



# Assessing the Market for California Carbon Offsets

*A discussion of products, market activity and deal structures for offset sales*

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# Business Overview

## Company Overview

- NFA-registered Introducing Broker (IB) providing professional voice brokerage for wholesale energy and environmental markets
- Founded in 2000 by current management team
- Leader in the global energy and environmental commodities sector
- Privately held
- ~80 employees in New York, San Francisco, Houston, London, Cape Town, and Singapore
- Award-winning, client-focused services

## Extensive Counterparty Network

- Fortune Global 500 Firms
- Banks
- Hedge Funds
- Utilities & Power Generators
- Industrials
- Project Developers
- Private Investors

## Market Pioneer

- Largest dedicated environment and energy markets brokerage
- Advised market design of carbon programs in EU, California, and Northeast US
- Facilitated first trades in EU-ETS, California, RGGI, and RECs in NEPOOL, Texas, & PJM
- Evolution principals launched weather derivatives market
- Forefront of US coal and nuclear fuels markets

## Services

- Market execution for energy and environmental commodity markets
- Structured environmental products
- GHG compliance strategy services
- Environmental asset origination, including carbon, emission credits, renewable energy & fuels
- Advisory on renewable power purchase agreements
- Market analytics and data

# Our Markets

## Energy

- Financial and physical coal
- Financial and physical natural gas
- Financial crude oil
- Financial and physical power

## Emissions

- GHG emission markets (EU-ETS, Alberta, California-Quebec, RGGI and other evolving global markets)
- US federal and state NOx and SOx allowance markets, including ERCs and RECLAIM in California

## Clean Energy

- Renewable power, including RECs & Green Power PPAs
- Physical biomass and biofuel markets, including RINs and LCFS credits
- Nuclear fuel

## Water

- US water rights & wetlands banking markets; ecosystem services

## Weather

- Weather derivatives and natural catastrophe securities



## ENVIRONMENT

EMISSIONS  
RENEWABLES

WATER  
WEATHER



## ENERGY

COAL  
NATURAL GAS  
POWER

NUCLEAR FUELS  
BIOFUELS/BIOMASS  
CRUDE OIL



## FINANCE

STRUCTURED PRODUCTS  
CARBON FINANCE

# Traded Carbon Products

## Carbon Allowances (CCAs, QCAs\*)

**Primary Market:** quarterly auctions/direct allocation. **Secondary Market:** exchange-cleared (ICE) futures/options & OTC bilateral spot and forward. Pricing is fixed or indexed. Vintages: 2013-2017

## Carbon Offsets (CCOs, QCOs)

**Primary Market:** project-specific, i.e. MMC CCO(3). **Secondary Market:** non-project specific CCO. Spot/issued, Dec 2014 or later forwards. CCOs trade w/ 3 yr, 8 yr or no invalidation risk. Pricing is fixed or indexed.

## Bundled Carbon Compliance Instrument

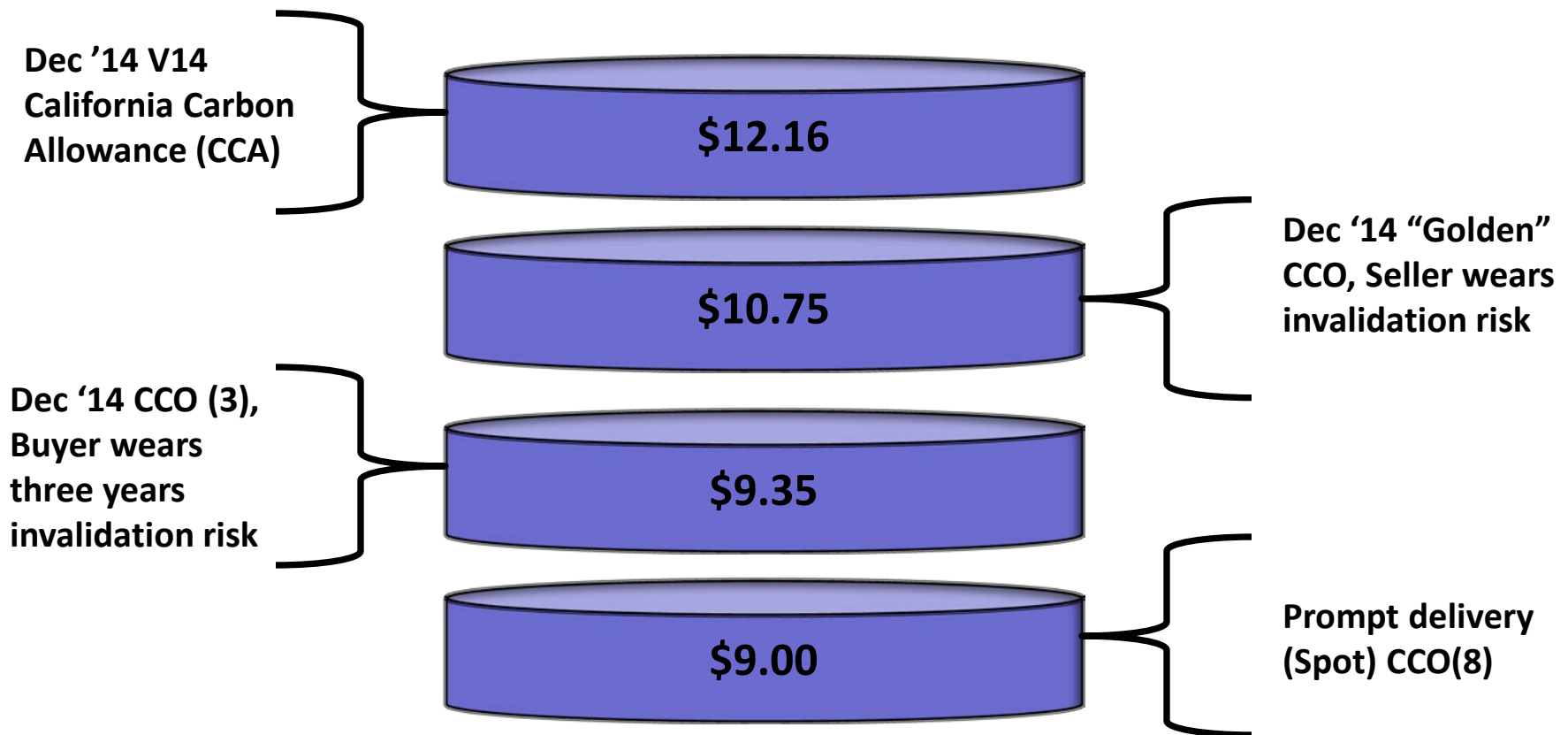
Bundled allowance and offsets product typically 92% / 8% split. Trades OTC under bilateral contracts. Pricing is fixed or indexed.

\* QCAs are deliverable under the ICE contract

# Current Price Spreads

Note: prices are indicative based on current market conditions and are subject to change.

Date: 11/16/2014




# Auction – Highlights

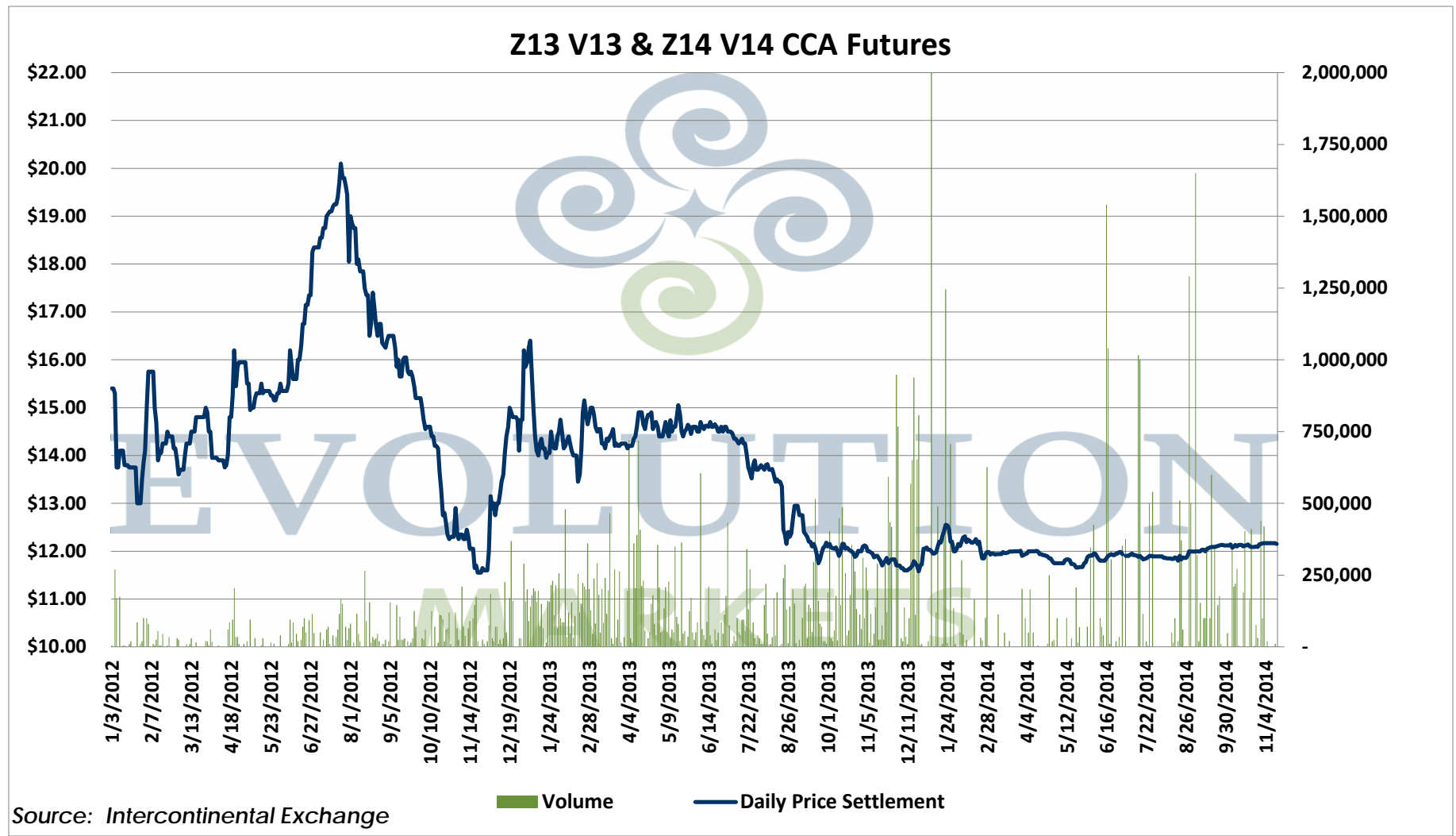
| Auction        | Current Vintage Volume | Future Vintage Volume | Reserve Price (USD)        | Current Vintage Price | Current Vintage Ratio Qualified Bidders :Supply | Future Vintage Price |
|----------------|------------------------|-----------------------|----------------------------|-----------------------|---|----------------------|
| CA Nov 2012    | 23,126,110 (100% sold) | 39,450,000 (14% sold) | \$10.00                    | \$10.09               | 1.06*   | \$10.00              |
| CA Feb 2013    | 12,924,822 (100% sold) | 9,560,000 (46% sold)  | \$10.71                    | \$13.62               | 2.47  | \$10.71              |
| CA May 2013    | 14,522,048 (100% sold) | 9,560,000 (79% sold)  | \$10.71                    | \$14.00               | 1.78  | \$10.71              |
| CA Aug 2013    | 14,522,048 (100% sold) | 9,560,000 (100% sold) | \$10.71                    | \$12.22               | 1.62  | \$11.10              |
| CA Nov 2013    | 16,614,526 (100% sold) | 9,560,000 (100% sold) | \$10.71                    | \$11.48               | 1.82  | \$11.10              |
| QC Dec 2013    | 2,971,676 (34% sold)   | 6,319,000 (27% sold)  | \$10.75 CAD                | \$10.75 CAD           | 0.34  | \$10.75 CAD          |
| CA Feb 2014    | 19,538,695 (100% sold) | 9,260,000 (100% sold) | \$11.34                    | \$11.48               | 1.27  | \$11.38              |
| QC Mar 2014    | 1,049,111 (99% sold)   | 1,527,000 (84% sold)  | \$11.39 CAD                | \$11.39 CAD           | 0.98  | \$11.39 CAD          |
| CA May 2014    | 16,947,080 (100% sold) | 9,260,000 (44% sold)  | \$11.34                    | \$11.50               | 1.46  | \$11.34              |
| QC May 2014    | 1,049,111 (100% sold)  | 1,527,000 (85% sold)  | \$11.39 CAD                | \$11.39 CAD           | 1.02  | \$11.39 CAD          |
| CA Aug 2014    | 22,473,043 (100% sold) | 9,260,000 (70% sold)  | \$11.34                    | \$11.50               | 1.14  | \$11.34              |
| QC Aug 2014    | 1,049,111 (66% sold)   | 1,527,000 (95% sold)  | \$11.39 CAD                | \$11.39 CAD           | 0.66  | \$11.39 CAD          |
| JOINT Nov 2014 | 23,070,987 (n/a)       | 10,787,000 (n/a)      | \$11.34 USD<br>\$11.39 CAD | N/A                   | N/A   | N/A                  |

M

- Total Current Vintage CA-QC allowances sold at auction: 144,458,886 vs. 2013 Capped Emissions of 144,999,976 tons. Prices have rallied since the last auction. **Estimated 2015 price floor: \$12.11/ton USD.** V14 Dec'14 range bound between \$11.66-\$12.55 in 2014.

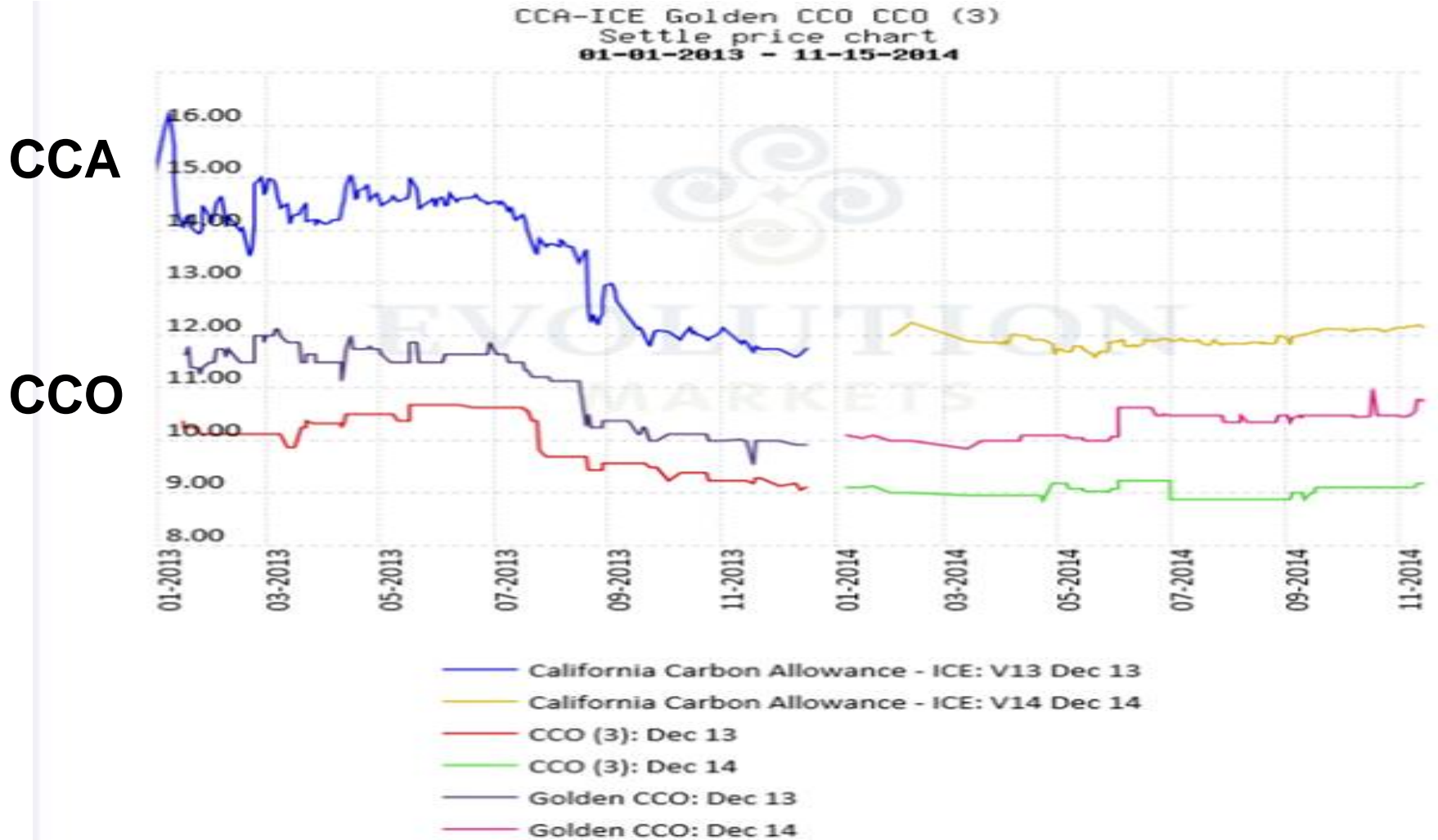
- Analysts report the market is long compliance instruments. **Forecasts predict a shortage 2018 or later.** Prospective bullish signals for the market include a post-2020 mandate, nuclear shutdown (Mt. Diablo), sustained low hydro electric conditions in CA.  *The Intersection of Environment, Energy and Finance.*

# ICE V13-14 CCA, Dec Delivery



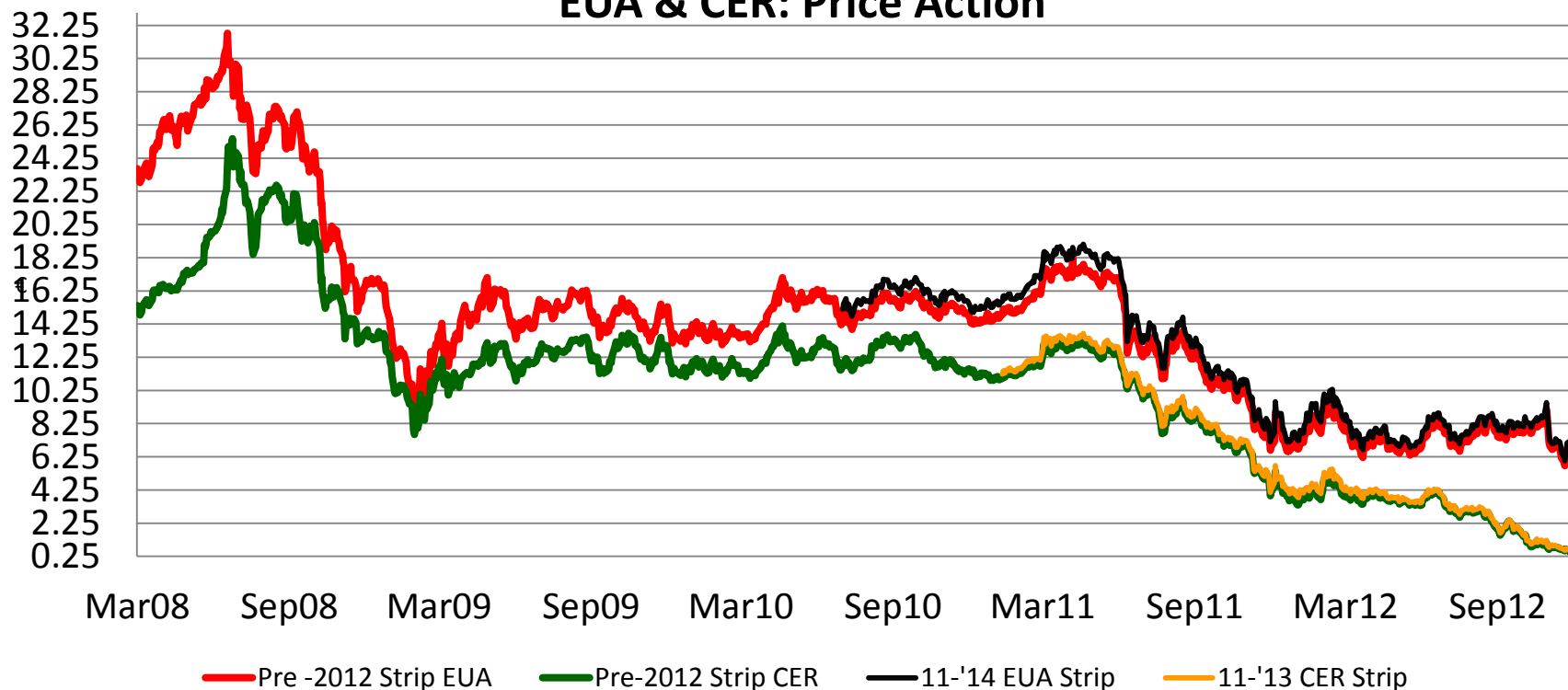


# OTC CCA vs. CCO Settles



# Historical Offset-Allowance Spread in EU

## EUA & CER: Price Action



**Historical Average EUA/CER Spread: 29%\* (2008-2012)**

\* past 6 months of the EU-ETS the spread between the EUA-CER has widened considerably due to the Euro zone economic crisis. Not accounting for the last 6 months of 2012, the spread is 24%

# Deal Structures

## Standard Commercial Terms by Deal

- **Plain Vanilla Spot or Forward Contract**
  - ***Terms include Quantity, Purchase Price, Product Definition, Settlement, i.e. Delivery & Payment***
  - *Product Type & Definition:* Mine Methane Capture CCO w/ three(3) or eight (8) year invalidation risk
  - *Invalidation risk:* typically buyer's require seller's to pay for and perform the conversion from a CCO(8) to a CCO(3)
    - MMC project owners can perform a verification of a subsequent reporting period with a different verifier within three (3) years of the last project's issuance in order to reduce the invalidation risk from eight (8) to three (3) years [for prior-issued CCOs]
  - *Purchase Price:* negotiated deal-to-deal; some buyer's pay X% of the Purchase Price at CCO(8) delivery and Y% of the Purchase Price upon conversion to CCO(3); other's 100% of the Purchase Price at delivery
    - **Pricing could be fixed or indexed, i.e. indexes might be Seller-Guaranteed Offset a.k.a Golden CCO or the CCA, i.e. Auction Clearing Price or ICE-cleared futures**

# Deal Structures (cont'd)

## Standard Commercial Terms by Deal

- **Plain Vanilla Spot or Forward Contract**
  - ***Terms include Quantity, Purchase Price, Product Definition, Settlement, i.e. Delivery & Payment***
  - *Delivery*: projects with no balance sheet, i.e. non-investment grade, will sell Unit Contingent (UC). UC delivery is non-firm, non-guaranteed meaning seller performs in operating the project and the buyer is obligated to purchase the CCO output
    - In many cases, buyer's will request the seller to cause delivery (issuance by ARB) of the Product directly into their CITSS account
  - *Payment*: due upon Delivery of the Product into the buyer's CITSS account

**TALK TO YOUR BROKER ABOUT WHAT COMMERCIAL TERMS AND PRICE  
ARE CONSIDERED "IN MARKET"**

# Brokered Trades

**Access:** Broker assisted trades enables participant to gain access and insight into the markets, including ideas on effective price risk management, structured financing trades and other strategies maximizing environmental asset value

**Full Product Coverage:** ICE-cleared allowance futures, options, spreads, and bilateral offset and allowance structured products for California, Quebec, RGGI and other emerging carbon programs

**Price Transparency:** increased exposure to market pricing and transaction opportunities. Brokers communicate with all market participants and therefore provide price discovery and liquidity in the market

**Competitive Trade Execution:** When executing via broker seller's increase their exposure to counterparties vs. trading directly with 1-2 enable parties OTC which limits price discovery. Why sell to 1-2 parties when you can get competitive pricing from the broader market?

**Anonymity (for exchange-cleared deal):** Brokers are used to handle larger "block trades." For example, 25 contracts (25,000 MT) is typically traded electronically on the ICE. A party may enter the market and want to purchase 1,000 contract (1 million MT). Putting a bid 1,000 contracts on the benchmark Dec '14 V14 CCA contract on ICE in a thin market will discourage sellers to sell competitively. The buyer can use an OTC broker to find a seller that is willing to sell the size. The trade is put together OTC by the broker and then given up to the parties' FCMs for clearing.

**Neutral:** Introductory Brokers (IBs) are market neutral. We do not take principal positions in the market and therefore, do not trade a book which could impact the price we're providing to the market.

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# Carbon Price Drivers: Fundamental

**NOTE:** November 4<sup>th</sup> ARB released 2013 emission data from capped sectors. 2008-2013 emissions trends show declining emissions largely due to the recession, but there are other reasons. **2013 capped emissions in CA amounted to 145M tons. The 2013 cap is 163 million – market is oversupplied compliance instruments.**

## Macro-economic

- Electrical load and industrial growth in CA → the state's economic recovery is picking up

## Power

- Annual hydro power variability – California declared a drought emergency which means low hydro power/higher fossil generation, yielding higher CCA demand
- Record renewable energy generation in '13; escalating RPS (33% by 2020)

## Transportation

- Added to cap in 2015 -- GHG policies such as clean car standards and LCFS dampening gasoline demand and emissions
- Fuels are 100% short; comprise approx. 160 million tons, or 40%, of emissions cap in 2015

# Carbon Price Drivers: Fundamental

## Offset Supply

- Current offset utilization rate is below 8% allowable limit; we expect demand to pick up in 2015 as regulated approach the first compliance period deadline (November 2015)
- 5 project types approved by ARB to date (MMC, ODS, Livestock, Urban Forestry, Forestry)
- Currently approx. 12.2 million tons issued vs. forecasted annual demand of 12 million tons
- **ARB issued a Final Determination to Invalidate 89k of 4.3 million ODS credits under investigation**

## Linkage with other Programs

- Quebec-CA linked January 1, 2014 making compliance instruments between the program fungible
- Quebec has a more stringent reduction target than CA and less abatement opportunity due to predominantly hydro power
- Section 111(d) of The Clean Air Act: EPA proposal may lead to additional U.S. States joining CA & Quebec, RGGI



# Carbon Price Drivers: Technical & Legal

## Hedging Behavior

- Power generators buy carbon when selling power; mismatched timing of supply and demand, some argue, could lead to short term price spikes albeit they would be limited given the oversupply
- Utility procurement restrictions adversely impacting liquidity
- Fuels have a large short to cover; we're starting to see fuel hedging in the V15 Q1 ICE CCA futures contract

## Structural/Regulatory

- Price floor + 5% escalator and CPI provide price support
- Holding limits adversely impacting liquidity
- High level of free allocations, flexibility to comply, i.e. use 'V14 against '13 emission obligation and some industrials are permitted to use V15 against CP1 obligations
- Resource shuffling "safe-harbor provisions" driving down importer power emissions

## Legal

- All environmental markets are ripe for legal challenge
- Auction lawsuit challenge -- look out for results in 1H 2015