Renewable Thermal Tracking System

Operating Procedures

Effective 11/21/2024

Table of Contents

To jump to a section in this document, select the title of the section.

Section 1: Introduction

Section 1.1: What is an RTC?

Section 2: Privacy and Security

Section 3: Establishing an M-RETS Organization

Section 3.1: Billing Information

Section 3.2: Inactivating an Organization

Section 4: The Tracking System

Section 4.1: Users
Section 4.1.1: User Permissions
Section 4.1.2: Notification Settings
Section 4.1.3: Notification Categories
Section 4.1.4: Inactivating Users
Section 4.1.5 Advanced Account Permissions

Section 4.2: Accounts
Section 4.2.1: Active Accounts
Section 4.2.2: Deposits to the Active Account
Section 4.2.3: Transfers from the Active Account
Section 4.2.4: Functionality of an Active Account
Section 4.2.5: Retirement Accounts
Section 4.2.6: Deposits to the Retirement Account
Section 4.2.7: Functionality of the Retirement Account
Section 4.2.8: Functionality of the Reserve Account
Section 4.2.9: Account Status

Section 4.3: Generators
Section 4.3.1: Generator Registration
Section 4.3.2: Verification of Static Data Submitted During Generator Registration
Section 4.3.3: M-RETS Interaction with Regulatory Commissions and Certification of Facilities for Programs
Section 4.3.4: Multi-Feedstock Generator
Section 4.3.5: Annual Review of Generators
Section 4.3.6: Changes to Static Data
Section 4.3.7: Generator Inactivation
Section 4.3.8: Generator Suspension
Section 4.3.9: Generator Termination
Section 4.3.10: Changing the Organization to which a Generator is Associated
Section 4.3.11: Assignment of Rights of Registration – Designation of Responsible Party
Section 4.3.12: Termination of Rights of Registration
Section 4.3.13: Changing Rights of Registration

Section 4.4: Generation

Section 4.4.1: Generation Upload Process
Section 4.4.2: Measurement of Generation and Adjustments (Qualified & Non-Qualified Generation)
Section 4.4.3: Initial Reporting and Reporting Historic Generation Upon Generator Approval
Section 4.4.4: Generation Data Submittal Time Restrictions
Section 4.4.5: Requirements of Independent Reporting Entity (IRE) and Self-Reporting Generators
Section 4.4.6: The Addition of Non-Renewable Fuels – Non-Qualified Generation
Section 4.4.7: Carbon Pathways
Section 4.4.8: IRE Verification Scope
Section 4.4.9: Changes to Issuances (Rollbacks)
Section 4.4.10: Data Transmittal

Section 4.5: Renewable Thermal Certificates (RTCs)
Section 4.5.1: Certificate Creation
Section 4.5.2: Certificate Data Fields
Section 4.5.3: Certificate Retirement
Section 4.5.4: Voluntary Retirement Types
Section 4.5.5: Compliance Retirement Types
Section 4.5.6: Forced Retirement of Certificates
Section 4.5.7: Reserving Certificates

Section 4.6: Transactions
Section 4.6.1: Transferring Certificates between Organizations
Section 4.6.3: Automatic Recurring Transfers
Section 4.6.4: Irrevocable Automatic Recurring Transfers

Section 4.7: Programs
Section 4.7.1: Establishing a Program
Section 4.7.2: Participating in a Program

Section 4.8: API

Section 6: Public Reports

Section 7: Acknowledgements

Appendix A: Resource Type & Feedstock Source

Appendix B: Glossary

Appendix C: Thermal Resources and Feedstocks

Section 1: Introduction

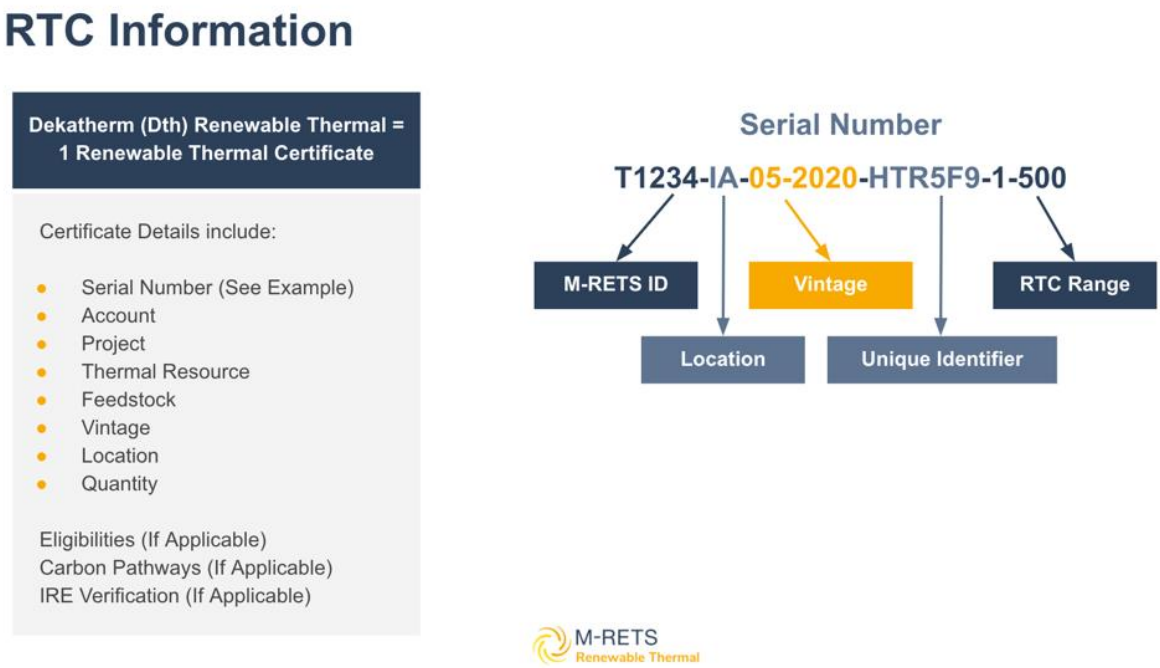
This document serves as a comprehensive introduction to the Midwest Renewable Energy Tracking System (M-RETS). M-RETS staff organized this document to help lead Users through registration and use of the System.

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.

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. Below is a depiction of what an RTC looks like in the M-RETS RTC system.

Figure 1: Anatomy of an RTC



Figures 1-4 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

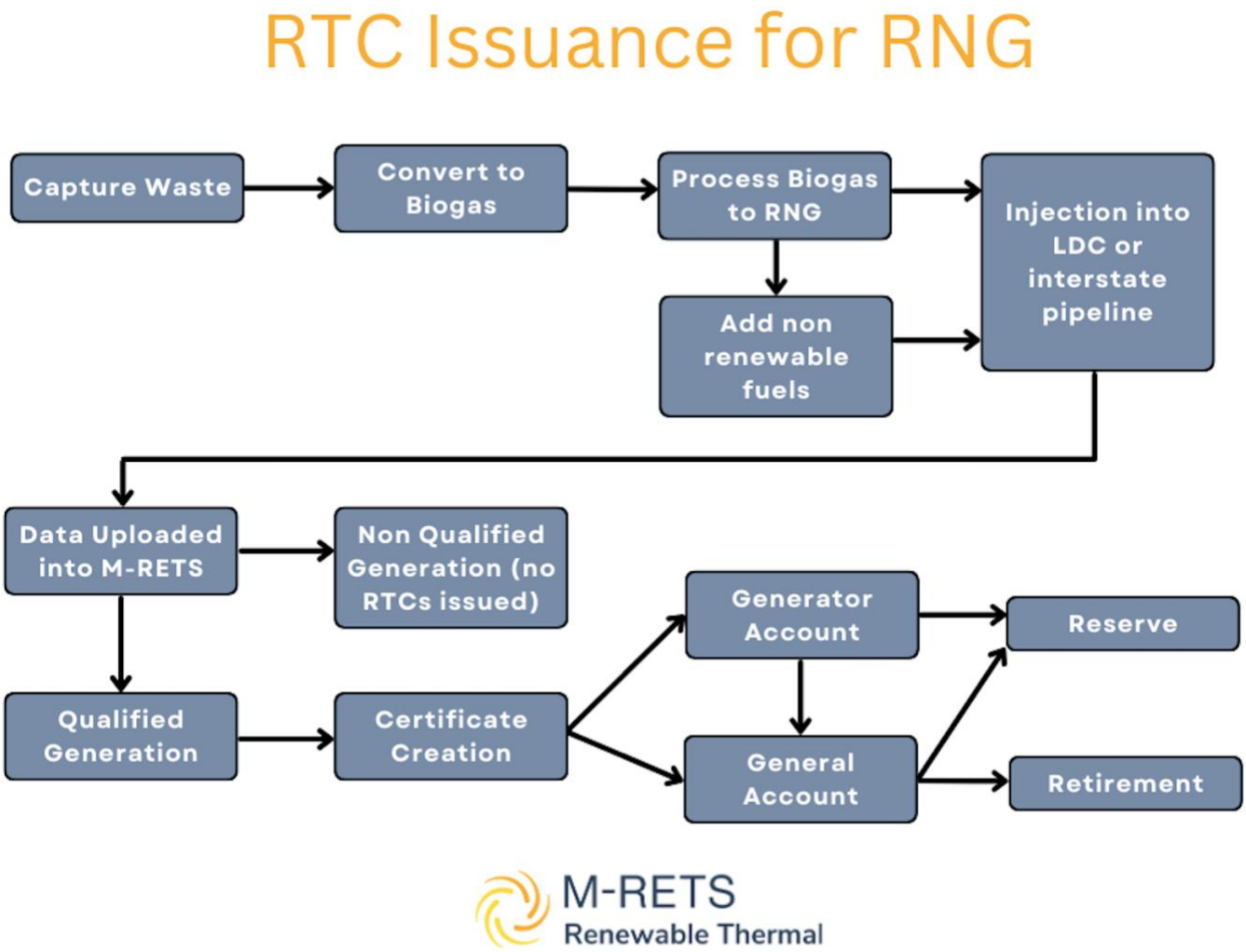


Figure 3: RTC Process for Behind-the-Meter Renewable Thermal Fuel

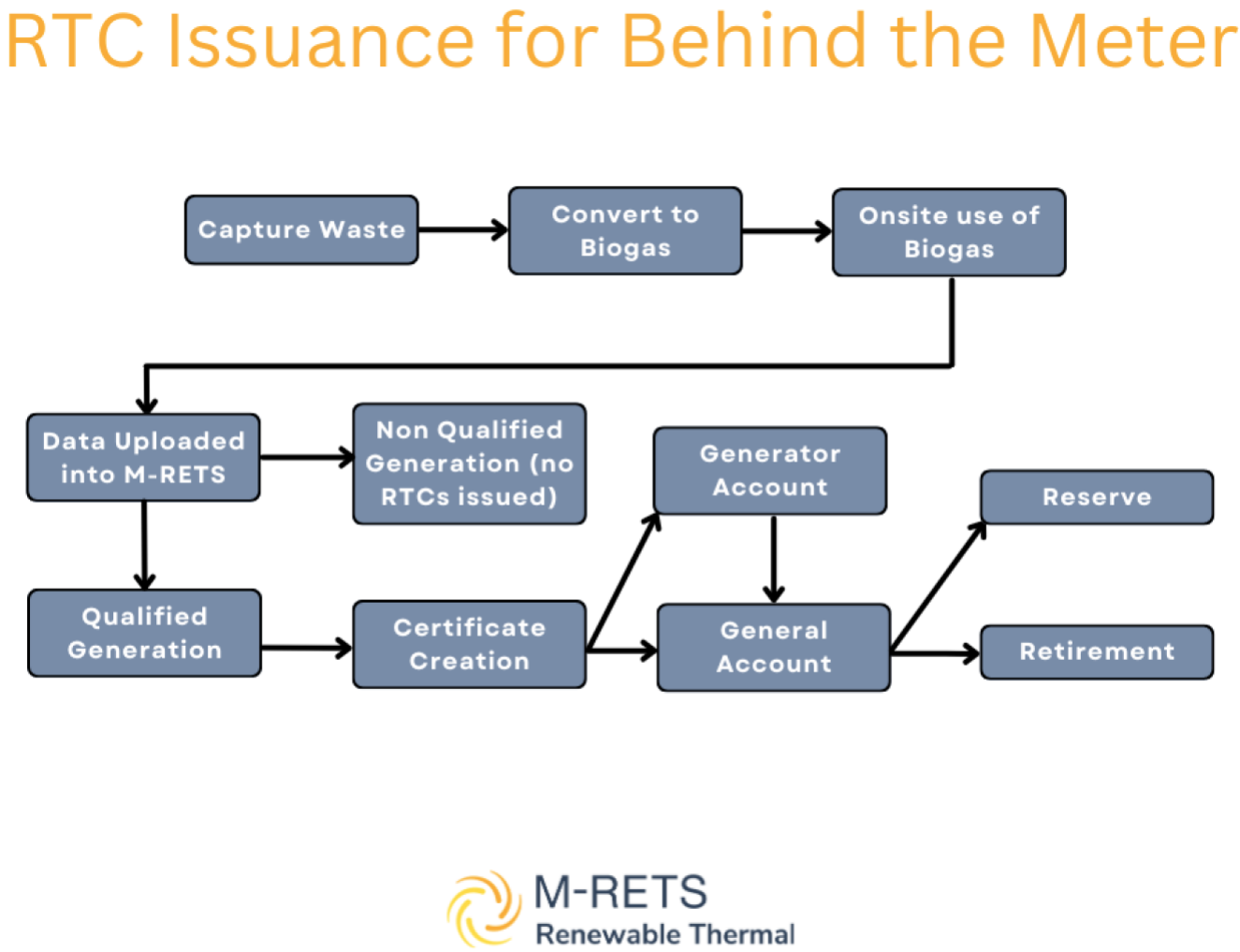


Figure 4: RTC Process for Combined Heat & Power Using Renewable Thermal Fuels

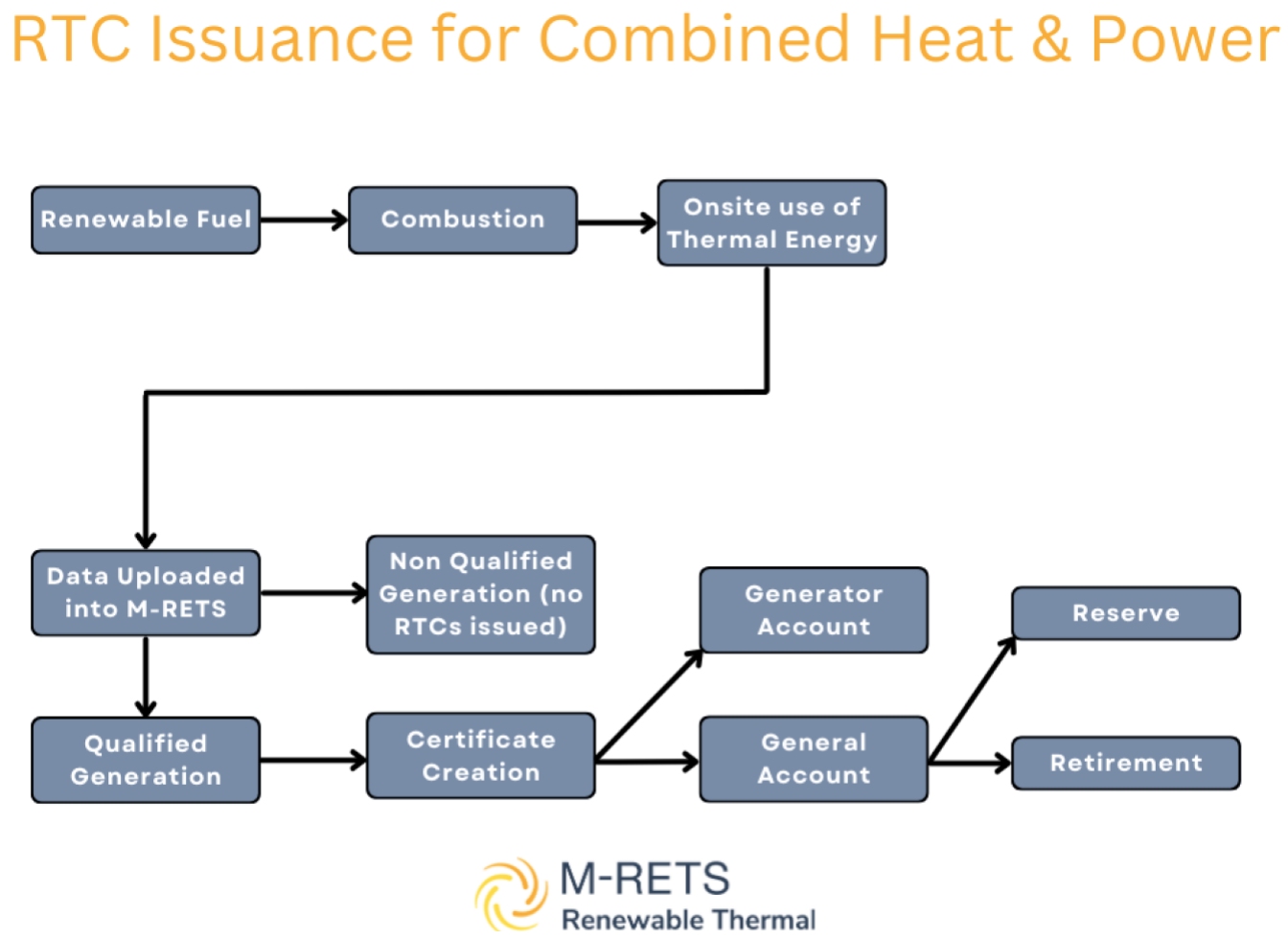
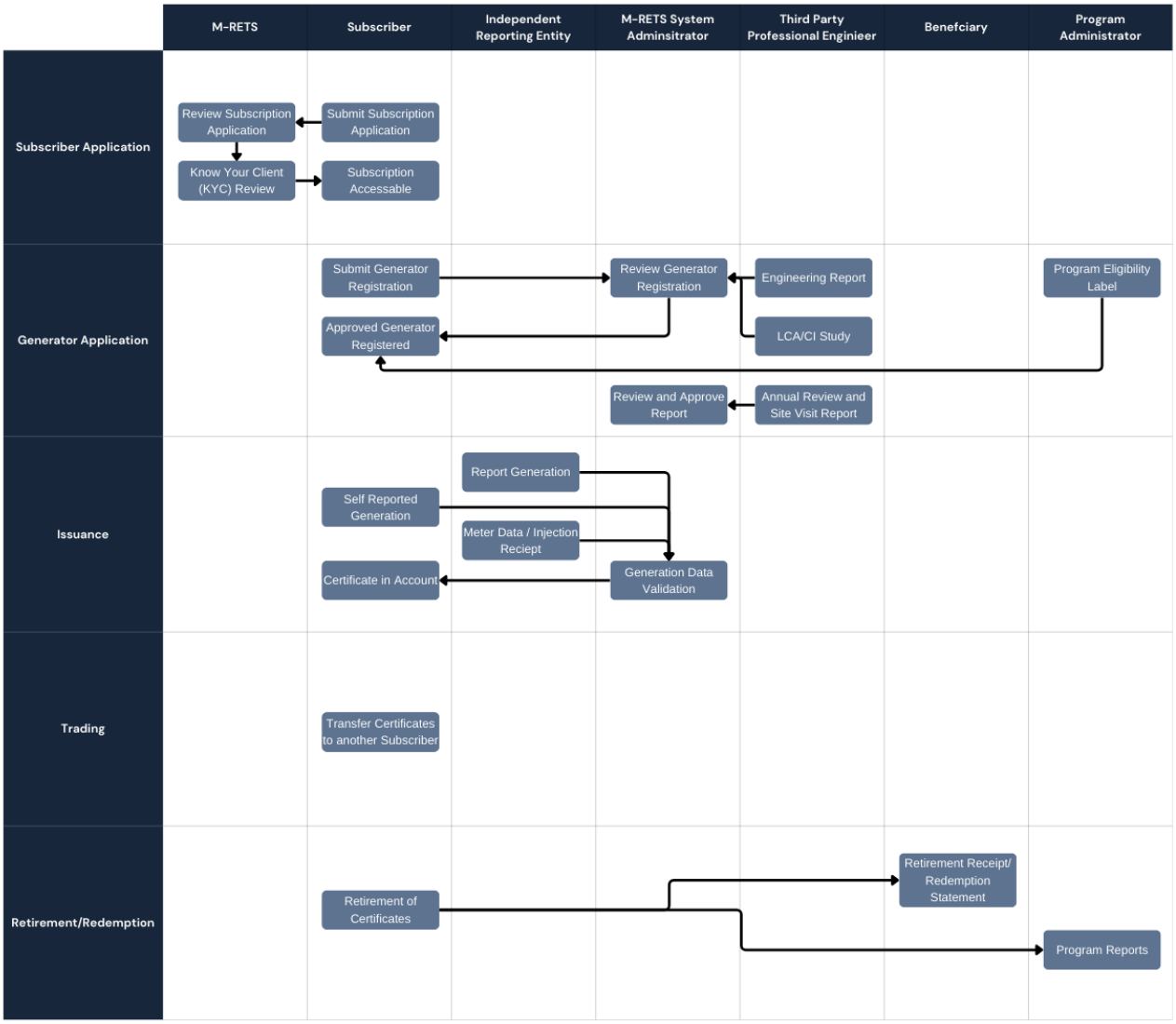


Figure 5: RTC Processes by Subscription Type



Section 1.2: Environmental Attribute Certificate Accounting Methodologies: Mass Balance and Book and Claim

Environmental attribute tracking systems can be used with multiple accounting methodologies including; "Book and Claim" and "Mass Balance" to account for and track the production, trade, and consumption of renewable energy. While M-RETS is primarily used to facilitate Book and Claim accounting, M-RETS can also be used to collect documentation to validate the full chain of custody for the flow of gas injected into a pipeline through the end consumer. A regulatory scheme requiring Third Party Audits and additional data collection procedures to validate chain of custody beyond the generator registration fields and required documents (refer to Section 4.3) can work with the M-RETS Administrator to create guidance for their program. M-RETS may be used under any chain of custody scheme and each market participant may at its own discretion or pursuant to rules provided by voluntary market accounting bodies or applicable regulatory schemes decide the appropriate accounting methodology.

Section 1.2.1: Book and Claim Accounting

A Book and Claim System primarily tracks the environmental benefits of renewable thermal generation, independently of the actual movement of the physical molecules. This accounting method permits the generation of renewable energy at one site, which is then fed into a pipeline or delivered behind the meter. This approach decouples the environmental attributes from the physical delivery, facilitating the allocation of green benefits across different parties.

Key characteristics of Book and Claim:

- Decoupled Claims: The environmental attributes are decoupled from the physical energy and can be traded independently.
- Flexibility: Allows entities in regions without direct access to renewable energy sources to support and claim renewable energy by purchasing Environmental Attribute Certificates (EACs).
- Simplicity: Simplifies the accounting of renewable energy attributes, especially useful in deregulated energy markets.

Section 1.2.2: Mass Balance System

A Mass Balance system is a method used to track the flow of sustainable or renewable materials through the supply chain, ensuring that inputs and outputs balance over a defined system boundary. This approach is often used in the production of sustainable materials, biofuels, and in some renewable energy contexts, ensuring that the proportion of sustainable or renewable content claimed in the final product matches the proportion that was fed into the process.

Key characteristics of Mass Balance:

- Integrated Claims: The claim about the sustainable or renewable content of the product is closely tied to the physical flow of materials through the supply chain.
- Chain of Custody: Requires a robust tracking system to ensure the integrity of the claim from the source to the final product, often necessitating certification schemes.
- Complexity: Can be more complex to manage due to the need to track physical flows and maintain the balance of sustainable inputs and outputs.

Section 2: Privacy and Security

M-RETS is committed to safeguarding the confidentiality of all User information, as outlined in our Operating Procedures, Terms of Use, or any Separate Agreement, unless explicit authorization is granted. However, M-RETS provides access to public reports via its website's public section, showcasing organizational and generator names along with aggregated data. Disclosure of information is stringently controlled, with exemptions made solely for State or Provincial Regulators, and subject to rigorous verification processes. Research institutions and government entities may receive unit-specific generation data, albeit without any personal or identifying details such as specific locations, organization

names, users, and generator names. For comprehensive details on our confidentiality practices, please refer to Section 11 of the M-RETS Terms of Use.

M-RETS enforces a security policy requiring Users to create a robust password of at least 12 characters and strictly prohibits the sharing of login credentials. It is obligatory for every individual accessing the system to use distinct User login credentials. User activities are closely monitored through their unique User ID and password. Failure to adhere to these security measures or the Terms of Use could lead to termination of access privileges to M-RETS.

Additionally, M-RETS advocates for the implementation of multi-factor authentication (MFA) to fortify security measures, offering SMS or phone call options for MFA activation, which remains optional for Organizations at this point. Nevertheless, M-RETS reserves the right to require MFA for all users in the future to ensure the system's security integrity. Should you have any queries or wish to provide feedback, please contact systemadmin@mrets.org.

Section 3: Establishing an M-RETS Organization

Participation in M-RETS, while voluntary, may be compulsory for compliance with state or provincial regulations. Entities that register with M-RETS and pay the requisite fees are eligible to set up an Organization within the system, without a limit on the number of Organizations that a business or individual can establish. During the registration process, it is mandatory to provide information such as a name of registering individual, address, and contact details through a secure online platform. Additionally, M-RETS requires each Organization to pass a security verification conducted by an external service before system access is granted (refer to Section 3.3). The registration must be accompanied by the payment of fees, which are dependent on the Organization's type as specified in the M-RETS Terms of Use. An Organization's status within M-RETS remains active unless it is deactivated, a process described in Section 3.2: Inactivating an Organization.

M-RETS undertakes a thorough review of all new or updated Organization registrations. Should any required fields be incomplete, an error notification will be issued.

All Organizations are subject to an Annual Subscription Fee, with the renewal fees payable in the month of initial registration for each subsequent year. The amount of the Subscription Fee is determined by the type of Organization enrolled. A detailed visual guide and additional information available is provided below. It should be noted that billing will be based on the fee structure available on the M-RETS website.

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 invoice issuance, M-RETS shall inactivate the Organization's access. 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.

- **Generator Registration Fee: $1,500/one-time fee** (M-RETS may waive this fee if and only if the Generator meets certain conditions)
    - Every Generator shall be required to pay a $1,500 one-time registration fee. This fee accounts for the cost of verifying the registration information prior to certificate issuance. 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 information submitted through the registration process is true and correct.

Subscription Fees:

- **Generator Only: No Annual Subscription Fee**
    - Organizations under this category are authorized to register one or multiple renewable thermal generators and will receive Energy Attribute Certificates (EAC) issued for these generators. A Generator-Only Subscription is permitted to hold certificates, initiate outgoing transfers, and withdraw certificates, specifically for use in external regulatory programs like the California Low Carbon Fuel Standard or the United States Environmental Protection Agency Renewable Fuel Standard. Although there are no annual fees for Generator-Only Accounts, transaction-based fees may be applied for the withdrawal of certificates.

- **General Subscription: $2,500/year**
  - The General Subscription is authorized to hold, transfer (both outgoing and incoming), and retire Energy Attribute Certificates (EAC). Additionally, it can register and manage projects, receiving certificates for approved generation. Organizations that are utilizing M-RETS to retire certificates to meet compliance requirements for any State or Provincial RPS programs that utilize M-RETS must use this subscription type.

- **Independent Reporting Entity (IRE): No Fee**
  - An Independent Reporting Entity (IRE) serves as a neutral party, such as a control area operator or third-party meter reader and is not linked to the generator owners it represents or is sufficiently independent in duty segregation to ensure no conflict of interest. IREs must sign an agreement with M-RETS, committing to precise data reporting and IRE Verification process per the Operating Procedures. This role is critical to upholding the integrity of certificate issuance and tracking. Please reach out to systemadmin@mrets.org before registering this Subscription Type.

- **Program Administrator/Government Regulator: No Fee**
  - State or Provincial regulatory bodies, such as staff from public utility commissions and public service commissions, as well as administrators of voluntary market programs like Green-e, may be eligible for a Program Administrator Subscription. To determine your eligibility for this type of account, please reach out to the M-RETS System Administrator at systemadmin@mrets.org.

Section 3.1: Billing Information

Organizations are tasked with ensuring their billing information remains current and accurate. Users may update billing details at any time. Guidance for modifying or adding billing contact information is available here.

Under the Organization Information tab, users can find billing details, including the ability to view transactions listed on invoices and access to Organization invoices. Instructions for invoice viewing are accessible here.

M-RETS offers a variety of payment methods, including checks, wire transfers, credit card, or ACH transfers. For Vendor Authorization Forms, W-9 requests, or any billing inquiries, Organizations should reach out to business@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 include the full postal 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. Include invoice number, Organization name, and M-RETS on check payments.
3. Include the invoice number(s) on the wire transfer.
4. Include 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 two business days to be reflected in the Organization.

Section 3.2: Inactivating an Organization

To initiate the process of Organization Inactivation, a User possessing the necessary manage permissions must formally notify M-RETS via email (systemadmin@mrets.org) sent from the email address linked to their User account with the requisite permissions. This written communication should clearly request the placement of the Organization into Inactive status. Upon inactivation, any Generators affiliated with the Organization will also be set to Inactive status, halting the production of any further Renewable Thermal Certificates (RTCs). Concurrently, any Active RTCs associated with the Organization will become inaccessible once the Organization is marked as Inactive.

Section 3.3 Identity Verification with Plaid

All organizations must complete identity and fraud detection verification through Plaid. Plaid is an industry-leading service that partners with over 12,000 financial institutions in the United States and many more globally. For a list of supported institutions, refer to Plaid's official institutions page.

3.3.3 Functions of Plaid:

- **Identity Confirmation**: Plaid confirms the identity of individuals and entities.
- **Risk Assessment**: Plaid's algorithms cross-verify against international watchlists for anti-money laundering (AML) and politically exposed persons (PEP) risks.

3.3.4 Data Privacy

M-RETS does not store any data collected by Plaid. After the verification process is complete, all such data will be redacted from the Plaid System. By following this procedure, we aim to maintain a secure and trustworthy environment for all users and stakeholders in the EAC markets.

Section 4: The Tracking System

Section 4.1: Users

Authorized Users within an Organization are permitted to add new Users to their Organization, ensuring broader access while maintaining individual accountability. Each individual accessing the system must possess distinct User login credentials, underlining the importance of personal responsibility and security within the system. M-RETS employs a rigorous monitoring system that utilizes each User's unique ID and password combination to track their specific actions within the system. This detailed monitoring is essential for maintaining a secure operational environment and for the enforcement of compliance with our security policies.

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

Section 4.1.1: User Permissions

Access and control privileges of each User are governed by customizable permissions. These permissions facilitate differentiated access levels, including; Manage, Read Only, or No Access, tailored to the specific requirements of the Organization. Permission adjustments can only be made by Users who possess Manage permissions for their Organization or by M-RETS Administrators. The capabilities associated with each permission level are defined as follows:

- Manage: Grants the capability to both view and modify the subject matter.
- Read Only: Provides the ability to view the subject matter without editing capabilities.
- No Access: Prevents the user from viewing or editing the subject matter.

In instances where an Organization's sole User with Manage permissions is to be dissociated from the Organization, M-RETS necessitates the submission of an affidavit.

Affidavit Requirements:

- The affidavit must be presented on official company letterhead.
- It should state the dissociation of the former manager from the Organization.
- It must nominate a new manager, indicating their acceptance to assume Manage permissions.
- The affidavit requires a signature from a member of the Organization's management who has authority over contractual decisions.

Section 4.1.1.1: Organization Permission

'Organization' refers to the Organization Information, Billing Contact Information, and User List. Organization permissions grant Users within an organization access to specified accounts and permissions.

Section 4.1.1.2: Transactions Permission

'Transactions' refers to incoming and outgoing transfers of Certificates. A User with 'Manage' permissions will be able to transfer (both internal and external) as well as accept incoming transfers of Certificates.

Section 4.1.1.3: Generators Permission

'Generators' refers to a registered Generator. 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

'Billing' refers to invoicing. A User with 'Manage' permissions will be able to view and save invoice details.

Section 4.1.1.4: Application Programming Interface (API) *Permission*

Any User that intends to connect and use our API will need Manage permissions. Contact our API Specialist (apisupport@mrets.org.) to set up your API Key.

Section 4.1.1.5: Upload Generation Permission

'Upload Generation' refers to the uploading and issuance of Certificates. A User with 'Manage' permissions will be able to report Dth information for issuance.

Section 4.1.1.5: Programs Permission

'Programs' refers to the Programs feature that allows Regulator and General Subscription Organizations the ability to set up rulesets that prevent retirements of Certificates outside the parameters set to a specified Retirement Account. A User with 'Manage' permissions will be able to create and manage Programs.

Section 4.1.1.6: Markets Permission

'Markets' refers to the Markets feature that allows Regulator and General Subscription Organizations the ability to set up rulesets that prevent retirements of Certificates outside the parameters set to a specified Retirement Account. A User with 'Manage' permissions will be able to create and manage Programs.

Section 4.1.1.7: Agent Permission

Agent users are classified as "external" parties who can be affiliated with a specific Organization within M-RETS. These agents can be granted varying degrees of access to the M-RETS organization using the permission settings.

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 four notification settings:

1. Transfers
2. Issuances
3. Retirements
4. Markets

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 A]
Total Certificates: 789
Transaction Details:

Project	Fuel Type	Vintage	Facility name	Quantity	Serial Number
M123	Wind	10/2021	Facility A	789	123-MN-10-2021-A475027E-1 to 789

To complete the transfer, [Organization B] must accept it by signing into M-RETS and visiting the Pending Transaction section of the Transaction page. (https://app.mrets.org/transfers/pending-transactions)

Section 4.1.3.2: Issuance

This setting emails Users upon generation submittal.

Hi,
Organization: [Organization A],
The following RTC's have been issued:

Project	M-RETS ID	Vintage	Quantity	Serial Numbers	Account
Facility A	123	08/2022	298	123-MN-08-2022-B8907 - 1 -298	2022 Active

Your email preferences can be updated in the User Profile section of the M-RETS platform.

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 4.1.3.4: Markets

This setting emails Users regarding participation in the Markets feature.

> *Hello [User],*
>
> *[Your Organization] has a pending invitation to participate in a market.*
>
> *MARKET INFORMATION*
>
> *Market Administrator: [Market Organization]*
>
> *Market Name: [Market Name]*
>
> *Visit your pending market invites to accept or reject this invitation:*
> *[Link to Market invitation in the M-RETS platform]*
>
> *Read more about the new Markets feature in M-RETS: Market*
>
> *If you have any questions, please contact us at systemadmin@mrets.org.*
>
> *Best Regards,*
> *The M-RETS Team*

Section 4.1.4: Inactivating Users

Maintaining an up-to-date User list falls under the responsibility of the Organization. This includes deactivating Users who have departed from the company or those who no longer need access, as well as adding new Users to fill the positions of those who have left. Neglecting these responsibilities can result in considerable delays when attempting to access an Organization's account.

In instances where an Organization's sole User with Manage permissions is to be dissociated from the Organization, M-RETS necessitates the submission of an affidavit (see Section 4.1.1 for affidavit requirements).

An Organization has the right to inactivate a User's access at any time and for any reason. Similarly, M-RETS has the discretion to inactivate a User's access for non-compliance with the Operating Procedures or Terms of Use.

Section 4.1.5 Advanced Account Permissions

Organizations can grant specific account level permissions. This feature provides users with access to specific Active, Retirement, or Reserve accounts. Once configured, account level permissions allow a specific user granted privileges the ability to view data for the designated account. All other accounts within an organization not granted permission to a user with account specific permissions remain inaccessible. To ensure the user does not have access to any other data, all other permissions should be set to 'None'.

Section 4.2: Accounts

M-RETS supports the creation of the following Account types: Active, Retirement, and Reserve. Users can transfer Certificates to specific Accounts manually or automatically upon upload via an Automatic Recurring Transfer. Each Account is assigned a unique identification number. Users must assign a name to all accounts (e.g., by state, by product name, etc.).

Section 4.2.1: Active Accounts

An Organization within M-RETS may contain any number of active accounts These accounts serve as repositories for all active Certificates held by the Organization. M-RETS Certificates stored in Active Accounts are considered liquid assets. Depending on the Organization's subscription type, it may have the capability to transfer, retire, or export these Certificates as required by their operational or compliance needs.

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)M-RETS ID number.

Section 4.2.1.1: Deposits to the Active Account

There are three ways that 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 Certificates into their Active Account from another of the Organization's Active Accounts (Internal Transfer)
3. The Organization can accept a transfer of Certificates from another M-RETS Organization (External Transfer).

Section 4.2.1.2: Transfers from the Active Account

There are three ways to transfer Certificates from an Active Account:

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

Section 4.2.1.3: Functionality of an Active Account

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

Section 4.2.2: Retirement Accounts

A Retirement Account is a repository for Certificates that the Organization wants to designate as retired. An Organization can retire Certificates for any number of reasons, see section 4.5.4 for a list of retirement options and definitions. Certificates in a Retirement Account are no longer transferable to another party and serve as an electronic proof of retirement. There is no limit to the number of Retirement Accounts an Organization may create.

Retirements are effective immediately upon completion of the transaction. Once a 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 a Certificate.

Section 4.2.2.1: Deposits to the Retirement Account

See Section 4.5.3: Certificate Retirement

Section 4.2.2.2: Functionality of the Retirement Account

Retirement Accounts serve the purpose of securely storing Certificates that have been permanently withdrawn from active circulation, ensuring these Certificates are recognized for either voluntary or compliance-related claims. Once an Organization finalizes the retirement of a Certificate, the action is irreversible, safeguarding against the possibility of a Certificate being claimed more than once.

Section 4.2.2.3: Regarding Un-retiring Certificates:

Should an Organization wish to reverse a retirement, it must reach out to M-RETS in writing within 24 hours after the retirement is completed. M-RETS may consider allowing a reversal within this 24-hour window, provided there's no risk of the Certificate being claimed for multiple reasons and there's no suspicion of wrongful conduct. Should there be any concern about potential double-claiming, M-RETS

will reject the reversal request. Certificates retired for a Supported Program will require approval of the relevant regulatory authority before processing an unretirement.

Section 4.2.3: Reserve Accounts

An Organization may establish multiple reserve accounts. A Reserve Account is an account that is used to designate Certificates as: "Reserved". Transferring Certificates to a Reserve Account removes the Certificates from circulation. Once Certificates are placed in a Reserve Account they can no longer be transferred to another organization. Reserve Accounts and the transactions associated with them are considered permanent. Certificates deposited into a Reserve Account will be settled and claimed outside of M-RETS. The M-RETS Administrator cannot verify an environmental claim for certificates deposited into the Reserve Accounts.

Section 4.2.3.1: Deposits to a Reserve Account

Certificates are deposited into a Reserve Account by any user with Manage Transaction permissions in an organization. Once Certificates are deposited into a Reserve Account, the information associated with the Certificates cannot be edited.

M-RETS has a drop-down menu of options for acceptable reserve reasons that the Generator Owner must select to complete the reserve.

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

Section 4.2.3.2: Withdrawals from a Reserve Account

The M-RETS Administrator has the sole ability to withdraw Certificates from a Reserve Account. Once the user has deposited Certificates into a Reserve Account they can no longer be moved by any user. The M-RETS Administrator will require documentation explaining why Certificates were reserved in error.

Section 4.2.4: Account Status

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

Section 4.2.4.1: 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 4.2.4.2: 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 4.2.4.3: 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 4.3: Generators

M-RETS defines renewable thermal 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[1] produced by registered generators[2] To ensure that double-counting does not occur, Generators participating in M-RETS must report 100% of their generation output. 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). [3]

A Generator engaging in sales within either a voluntary or non-supported regulatory programs (such as LCFS or RFS) that operates outside of M-RETS is required to report 100% of their generation data through an Independent Registered Entity (IRE). This IRE should also serve as the Quality Assurance Plan (QAP) reporting entity or be an authorized reporting entity within the relevant voluntary or regulatory scheme. Information pertaining to generation for programs not covered by M-RETS will be accessible exclusively to the Generator Owner, IRE, and designated regulatory personnel.

For generators pending approval under the EPA's Renewable Fuel Standard (RFS) or California's Low Carbon Fuel Standard (LCFS), M-RETS permits self-reporting of generation data up until the official approval date. Once approval is granted, generators must provide documentation from the relevant regulatory body specifying the date of approval for the program. From this data the generator will be required to stop self-reporting and switch to an IRE or inactivate the generator in M-RETS.

All Generators producing non-electric thermal energy in North America are eligible to register with the M-RETS Renewable Thermal Registry. This encompasses a variety of sources, including but not limited to: biogas, renewable natural gas/biomethane (RNG), solar thermal, Clean hydrogen[4], thermal energy

[1] As defined in these Operating Procedures.

[2] 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.

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

[4] 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.

from combined heat and power systems utilizing renewable feedstocks (such as biomass or wood waste), ground-source heat pumps[5], and geothermal energy.

Organizations are permitted to issue and retire Certificates that are stacked with generation tracked in the RFS or LCFS specifically when the reported volumes in both programs are for the same transportation end use, provided these programs officially acknowledge M-RETS as a valid compliance mechanism and permit stacking.

M-RETS supports registration of generators that are considered interconnected or behind the meter.

Generators not fulfilling these specific criteria may still apply for registration, but their participation is contingent upon approval from the M-RETS Administrators. Similarly, requests from states, provinces, territories, countries, or Generators situated outside of North America to utilize M-RETS will be considered on a case-by-case basis by the M-RETS Board.

M-RETS will allow for a generator to be registered in both the Renewable Electric (REC) System and the RTC System. In the case of an electric generator where waste steam is recycled, M-RETS will issue; RECs for the portion of electric generation and RTCs on the portion of recycled/recovered steam.

For synthetic natural gas (also referred to as synthetic methane) generators a carbon intensity must be completed and provided to M-RETS before registration. The carbon intensity of the synthetic gas must be lower than that of conventional natural gas if the project is to be registered in the system.

Section 4.3.1: Generator Registration

To initiate the registration process, all Generator Owners are required to establish an Organization subscription and subsequently register their Generator with M-RETS. For Generators under joint ownership, a single designated Organization must be appointed privately to house the Generator's registration.

It is mandatory for all registered Generators to furnish relevant documentation for M-RETS's examination and approval of the Generator Registration. To maintain the integrity and validity of registrations, Generators must submit an Engineering Report. This report must be authored by a licensed professional engineer. Generators that engage with an IRE are obligated to undergo an annual review process, as detailed in Sections 4.4.8, and Self Reporting projects must undergo an annual review process, as described in section 4.3.5. For projects situated outside the United States, employing a Professional Engineer licensed in the respective country is permissible, contingent upon the M-RETS Administrator’s approval.

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

If Relevant:

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

- **Schedule A: Generator Owner's Designation of Responsible Party**: Generators that are registered by a designated Responsible Party can assign the registration rights to a Designated Responsible Party. (Required only if registering Organization is not the Generator Owner)
- **Certificate of Interconnection and Operational Balancing Agreement:** include a generator interconnection agreement if the generator is connected to a pipeline or a gas distribution network.
- **Air and Building Permits:** Any local, state, or provincial documentation or permits that can substantiate the generator registration data.
- **Program Certification Documentation:** Please refer to the compliance program requirements for program-specific documents to be uploaded.

Required Engineering Report prepared by a licensed Professional Engineer:

- Documentation for measuring and verifying the quantities of each feedstock (see Section 4.3.4.1):
  - Fuel and Feedstock Sources
  - Calculations used to determine maximum daily, monthly, and yearly values.
  - Fuel processing
  - Reports or certificates from laboratories that demonstrate the chemical composition of the biogas and/or biomethane produced and its calorific value.
  - When it is a biomethane production unit based on the purchase or production of biogas, presentation of evidence that the biomethane production unit owns the biogas or has contractual coverage for the biogas used. Evidence that both parties understand the language of the agreement and precautions have been taken to prevent double counting. An attestation may be submitted from both parties that the biogas is not independently registered or otherwise double counted.
  - Production capacity data and production data from the last 24 months (if applicable).
- Description of the Interconnection/Injection point and measurement:
  - Coordinates of the Injection Point
  - Pipeline Details
    - Pipeline name
    - End user details - Presentation of contracts or other evidence that demonstrates the destination of the gas that is produced.
- Equipment Specifications: Information regarding specific equipment and processes detailed in the process flow diagram. This may include but is not limited to:
  - Inlet meter
  - Efficiency upgrading
  - Revenue Quality Meter Details
    - Meter Model
    - Meter Serial Number
    - Photo of Installed Meter
  - Gas Compressors
- Process flow diagram - A single line gas diagram using industry standard notation. This must show all existing network entry/exit points and any directly connected consumer supply points
- Statement on Generator certification and participation in the RFS, LCFS or any other program outside of the M-RETS RTC including a Carbon Tracking System.
- Require proof of site visit from PE:
  - Unedited project photos (with Production Facility location embedded).

- An onsite inspection report should include:
    - The location of the Production Facility as both address and latitude and longitude;
    - The sources/type of Production Facility (including photographic evidence);
    - The capacity of the Production Facility;
    - The nature and size of any on-site consumer loads;
    - The location and class of metering equipment;
    - The connection to the pipeline if it exists;
    - Any standby generators (e.g., for start-up) and whether they can directly contribute to the export of gas from the site;
    - How and when the site takes gas from the network;
    - The Commenced Operation Date
    - The quality of the produced biogas, including its calorific power;
    - The accuracy of the single line diagram provided;
    - Photos of the inspection.
- **Life Cycle Assessment Report (Third Party Required):** Only required if Carbon Pathways are to be reported.
    - Must be completed by an independent third party.
    - Initial review of fuel pathways/carbon intensity score (Reference)
    - Analysis of the Carbon Intensity and assessment methodology
    - Review all inputs and outputs that could affect CI
    - Statement on the independence of the third party performing the review
    - Documentation validating individuals' credentials:
        - PE Stamp and license number or;
        - PHD in Lifecycle Carbon Analysis with Accreditation Documentation

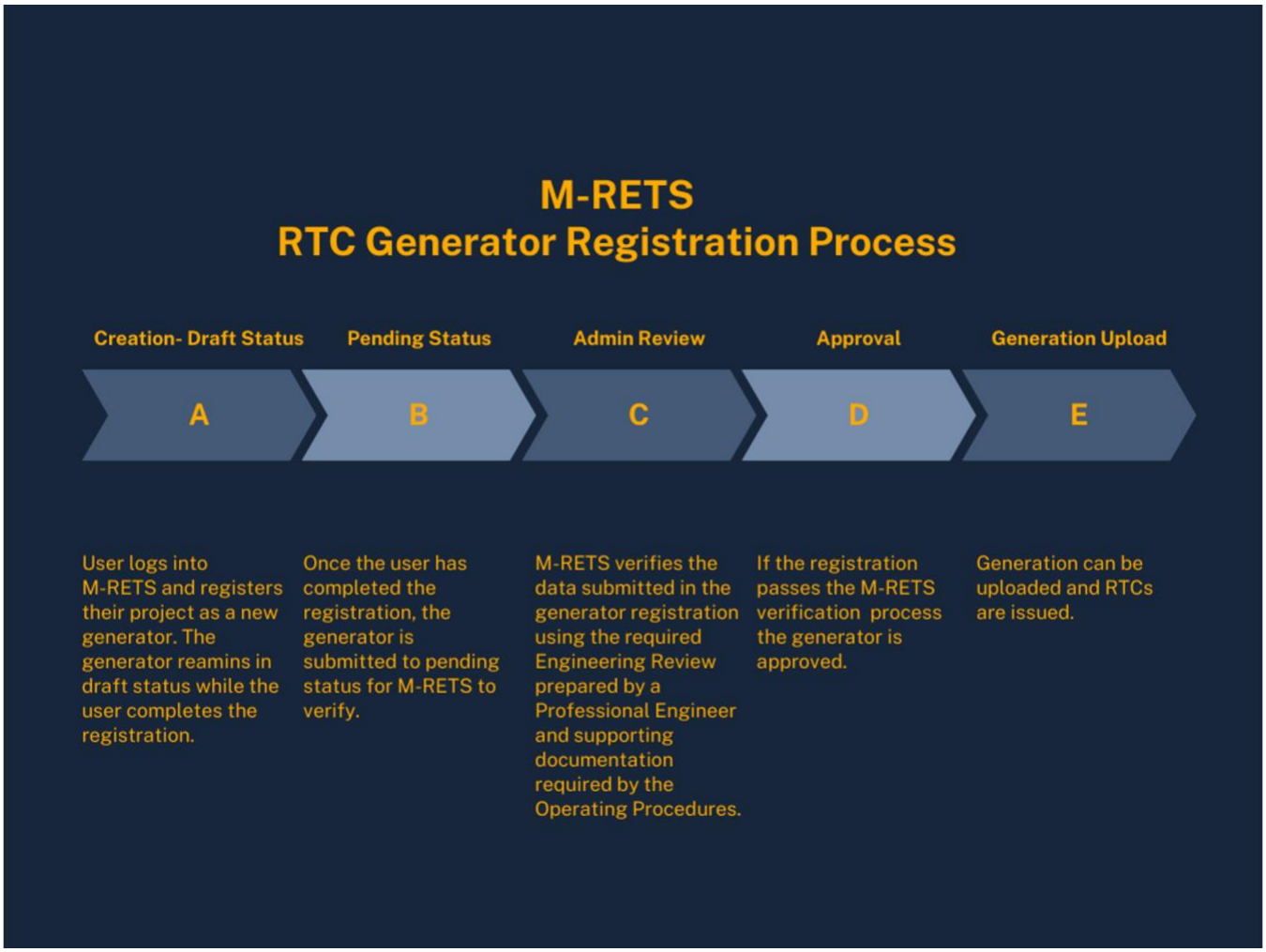
M-RETS reviews and verifies all static data submitted for accuracy and to ensure that requirements are met.

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

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

A Visual Guide to the Generator Registration Process

M-RETS Renewable Thermal Operating Procedures



Section 4.3.1.1: Static Data in M-RETS

Static data fields describe the physical attributes of the Generating Unit. Users input this data to M-RETS during the Generator registration process.

M-RETS verifies all static data before approving a generator. M-RETS reserves the right to request additional 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 4.3.1.2: Professional Engineer Requirements

A Professional Engineer (PE) is a licensed engineer who has met the rigorous standards of education, experience, and examination, signifying a high level of expertise and ethical standards in the field of engineering. To become a PE, one must earn a four-year degree in engineering from an accredited program, pass the Fundamentals of Engineering (FE) exam, gain four years of progressive experience under a PE, and pass the Engineering exam from the National Society of Professional Engineers (NSPE) or National Council of Examiners for Engineering and Surveying (NCEES). Professional engineering certifications in Canada and Mexico will be accepted. The engineer must be compliant with the state or provincial licensing body and its standards and must be in good standing.

Section 4.3.2: Verification of Static Data Submitted During Generator Registration

By completing the Generator registration, the User affirms to M-RETS that the information provided regarding the Generator is accurate, comprehensive, and correct to their best knowledge and belief. Should there be any modifications post-submission, it could lead to delays in the approval timeline. The approval process for the Generator commences as soon as it moves out of draft status.

Should any of the data be found inaccurate or discrepancies arise between the submitted online registration details and the documentation provided for verification, M-RETS will inform the registrant about the inconsistencies. A process will then be initiated to either amend the discrepancies in the online form, retract the registration, or submit evidence validating the accuracy of the information on the form. This process will continue until M-RETS is convinced the supplied information meets approval criteria.

Additionally, M-RETS offers to waive the one-time registration fee for Generators that agree to engage an Independent Registered Entity (IRE) for the initial year of reporting generation data. The registrant is required to provide a legal declaration from the IRE, confirming the review and accuracy of the information in the registration, based on the best of the IRE's knowledge.

Section 4.3.3: M-RETS Interaction with State and Provincial Regulators and Certification of Generators for State Programs

M-RETS shall be responsible for verifying information submitted during the Generator Registration Process. Each State or Province will be responsible for determining whether a Generator qualifies for their compliance program. The Regulator may use the information collected and verified by M-RETS to conduct this determination.

State and Provincial 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 Regulator has exercised this option, M-RETS will send an electronic message to the designated contact at the commission each time a user registers a generator with the specific state eligibility. The Regulator reserves the right to conduct site visits or request additional information from a Generator to determine whether the facility meets all requirements.

Section 4.3.4: Multi-Feedstock Generators

A multi-feedstock Generator can produce energy using more than one feedstock type, where the quantity of each of the feedstocks 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. [6] 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 not like Certificates issued for the second feedstock type. If the Generator Owner or M-RETS cannot measure or calculate the

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

relative quantities of renewable energy production from each feedstock, the generator is not eligible to register as a multi-feedstock Generator.

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.

The Generator 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. 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 Generators, 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 and review Generators once a year during the month of January to ensure correct static data. M-RETS will email Users annually 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 the data for every Generator in the Organization.

The Generator Owner's that do not use an Independent Reporting Entity (IRE), should provide the following:

Verification objective	*Method*	*Frequency*

1. Carbon Intensity (CI) (if applicable)	1. Third Party Engineer review the following and provide letter attesting to the following: 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	Annually (from the date the CI was verified)
2. Reported gas volumes injected into the common carrier pipeline are accurate	3. Third Party Engineer review the following and provide letter attesting to the following: 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 4. Confirm upgrading unit efficiency 5. Prepare a report of the above and upload it to M-RETS via the generation submission process.	Annually (before or by date of last verification)
3. The RNG production site is physically connected to a common carrier pipeline	1. Third Party Engineer review the following and provide letter attesting to the following: a. Visual inspection	Annually (before or by date of last verification)
4. The Environmental Attributes are intact, and the same gas claimed in	Affidavit from biogas producer and RNG producer	Annually (before or by

M-RETS is not sold elsewhere.		date of last verification)

Generators that use an Independent Reporting Entity (IRE) must comply with the annual review through their IRE's verification requirements (see Section 4.4.8).

Evidence of a visual inspection (see Section 4.3.1 for onsite visit documentation requirements) by the third-party professional engineer or Independent Reporting Entity (IRE) is required prior to registration and then annually by January 31st of each year thereafter. The Visual inspection must be documented in a report submitted by the IRE or PE. Unreasonable withholding of access to the relevant premises or documentation will result in the immediate suspension of issuing in relation to that Production Facility.

Where, for reasons of safety or security, a Registrant reasonably requires additional notice of a requirement for access to the relevant premises or documentation a notice period of not more than one Business Week may, at the sole discretion of the Entity requesting the inspection, be accepted.

Section 4.3.6: Changes to Static Data

In addition to the annual review, 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 "essential generating characteristics".

These changes will put the affected generator into Pending Status. Before the Generator is placed back into Active status, M-RETS will verify the Generator meets the required changes, such as Program eligibility requirements. In the case where a regulatory program requires preapproval, M-RETS will require the appropriate documentation and reserves the right to verify this information with the appropriate certification body.

M-RETS can remove Generators for cause, including willful misrepresentation of static data. M-RETS may rely on the 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 '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 unit's participation, 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, 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 a Generator Owner wants to remove a generator from M-RETS, they shall notify the M-RETS Administrator from a user registered in that Organization with Manage Project privileges with the following information:

- The date the generating unit should be removed from the 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 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 via email. The request must come from a user with manage "organization" permissions.

The Transferor must confirm the following:

a. The Organization Name as it is registered in M-RETS.
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
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.

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.

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) to an M-RETS Organization for the purposes of allowing that party the ability to control and manage the disposition of any 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. The organization must email M-RETS with the information in section 4.3. 10.. 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 4.3.14: Production Facility Boundary and Traceability

The boundary of a Generator shall follow the principles below:

- In cases where there is a biogas production plant and an RNG/biomethane production plant, both plants can only be registered as a single generator if both units are owned by a single owner (Registrant) and if 100% of the biogas production is intended for the production of RNG (with or without flare). If part of the biogas is destined for another destination or use, each production unit must be registered as a different Production Facility. If the owner of each production unit is different, each plant must be registered individually.
- Shall normally be defined as the total or partial set of existing production units in a single connection to an internal use point or public gas pipeline or to a point of shipment of biogas/RNG to be transported by any other means (including, but not limited to, road or rail); and
- Shall, where multiple points of connection to a public gas pipeline exist, be permitted only where evidence of contiguous ownership of gas or land assets that explicitly relate all production units within such contiguous ownership is provided; and
- Shall be capable of being controlled and dispatched either as a single unit or through a common generation control and dispatch system; and
- Shall have normally been planned at the time of first construction works as a single production project and, where capacity increases have occurred, these shall have been directly integrated with any pre-existing generation units inside the contiguous asset boundary; and
- May, at the sole discretion of M-RETS be considered as a single Production Facility where multiple production units have been placed under different ownership as part of a wider integrated Project. Such cases shall be limited to projects where there is:
    - Documented contiguous private ownership of gas or land assets that explicitly relate all generation units within such contiguous private ownership; and
    - Pre-construction documentation to support that the project was initiated with all generation units explicitly identified for potential development.

For the avoidance of doubt:

- Common production control and dispatch does not create a boundary for a Generator where other constraints suggest limits within this.
- Common ownership does not create a boundary for a Generator where other constraints suggest limits within this.
- Where multiple connections exist, the Registrant shall still be required to submit a single line diagram that identifies every point of generation and consumption within the common gas connection between production units. Any change to the common gas connection and connections to it after the time of registration shall be notified to M-RETS and may be subject to a further registration fee.

Section 4.4: Generation

See Figures 2-4 for a graphic representation of the RTC generation process. Any user with Generation permissions can report generation (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 or more of the following statuses:

- **Accepted**: Applies to all generations 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. Pending Generation is not issued and therefore not represented by Active certificates.
- **Pending: Fuel Split:** Applies to all generation waiting to receive 'Feedstock' allocation if the generator is a multi-feedstock generator
- **Pending Date Feasibility:** Applies to all generations that occurred outside of the 62-day reporting period allowed by M-RETS.
- **Holding Period:** Applies to all generations that are reported into M-RETS, this status provides the user the opportunity to review the reported generation. If not approved by the M-RETS Administrator, generation will automatically be approved after 14 days.

Section 4.4.1: Generation Upload Process

All generation data is reported by an IRE or Self-Reported. 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 an allocation of certificate issuance. During the upload, Users must declare whether the generation is 100% from renewable sources, or if the Generator used non-renewable sources. At issuance M-RETS will issue certificates on the quantity of renewable fuel(s) reported as a qualified issuance.

M-RETS requires that all quantities of generation reported be supported by documentation. M-RETS reserves the right to reject a Generator's 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.

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)

Section 4.4.2.1 Measurement and Reporting Protocols

1. Measurement Methodology:
    - For units connected to a local gas distribution system, measurement is done at the point of interconnection.
    - Units connecting to the interstate pipeline system are measured at the meter at the injection point.
    - Non-interconnected or behind-the-meter generation is measured based on the approved metering methodology/instruments submitted at registration.
2. Mandatory Reporting of Total Generation:
    - Generators are required to report 100% of the generation into the system at the injection point or point of measurement to prevent double-counting and ensure M-RETS can function as a central repository, even if the production is not tracked in M-RETS.
    - Reported generation will be substantiated with Pipeline Injection receipts or metering documentation.

Section 4.4.2.2 Certificate Issuance and Non-Qualified Generation

1. Certificate Designation by Generators:
    - M-RETS will not create certificates for generation reported and designated as ‘not qualified’ to be tracked on M-RETS (such as the LCFS or RFS).
    - Generators, through an Independent Registered Entity (IRE) or via self-reporting, must designate the exact quantity or percentage of certificates sought for issuance.
    - A generator engaging in sales within either a Non-Supported voluntary or regulatory program that operates outside of M-RETS is required to report 100% of their generation data through an Independent Registered Entity (IRE).
    - For example: A generator injects 100 Dth at the interconnection during the reporting period, the IRE or Self-Reporting Generator must report 100 Dth. If the generator sells 50 Dth into the voluntary market **(M-RETS Supported)** and 50 Dth into the RFS Program (**Non-Supported**), M-RETS will only issue certificates for 50 Dth of generation. The system will maintain a record of 100 Dth injected and will provide details to any Regulator/Program Administrator regarding the disposition of the Dth according to the information provided at generation upload.

2. Non-Qualified and Qualified Generation Definition:

- Qualified Generation: any generation that qualifies for certificate issuance that is reporting into a program/ market that is M-RETS Supported.
- Non-Qualified Generation: any generation not eligible for certificate issuance, including non-renewable additives or generation intended for Non-Supported Programs.

This policy ensures transparency regarding the portion of generation that qualifies for certification and prevents misuse of non-qualified generation.

Section 4.4.2.3 Special Considerations for RNG Generators

1. Requirement for Revenue Quality Meter:
    - Biomethane generators are required to use revenue quality meters to ensure accurate measurement.
    - Exceptions can be made for projects without a revenue quality meter, but such exceptions will be clearly noted on the Public Generator Report and/or the certificates.

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 2023, M-RETS will accept generation submitted within 90 days of approval going back to the year 2012. 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. M-RETS will evaluate the reporting and issuance of generation that dates back further than two years on a case-by-case basis.

Section 4.4.4: Generation Data Submittal Time Restrictions

To encourage accuracy in generation data reporting, M-RETS requires documentation in the form of an injection receipt, meter-read out, or invoice to validate the generation. The M-RETS Admin will verify that the generation quantities submitted match the documentation uploaded by the user. 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 4.4.4.1: Hierarchy of Generation Data Evidence

This M-RETS observes a hierarchy of evidence when reporting generation data:

a) For a Generator which is connected to a national or local or private gas pipeline, the evidence should be gas market settlements metering data (e.g., pipeline statement or injection invoice);

b) Where such gas market settlement data is not available or where there is no connection to any gas pipeline, appropriate metering data which has not been through settlement validation may be accepted at the discretion of M-RETS;

c) Where metering data is not available, measured volume documentation for the periodic commercial/legal transfer from the Generator to another person/company may be accepted at the discretion of M-RETS.

d) If none of (a), (b), or (c) is feasible, a system of measurement suggested by M-RETS.

The Registrant must give the reason for using evidence that is in any category above, except (a), unless prior approval has been granted by M-RETS.

Approval of methods under (c) or (d) above will be granted only if all the following criteria are satisfied:

- The measured volume is agreed to by an independent auditor;
- The measured volume cannot be claimed by another person/company;
- The measurement process is a reasonable representation of the volume produced by the Generator during the production period identified.

Section 4.4.4.2: Gas as a Feedstock

An organization cannot register if they operate with gas storage for the treatment and transformation of gas into a by-product, such as fertilizers. This type of operation must ensure the gas maintains the requisite attributes. Such a company shall retire the RTC in the name of the company if they intend to use the certificates as proof of the feedstock origin.

Section 4.4.4.3: Conversion

Since biogas and biomethane are eligible to be registered in M-RETS and are eligible under the I-Track(g) product code, in the case of conversion, the standard unit to be used is Dth. For each biogas Generator, a third-party audit is necessary to evaluate the quality of the produced gas and correctly measure the total Dth for each normal cubic meter of gas produced by the unit.

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.

- A Reporting Entity is required for:
    - Generators that participate in a Non-Supported Program
    - Generators located in Mexico
    - Generators with multiple feedstocks
    - Generators that report generation that is eligible to be used for certificate issuance in both the REC and RTC System.

M-RETS will maintain a record 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 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.

M-RETS will work with the personnel from the IRE 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 recognizes in some cases non-renewable fuels or gas may be blended with renewable fuels (e.g., to achieve a specific heating value and/or meet other pipeline specifications). M-RETS considers Non-Renewable Fuels added to a fuel as 'Non-Qualified Generation'. The non-renewable fuels will not be issued 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. 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 (CP)

M-RETS supports the tracking of one or more Carbon Pathways that provide a Carbon Intensity ("CI"). 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, Partial Lifecycle CI, or Injection point.

Carbon Pathways must be completed by an independent third party that does not have any relation to the organization registering the generator. CP methodologies can be completed by either a licensed PE or an academic with a PHD in Lifecycle Carbon Analysis or a similar field.

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

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

3. **Injection Point Carbon Intensity** - Represents GHG emissions associated with the injection of a fuel at the point of 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 equivalent 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.[7]

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 users to maximize GHG emission reductions should users seek to do that.

The alternative to using lifecycle accounting is to use source-based accounting similar to that used in national and state-level GHG emission inventories.[8] Source-based accounting is simpler in that it focuses only on the greenhouse gasses 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).

Upon retirement, users may select an existing CI. 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.

Each Carbon Pathway has an applicable date range, the first date in the range represents the verification date by an independent third party. M-RETS will allow for CPs to be retroactively applied before the verification date if the third party that performed the review validates that there were no changes that would result in a material difference (Appendix B) of CIs. Generation reported prior to the verification date will not issue certificates with the CI Score. 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.

---

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

[8] *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).

Section 4.4.7.1: Monthly Carbon Intensities

For generators reporting monthly carbon pathways, M-RETS mandates that the "Verification Start Date" and "End Date" for the CP align with the issuance period of the Certificates to which that CP is being applied.

Section 4.4.8: IRE Verification Scope

Certificates submitted to M-RETS by an IRE must meet stringent criteria. Once generation is uploaded by an IRE, Certificates will be marked with an IRE eligibility flag, indicating they have undergone rigorous, independent third-party verification. Any deviation from the standards mutually established by M-RETS, the Generator Owner, and the IRE could lead to the Generator's disqualification from the M-RETS system, annulment of any certificates that may not correctly maintain IRE eligibility, and the exclusion of the IRE from future involvement with M-RETS.

IREs are obligated to follow a precise independent third-party verification procedure. While IREs can opt for a more stringent verification process, they must not, under any circumstances, fall short of the minimum requirements outlined here:

Verification objective	*Method*	*Frequency*
1. The CI of the is equal to or less than what is claimed initially. If more than one, each CI must be reviewed 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	Annually (before or by date of last verification)
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	At generation reporting (via attestation, and becomes attached to certificate and visible to future owners in the chain of custody)

	M-RETS via the generation submission process.	
3. The RNG production site is physically connected to a common carrier pipeline	Visual inspection	Annually (before or by date of last verification)
4. The Environmental Attributes are intact, and the same gas claimed in M-RETS is not sold unless otherwise permissible and stacking is permissible under the regulatory programs.	Affidavit from biogas producer and RNG producer and upload Affidavits into M-RETS via the Generator Documents Portal.	Annually (before or by date of last verification)

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

The User must notify M-RETS if they believe the reported generation data recorded on the Generation Log is inaccurate for any reason. This is known as a dispute. Adjustments made after the upload of generation data to M-RETS and/or Certificate issuance are known as Rollbacks or 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 generation may be re-reported, and certificates will be issued on the reported quantity

If incorrect generation data is reported and the Certificates have been transacted (externally transferred, retired, etc), 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.

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 supporting Generation Document.

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 an IRE.

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. Any remainders will be carried over until a whole certificate can be issued.

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 history dashboard.

Certificates in M-RETS do not have an expiration date. Regulators and Program Administrators define the lifetime or expiration date for Certificates. Therefore, all certificates in M-RETS are "bankable-RETS never forcibly removes or retires RTCs due to vintage.

For gaseous generation that is placed into storage, M-RETS will allow the vintage of certificates to correspond with the month and year that the physical gas was released from storage.

4.5.1.1: Stacking Claims

Generators may not make stacked claims in any other program or jurisdiction (Gas/REC Tracking System, or Carbon Tracking System) except for regional programs allowing for participation in the federal RFS. If permitted, all stacked claims must be made for the same use and volume of the fuel or its derivatives in both regional and federal programs.

Section 4.5.2: Certificate Data Fields

a. Serial Number(s)
b. Account
c. M-RETS 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 retirements. M-RETS maintains an integrated online help guide that Users can access after logging into the System and selecting the button labeled "Help" in the left dashboard

Section 4.5.4: Voluntary Retirement Types

Beneficial Ownership (BBO)

- 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.
- All retirements for the benefit of an individual owner for a general environmental reason.

  A "Notes" field is provided to allow the User to provide specific information about the sale (i.e. customer name, retirement year, etc.)

  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 Gas Program

Green Gas Program

- 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 Gas Program Retirement.

Corporate Renewable Claim

- Corporations that wish to make environmental claims may use this retirement type. 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 field.

Green-e Gas Program

- 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.

The Center for Resource Solutions (CRS) sets generation vintage requirements for their Green-e Gas Program, refer to the table below for the eligibility requirements by certified transaction year.

Table 2: Fuel Vintage based on Year of Certified Transaction

Year of Certified Transaction	Earliest Eligible Fuel Pipeline Injection Date[7]	Latest Eligible Fuel Pipeline Injection Date
2021	1/1/2017	12/31/2021
2022	1/1/2018	12/31/2022
2023	1/1/2019	12/31/2023
2024	1/1/2020	12/31/2024
2025	1/1/2021	12/31/2025
2026	1/1/2025	12/31/2026
2027	1/1/2026	12/31/2027
2028 and beyond	Increases by 1 year annually	Increases by 1 year annually

[7] Through sales year 2023, Participants may apply to use fuel injected into a common carrier pipeline between 5 and 15 years in the past on a first-come-first-served basis at the discretion of CRS, with a cap of 4 million MMBTU across all Participants for such fuels that are applied through sales year 2023.

Section 4.5.5: Compliance Retirement Types

State/Provincial Portfolio Standards

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

Low Carbon Fuel Standard

- This should be selected only if the Certificates subject to this claim will be used for a Low Carbon Fuel Standard claim that has designated M-RETS as the tracking system for the specific standard. The use of this retirement type is subject to the rules and regulations of any state, federal, or provincial low carbon fuel standard Program Administrator. This retirement type is only applicable for programs that are not the California LCFS or EPA RFS.

Renewable Fuel Standard

- This should be selected only if the Certificates subject to this claim will be used for the US EPA's Renewable Fuel Standard. Use of this retirement type is subject to the rules and regulations of the Renewable Fuel Standard.

Other - Non - RPS Compliance

- This should be used for retirements toward compliance programs that are not part of an RPS program.

Oregon Clean Fuels Program

- This should be selected only if the Certificates subject to this claim will be used for the state of Oregon's Clean Fuels Program.

LCFS/RFS Stacked Claim

- 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.

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: Reserving Certificates

Certificate Reserving is an action taken by the User to remove a Certificate from M-RETS to use the Generation for a Non-Supported or another Compliance/Voluntary program. M-RETS is not responsible for ensuring that Users reserve Certificates for voluntary or compliance purposes. M-RETS requires all Users to initiate and complete all reserves.

Section 4.6: Transactions

Section 4.6.1: Transferring Certificates between Organizations

M-RETS Users may transfer active Certificates to:

1. Another Organization (External)
2. Another active Account (Internal)

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 Transactions Dashboard- Pending tab 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 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. The System will notify all parties should either party withdraw or reject a transfer.

Section 4.6.2: Automatic Recurring Transfers (ARTs)

Automatic Recurring Transfers are a recurring transfer that immediately transfer certificates to the specified recipient when generation is reported and approved.

Users may request ARTs of Certificates from any Generator Resource Type to the following:

1. One internal Account
2. Multiple internal Accounts
3. An external Organization

In the registration of an ART the transferor must indicate:

1. Generator Name
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 ART ("Transferor"), the ART enters a 'Pending' status. The receiving Organization ("Transferee") then receives an email detailing the pending ART.

> *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.*

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 ART does not automatically accept subsequent transfers. The System requires a manual acceptance by the Transferee in case of unwanted or incorrect quantities.

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

Each ART 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.

Section 4.6.3: Irrevocable Automatic Recurring Transfers (ARTs)

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

Section 4.7: Programs

The Programs feature helps regulators, regulated entities, and organizations to manage compliance and voluntary programs efficiently. This feature allows Regulators and Organizations the opportunity to create rulesets that prevent retirements of Certificates outside the parameters set to a linked Retirement Account.

Users may create rules around any subset or all the following data points however, the System does not require a ruleset to utilize this feature nor:

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

Any User with a General Account Subscription Organization that has ‘Manage’ Program permissions or a Program Administrator can create a 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 Organization must create a new Retirement Account and link the Account to the Program. A user must first create a new retirement account and link the account to the Program before Certificates can be retired. 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 the corresponding Program.

If a User attempts to retire Certificates that do not match the predetermined criteria in the Program's Ruleset, the System will block the retirement.

Section 4.8: Application Programming Interface (API)

M-RETS offers an API to provide Organizations with a General Account Subscription the ability to access M-RETS data from outside the System. 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. M-RETS encourages all users to use the sandbox environment prior to utilizing the API in the production system.

M-RETS is currently in the planning phase for our RTC API, a more detailed timeline of our API development work can be obtained by contacting systemadmin@mrets.org.

Documentation for the API is accessed through the System. Select the "Documentation" Dashboard to view a list of available calls and technical specifications. The documentation is interactive and allows for the testing of API calls in the interface.

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

Section 6: Public Reports

M-RETS provides updated Public Reports on the M-RETS.org website under the RTC registration section. The M-RETS Administrator will also provide an Organization report to users as requested. Public reports are subject to the privacy rules contained in the M-RETS Terms of Use.

Section 7: Acknowledgements

At the time of publication, the M-RETS Board of Directors included:

Andy Kellen, WPPI Energy
Brian P. Rounds, AESL Consulting
Eric Schroeder, Subject Matter Expert
Ken Nelson, Blue Delta Energy, LLC
Tyler Meulemans, Public Service Commission of Wisconsin
Luke Penne, Constellation
Jim Jones, Great River Energy
Leanne Shewchuk, Government of Manitoba
Holly Lahd, Center for Green Market Activation
Sandra M Nessing, American Electric Power

Appendix A: 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

Feedstocks:

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 gasses 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 gasses 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
Clean Hydrogen	Clean 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 B: 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" gasses, with carbon dioxide being the major other gas along with trace gasses 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 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)

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 gasses 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 contrasts with 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).

Commenced Operation Date: 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 Commenced Operation Date 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 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 - Considers the GHG emissions associated with all 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 to increase the heating value of the RNG, while an upgrading unit for syngas will reform the hydrogen and carbon monoxide to form methane 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 other 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.

Green Waste: organic waste materials that originate from plants and yard wastes.

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.

Clean Hydrogen: Section 45V(c)(2)(A) of the Inflation Reduction Act: provides that the term: "qualified clean hydrogen" means hydrogen that is produced through a process that results in a lifecycle GHG emissions rate of not greater than 4 kilograms of CO2e per kilogram of hydrogen.

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.

Material Difference: when the difference in carbon intensity is large enough to be measurable and meaningful, potentially affecting the overall environmental impact or sustainability rating of the subject being assessed.

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 gasses recovered from the earth from wells. It is composed predominantly of methane but contains other light hydrocarbons and impurities.

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.

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-Supported Program: any program that M-RETS is not designated to track, this includes but is not limited to the LCFS and RFS.

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: Considers the GHG emissions associated with all 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 entity in a jurisdiction to include a designated percentage of renewable thermal energy to their load.

Renewable Natural Gas (RNG) or Biomethane: Pipeline quality injectable gaseous fuel derived from biomass or other renewable sources that have lower life cycle 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 gasses 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 pruning's.
> (4) Wood, wood chips, and wood waste.
> (5) Non-Recyclable pulp or nonrecyclable paper materials.
> (6) Livestock waste.
> (7) Municipal sewage sludge or biosolids.

Renewable Thermal: Energy generated and used for non-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 an 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.

Storage: The storage of gaseous thermal fuels in tanks, reservoirs, or other systems for future use.

Syngas (Synthetic Natural Gas): Also referred to as substitute natural gas. A manufactured product, chemically similar in most respects to natural gas, resulting from the conversion or reforming of hydrocarbons that may easily be substituted for or interchanged with pipeline-quality natural gas.

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. Exception for storage.

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.

Verification Date: The date that the carbon intensity study was completed by an independent third party.

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 gasses such as carbon dioxide or air (nitrogen plus oxygen).

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.

Appendix C: Thermal Resources and Feedstocks

Thermal Resource	Feedstock(s)
Air Source	Air Source
Biogas	Agricultural Waste Agricultural Crop (closed loop) Agricultural Crop (open loop)
	Alt fuels from plant oils or animal fats
	Anaerobic Digestion Anaerobic Digestion of 100% Green Waste
	Anaerobic Digestion Anaerobic Digestion of 100% Green Waste
	Biogas Biogas (Generic)
	Constructed in compliance with new source performance standards promulgated under the federal Clean Air Act for a generation facility of that type
	Dairy Manure
	Digester Gas Digester Gas-Farm-based methane gas Digester Gas-Industrial digester gas Digester Gas-Wastewater Treatment Gases
	Employs the maximum achievable or best available control technology available for a generation facility of that type
	Food waste

Biogas	Generic Manure
	High-solids (greater than 15 percent total solids) anaerobic digestion of food and green wastes
	HSAD Food & Green Waste
	Landfill Gas
	Liquid fuels derived from plant or animal sources, including but not limited to ethanol, biodiesel, vegetable oil, or animal fat
	Meets the following criteria: Gasses that are derived from plant-derived organic matter, agricultural food and feed matter, wood wastes, aquatic plants, animal wastes, vegetative wastes, or wastewater treatment facilities using anaerobic digestion or from municipal solid waste
	Mesophilic Anaerobic Digestion of Wastewater Sludge
	Methane or other combustible gasses derived from the processing or decay of plant, animal, or municipal solid waste materials
	Swine Manure
Biomass	Agricultural Crop (closed loop) Agricultural Crop (open loop) Agricultural Crop- Dedicated Energy Crops
	Alt fuels from plant oils or animal fats
	Animal Waste – Other Animal Waste – Poultry Animal Waste - Swine
	Agricultural Wastes and Residues - Invasive Species
	A majority of the fuel source is Agricultural by-products including wastes
	A majority of the fuel source is Agricultural products
	A majority of the fuel source is mixed municipal solid waste
	A majority of the fuel source is refuse-derived fuel
	A majority of the fuel source is Wood products
	Biological Waste
	Biodiesel

Biomass	Biodiesel Blend
	Biomass
	Material that has been separated from municipal solid waste (MSW), and subsequently processed (e.g., palletization, gasification) to serve as a combustion fuel
	Biomass- Not derived from fossil fuels
	Black Liquor
	Herbaceous Vegetative Matter or Residue
	Incineration of Construction Debris
	Incineration of Garbage
	Landfill Gas
	Liquid fuels derived from plant or animal sources, including but not limited to ethanol, biodiesel, vegetable oil, or animal fats
	Liquids
	Method of combustion is Direct Combustion
	Method of combustion is Gasification
	Method of combustion is Liquefaction
	Mixed municipal solid waste and refuse-derived fuel from MSW
	Non vegetation waste
	Organic material or wastes
	Organic material or wastes-Fuel meets the following definition: Non-toxic plant matter that is the by-product of agricultural crops, urban wood waste, mill residue, slash or brush
	Organic material or wastes-Non-hazardous plant matter waste that is segregated from other waste
	Paper-derived
	Primary woody or herbaceous vegetative matter (plants), including but not limited to wood, grasses, agricultural crops or residues
	Processed plant materials from industry waste sources, including manufacturing, construction, or demolition
	Recovered Woody Biomass

	Refuse-Derived Fuel
	Sludge Waste
	Solid waste materials-Including waste pallets, crates, dunnage, manufacturing, and construction wood wastes, landscape or right-of-way tree trimmings, mill residues that are directly the result of the milling of lumber, and rangeland maintenance residues
	Solid waste materials-Recycled paper fibers that are no longer suitable for recycled paper production
	Sustainably managed woody biomass
	Treated Organic Waste Biomass
	Untreated Organic Waste Biomass
Biomass	Wood and Wood Wastes
	Wood - Railroad Ties
	Wood - Utility Poles
	Wood - Wood Waste Liquids
	Wood - Wood/Wood Waste Solids
	Wood and Wood Wastes A
	Wood and Wood Wastes B
	Wood and Wood Wastes C
	Wood and Wood Wastes D
	Wood and Wood Wastes E
Compost Heat Exchange System	Compost
Ground And Water Source Heat Pump	Air Source Heat Pump
	Ground Source Heat Pump
Hydrogen	Electrolysis (Requires CI)
	Electrolysis Using Electricity Generated From Zero-CI Sources
	Fossil Based (Requires CI)
	Hydrogen
	Hydrogen production via electrolysis using solar electricity
	Landfill Gas

	Landfill gas to on-site hydrogen production via cracking of methane
Non-Renewable Additives	Non-Renewable Additives Added to Conform to Pipeline Quality Standards
Renewable Natural Gas (Biomethane)	Anaerobic Digestion of 100% Green Waste
	Animal Waste
	Biomethane produced from the high-solids (greater than 15 percent total solids) anaerobic digestion of food and green wastes
	Dairy Manure Generic Manure
	HSAD Food & Green Waste
	Landfill Gas to Pipeline Quality RNG
	Mesophilic Anaerobic Digestion of Wastewater Sludge
	Renewable Natural Gas
	Swine Manure
	Waste Water
Solar Thermal	Solar Hot Air
	Solar Hot Water
	Solar Sludge Dryer
Woody Biomass System	Wood Chip
	Wood Pellet

Full descriptions of abbreviated feedstocks:

Wood and Wood Wastes A -(a) 'Biomass energy' includes: (i) Organic by-products of pulping and the wood manufacturing process; (ii) animal manure; (iii) solid organic fuels from wood; (iv) forest or field residues; (v) untreated wooden demolition or construction debris; (vi) food waste and food processing residuals; (vii) liquors derived from algae; (viii) dedicated energy crops; and (ix) yard waste. (b) 'Biomass energy' does not include: (i) Wood pieces that have been treated with chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenic; (ii) wood from old growth forests; or (iii) municipal solid waste.

Wood and Wood Wastes B -Fuel meets the following definition: landscape waste, right of way tree trimmings, small diameter forest thinning's; forest-related resources such as harvesting and mill residue, pre-commercial thinning's, slash and brush; waste pallets, crates, and dunnage; but not including painted, treated, or pressurized wood, wood contaminated with plastics or metals, tires, or recyclable post-consumer wastepaper.

Wood and Wood Wastes C -Fuel meets the following definition: low-emission, nontoxic biomass based on solid organic fuels from wood, forest, or field residues, except that the term does not include wood pieces that have been treated with chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenic;

Wood and Wood Wastes D -Fuel meets the following definition: small diameter timber, salt cedar and other phreatophyte or woody vegetation removed from river basins or watersheds in New Mexico.

Wood and Wood Wastes E- Fuel Source meets ALL the following criteria:(i) Have been harvested pursuant to an approved timber harvest plan prepared in accordance with the Z'berg-Nejedly Forest Practice Act of 1973 (Ch. 8 commencing with Sec. 4511), Pt. 2, Div. 4, Public Resources Code). (ii) Have been harvested for the purpose of forest fire fuel reduction or forest stand improvement. (iii) Do not transport or cause the transportation of species known to harbor insect or disease nests outside zones of infestation or current quarantine zones, as identified by the Department of Food and Agriculture or the Department of Forestry and Fire Protection, unless approved by the Department of Food and Agriculture.