



Midwest Compliance Markets

Ryan Cook

Vice President

Clear Energy Brokerage & Consulting LLC

Renewable Energy Markets

San Francisco, 2011

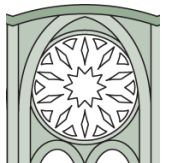
Clear Energy Overview

Clear Energy Brokerage & Consulting LLC

A boutique environmental commodities brokerage firm that provides transactional services and consulting in the renewable energy and renewable energy credit (REC) markets, as well as the long-term renewable power market.

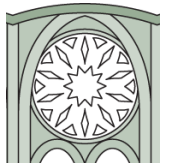
Ryan Cook, Vice President

Voluntary and compliance REC markets with a focus on the Midwest and long-term renewable power contracts.



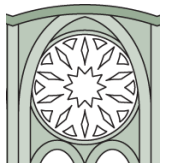
Summary

- **Active Midwest RPS States**
 - RPS Highlights
- **Projected Supply & Demand Curves**
 - 2009 vs. 2011
 - Underlying causes (if definable)
- **New Compliance Market Behavior**
- **Procurement Processes**



Ohio RPS Highlights

- 25% by 2025, half (12.5%) from renewables, half (12.5%) from advanced energy resources, 50% of each must be in-state
- Bench mark for renewables, non for advanced energy resources
- Online date of January 1, 1998
- Reporting period is calendar year,
- Allowable tracking systems: MRETS, GATS
- Importation area: adjacent states qualify
- Shelf life: 5 years **from purchase or acquisition from generator**

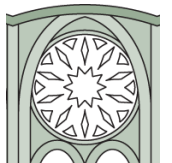


Ohio In-State REC Supply & Demand

September, 2009

	2009	2010	2011	2012	2013
Starting supply	117,000	261,500	210,000	(21,000)	(376,000)
In-state reqmnt (50%)	(192,500)	(407,500)	(850,000)	(1,325,000)	(1,875,000)
Est. in-state generation	337,000	356,000	619,000	970,000	970,000
Ending Supply	261,500	210,000	(21,000)	(376,000)	(1,281,000)

- OH in state REC prices have reflected the projected shortfall, trades started at just under \$10, increased to \$15, last market \$22 @ \$25



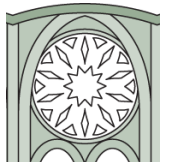
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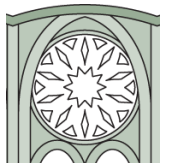
November, 2011

	2009	2010	2011	2012	2013	2014	2015
Starting supply	244,000	802,818	1,203,316	1,474,142	2,355,727	2,843,985	2,964,690
In-state reqmnt (50%)	(164,182)	(333,501)	(676,174)	(1,028,415)	(1,421,742)	(1,789,295)	(2,522,756)
Est. in-state generation	723,000	734,000	947,000	1,910,000	1,910,000	1,910,000	1,910,000
Ending Supply	802,818	1,203,316	1,474,142	2,355,727	2,843,985	2,964,690	2,351,934



Michigan RPS Highlights

- 10% by 2015 with annual benchmarks:
 - 2.0% in 2012 | 5.0% in 2014 | 3.3% in 2013 | 10.0% in 2015
- Wide definition of supply, existing hydro & MSW counts, old biomass
- No online date or set ACP, but a 3 year shelf life
- MI-RECs is the tracking system, integrates with MRETS & GATS
- 10% of the obligation may be met with Energy Optimization Credits (EOCs) or Advanced Cleaner Energy Credits (ACECs – 10 to 1)
- **Importation area is the service areas of electric providers to Michigan**

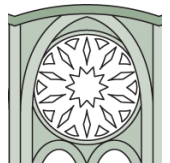


Michigan REC Supply & Demand

September, 2009

	2012	2013	2014	2015
Beg Supply	12,651,000	12,651,000	12,651,000	10,918,000
LESS: Expiring RECs	(1,837,000)	(290,000)	-	-
REC Req	(2,380,000)	(3,927,000)	(5,950,000)	(11,900,000)
Est Eligible Generation	4,217,000	4,217,000	4,217,000	4,217,000
Ending Supply	12,651,000	12,651,000	10,918,000	3,235,000

- Majority of supply is old hydro, MSW or old biomass
- Assumes no new generation facilities between now and 2015
- Very few MI RPS eligible REC trades, mostly RFP few @ \$10+



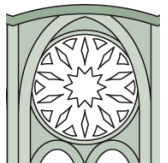
Michigan REC Supply & Demand

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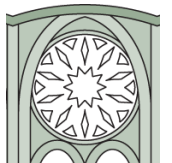
November, 2011

	2012	2013	2014	2015
Beg Supply	12,651,000	13,177,000	14,447,000	13,710,000
LESS: Expiring RECs	(1,824,000)	(189,000)	-	-
REC Req	(2,393,000)	(4,028,000)	(6,224,000)	(12,697,000)
Est Eligible Generation	4,743,000	5,487,000	5,487,000	6,538,000
Ending Supply	13,177,000	14,447,000	13,710,000	7,551,000



Illinois RPS Highlights

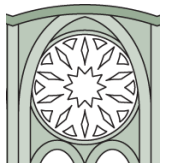
- 25% by 2025 with annual benchmarks:
- Wind requirement: 75% for IOUs, 60% for ARES
- Reporting year similar to PJM markets
- No specified online date, old hydro counts
- No certification process, just enrollment into tracking system
- Standard eligible technologies + **waste heat from industrial processes**
- **After June 1, 2011 (EY12), instate and adjoining state RECs have equal preference**



Illinois REC Supply & Demand

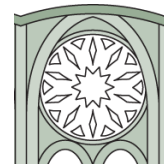
	2012	2013	2014	2015	2016
REC Requirments	(6,241,360)	(7,427,219)	(8,658,015)	(9,935,072)	(11,259,748)
Est. Eligible Generation	19,243,194	18,177,194	17,643,194	17,143,194	16,893,194
Ending Supply	13,001,834	10,749,975	8,985,179	7,208,122	5,633,446

- Majority of supply is new wind
- Includes the MI surplus RECs, old hydro etc.
- EY 2012 includes other adjoining states IA, IN but not WI, KY or MO
- Does not count any industrial waste heat (1MM plus RECs out there)
- Last ComEd RFP results: \$1.05 for wind, \$0.65 for non wind



Midwest Compliance Markets

Questions? / Time Check



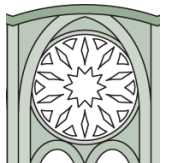
New Compliance Market Behavior

Ohio

- Followed supply & demand information relatively well (good information)
- Experienced natural sellers & buyers paved the way
- Price stickiness during change in market direction
- Overall a relatively logical market...kind of
- Solid mix of purchasing via RFP and OTC

Forecast:

- Expect this state to follow the curves and prices to come down to the low to medium single digits
- Natural buyers will continue their purchasing trends



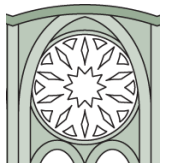
New Compliance Market Behavior

Michigan

- Completely ignored supply & demand information (good information)
- Natural sellers were inexperienced and enthusiastically optimistic
- Very irrational market
- Purchasing primarily done via RFP (drives pricing)

Forecast:

- Expect purchasing by two main utilities to pause
- ARES will begin to purchase spot market in the next 12 months.
- Prices should begin to drop significantly as OTC trading picks up
- Target price range: \$1.00 or less



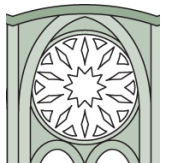
Procurement Process

Ohio

- Four main purchasing entities, plus numerous ARES
- ARES companies typically purchase OTC for 1 – 3 years forward
- Big Four Vary:
 - OTC only, spot and short term forward
 - Engage in long term PPAs plus some small volume spot market
 - Numerous RFPs, spot, short term and long term

Michigan

- Two main utilities, plus a handful of other LSEs
- RFP (power / REC / bundled) only for the two main utilities
- Direct deals, or OTC for the smaller firms, IF they have need at all



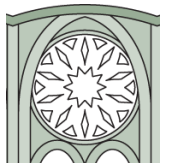
Procurement Process

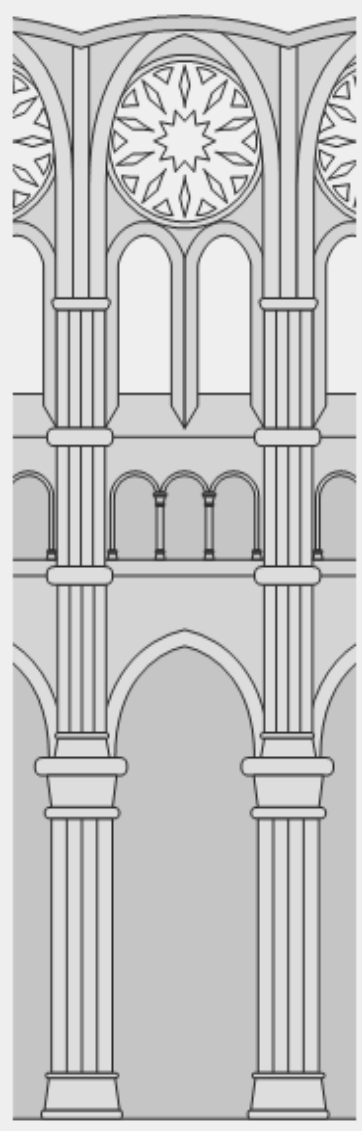
Wisconsin

- No RECs, Renewable Resource Credits, only utilities can create an RRC
- No active trading, only RFP for PPAs, or brokered off-take agreements

Illinois

- Two main utilities, plus a handful of other LSEs
- Annual RFP for RECs, annual RFP for Power
- New IPA director – in their procurement plan Ameren and ComEd will not be contracting for long-term RECs, only spot.





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