The Importance and Impact of Including Fuels and Natural Gas in California's Cap-and-Trade Program

December 11, 2014

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Guest Speakers:

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Fuels under the cap

Cynthia Obadia, West Coast Business Development

Argus Media: global, market-focused, independent

- World's largest independently held energy markets PRA – 700 staff, 23 countries
- Publish > 8,000 daily commodity price assessments + energy market intelligence
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  - US Natural Gas
  - Base Oils
- Services
  - Price reporting and indexation
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  - Conferences
- Indexation examples
  - US crude oil and condensate
  - US refined products (incl. VGO)
  - Global liquefied petroleum gas/natural gas liquids

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Cap-and-trade at the rack

- Point of regulation is roughly at the rack, or where fuels go from wholesale pipelines and tanks to trucks for distribution to retail
- Emissions intensity varies on octane and winter/summer blend
- Compliance obligation mostly applies to fossil fuels, small amount of covered emissions from biofuels.

Cap-and-trade at the rack

- Rack markets are highly competitive and profit margins tend to be thin
- Cap-and-trade price should apply evenly to all large distributors
- Competitiveness of the racks could lead to attempts to use the CCA price as another avenue to undercut the other sellers
- Experience with RINs suggests that rack players will end up applying the carbon price across the board

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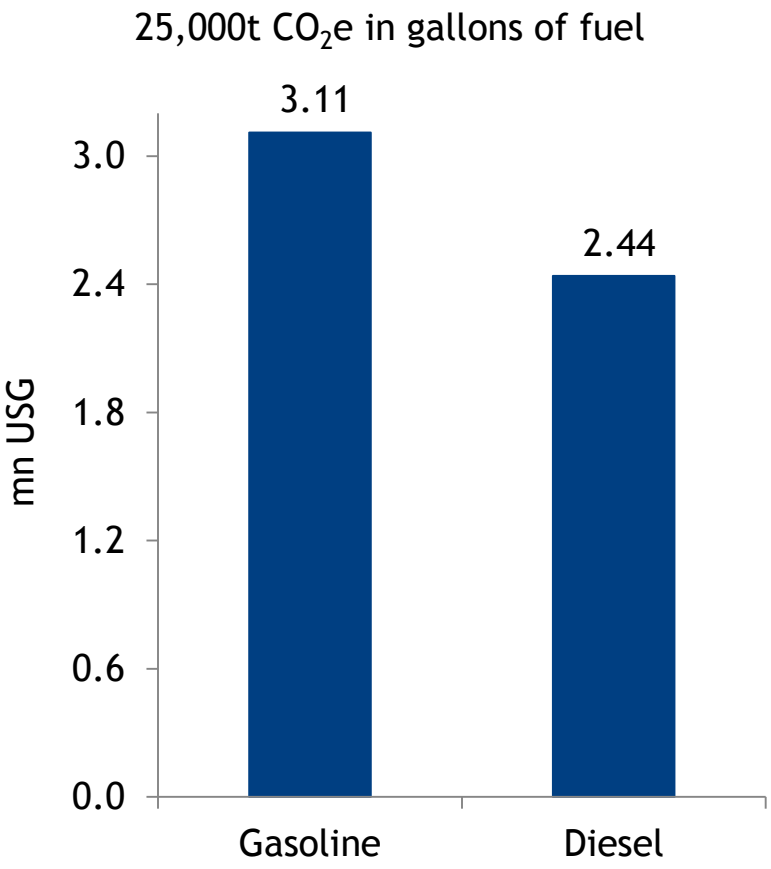
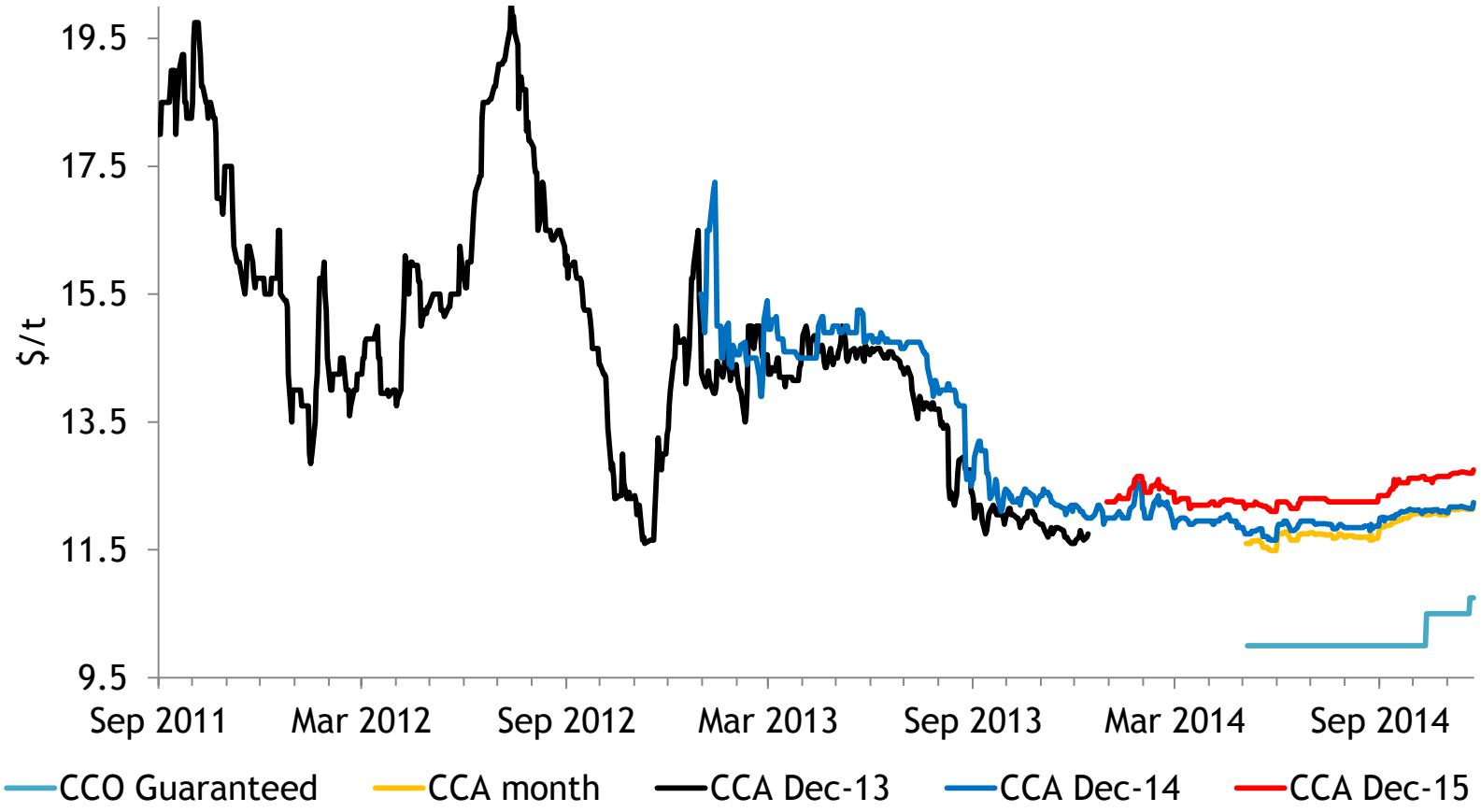
Cap-and-trade at the rack

- Cap-and-trade compliance covers only sellers of over 25,000t CO_2e equivalent in fuel or the sum of both fuels

- Smaller sellers would have to prevent their sales going over the 25,000t barrier in any year



Cap-and-trade markets



Cap-and-trade at the rack

- Implied carbon allowance price for California gasoline is currently around 9.8¢/USG (in Quebec 3.08C¢/l), Diesel is around 12.5¢/USG (3.83C¢/l)

- Limited opportunities to undercut competitors' compliance costs
  - 8pc offsets
  - Well-timed buying, auctions
  - In Quebec, increased blending of biofuels since Canada has weaker biofuel blending mandates

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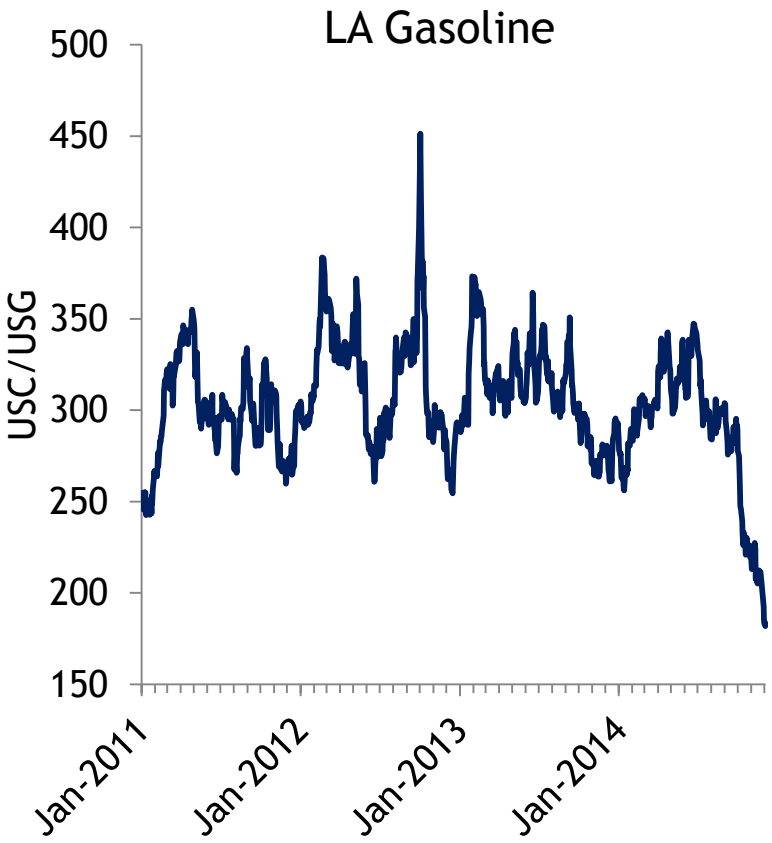
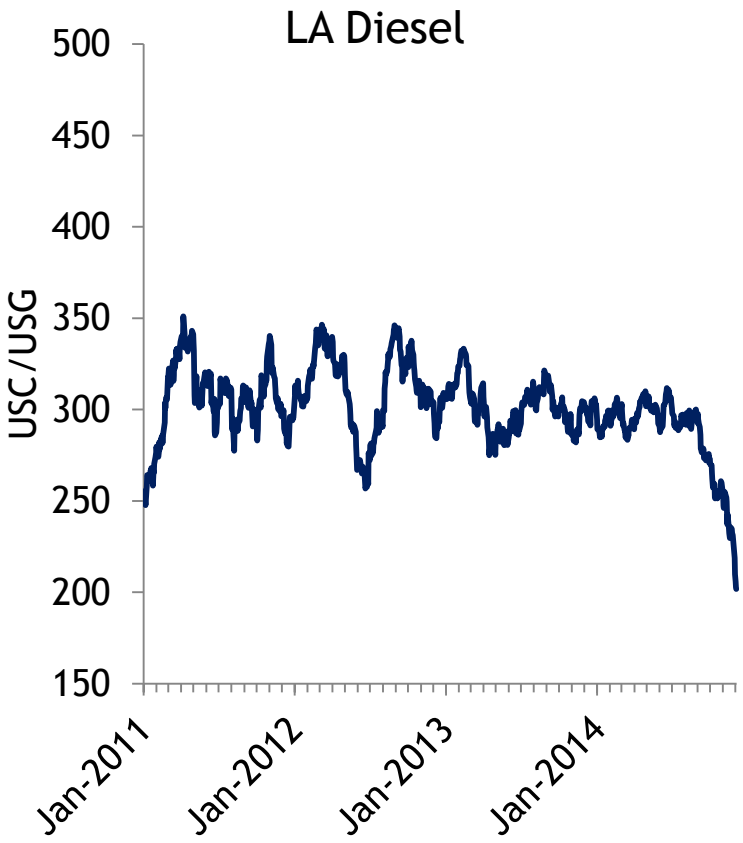
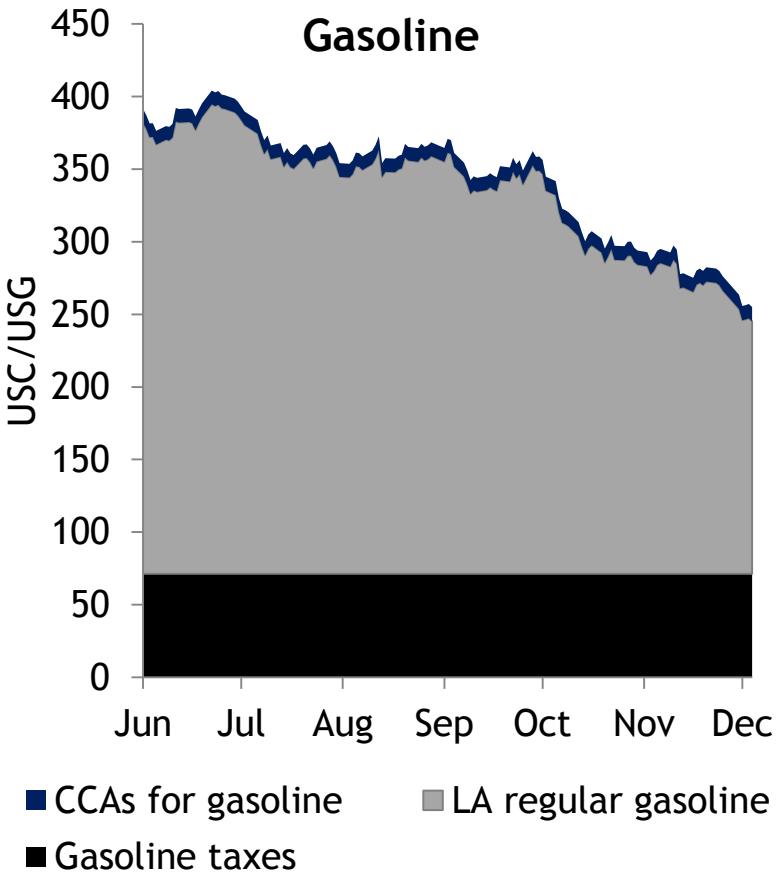
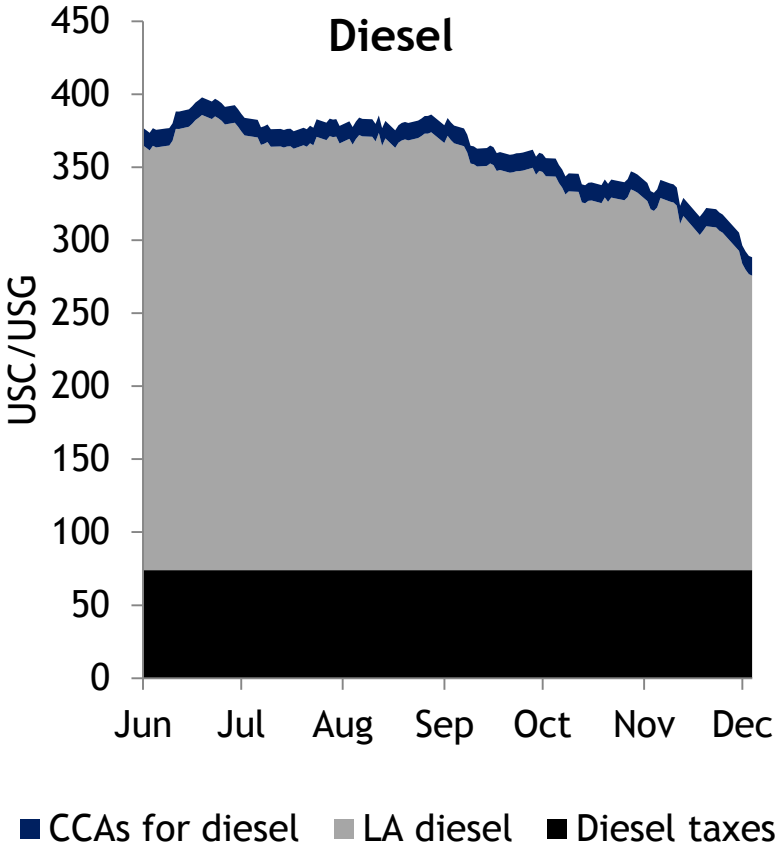
Gasoline prices more volatile



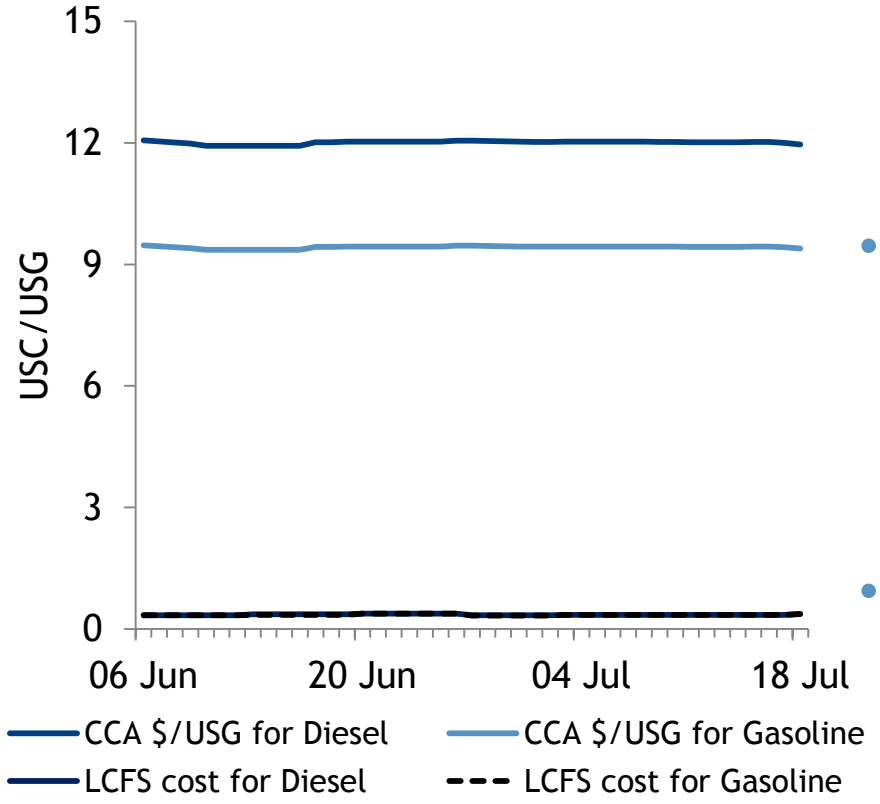


Possible effect on fuel prices





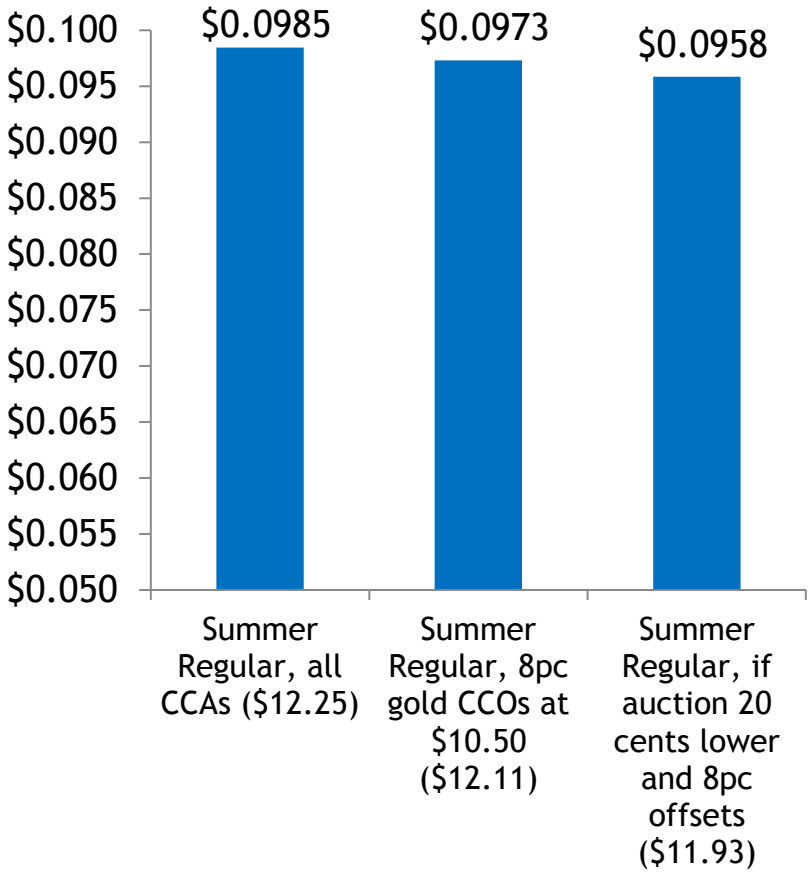
Gasoline LCFS deficits versus CCAs



- CCAs are the larger price component, but affect everyone
- LCFS depends on the marketer, larger firms can have an easier time with blendstocks, price risk
- LCFS portion will become larger once targets start increasing in 2016

Carbon savings are possible, but small

- Auction prices have been lower than in the spot market, but that spread is unpredictable and not guaranteed
- Savings from using offsets
- On the diesel side in California, blending higher levels



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1 Introduction to Alpha Inception

Alpha Inception

Andre Templeman, Managing Director & Founder –

- Over 12 years of experience in commodity structuring and origination with Macquarie Bank, Goldman Sachs, Duke Energy and Iberdrola Renewables. Developed, built and led teams in the WECC and ERCOT while at Macquarie and Goldman Sachs. Extensive experience developing and executing innovative hedge structures for end-users with a specific focus on renewables and natural gas-fired power plants. MBA from the Ivey School of Business at the University of Western Ontario and BA from York University.

Best-in-class Relationships

- Private equity, investment managers, utilities, and industrial end-users:
  - Alpha Inception's clients manage over 10,000 MW of generation, transmission and load, with over $7 Billion under active management
  - Vast network with all significant sector groups and associated environmental markets
  - Access to alternative sources of capital and hedging opportunities
  - Best-in-class learning while maintaining confidentiality

- Partnerships and working relationships with other institutions:
  - Environmental product brokers
  - Offset project developers
  - Financial institutions and marketers
  - Power plant developers and Gas E&P companies

- Frequent communication and open discussions with regulators:
  - CARB, CAISO, and CPUC
  - Regulatory bodies and trade associations
  - Legislative and executive branches

Alpha Carbon Services

Building a customized approach to carbon risk mitigation…

Compliance

Imports

Tracking System

Offsets

Market Overview & Training

- Information/Education
- Build management understanding
- Customized assessment
- Market Intelligenc
- Support

Risk Management & Strategy

- Risk identification
- Compliance/Hedge strategy
- Auction management
- Portfolio optimization
- Trading

Compliance & Reporting

- Process management
- Auction bidding
- Updates and reports
- Regulatory consulting

nnovation & Other Services

- Strategic investments
- Renewable integration
- Asset controlling entity

Auction Revenues

Linkages

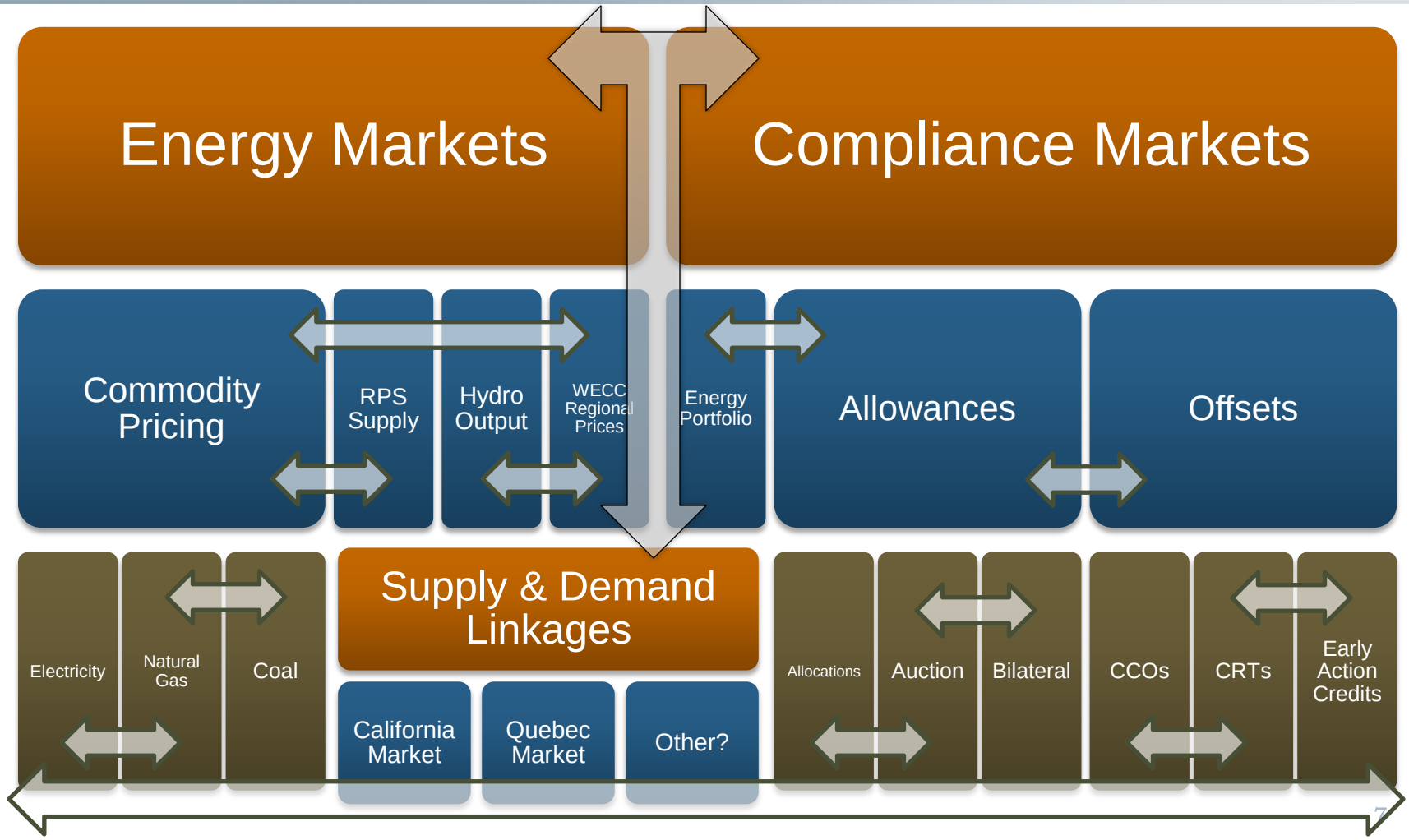
Optimization

Allowances

Renewable

2 Carbon Market Observations

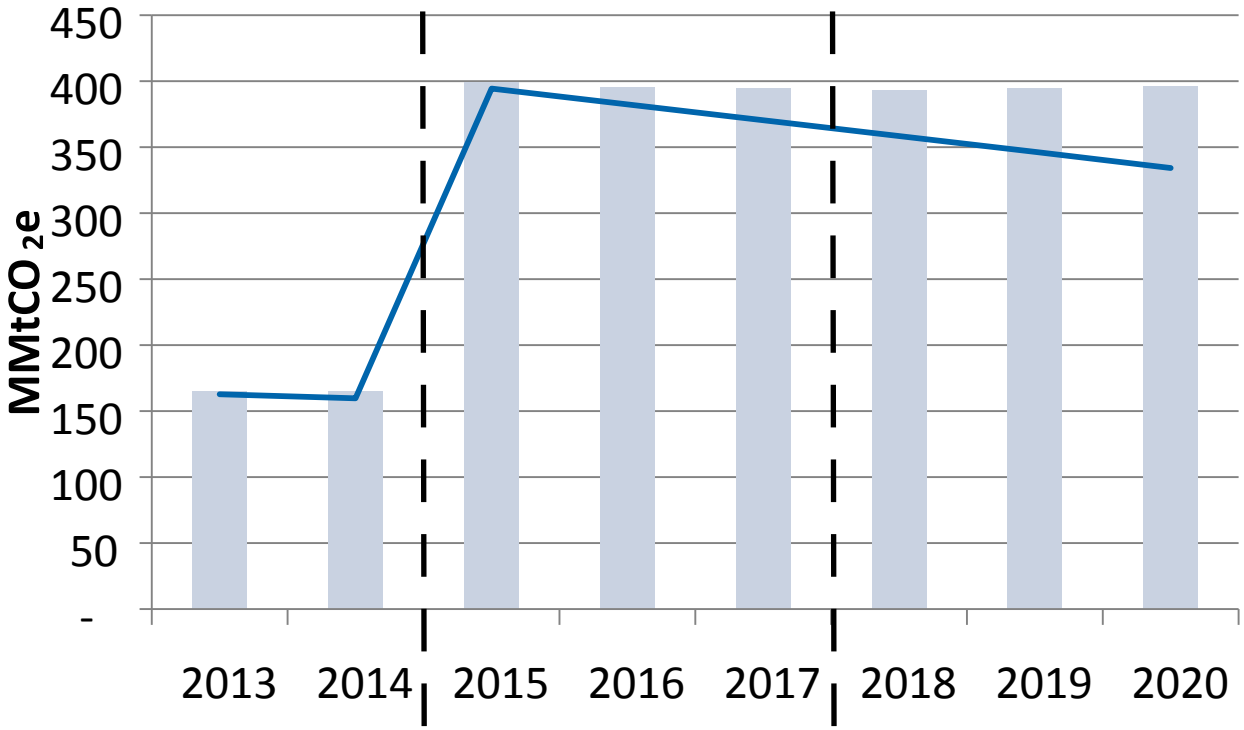
Complex Markets



Cap & Trade Compliance

- Compliance Period I (2013-2014)
  - Electric generation units, Industrial stationary sources, and Importers of electricity from specified sources with emissions of over 25,000 tons per year.
- Compliance Period II (2015-2017)
  - Natural Gas Pipelines, Tailpipe Emissions and other sectors will be added to the program as it triples in size. Entities who emit in excess of 25,000 tons of CO_2 per year and are estimated to account for approximately 20% of the states overall emissions, will be added to the program.
- Compliance Period III (2018-2020)
  - By the end of Phase 3, all covered entities should have together reduced their overall GHG emissions below the "AB 32 2020 Baseline of 1990 emission levels."

GHG Emissions Goals / Cap*



Compliance Period 1
Electricity, Industry

Compliance Period 2
Electricity, Industry, Liquid Transportation Fuels
Natural Gas

Compliance Period 3
Electricity, Industry, Liquid Transportation Fuels
Natural Gas

Note: Baseline includes reductions due to 33% RPS and Pavley I standard

* This slide was provided at the courtesy of Roger Yang of Ambiente Group Inc. based on information from ARB.gov

Regulatory Amendments

2013-2014 Amendments:

- Revised “assistance factors” for Emissions Intensive Trade Exposed Industries
- Enhanced role of “Market Monitor”
- Allocation percentages to Natural Gas Distribution Utilities
- New market monitoring and Disclosure Requirements
- “Legacy Contract” treatment and CHP exemption

Potential Future Amendments:

- Post 2020 emission reduction targets
- Further reductions in “transitional assistance” to Emissions Intensive Trade Exposed Industries
- EPA-required changes for compliance under Clean Power Plan
- Other?

CCAs & Quarterly Auctions

California Carbon Allowances or CCAs:

- CCAs have traded on a generally downward trend over the last couple of years from a highs of ~$24 down to recent prices of approximately $12
- Significant range of forecasts as high as ~$40/mt and as low as $10/mt
- Volume is sporadic and increases before and after the auctions (liquidity event)
- CARB has now completed 9 successful auctions and the market has started to show more confidence in the program

	Auction	Allowance Reserve
Frequency	Quarterly Auction	3 weeks after each quarterly auction (**none to date)
Available for sale	Current vintage and current vintage + 3 years	Up to 121.8 million tonnes
Format	Single-round, sealed-bid, uniform price format	Fixed Price Sale - Tiers of Allowances, with minimum purchase price for each tier; Participants submit bids for purchase of allowances from each tier
Eligible Participant	Anyone	Covered Entities under AB32
Floor Price (2015)	$12.10	$45.20 (Tier I) $50.86 (Tier II) $56.51 (Tier III)
Floor Prices (2015+)	Increases every year by CPI+ 5%	Increases every year by CPI+ 5%

Auction vs Secondary Markets

Auctions:

- Spot current or Spot forward
- Exposed to timing between auctions
- No innovation
- 167mm Sold (Current Auctions)
  - Incl. ~5mm Quebec Allowances
- 73mm Sold (Forward Auctions)
  - Incl. ~7mm Quebec Allowances

Secondary Markets:

- Spot and Future
- Reduce slippage risk, hedge when needed
- Growing innovation
- Offsets

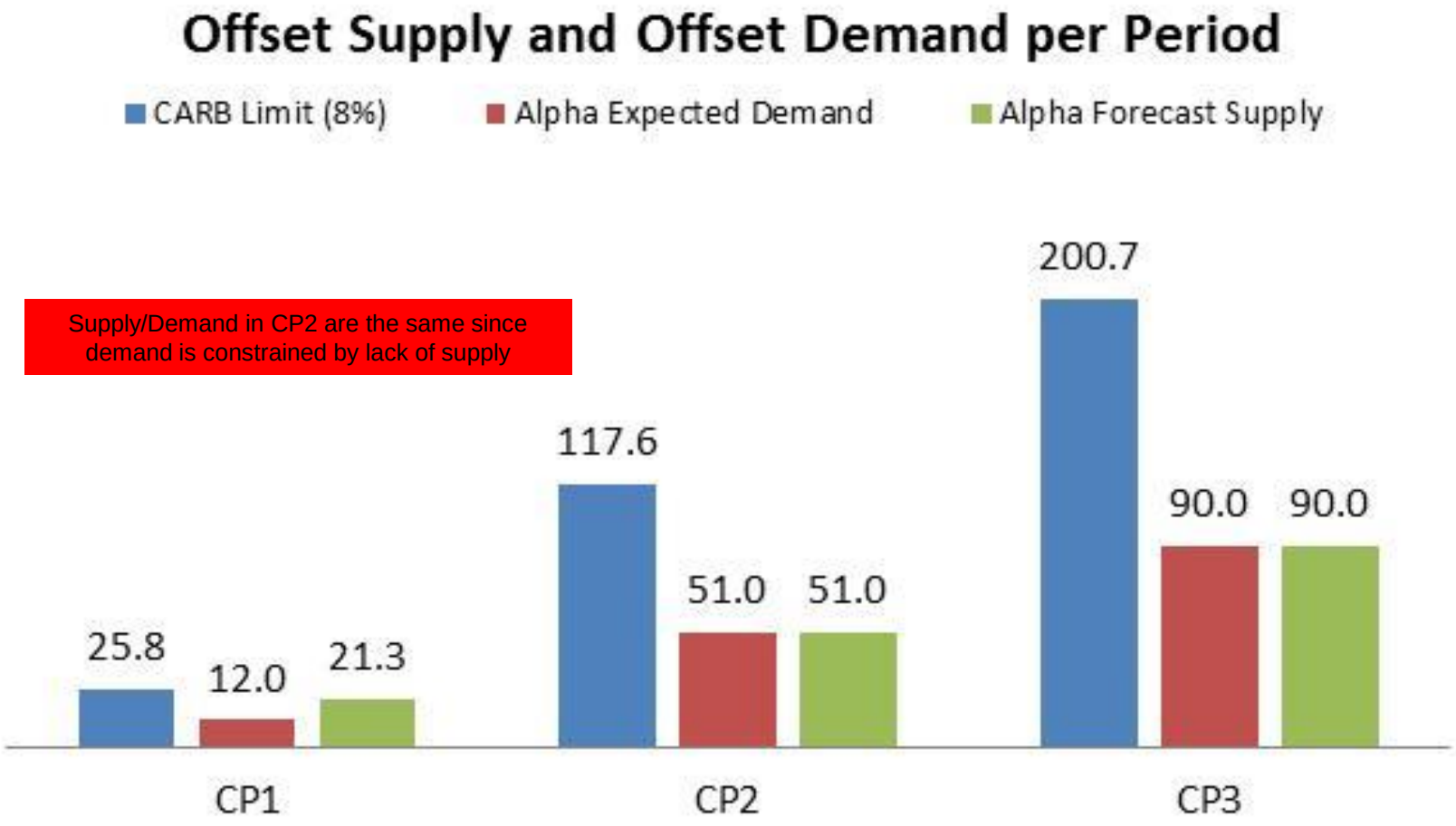
Price Comparison:

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Est. Auction Reserve Price	$10.00	$10.71	$11.34	$12.10	$12.94	$13.85	$14.82	$15.85	$16.96
Recent ICE Settles (Dec 10, 2014)			$12.35 V14Dec14			$12.12 V17Dec14			

Carbon Offsets

- A compliance entity can surrender up to 8% of obligation as offsets.
- Introduced as a cost-containment mechanism and accounts for 50% of the carbon reductions CARB is predicting.
- Variety of products, structures, risk sharing and pricing (gCCOs, CCO3, CCO8, Prepays, Early-Action)
- Buyer wears offset invalidation risk unless contractually limited
  - Clean Harbors approx. 89,000 credits invalidated
  - CARB concluded that the facility at issue failed to comply with a permit issued under the Resource Conservation and Recovery Act (RCRA)
  - CARB reached this conclusion even though it determined that "the [GHG] emission reductions represented by the offsets at issue here are real, quantified, and verified reductions."
  - U.S. EPA Region 6 inspection report describing potential RCRA violations (from 02/2/12 – 02/3/12) – i.e., not treating calcium chloride brine material generated by the facility as a hazardous waste – triggered noncompliance for purposes of California's offset program.
- Large undersupply expected in CP2 (2015-2017) but uncertainties remain:
  - Will compliance entities optimize compliance portfolio?
  - How does supply/demand change if only 6% or 4% is optimized?
  - Future invalidation risk

Carbon Offsets Supply



Compliance Period 1

Supply & Demand

Fundamentally Oversupplied in Compliance Period 1:

- Based on Alpha's proprietary analysis and conversations across market participants, our models show the market has been oversupplied by 40-45 million mt in Compliance Period 1.
- The model assumes ~4% utilization rate for offsets. Oversupply increases assuming any utilization from 4-8%.
  - Low utilization due to i) uncertainty of invalidation risk and ii) low clearing allowance prices negate the cost-saving benefit of offsets.
- Role of speculators is uncertain. How much did speculators vs compliance buyers purchase in 2013 & 2014 with the intent to bank until future compliance periods?
  - Market cost of capital is high at 4-5%
  - Difficult for compliance entities to justify when expectations are that prices will remain near floor levels.

Compliance Period 2

Supply & Demand

Introduction of the Fuels Sector:

- In the second compliance period beginning in 2015, the program expands to apply to distributors of transportation fuels, including natural gas. For the transportation fuel distributors, the regulated entity is the fuel provider that distributes the fuel upstream.
- **Auction supply increases by ~150% from 2014 - 2015**
  - 2014 Allowance Budget = 159.7 mm
  - **2015 Allowance Budget = 394.5 mm (~75 mm likely offered per auction)**
  - 2016 Allowance Budget = 382.4 mm
  - 2017 Allowance Budget = 370.4 mm
- Expected total cumulative excess supply in CP2:
  - 2015 = > 75 mm
  - 2016 = > 90. mm
  - 2017 = > 94.0 mm

Quebec Linkage – 2014

- CARB linked California cap and trade to Quebec cap and trade system
- First joint auction held Nov. 25, 2014.
- Linkage opened a new market for greenhouse gas allowances (CCAs and QCAs) and offsets for California's regulated entities and offset generators
- Quebec's emissions cap is far more aggressive than California's but only regulates roughly 80 facilities, so the net effect of the aggressiveness is immaterial

<u>Quebec Offset Market</u>

- In addition to accepting California offsets, Quebec has adopted three offset protocols
  - Covered Manure Storage
  - Landfill Gas
  - Ozone Depleting Substances

3 Price Drivers and Other Issues

Impact to prices at the pump

- According to a comprehensive study commissioned by Western States Petroleum Association, the Boston Consulting Group concluded:
  - California's cap-and-trade auction program, as currently written and being implemented, will increase the cost of making gasoline and diesel **14 cents per gallon to 69 cents per gallon**, depending on the cost of carbon allowances.
  - The cost of compliance could be significantly higher if the cost of carbon rises above CARB's projected auction prices.
  - Carbon costs could be extremely volatile initially, creating the potential for market disruptions.

- Other studies have suggested a lower price impact.

Issues to Consider

- Do Compliance Period 2 organizations understand rules, market dynamics, and position (including secondary impacts)?
- Complex interaction between various compliance instrument markets.
  - Allowances / Offsets / RPS / Power / Nat Gas and other CP 2 new entrants
- What is actual Supply and Demand?
  - Supply can be estimated but will change and demand will be difficult to ascertain until after the fact.
    - For the first few years supply and demand in each auction is more important than the long term fundamental supply/demand picture
  - Contractual, credit and regulatory requirements associated with each product?
  - How will forward year allowances be sold and priced? Risks?
  - Will the price containment mechanism and floor work?
- EMAC Analysis and Recommendations:
  - Frequency of auctions
  - Two-sided auction (buyers/sellers)
  - Hard price caps
  - Revisions to holding limits

Issues to consider cont'd

- Be prepared for the unexpected.
  - Prices below the floor?
  - Failed auctions?
  - Lack of liquidity?
  - …
- Work with regulators through industry associations such as The Carbon Market Compliance Association (CMCA)
  - A forum to share ideas to resolve market issues.
  - Receive timely and commercially-relevant information on market developments, fundamentals and regulatory changes through frequent updates.
  - Professional networking where they can find insight into commercial hedging opportunities/structures to help members adopt best-in-market approaches.

4 Contact Details

Contact Information

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