

CLEAN POWER MARKETS, INC.

Tracking and Managing Renewable Energy Credits

October 28, 2008



Full Dist.

Presentation Overview

- Who is Clean Power Markets
- REC Markets
- Tracking Systems and Registries
 - How they work
 - Benefits
 - Importance of Verification Process
- Solar Tracking Systems
 - New Jersey Solar REC Program

Who is Clean Power Markets

- Founded in July 2000
- Awarded WI contract in 2002
- Awarded NJ and CT projects in 2004
- Awarded PA project in 2006
- Acquired by Enerwise in October 2006

Who is Clean Power Markets

- Clean Power Markets, Inc. (CPM) improves the efficiency by which states meet their goals to encourage green power.
- CPM provides software and services to track renewable power production for regulators, power producers, and utilities that is simple and cost-effective.

REC Markets

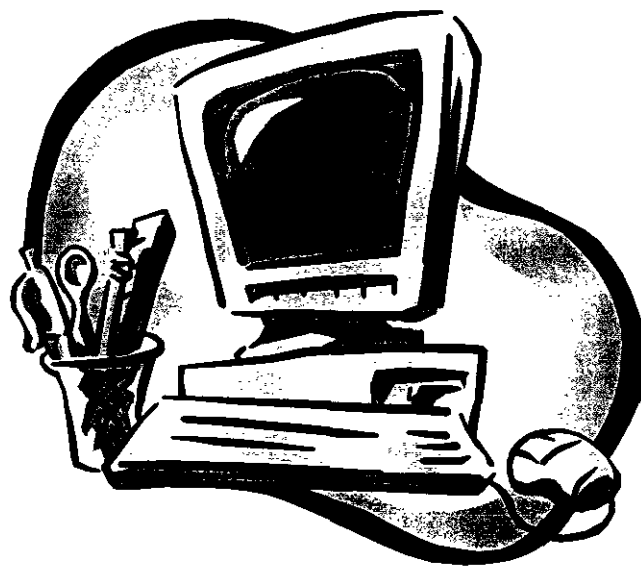
- Compliance-driven:
 - States with an RPS
- Hybrid:
 - States with incentive programs
 - Utility programs
- Voluntary Programs

CPM REC Tracking and Management

- Solar tracking systems:
 - Build and operate NJ SREC Program to track solar systems for RPS compliance and issue Renewable Energy Certificates
- State portfolio standard tracking system/program administrator
 - Qualify systems for PA AEPS program
 - Build and operate tracking program for the PA AEPS
- State/regional REC management for BTM facilities:
 - Build and operate tracking program for Connecticut Clean Energy Fund to manage RECs and report on program revenues

What is a Tracking System?

- Web-based electronic database
- Tracks and verifies production of behind-the-meter facilities (PV, small wind, other)
- Creates renewable energy certificates (RECs) based on production
- Maintains accounts for buyers and sellers
- Provides bulletin board to facilitate trades of RECs
- Allows account holders to sell, transfer, retire, export, or bank RECs



CPM's BTM Tracking Systems: Benefits to State Regulators

- Provides verification and accounting process for regulated entities to meet RPS requirements
- Prevents double-counting
- Low cost option due to existing system and experience of CPM
- Proven reporting system and price transparency for REC market
- Provides price information
- Includes facilities certified by States as meeting renewable portfolio requirements
- CPM provides reports to States regarding electric supplier compliance with solar share of RPS

CPM's NJ Solar and BTM REC Program: Verification

- A critical component of a successful program is a proper **verification process** to assure credible (high quality) RECs
- This is critical to maintain the **integrity of the program** and the **integrity of the SREC market**
- **CPM audits** all types of facilities to check that
 - Facilities are **actually operating**
 - Reported meter readings are **accurate**
 - Estimated production and actual production is within a **reasonable margin of error**

CPM's Tracking Systems: NJ SREC Program

- CPM designed, built, and administers New Jersey Solar and Behind-the-Meter REC Program launched in June 2004
- Tracks solar, wind, biomass and landfill BTM production and issues RECs based on reported/estimated electricity production
- One Renewable Energy Certificate (REC) = 1000 kWh
- As of September 2008:
 - Active users: Over 2,850 registered users
 - Capacity of installations tracked: 72.4 MW
 - RECs issued Delivery Year 2008: 52,941
- Serves the New Jersey solar carve-out for the New Jersey Renewable Portfolio Standard
- Users establish electronic account to track their RECs
- Users can sell, transfer, retire, export, or bank RECs within system
- Electronic bulletin board facilitates buying and selling of RECs

CPM's NJ Solar and BTM REC Program Accounts

- Users establish **electronic accounts**
- CPM receives **weekly updates** of new state-certified facilities from the New Jersey Clean Energy Program
 - A **unique generator ID** is assigned to each facility and added to the Solar Facilities database
- CPM calculates **engineering estimates** of expected production from each solar facility, based on its size, location, orientation and tilt
- CPM **activates the account** once an **attestation** is received from the owner, agreeing to certain conditions

Attestations

Before CPM issues RECs to a renewable facility owner, they must attest that RECs are NOT:

- also sold to another party
- double-counted
(e.g. for another RPS or emissions trading program)
- tracked in any other system



CPM's NJ Solar and BTM REC Program: Metering Requirements

Small: less than 10 kW

- Meter or inverter readings
- OR
- Engineering estimates using
PV Watts calculations

Large: 10 kW +

- Meter, inverter or DAS readings
- Upload to website monthly

*RECs issued monthly based on engineering
estimates or actual reported readings*

CPM's NJ Solar and BTM REC Program: Annual "Audit"



- Annual audit of ALL systems reporting actual meter readings (systems ≥ 10 kW in size)
 - Verify accuracy of meter reading
 - Verify that system is operating
- Annual audit of statistically significant number of systems utilizing engineering estimates (systems < 10 kW in size)
 - Verify that systems are operating
 - Check on annual variance between actual and estimated production

CPM's NJ Solar and BTM REC Program: Trading SRECs

- Unique serialized SRECs are issued monthly
 - SRECs are categorized by Reporting Year
 - Reporting Year in NJ spans June 1 - May 31
- Active bulletin board facilitates trading
- Once deals are made, the users transfer RECs to other accounts
- A 30-day escrow period provides small solar owners with control over payment

CPM's Administrator Responsibilities - NJ

- **Provide high level of customer service:**
Rapid response to questions by phone and e-mail from individual solar users, aggregators, brokers, LSEs, and other interested parties
- **Weekly database updates:**
Immediately add new facilities to database once they have passed inspection by New Jersey's Office of Clean Energy
- **Calculate engineering estimates:**
Calculated for each facility in database
Provide account holders with information on expected REC production
Provide verification / auditing tool
- **Verify production output:**
Confirm that systems are operating
Audit accuracy of meter readings
- **Conduct monthly training sessions** for new users



CPM PA AEPS Program

- PA AEPS program launched Feb. 28, 2007
- CPM designated as Program Administrator:
 - Alternative Energy System Qualification
 - Verification of EDC and EGS compliance with the portfolio standard requirements
 - Calculation of the level of alternative compliance payments for EDCs and EGSs.
 - Verification of alternative energy system status and performance
 - Large Generators
 - Customer-generators
 - Demand-side management and energy efficiency programs
 - MW Total: 16,185.578
 - Support Services

CPM PA AEPS Program

- Generators will be able to choose to manage the facility within the CPM platform or register the facility directly to PJM GATS
- CPM will assist in aggregating small customer generators who receive AECs
- CPM will maintain Bulletin Board so small customer generators can participate in market

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Questions We'd Like Tracking System Vendors to Address

RESPONSES FROM CLEAN POWER MARKETS INC.

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N.C. Utilities Commission

1. Describe the process and data format that utilities use to feed control area check-out generator MWh data into systems that your organization has administered or designed.

Response:

MWh data is uploaded into the system via .csv format or manually entered after logging in to the website. The system can also accept metered data.

2. Similarly, describe the process and data format for metering data to be inputted for small generators in the systems that your organization administers or has designed. (In situations where the meter is read once a month during a retail billing cycle, rather than at month-end.)

Response:

Small generators can also input data via .csv format or manually entered after logging in. There are provisions to prevent readings from being entered more than once a month. The length of time between entered readings can be adjusted as needed. Generally CPM requests that data is uploaded within the 5 days prior to issuing RECs.

3. Describe the process and data format for estimating MWh output for non-metered generators, such as small solar, in the systems that your organization administers or has designed.

Response:

CPM utilizes PV Watts to estimate MWh output for solar systems. We calculate PV Watts estimates for every solar facility entered into the database whether readings are entered for a facility or not. In this way, we can check the accuracy of uploaded data for these facilities. All readings are verified against the size of an installation for facilities such as wind.

4. Describe the process for REC transfers in systems your organization administers or has designed. Have any transfers between tracking systems actually occurred? If no, why not?

Response:

REC transfers between users in the tracking system is a simple process. After a user has logged in to the system, they would select the transferee from a dropdown list of available users. After the transfer has been made, a confirmation of the transaction is sent to the administrator and both parties involved in the transfer. The transfer is not completed until an escrow period has passed. Transfers can also be made within a users account to various subaccounts if an account holder needs RECs separated into different categories.

5. Describe how generation data from multi-fuel generators is handled in systems your organization administers or has designed? Who inputs the monthly fuel information? Does the system calculate the RECs?

Response:

When the generator completes the application to be put into the database, it informs CPM of the fuels involved and the splits. The generator is responsible for uploading the monthly fuel information. CPM uses a combination of the respective gas volumes and combustibility of the fuels to determine how the RECs should be assigned.

6. Comment on the advantages and disadvantages of REC serial numbers having "meaning," i.e. where certain digits are assigned meaning, such as year and month of creation, fuel type, etc, versus serial numbers that are merely sequential and all information is contained in other fields / tables.

Response:

REC serial numbers should include the year and month of creation for vintage purposes and to demonstrate that the REC is able to be used for the energy year for which it is being retired. The fuel type is also important for confirming that the REC has been purchased for the correct Tier. CPM utilizes these indicators to quickly verify

resources and vintages for compliance with the RPS, rather than looking for information in other fields/tables.

7. Discuss any experience your organization has with systems that track RECs associated with energy efficiency and / or demand-side management. How is that data inputted and managed?

Response:

Due to the unique nature of these projects, each application is evaluated individually. When a certification number is issued to the project it is issued for the particular parameters established in the evaluation process and the number of RECs to be associated with that project. A schedule is established for earning the RECs and after that schedule is exhausted, the certification number is cancelled.

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