Three Rivers Through the Fog

FINANCIAL CRISIS OF 2008 & 2009 Oil Price Collapse

Big Companies Leaving the Permian
Cline is New Play
(Wolfcamp Shale Only Works in Southern Midland Basin)

Big Companies No Longer Leaving the Permian

Sinochem to Buy 40% of Pioneer Natural Venture
Three Rivers Through the Fog

BROC3: 2014

2014 OPEC Price War with US

Oil Floods Market

Feb 2016

Oil Px $26.14
“Peak Oil Demand”
Today’s Fog

OIL DEMAND

2010 2015 2020 2025 2030 2035

90 95 100 105 110

EFFICIENCY
History Lesson: “Peak Oil”

1956

M. King Hubbert, a geologist for Shell Oil, says that **U.S. oil production will likely peak between 1965 and 1970 and decline steadily thereafter.**

Others Have Made the Same Prediction Since.

- 1972 • Esso
- 1976 • UK Dept. of Energy
- 1979 • Shell
- 1981 • World Bank
- 1997 • JD Edwards
- 2000 • EIA
- 2003 • Shell
Hubbert’s Original Curve

- 1900-1920: Historical Production
- 1956: Original Prediction
- 1970: "Peak Oil"
- Expected Discoveries
- 1910-1940: Historical Production
- 1950-1970: Expected Discoveries
What Really Happened

“Peak Oil”

Original Prediction 1956

EXPECTED DISCOVERIES

HISTORICAL PRODUCTION

DECLINE
What Really Happened

“Peak Oil”

Original Prediction 1956

Expected Discoveries

Historical Production

Decline

SHALE
“It’s tough to make predictions – especially about the future.” (1)

(1) This quote was originally attributed to Karl Kristian Steincke
But Wait

7.6 Billion
On Earth in 2017
But Wait

7.6 Billion
On Earth in 2017

8.6 Billion
By 2030
But Wait

83 Million Per Year
At a global level, we are witnessing the most rapid expansion of the middle class the world has ever seen.

At the end of 2016, there were about 3.2 billion people in the global middle class. On average 160 million will join the middle class annually for the next 5 years.

160 Million

Each year for the next 5 years will be added to the global middle class.
At a global level, we are witnessing the most rapid expansion of the middle class the world has ever seen. Let's talk about a USA slide for perspective. Every 2 years, +1 USA slide for perspective. In 2016, there were 3.2 billion global middle-class members, an average of 160 million will join the middle class annually for the next 5 years. Each year for the next 5 years will be added to the global middle class.
88 percent of the next billion entrants into the middle class will be in Asia

By 2030, Asia could represent 2/3 of the global middle class population.

- 350m in China
- 380m in India
- 210m in rest of Asia
- 130m in rest of the world
88 percent of the next billion entrants into the middle class will be in Asia.

Region’s Energy Mix: 50% Coal

By 2030, Asia could represent 2/3 of the global middle class population.
88 percent of the next billion entrants into the middle class will be in Asia.

Region’s Energy Mix: 50% Coal

Lower Middle Class

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88 percent of the next billion entrants into the middle class will be in Asia.

Region's Energy Mix: 50% Coal

Lower Middle Class

By 2030, Asia could represent 2/3 of the global middle class population.

They need energy any way they can get it – cheaply and easily.
Only One Place to Get It

Oil Outlook to 2025 without a Pick-Up in Conventional Oil Investment

They Need Us

They Need Us

CURRENTLY PRODUCING FIELDS

We Are Not Going Out of Business.
Why Does Wall Street Hate Energy?
Not Care About
Why Does Wall Street Hate Energy?
S&P 500 Energy

5.3% Of S&P 500 Index

APACHE
ANADARKO
BAKER HUGHES
CABOT
CONOCOPHILLIPS
CHEVRON
CONCHO
DEVON
EOG
EQT

TECHNIPFMC
HALLIBURTON
HESS
HOLLYFRONTIER
KINDER MORGAN
MARATHON PETROLEUM
MARATHON OIL
NOBLE
NEWFIELD
NATIONAL OILWELL VARCO

ONEOK
OCCELLIDENTAL
PHILLIPS 66
PIONEER
SCHLUMBERGER
VALERO
THE WILLIAMS COMPANIES
CIMAREX
EXXON MOBIL
### S&P 500 Energy

- **5.3%** Of S&P 500 Index
- **1.7%** Upstream Growth

<table>
<thead>
<tr>
<th>Company</th>
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<td>APACHE</td>
<td>ANADARKO</td>
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<td>CABOT</td>
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S&P 500 Energy

5.3% Of S&P 500 Index

1.7% Upstream Growth

We Are Immaterial.
We Have Lost Money

<table>
<thead>
<tr>
<th>Year</th>
<th>S&amp;P</th>
<th>Energy</th>
<th>Outcome</th>
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<tbody>
<tr>
<td>2012</td>
<td>16.0%</td>
<td>4.6%</td>
<td>Worse</td>
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<tr>
<td>2013</td>
<td>32.4%</td>
<td>25.1%</td>
<td>Worse</td>
</tr>
<tr>
<td>2014</td>
<td>13.7%</td>
<td>&lt;7.8%&gt;</td>
<td>Worse</td>
</tr>
<tr>
<td>2015</td>
<td>1.4%</td>
<td>&lt;21.1%&gt;</td>
<td>Worse</td>
</tr>
<tr>
<td>2016</td>
<td>12.0%</td>
<td>27.4%</td>
<td>Better</td>
</tr>
<tr>
<td>2017</td>
<td>21.8%</td>
<td>&lt;1.0%&gt;</td>
<td>Worse</td>
</tr>
<tr>
<td>2018</td>
<td>&lt;4.4%&gt;</td>
<td>&lt;18.1%&gt;</td>
<td>Worse</td>
</tr>
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6 Out of 7 Years
If You Are Wall Street

- BIG
  - 20% of S&P 500

- STRONG
  - Beat Energy by 10x for the Past 7 Years

- SEXY

TECHNOLOGY

- Apple
- Amazon
- Facebook
- Google
If You Are Wall Street

- Small
- Weak
- Boring

EOM  COP  CLR  HES

ENERGY
Energy Investors Want

- Growth Within Cash Flows
- Return of Capital – Dividends or Share Buybacks
- Consolidation to Achieve Economies of Scale
What Does This Mean To YOU?
It Depends Who You Are
Public Companies
Public Companies

HAVES

- Drill Tier 1 Acreage
- Rationalize Tier 2 Acreage
- Selective Consolidation

You’re fine!
Public Companies

- Drill Tier 1 Acreage
- Bolt On Additional Tier 1 Acreage
- Consolidation
Public Companies

HAVE-NOTS – Survive!

- No Premium Mergers
Public Companies
What is Tier 1 Acreage?

Tier 1 = 50% Well IRRs at $60 Oil Excluding Land Cost
Last 12 Months of Permian Wells
(Approximately 3700 Wells)

3700 Wells Last Year
Tier 1 Acreage

Last 12 Months of Permian Wells
(Approximately 3700 Wells)

3700 Wells Last Year

Assumptions:

Midland Basin
D&C Costs:
$900/Lateral Ft
Tier 1 Acreage

Last 12 Months of Permian Wells
(Approximately 3700 Wells)

3700 Wells Last Year

Assumptions:

Midland Basin
D&C Costs: $900/Lateral Ft

Delaware Basin
D&C Cost: $1,250/Lateral Ft.
Last 12 Months of Permian Wells
(Approximately 3700 Wells)

3700 Wells Last Year

Assumptions:

- Midland Basin D&C Costs: $900/Lateral Ft
- Delaware Basin D&C Cost: $1,250/Lateral Ft.
- Lifting Costs: $10/Barrel
Tier 1 Acreage

Last 12 Months of Permian Wells
(Approximately 3700 Wells)

Expected Net Cash Flows

Percentage of Wells

Tier 1
50%+IRR
Tier 1 Acreage

Last 12 Months of Permian Wells
(Approximately 3700 Wells)

- **Tier 1**: 50%+ IRR
- **Tier 2**: 30%–49% IRR

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<thead>
<tr>
<th>Percentage of Wells</th>
<th>Tier 2</th>
<th>Tier 1</th>
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<tbody>
<tr>
<td>10%</td>
<td></td>
<td></td>
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<tr>
<td>20%</td>
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<tr>
<td>90%</td>
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<tr>
<td>100%</td>
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Expected Net Cash Flows
Tier 1 Acreage

Last 12 Months of Permian Wells
(Approximately 3700 Wells)

- **Tier 1**: 50%+ IRR
- **Tier 2**: 30%–49% IRR
- **Tier 3**: 10%–29% IRR
- **Uneconomic**: <0%–9% IRR

**Expected Net Cash Flows**

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If You Are Private Equity Backed

PE Assets That Can Be Sold As Tier 1 Assets

TIER 1
You’re going to be fine – keep up the good work.
If You Are Private Equity Backed

PE Assets That Can Be Sold As Tier 1 Assets

TIER 1
You’re going to be fine – keep up the good work.

TIER 2
Implement a new business model
Tier 2 Assets – New Model

Old Model
Buy, Build, Flip

Initial Purchase

Prospecting

Equity Deployed ($Million)

Years

1 4 6

Tier 2 Assets – New Model

Initial Purchase

Prospecting

Equity Deployed ($Million)

Years

1 4 6
Tier 2 Assets – New Model

Equity Deployed ($Million)

Years

0 1 2 3 4 5 6

Old Model
Buy, Build, Flip

Traditional PE Sales Point

Initial Purchase

Proof of Concept

Prospecting

1 4 6
Tier 2 Assets – New Model

**Old Model**
Buy, Build, Flip

**New Model**
Buy, Drill to Cashflow Neutral, Flip

- **Prospecting**
- **Initial Purchase**
- **Proof of Concept**
- **Initial Development** 18 – 24 Months
- **Full Development**
- **New PE Sales Point**
  - Cash Flow Neutral
Newco

Tier 2 Conclusion

- Expect Longer Hold Periods
- Expect Lower ROIs
- Bigger Teams – Must Be Able to Drill Wells Efficiently
- Smash Co. May Become More Common
Tier 2 Conclusion

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- Bigger Teams – Must Be Able to Drill Wells Efficiently
- Smash Co. May Become More Common
PDP / YIELD INVESTORS

- Haynesville buys Ontario Teachers
- Fayetteville buys Income Fund
- Utica buys Canadian Pension Plan
- Eagle Ford buys Income Fund
- Haysnesville buys Ontario Teachers
PDP / YIELD INVESTORS

BAKKEN
- Vantage
- QEP
- SPAC

BUYS

FAYETTEVILLE
- SPAC
- Income Fund

HAYNESVILLE
- ATRON
- QEP
- Investor

BUYS

ONTARIO TEACHERS

UTICA
- CANADIAN PENSION PLAN

BUYS

EAGLE FORD
- VEGA
- SMER
- SPAC

BUYS

CANADIAN PENSION PLAN

BUYS

INCOME FUND
PDP / YIELD INVESTORS

- **BAKKEN**
  - Buys
  - QEP
  - Spac

- **SAN JUAN**
  - Buys
  - ConocoPhillips
  - Private

- **EAGLE FORD**
  - Buys
  - Venoco
  - Spac

- **FAYETTEVILLE**
  - Buys
  - Haynesville
  - Income Fund

- **UTICA**
  - Buys
  - Canadian Pension Plan

- **HAYNESVILLE**
  - Buys
  - QEP

- **SAN JUAN**
  - Buys
  - Eagle Ford
  - Income Fund

- **SAN JUAN**
  - Buys
  - Canadian Pension Plan
  - Ontario Teachers
Conclusion

- Best Deals Come Out of the Fog
Conclusion

- Best Deals Come Out of the Fog
- Change is Inevitable
Conclusion

- Best Deals Come Out of the Fog
- Change is Inevitable
- Is the Party Over?
Conclusion

- Best Deals Come Out of the Fog
- Change is Inevitable
- Is the Party Over?

ABSOLUTELY NOT
One More Thing
Trouble brewing
Private Equity

Private Equity Investor
- Must beat the S&P 500

Wall Street Investor
- Must Beat the S&P 500
Private Equity Investor

- Must beat the S&P 500
- Wants to be a **Social Investor** – Hydrocarbons are out of Favor

Wall Street Investor

- Must Beat the S&P 500
- Only Cares about Making Money
Private Equity

- Must Beat the S&P 500
- Only Cares about Making Money
- Can Have Short-Term Thesis

Private Equity Investor

- Must beat the S&P 500
- Wants to be a Social Investor – Hydrocarbons are out of Favor
- Has Longer Hold Periods

Wall Street Investor

- Must Beat the S&P 500
- Only Cares about Making Money
- Can Have Short-Term Thesis