

© Copyright 2014 RBN Energy

## The Future's So Bright, I Gotta Wear Shades

### Market Outlook for Crude Oil, NGLs & Natural Gas

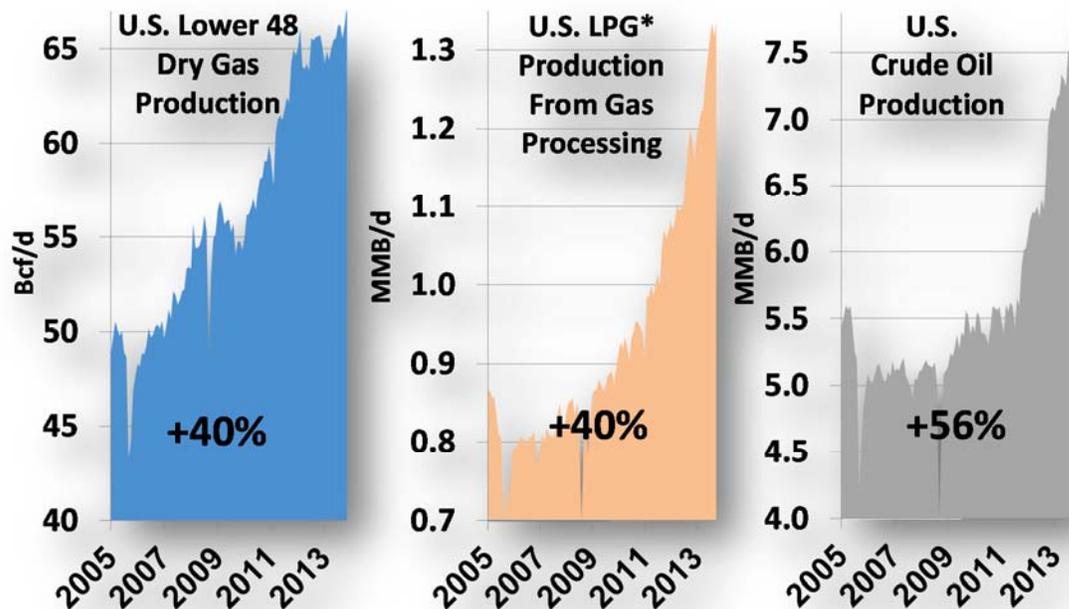


Figure 1 – U.S. Gas, LPG and Crude Production

\*LPG = the NGL's Propane & Butane; Source: EIA

If there is any uncertainty remaining about how much energy markets have changed over the past few years, the three graphs in Figure 1 should put it to bed once and for all. Production statistics for U.S. natural gas, natural gas liquids and crude oil are all surging, in some cases into uncharted territory, in others back to levels last seen when George H. W. Bush was President. Make no mistake about it. The U.S. is at the doorstep of that long sought-after goal of energy independence – where the country can produce all the energy that it uses. That goal may still be a few years away, but it is in sight. And for the U.S. consumer, that is a future so bright, you gotta wear shades.

This report is an overview of the major developments in the markets for the three energy sectors referenced by RBN as the “drill-bit hydrocarbons”. The term groups together the three hydrocarbons created by the business end of a drill bit and produced from a well – natural gas, natural gas liquids and crude oil. It is that drill bit, the way it is used to drill horizontally, and the hydraulic fracturing

techniques applied downhole once the well has been drilled, along with other technologies facilitating the process of drilling and completing wells, that launched and continues to drive the Shale Revolution.

Key takeaways from this report include:

- U.S. natural gas production, down temporarily due to weather related freeze-offs and other short-term problems will quickly recover to record levels, driven primarily by Marcellus/Utica region supplies.
- Cold weather during the winter of 2013-14 has pushed natural gas prices higher, improving producer economics. This will encourage more gas directed drilling, resulting in still more growth in natural gas production. The implication is lower prices after inventories are replenished.
- The onslaught of gas production from the Marcellus/Utica is having a dramatic impact on natural gas pipeline flows into the Northeast, and will eventually curtail or reverse flows on many of those systems.
- Natural gas surpluses will be used in new gas fired power generation and industrial capacity or exported to Mexico and global LNG markets.
- Production of 'wet' high BTU gas continues to drive significant increases in NGL production, with surplus supplies destined for export. However, the winter 2014 propane crisis will result in scrutiny of inventory and export practices by both industry and regulators.
- Over the longer term, LPG exports will maintain a tight balance for U.S. propane, with most supplies moving to Latin America and Asia/Pacific markets. Surpluses of normal butane and natural gasoline will also move to export markets. Surplus ethane will be rejected into natural gas.
- Crude oil production will continue to increase, although at a slightly lower growth rate than seen over the past two years. Surpluses of light sweet crude will continue to build on the Gulf Coast, resulting in weaker prices for light crude and condensates.
- As refineries and splitters absorb more of these light crude barrels, the resulting growth in naphtha range materials will drive increases in petroleum product exports, primarily motor gasoline.
- Since the 1970s, U.S. energy policy has been designed around the importance to national security of reducing dependence on foreign resources—the oft-touted goal of “energy independence”. The question is - how should energy independence be measured? One alternative view is offered here. By reducing all energy imports and exports to a common denominator (Quadrillion BTU, or Quads) and defining independence as a net zero import/export balance of Quads, it is quite possible that the U.S. could reach this energy independence goal by 2020, if not sooner.

**This RBN Energy Drill-Down Report is available for individual subscription at [rbnenergy.com](http://rbnenergy.com).**

**For more information on group subscriptions, send an email to [info@rbnenergy.com](mailto:info@rbnenergy.com) or call 888-613-8874.**

## Table of Contents

|            |                                                                 |               |
|------------|-----------------------------------------------------------------|---------------|
| <b>1.</b>  | <b>Introduction .....</b>                                       | <b>- 3 -</b>  |
| <b>2.</b>  | <b>Surging Production from the Drill Bit Hydrocarbons .....</b> | <b>- 5 -</b>  |
| <b>3.</b>  | <b>U. S. Lower-48 Natural Gas Production .....</b>              | <b>- 5 -</b>  |
| <b>4.</b>  | <b>Northeast Natural Gas Market Developments .....</b>          | <b>- 7 -</b>  |
| <b>5.</b>  | <b>U.S. Natural Gas Production Outlook .....</b>                | <b>- 10 -</b> |
| <b>6.</b>  | <b>Natural Gas Demand .....</b>                                 | <b>- 11 -</b> |
| <b>7.</b>  | <b>Natural Gas Liquids (NGLs) Tutorial .....</b>                | <b>- 13 -</b> |
| <b>8.</b>  | <b>NGL Market Developments .....</b>                            | <b>- 15 -</b> |
|            | 8.1 Propane .....                                               | - 16 -        |
|            | 8.2 Ethane .....                                                | - 20 -        |
|            | 8.3 Normal Butane and Isobutane .....                           | - 22 -        |
|            | 8.4 Natural Gasoline .....                                      | - 23 -        |
| <b>9.</b>  | <b>U.S. Crude Oil Production and Price Developments .....</b>   | <b>- 25 -</b> |
|            | 9.1 Crude Oil Production .....                                  | - 25 -        |
|            | 9.2 Price Developments .....                                    | - 28 -        |
|            | 9.3 Crude Oil Production Outlook .....                          | - 29 -        |
| <b>10.</b> | <b>Crude Oil Infrastructure and Crude by Rail .....</b>         | <b>- 30 -</b> |
| <b>11.</b> | <b>Crude Oil Light/Heavy Imbalance: The Dumbbell .....</b>      | <b>- 32 -</b> |
| <b>12.</b> | <b>Imports/ Exports and Energy Independence .....</b>           | <b>- 34 -</b> |