



REC Transparency & Prices

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APX

About APX

- APX is the leading infrastructure provider for environmental and energy markets in renewable energy and carbon commodities. APX business services include the APX Environmental Management Account, a complete suite of solutions for environmental asset and risk management
- APX provides registry infrastructure and administration for:
 - all of the US Renewable Portfolio Standards (RPS) programs
 - the 3 major voluntary carbon offset programs
 - the only energy efficiency project registry



REC Markets

- State, regional or national REC market?
- Transparent market?
 - Different REC definitions
 - Different resource definitions (biomass)
 - Power deliverability requirements
- Transparent Prices?
 - Over the counter market
 - Regulatory uncertainty

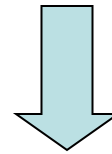
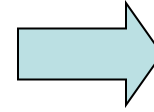
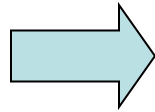









Wheat Markets in the 1800's

Similar evolution as REC markets?

	Before 1850s	After 1850s
Product	Individual sacks of grain	Commodity classified by attributes (white winter wheat, red winter wheat, spring wheat)
Delivery	Wagon/boat	Train
Season	When water ways and roads allowed	Year round
Prices	Week or month old	Every day (Telegraph)

REC Markets



Fuel Type 	Certificate Type 	Certificate Vintage 	Generation Period 	Certificate Serial Numbers 	Quantity 	MN 
Biomass	Renewable	3/2010	3/2010	.MN-03-2010-10116-1 to 15	<u>15</u>	Yes



MN Swine Waste RECs to NC?

Similar evolution as REC markets?

	Yesterday	Today
Product	Biomass – MN – 2010	Attribute definition: Swine waste – MN (Qualified for NC swine waste carve-out, CO, WI, IL, MO?, etc.)
Delivery	MRETS only	Any registry that accepts MRETS certificates (currently NAR, NC RETS, MIRECS)
Season	MN: 4 years	MN: 4 years NC: Never expires etc.
Prices	Broker quotes for MN market	Price quotes based on full set of attributes

Key to Map

You may click on registry names to visit the registry's website.

- ERCOT

- MIRECS

- M-RETS

- NAR

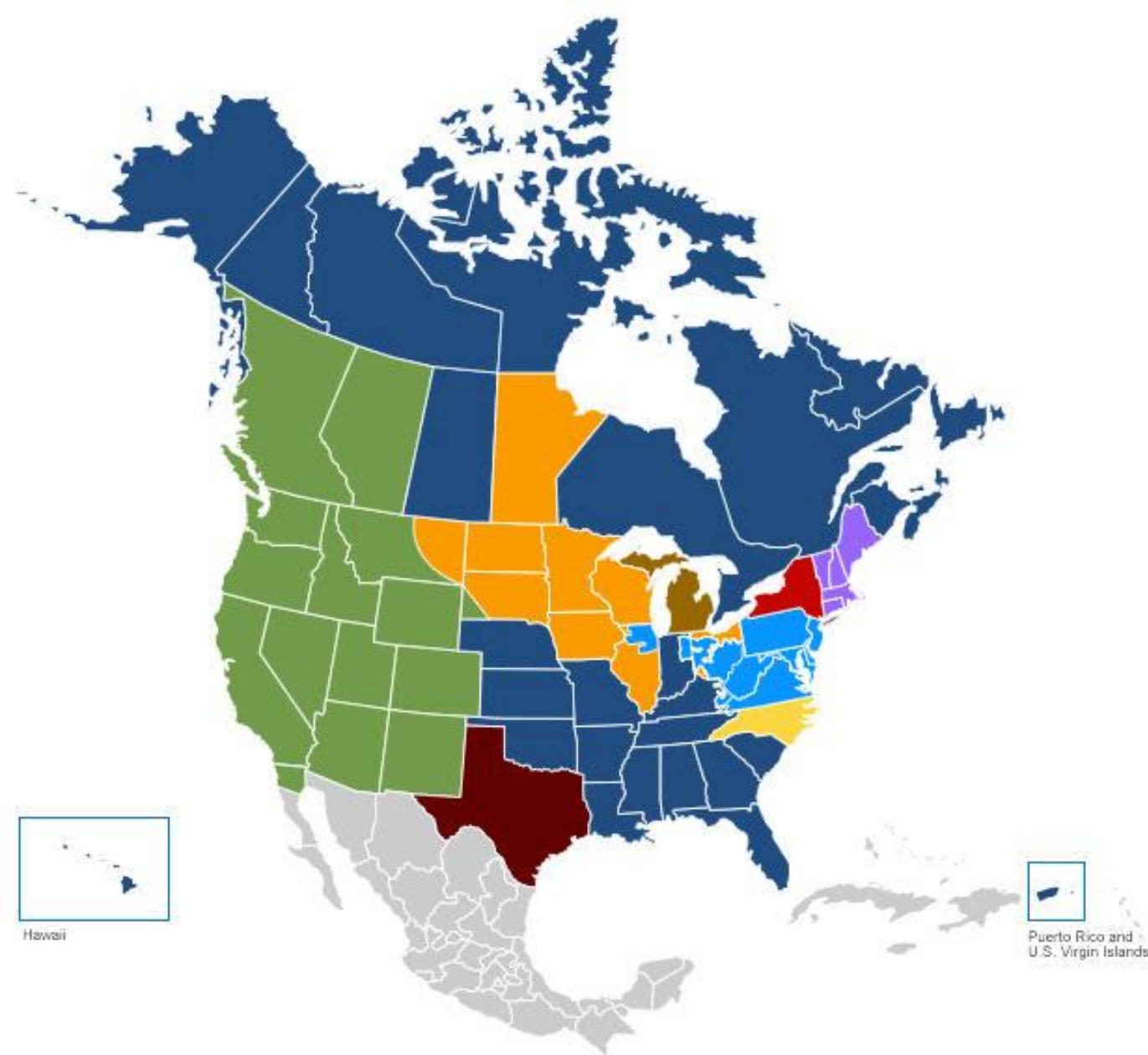
- NC-RETS

- NEPOOL

- NYISERDA (in development)

- PJM-GATS

- WREGIS



Reference: <http://narecs.com/resources/registries.htm>