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Geothermal Energy Generation in Oil and Gas Settings: Renewable Energy Credits for the Gulf Coast States

Presented by Tim Smith

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Overview of the Presentation

- Who is Element Markets?
- What is a REC?
- What markets exist for RECs?
- A look at Louisiana, Mississippi, Alabama, Oklahoma, and Texas markets

Who is Element Markets?

- Started in 2004 as an emission and renewable energy credit asset management company
- Element Markets wants to take on the role of being an asset manager with strategic partners in select markets
- We guide our clients in their decision-making process making us a “part of the team” vs. an outsourced brokerage or consulting function.
- We provide in-depth market due diligence, analysis, and trading strategies to maximize our clients revenue potential
- Our commercial experience and market intelligence is unmatched
- We focus on developing client relationships with developers and utilities

What is a REC and How Does It Work?

- REC = Renewable Energy Credit
- A renewable generator produces 2 products when it creates electricity:
  - System energy
  - REC
- A REC is a marketing right that allows the owner to virtually overlay it on his system energy to create renewable electricity
- One REC is equivalent to one MWhr of energy
- RECs work on a broader time frame and geography compared to system energy

A Few Notes About REC Markets

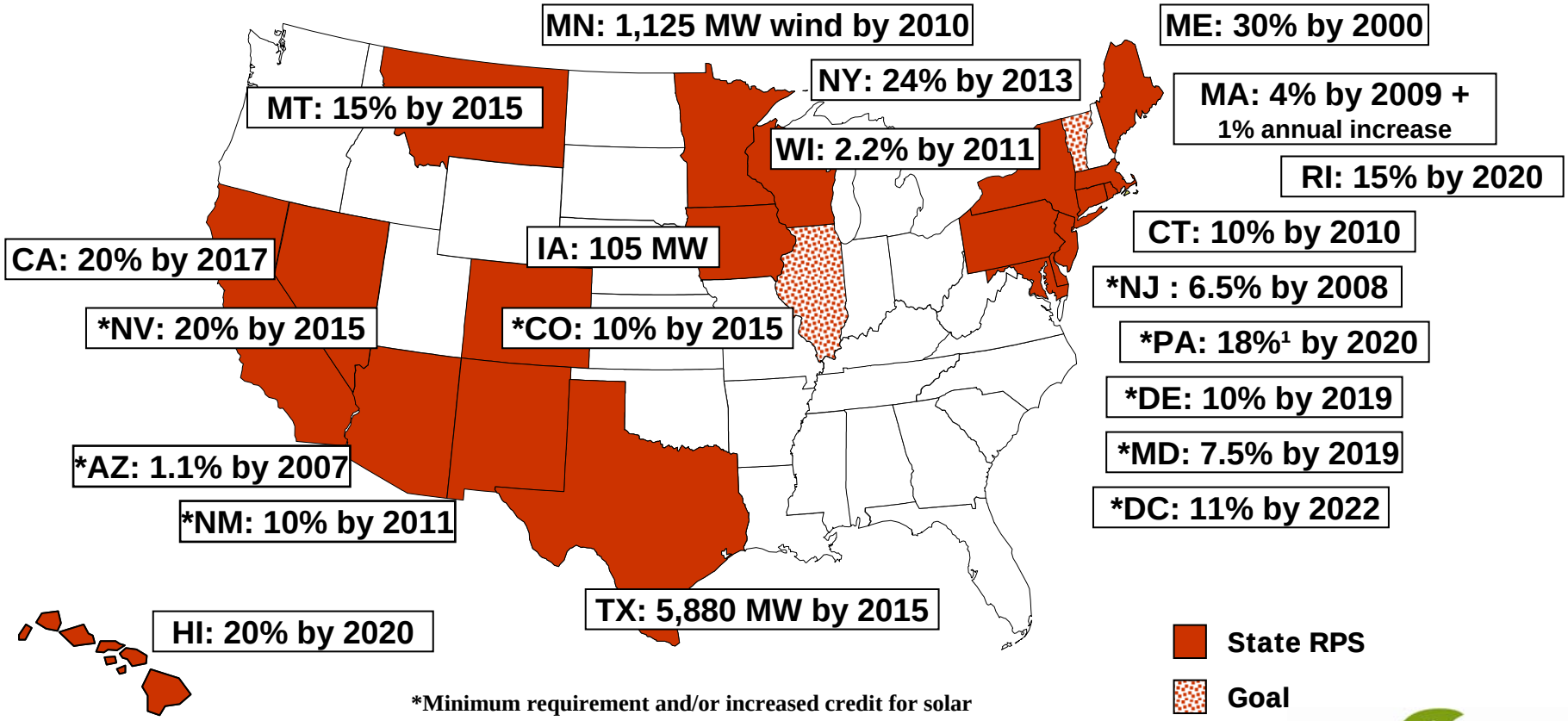
- Markets are very illiquid
  - Wide Bid/Offer Spread
  - This is a compliance purchase only and is not a hedged commodity
  - Few, if any, people speculate in REC markets
  - Compared to electricity, REC prices are relatively low
  - 2-3 trades in a week for a market is considered active
  - Little to no speculation
- Buyers generally don't have the time or resources to give much thought to their purchase obligations
- Sellers often don't have the time or resources to try to extract value from their renewable assets
- Few brokered deals are done
- Price discovery is very difficult to achieve
- Contracts, especially for voluntary REC markets, can be cumbersome and risky

Types of REC Markets

- VOLUNTARY
  - Demand driven by marketing
  - Rules are not clearly defined
  - Little regulation
  - Almost no liquidity
  - Purpose: To drive the development of new renewables
  - Size: Over 5 million MWhrs in 2005
  - Price: Less than $1/REC
- MANDATORY (RPS)
  - Driven by statute or regulation
  - Rules are clearly defined
  - Highly regulated
  - Slightly better liquidity
  - Purpose: To drive the development of new renewables
  - Size: Over 20 million MWhrs in 2005
  - Price: Average is over $3/REC

States with a RPS

Renewable Portfolio Standards



*Minimum requirement and/or increased credit for solar

[1] PA: 8% Tier I, 10% Tier II (includes non-renewable sources)

From: www.dsireusa.org

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Voluntary Markets

- Includes Alabama, Louisiana, Mississippi and Oklahoma
- Voluntary markets are buyer's markets
  - Can choose from a variety of resources
  - Can choose from anywhere in the country
  - Have flexibility in the age of the facility
- Prices are low
- Louisiana has the most advanced RPS discussions of these states

General Observations on RPS Markets

- No 2 RPS markets are alike
  - Geographic boundaries
  - Shelf life
  - Potential Resources
  - Classes or Tiers
  - Targets
  - Penalties
- Further changes are likely to occur
  - Connecticut
  - Texas
- Geothermal is universally recognized as a renewable generating resource

RPS in Texas

Tracking System	Unnamed, administered by ERCOT
No. of Classes	1
Unusual Resources	Solar Thermal
Geography	Anywhere in Texas
Credit Multipliers	No
Shelf Life	3 years
2006 Target	1.4%* (3.4 million MWhrs)
2011 Target	3.3%* (8.9 million MWhrs)
Current Pricing	$7.75

Method to Calculate of the State-wide RPS Requirement

- RPS = Q * CCF * 8760
  - Q = Assumed capacity for the year
    - 2002-2003 = 400 MW
    - 2004-2005 = 850 MW
    - 2006-2007 = 1400 MW
    - 2008-2009 = 2392 MW
    - 2010-2011 = 3384 MW
    - 2012-2013 = 4376 MW
    - 2014-2015 = 5000 MW
  - CCF = Capacity conversion factor of wind
  - 8760 = Hours in a year

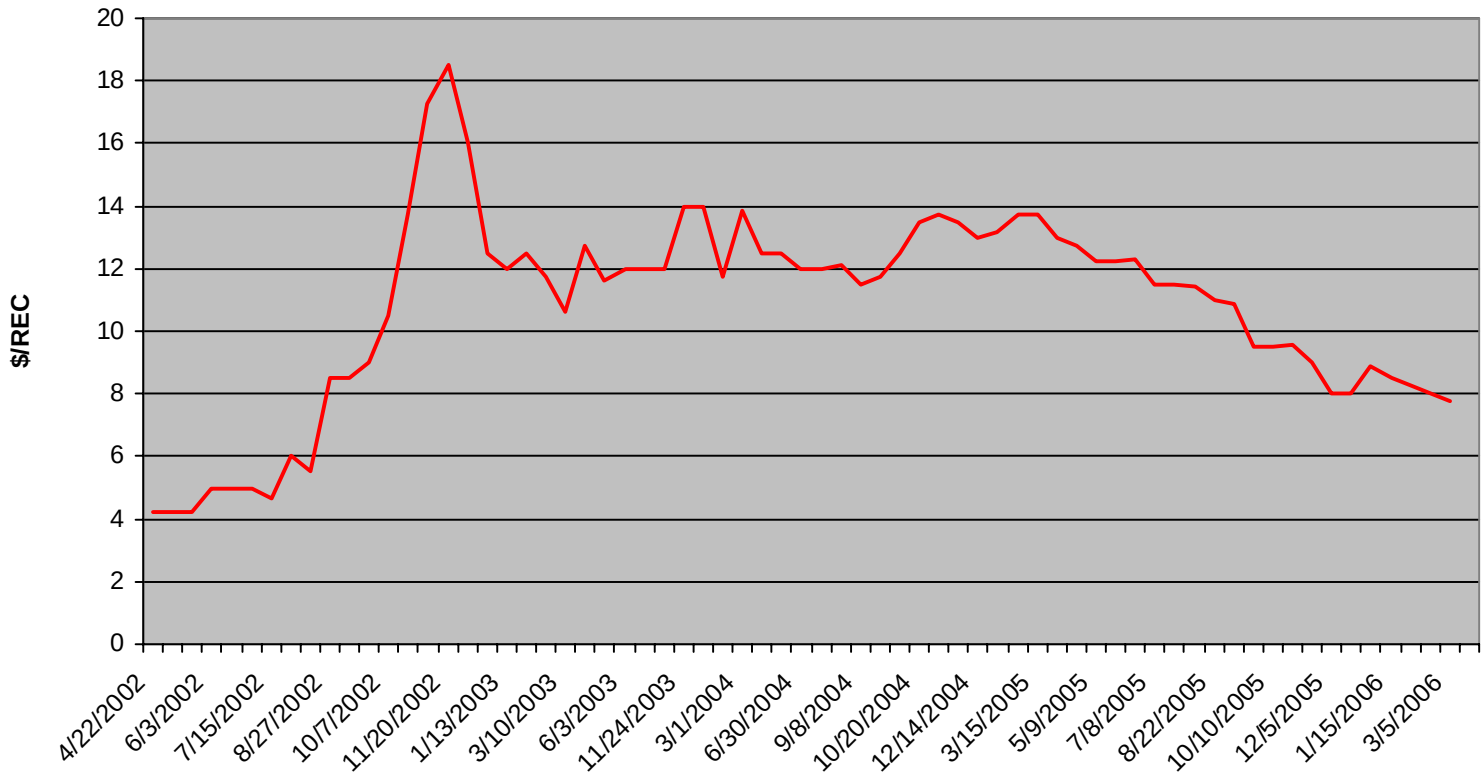
Setting the CCF

- The effective capacity factor of wind is at about 27%
  - Distribution congestion
  - Wholesale transmission congestion
- The CCF has been reduced to 27.6% from 35%
  - The change occurred in the second half of 2005
  - The adjustment will be made retroactive to 2004 requirements
- CCF is adjusted on a biannual basis to reflect actual capacity of REC-generating facilities since the inception of the program
- CCF for 2006-2007 will be 27.9% (set at the end of 2005)

Translating RPS Requirement to Usage

- In 2003, the total RPS requirement came to be about 1,226,400 MWhrs
- In 2004, the total RPS requirement came to be about 2,606,100 MWhrs
- RPS in 2003 amounted to slightly less than 0.6% of the load for a given competitive retail provider
- After adjustments due to the CCF, the total RPS requirement for 2005 will be around 1,600,000 MWhrs

Historical Pricing for TX RECs



- Prices for 2005 have gradually fallen from $14/REC to just under $8/REC
- Oversupply precipitated by CCF adjustment, retroactive to 2004

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Closing

- Contact Information

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- Thank you for your time and attention!
- Any questions?

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