



**Bridging the data gap  
between headlines to wellhead  
– An analyst's perspective**





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- ◆ Phani is a Senior Analyst in the Upstream Lower 48 team at Wood Mackenzie. He has over 14 years experience in the energy industry. Phani leads the North America supply data analysis and develops production forecasts for tight oil plays. He keenly follows technological and operational efficiency gains in unconventional plays and prior to his current role, he worked as a Senior Supply Analyst in the North American Gas Service at Wood Mackenzie.
- ◆ Before joining Wood Mackenzie, Phani worked as a research engineer at The University of Texas at Austin for six years where he led research and consulting related to produced water reinjection and slick-water fracturing in tight gas sands.
- ◆ Phani holds a B.S. from Indian School of Mines and an M.S. from the University of Texas at Austin, both in Petroleum Engineering.

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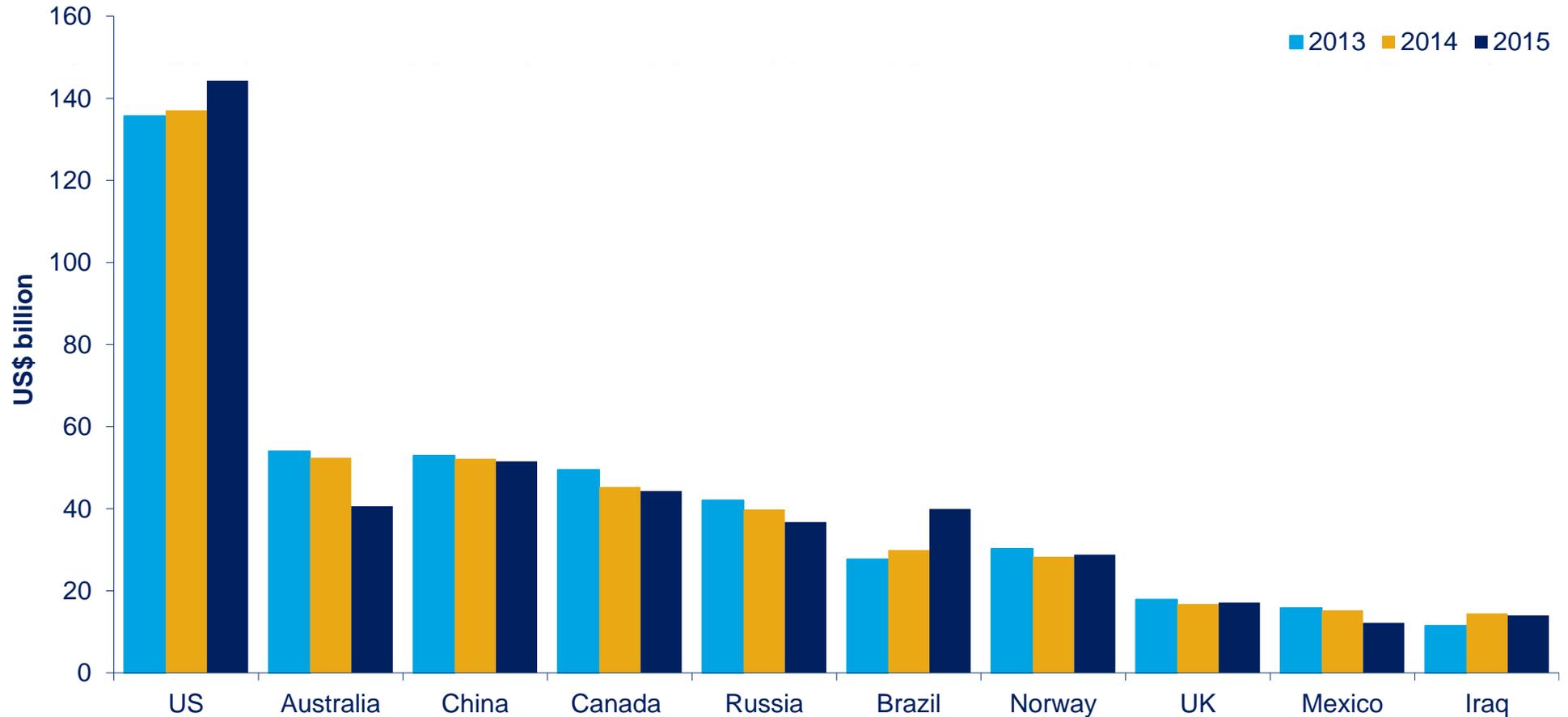
**US Lower 48 investment outlook**

2

**Bridging the data gap – challenges and solution**

# US dominates global upstream spend

Top 10 countries for upstream development spending 2013 to 2015



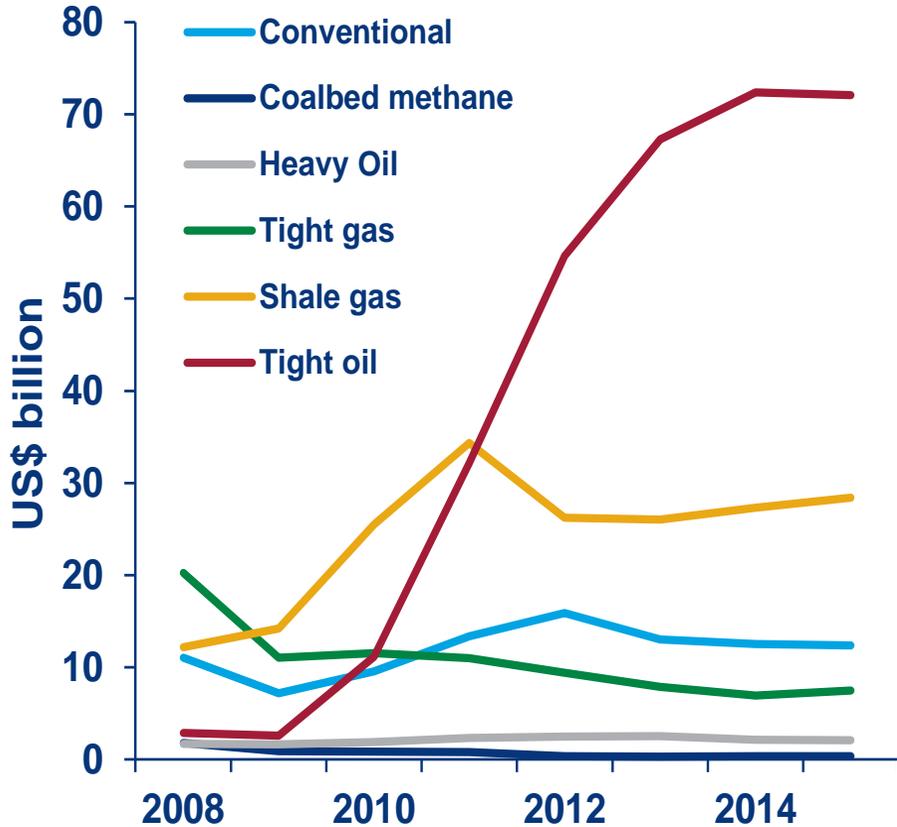
US accounts for nearly a quarter of the upstream development spending

Source: Wood Mackenzie

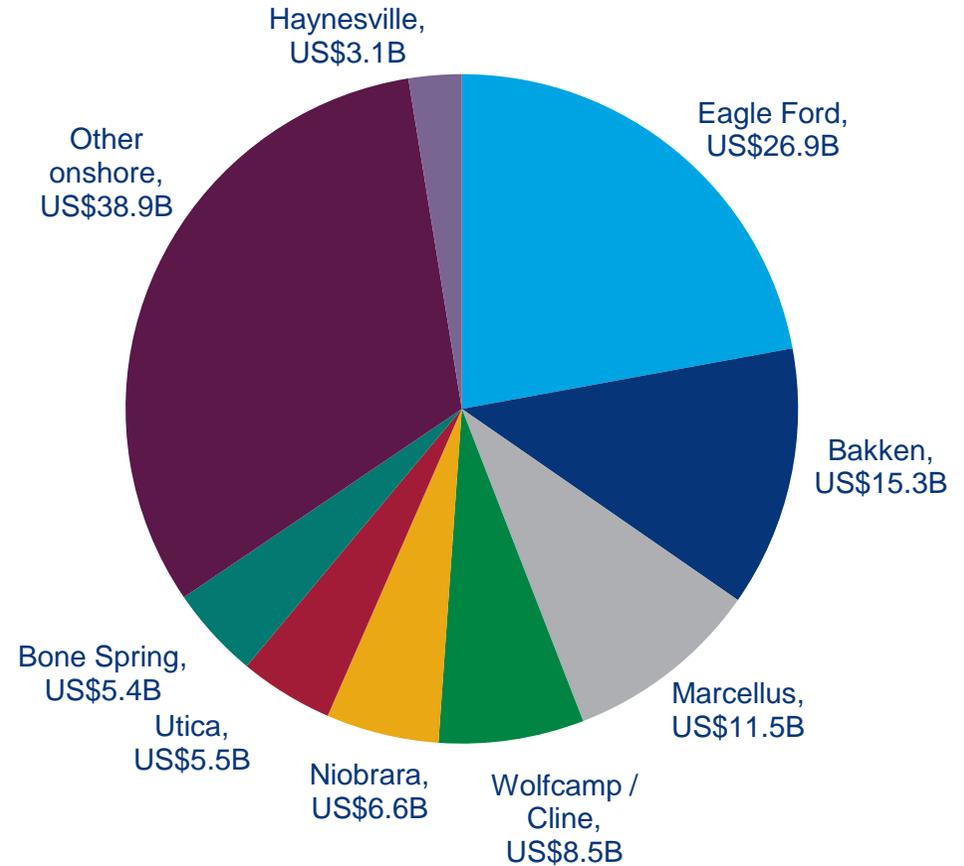
# The big three continue to drive Lower 48 capex

Wolfcamp capital spend could exceed Bakken by 2017

US Lower 48 development spend by theme



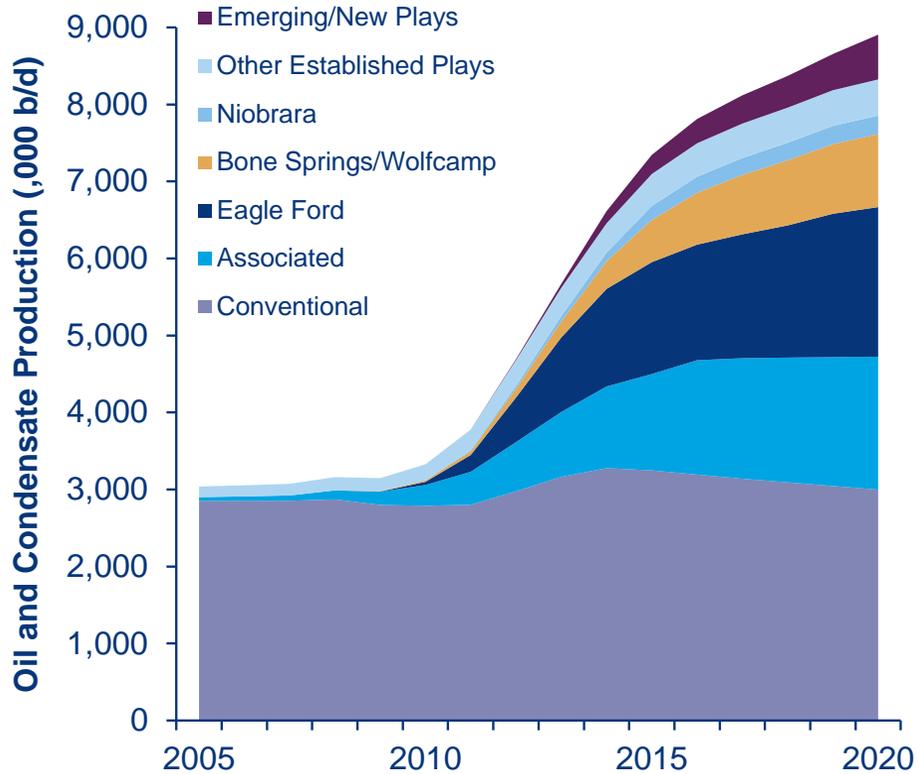
US Lower 48 development spend by play



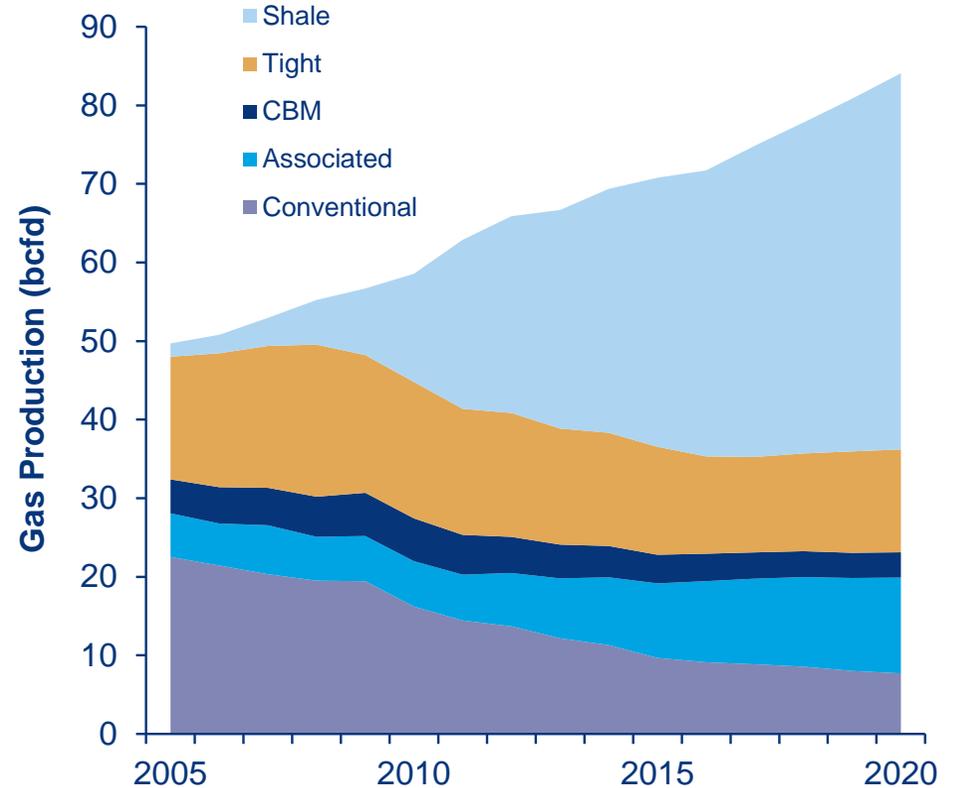
Source: Wood Mackenzie

# Production accelerating in line with our expectations

## US L48 liquids production by play



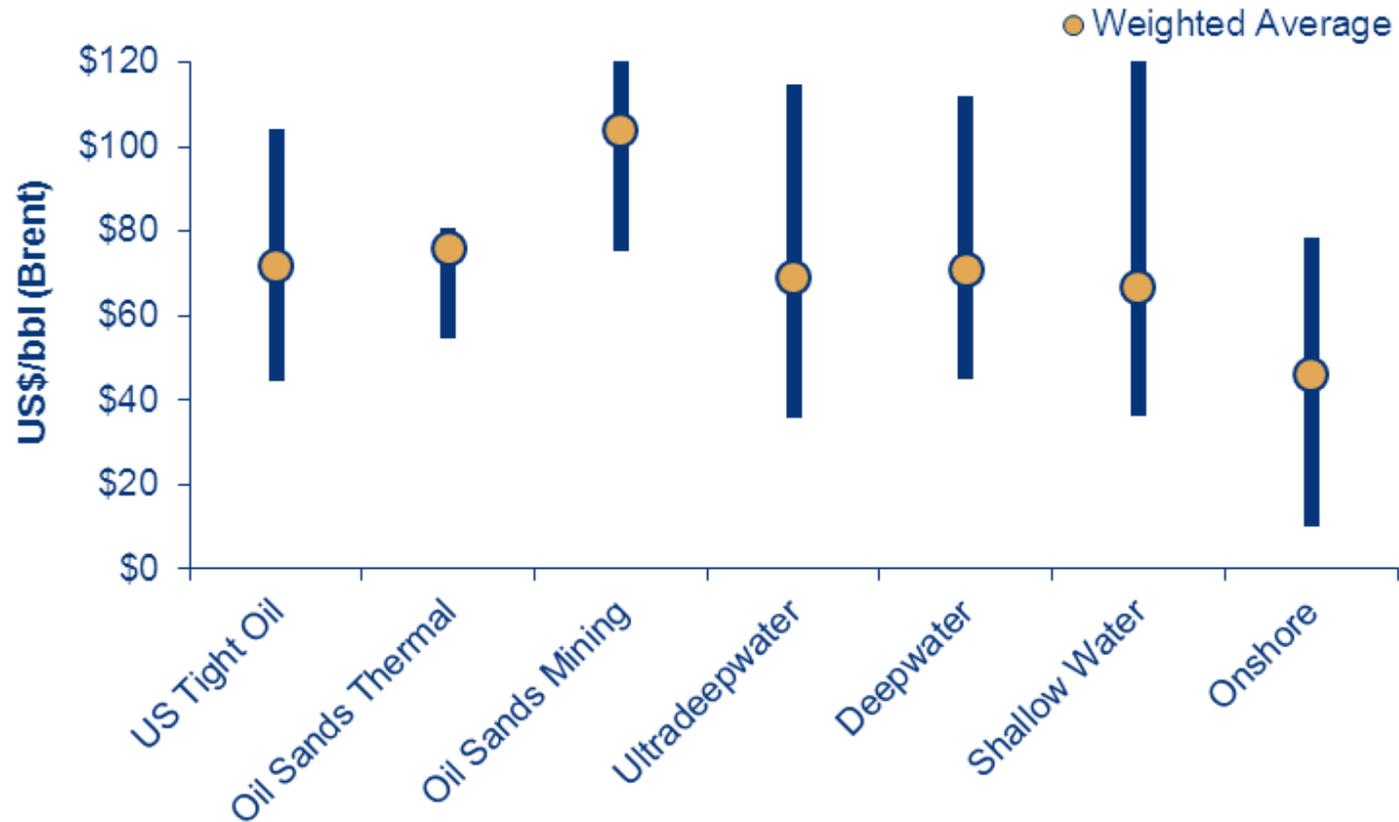
## US gas production by type



Source: Wood Mackenzie

# Breakevens for new projects provide some support for prices

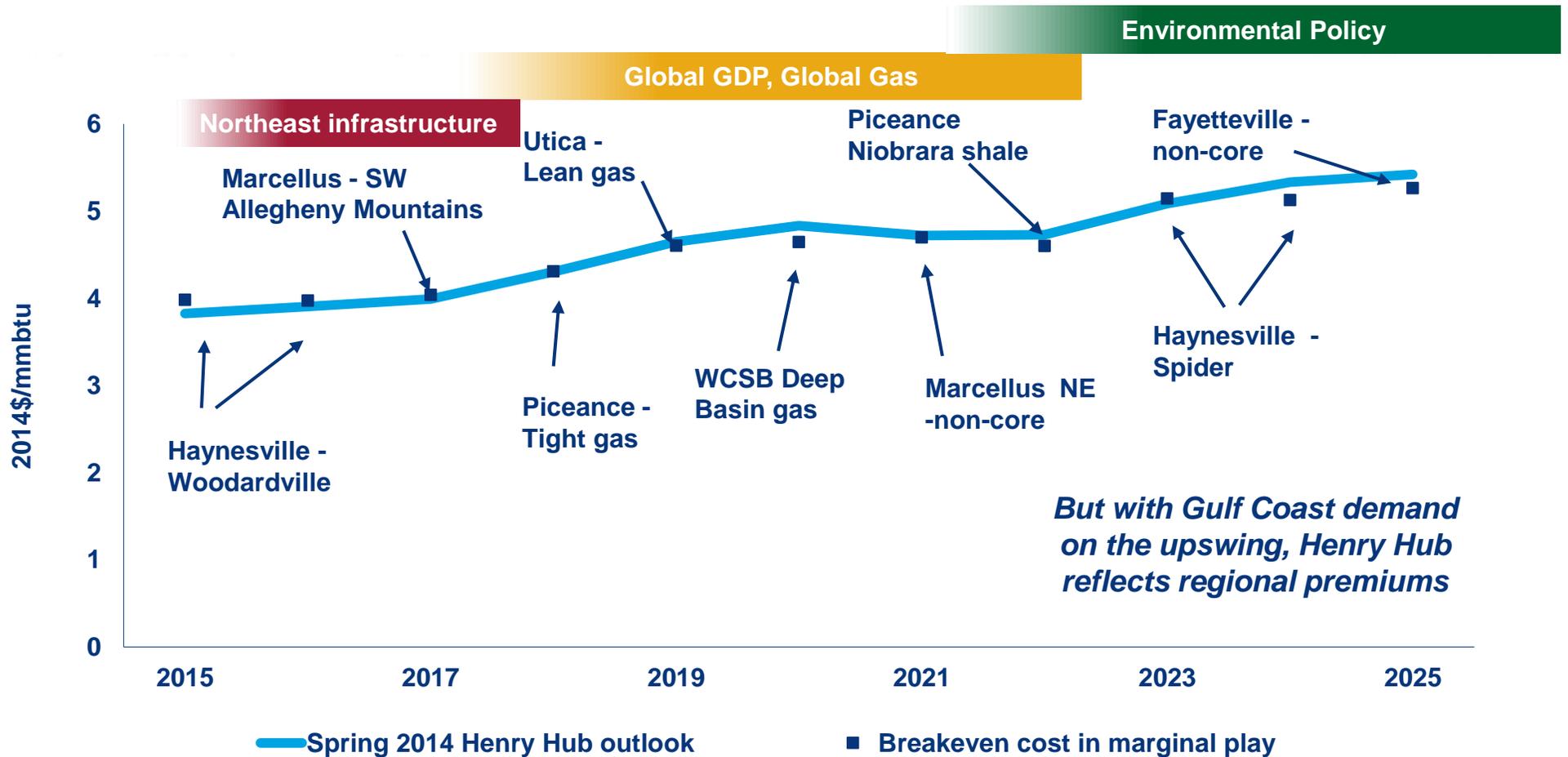
## Breakevens for new oil developments



Source: Wood Mackenzie

# ...and as new projects come online, higher-cost sources of supply come into the mix

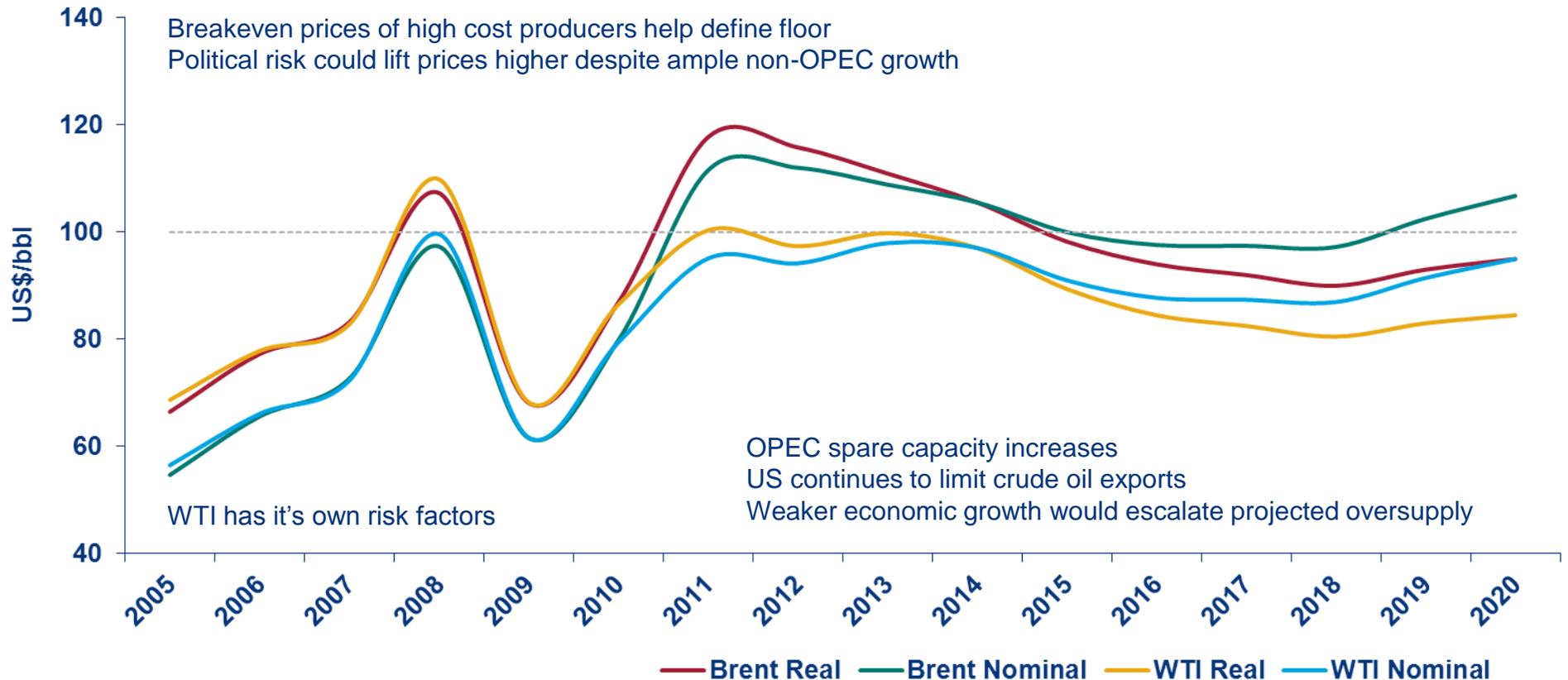
Northeast subplays, Rockies and WCSB supplies compete



Source: Wood Mackenzie

# Wood Mackenzie's forecast shows slight weakness from 2014 to 2016 with recovery towards 2020

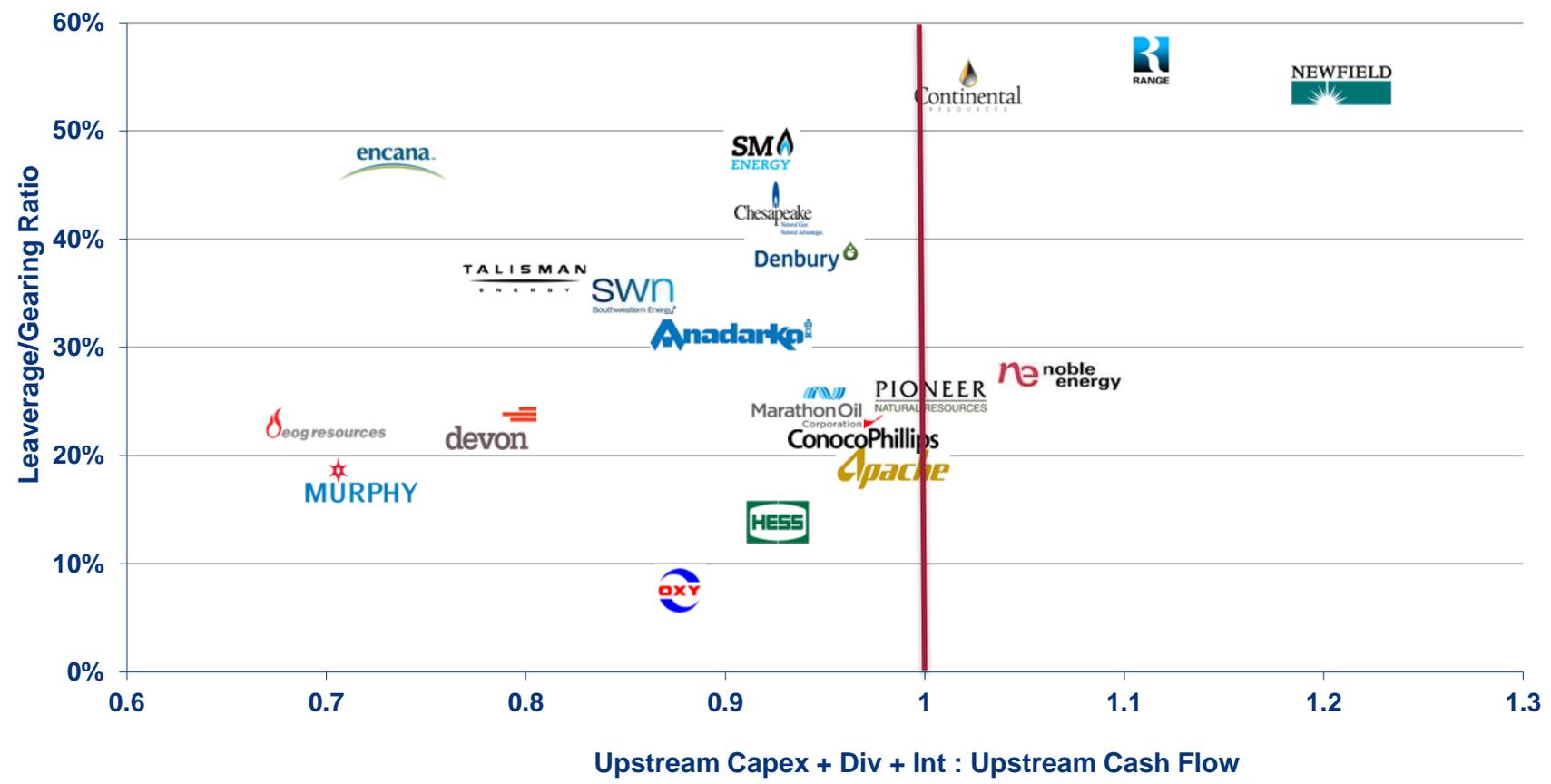
## Annual average for Brent and WTI in real and nominal terms to 2020



Source: History – Thomson Datastream, Argus, Forecast - Wood Mackenzie

# At \$100 Oil, key shale gas and tight oil focused operators turning cash flow positive over 2014-2017

Text



Source: Wood Mackenzie, Company Reports



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US Lower 48 investment outlook

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**Bridging the data gap – challenges and solution**



**#1**

# **Data is a commodity**

**#2**

**User-friendly does  
not necessarily mean  
analysis-friendly**

# Eagle Ford Condensate Exports

**Commerce department decision means Eagle Ford condensate can be exported**

**In private rulings, Commerce Department approves exports for condensate stabilized “infield” for EPD and PXD**

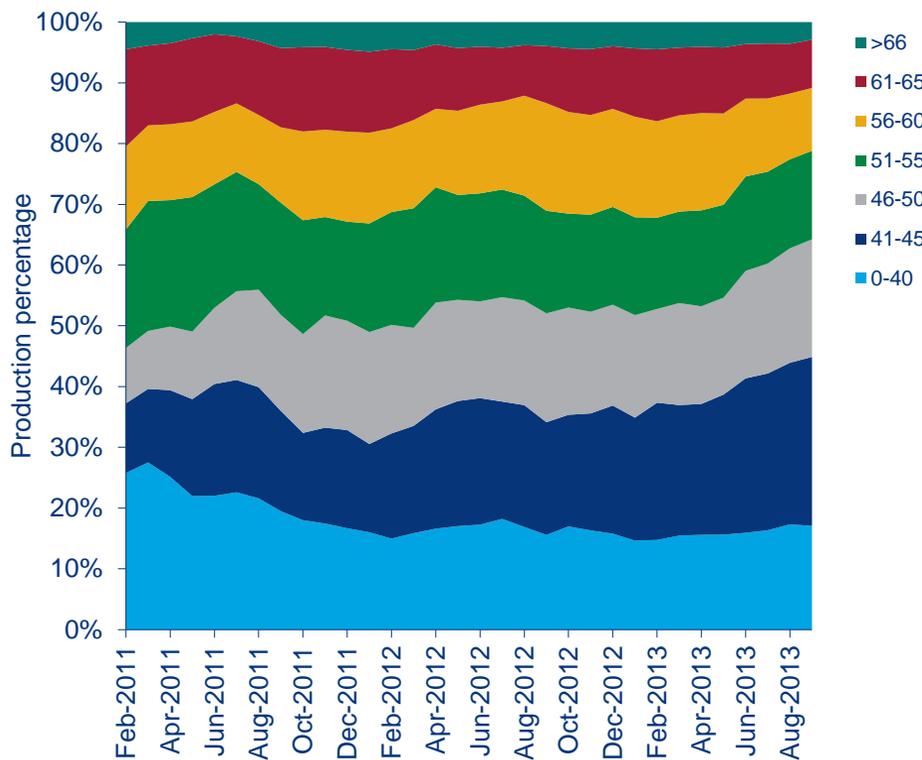
**Enterprise and Pioneer begin shipping condensate abroad**

**Others follow suit with applications**

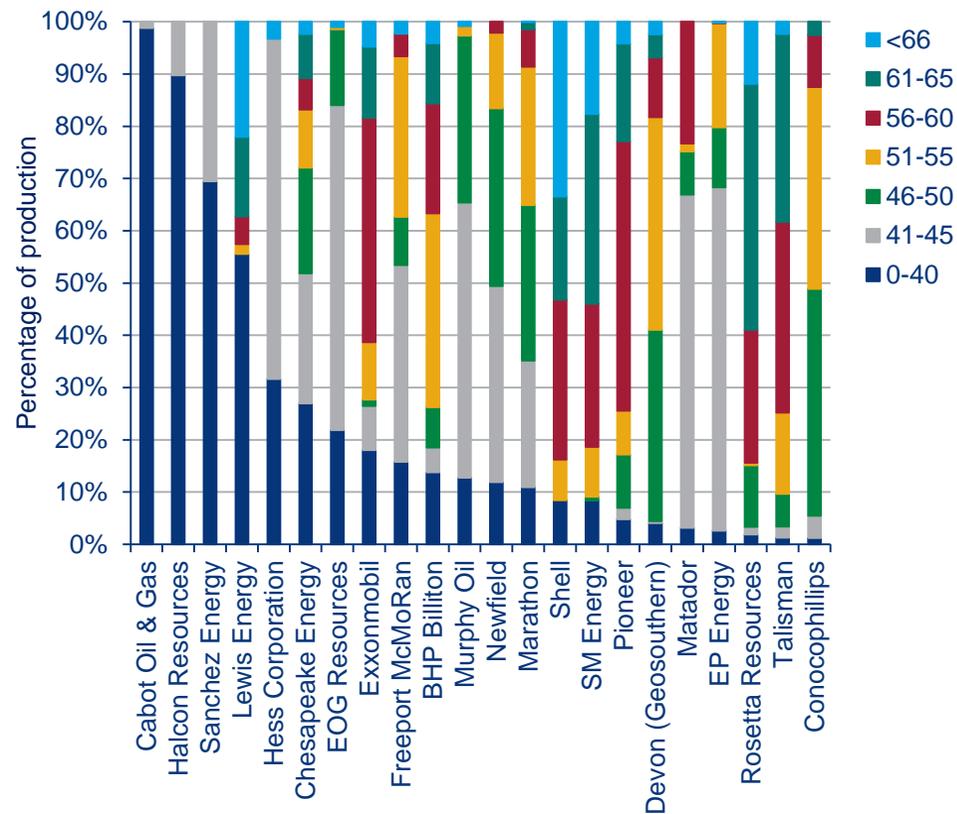
**BIS defers further decisions as the White House signals it was unaware of the decision**

# API gravity weighting varies by sub play and operator

## Play production by API percentage



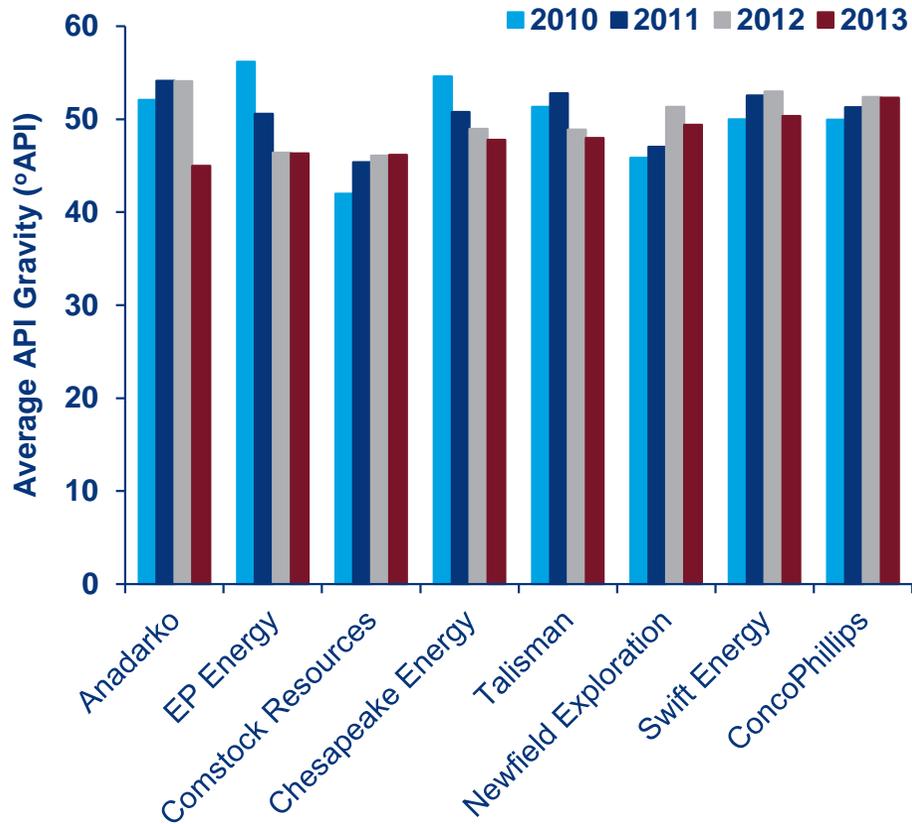
## Operators' condensate weighting varies



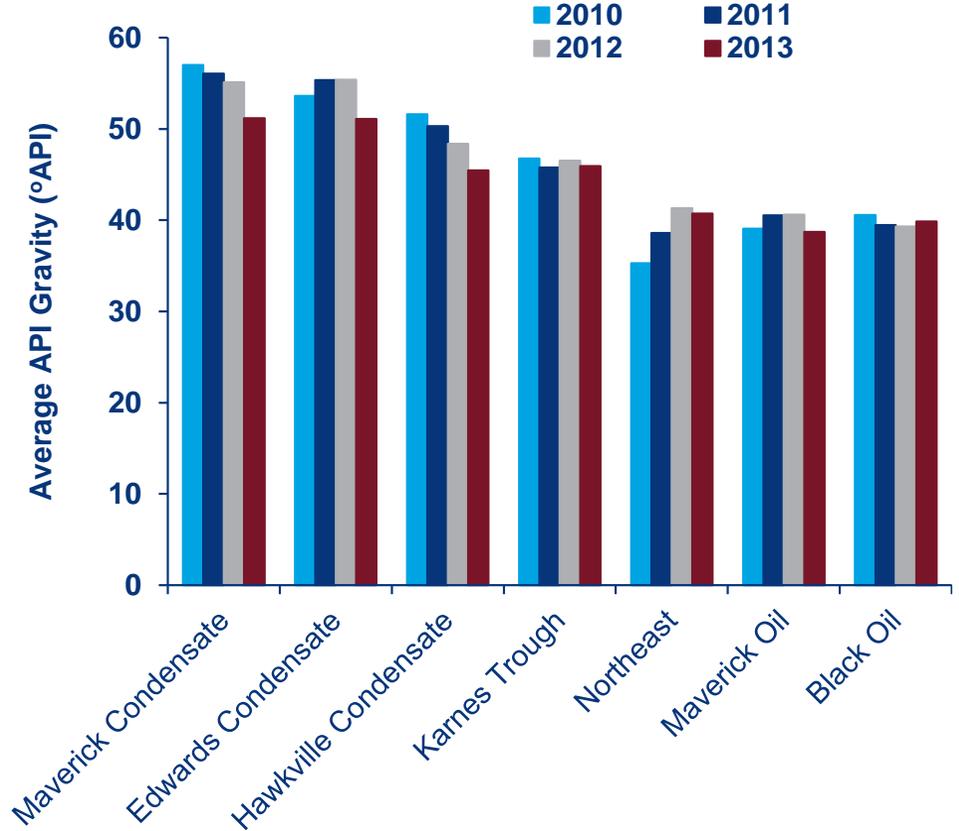
Source: Wood Mackenzie

# Operators respond to condensate pricing

## Commodity production forecast



## Commodity production forecast



Source: Wood Mackenzie

# Permian production set to grow

**Permian Basin Exhibits  
Unstoppable Growth**

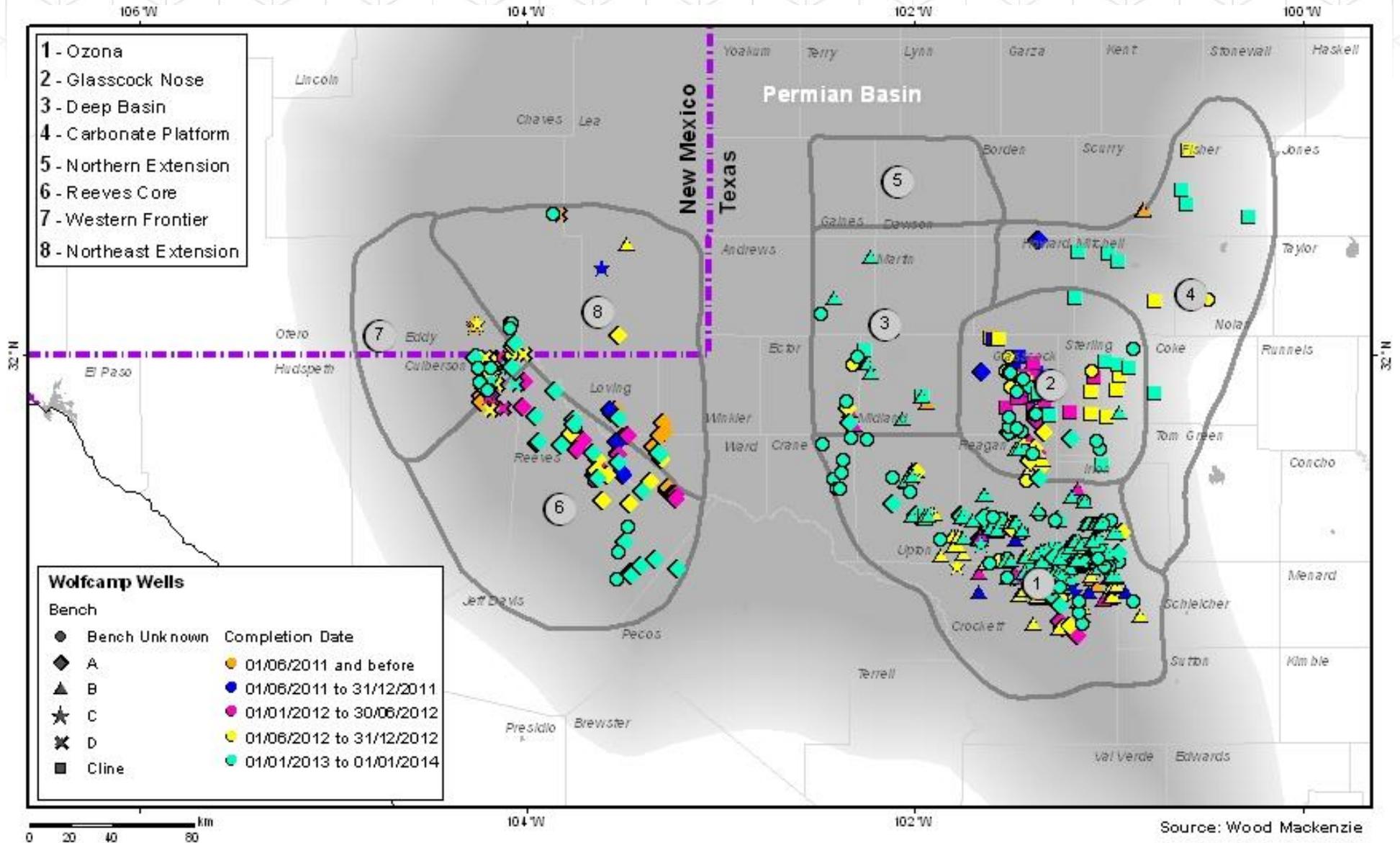
**Production from the region is set to  
increase by more than 1 million b/d over  
the next 5 years**

**Horizontal Drilling  
Accelerates In Permian  
Basin**

**Permian activity takes  
off in early 2014**

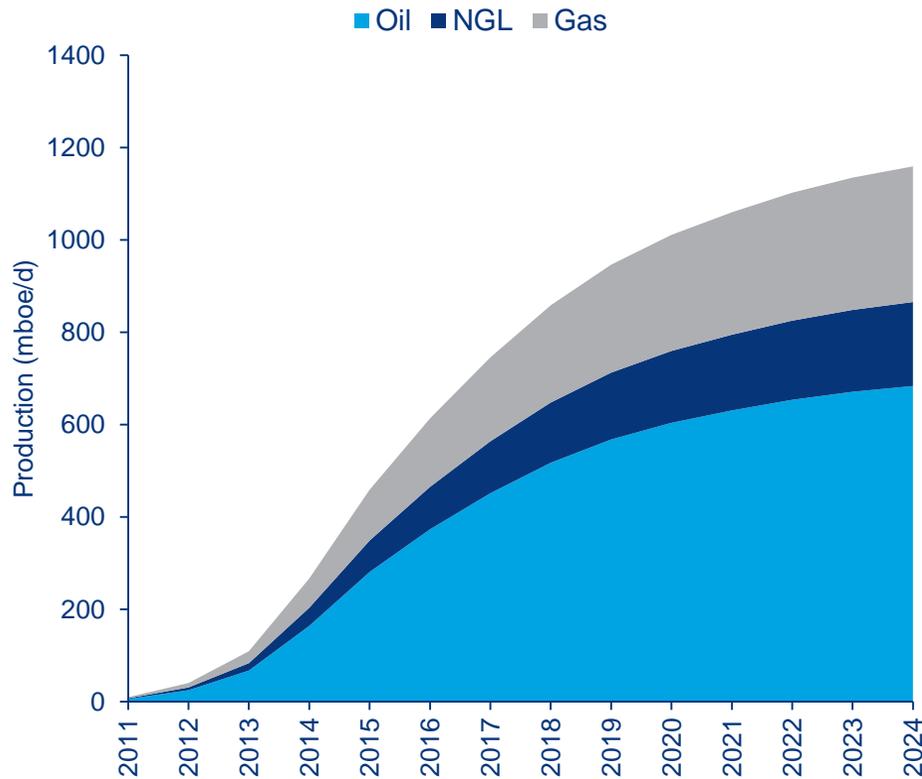
**Wolfcamp spending is on pace to  
surpass the Bakken by 2017**

# Wolfcamp completions over time

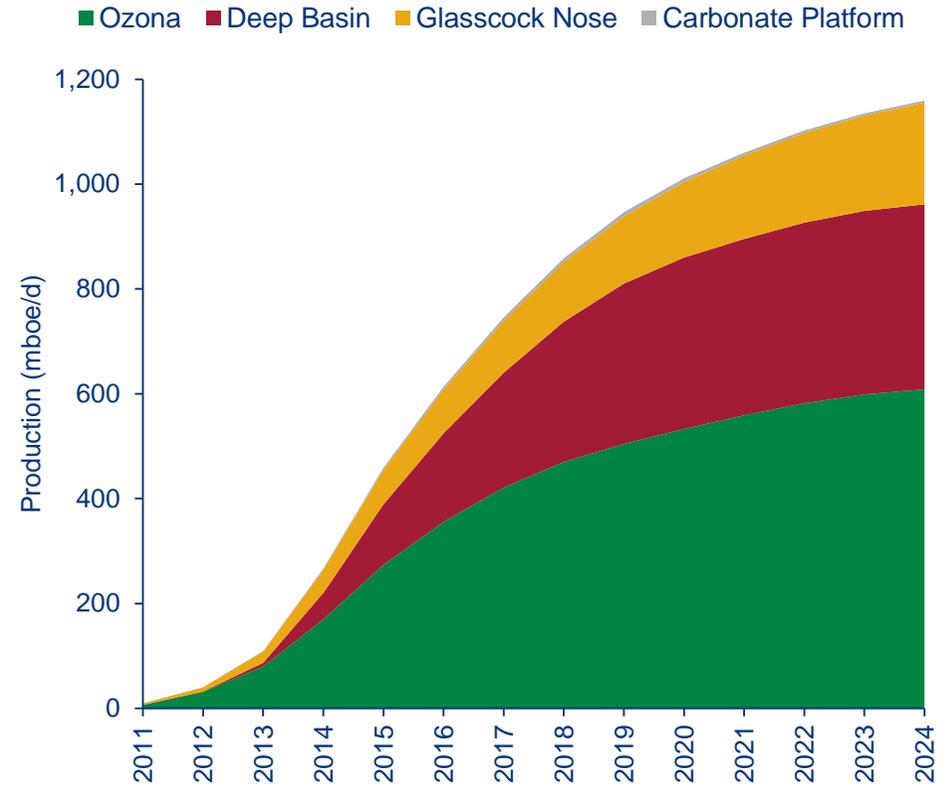


# Midland Wolfcamp production profile

## Commodity production forecast



## Sub-play production forecast



Source: Wood Mackenzie Upstream Service

# Infrastructure choking Marcellus growth

**MarkWest announces two new gas processing plants, bringing capacity to nearly 10 bcfd by 2016**

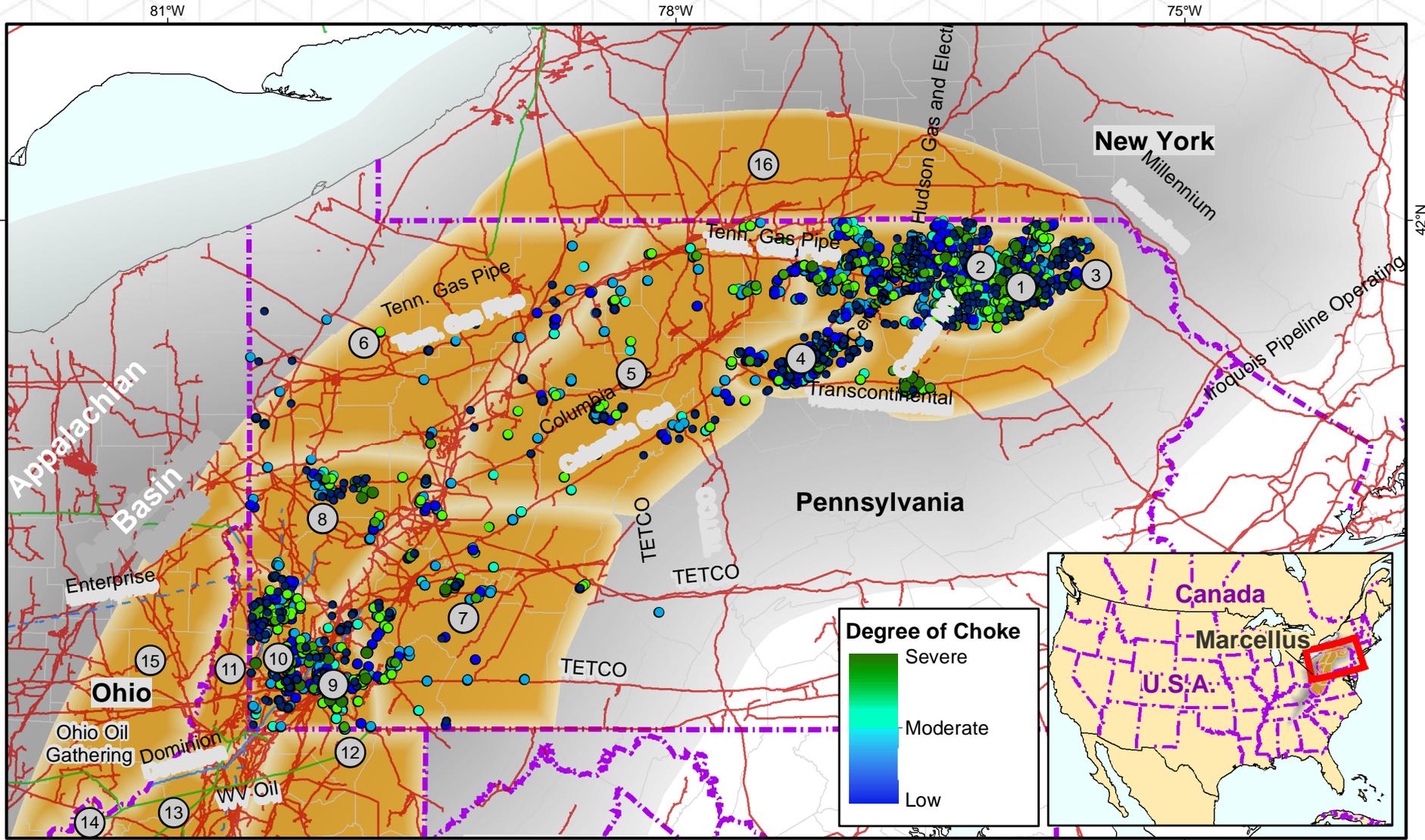
**It could take a couple of years to build enough pipelines to handle gas from the Marcellus and Utica**

**Chesapeake's Marcellus gas prices crumble in Q2 2014**

**Marcellus Shale gas production hits new milestone – 15 bcfd**

**Consol and Noble form Mid-Stream MLP to develop midstream assets for their Marcellus acreage**

# Well choking demonstrates infrastructure constraints in Marcellus



0 20 40 80 km

Source: Wood Mackenzie

# NDIC imposes new rules on Bakken flaring

**ONEOK Partners committed to reducing flaring in North Dakota**

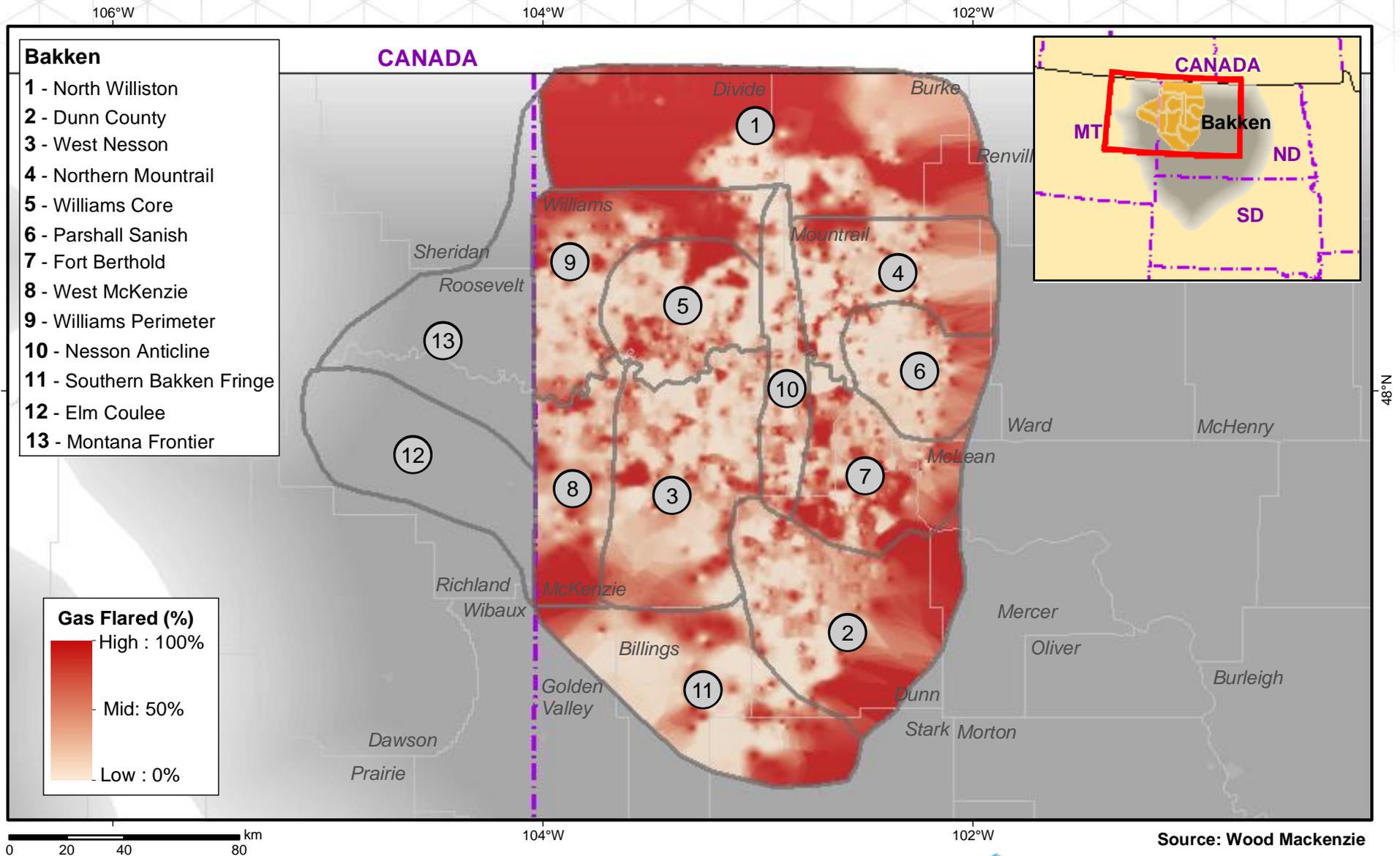
**Statoil tackles Bakken flaring with innovation**

**North Dakota flaring reduction policy may impact January production**

**North Dakota Orders Limits on Gas Flaring**

**Continental Pledges to Reduce Flaring in Bakken**

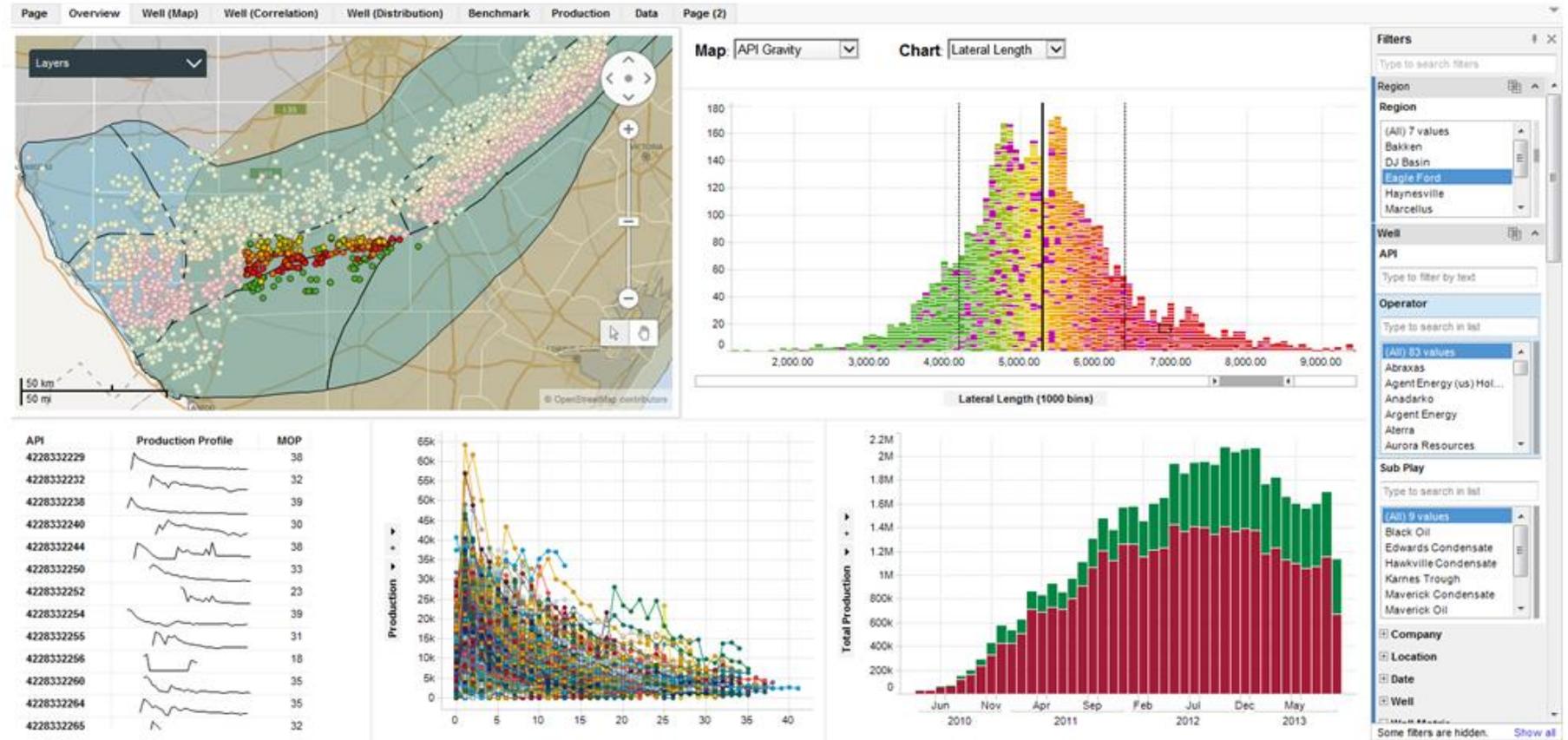
# North Dakota flaring is widespread across the play



# North America Well Analysis Tool

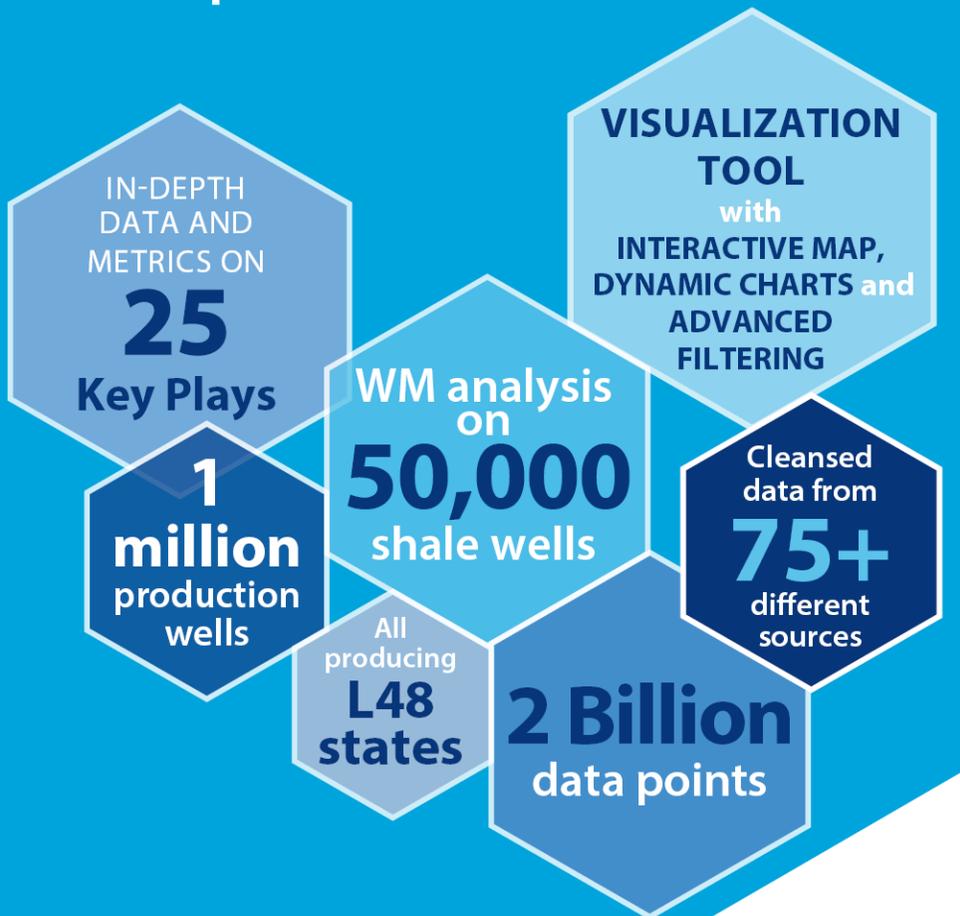
- ◆ A new analysis-friendly tool with historical operational, performance and analytic information **at the well level**

## Wood Mackenzie North America Well Analysis Tool



# North America Well Analysis Tool

Analyze the past performance of **wells, plays** and **companies** with our **closely screened** and **verified data**. Inform your future strategy, applying your own assumptions to **forecast performance**.



## With this single online resource, you can:



Analyze past performance of producing wells to screen the suitability of potential acquisitions



Benchmark plays and competitors to identify areas to improve business performance



Inform your own strategy by identifying successes and challenges your peers have experienced



Apply reliable historical well data to select analogues for use in benchmarking new ventures



Understand why different wells perform better than others by marrying production data with drilling and completion data



With the data, project operators' future drilling activity and estimate accompanying production performance, using your own internal assumptions

# Disclaimer

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