BHP Billiton Petroleum
Onshore US Shale Media Tour

J. Michael Yeager
Chief Executive, BHP Billiton Petroleum
8 November 2012
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BHP Billiton Petroleum overview

The US shale revolution

BHP Billiton’s shale position

Business plan highlights
One of BHP Billiton’s four largest businesses

% of FY12 Underlying EBIT

- Iron Ore: 23%
- Petroleum
- Base Metals
- Metallurgical Coal
- Energy Coal
- Manganese
- DSP
- SSM
- Aluminium
A world class, global Petroleum portfolio

Onshore US Shale
~270 Mboe/d
- Eagle Ford
- Permian
- Fayetteville
- Haynesville

Gulf of Mexico
~90 Mboe/d
- Shenzi
- Neptune
- Atlantis
- Mad Dog

International
~75 Mboe/d
- UK
- Trinidad and Tobago
- Algeria
- Pakistan

Australia
~215 Mboe/d
- North West Shelf
- Bass Strait
- Pyrenees
- Stybarrow
- Minerva

Production based on approximate FY13 expected net production rates.
A continuously growing business

BHP Billiton Petroleum net volumes
(thousands of barrels of oil equivalent per day)

2011 production rates – large caps
(thousands of barrels of oil equivalent per day)

Source: BHP Billiton analysis as at 30 June 2012.

A leader in safety performance

Conventional business safety performance (Total Recordable Incident Frequency)

- Best ever TRIF in the conventional business during FY12
- New Onshore US business significantly lagging in performance
- Goal is to be become safest in industry, offshore and onshore

1. International Association of Drilling Contractors.
   Source: BHP Billiton analysis.
A proven track record of outstanding operational performance

**Unit cash operating costs**  
(BHP Billiton net share, US$/boe)

- Peer group
- BHP Billiton

<table>
<thead>
<tr>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
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<tr>
<td>15</td>
<td>15</td>
<td>15</td>
<td>10</td>
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</table>

**Average drill time per 1,000 ft**  
(Deepwater Gulf of Mexico, subsalt, days)

- Others
- BHP Billiton

Source: Rushmore Associates’ The Rushmore Reviews, Scout Tickets and BHP Billiton analysis as of 16 April 2012.
Outstanding project execution

Shenzi
Gulf of Mexico

Pyrenees
Western Australia

Zamzama
Pakistan

Macedon
Western Australia
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Business plan highlights
An abundance of opportunity

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Source: US Energy Information Administration.
A unique combination of favourable characteristics working together

- Rig and services availability
- World’s largest gas market
- Low population density in development areas
- Extensive pipeline network
- Attractive geology
- Landowners as royalty owners
- Attractive fiscal terms
- Supportive regulators
Two technologies in combination

Horizontal drilling

Hydraulic fracturing
US shale rig counts in selected plays

Natural gas resources in the US are the largest in the world, driven by shale

Natural gas resource estimate (Tcf)

Unconventional | Conventional

Shale gas is a critical source of supply to meet growing US demand for natural gas

**US natural gas demand (Bcf/d)**
- Power
- Non power

**US natural gas supply (Bcf/d)**
- Net imports
- Conventional
- Associated
- Tight gas, CBM
- Shale

A major ramp-up in industry activity over the last three years, now focused on liquids

Total US onshore rig counts

Drilling permits issued in the Eagle Ford shale

Source: Baker Hughes.

Source: Railroad Commission of Texas.
US unconventional liquids production now forecast to surpass Brazil, Canada, and Iraq

- Onshore US unconventional production is expected to grow rapidly and contribute significantly to total US liquids production.

- In 2013 total US liquid production forecast to average 11.4 million barrels per day\(^1\).

- Saudi Arabia averages approximately 11.6 million barrels per day\(^1\).

Liquids production forecast (millions of barrels per day)

<table>
<thead>
<tr>
<th>Year</th>
<th>Brazil</th>
<th>Canada</th>
<th>Iraq</th>
<th>Onshore US unconventional</th>
<th>Total liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>2012</td>
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<td>2018</td>
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<td>2020</td>
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1. Petroleum Marketers Association of America.
Decades of declining US oil production reversed with growth in shale liquids

US crude oil production
(millions of barrels per day)

Source: US Energy Information Administration.

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Shale energy development brings major benefits to the US economy

**Employment**
- 1.75 million jobs created in the past few years and expected to account for 3 million jobs in 2020
- Wages 50% higher than the national average

**Investment and Tax Revenue**
- US$5.1 trillion investment and US$2.5 trillion in government revenues between now and 2035
- Nearly 2% of US GDP over the next 3 years

**Energy Security**
- 25% increase in domestic oil production in the last 4 years, driven primarily by shale oil
- Net oil imports expected to decrease 60% by 2020

Source: US Chamber of Commerce.
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Shale business model

- Offshore oil and gas offers strong returns on a full development basis but expansion capability is limited post investment.
- Shale developments offer strong returns on an individual well basis and are highly expandable in both the short and long term.
- Current shale drilling and completion technologies recover very low amounts of the hydrocarbons in place.
- Shale is ripe for a long term technology approach which few companies can execute.

<table>
<thead>
<tr>
<th>Offshore</th>
<th>Feature</th>
<th>Shale</th>
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<tbody>
<tr>
<td>Yes</td>
<td>Geologic risk</td>
<td>No</td>
</tr>
<tr>
<td>5+ years</td>
<td>1st production</td>
<td>Months</td>
</tr>
<tr>
<td>Years</td>
<td>Payback</td>
<td>Months</td>
</tr>
<tr>
<td>Limited</td>
<td>Flexibility</td>
<td>Significant</td>
</tr>
<tr>
<td>Limited</td>
<td>Expandability</td>
<td>Substantial</td>
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Strong positions in four large shale plays

- Fayetteville
- Haynesville (and Lower Bossier)
- Permian
- Black Hawk
- Hawkville Field
- Eagle Ford

Midland Basin
Delaware Basin

Liquids area
Dry gas area
We have significant positions in two of the largest oil field developments in the world

**Major field production growth 2012-2017**
(thousands of barrels of oil per day)

- Eagle Ford Shale
- Manifa, Saudi Arabia
- Permian Shale
- Bakken Shale
- West Qurna 2
- Kashagan
- Lula Phase 1, Brazil
- Christina Lake
- Rumaila N&S
- Upper Zakum
- West Qurna 1
- ACG
- Niobrara Shale
- Kearl Oil Sands

- Eagle Ford and Permian are forecast to be the two largest drivers of US oil production growth through 2017
- BHP Billiton’s position in these two fields is large
- Fields with very long lives such as these will have several tranches of technologies applied over decades
- There are very few in the world

Source: Morgan Stanley.
Our position in the Eagle Ford is among the largest and most valuable of all operators

NPV and acreage of Eagle Ford operators
(relative terms, BHP Billiton indexed to 1.0)

Source: WoodMackenzie, BHP Billiton indexed to 1.0 (October 2012).
The scale of our Eagle Ford opportunity is unprecedented for BHP Billiton Petroleum

Actual and estimated production
(BHP Billiton net share, Mboe/d)

Source: BHP Billiton analysis.
Permian offers a second shale liquids opportunity

US rig count by field and type
(week ending October 12, 2012)

- Industry operating almost 500 rigs in the Permian
- Decades of conventional drilling and production history
- Shale oil development in early stages – years behind Eagle Ford
- BHP Billiton holds over 400,000 acres in the Permian and is actively appraising for potential development

Source: Baker Hughes.
Our total dry gas resources exceed current annual US consumption

- Total dry gas resources in excess of 30 tcf
- Sufficient to supply US demand for natural gas for more than a year
- Drilling will continue for decades in both fields

**BHP Billiton resources by field**
(trillions of cubic feet)

- Fayetteville
- Haynesville

Source: Wood Mackenzie, BHP Billiton analysis.
The quality of our acreage in the Haynesville is among the best in industry.

- Largest acreage position in the core of field, where single well recoveries exceed 8 Bcf
- Many wells within our core acreage deliver recoveries in excess of 10 Bcf and some significantly higher
- Strong rates of return for single well investments, even at current prices
Haynesville and Fayetteville are among the lowest cost dry gas properties in the US.

Comparative ranking of break even wellhead cost for US unconventional gas plays, 2012 (gas focused unconventional plays only)

We are making significant progress towards further reducing development cost

Average Fayetteville rig release time (days)

Source: BHP Billiton analysis.
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Business plan highlights
Near-term activity focused on liquids

Gross operated rigs
(average rig count)

Source: BHP Billiton analysis.
US$6.5 billion capital program this fiscal year, focused on shale liquids

Development capital
(BHP Billiton net share, US$ millions)

Conventional
Shale

Source: BHP Billiton analysis.
Targeting combined 15% liquids growth in FY13, both shale and conventional

Volumes
(BHP Billiton net share, MMboe)

Source: BHP Billiton analysis.
Onshore US shale in summary

- An industry phenomenon that is transforming the US energy outlook
- BHP Billiton’s position is both large and valuable
- Leverages our strengths in project management, technical capability and operational excellence
- Matches BHP Billiton’s strategy and strong financial capability
- Major development program and production growth ahead
Looking forward

J. Michael Yeager
Chief Executive, BHP Billiton Petroleum
8 November 2012
Many examples of shale beginning to transform the US economy

Electric power: gas displacing coal at an unprecedented rate

Share of total US electric generation
Percentage of monthly MWh

0% 20% 40% 60%
01 03 05 07 09 11
Coal
Natural gas

Source: EIA.

Petrochemicals: US becoming a global low-cost powerhouse

Global ethylene cash cost, 2011
$/Mt

Mid E. N. Am S Am. SE Asia N. Am. NE Asia W Eu.
290 393 615 690 706 912 1020
With ethane at 45 c/gal With ethane at 77 c/gal

Source: CMAI, BHP Billiton analysis.

Steelmaking: energy costs dropping rapidly

Blast furnace fuel costs
$/Mt of hot metal

Coke only Partial gas injection
203 187
7 180
Coke Natural gas

Source: US Steel.

1. For a non-integrated steel mill using merchant coke.
2. Based on 65 bcfd average gas use and $4/MMBTU difference in gas prices relative to Western European levels.

• In April, gas surpassed coal in power generation
• During 2006-2011, the US had the largest reduction in GHG emissions of any country
• US ethylene production is now among the lowest cost in the world
• Low gas prices are reviving other industries such as steelmaking
• Lower gas prices brought on by shale amounts to a ~$100 billion annual savings to the US economy

1. Source: IEA.
2. Based on 65 bcfd average gas use and $4/MMBTU difference in gas prices relative to Western European levels.
Significant domestic gas demand upside

The US gas market is the largest in the world...

Gas demand, 2011 (Bcf/d)

Australia
Domestic  2.8
China  13.1
Global LNG  31.0
Europe  52.1
US  65.9

...but substantial untapped incremental domestic demand remains

Examples of potential incremental US gas usage (Bcf/d)

- Replacement of half of remaining coal-fired power: 15\(^1\)
- Fleet transport to CNG: 8
- Highway transport to Natural Gas Vehicles: 5
- Gas to Liquids: 2
- All light-duty vehicles to CNG: 40

1. Part of this replacement to be driven by projected environmental regulations.

Source: AEMO, Wood Mackenzie, BHP Billiton analysis.

Notes: CNG stands for Compressed Natural Gas vehicles.
LNG exports are opening new markets to US shale production

Multiple LNG export terminals proposed in the US Lower 48…

US lower 48 LNG proposed export capacity (Bcf/d)

- Under construction: 2.2
- With supply contracts: 4.1
- Others proposed: 13.1
- Total: 19.4

…which would give US gas access to a growing global market

Global LNG demand (Bcf/d)

Source: EIA; BHP Billiton analysis.

As technology improves, recoveries from shale fields will likely grow, extending their lives.

In conventional, technology has helped secure large increases in recoveries over time...

**Norway: Ekofisk recovery factor predictions**  
(percent of OOIP (100%=6,900 MMBO))


...and early indications are that a similar dynamic is likely to be present in shale

**US lower 48 initial shale gas production rates, by vintage year**  
(Mcf/day)

*Source: IHS CERA.*

**Canada: Turner Valley Rundle recoverable reserves**  
(MMBO)

*Source: Beliveau, D. et al. in “Reserves growth: enigma, expectation or fact?”, SPE paper 84144, 2003.*
BHP Billiton is well positioned in this transformative opportunity

- Enormous, potentially transformative opportunity for the oil and gas industry

- Requires large capital resources, deep technical skills, and operational discipline

- Fits squarely within our strategic focus

- Positioned for success with a proven track record of operational excellence, strong financial footing, and our long term approach