

# Twelve Steps from Trash to Cash: A Broker's Perspective

7<sup>th</sup> Annual LMOP Conference  
Washington, DC

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# Natsource: At a Glance

- Global reach

- 150 employees
- New York, Washington, Ottawa, Calgary, London, Tokyo

- Energy broker

- Natural Gas
- Coal
- Electricity

- Environmental commodity broker

- Top REC Broker (*Environmental Finance, Dec. 2001 & 2002*)
- Top GHG Broker (*Environmental Finance, Dec. 2000, 2001 & 2002*)
- Also, SO<sub>2</sub>, NO<sub>x</sub>, ERCs, RECLAIM, HGA...



# Presentation Outline

- The Twelve Steps
- REC Definition
- Demand drivers
- REC pricing
- Relevance for developers
- Maximizing value for outputs
- GHG developments and pricing (briefly)



# The Twelve Steps

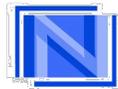
1. Find site
2. Assess gas
3. Secure gas rights
4. Assess buyers
  - a) Direct gas sale
  - b) Power sale
  - c) REC sale
5. Structure offer
1. Distribute offer
2. Conduct auction
3. Select highest/best
4. Sign contract
5. Build project
6. Deliver output
7. Receive cash



# Where we focus...

- 1. Find site**
2. Assess gas
3. Secure gas rights
- 4. Assess buyers**
  - a) Direct gas sale
  - b) Power sale**
  - c) REC sale**
- 5. Structure offer**

- 1. Distribute offer**
  - 2. Conduct “auction”**
  - 3. Select highest/best**
  - 4. Negotiate contract**
  5. Build project
  6. Deliver output
  7. Receive cash
- ...repeat...



N A T S O U R C E

# Can be simplified to...

- Finding maximum value
- Capturing that value

...these are not the same thing!

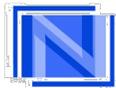
# Identify your \$\$\$ sources

- Energy Sales
  - Gas
  - Power
- Non-energy attributes
  - Tax preference: Production Tax Credits
  - Environmental Preferences
    - REC
    - GHG



# Defining “The REC”

- Renewable Energy Certificate denotes the environmental attributes associated with a unit of energy from a renewable source
    - Quantized and vintaged(eg, 10 MWh 2003s)
    - Sometimes registered (eg, TX, MA...not NJ)
- REC is main source of environmental value: don't wait for GHG market...



# The Environmentally Preferable Product



# RECs vs Renewable Power

- What's the difference?
  - Renewable Power:
    - Physical generation and delivery of energy from a renewable resource
    - Requires a contractual and a physical transmission path to end-use customer
  - Green Tags (or RECs) are an “unbundling” of the electricity into two parts:
    - Delivery of system power
    - Delivery of a statement of generation from a renewable source



# Environmental Attributes?

- REC concept is functionally a subsidy for generating renewable energy
  - Governmental or public-at-large
  - Emissions “offset” is not REC generator’s to sell
- Methane capture would yield GHG credits *separate from REC*

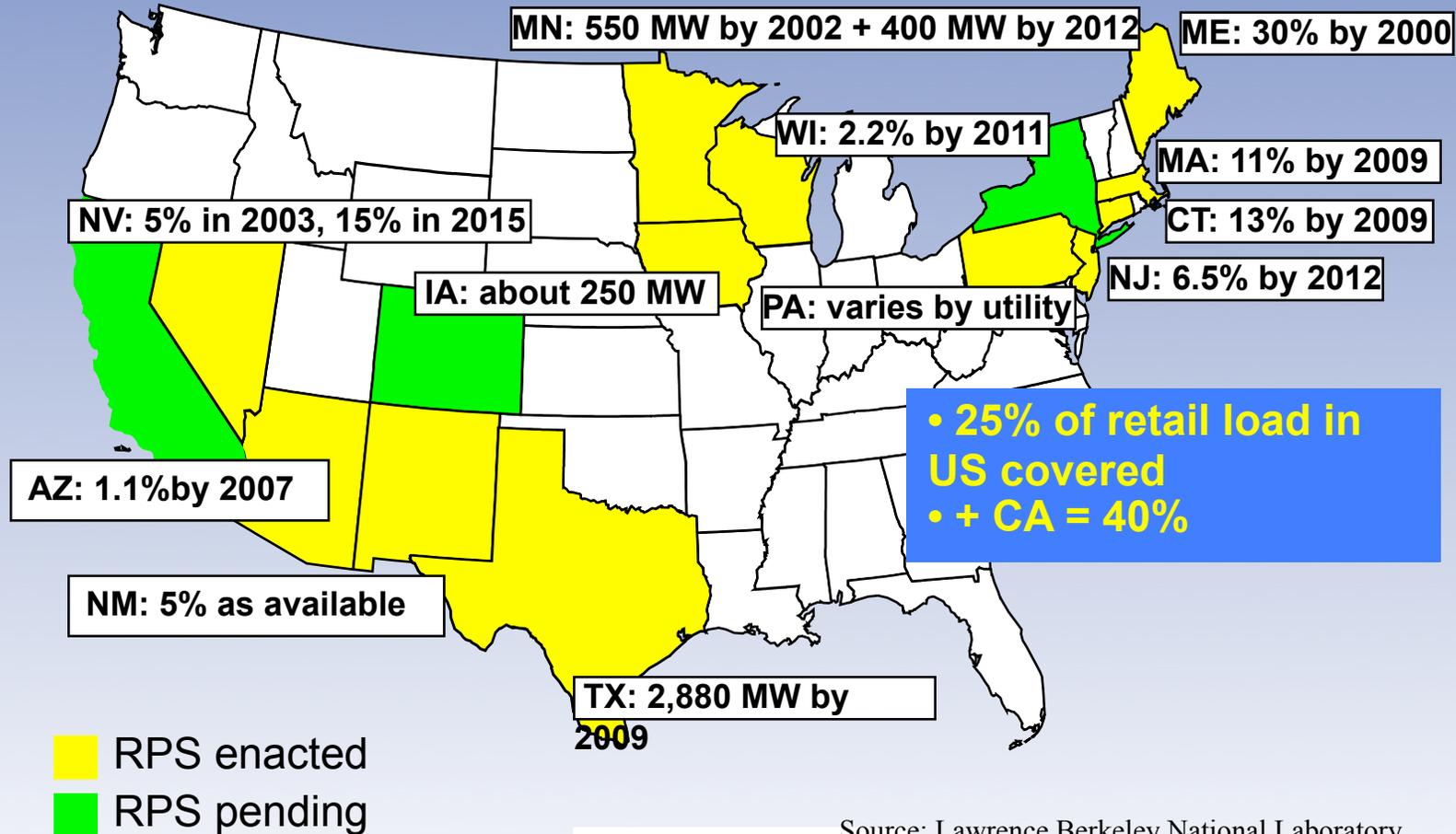


# Demand Drivers

- Mandates
  - State RPS and Renewable Goals
  - State-level procurement
  - Federal procurement – EO 13123
- Choices
  - Green marketers
  - Utility green pricing programs
  - Procurement as Corporate Sustainability Strategy



# State Renewable Portfolio Standards



Source: Lawrence Berkeley National Laboratory  
+ Recent Press Reports



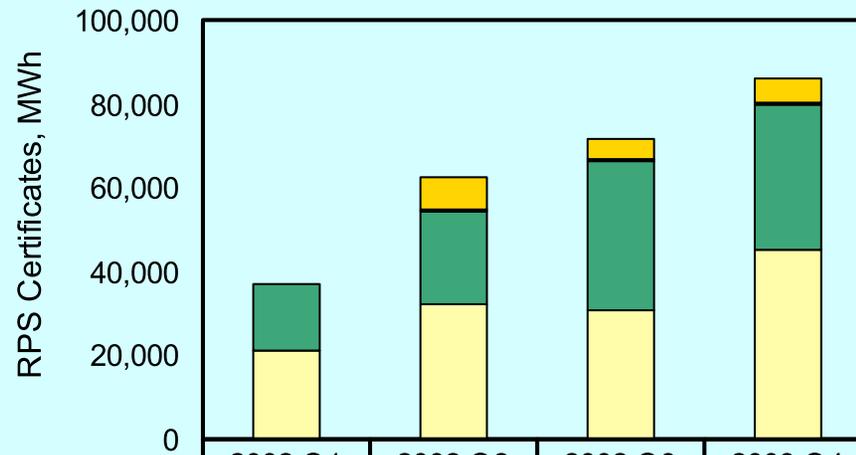
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# MA RPS Generation

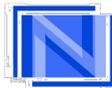
**MA RPS Certificate Generation in 2002**



	2002 Q1	2002 Q2	2002 Q3	2003 Q4
Photovoltaics	2	6	5	2
Anaerobic Digester	-	8,078	5,150	5,467
Wind	277	367	249	503
Biomass	15,681	21,851	35,598	34,863
Landfill Gas	21,127	32,358	30,863	45,154

Total Certificates Settled in 2002: 257,600 MWh  
 Some of the PV Certificates have been settled in Reserve Account.

Source: Dwayne Breger, MA DOER



**NATSOURCE**

# Voluntary Green Tag Markets

- Cater to client desires to buy green
- Multiple branded products on market
  - Price and product differentiation
  - Significant market education involved
- Demand is more elastic than compliance
- Guiding rules in absence of law:  
NAAG, NGOs, etc...



# Either Way...RECs Have Value

Region	Bid	Ask
Nepool	\$ 42.00	\$ 46.00
PJM	\$ 4.00	\$ 5.00
ERCOT	\$ 12.00	\$ 13.00
NYISO	\$ 3.50	\$ 5.00
Midwest	\$ 0.50	\$ 2.00
WECC	\$ 1.00	\$ 2.00
SERC	\$ 2.00	\$ 3.00

- Prices vary by region and vintage
- RPS states are premium
- There *is* a national market for your RECs

Source: Natsource, "RETrends" January 5, 2004



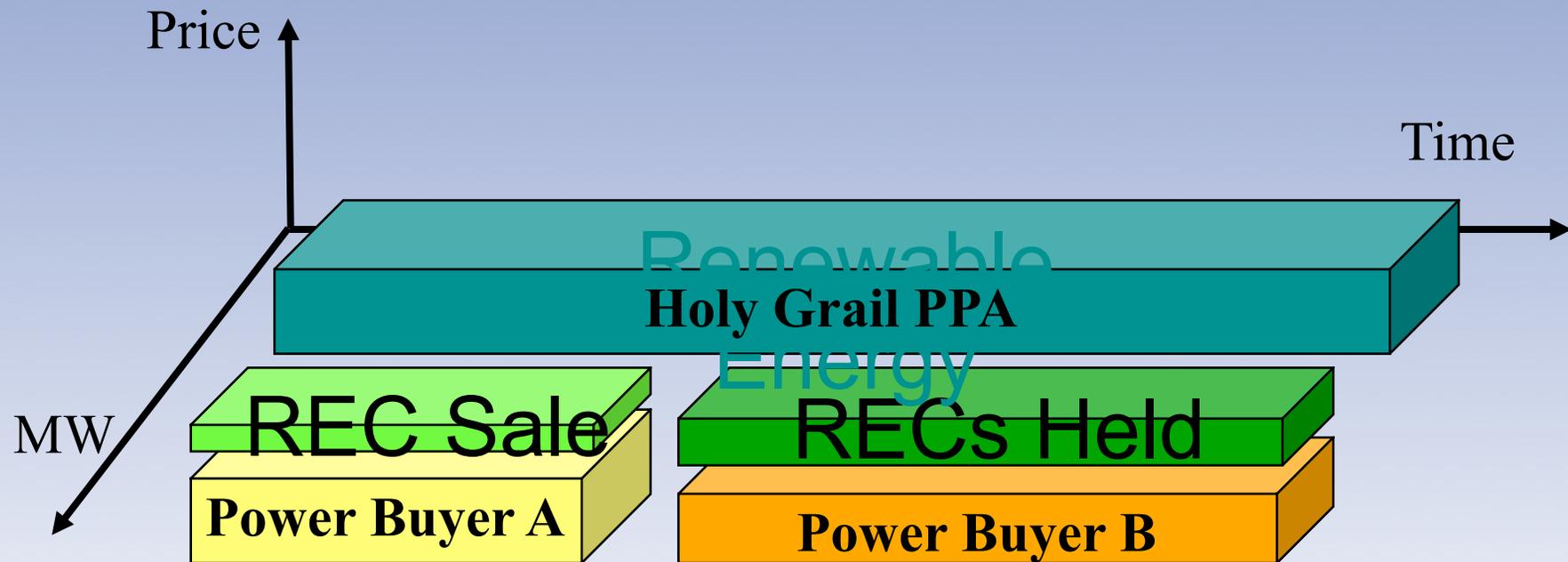
# Is That Value Real for *Projects*?

- Yes, though...not a true commodity
  - Concern about rule changes limits price/term
  - Technology type, age...
- Yes, though...liquidity remains a concern
- Contract term is lengthening
  - Markets for RECs are maturing
  - Track record of pricing is developing

Even in Nepoch, you can't get \$45 for 10 years



# Capturing Value: an example



# Why use tape and baling wire?

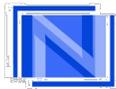
- Fewer creditworthy counterparties
- Risk diversification
- Potential to maximize revenue/output

The effort itself may encourage an improved “unitary” PPA.

# Basic lessons for Value Capture

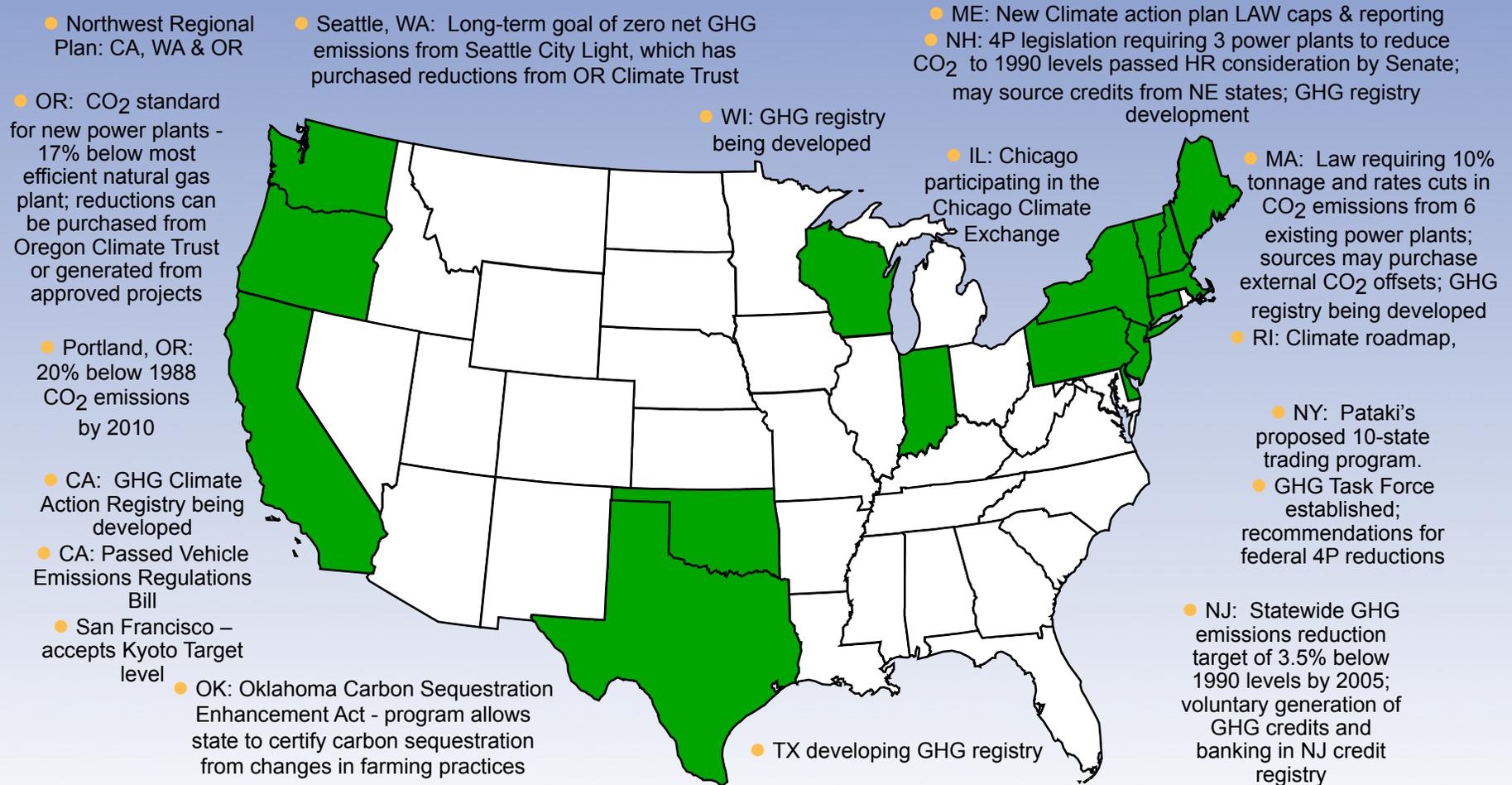
- Remember REC value is not \$0!
- Know the value of the transaction legs:
  - Power price? Relevant hub? Over time? Peak/OP?
  - REC value? Where might it sell? To whom?
- Access the full universe of buyers
  - Short term and long-term buyers
  - Don't close out smaller players
  - Make market dynamics work for you

You need to know the legs...to get the value.



N A T S O U R C E

# USA is moving forward via a Patchwork of State & Local GHG Initiatives



# Current Market Pricing

## GHG Prices by Commodity and Vintage (U.S.\$ per ton CO<sub>2</sub>E)

Commodity Type	Vintage Year	Bid @ Ask Spread
<b>Verified Emission Reductions ("VERs")</b>		
USA VERs	2000-2018	\$0.10 @ \$0.50
CCX	2003-2006	\$0.30 @ \$0.98
Ratifying Annex B VERs (incl. Canada)	2000-2007	\$1.00 @ \$3.00
Ratifying Annex B VERs (incl. Canada)	2008-2012	\$1.50 @ \$3.00
CDM VERs	2000-2012	\$3.00 to \$6.00
Dutch ERUs	2008-2012	€4.5
World Bank PCF	2000 - 2012	\$3.00 to \$4.00
PCF Secondary Market	2000-2012	\$3.50 @ \$7.00
<b>Compliance Tools</b>		
UK allow ances (not trading)	2002	£3.00 @ £4.50
UK allow ances	2003	£1.75 @ £2.30
EU Allow ances	2005 - 2007	€11.50 @ €13.00
AAUs	2008 - 2012	@ \$7.50

**Current prices could be best indication of future prices...**



Source: Natsource, December 2003

# For More Information...

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