The retirement flow does not require the selection of a CI; however, it may be required as part of a voluntary or compliance program.

Partial CI scores may be helpful for generators that have not identified an end-use buyer prior to uploading generation. A future buyer may be able to use the CI provided to calculate a full lifecycle analysis outside M-RETS.

The alternative to using lifecycle accounting is to use source-based accounting similar to that used in national and state-level GHG emission inventories.[14] Source-based accounting is simpler in that it focuses only on the greenhouse gases emitted at the point of end combustion of the gas and usually makes the assumption that all bio-derived fuels are "carbon neutral" (i.e., have zero net CO_2 emissions since CO_2 created at the point of combustion are offset by the uptake of CO_2 when the biological material that was the source of the RNG was grown). Using such a source-based system does not account for upstream methane effects (both reductions when the RNG is created and leakage as the gas is transported to the end market).

M-RETS does not require Generator Owners to update the Carbon Pathways at specific intervals. Instead, each Carbon Pathway has a date range. The first date in the range represents the verification date by an independent third party. The last date in the range represents the last day that certificates can be issued with that Carbon Pathway. Certificates issued following the last day of the date range will no longer maintain the Carbon Pathway. Should a state or provincial regulatory scheme require annual updates, the eligibility flag will be removed if valid Carbon Pathways are not maintained by the generator and/or the specific Thermal Resource and Feedstock. For a generator to maintain the IRE eligibility the Generator must at a minimum update each Carbon Pathway associated with a generator annually.

Section 4.4.8: IRE Verification Scope

Certificates reported into the system by an IRE must adhere to a strict standard. Certificates uploaded into the system by an IRE will carry an IRE eligibility. That will indicate the certificates have gone through a strict independent third-party verification. Failure to adhere to the standards agreed to

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[13] *See* https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_Chapter08_FINAL.pdf.

[14] *See* ICF, December 2019, *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*, prepared for the American Gas Foundation (pg. 44-47, Appendix B) https://www.gasfoundation.org/wp-content/uploads/2019/12/AGF-2019-RNG-Study-Full-Report-FINAL-12-18-19.pdf (describing how these approaches related to RNG).

between M-RETS, the Generator Owner, and the IRE may result in removal of a Generator from the M-RETS system, cancellation of any certificates suspected of incorrectly maintaining an IRE eligibility, and removal of the IRE from further participation in M-RETS.

IREs must strictly adhere to the following independent third-party verification process. IRE's may adhere to a stricter process, however, in no case shall an IRE do less than required below.

Verification objective	*Method*	*Frequency*
1. The carbon intensity (CI) of the RNG source is equal to or less than what is claimed initially. If more than one, each CI must be done. Generators that utilize an IRE but do not track a CI are exempt from this requirement.	1. Review all inputs and outputs that could affect CI 2. Recalculate CI based on annual data 3. Confirm annual CI is within an acceptable range 4. Prepare report and upload to the M-RETS System via the Generator Documents	Annual
2. Reported gas volumes injected into the common carrier pipeline are accurate	1. Review EDI/meter data 2. Submit gas volumes injected into the M-RETS System 3. Review meter calibration 4. Compare with proof of biogas production 5. Verify biogas production from inputs/outputs 6. Confirm upgrading unit efficiency 7. Prepare a report of the above and upload it to M-RETS via the generation submission process.	Monthly (via attestation, and becomes attached to certificate and visible to future owners in the chain of custody)
3. The RNG production site is physically connected to a common carrier pipeline	Visual inspection	Annual
4. The Environmental Attributes are intact, and the same gas claimed in M-RETS is not sold elsewhere.	Affidavit from biogas producer and RNG producer and upload Affidavits into M-RETS via the Generator Documents Portal.	Quarterly (provided one time at the Annual Review on or after January 1)

Section 4.4.9: Changes to Issuances (Rollbacks and Prior Period Adjustments)

The User must notify M-RETS if they believe the generation data amount recorded on the Generation Log is inaccurate for any reason. This is known as registering a dispute. Adjustments made after the upload of generation data to M-RETS and/or Certificate issuance are known as Rollbacks or Prior Period Adjustments.

If the IRE or User uploaded incorrect generation data and the Certificates remain in the issuance Account, M-RETS will Rollback the issuance. Once the Rollback is complete, the Certificates may be re-uploaded.

If the IRE or User uploaded incorrect generation data and the Certificates do not remain in the issuance Account, a Prior Period Adjustment is required. M-RETS will post the Prior Period Adjustment to the Generation Log associated with the Generating Unit. This will have the effect of applying a credit or debit to the generation amount reported in the current month. Consequently, the adjustment occurs upon the next Certificate issuance. If new Certificates are created, the month of creation of the Certificates shall be the same as all other Certificates created that month. However, the Certificates will also indicate the month the prior period generation occurred.

If a User requests a Rollback outside of the acceptable upload range, M-RETS may require evidence of data inaccuracy. This includes, but is not limited to:

a. Screenshot(s) of internal readings
b. Official readouts of generation

All requests for Rollbacks and Prior Period Adjustments are subject to review by M-RETS.

Section 4.4.10: Data Transmittal

Users must electronically enter data to M-RETS using a secured web interface provided within the M-RETS web-based application. The data shall reflect, at a minimum, the start date and end date of generation, monthly accumulated dekatherms for each fuel type (including Non-Renewable Additives), and Generation Document.

The data must be entered by a single entity, which must be either (1) an IRE, or (2) a Self-Reporting Generator.

Section 4.5: Renewable Thermal Certificates (RTCs)

Section 4.5.1: Certificate Creation

Small generators (1 to 150 Dth/year) have up to one year from the generation end date to upload generation. Large generators (>150 Dth/year) have 60 days from the generation end date to upload generation. This applies regardless of whether the generator is self-reporting or uses a IRE. M-RETS must approve any generation outside of these ranges.

All generation data submitted to M-RETS will undergo an automatic validation process. The process includes an automated verification process that reviews the feasibility of the generation amount, ensures there are no overlapping generation entries, and that there are no lapses in generation information.

M-RETS only issues Certificates in whole numbers. A Certificate created and tracked within M-RETS represents all renewable attributes from one Dth of renewable generation. M-RETS Certificates are "Whole Certificates," meaning that none of the renewable and/or Environmental Attributes may be split off from the Certificate while it is in circulation in the M-RETS system.

Depending on user settings, the system will notify the user via email that the generation has been posted. The generation posting will be marked "Issued" on the Generation Log.

Certificates in M-RETS do not have a specific expiration date. States and Provinces define the lifetime or expiration date for Certificates as applied to the programs they oversee. Therefore, all certificates in M-RETS are "bankable" i.e. M-RETS never forcibly removes or retires RTCs due to vintage. If a State or Province does not want to utilize the Program feature to prevent the retirement of RECs that no longer meets their vintage requirements, M-RETS can work with regulators to remove the eligibility flag from their jurisdiction for all unretired RECs in M-RETS that no longer meet specifically defined vintage requirements and maintain an eligibility flag for that jurisdiction.

M-RETS will issue one electronic Certificate for each Dth of energy generated by those Generating Units registered with M-RETS. Certificates will be issued based on the number of whole Dths on the Generation Log on the day of Certificate creation. M-RETS will issue Certificates no more frequently than once per month per Generating Unit.

Section 4.5.2: Certificate Data Fields

a. Serial Number(s)
b. Account
c. ID
d. Generator Feedstock Type
e. Generator Resource Type
f. Vintage Date
g. Location
h. Quantity (in Dth)
i. Eligibilities (if applicable)
j. Carbon Intensity (if applicable)

Section 4.5.3: Certificate Retirement

Certificate Retirement is an action taken by the User to remove a Certificate from circulation. M-RETS is not responsible for ensuring that Users Retire Certificates for voluntary or compliance purposes. M-RETS requires all Users to initiate and complete all retirements. M-RETS maintains an integrated online help guide that Users can access after logging into the System and clicking on the button labeled "Help" in the lower-right corner of the screen.

Section 4.5.4: Voluntary Retirement Types

Beneficial Ownership (BBO)

- Formal Definition: With respect to any Certificate, Beneficial Ownership Rights means any contractual or other right to direct or control the sale or other disposition of, or the Retirement of, such Certificate or (ii) any contractual or other right to receive the benefits of such Certificate or any proceeds from the sale or other disposition of such Certificate.

- M-RETS Uses: All retirements for the benefit of an individual owner for a general environmental reason (i.e. company purchasing RTCs to green their thermal operations). Within this Retirement type there are additional options in the "Reason" drop down box. One of the reasons is utility retirement on behalf of all customers. This Reason should be selected when a utility is looking to make a voluntary retirement that can be applied to all customers.

  An Additional Details field is provided to allow the User to provide specific information about the sale (i.e. customer name, retirement year) Note: Compliance or Green-e Voluntary programs should not use the Beneficial Ownership retirement type. All state compliance retirements should use the Compliance Retirement Type. Green-e Voluntary Retirements should use the Green-e Thermal Certified Voluntary Market Sale Retirement Type.

Green-e Thermal Certified Voluntary Market Sale (GRN)/Green-e Gas Program

- M-RETS Uses: All Green-e Retirements. To retire Certificates to substantiate sales made in a given calendar year as "Green-e Energy certified", the party retiring Certificates must have a contract in place with Center for Resource Solutions to make Green-e Thermal certified sales in that year of sale.

Corporate Renewable Claim

- M-RETS Uses: Corporations that want to make claims may use this retirement time. While similar to Beneficial Ownership, it is more explicit regarding the type of claim made by the holder of the certificate. This claim should only be used when the Organization retiring Certificates is the same Organization making use of the claim. If the claim is intended for a different party, the correct selection would be Beneficial Ownership while including the name and other relevant information in the notes.

Green Gas Program

- M-RETS Uses: Utility Green Gas and/or Utility Renewable Natural Gas Programs. Note: "Green-e Energy Certified" Utility Green Pricing Program Retirements should use the Green-e Energy Certified Voluntary Market Sale Retirement Reason.

Section 4.5.5: Compliance Retirement Types

State-Regulated Utility Renewable Portfolio Standard / Provincial Utility Portfolio Standard (Compliance) (RPS)

- M-RETS Uses: State-Regulated Utility Renewable Portfolio Standard/Provincial Utility Portfolio Standard (RPS) retirements.

Low Carbon Fuel Standard

- M-RETS Uses: This should be selected only if the generation subject to this claim will be used for a Low Carbon Fuel Standard Claim. The use of this retirement type is subject to the rules and regulations of any state, federal, or provincial low carbon fuel standard program.

Renewable Fuel Standard

- M-RETS Uses: This should be selected only if the Certificates subject to this claim will be used for the United States Environmental Protection Agency Renewable Fuel Standard. Use of this retirement type is subject to official rules and regulations of the Renewable Fuel Standard.

Both Low Carbon Fuel Standard and Renewable Fuel Standard

- M-RETS Uses: This should be selected only if the Certificates subject to this claim will be used for the United States Environmental Protection Agency Renewable Fuel Standard and the Low Carbon Fuel Standard. Use of this retirement type is subject to official rules and regulations of the Renewable Fuel Standard. It is most often the case that Both will be selected as these attributes are frequently stacked.

Section 4.5.6: Forced Retirement of Certificates

M-RETS and/or appropriate regulator(s) shall have sole discretion to retire any Active Certificates for mistake, fraud or other reasonable cause consistent with these Operating Procedures, the Terms of Use and/or the purposes of the M-RETS platform.

Section 4.5.7: Withdrawing Certificates

Certificate Withdrawal is an action taken by the User to remove a Certificate from M-RETS to use the Generation for LCFS, RINS, or another Compliance/Voluntary program. M-RETS is not responsible for ensuring that Users Withdraw Certificates for voluntary or compliance purposes. M-RETS requires all Users to initiate and complete all withdrawals. M-RETS maintains an integrated online help guide that Users can access after logging into the System and clicking on the button labeled “Help” in the lower-right corner of the screen.

Section 4.6: Transactions

Section 4.6.1: Transferring Certificates between Organizations

M-RETS Users may transfer active Certificates to:

1. Another Organization
2. Another active Account

After a User initiates a transfer ("Transferor"), the transferred Certificates enter a 'Pending' state. This effectively "suspends" the Certificates and the System will prevent the Transferor from making additional transfers of Certificates in Pending status.

The Pending Transactions table lists all Pending Transactions for both the Transferor and Transferee. Once the Transferee confirms the transfer, both the Transferor and Transferee receive an email if their notifications are enabled.

The Transferor may cancel any transfer before a Transferee confirms the transfer by withdrawing the transfer in the Pending Transactions table. The Transferee may reject a transfer prior to acceptance. M-RETS will notify both the Transferor and Transferee should either party withdraw or reject a transfer.

Section 4.6.3: Automatic Recurring Transfers

Users may request Automatic Recurring Transfers of Certificates from any Generator Resource Type to the following:

1. One internal Account
2. Multiple internal Accounts
3. An external Organization within M-RETS

In the registration of Automatic Recurring Transfer, the transferor must indicate:

1. Generator
2. Generator Feedstock
3. Generator Resource Type
4. Vintage Dates
5. Destination (Account, Multiple Accounts, External Organization)
6. Percentage or Maximum Number of Certificates
7. Irrevocable status (see Section 4.6.4: Irrevocable Automatic Recurring Transfers)

After a User initiates an Automatic Recurring Transfer ("Transferor"), the Automatic Recurring Transfer enters a 'Pending' state. The receiving Organization ("Transferee") then receives an email detailing the pending Automatic Recurring Transfer.

Dear [User],
The Organization [Transferor] added you as a destination in an Automatic Recurring Transfer (ART). Your Transfers can be viewed here: https://app.mrets.org/transfers/recurring-transfers

To start receiving Certificates, the following ART(s) must be accepted.

Generator	*M-RETS ID*	*Vintage Range*	*Feedstock*	*Fuel Type*	*Source Organization*	*Destination Organization*	*Max Quantity*	*Percentage*
My Thermal Generator	*M1234*	*1/2019-12/2024*	*Landfill Gas*	*Renewable Natural Gas*	*Organization A*	*Organization B*	*N/A*	*100%*

The Transferee must accept each transfer in the System prior to the deposit of the Certificates in the Transferee's Account. An acceptance of an Automatic Recurring Transfer does not automatically

accept subsequent transfers. The System requires a manual acceptance by the Transferee in case of an unwanted or incorrect Automatic Recurring Transfer.

A User may set up multiple Automatic Recurring Transfers. However, each Generator Feedstock Type may only be associated with one Automatic Recurring Transfer. For example, if your Generator uses both Biomass and Liquid Biomass as a Feedstock, you will be able to create an Automatic Recurring Transfer for the Biomass feedstock and a separate Automatic Recurring Transfer for the Liquid Biomass Feedstock. Single-feedstock Generators may only set one Automatic Recurring Transfer at a time.

Each Automatic Recurring Transfer will be set up based on a percentage of Certificates or a maximum number of Certificates. If fewer Certificates are issued than the maximum number specified, the total number of Certificates issued will transfer. If the Certificates are transferring to multiple Accounts, Users may prioritize the receiving Accounts. If there is a remainder, the User-set priority determines where to deposit the remaining Certificates.

Section 4.6.4: Irrevocable Automatic Recurring Transfers

From a technical standpoint, Irrevocable Automatic Recurring Transfers are like Automatic Recurring Transfers. However, only M-RETS can edit an Irrevocable Automatic Recurring Transfer. A change requires written electronic consent from the Transferor and Transferee. During the creation of Automatic Recurring Transfers, Users can select an option to apply Irrevocable status to the Automatic Recurring Transfer.

Section 4.7: Programs

The Program feature helps regulators, regulated entities, and organizations with their internal programs to manage the complexity of various programs more efficiently. The Program feature allows regulators as well as Organizations the opportunity to set up rulesets that prevent retirements of Certificates outside the parameters set to a specified Retirement Account.

Users may create rules around any subset or all the following attribute areas, however, the System does not require a ruleset to utilize this feature nor is this feature restricted to compliance programs:

1. Vintage Start [requires Certificate vintage to be within a certain date]
2. Vintage End [requires Certificate vintage to be within a certain date]
3. Eligibilities [requires Certificates to have AT LEAST one of the selected eligibilities]
4. Generator Location [Generator must originate in one of the selected state/provinces]
5. Feedstock [Certificates must meet AT LEAST one feedstock type]
6. Resource Types [Certificates must meet AT LEAST one resource type]
7. Generators [Certificates must come from AT LEAST one of the selected Generators]

Section 4.7.1: Establishing a Program

Users can create a Program for internal use or can invite other M-RETS Organizations to participate.

Any User within a General Account Subscription Organization that has 'Manage' Program permissions can create an Internal Program. Only Organizations that create Internal Programs can use and view the Program. Any Account created as part of the Internal Program will be subject to the associated Program Ruleset.

Any User within a General Account Subscription Organization that has 'Manage' Program permissions or a Program Administrator can create an External Program. The Administrator of an External Program can invite an unlimited number of other M-RETS Organizations to participate in a Program. All participants will receive a notification inviting them to participate in the Program. Prior to becoming active Program participants, the invitee must accept the invitation.

A walk-through guide to adding a Program may be found here.

Section 4.7.2: Participating in a Program

Once an Organization accepts an invitation to participate in a Program, the accepting Organization must create a new Retirement Account and link the Account to the Program. As Certificates are retired into this Account, they will automatically appear on both the Program Administrator and the participant's Program dashboard. This dashboard is tailored to only show relevant information for their Program.

If a User attempts to retire Certificates that do not match the predetermined criteria of the Program, the System blocks the retirement. This prevents the retirement of incorrect Certificates.

A walk-through guide to participating in a Program may be found here.

Section 4.8: API

M-RETS offers an application programming interface (API) to give Organizations with a General Account Subscription the ability to access M-RETS data from outside of the M-RETS Portal. Uses for this feature include, but are not limited to, creating an automated process to send a transfer or to pull report information. Organizations need to request an API access key before using the API. M-RETS can also provide access to a sandbox environment to test the API without affecting live production data in M-RETS. M-RETS encourages all users to use the sandbox environment prior to utilizing the M-RETS API in the production system.

Documentation for the API is accessed through the M-RETS portal. Click on the "Documentation" tab located in the left nav menu to view a list of available calls and technical specifications. The documentation is interactive and allows for the testing of API calls right in the interface.

More information on our API can be found in our Terms of Use.

Section 6: Public Reports

M-RETS provides live-updated Public Reports on the M-RETS Landing Page subject to the privacy rules contained in the M-RETS Terms of Use.

Section 7: Acknowledgements

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Appendix B: Resource Type & Feedstock Source

Resource Type

Resource Type (Short Description)	Feedstock (Long Description)	Renewable(Y/N)	Recycled(Y/N)
BIG	Biogas	Y	N
BIM	Biomass	Y	N
CO1	Coal	N	N
DI1	Diesel	N	N
FC1	Fuel Cells	Y	N
FLR	Flared Gas	N	Y
GE1	Geothermal Energy	Y	N
HYD	Hydrogen	Y	N
JET	Jet	N	N
MS1	Municipal solid waste	Y	N
NG1	Natural Gas	N	N
NON	Not Listed - Contact M-RETS	N	N
OIL	Oil	N	N
SO1	Solar Thermal	Y	N
WHR	Waste Heat Recovery	Y	N
WO1	Waste Oil	N	N

Fuel Source:

Resource Type	Feedstock
Biogas	Biogas
Biogas	Animal Waste
Biogas	Anaerobic digester system
Biogas	Liquid fuels derived from plant or animal sources, including but not limited to ethanol, biodiesel, vegetable oil, or animal fats
Biogas	Methane or other combustible gases derived from the processing or decay of plant, animal, or municipal solid waste materials
Biogas	Constructed in compliance with new source performance standards promulgated under the federal Clean Air Act for a generation facility of that type
Biogas	Employs the maximum achievable or best available control technology available for a generation facility of that type
Biomass	Biomass
Biomass	Method of combustion is Direct Combustion
Biomass	Method of combustion is Gasification
Biomass	Method of combustion is Liquefaction
Biomass	A majority of the fuel source is Agricultural products
Biomass	A majority of the fuel source is Wood products

Biomass	A majority of the fuel source is Agricultural by-products including wastes
Biomass	A majority of the fuel source is mixed municipal solid waste
Biomass	A majority of the fuel source is refuse-derived fuel
Biomass	Primary woody or herbaceous vegetative matter (plants), including but not limited to wood, grasses, agricultural crops or residues
Biomass	Processed plant materials from industry waste sources, including manufacturing, construction, or demolition
Biomass	Methane or other combustible gases derived from the processing or decay of plant, animal, or municipal solid waste materials
Biomass	Liquid fuels derived from plant or animal sources, including but not limited to ethanol, biodiesel, vegetable oil, or animal fats
Biomass	Mixed municipal solid waste and refuse-derived fuel from MSW
Biomass	Landfill Gas
Biomass	Animal Waste
Biomass	Constructed in compliance with new source performance standards promulgated under the federal Clean Air Act for a generation facility of that type
Biomass	Employs the maximum achievable or best available control technology available for a generation facility of that type
Coal	Coal
Diesel	Diesel
Fuel Cells	Fuel Cell using renewable fuels
Fuel Cells	Fuel Cell using non-renewable fuels
Flared Gas	Flared Gas
Geothermal Energy	Geothermal Energy
Geothermal Energy	Dry Steam
Geothermal Energy	Flash Steam
Geothermal Energy	Binary Cycle
Hydrogen	Hydrogen
Jet	Jet
Municipal solid waste	Municipal Solid Waste
Municipal solid waste	An energy recovery facility used to capture the heat value of mixed municipal solid waste or refuse-derived fuel from mixed municipal solid waste
Municipal solid waste	Anaerobic digester system
Municipal solid waste	Landfill Gas
Natural Gas	Natural Gas
Oil	Oil
Solar	Solar PV
Solar	Solar Thermal
WHR	Waste Heat Recovery/Recycled Energy
WHR	Energy produced by a Generating Unit with a nameplate capacity of not more than fifteen megawatts that converts the otherwise lost energy from the heat exhaust stacks or pipes to electricity and that does not combust additional fossil fuel. "Recycled Energy" does not include energy produced by any system that uses energy, lost or otherwise, from a process whose primary purpose is the generation.
Wind	Wind
Waste Oil	Waste Oil

Appendix D: Glossary

Account: M-RETS provides several different Accounts for holding and retiring M-RETS Certificates

> **Active Account**: The Active Account is the holding place for all active M-RETS Certificates. If the Organization is a registered generator, or is the designated representative of a registered generator, their Active Account will be the first point of deposit for any M-RETS Certificates created that are associated with the Generating Unit ID number, unless the Certificate is subject to an automatic recurring transfer. An Active Account may be associated with one or more Generating Units.
>
> **Retirement Account**: A Retirement Account is used as a repository for M-RETS Certificates that the Organization wants to designate as retired and remove from circulation. Once a Certificate has been transferred into an M-RETS Retirement Account, it cannot be transferred again to any other Account.

Active Account: *See* Account

Active Certificates: Any Certificate held in an M-RETS Active Account. The holder of the Active Account or their agent may trade, transfer, export, or retire, etc. certificates at their discretion.

Agent: Any party granted access by an M-RETS Organization to "use" their Organization. Agents may include viewing information, performing transactions, changing personal information, etc. The Organization may at any time revoke the permissions granted to an Agent by notifying M-RETS. The M-RETS System will be able to track the specific activities of each Agent through the unique user ID and password. Also known as a User.

Anaerobic Digestion: The degradation of organic matter including manure brought about through the action of microorganisms in the absence of elemental oxygen. The decomposition process produces a gaseous byproduct called "biogas" primarily composed of methane and carbon dioxide.

Automatic Recurring Transfers: Normally, the first point of deposit for M-RETS Certificates is the Account to which a Generating Unit selects as its issuance Account. With an Automatic Recurring Transfer, the Organization to which the Generating Unit is registered requests that the Certificates be directly deposited into another Account when the Certificates are created. Automatic Recurring Transfers may be set up for transfers to:

1. One internal Account
2. Multiple internal Accounts
3. An external Organization within M-RETS
4. A Compatible Certificate Tracking System (Export)

Automatic Recurring Transfers can be set as Irrevocable during the confirmation of the transfer process. However, only M-RETS can edit Irrevocable Automatic Recurring Transfers once they are set.

Behind-the-Meter: *See* Non-Pipeline Connected.

British Thermal Unit (Btu): The quantity of heat required to raise the temperature of one pound of water by one degree Fahrenheit. 1,000,000 Btu equals 1 Dth.

Biogas: The gas resulting from the anaerobic digestion of biomass. Depending upon the feedstocks used and conditions of digestion, biogas typically consists of 40 – 65% methane. The remaining 35 – 60% of

the biogas consists of "other" gases, with carbon dioxide being the major other gas along with trace gases including nitrogen compounds (ammonia, etc.), water vapor, sulfur compounds (hydrogen sulfide, etc.), and other constituents, depending upon the biomass used. Biogas is considered "raw" unless "conditioned" or "upgraded" to meet the requirements of the intended end-use, including pipeline injection. "Raw" biogas is not interchangeable with natural gas pipeline networks. Biogas is produced in processes including, but not limited to, anaerobic digestion, anaerobic decomposition, and thermochemical decomposition. These processes are applied to biodegradable biomass materials, such as manure, sewage, municipal solid waste, green waste, and waste from energy crops, to produce landfill gas, digester gas, and other forms of biogas.

Biomass: Organic materials that may be converted to gaseous or liquid fuel through digestion (breakdown) or high-temperature conversion (gasification). These materials may include all organic substances, but some biomass materials have higher energy potential than others, and some are more suited for anaerobic digestion while others with high lignin content are more suitable for gasification. Biomass sources vary widely and include domestic wastes, animal wastes, livestock operation residues, forest and mill residues, agricultural crops and wastes, wood and wood wastes, aquatic plants, fast-growing trees and plants, and municipal and industrial wastes.

Biomethane: Another term for RNG.

Carbon Intensity: Carbon intensity is expressed in grams of carbon dioxide equivalent per megajoule of energy provided by that fuel. RTCs also show the value in grams of carbon dioxide equivalent per Dth. The conversion factor used for this value is 105.5 (MJ/Therm) comes from the California Air Resources Board Unofficial Electronic Version with an effective of date July 1, 2020 page 70 Table 4.

Carbon Pathway: A detailed description of all stages of thermal resource production and use, including feedstock generation, production, cleaning or conditioning, transportation, distribution, and combustion or final disposition and use of the renewable resource by the consumer. The fuel pathway—either a Full Lifecycle or Partial Lifecycle Carbon Pathway is used to calculate the carbon intensity of each source. *See* Full Lifecycle Carbon Pathway or Partial Carbon Pathway.

Certificate: The term "Certificate," as used in this document, refers to an M-RETS Certificate of generation, or M-RETS Certificate. An M-RETS Certificate represents all the attributes from one Dth of energy from a renewable Generating Unit registered with the M-RETS tracking system. M-RETS creates one Certificate per Dth of generation produced by a registered Generating Unit. In the case of Renewable Natural Gas, Certificates are created upon injection of the gas into the common carrier network (i.e. interstate natural gas pipeline system) or a local gas distribution company network. M-RETS will consider "behind-the-meter" uses such as onsite biogas combustion used for thermal purposes or onsite thermal use (e.g., combined heat and power) *See also* the definition of "Whole Certificate."

CH_4: Methane

CO_2e: Carbon dioxide equivalent. CO_2 is the benchmark greenhouse gas with a "global warming potential" (GWP) of 1. The GWP of other greenhouse gases is measured in relation to CO_2; e.g., methane has a GWP 28 times greater than CO_2 (100-year timeline), so that a ton of methane has a "CO_2e" value of 28.

Common Carrier: Common carrier refers to any pipeline that offers transportation services to any third party under a standard set of terms. This is in contrast to a private or proprietary pipeline that is either used by the owner for internal purposes or contracted to only a limited set of users.

Creation Date: The date that M-RETS Certificates are created. Certificates are created monthly, seven days after the Organization has accepted the generation amount of the Generation Activity Log.
Customer-Sited Distributed Generation: Generation interconnected behind a retail customer meter and therefore not directly interconnected with either the distribution system or transmission system (including net metered facilities).

Date of First Operation: The month and year a Generating Unit first began commercial operation or for non-commercial facilities, the date approved by the licensing or permitting agency. For repowered or refurbished Generating Units, this is the date of the original operation, not the date of the repower or refurbishing. For incremental capacity, this is the date of the original operation for the non-incremental capacity. M-RETS may refine the definition of Date of First Operation for small non-commercial Generating Units in the future.

Digester (Anaerobic): A tank, covered lagoon, or another covered vessel designed to convert biomass to biogas. Digesters are common to the wastewater treatment industry as well as in farming operations for manure management. Conversion of the biomass in the digester depends upon bacterial degradation or transformation of compounds, both carbon-based and other, to gaseous products, which are then present in the resulting biogas. Digesters vary in complexity and design. The maximum quantity of biogas generated from the digestion of biomass is dependent upon the design of the digester (temperature and hydraulic retention time), a biologically degradable fraction of the raw material, and other factors. Biogas generated through anaerobic digestion of biomass in digesters requires further cleanup prior to use (interchange) within natural gas pipeline systems.

Dispute Resolution Process: Administrative process managed by M-RETS to resolve disputes regarding M-RETS functionality and actions, including but not limited to disputes related to the number of Certificates in an Account, static data, Organization requests to reverse permanent transactions (such as retirements), and Certificate creation.

Dekatherm ("Dth"): Ten therms or 1,000,000 Btu. This is the default unit of measurement in the M-RETS Renewable Thermal Tracking System.

Dynamic Data: Dynamic data is variable information that is associated with a specific Dth from a registered Generating Unit, such as Certificate serial number or date of generation. See Appendix B-1 for a list of dynamic data fields.

Environmental Attribute(s): Any and all environmental claims, credits, benefits, emissions reductions, offsets, and allowances attributable to the production of renewable thermal energy (e.g., RNG) and if applicable its avoided emission of pollutants. The environmental attributes of renewable natural gas include but are not limited to the avoided greenhouse gas emissions associated with the production, transport, and combustion of a quantity of renewable natural gas compared with the same quantity of geologic natural gas. Environmental attributes do not include:

(a) The renewable natural gas itself or the energy content of that gas;
(b) Any tax credits associated with the construction or operation of the renewable natural gas production facility or other financial incentives in the form of credits, deductions, or

allowances associated with the production of renewable natural gas that applies to a state, provincial, or federal income tax obligation;

(c) Fuel- or feedstock-related subsidies or "tipping fees" that may be paid to the seller to accept certain fuels, or local subsidies received by the renewable natural gas production facility for the destruction of particular preexisting pollutants or the promotion of local environmental benefits; or

(d) Emission reduction credits encumbered or used by the renewable natural gas production facility for compliance with local, state, provincial, or federal operating and/or air quality permits.

Environmental Attribute(s) (California Low Carbon Fuel Standard): A greenhouse gas emission reduction recognition in any form, including verified emission reductions, voluntary emission reductions, offsets, allowances, credits, avoided compliance costs, emission rights, and authorizations under any law or regulation, or any emission reduction registry, trading system, or reporting or reduction program for greenhouse gas emissions that is established, certified, maintained, or recognized by any international, governmental, or non-governmental agency. If there is any difference between the definition listed herein and the most recent official regulations maintained on the California Air Resources Board (https://ww2.arb.ca.gov) then the official regulations shall take precedence.

Facility/Generating Facility: *See* Generator.

Feedstock: Raw material that for the purposes of M-RETS is considered renewable and that is transformed through chemical, physical, or any other process into a renewable Resource Type.

Full Lifecycle Carbon Pathway - Takes into account the GHG emissions associated with all of the steps of producing, transporting, and consuming a fuel.

Gas Cleanup and Gas Upgrading: Used somewhat interchangeably in reference to the unit operations for treating raw gas resulting from biomass conversion. The goal of the gas cleanup unit is to remove constituents within the raw gas that could cause pipeline or end-user health or safety issues. Cleanup efficiencies for constituents of concern vary between cleanup or "conditioning" units. An upgrading unit for biogas will isolate the methane from the carbon dioxide in order to increase the heating value of the RNG, while an upgrading unit for syngas will reform the hydrogen and carbon monoxide to form methane in order to produce RNG.

Gasification: An alternate way to produce a raw gas which can be used to produce RNG. Gasification is a high-temperature, low oxygen conversion process of organic material into a syngas that can be reformed into methane and cleaned of trace constituents into RNG for pipeline injection.

Gasifier/Syngas: *See* Gasification

Generating Unit: Equipment or machinery that converts Feedstock into a Resource Type.

Generation Activity Log: The Generation Activity Log is an electronic ledger where generation is posted prior to Certificate creation. Each time generation data is received by M-RETS for a Generating Unit, the date and quantity of Dths is posted to the Generation Activity Log. Similarly, adjustments received will be posted likewise.

Generation Document: An injection receipt, injection invoice, meter readout, or another similar document that provides the same level of assurance that gas was received into a common carrier pipeline, a private pipeline, a local distribution utility, or was produced and used in a behind the meter application. M-RETS shall reject documentation if it does not provide adequate assurance to parties.

Generation Month: The generation month is the calendar month in which the generation occurred.

Generator: An electric generating facility consisting of one or more Generating Units with the same essential generation characteristics and whose output is measured with a single certified meter.

Generator Registration Agreement: The agreement between an Organization and M-RETS which sets forth terms and conditions for use of the M-RETS System.

Geothermal: Hot water or steam extracted from **geothermal** reservoirs in the Earth's crust. Water or steam extracted from **geothermal** reservoirs can be used for **geothermal** heat pumps or water heating.

Heat Pump:

Heat pump (geothermal): A heat pump in which the refrigerant exchanges heat (in a heat exchanger) with a fluid circulating through an earth connection medium (ground or groundwater). The fluid is contained in a variety of loop (pipe) configurations depending on the temperature of the ground and the ground area available. Loops may be installed horizontally or vertically in the ground or submerged in a body of water.

Water source heat pump: A type of (**geothermal**) heat pump that uses well (ground) or surface water as a heat source. Water has a more stable seasonal temperature than air thus making for a more efficient heat source.

Heating Value: Gross heating value, also known as Higher Heating Value (HHV), is defined as the amount of energy transferred as heat from the complete, ideal combustion of the gas with air, at a standard temperature, in which all the water formed by the reaction condenses to liquid. Another commonly seen heating value parameter is net heating value, or Lower Heating Value (LHV). The difference between HHV and LHV is that the water produced by combustion remains in the vapor state when determining the LHV. The energy gained by the condensation of the water vapor is not realized so the heating value is lower. Heating values are also often reported as wet or dry. Wet gas refers to gas that is completely saturated with water vapor. A wet gas has a lower heating value per volume than a dry gas because some of the gas volume is occupied by the water vapor, so the absolute amount of combustible gas is less. The North American Energy Standards Board recommends utilizing the HHV expressed on a dry basis.

Incremental Capacity: Nameplate capacity added to an existing generator. Incremental Capacity may consist of one or more new Generating Units. Incremental capacity does not include repowered capacity

Independent Reporting Entity: A Reporting Entity that is (1) an independent third-party meter reader not affiliated with the owner of the generator for which the entity is reporting; or (2) the interconnecting utility and that is affiliated with the generator owner, but having sufficient segregation of duties such that the person performing the Independent Reporting Entity duties does not have access to transfer or retire Certificates created for that generator. The Independent Reporting Entity must report data in accordance with the standards set forth in these Operating Procedures and in the M-RETS Terms of Use.

Interface Control Document: An Interface Control Document contains the protocol for collecting and transferring generation data from participating control areas and other reporting entities to M-RETS for the purposes of creating M-RETS Certificates. The Interface Control Document will identify M-RETS Registered Generators to be reported for that interface, as well as the collection of information such as meter IDs, data format, communication protocols, timing, and security requirements for data collection.

Interchangeability: The ability to substitute one gas for another (in the context of natural gas replacement) without materially changing or influencing environmental health and safety, end-use performance, or pipeline integrity.

Interstate Natural Gas Pipeline: Any pipeline located in the United State of America under Federal Energy Regulatory Commission ("FERC") jurisdiction subject to Section 7 of the Natural Gas Act.

Landfill Gas: Gas which is emitted from the breakdown of materials in a landfill. This gas is considered "raw" and requires upgrading for introduction to the pipeline network.

Local Distribution Company ("LDC"): Any firm, other than a natural gas pipeline, engaged in the transportation or local distribution of natural gas and its sale to customers that will consume the gas.

Methane: A colorless, odorless, flammable hydrocarbon gas that is the main component of natural gas.

M-RETS Administrator: M-RETS is the entity with the authority to administer or oversee the administration and implementation of the M-RETS Operating Rules.

M-RETS Board: The Board of Directors of Midwest Renewable Energy Tracking System, Inc., a Wisconsin nonprofit corporation.

M-RETS Certificates: *See* Certificate.

Marketer: A marketer is any person that either purchases RTCs for sale to others or a broker that arranges sales of RTCs between two or more parties.

Month and Year of Generation: *See* Vintage.

Multi-Feedstock Indicator: An indication that the Generating Unit or generator can use more than one Feedstock type to generate a Resource Type capable of production RTCs. This often occurs as co-digestion, when feedstocks are mixed in the Anaerobic Digestion process to increase output. The multi-feedstock indicator will be selected during registration or later if the Generating Unit or Generator is converted to multi-feedstock capability after registration is complete.

Nameplate Capacity/Maximum Generator Nameplate Capacity: The maximum rated output of a generator per month and year.

Natural Gas: A naturally occurring combustible mixture of gases recovered from the earth from wells. It is composed predominantly of methane but contains other light hydrocarbons and impurities.

Non-Qualified Generation: Generation that does not qualify for M-RETS Renewable Thermal Certificate creation. This includes RNG recorded as part of an injection but sold into a program that does not recognize and/or utilize M-RETS as well as non-renewable additives added to RNG.

Non-Pipeline Connected: A Generator that does not carry the Pipeline Connected attribute. This attribute means the generator may be a private or proprietary pipeline that is either used by the owner for internal purposes or contracted to only a limited set of users or the Generator does not meet requirements to qualify as Pipeline Connected. An example is a closed-loop CHP system.

Organization: An M-RETS Organization is a party that has registered with M-RETS and has established an Organization within the M-RETS system. Also referred to as a Subscriber or User.

Partial Carbon Pathway: Takes into account the GHG emissions associated with all of the steps of producing a fuel up to the Injection Point or interconnection into the distribution system or interstate transportation system. Expressed as a Carbon Intensity. Some programs may allow a Partial Carbon Pathway to represent the CI of the fuel from the Injection Point to the source. Make sure to check the documentation and the start point and endpoint of the CI.

Pipeline Operator: For purposes of this document, the pipeline operator owns and operates the pipeline system. The pipeline operator may be a Local Distribution Company (LDC) or utility, or it may be a pipeline transmission company that sells gas to the LDC.

Pipeline Connected: For purposes of an RTC, pipeline connected means that the Generator is not "behind-the-meter" and therefore is connected to any legally recognized transportation system, including, but not limited to any: major interstate pipeline, intrastate pipeline, pipeline distribution, pipeline transmission, and/or Hinshaw pipeline. This includes without question common carrier systems legally recognized by any local, state, federal, or provincial regulator, statute, or ruling. This does not include a private or proprietary pipeline that is either used by the owner for internal purposes or contracted to only a limited set of users.

Pipeline Quality: Meets the requirements for injection into a common carrier system.

Qualified Generation: Renewable Thermal Generation Information that meets the strict data and reporting requirements for M-RETS Certificate creation. Only Qualified Generation can be issued M-RETS RTCs.

Registered Generator: A renewable energy source, known as a Generating Facility or Generator, that has registered with M-RETS.

Renewable Portfolio Standard (RPS): Generally, a Renewable Portfolio Standard is a legislative or administrative requirement on a gas utility or load-serving entities in a jurisdiction to include a designated percentage of renewable thermal energy to their load.

Renewable Natural Gas or RNG or Biomethane: Pipeline quality injectable gaseous fuel derived from biomass or other renewable sources that have lower lifecycle CO2e emissions than geological natural gas. It is the portion of biogas that consists primarily of methane. RNG is generally extracted from raw biogas through cleanup or conditioning, to remove those constituents which impact gas quality. Using effective biogas cleanup (removal of gases that affect overall gas quality). RNG is considered suitable for many

end-use applications and may be considered suitable for inclusion in common carrier pipeline systems, depending upon other characteristics of the gas and specific tariff requirements.

> Unless a state, provincial, or federal statute dictates otherwise, to be recognized as renewable natural gas, the methane must either be: (1) produced from the anaerobic decomposition of organic material, including co-digestion; or, (2) The methane is produced from the non-combustion thermal conversion of any of the following materials when separated from other waste:
>
> (1) Agricultural crop residues.
> (2) Bark, lawn, yard, and garden clippings.
> (3) Leaves, silvicultural residue, and tree and brush prunings.
> (4) Wood, wood chips, and wood waste.
> (5) Nonrecyclable pulp or nonrecyclable paper materials.
> (6) Livestock waste.
> (7) Municipal sewage sludge or biosolids.

Renewable Thermal: Energy generated and used for no electric purposes by a facility that any state, province, or territory participating in M-RETS considers renewable by law or policy. This includes, but is not limited to: biogas, renewable natural gas ("RNG") also known as biomethane, solar thermal, renewable gas (i.e. hydrogen produced using renewable energy), the heat produced by a combined heat and power system using recognized renewable feedstock (e.g., biomass, wood waste, etc.), ground source heating and cooling pumps, and geothermal energy.

Renewable Thermal Certificate (RTC): a unique representation of the environmental attributes associated with the production, transport, and use of one dekatherm of renewable thermal energy (e.g., one Dth of RNG.

Reporting Entities: *See* Independent Reporting Entity.

IRE Entity Terms of Use: The agreement between a reporting entity and M-RETS that describes the terms and conditions under which the reporting entity agrees to exchange information and conduct business with M-RETS.

Resource Type or Thermal Resource: The type of fuel or other naturally occurring thermal energy source produced by the associated Generating Unit. Resource Type is indicated during generator registration (e.g., a biogas generator produces biogas as a Resource Type while a renewable natural gas generator produces renewable natural gas).

Responsible Party: An M-RETS Organization that has been assigned the Rights of Registration for a given Generating Unit. This gives the designated Organization full and sole management and authority over the transactions and activities related to the Generating Unit within M-RETS.

Retirement Account: *See* Account

Retirement of Certificates: Retirement of Certificates is an action taken to remove a Certificate from circulation within the M-RETS system. Retirement may be initiated only by the M-RETS Organization for Certificates in their own Account(s). Retirement is effectuated by transferring Certificates into a Retirement Account.

Self-Reporting Generator: A generator that does not use a IRE to report generation. All certificates from Self-Reporting Generators will be indicated as self-reported.

Solar Thermal – A solar energy conversion system characterized by the optical concentration of solar rays through an arrangement of mirrors to generate a high temperature working fluid

Static Data: Static data describes the attributes of the Generating Unit. Static information generally includes information related to the characteristics of the generation facility such as technology type, ownership, or location. See Appendix B-1 for a list of M-RETS Static Data Fields.

Syngas: Also known as synthesis gas, it is a fuel gas mixture consisting primarily of hydrogen, carbon monoxide, and often some carbon dioxide. It is the intermediate product in the process of creating synthetic natural gas (SNG). Syngas is usually a product of gasification.

Upgrading (of cleaned biogas): The process of removing diluents to improve the methane percentage of gas and thus the heat content and quality of the gas.

Vintage: Month and Year of generation. The vintage on the issued Certificate will be the last month and year of generation contributing to an accumulated Dth.

Virtual Pipeline: A system whereby, in the absence of a nearby pipeline, gas is loaded onto special container trucks and driven to an injection point along a more distant pipeline. Gas can also be delivered by this method directly to fueling stations.

Wobbe Number: An interchangeability parameter that takes both the higher heating value and the relative density of the gas into consideration and accounts for both heat content and gas flow through a fixed orifice. The Wobbe Number is calculated by dividing the HHV by the square root of the relative density. Differences in the relative density, and by extrapolation the Wobbe Number, generally come from the presence of other hydrocarbons or diluent and inert gases such as carbon dioxide or air (nitrogen plus oxygen).

Whole/ Whole Certificate: A "Whole Certificate" is one where none of the renewable and/or environmental attributes have been separately sold, given, or otherwise transferred to another party by a deliberate act of the Certificate owner. Renewable attributes shall include the Environmental Attributes that are defined as any and all certificates, benefits, emissions reductions, offsets, and allowances, howsoever entitled, directly attributable to the generation from the Generating Unit(s). Individual states and provinces may create different definitions of renewable Certificates. M-RETS may consider revision of the definition of an M-RETS Certificate in the future if needed to better meet the needs of state and provincial programs. *See also* the definition of "Certificate."

Yield: The amount of RNG that can be produced from each dry ton of biomass feedstock input. This unit is expressed in British Thermal Units (Btus) and Million Standard Cubic Feet (MMSCF) of natural gas equivalent.