Midwest Renewable Energy Tracking System
Concept Paper

Prepared for
Powering the Plains

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Purpose

A Midwest Renewable Energy Tracking System (M-RETS) is proposed to provide interested states in the region with an administratively simple, cost-effective means of achieving the following objectives:

- *Substantiating green marketing claims;*
- *Demonstrating compliance with a variety of state policies and regulations; and*
- *Facilitating trade of renewable energy certificates.*

By issuing certificates based on metered generation, M-RETS will add credibility to the market and accelerate trade of a product that is increasingly in demand. M-RETS will provide an efficient mechanism for generators in the region to receive compensation for generation attributes that are valued by state policies and by retail consumers, and will help generators find markets more easily. M-RETS will help electricity providers acquire the specific generation attributes needed to comply with a variety of state regulations and to satisfy consumer preferences.

Background

Electronic tracking and accounting systems are being designed and implemented to support the growing market for renewable energy certificates (RECs) and green power. These tracking systems perform essential functions of issuing certificates, tracking changes of ownership, and retiring certificates when they are used to support compliance or voluntary claims. Based on metered generation, tracking systems create a record that contains a variety of information useful or necessary to determine REC eligibility in compliance markets or desirability in voluntary markets.

Because RECs are intangible, multiple ownership claims can arise and marketing abuses can occur. The best prevention to double claims and double sales of RECs is an accounting system that tracks ownership from cradle to grave. A REC tracking system can be used to verify compliance with an RPS and to verify retail product claims of environmental or other benefits. It could also be used to verify environmental disclosure labels required by some states. In short, REC tracking systems facilitate both state policies and voluntary markets.

As the interest in expanded REC markets has grown in the Midwest, stakeholders from Minnesota, Wisconsin, Iowa, North Dakota, South Dakota and Manitoba have held two workshops to help educate themselves. The first of these workshops was held in St. Paul on February 24, 2004 and a second took place in Madison on June 16, 2004.[1] Both workshops were well attended by a diverse set of interests, including regulators, legislators, utilities and NGOs. Stakeholders expressed enthusiasm and indicated substantial interest in pursuing the development of a renewable energy tracking system.

[1] Presentations and summaries of these two workshops are available at the website of the National Council on Electric Policy, at http://www.ncouncil.org/past_workshops.shtml

At the conclusion of the Madison workshop, participants suggested a concept paper as a next step to help stakeholders focus on key tracking system design and development issues. This paper is that work product.

Prior to the second workshop, a needs assessment was conducted to determine what people in the region want from a tracking system.[2]

The sample of respondents was admittedly small (22), but they included a balanced representation of state utility commissions, utilities (investor-owned, municipal and rural electric cooperatives), environmental and renewable energy organizations, and a few other state agencies.

More than half of the respondents to the survey indicated that the most important functions of a renewable energy tracking system should be to (1) prevent double counting of certificates, (2) verify compliance with renewable portfolio standards or other state policies, (3) verify quantity of generation, (4) issue certificates, (5) create reports about renewable certificates and (6) track certificate transactions in wholesale markets.

Most respondents stated that accurately tracking and accounting for renewable energy generation or certificate ownership, and supporting commercial trading of renewable certificates, are very important. Most respondents also believed that exchanging information with other U.S. certificate tracking systems is important. Incorporating emissions information from specific generating units, accommodating small, on-grid, on-site generators, and exchanging information with non-U.S. certificate tracking systems were considered somewhat important functions.

In response to a question about who or what organization should be responsible for managing the tracking system, a plurality was unsure, indicating that much discussion needs to occur before this decision can be made.

Finally, half the respondents thought that utility or transmission customers should be the ones to pay for the tracking system, while 41% thought it should be paid for through user fees.

The following concept paper, consisting of an Overview, System Design, Cost Recovery and Institutional Framework sections, is written primarily to focus the discussion participants on key issues and ideas in the design of a REC tracking system. It draws on the evolving experience and lessons learned from other regions. Although it is sometimes written as a statement of intent, like a straw proposal, the options included are intended as a stimulus to the reader's thinking, not to be interpreted as predetermined outcomes.

Overview

M-RETS will contain hourly generation information for each registered generating unit, and will create generator-specific certificates that identify the relevant generation

[2] Porter, Kevin and David Chen. *Results of a Survey Regarding a Potential Midwest Renewable Energy Tracking System*. National Council of Electricity Policy, September 2004 (forthcoming).

attributes necessary for electricity suppliers to satisfy state policies, retail market requirements and regulations. The certificates will contain the information needed to allow suppliers to demonstrate their compliance with state or marketing requirements and to allow agencies to verify that compliance.

A certificates approach will provide an efficient process for utilities or other load-serving entities to develop specific products for retail consumers with a high degree of certainty that their product claims can be verified. For owners of generation, a certificates approach will provide a means to precisely measure the value to the retail consumer of particular attributes of each generation unit. For state agencies seeking effective ways to implement policies and regulations, a certificates approach and central database will provide a means to monitor and document compliance.

Creating M-RETS will require many separate and inter-related decisions.[3] The purpose of this concept paper is to describe key elements of system operation, governance, and cost recovery, and in so doing to identify options for consideration and precedents for these options.

The concept paper makes three major assumptions.

1. M-RETS will issue and track renewable certificates only (however defined) and will not issue and track certificates for all types of generation. Changing this assumption would not change the key issues, but the paper does not describe some of the issues that arise if all generation were to receive certificates.

2. M-RETS will track wholesale transactions, not retail transactions. Tracking retail transactions implies that sales to end-use consumers would be tracked. Retail tracking capability is generally unnecessary, as the seller generally retires the certificate on behalf of the retail consumer.

3. After the issues in this concept paper are discussed, and the options are clarified and decided, more detailed operating rules will be developed as specifications for a software developer and to guide the administrator of M-RETS. Operating rules are at a level of detail that is probably premature for most participants.

System Design

1. *Geographic Scope of M-RETS*

The initial focus of M-RETS is Iowa, Minnesota, North Dakota, South Dakota, Wisconsin and Manitoba. The system should be designed so that it can be expanded to include other states and provinces if and when they choose to participate.[4]

[3] For a more in-depth look at the issues faced in designing REC tracking systems, see National Wind Coordinating Committee, *Design Guide for Renewable Energy Certificate Tracking Systems*, 2004. Available at http://www.nationalwind.org/pubs/rec/rec_guide.pdf

[4] Jurisdictional reference to states is meant to include Canadian provinces where applicable. Further legal research may be necessary to ensure there are no problems with international law (e.g., NAFTA).

Option A: Require states to meet certain criteria before allowing generators from that state to register. Interested generators would thus be motivated to encourage their state to meet the criteria, which might include (1) a financial contribution, (2) a policy goal, or (3) an explicit acknowledgement and acceptance of M-RETS certificates.

Option B: Allow generators from any state to register, independent of any state action, as long as generation data is independently reported and verified to M-RETS.

Example: Other tracking systems are for states, regions, ISOs or interconnected grids that are defined, whereas the Midwest has few relevant institutions that suggest a footprint. In other tracking systems, representatives of state government (governors in the West, regulators in New England, legislatures in Texas and Wisconsin, and regulators in PJM) have provided momentum.

2. Scope of Renewables Tracked

The definition of renewable energy, for the purposes of issuing certificates, will be any resource that is defined as renewable by any participating state for the purpose of meeting a public policy or renewable energy program. States need not agree on a common definition.

Example: This is common to all multi-state tracking system design.

3. Mandatory or Voluntary Registration

Option A: Registration of generators with M-RETS could be voluntary, but M-RETS would only issue certificates to generators that have registered. Example: WREGIS. Registration in Wisconsin is also voluntary, but registration applies to utilities, not to generators.

Option B: All generators could be required to register. Example: NEPOOL GIS, PJM GATS.

Option C: Each state can decide. One state may require that all generators in its jurisdiction must register, while another state may have no such requirement. Example: None.

4. Generator Registration

Generators that want to have certificates issued must register with M-RETS. Registration involves an agreement with the M-RETS Administrator, the provision of certain information about the generating units, and arrangement for the transmittal of generation data from a control area or other independent party.

Example: Something like this is common to all tracking systems.

5. States Served By More Than One Tracking System

If other tracking systems (WREGIS, PJM GATS) happen to serve parts of states that are interested in participating in M-RETS, a generator may register with one and only one tracking system to prevent two systems issuing certificates for the same MWh (a form of double counting). A facility with multiple generating units should register all the units with the same tracking system. There are several options for determining which tracking system will issue and track certificates:

Option A: Let generators choose in which tracking system they will register independently. The choice may depend on where they perceive their best markets will be. Example: None (currently, there are no other examples where a state or province is split by two tracking systems.)

Option B: States decide which tracking system will serve their generators. A state might decide that all generators in the state must register with M-RETS, even if a part of the state is part of a different ISO or interconnection. Or a state might decide that generators should register with the tracking system that serves the region where the generating facility is dispatched, even if that means that the state will be served by more than one tracking system.

Example: None.

6. Data Verification

Designers of tracking systems may decide what level of data integrity they want to meet. Other tracking systems, however, may accept for import only certificates that meet their own standard of data verification. At issue is the level and extent of verification of facility characteristics and of generation data. Higher data standards may impose additional cost on participants, while lower data standards may lead to some abuse or even fraud. The Options for data related to facility characteristics are below. Sources of data related to generation amounts are discussed in Section 17 and 18 below.

Option A: For facility characteristics, only data that is independently verified will be accepted. Independent verification may mean a requirement for copies of existing paperwork to prove data, or a site visit by an independent party. For generation data, an ISO or entity with a market settlement system will likely provide a satisfactory verification standard, or an independent agent to periodically verify meter reads for small generation that is not dispatched by a control area. Example: WREGIS.

Option B: Facility characteristics provided by the generator owner will be accepted if backed by a sworn affidavit or agreement with the tracking system administrator. Generation data need not be independently verified if output is measured by a "revenue-quality meter." Example: NEPOOL GIS, for generators not already registered with NEPOOL and dispatched by the ISO.

Option C: The M-RETS Administrator could get the information from EIA or FERC reports, or from the control area operator or ISO, or other sources. Example: NEPOOL GIS allows this in some instances where registration information is incomplete.

7. User Registration

Anyone that wants to be issued certificates in M-RETS, or anyone that wants to buy or sell (own) certificates that are recognized by M-RETS, must register with M-RETS and pay applicable fees, if any. Generators are one class of users that will establish an account with M-RETS when they register their generating units. Other market participants may establish accounts by registering with M-RETS. As in opening a bank account, registration requires the provision of certain identifying information, such as account holder name, address, contact info, etc.

Example: All tracking systems require user registration to open an account.

8. M-RETS Accounts

M-RETS will maintain an account for each entity that generates electricity and for each market participant, whether or not they sell electricity. Each certificate can only be held in one account at a time so as to eliminate the possibility of double counting.

Option A: M-RETS would define sub-accounts. These might be an Active Sub-Account for certificates that may be traded, a Retirement Sub-Account for certificates that have been used to meet any obligation, an Export Sub-Account for certificates to be exported to another tracking system, and a Reserved Sub-Account for certificates that will be withdrawn from the M-RETS for some other reason. It is up to the account holders to manage their different products within those defined accounts. Example: Both NEPOOL GIS and WREGIS have defined sub-accounts very similar to these.

Option B: M-RETS would allow each account holder to determine and create sub-accounts for their own purposes. Example: Although PJM GATS would also pre-define some sub-accounts, it currently envisions allowing users to create sub-accounts for individual purposes of their own choosing.

9. Issuing Certificates

Option A: The M-RETS Administrator would create an electronic certificate for each MWh of renewable energy that is produced by those generating units that are registered with M-RETS and for which generation data has been reported to M-RETS. Each certificate will have a unique serial number, and will describe all the attributes associated with the generator and the MWh. When certificates are issued, they will be deposited into the generator's account. Example: All tracking systems except Wisconsin's operate (or are planned) this way.

Option B: The M-RETS Administrator would create an electronic certificate to retail providers for each MWh of renewable energy sold to retail customers. Example: None.

10. Transferring Certificates

Certificate transactions require an affirmative action by both sellers and buyers. Certificate sellers will transfer the specified number of certificates they are selling to a

designated purchaser's account. The transaction will be deemed complete when the purchaser affirms the transaction by accepting the certificates from the seller.

Example: Most tracking systems operate or are planned to operate this way.

11. Retiring Certificates

The retirement of certificates must be initiated by the owner of the certificate. Retirement will remove the certificate from circulation. Certificates will be retired when they are used to:

- Support a retail green marketing claim to an end-use customer, as for green pricing programs or stand-alone REC sales, or otherwise meet the retail load of a load-serving entity;
- Meet the regulatory requirements of a state, such as an RPS, REO, mandated or voluntary goal;
- Report environmental disclosure for electricity labels.
- Are voluntarily retired by the owner, e.g. by a non-profit who wants to retire RECs for environmental reasons.

Example: All tracking systems have certificate retirement mechanisms.

12. Certificate Information

Data fields will be established to carry standardized information to accompany each certificate. Some data may be required, while other data may be voluntary. Typically each certificate will have essential information about the generating unit, such as unit location, resource type, date of initial operation, etc. Each certificate will also have a unique serial number for identification and tracking. The principle question to be decided is what specific information to include. Without going into all the options at this time, there are examples from the other tracking systems that can be considered. A higher level question might be whether to include environmental data (emissions, as in lbs. per MWh) with each certificate.

Option A: Include emissions data for NOx, SO2, CO2, etc. Certificates lacking this information may have a smaller market if buyers require this information for marketing claims or environmental disclosure. Example: NEPOOL GIS. Proposed for WREGIS and PJM GATS.

Option B: Do not include emissions data. Most renewable generation does not have emissions, although biomass does. Example: Texas, Wisconsin.

13. Certificate Life

Some tracking systems establish an expiration date for certificates. These systems tend to be those that are designed to settle all certificates on a regulator calendar basis to satisfy environmental disclosure requirements. This choice depends to a large degree on whether

state policy-makers and users want M-RETS to serve environmental disclosure requirements.

Option A: Tracking system would support unlimited certificate life. States can decide if they want to allow only "fresh" certificates to satisfy regulatory requirements. Example: (proposed) WREGIS, Wisconsin (but there is a proposal to limit it to four years).

Option B: Tracking system would limit certificate life, in effect by moving them into an expired account when they reach their expiration date. Certificate life might be one year or 18 months, or a longer period determined by a state that allows banking of certificates to satisfy an RPS, for example. Example: NEPOOL GIS, Texas.

Option C: Tracking system would generally limit certificate life as in Option B but would allow extending the life of a certificate if it is moved into a special sub-account system to be used for compliance with an RPS or similar mandate. Example: (proposed) PJM GATS.

14. Certificate Transfer Period

Option A: Some tracking systems allow certificate transfers to occur only within a set window of time within a regular cycle. According to one, this is to facilitate accurate regulatory reporting, mitigate the exercise of market power, and maintain a one-for-one match between energy and certificates. In practice, this is done for systems that issue certificates for all types of generation, not just renewable, in support of environmental disclosure. In this case, at the end of the fixed transfer period, all certificates would be accounted for due to the required balance between generation production and load consumption, maintaining the one-for-one match. Example: NEPOOL GIS and PJM GATS.

Option B: Certificates could be transferred at any time at the will of the trading parties. Certificates that are in retired sub-accounts or otherwise assigned for various purposes may not be transferred. Example: (proposed) WREGIS, Wisconsin.

15. Certificate Disaggregation

Generally, certificates reflect the attributes of that MWh of generation, including emissions. There are emerging markets for NOx, CO2 and other emissions. Some generators would like to disaggregate individual attributes that might have value and sell them into emissions markets to increase revenues, while others are opposed to disaggregation in the belief that the credibility and integrity of the certificate must be maintained. This is a policy decision on which a tracking system should be neutral, but the question is whether the tracking system should track individual attributes separately from the certificates from which they came.

Option A: Track individual attributes that have been disaggregated. This could make the tracking system much larger and would add significant complexity. Example: None.

Option B: Track only "whole" certificates that have not been disaggregated. If a tracking system user wants to disaggregate, the user must withdraw the certificate from the

tracking system and it will no longer be counted nor tracking in the tracking system. Example: (proposed) PJM GATS, WREGIS, Wisconsin.

Option C: Track whether or not the certificate has been unbundled, but not the disaggregated attributes themselves. A certificate would remain in the tracking system but it would not be "whole." The tracking system would maintain a policy of "caveat emptor."

16. Reports

M-RETS will allow registered users to create private reports from their accounts for their own purposes. In addition, public reports will be created and issued periodically or as required by regulatory agencies. Public reports would be available on the M-RETS website. Public reports would not include confidential information about the business activity of any particular user, but would include aggregate information about certificates issued, number of certificates traded, number of certificates retired for various purposes, etc. Public reports would also include a list of registered users or account holders and a list of registered generating units.

Example: Most tracking systems have the ability to create both public and private reports.

17. Generation Data Sources

M-RETS will have to figure out how it will acquire generation data on which to base the issuance of certificates. This will require a technical investigation of the practical possibilities. One possibility is that the Midwest ISO may have or receive data from control areas that dispatch each generating unit, particularly if the Midwest ISO changes to a central energy market as planned (but much delayed in the past) in March 2005. If not, then each control area may have to create a regular (probably monthly) data submission to a central data base. Whatever system is used to receive generation data from generating units that are dispatched, will be supplemented with self-reported data for smaller generators and behind-the-meter generators, if it is decided that M-RETS will support generators not reported by a control area. Protocols should also be established for dual-fuel, multi-fuel units.

Example: The NEPOOL GIS uses, and the PJM GATS will use, ISO market settlement data to determine MWh generated by each generating unit. WREGIS does not coincide with a single ISO, in fact ISOs have not formed for all of that region. Instead, WREGIS will rely on generation data reported by individual control areas, reported to a central data management system. In Wisconsin, utilities enter their own data through a web portal.

18. Behind-the-Meter Generation and Small Generators Not Reported by Control Areas

M-RETS will be designed to allow for the participation of behind the meter (BTM) generation. BTM and other small generation not reported by a control area will have to register and provide the same information about each generating unit as larger units, and M-RETS will have to develop a procedure for how generation data will be reported and verified. There is significant guidance on this from other tracking systems. M-RETS

should support the registration of independent agents or aggregators that can handle the reporting and interface with M-RETS, reducing the burden on owners of small units.

Example: Most tracking systems make an effort to issue certificates to small generation.

19. Certificate Exports and Imports

Because the markets for RECs may be larger outside of the states initially participating in M-RETS, it is likely that RECs owners will want to export certificates. M-RETS should support exports to support wider markets for in-region generators. This may require, for reciprocity reasons, that M-RETS also support imported certificates.

Example: WREGIS will support exports out of WREGIS if the certificates are going to a compatible tracking system. "Compatible" is defined as a tracking system with a data exchange agreement with WREGIS. To forge such an agreement, the tracking system must meet similar standards as WREGIS for data integrity and security. Every account holder in WREGIS will have at least one export sub-account. Any other removal of certificates from WREGIS will be managed through retiring certificates or reserving them to special sub-accounts.

PJM GATS proposes that it will allow imported certificates from neighboring regions that offer reciprocal treatment of PJM certificates.

There may also be a desire to import certificates into M-RETS. WREGIS will allow this if the certificates come from a compatible tracking system. This may mean that the exporting tracking system provides the same information on each certificate as is required by the importing tracking system, and M-RETS could consider such a policy. NEPOOL GIS also allows imports if the underlying energy is also delivered in the NEPOOL control area.

Texas does not import certificates because its purpose is primarily to verify compliance with that state's RPS, and the RPS accepts certificates only from generating units located in Texas or with a dedicated transmission line into Texas.

Wisconsin tracking system does not support imports and exports.

20. Market Evolution and Expansion

M-RETS should be flexible enough to accommodate new state renewable energy policies or initiatives. It must be flexible enough to accommodate new data fields and new reporting needs.

M-RETS should be flexible enough to allow for geographic expansion if additional states wish to join.

As the market for RECs grows, M-RETS will collect data for the newly added generation resources and create accounts for additional participants.

Example: Common to all tracking systems.

21. Facilitating Trade

The information system would include a posting system where market participants can voluntarily post bids and offers. The system will not include a trading platform or provide a market clearing function, but it will not preclude the development of this function if the need for more price transparency arises in the future (e.g., price indexes, not disclosing individual trade prices).

Example: Several tracking systems include a bulletin board to facilitate buyers find sellers and vide versa, but none include a trading platform at this time.

22. Market Monitoring

The M-RETS Administrator and state regulators should monitor the market for certificate trading behavior that is not in the public interest.

Example: Texas PUC conducted a review when the price of RECs rose to a new high.

Cost Recovery

Creating and administrating a renewable energy tracking system generally involves three sets of costs: 1) the administrative costs of designing and developing the renewable energy tracking system; 2) the costs of devising an RFP, hiring a contractor, and writing the tracking software; and 3) the day-to-day operational costs of administering the renewable energy tracking system. The administrative costs, including the costs of meeting, planning and describing how the system is intended to work (system specifications), are generally absorbed by participants and depends on their commitment to the process.

Overall, the costs of developing any tracking system depend on several factors, such as whether all generation is tracked or just renewable energy, or whether a new tracking system must be created or an existing tracking system can be reconfigured or expanded to include new features or functions. Table 1 below lists proposed or operating tracking systems around the country and their start-up and operating costs.

Table 1. Estimated Costs of Certificate Tracking Systems[5]

Name	Core Characteristics	Start-up Costs	Operational Costs
New England Generation Information System	• Tracks all generation in 6 state region • Mandatory participation by all generation units and electricity suppliers • Relatively sophisticated system	$200,000 Does not reflect full cost of development. A significant share is recovered in transaction fees.	Between $900,000 - $2.4M per year collected through transaction fees levied on retail electricity suppliers for load served. The high operational costs reflect the recovery of some system development costs. Transaction fees start higher and decline, as shown for the first five years. year 1: $0.0176/MWh year 2: $0.0173/MWh year 3: $0.0123/MWh year 4: $0.0098/MWh year 5: $0.0074/MWh
Wisconsin Renewable Resource Credit System	• Tracks only renewable energy purchased in excess of WI utility requirement • Only electricity suppliers participate • Simple accounting system	$50,000	Approximately $60,000/year is collected through a cents/MWh fee allocated to the electric providers based on the MWh of renewables each provider needs to deliver to meet the State's RPS requirement in any particular year. The actual amount of the fee varies each year based on the RPS requirement. The fee for 2004 is $0.00119 (0.119 cents) per MWh.
ERCOT Renewable Energy Credits System	• Tracks only renewable generation in TX that is eligible for the RPS • Voluntary participation by generators, mandatory participation by companies with RPS obligation • Simple accounting system	$500,000*	Approximately $70,000/year is collected for annual program operations through a per MWh fee assessed to all load-serving entities in the Texas ERCOT system. For 2004, the fee is 0.25 cents per MWh.
PJM Generation Attribute Tracking System	• Will track all generation in parts or all of 13 states • Would include clean energy portfolio standard accounts for compliance with state clean energy policies or initiatives	$1 million	$325,000, or $0.0021 (0.21 cents) per MWh if all load is assessed charges. PJM is examining alternative cost recovery strategies, so these numbers may change somewhat.
Western Renewable Energy Generation Information System	• Would track renewable energy generation in Western states that "opt in" to WREGIS	$300,000. Co-funded by the California Energy Commission, Western Governors Association and Western Regional Air Partnership	To be determined, but likely to be a volumetric transaction charge per MWh. Start-up costs were a grant and do not have to be recovered through operational charges.

* We do not know what the actual start-up costs were for the Texas tracking system. This is an independent estimate to design tracking system with similar features.

[5] Excerpted in part from National Wind Coordinating Committee, "Design Guide for Renewable Energy Certificate Tracking Systems," July 2004, and supplemented by additional research.

There are several means of recovering the costs associated with renewable energy tracking systems, and these are detailed below:

Option A: Volumetric Charge

Costs would be recovered through a MWh charge on all load-serving entities. This could be handled in two ways. One is to place the charge on all MWh sold at retail. Since all customers benefit from clean energy, it could be argued that all customers should pay for M-RETS based on their energy use regardless of whether their electricity provider uses a significant amount of RECs or not. This approach may keep the per-MWh costs low by spreading the costs across a larger load, and therefore may encourage greater participation in the tracking system. However, since M-RETS would only track renewable energy, it could also be argued that M-RETS benefits only a select group of market participants.

The second approach that uses a volumetric charge is to place the charge only on renewable MWh sold at retail. Here the rationale would be to recover costs from load-serving entities that are subject to state policy requirements such as a state RPS.[6] The charge could apply only to MWh used for policy compliance, or to all renewable energy sold, including for voluntary green power sales. The per-MWh charge would be higher than if all load were charged, which will affect the competitiveness of renewable energy.

Option B: User Fees

This option would impose fees based on use of the tracking system. Fees can be structured in different ways. For example, transaction fees could be charged for each REC sale or movement of RECs in the tracking system. A clear advantage of this option is that it avoids the equity issues with assessing the costs of M-RETS on all load-serving entities or market participants regardless of whether or not they use M-RETS. One disadvantage is that the per-MWh cost may be relatively high if there are initially few M-RETS participants, with the resulting perverse effect of discouraging market participation. That problem may be minimized as more market participants use M-RETS; an important consideration up front is determining how many market participants will commit to using M-RETS and estimate how many subsequent market participants may use M-RETS. Such ebb and flow of market participants in M-RETS, and changing state renewable energy requirements such as scheduled increases in RPS levels over time, may cause the per-MWh charge to fluctuate, although probably not dramatically.

Alternatively, the cost of the system could be charged to renewable generators that benefit, although this will make renewable energy less cost-effective.

Another option is to impose annual subscription fees in advance of using M-RETS, and then allowing M-RETS users unlimited access to M-RETS. A disadvantage of this approach is the challenge of determining the subscription fees in advance and determining which market participants to impose the subscription fees on.

[6] Cost allocation could also take into account use for other policies such as for environmental disclosure label verification.

Option C: State Public Benefit Funds

Such funds are operating in Minnesota (but only in Xcel Energy's service territory) and Wisconsin. Under this option, state public benefit funds could finance the start-up costs of M-RETS, as was done by the Wisconsin Focus on Energy public benefit funds for the Wisconsin tracking system, or a state public benefit fund could subsidize the annual operating costs of M-RETS. This gets around cost allocation questions, but there are disadvantages with this option also. The "mission fit" for state public benefit funds of financing M-RETS is not entirely clear—the Xcel Energy fund, for example, can only support commercial renewable energy projects or renewable energy projects in early R&D phases. It is not clear whether funding M-RETS would be within the mission of the Xcel Energy fund or not. In addition, difficult budget conditions for states around the country have prompted state legislatures or governors to tap state public benefit funds to offset projected budget deficits—Wisconsin's fund has been particularly hit. Therefore it may be difficult to rely on a state public benefit fund for long-term funding of M-RETS operating costs.

Option D: Contractor-Financed

A contractor might be willing to finance the start-up costs of the tracking system and recover the costs through transaction fees—essentially a variation of Option B above. This option has the same advantages and disadvantages of Option B, but has an additional disadvantage that the contractor must assume the financial risk and therefore the overall costs to users and states is higher to account for the risk involved. This is how the NEPOOL GIS was funded.

It should be noted that these options are not mutually exclusive, and that some combination may be necessary to cover both the start-up and operating costs of M-RETS. For instance, PJM, in financing its proposed Generation Attribute Tracking System (GATS), may receive funding for the start-up and operating costs from the New Jersey public benefits fund and some or all of the five clean energy funds in Pennsylvania. Although this is still under discussion, PJM may adopt the New England approach by imposing a volumetric surcharge on electricity providers that have state RPS policies or environmental disclosure requirements, and use the proceeds to reimburse the New Jersey and Pennsylvania clean energy funds.

A more local example is that the Wisconsin tracking system used a grant from the Wisconsin Focus on Energy public benefits fund for the start-up costs and recovers operating costs from load-serving entities that must comply with the Wisconsin RPS.

Similarly, organizers of the proposed Western Renewable Energy Generation Information System (WREGIS) received funding from the California Energy Commission and other parties for designing WREGIS, while the on-going operating costs of WREGIS will be covered through transaction fees. It is likely that the designers of M-RETS will have to use a combination of options to cover the design and development, system development, and system operation costs of M-RETS.

Finding an Institutional Home

Locating a host for M-RETS is vital for its successful launch and operation. The host of M-RETS should have adequate funding and authority to make any necessary changes to the renewable energy tracking system. In addition, the host must be able to manage data, preserve security, resolve disputes that may arise, and meet the reporting requirements of individual state or local jurisdictions or report requests from market participants.

There are typically two phases related to determining an institutional host for a tracking system: when a tracking system is being designed and developed, and when the tracking system is in operation. This discussion only focuses on the latter question, i.e., where M-RETS will be hosted once it is operational.

Individual states can create their own renewable energy tracking systems and work out export and import arrangements with neighboring states. This option is not discussed in this paper because the presumption is that a regional renewable energy tracking system is more efficient and better equipped to prevent double counting than multiple individual renewable energy tracking systems. For these reasons, the option of several separate state renewable energy tracking systems is not discussed further.

There are potentially several options for hosting M-RETS, and these are detailed below:

- Midwest Independent System Operator
- Mid-American Power Pool
- Wisconsin PSC
- Generic State Agency
- Mid-American Regulatory Conference
- For-Profit Host
- Non-profit Entity Created to Administer M-RETS

Midwest Independent System Operator (MISO): MISO is a regional transmission organization (RTO) that encompasses parts of 11 states and a Canadian province, covering 1.1 million square miles. Assuming certain FERC directives are satisfied, MISO is scheduled to launch a centralized regional energy market in March 2005.

Mid-American Power Pool (MAPP): MAPP is a voluntary association of electric utilities in the Upper Midwest, as well as a reliability council under the North American Electric Reliability Council (NERC). MAPP members include investor-owned utilities, cooperatives, municipals, public power districts, a power marketing agency, power marketers, regulatory agencies, and independent power producers.

Wisconsin PSC: Given the existing Wisconsin Renewable Resource Credit Tracking System, one possibility is to have the Wisconsin PSC host M-RETS and expand the Wisconsin system to include other states.

Generic State Agency: A similar option is to have a state agency agree to host M-RETS and invite other states to participate. An example might be either the Minnesota PUC or the Minnesota Division of Energy (in the Minnesota Department of Commerce).

Mid-American Regulatory Conference: The Mid-American Regulatory Conference (MARC) is an association of state regulators covering 15 states, including the five states in the Upper Midwest. MARC members meet periodically to share information and to discuss developments in the telecommunications, gas and electricity industries.

For-Profit Host: Here, a company experienced with tracking systems would offer to host, administer and self finance M-RETS, and recoup its investment through transaction charges or user fees. We envision the contractor appointing regional stakeholders to a board of directors that would oversee the contractor's operation of M-RETS.

Non-Profit Created to Administer M-RETS: Under this option, stakeholders in the region could create and fund a non-profit entity intended solely for administering M-RETS.

Although these options are devised to be stand-alone, various combinations are possible. For example, a contractor would likely be selected to manage the day-to-day operations of M-RETS under several of these options.

Evaluating Potential Hosts Of M-RETS

Criteria were created to determine who might be the best host for M-RETS, and a matrix was drawn up to compare the potential M-RETS hosts.[7] In general, the host should:

- Be willing to be the host
- Have the legal authority to enforce operating rules and maintain the confidentiality of information
- Have access to data and information that is verifiable, as well as accepting liability for the accuracy of that information
- Be viewed as reliable and trustworthy by stakeholders
- Have the necessary technical capabilities

The criteria used to evaluate the potential options are discussed below:

Accountability: Whether the host can assume responsibility for M-RETS and be responsive to account holders and users of M-RETS.

Capability: Whether the host has the technical, financial and managerial capability to host M-RETS, as well as the flexibility to adjust to new issues, needs or circumstances.

Authority: At a minimum, the host should be able to enforce operating rules that an external committee may design. At a maximum, the host must be able to design, implement and enforce operating rules. The host should be able to access data and maintain the confidentiality of the data.

Responsibility: The host should demonstrate the effectiveness of its operations and provide confidence of the accuracy of the data, transactions, and reports in the tracking system.

[7] This section is drawn from *Institutional Home and Governance: Revised Phase I Report of the Institutional Committee for Formulation of the Western Renewable Energy Generation Information System*, June 16, 2004. Available at http://www.westgov.org/wieb/wregis/reports/Phase1revdrft7-16-04.pdf.

Credibility: Stakeholders and users of M-RETS should view the host as fair and not exposed to potential influence by another entity.

Discussion

MISO: The launch of a centralized energy market in 2005 will give MISO access to energy data that is critical for the successful operation of M-RETS. Some potential concerns include that MISO does not include as members all of the potential users of M-RETS, although this could be handled through a special membership category, as is proposed in PJM. In addition, administering M-RETS may be an expansion of MISO's duties into new and uncharted territory, and MISO staff may not be familiar with renewable energy tracking systems. This could be mitigated by MISO contracting with an entity to run M-RETS, as ERCOT did in Texas. Finally, not all stakeholders are supportive of MISO, and this could be problematic if MISO is the host for M-RETS. Even if MISO is ultimately not the administrator of M-RETS, MISO's access to data and technical expertise suggests that MISO should at least be involved as an interested party in M-RETS.

MAPP: MAPP's advantages are somewhat similar to MISO's in that it would encompass many of the electric power companies that are active in the Upper Midwest, and that MAPP would have technical expertise in creating systems to track transactions such as RECs. MAPP's disadvantages are also similar to MISO but perhaps more pronounced, in that MAPP will not have the data access that MISO has.

Wisconsin PSC: Such an approach would take advantage of the existing experience and knowledge of the Wisconsin PSC staff and Clean Power Markets, the administrator of the Wisconsin renewable energy tracking system. Some potential disadvantages include whether the Wisconsin PSC would be willing to have less control over a regional renewable energy tracking system, and whether there is political support for the Wisconsin PSC to participate in a regional renewable energy tracking system. As an example, the Wisconsin PSC and Wisconsin utilities may wish to continue having RECs granted to utilities rather than to generators, as is the case with the current Wisconsin tracking system but not the case with other tracking systems. Furthermore, regional stakeholders may not feel like participants in designing and administering M-RETS if it is housed at a state PSC, unless these arrangements are thought of in advance. Finally, on a more technical matter, it must be decided whether the existing Wisconsin tracking system is good enough to build into a regional tracking system, or whether it is better to start fresh.

Generic State Agency: Under this option, a state agency could host M-RETS and invite other states to participate. This option is similar to the Wisconsin PSC acting as host for M-RETS, but without the benefits of the experience that Wisconsin has with its current tracking system. The success of this option depends on whether regional stakeholders would find the state agency a credible host, and (assuming the state agency contracts the technical services out) on the performance of the contractor.

MARC: The disadvantages of this hosting option are pretty formidable. While all the states in the Upper Midwest are members of MARC, there are 10 other state members of

MARC besides the states in the Upper Midwest, and these states may not be enthusiastic about MARC administering a renewable energy tracking system. It also may be difficult for MARC to raise the funds to operate M-RETS, and it also may be difficult to design and implement a regional enforcement mechanism. Other stakeholders besides state utility regulatory commissions may not have a voice in M-RETS, absent efforts by MARC to include these stakeholders, and that may cause stakeholders to be less supportive of M-RETS.

For-Profit Host: The for-profit host would likely have extensive experience in designing and administering renewable energy tracking systems and would be an outside, impartial party that could gain respect of stakeholders. The success of this option depends in part on whether a board of directors can be created that incorporates regional stakeholders, and whether that board can exercise oversight over the for-profit host. Some companies may not be willing to work under such an arrangement. Enforcement of the rules of the M-RETS may also be problematic—the for-profit host may be unwilling or unable to penalize market participants if doing so may affect the market viability of the tracking system the company is administering.

Non-Profit Created to Administer M-RETS: Advantages of this option are that it would allow significant flexibility in designing, implementing and operating M-RETS to meet diverse regional needs and interests. However, the difficulty of this option is not only is a renewable energy tracking system being created, an organization is also being created. Also, the new organization would have to earn the trust and credibility of market participants and stakeholders. The organization could fail if it does not perform well, meaning that the region would have to start over again in designing and administering a renewable energy tracking system.

Table 2. Evaluation of Potential M-RETS Hosts

	Accountability	Capability	Authority	Responsibility	Credibility	Comments
Midwest ISO (MISO)	Has expressed interest in hosting. Users of tracking system may not be MISO members but could be handled through a separate category. State influence may not be as high as with other hosting options. Geographic territory may not overlap tracking system.	With new energy market, likely to have access to data and technical capability. Will depend partly upon capabilities of staff.	Depends on design. May be subservient to MISO Board of Directors. Day-to-day authority could be high.	Good access to data and staff capabilities, plus ability to contract out for evaluation services.	Unpopularity with some stakeholders may make this an issue. Will also depend on staff capabilities. Potential lack of familiarity with tracking could be a problem.	Access to data and technical capabilities perhaps superior to other options. Stakeholder support perhaps not as strong as other options. Staff capabilities and familiarity unclear.
Mid-American Power Pool (MAPP)	Wide range of industry members; unsure of state regulatory involvement. Unknown if interested in being a host. Geographic territory of map may not overlap tracking system.	Access to data may not be as good as MISO's. Likely to have sufficient technical capability. Will depend partly upon capabilities of staff.	Not clear. May be subservient to Board of Directors. Board membership may be narrowly construed.	Technical operations may be contracted out.	This would be a new area for them, and MAPP would have to work to gain credibility.	Access to data, potential restriction on members on Board of Directors, unfamiliarity with tracking may make this option problematic.

	Accountability	Capability	Authority	Responsibility	Credibility	Comments
Wisconsin PSC	Will depend on underlying legal documents. Accountability could be high, as regional stakeholders would be involved in creating and administering tracking system.	Capability well-established, although contractor has not administered multi-state system before. May require significant changes to Wisconsin system that may or may not be easy to work out with the state and regional stakeholders.	Depends on underlying legal documents. May involve collaboration between tracking system and state regulators; could be cumbersome. Questions include whether the WPSC would be willing to share authority with other states and stakeholders and whether there is political support for WPSC to lead tracking activity beyond the state.	Data access perhaps not as good as MISO—will have to rely on participants in tracking system. Tracking system experience a plus.	Generally strong support in Wisconsin but other states and stakeholders perhaps not as familiar. Will need to work to gain credibility. Important question is whether regional stakeholders will feel they have a voice in creating and overseeing tracking system.	Experience in Wisconsin and other states an advantage. Scaling up to multi-state operations may be challenging. Data access a concern, although could be resolved through participant agreements.
Generic State Agency	Will depend on underlying legal documents. Accountability could be high, as regional stakeholders would be involved in creating and administering tracking system.	Capability not well established; operations would presumably be contracted out.	Depends on underlying legal documents. May involve collaboration between tracking system and state regulators; could be cumbersome. Similar questions as with Wisconsin option as to whether state agency able to share authority with other stakeholders, and whether there is political support for state agency to lead regional tracking system.	Data access perhaps not as good as MISO—will have to rely on participants in tracking system.	Lack of experience with tracking systems; will have to work to gain credibility. Important question is whether regional stakeholders will feel they have a voice in creating and overseeing tracking system.	Lack of experience with tracking systems, although this can be contracted out. Success will depend on credibility with regional stakeholders and performance of contractor, assuming it is contracted out. Data access a concern, although could be resolved through participant agreements.

	Accountability	Capability	Authority	Responsibility	Credibility	Comments
Mid-American Regulatory Commission (MARC)	Will depend on underlying legal documents. State regulator focus may be a limiting factor for other stakeholders.	Capability not well established; would most likely have to contract services out. Data access could be problematic, absent participant agreements or cooperative arrangements with MISO.	Unclear whether enforcement will be a limiting factor; will depend on underlying legal documents.	Expect technical operations to be contracted out. Since MARC is an association of states, not clear whether organizational capabilities are sufficient to provide oversight.	State regulator focus may make other stakeholders feel left out.	Unsure whether MARC is interested, and there are some disadvantages that make this option difficult.
For-Profit Host	Depends on how business relationship between regional stakeholders and contractor is implemented. Accountability could be high if board of directors exercises oversight, or accountability could be low if board is not truly independent.	Capability could be high, as host would likely have past experience in operating renewable energy tracking systems. Host could also potentially finance the up-front costs of the system and recoup costs through transaction costs.	Depends on underlying legal documents and operating rules. At best, for-profit enforces rules. Alternative is to refer market participant to state for review.	Will depend on performance of for-profit host.	Will depend on performance of for-profit host. Regional stakeholders may not be enthusiastic about turning over the design and operations of tracking system to a for-profit host.	Never done elsewhere, could be viewed as a risky option. Success of this option would depend on relationship between regional stakeholders, the board of directors and the for-profit host, and the performance of the for-profit host.
Non-Profit Created to Administer M-RETS	Theoretically, accountability could be high. Depends on representation of Board and on how governing documents are structured and created.	Depends upon capabilities of staff.	Unclear. Depends on design of underlying legal documents. Possible that enforcement issues could be referred to individual state regulatory commissions.	Technical operations would likely be contracted out.	New organization; would have to earn credibility	Long-term sustainability a potential issue because of lack of an identifiable parent organization

Appendix A: Definitions

(selectively excerpted from WREGIS and PJM GATS, FYI only)

Accumulation: The act of summing kWh generation data over multiple months from a single generating unit until one MWh has been accumulated and a M-RETS Certificate can be issued. Accumulation will be used primarily by small generators that do not generate one MWh in a month. It may also be used by generating units whose generation is reported to M-RETS by control areas in kWh, so that trailing kWh or MWh decimals may be rolled over into the next month.

Account Holder: An Account Holder is a party that has registered and established an account with M-RETS. An Account Holder may be any market participant.

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

Attribute*:* A characteristic of a generator, such as location, vintage of generator, date of certificate issuance, emissions output, energy resource, eligibility for state programs, etc.

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). Also referred to as behind-the-meter (BTM) generation.

Certificate: A certificate represents all of the attributes from one MWh of electricity generation from a renewable generating unit registered with M-RETS or a certificate imported from a compatible certificate tracking system and converted to an M-RETS certificate.

Compatible Certificate Tracking System: A Compatible Certificate Tracking System is a generation tracking system that has an operating agreement with the M-RETS Administrator regarding the Conversion and transfer of certificates between tracking systems. This can not occur until a protocol has been developed between the M-RETS Administrator and the administrator of the other tracking system for converting certificates from another tracking system into M-RETS certificates, or vice-versa.

Control Area: An electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation of the Interconnection. For the purposes of this document, a Control Area is defined in broad terms to include transmission system operations, market, and load-serving functions within a single organization. A Control Area operator may be a system operator, a transmission grid operator, or a utility.

Creation Date: The date that M-RETS certificates are created. Certificates are created (monthly, 90 days following the last day of the month of generation). Certificates based on accumulated generation data will also bear a Creation Date, but will also show the period over which the generation was accumulated.

Disclosure Label: A state-mandated report on the fuel source, emissions, and other characteristics of the electricity resources supplied to retail customers.

Dynamic Data: Variable information that is associated with a specific MWh from a registered generating unit, such as certificate serial number or date of generation. Dynamic Data is contrasted with Static Data; see definition below.

Emission Factor: The emission factor of a generating unit indicates the amount of emissions released in terms of mass of emitted substance per MWh.

Facility/Generating Facility: One or more Generating Units at a single physical location.

First Point of Interconnection: The first point of interconnection is defined as the substation where radial lines from a given power plant interconnect to the transmission system, or the generator delivery point as defined by that generator's agreement with the local Control Area Operator.

Generating Unit: A Generating Unit for the purposes of M-RETS is a renewable energy source that is identified by a single meter.

Generation Activity Log: A series of log entries associated with each registered generation unit which will include, at a minimum, a balance remaining (kWh) after the most recent certificate creation date; the MWh report to M-RETS by the reporting entity during the current month; administrative adjustments; certificates created during the current month,; and balance forward.

Generator Agent: A representative designated by a Generator to act on its behalf for interaction with M-RETS. A generation unit may register itself with M-RETS, and later assign an agent, or assign an agent before registration, in which case the agent can register the generation unit with M-RETS. A Generator Agent will be vested with the authority to manage certificates, approve transfers, imports, retirement or any other action taken with regards to certificates deposited into or transferred out of the specified account(s). A Generator Agent may represent more than one Generating Unit.

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 the M-RETS Administrator 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.

Midwest Renewable Energy Tracking System (M-RETS): A database that is able to track the certificates that result from the generation of electricity. M-RETS is an information and accounting system and is not intended to establish any legal title or ownership to certificates or the underlying attributes they represent.

Operating Rules: The detailed rules by which M-RETS is administered.

Reporting Entities: A Reporting Entity is an entity reporting meter reading and other generation data to the M-RETS Administrator. Reporting Entities may include control areas and Qualified Independent Parties, and for certain Customer-Sited Distributed Generation, the generation owner or customer. The protocol for such reporting is the Interface Control Document.

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 Account Holder for certificates in his/her own account(s).

Self-Reporting Generator: A Customer-Sited Distributed Generation installation with a nameplate capacity of less than or equal to 360 kW that elect to have dynamic data transmitted to the M-RETS Administrator via the Self-Reporting Interface.

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.

Whole Certificate: A "Whole Certificate" is one where none of the Attributes have been separately sold, given, or otherwise transferred to another party by a deliberate act of the certificate owner. Renewable attributes shall include the environmental attributes that are defined as any and all credits, benefits, emissions reductions, offsets, and allowances, howsoever entitled, directly attributable to the generation from the generation unit(s). Individual states may create different definitions of renewable certificates. See also definition of "Certificate."