IF IT AIN'T BROKE, DON'T FIX IT?

Observations from SEA’s ‘REMO’

New England ‘Class I’ REC Market Analysis

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What is REMO?

Renewable Energy Market Outlook

• Much more than just a forecast… A market outlook on the New England market for new (Class 1) renewable energy credits
• Since 2005 ➔ 3x/yr subscription briefing
• On results of our extensive analysis of… Supply, demand, drivers, risks, scenarios, price implications for each state’s intertwined market =
• A detailed fundamentals analysis conveying a deep understanding of complex marketplace

Market shifts visible before they show up in the broker forwards
Who uses REMO?

Diverse audience with differing commercial interests = freedom to conduct objective analysis
The REC Market has Changed
Evolution of Recent Broker Forwards

![Graph showingREC Price ($/MWh) vs. Trade Date for different Vintage Years: 2014 (Δ), 2015 (■), 2016 (▲), 2017 (◆). The graph indicates a downward trend in REC prices over time, with a notable point for 2015#3 REMO: Vintage Year 2015, trade date 3/23/2017, price $26.00.]
Dec. 2016 Analysis Went Like This

DANGER!
This type of analysis should only be performed by a qualified professional.

Regional Supply-Demand Balance

- Operating Biomass
- Current & Expected Imports
- Class 1 Solar, SREC Policies
- Committed Pipeline Supply
- Current LT Procurement Policies
- Regional CI1 Demand, Current Targets
- Demand, Current, Incl. NH-3
- Est. EOY 2016 Bank Balance
Year-over-Year Incremental Supply
DG vs. Non-DG vs. Incremental Demand

Reflects current statute & policy, including MA SRECs & SMART
Assumes MA 83D = 70% hydro, 30% Class I
Business as Usual (BAU)
Business as Usual

Much of merchant biomass fleet reduces production

Still substantial surplus until demand picks up as a result of electrification

Imports fully curtailed

Avg. MA REC price: $10

Bank Balance as % of Incremental Demand

Operating Biomass
Current & Expected Imports
Class 1 Solar, SREC Policies
Committed Pipeline Supply
Current LT Procurement Policies
Regional Cl1 Demand, Current Targets
Demand, Current, Incl. NH-3
Est. EOY 2016 Bank Balance
All Other Operating Supply
Policy-Driven DG (expected)
Post-NYSERDA Contract Imports
Class 1 Solar, New MA Policy
MA Omnibus Procurement Policies
Regional Cl1 Demand, Adjusted Targets
Demand, Adjusted, Incl. NH-3

[Graph showing trends and data]
What May Alternative Futures Look Like?
REMO 2016#3 Case Map

Cases

**RPS Demand Boost**
- MA: 2% RPS increase starting 2018
- CT: 1% RPS increase starting 2021

**LPN**
- New York adopting policy to retain legacy supply in late 2018, effective in 2019

**RPS Demand Boost**
- MA: 2% RPS increase starting 2018
- CT: 1% RPS increase starting 2021

**MPN**
- New York adopting policy to retain legacy supply following 2020 triennial review

**MA CES**
- MA: CES (starting 2018) behaves as Class I surplus absorption capacity
- CT: 1% RPS increase starting 2021

**MPN**
- New York adopting policy to retain legacy supply following 2020 triennial review

Sensitivities

**Robust Supply**
- High MA SREC-II & SMART supply
- CT LREC/ZREC extension
- RI REGrowth extension
- ME Solar
- High CERFP/DG PPA success

**Supply Constrained**
- Low MA SMART supply
- Less contracted MA 83D Class I procurement (more large hydro)
- Less contracted MA 83C OSW supply
- Low CERFP/DG PPA success
- Transmission network upgrade delays

Red outline = cases presented today
Increased targets allow market to find equilibrium if discretional supply (biomass and imports) backs down.

Merchant biomass fleet reduces production in search of market equilibrium.
RPS Demand Boost + Constrained Supply

Merchant biomass fleet reduces production in search of market equilibrium in near-term.

Discretionary supply bounces back as increased targets and electrification strengthen demand.

Avg. MA REC price: $44

Bank Balance as % of Incremental Demand
Estimating MA CES 'Surplus Absorption Capacity'

CT(D) + MA CES: MPN

Class 1 Surplus v. MA CES "Absorption Capacity"

- Behaves like BAU
Hedged vs. Merchant Supply

- Class I Supply Not Exposed to Spot Market Prices
- Class I Supply Exposed to Spot Market Prices
Hedged vs. Merchant Supply

- **Class I Supply Not Exposed to Spot Market Prices**
- **Class I Supply Exposed to Spot Market Prices**

GWh

- 0
- 5000
- 10000
- 15000
- 20000
- 25000
- 30000
- 35000

Years:
- 2016
- 2017
- 2018
- 2019
- 2020
- 2021
- 2022
- 2023
- 2024
- 2025
- 2026
- 2027
- 2028
- 2029
- 2030

**EQUIL**
Conclusions/ BAU Implications

- When procurement >> targets, implications for...
  - Ratepayers
    - LT contract hedges ➔ stabilize cost and insure against high cost future
    - But oversupply does not result in huge RPS compliance cost savings (shift costs to wires charges as EDCs sell for large loss)
  - Generators
    - Competitive procurements/LT contracts ➔ important to getting new RE projects financed and built at lowest cost (in each ‘bucket’)
    - Merchant plants accepted market risk… got an extra helping of policy risk for free
  - Policy/Targets
    - Extra procurement shuts down RE ➔ and require more NG
    - Surplus RECs, and associated benefits, flow to other states
- RPS is a market policy
  - Does the BAU look like a market?
  - Does the regional BAU make any sense?
Questions and Comments

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