



# Midwest Compliance Markets

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Renewable Energy Markets

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# Clear Energy Overview

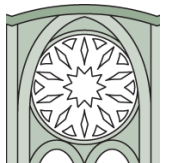
## **Clear Energy Brokerage & Consulting LLC**

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 domestic carbon market.

## **Ryan Cook, Senior Broker**

Voluntary and compliance REC markets with a focus on Midwest compliance markets.

Carbon project origination (CAR & CCX) and brokerage, spot and forward markets.



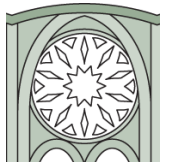
# Summary

## Ohio

- RPS Highlights
- Current Market
- Adjacent State Impact

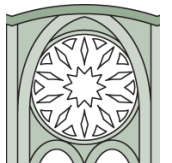
## Michigan

- RPS Highlights
- Current Market
- Adjacent State Impact



# Ohio RPS Highlights

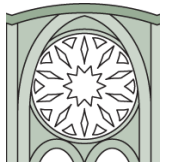
- 25% by 2025, half (12.5%) from renewables, half (12.5%) from advanced energy resources, 50% of each must be in-state
- No bench mark for advanced, only for renewable
- Online date of January 1, 1998
- Reporting period is calendar year, unknown true up date
- Shelf life: 5 years from purchase or acquisition from generator
- Allowable tracking systems: MRETS, GATS & NARR(?)
- Importation area: adjacent states qualify, non adjacent states qualify with a power flow study
- ACP is \$45 for non-solar, increasing annually by the CPI



# Ohio In-State REC Supply & Demand

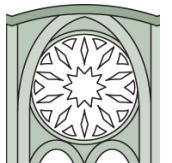
	2009	2010	2011	2012	2013
Starting supply	117,000	261,500	210,000	(21,000)	(376,000)
In-state reqmnt (50%)	(192,500)	(407,500)	(850,000)	(1,325,000)	(1,875,000)
Est. in-state generation	337,000	356,000	619,000	970,000	970,000
<b>Ending Supply</b>	<b>261,500</b>	<b>210,000</b>	<b>(21,000)</b>	<b>(376,000)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

- Above assumes the proposed 200MW OH based Biomass facility does not come online.
- OH in state REC prices have reflected the projected shortfall, trades started at just under \$10, increased to \$15, last market \$22 @ \$25.



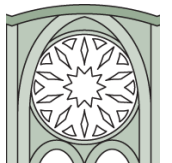
# Ohio: Adjacent State Impact

- Pennsylvania
  - Currently the only supplier to the OH Solar Market
  - PA based Tier 1 RECs will also count to OH (already in GATS)
- Indiana
  - Previously sold to the voluntary market, now will be looking to supply Adjacent State OH RECs
- Michigan
  - Will use the OH price as the market floor for MI RECs that are COD 01/01/98 or later.
- Kentucky & West Virginia
  - Eligible, non PJM resources should move to the OH market.



# Michigan RPS Highlights

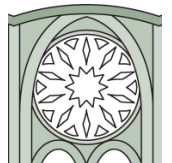
- 10% by 2015 with annual benchmarks:
  - 2.0% in 2012      5.0% in 2014
  - 3.3% in 2013      10.0% in 2015
- Wide definition of supply, existing hydro & MSW counts, old biomass
- No online date and no set ACP
- Reporting year is calendar year, unknown true up date
- Shelf life of 3 years from the generation month
- MI-RECs is the tracking system, integrates with MRETS & NARR,
- Importation area is the service areas of electric providers to Michigan



# Michigan REC Supply & Demand

	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
<b>Ending Supply</b>	<b>12,651,000</b>	<b>12,651,000</b>	<b>10,918,000</b>	<b>3,235,000</b>

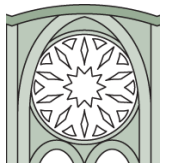
- Majority of supply is old hydro, MSW or old biomass
- Assumes no new generation facilities between now and 2015
- Very few MI RPS eligible REC trades, few outliers @ \$10+
- RFPs are occurring in state, little clarity on pricing at this time
- New legislation is in the works to double RPS requirements





# Michigan: Adjacent State Impact

- Ohio
  - Little to none expected
- Indiana
  - Little to none expected
- Wisconsin
  - Little to none expected





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