Status and Trends in Oil and Gas of Eastern Kentucky

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Shale Gas, Oil, and Fracking Workshop (NARO)
Pikeville, Kentucky, 4-Jun-2013
“Arise storms
North winds blow, south winds blow
Typhoons, hurricanes, earthquakes, smog
Flash lightning strike the rabbit
What have I done?? I've killed the rabbit....”

Note: copyrighted background image from Merrie Melodies cartoon cited below was removed for posting presentation on web.

What’s Opera Doc, Merrie Melodies, 1957
Kentucky Shale Wells

- First wells* – 1858
- ≥ 15,000 wells
- ≥ 5 trillion cubic feet
- $N_2$ frac

* Wells were drilled for brine and co-produced shale gas was used as fuel
Kentucky Oil Production Rising

2012: 3.2 MMbo

Highest since 1996 at 3.4 MMbo
Oil Production, 2012

3.2 MMbo

- Oil producing county
- Top 5
- Largest decrease

? – Production reported, but no known producing wells
Natural Gas Production, 2012

278.5 Bcf

- Gas producing county
- Top 5
- Largest decrease

0.1% 0.4% 99.5%

? – Production reported, but no known producing wells
East Kentucky Permits Issued

Average >90% of Proposed horizontal wells

All

Horizontal
Horizontal Wells Permitted 2012 to Date

- 1 to 5: 25 permits issued
- 6 to 10: 26 permits issued
- 11 or more

85 permits issued
Horizontal Well Targets, 2000 to Date

- Lower Huron: 752
- Cleveland: 293
- Berea: 186
- New Albany: 41

Permits issued
Statewide Natural Gas Production

- **State**
- **Horizontal**

Billion Cubic Feet

Horizontal wells permitted

- 2000
- 2002
- 2004
- 2006
- 2008
- 2010
- 2012
Pike County Gas Production

- Pike County Gas Production
- State
- Pike
- Horizontal

Billion Cubic Feet


Horizontal wells permitted
Floyd County – Game Changer

- State
- Pike
- Floyd
- Horizontal wells permitted

Billion Cubic Feet

Horizontal wells permitted
Kentucky Top 10 Producing Counties

Million Barrels of Oil Equivalent

FLOYD
PIKE
KNOTT
LETCHER
PERRY
MARTIN
LESLIE
HARLAN
CLAY
KNOX

2000 to 2012 data
Permits Issued & Gas Wells Completed

2000 to 2013 data
Horizontal Wells

2000 to 2013 data
Performance of Shale Wells

Drilled since 2000 with reported production data
Big Sandy Pipeline connects Langley to Tennessee Gas Pipeline System.

- Big Sandy
  - Berea and Huron shale
  - In service in 2008
- Langley
  - 160 MMcf/d cryogenic
  - 75 MMcf/d refrigeration
MarkWest Gas Processing

- The Ranger NGL pipeline connects Langley to fractionation, shipping, and storage at South Shore, Greenup County.

Pipeline data from U.S. EIA state energy profiles: www.eia.gov/state/
Berea Oil Production

Barrels of Oil

Thousands


Lawrence

Greenup

Nitrogen and slickwater fracks
OTHER TRENDS AND ACTIVITIES
Bluegrass Liquids Pipeline

- Williams & Boardwalk Pipeline Partners (JV)
- 200,000 bbl/d
- In service late 2015

Pipeline data from U.S. EIA state energy profiles: www.eia.gov/state/
CNG Vehicles

- RAM 2500 HD CNG
- Ford F-150, Westport, Louisville, Ky
- Honda Civic CNG

Oct-2012: 22 states fleet procurement deal
House Bill 212, 2013

• AN ACT relating to clean and alternative transportation fuels
  – CNG, LNG, LPG
  – Synthetic fuels
  • Coal to liquids
  • Coal gasification

• Signed by Governor Beshear, 4-April-2013
Opportunity for Growth: 3 Public CNG Fill Stations

Prices in $/gge
*November, 2012

Somerset: $1.80

$2.49*

$2.39*
Distributed Generation

Standalone power generation or on-demand conditioning of remote legs on power grid.
Somerset Refinery

- Capacity 5,000 to 5,500 bo/d
- Refining 1,200 to 1,500 bo/d
- Possible liquids market?
U.S. Electricity Generation Trends

Coal

Natural Gas

Month: April 2012

www.eia.gov/electricity/data/browser/#/topic/0?sec=g&geo=g&fuel=vvg&agg=2,0,1
Eastern Kentucky Summary

- More horizontal wells
- Oil production likely on rise
  - Berea, Weir, and other shallow oil plays
- Gas drilling and production steady to declining (controlled by price)
- CNG and LNG opportunities
- Natural gas liquids?
  - Bluegrass pipeline
- Natural gas for electricity generation
Thanks. Questions?

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