



BIOFUELS: WHAT'S HAPPENED AND WHERE ARE WE GOING?

By Scott Chabina

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DRIVING SUCCESS THROUGH
CHANGE AND GROWTH

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C. Scott Chabina
Director
Carl Marks Advisors

CONTACT

212-909-8408
schabina@carlmarks.com
v-Card

Advanced, commercially viable biofuel facilities no longer "unicorns on the horizon"

Today, we find ourselves at yet another crossroads within the ethanol and related biofuel industries. Conventional, or "Gen 1.0", corn ethanol producers have continued to diversify their revenue streams through the development of higher-margin, value-added co-products, as well as the successful implementation of various performance-enhancing capital projects designed to extract incremental value from the corn kernel.

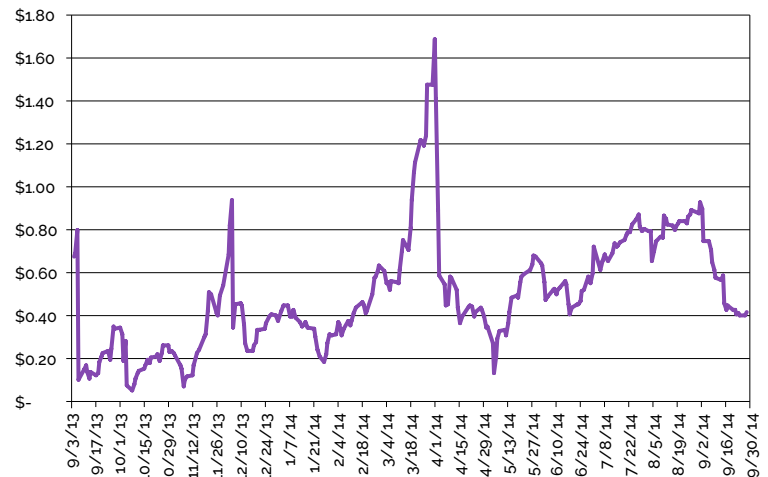
Simultaneously, as we look towards the advanced biofuel industry, or "Gen 2.0", we are now, finally, faced with the reality of advanced biofuel producers providing a meaningful contribution of commercial volumes towards the larger domestic renewable fuel supply, as many of these plants are scheduled to come online in 2015. This summary article aims to provide a review of the major developments within the domestic ethanol industry over the last 12-18 months, as well as offering a look forward to some of the noteworthy advanced biofuel projects that can no longer be fairly characterized as simply "unicorns on the horizon."

Gen 1.0 > Gen 1.5

The U.S. corn ethanol industry recently concluded one of the greatest 12-month periods for profit margins in its history (see Exhibit 1.0), with CBOT Crush Spreads (a widely used proxy for profit margins) exceeding ~\$1.70/gallon in Q1 2014, before quickly returning to more normalized levels going into Q4 2014 (see Exhibit 2.0).

Exhibit 1.0 – CBOT Crush Spread Sept. 2013 – Sept. 2014

Sept. 2013 - Sept. 2014 CBOT Crush Spread: 2.80 yield (gallons/bushel)



Source: CME Group

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www.carlmarksadvisors.com

New York City
900 Third Avenue
33rd Floor
New York NY 10022
(212) 909-8400

New Jersey
336 Main Street
P.O. Box 1005
Bedminster, NJ 07921
(908) 234-2373

North Carolina
212 South Tryon Street
Suite 1685
Charlotte, NC 28281
(701) 714-1240

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Exhibit 2.0 – CBOT Crush Spread Since Sept. 2014

CBOT Crush Spread (2.80 yield) - September 2014 to Present



Source: CME Group, data through Jan. 5, 2015

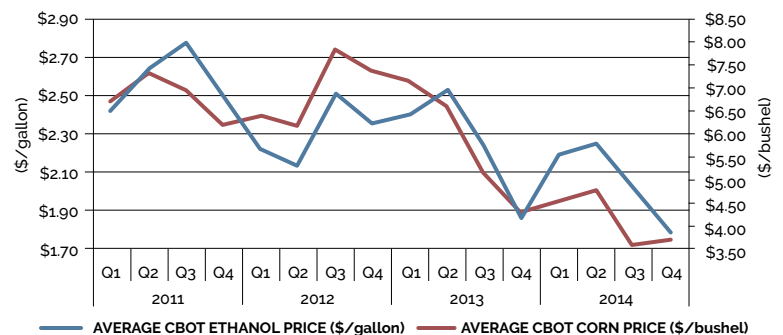
Despite this period of profitability, there remain a number of key factors that continue to impact the industry, including:

1. Volatile commodity pricing;
2. On-going legislative and regulatory uncertainty;
3. Continued consolidation activity; and
4. Increased liquidity during 2014 that offered capital market solutions for select producers.

Volatile Commodity Pricing

Industry veterans will recall the supply overhang that occurred in Q1 2012, as a result of the run-up in production in Q4 2011 (ahead of V.E.E.T.C. expiration), which led to the precipitous drop in ethanol prices and negative CBOT margins. In 2014, producers continued to bring facilities back online in pursuit of favorable prevailing Crush Spreads (over 500 million gallons brought back online since Q4 2013) and, as a result, we have witnessed the supply/demand dynamic begin to experience compression (see Exhibit 3.0).

Exhibit 3.0 – Average CBOT Pricing



Source: CME Group, U.S. Energy Information Administration

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Exhibit 3.0 – Average CBOT Pricing (cont'd)

	Q1	2011 Q2	Q3	Q4	Q1	2012 Q2	Q3	Q4	Q1	2013 Q2	Q3	Q4	Q1	2014 Q2	Q3	Q4
Avg. Weekly Production (000's barrels/day)	899	890	882	925	914	894	814	816	797	863	848	910	897	927	924	950
% change		-0.9%	-0.9%	4.9%	-1.2%	-2.1%	-9.0%	0.3%	-2.3%	8.3%	-1.7%	7.3%	-1.4%	3.4%	-0.3%	2.8%
Avg. Weekly Ending Ethanol Stocks (000's barrels)	19,198	19,998	18,010	17,287	21,293	21,293	18,974	19,248	19,287	16,617	16,282	15,318	16,424	17,378	18,174	17,667
% change		4.2%	-9.9%	-4.0%	23.2%	0.0%	-10.9%	1.4%	0.2%	-13.8%	-2.0%	-5.9%	7.2%	5.8%	4.6%	-2.8%
Average CBOT Ethanol Price (\$/gallon)	\$2.42	\$2.64	\$2.78	\$2.48	\$2.23	\$2.14	\$2.51	\$2.36	\$2.41	\$2.53	\$2.23	\$1.86	\$2.20	\$2.25	\$2.02	\$1.79
% change		8.7%	5.4%	-10.6%	-10.4%	-3.6%	17.2%	-6.2%	2.2%	5.0%	-12.0%	-16.6%	18.3%	2.4%	-10.4%	-11.5%
Average CBOT Corn Price (\$/bushel)	\$6.70	\$7.31	\$6.96	\$6.20	\$6.41	\$6.18	\$7.83	\$7.37	\$7.16	\$6.61	\$5.14	\$4.30	\$4.52	\$4.79	\$3.60	\$3.72
% change		9.1%	-4.8%	-10.9%	3.3%	-3.6%	26.6%	-5.9%	-2.8%	-7.7%	-22.2%	-16.4%	5.2%	5.9%	-24.9%	3.5%
Implied CBOT Crush Spread (2.80 yield)	\$0.03	\$0.03	\$0.29	\$0.27	-\$0.06	-\$0.06	-\$0.28	-\$0.27	-\$0.15	\$0.17	\$0.39	\$0.32	\$0.58	\$0.54	\$0.73	\$0.45
% change		-19.9%	1058.0%	-8.6%	-124.0%	-2.8%	351.3%	-2.9%	-46.3%	-216.6%	128.8%	-17.6%	80.5%	-7.3%	35.6%	-37.8%

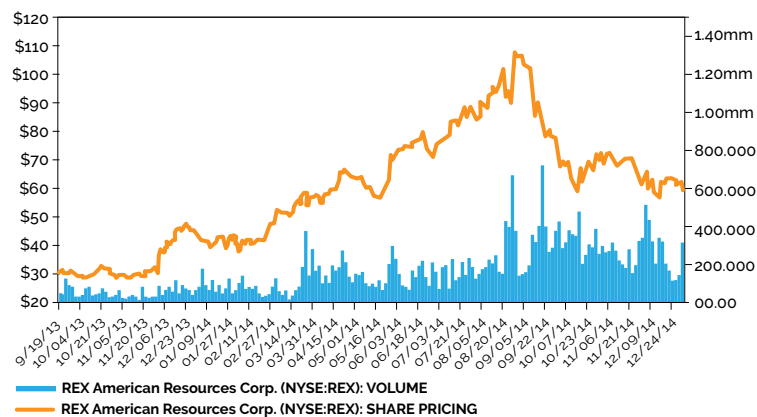
Source: CME Group, U.S. Energy Information Administration

Given the distinctive interplay between relevant commodity prices and the broader energy sectors, ethanol producers were able to capture significant margins for much of 2014. Consequently, the public equity markets began to mirror such valuations, which begged the question, *"What future margins are the equity markets presently expecting and, perhaps more importantly, are they sustainable?"*

Unfortunately, many of the publicly traded ethanol companies saw their market capitalizations abruptly return to more normalized levels as of late. Specifically, REX American Resources Corp. (NYSE: REX) and Green Plains Inc. (NasdaqGS: GPRE) saw their stock prices soar ~250% and 190%, respectively, from September 2013-14, only to have those values quickly retreat ~45% and 50% (see Exhibit 4.0).

Exhibit 4.0 – Reaction from Equity Markets

REX American Resources Corp. (NYSE:REX)



Source: Capital IQ, data through Jan 2, 2015

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Ongoing Legislative and Regulatory Uncertainty

In November 2014, the Environmental Protection Agency ("EPA") announced that it will not issue the final Renewable Fuel Standard ("RFS") volumes for 2014 and indicated that such a decision will not be made until 2015. Additionally, the EPA previously proposed nearly across-the-board cuts in its 2014 proposal, marking the first time in the history of the RFS that the agency proposed a reduction to the statutory requirements/volumes for corn-based, traditional ethanol production facilities.

Any further modifications or reluctance on the part of key policy-makers to confirm these volumes may have the potential to significantly alter the economics of ethanol production and, ultimately, affect overall value within various renewable fuel sectors (Gen 1.0 and 2.0).

Continued Consolidation Activity

Over the last decade, the ethanol industry has continued to mature from a relatively nascent sector to one that expanded quickly following the ban on MBTE. Due to rapid expansion, over-leverage and risk management problems, many producers experienced insolvency between 2009-2011. During this period, several large strategic ethanol producers emerged as significant players in the

rationalization and consolidation of the industry; namely Valero Energy Corporation, Koch Industries (Flint Hills Resources) and Green Plains.

These producers, along with POET, ADM and a handful of others, now control the vast majority of the total production capacity in the U.S. Even so, the overall market remains fragmented and certain producers continue to actively seek additional gallons from select production facilities. Notable recent M&A activity includes the following:

- Aventine Renewable Energy Holdings Inc. – acquired by Pacific Ethanol Inc. Announced in December 2014; Pacific Ethanol to acquire Aventine's outstanding shares in a stock-for-stock merger transaction; \$190mm purchase price and \$135mm assumed long-term debt implies \$1.03/gallon.
- Southwest Georgia Ethanol – acquired by Flint Hills Resources. Announced in September 2014; terms not disclosed.
- Illinois River Energy – acquired by CHS. Announced in April 2014; terms not disclosed, marks CHS' return to the production side of the business, as they have not owned an ethanol plant since 2009.

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Increased Liquidity During 2014 That Offered Capital Market Solutions For Select Producers

Aided by favorable commodity (crush) spreads and the low interest rate environment, many domestic ethanol producers were able to refinance burdensome debt loads and avoid a wave of restructurings similar to those witnessed in earlier years. Some notable examples include:

- Aventine Renewable Energy Holdings Inc. announced in September 2014 that it has secured a \$40mm loan. Aventine used proceeds from the refinancing (and its existing cash from operations) to fully repay its term debt due 2016.
- Southwest Iowa Renewable Energy ("SIRE") announced in July 2014 the completion of a \$66mm senior credit agreement (\$30mm term loan, \$36mm revolving term loan, LIBOR+3.35%) due 2023 with Farm Credit Services of America and CoBank. Proceeds were used to refinance senior bank debt scheduled to mature in August 2014. SIRE has paid off more than \$57mm of debt in 2014.
- Penford Corporation announced in August 2014 that it has secured a \$170mm line of credit.
- Green Plains announced in June 2014 the completion of a \$225mm senior secured credit facility due 2020.

Gen 1.0 Has Transitioned Into Gen 1.5

Domestic ethanol producers have successfully evolved from solely corn ethanol production facilities with limited co-products (principally DDGS) into diversified agri-businesses. Whether it be through retrofitting facilities to produce separate specialty chemicals (e.g. butanol), developing bolt-on capacity to produce ancillary fuels (e.g. biodiesel), or continuously extracting further value from the existing corn kernel (e.g. corn oil extraction, selective milling technology, etc.), these former "Gen 1.0" producers continue to expand their end markets and product offerings, simultaneously reducing their dependence on solely corn and ethanol.

Gen 2.0 Is Here...Finally

Unfortunately, it is true that the advanced biofuel industry in the United States has lagged behind previously established targets for commercialization and has yet to contribute any meaningful volume of towards the overall fuel supply. Specifically, the RFS had originally anticipated 1.75 billion gallons of advanced biofuel to be produced in 2014 – a far cry from the estimated 85 million gallons of capacity that only commenced operations during the year. However, to claim that the RFS has failed to deliver on its larger intended purpose and that these advanced biofuels will always be,

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ABOUT THE AUTHOR

Scott Chabina is a Director at Carl Marks Advisors and has provided a wide range of financial advisory services to ethanol and advanced biofuel producers representing over 4.0 billion gallons of aggregate production capacity.

as many cynics have often declared, "unicorns on the horizon", is incorrect.

To the contrary, as of January 2015, the advanced biofuel industry in the U.S. is finally demonstrating some truly significant accomplishments. These include, but are not limited to, the following:

- Abengoa Bioenergy (Hugoton, KS) – Abengoa's cellulosic ethanol facility came online in late 2014 and is expected to produce 25 million gallons per year ("MMGY") using corn stover, wheat straw, milo stubble and switchgrass.
- DuPont (Nevada, IA) – DuPont has stated that its 30MMGY cellulosic ethanol plant will begin production in Q1 2015 using corn stover collected from ~500 farmers that are participating in the company's "Feedstock Harvest Program."
- POET-DSM Advanced Biofuels (Emmetsburg, IA) – "Project Liberty" held its grand opening in September 2014 and produces cellulosic ethanol using corn cobs, leaves, husk and stalk. The 20-25MMGY facility anticipates full production sometime in 2015.

- Quad County Corn Processors (Galva, IA) – Quad County Corn Processors began production at its cellulosic ethanol facility (2 MMGY capacity) in July 2014 utilizing a co-product of its co-located Gen 1.0 corn ethanol facility known as corn kernel cellulose. The company claims that this patented technology has the ability to generate 1.0 billion gallons of additional ethanol (without using additional corn) by adding the bolt-on technology to existing corn ethanol facilities.

Undeniably, there remains a myriad of significant operational and technical hurdles for each of these advanced biofuel producers to address (e.g. feedstock procurement, marketing of co-products, etc.) before there can be any reliable contribution of commercial volumes of advanced biofuels for an extended period of time.

However, regardless of how far behind these revolutionary facilities are from the originally proposed volumes made nearly a decade ago, it remains critical to stay the course. Just as traditional corn ethanol facilities have continually developed innovative ways to adapt and diversify their product offerings and commodity exposure, advanced biofuel producers are, at last, producing renewable fuels and high-margin co-products today and the era of the advanced biorefinery is finally becoming a reality.

Source URL: <http://www.fierceenergy.com/story/biofuels-whats-happened-and-where-are-we-going/2015-04-09>

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www.carlmarksadvisors.com

New York City
900 Third Avenue
33rd Floor
New York NY 10022
(212) 909-8400

New Jersey
336 Main Street
P.O. Box 1005
Bedminster, NJ 07921
(908) 234-2373

North Carolina
212 South Tryon Street
Suite 1685
Charlotte, NC 28281
(701) 714-1240