

**OFFICIAL COPY**

**North Carolina Utilities Commission**

**November 3, 2008**

**FILED**

**OCT 23 2008**

Clerk's Office  
N.C. Utilities Commission

**Renewable Energy Market  
Infrastructure Solutions**

*E-100, Sub 121*

*Full Dist.*



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# Overview:

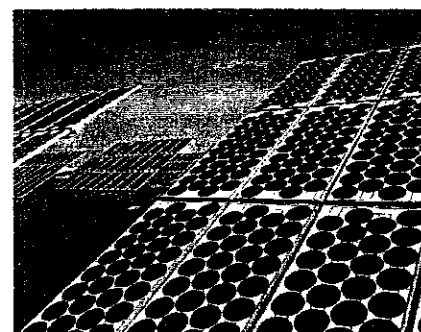
- APX is the technology provider or registry operator for all organized US REC markets
- The APX SAS model can provide a fully hosted registry as an end to end managed service
- APX is able to quickly deploy a REC system based on the North Carolina timeline and requirements



# Company

***APX provides trusted infrastructure solutions for environmental and energy markets.***

- ***Founded in: 1996***
- ***Offices in: Santa Clara CA, NYC Metro area, Washington DC***
- ***80 + employees***



# Focused on Market Solutions

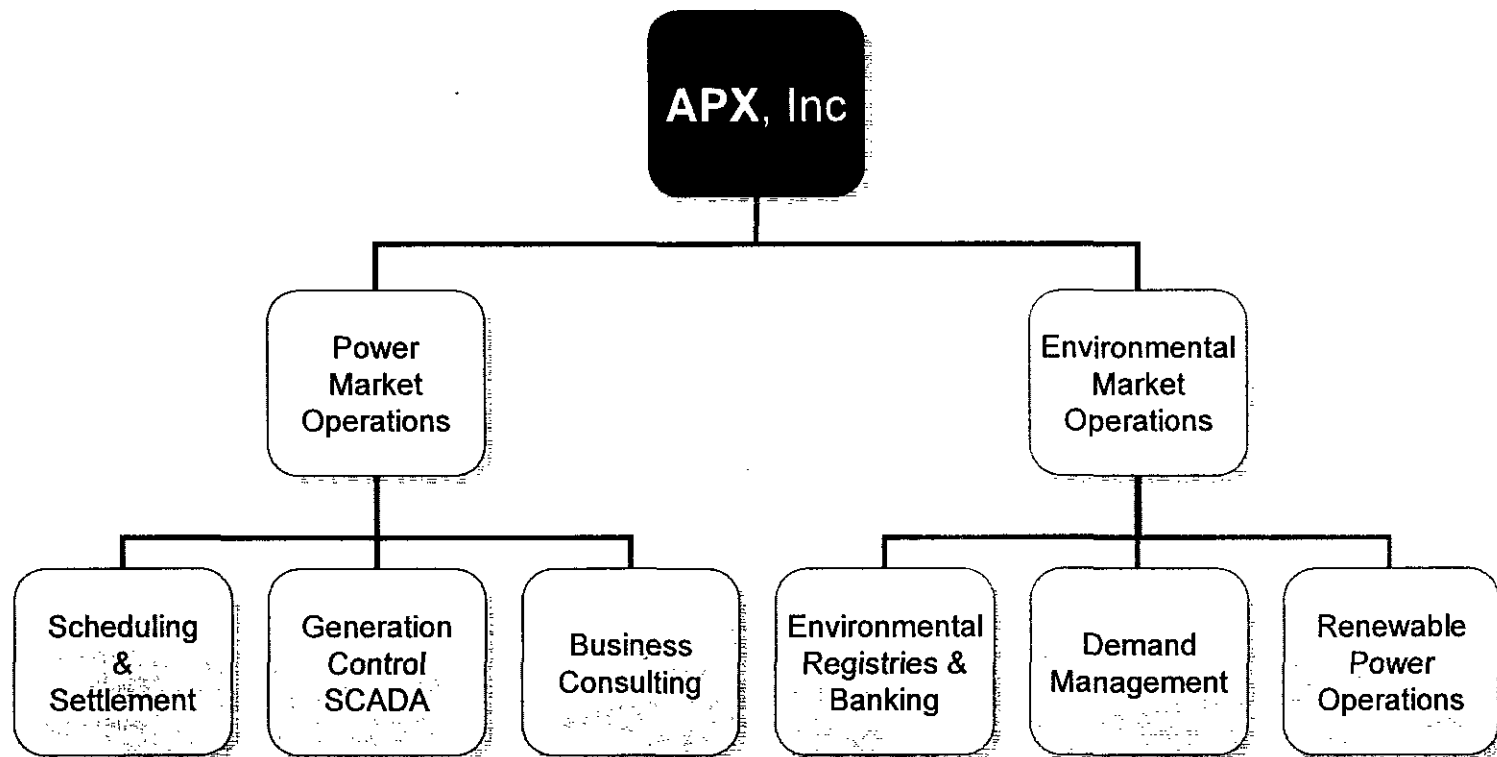
- Neutral and independent
- Serving institutions and regulatory bodies, both domestic and international



- Not environmental policy or protocols
- Not advocacy
- Not an exchange, trader, or broker
- Not investing or speculating in the markets



# APX Business Lines

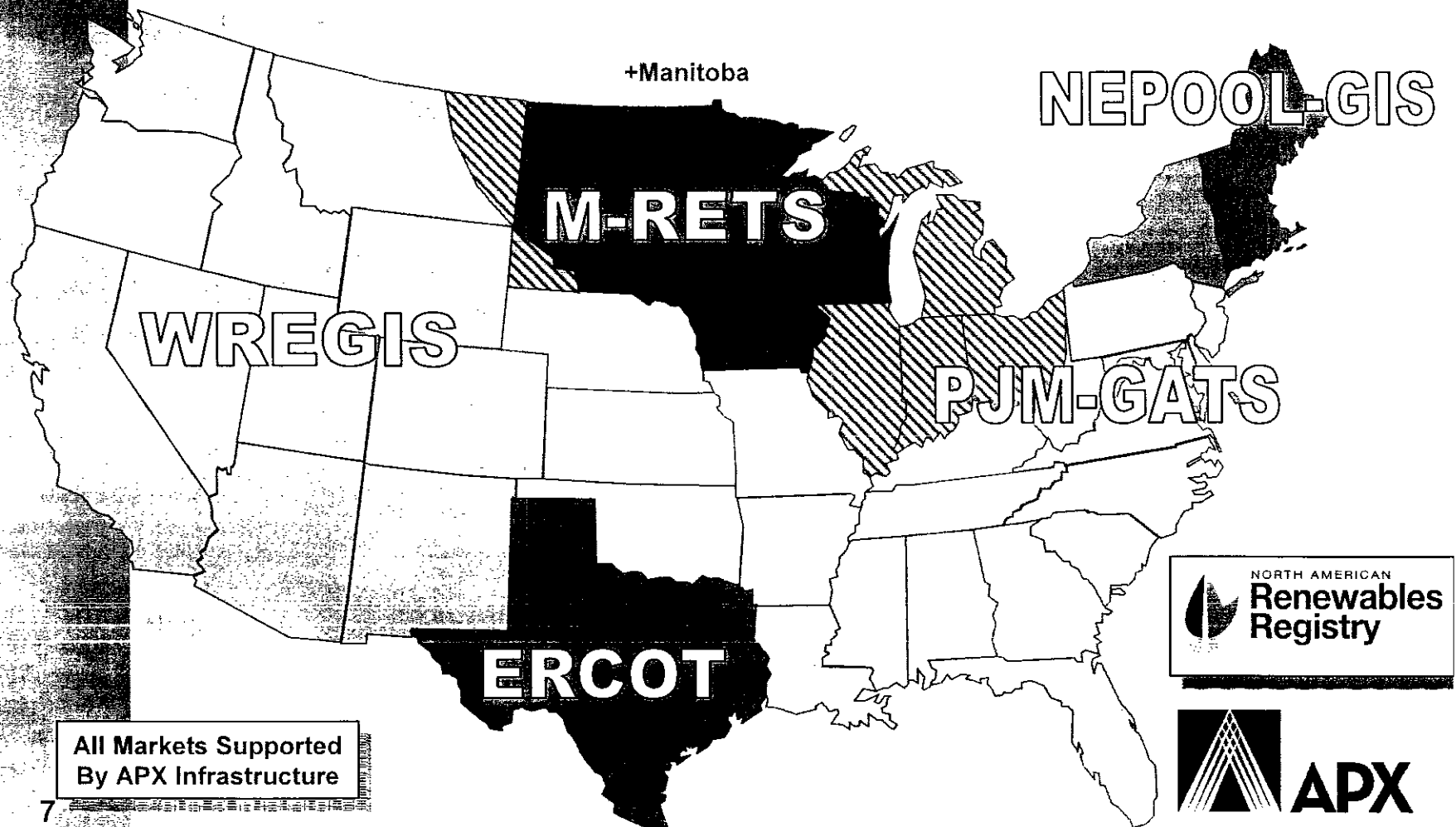


# The New Environmental Commodities

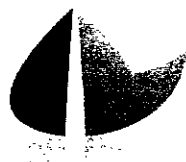
Instrument	Objective	Unit
Renewable Energy Certificates (RECs)	Promote the development of renewable energy resources.	MWh
Energy Efficiency Certificates	Promote the development of energy efficiency and conservation	MWh
Carbon Offsets or Verified Emission Reductions (VERs)	Reduce GHG emissions to mitigate climate change.	Tons of CO <sub>2</sub> equivalent



# North American REC Markets



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NORTH AMERICAN  
**Renewables  
Registry**

- Registry to support voluntary renewable energy markets in states without registries
- Covers fifteen states
- Green pricing programs active in every state
- More than 2 million MWh's of generation serving voluntary markets



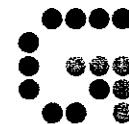


# Clients

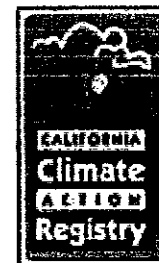
## *in Renewable Energy Markets and Carbon*

- Corporations
- Power Sector
- Financial Services
- Government
- NGOs

- plus 1200+ Corporate Accounts in APX systems in 2008



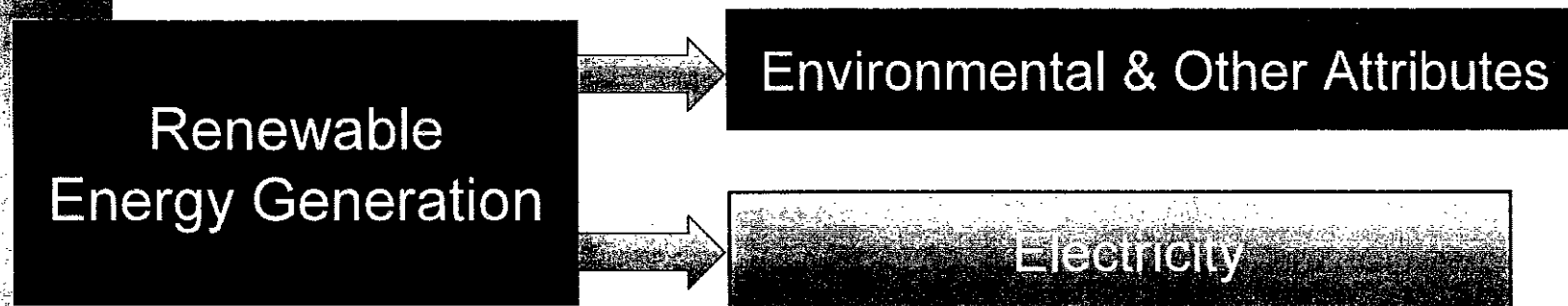
The Gold Standard  
Premium quality carbon credits



climate action reserve

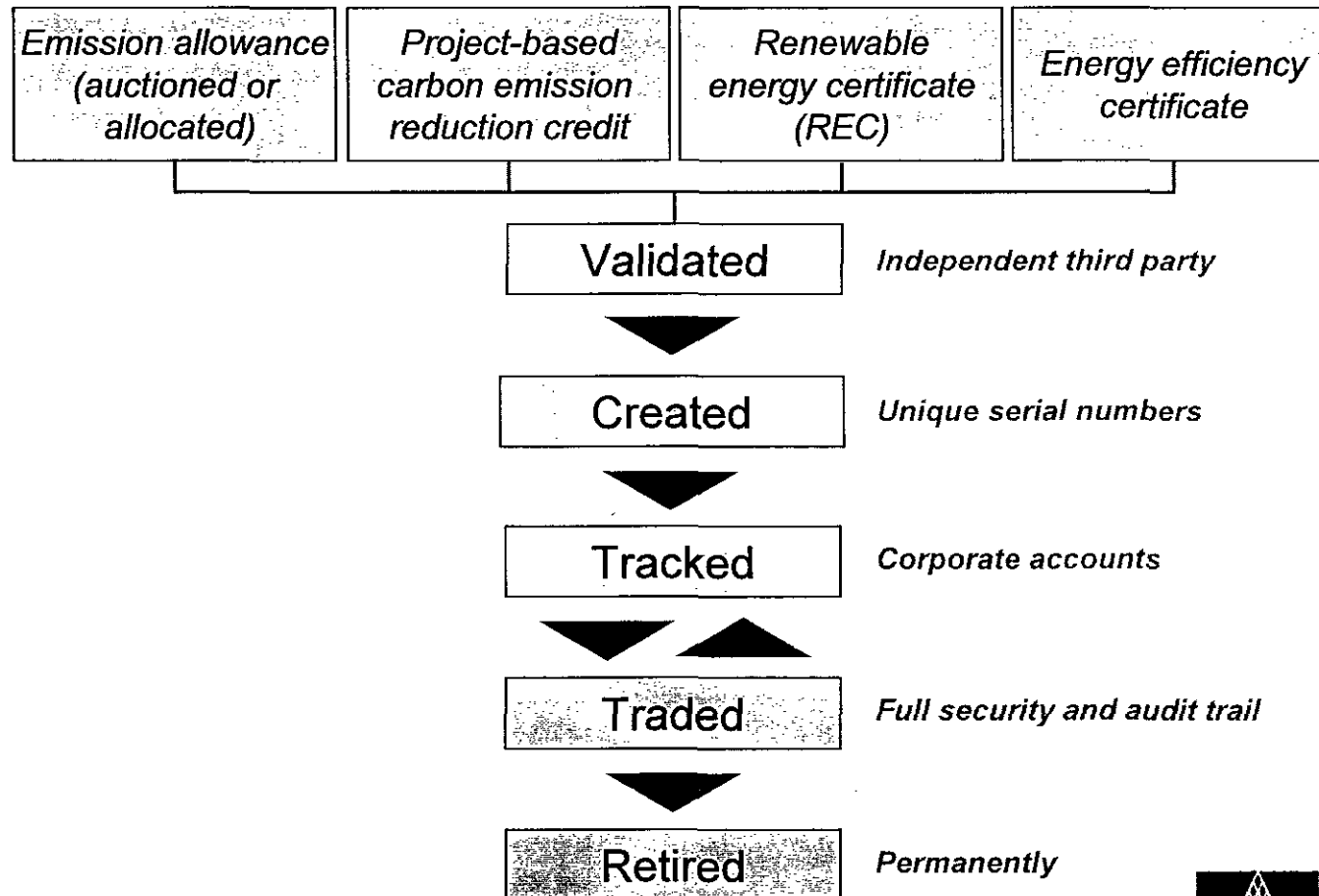


# Introduction to Certificate-based Renewable Energy Trading

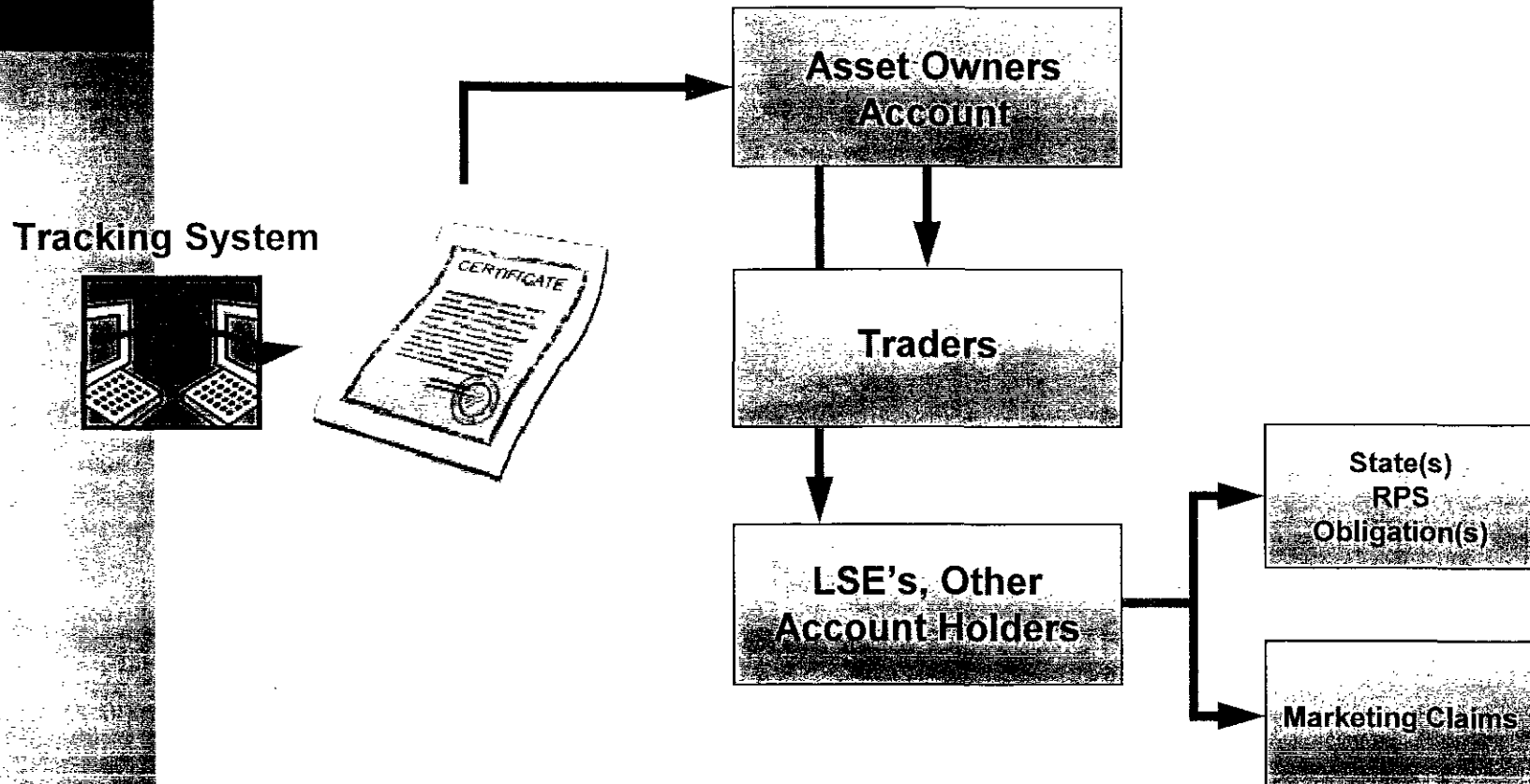


- Certificates represent the right to claim environmental and other attributes associated with electricity generated from a renewable energy facility
- **Renewable Energy Credits (REC)** and **Electricity** (each priced separately)
- RECs represent the environmental attributes associated with 1 MWh of renewable energy

# Environmental Registries: Ensuring Trust and Transparency

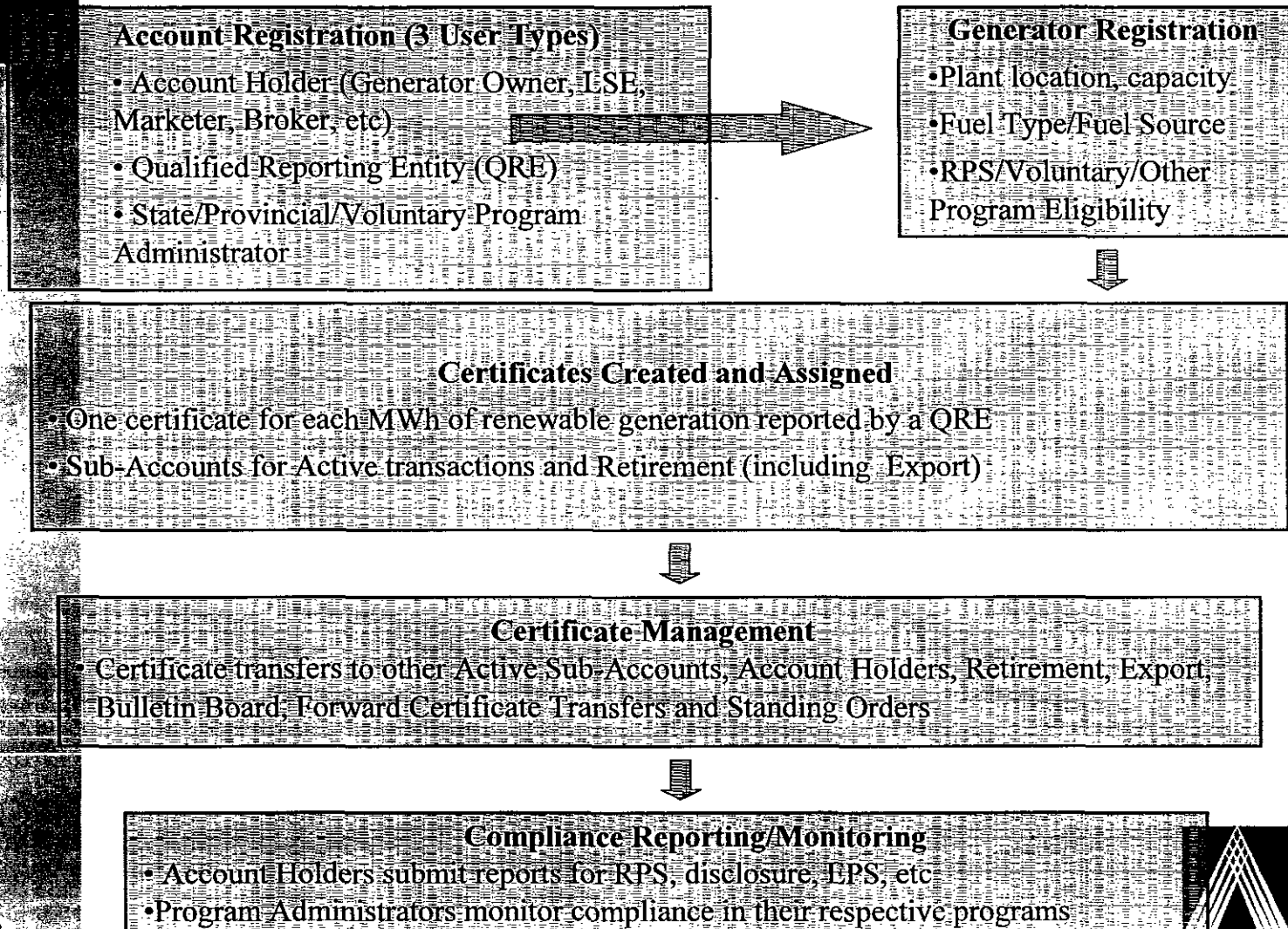


# REC Tracking System Overview - Tracking/Settlements



Renewable generators generate power and certificates are created in the registry / tracking system

# REC Tracking Systems – Process Flow



# Certificate Serialization

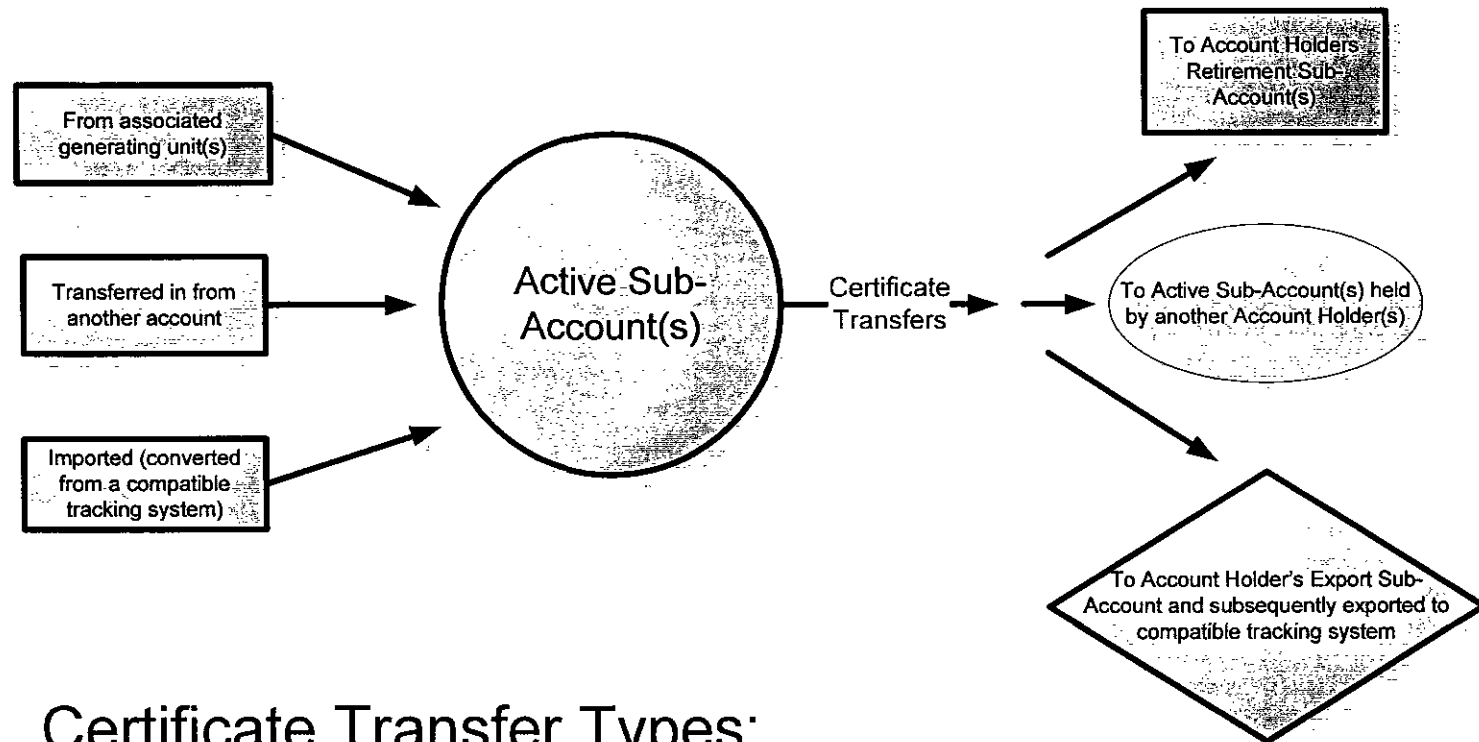
- Serial Number format defined by the system
- APX Registries utilize multiple formats of serialization
- A unique block number assigned to each batch of certificates issued
- Registries use a varying combination of additional characteristics:
  - Generating Facility ID (assigned by the tracking system)
  - Fuel Type/Technology of Generating Facility
  - Vintage Period (usually as mm/yyyy)
  - Location of Generating Facility (by State/Country)
  - Meter Data Begin/End (as mm/dd/yyyy-mm/dd/yyyy)
  - Identifier for which entity reported the meter data
- More information in the serial number provides tracking system users with important information about the RECs without having to dig into the details



# Example of Account Structure

- Basic Account types contain:
  - An Active Sub-Account
  - A Retirement Sub-Account
  - An Export Sub-Account
- Account Holders can set up other sub accounts at their discretion to manage their assets and obligations
- Certificates initially deposited into Active Sub-Account – can be transferred to other Sub-Accounts and/or other Account Holders

# Certificate Transfers



## Certificate Transfer Types:

- One-Time
- Recurring Standing Orders
- Recurring Forward Transfers



# Data Needs

- Meter data (monthly)
  - Generation production
  - Retail load data to determine obligation ( optional )
- Data provided in CSV (or other mutually agreed file format) for registry upload
- Meter file contains the following variables:
  - Facility ID (used by Reporting Agent)
  - Meter Start (mm/dd/yyyy)
  - Meter End (mm/dd/yyyy)
  - Vintage (mm/yyyy)
  - MWh (or KWh for self-reported micro-generators)
- Data file is loaded directly into the Registry via specialized screens for the Reporting Entities
- Validations are made at time of upload to check against facility performance feasibility and Reporting Entity identification
- Multi-fuel facilities self report fuel split, by percentage. The Registry uses this percentage to issue the appropriate amount of certificates

# Data Requirements/ Sources

Data	Source	Comment
Monthly Generator Output (MWh)	<ul style="list-style-type: none"><li>• ISO and/or Utility meter systems</li><li>• Qualified Reporting Entity (QRE)</li><li>• Self-reporting</li></ul>	QRE and self-reporting are generally options if ISO/Utility sourced data is not available or preferred
Fuel Sources / Generator Characteristics	Generator Entered – State or Admin Verified	Information such as fuel type(s), vintage, capacity, location etc
RPS Eligibility (by State/Province)	Generator Entered – Regulator Verified	State certification number required

# Energy Efficiency Certificates

- Starting with Connecticut (Class III), states are building mandatory and voluntary compliance programs around Energy Efficiency
  - Conservation and load management programs (C&LM)
  - Cogen fuel efficiency
  - Demand response resources
- Similar to RPS, state regulators define an annual obligation (% of state load)
  - Tracking system facilitates certificate trading and compliance reporting
  - One Certificate created per 1 MWh of energy efficiency savings or avoided power
- Data currently reported in two ways:
  - ISO/Utility Meter data file exchange
  - Self-Reported and verified by System Admin/State Agency Representative (C&LM only)



## Deployment Model – Software as a Service (SAS)

- Fully hosted with 24/7 operational support
- High reliability
- APX provides system administration
- No upfront cost, predictable cost model and expenses
- On going system maintenance, security, and support provided



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# Thank you

- For additional questions, contact:

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215-519-4228

