

# Long-term energy opportunities in an era of cheap oil and gas

Cosmin Laslau, Ph.D.  
*Senior Analyst*

Andrew Soare  
*Senior Analyst*

**New Energy Track**  
June 16<sup>th</sup>, 2015



**lux executive summit**  
Amsterdam • June 15-16, 2015

# The elephant in the room: Cheap oil and gas vs. new energy

COMMODITIES

## Oil Price at \$70 a Barrel Would Likely Trigger Cut in OPEC Output Ceiling

OPEC Officials Don't

## Oil Drops Below \$60 After Saudis Question Need to Cut

By Mark Shenk - Dec 11, 2014

## OPEC price war in Asia intensifies as oil falls below \$50

Mon, Jan 12 2015

By Florence Tan and Henning Gloystein

SINGAPORE (Reuters) - Even as Saudi Arabia and other OPEC members appear united in their refusal to cut output, Asian oil markets are becoming locked in an increasingly fierce price war.

2009 as Saudi Arabia

**BloombergBusiness**

## Goldman Sachs Sees Brent Crude Oil at \$55 a Barrel in 2020

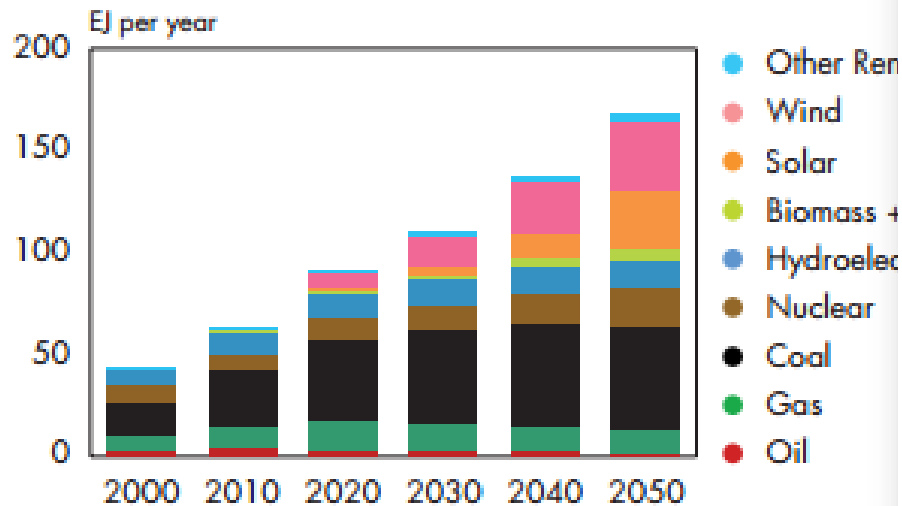
May 18, 2015

# The energy industry has a history of diversification

## World Energy Consumption

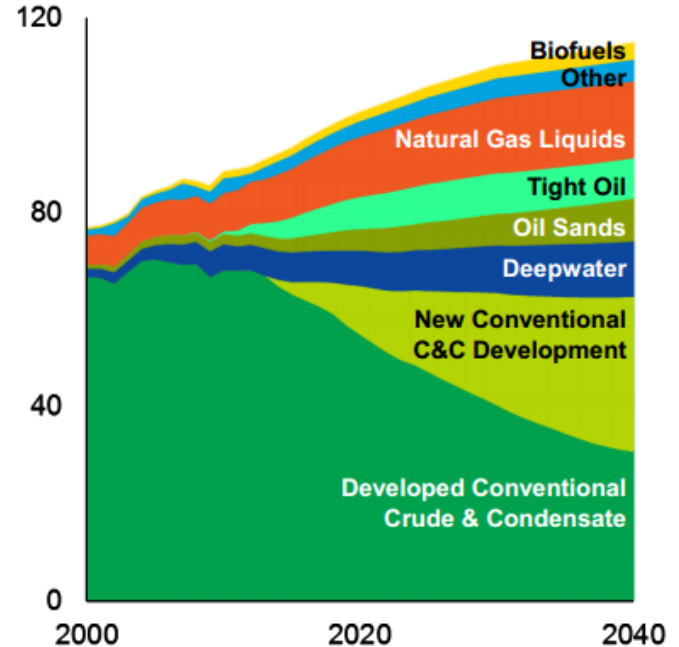


## Final energy consumption of electricity



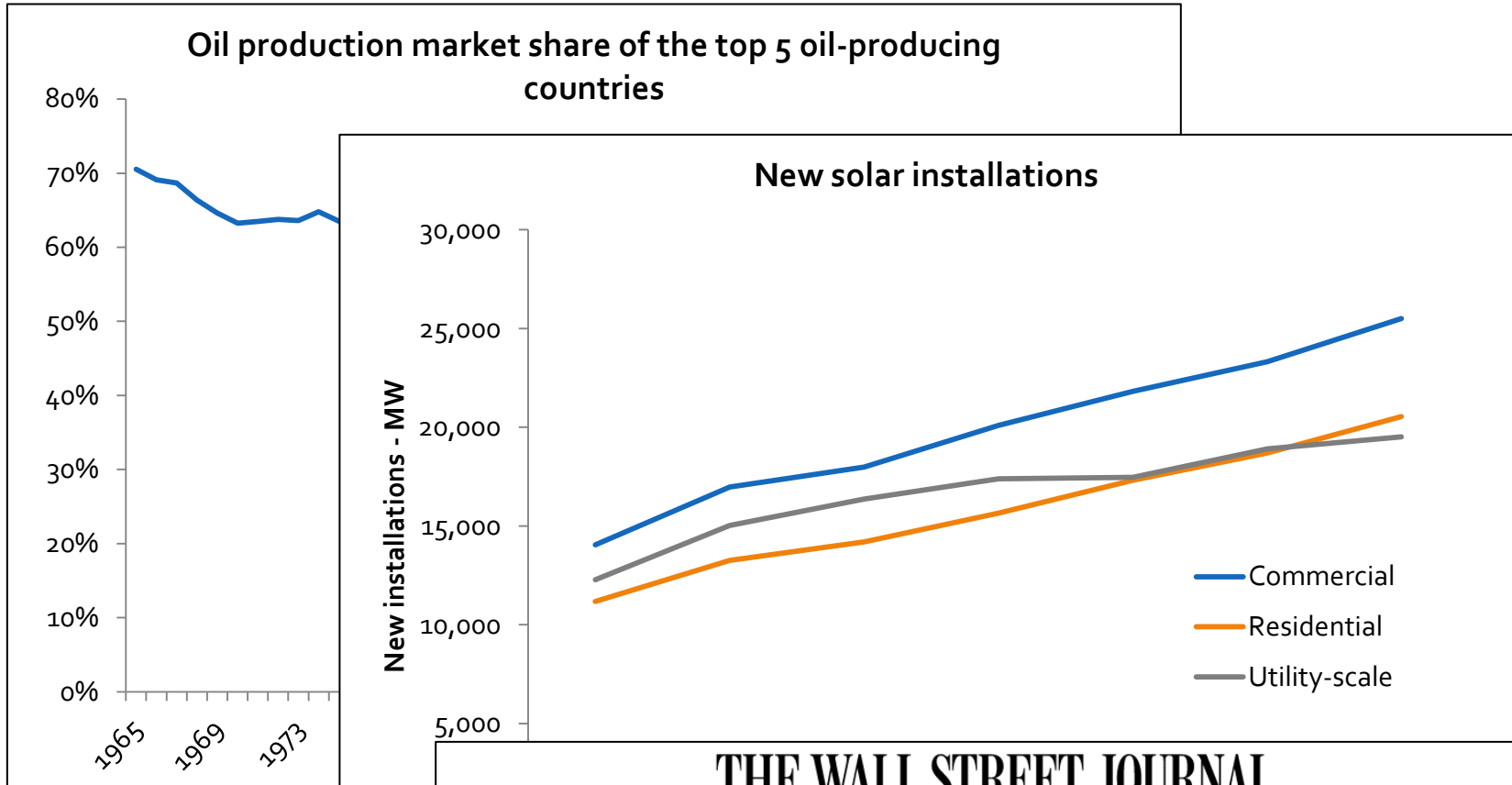
## Liquids Supply

### World Supply by Type MBDOE



ExxonMobil

# The energy industry is becoming more *distributed*



**THE WALL STREET JOURNAL.**  
EUROPEAN BUSINESS NEWS

**e-on** **E.ON to Split Into Two Companies**  
German Utility Says One Will Focus on Renewables, the Other on Conventional Energy

# Scouting for technologies to enable distributed and diverse, while focusing on the efficiency roadmap

✓ Distributed

✓ Diverse

ENERGY 2/11/2015 @ 5:43PM | 7,046 views

## OPEC Calls The Tune And U.S. Shale Producers Follow -- By Cutting Production

[+ Comment Now](#) [+ Follow Comments](#)

**By Jim Krane and Mark Agerton**

What happens when Saudi Arabia, the world's swing producer of oil, rejects its traditional market-balancing role?

Time

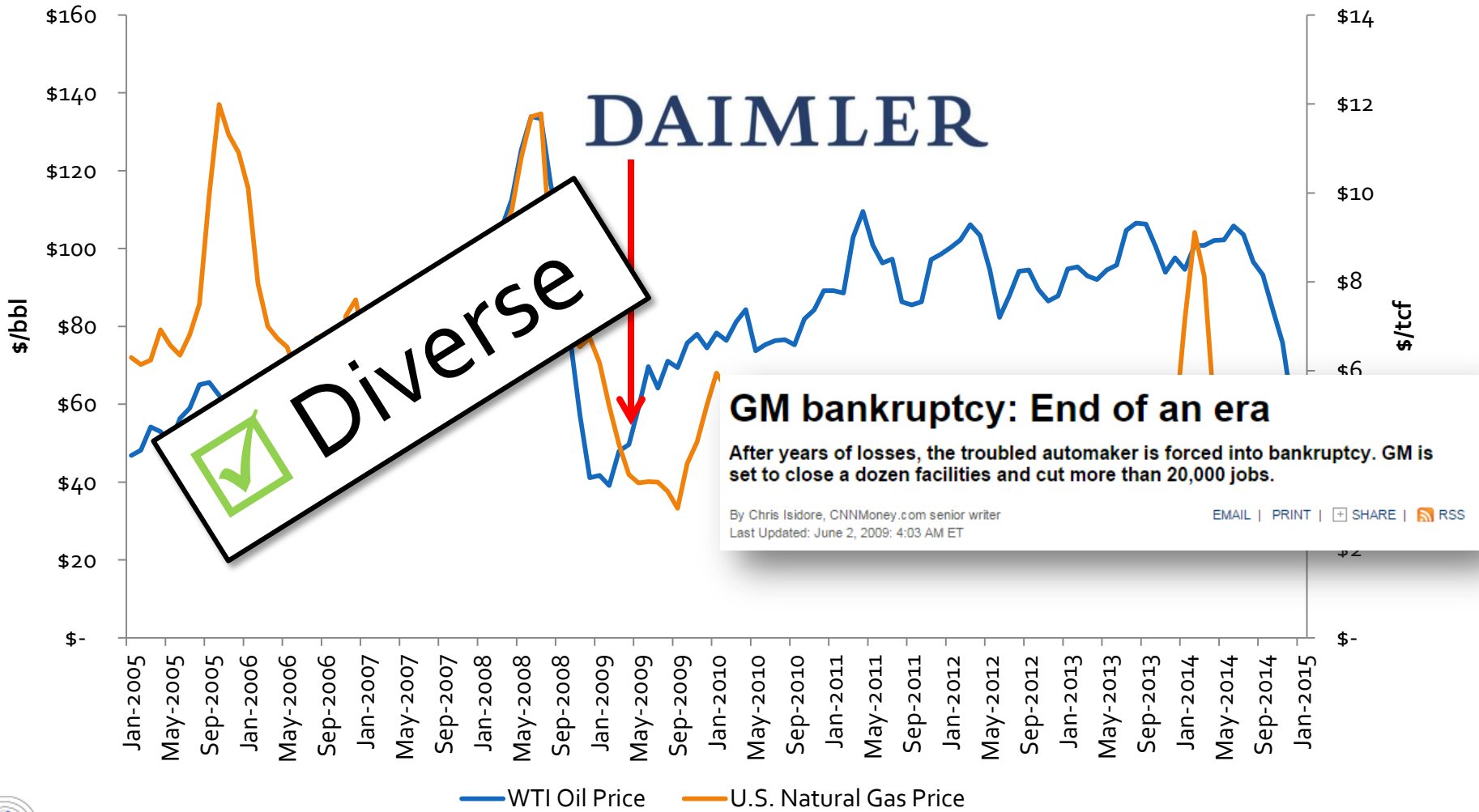
# Agenda

- Cheap oil and gas should not distract from the major evolutions of the energy industry

- Finding technologies to make the energy value chains more efficient, distributed, and diverse

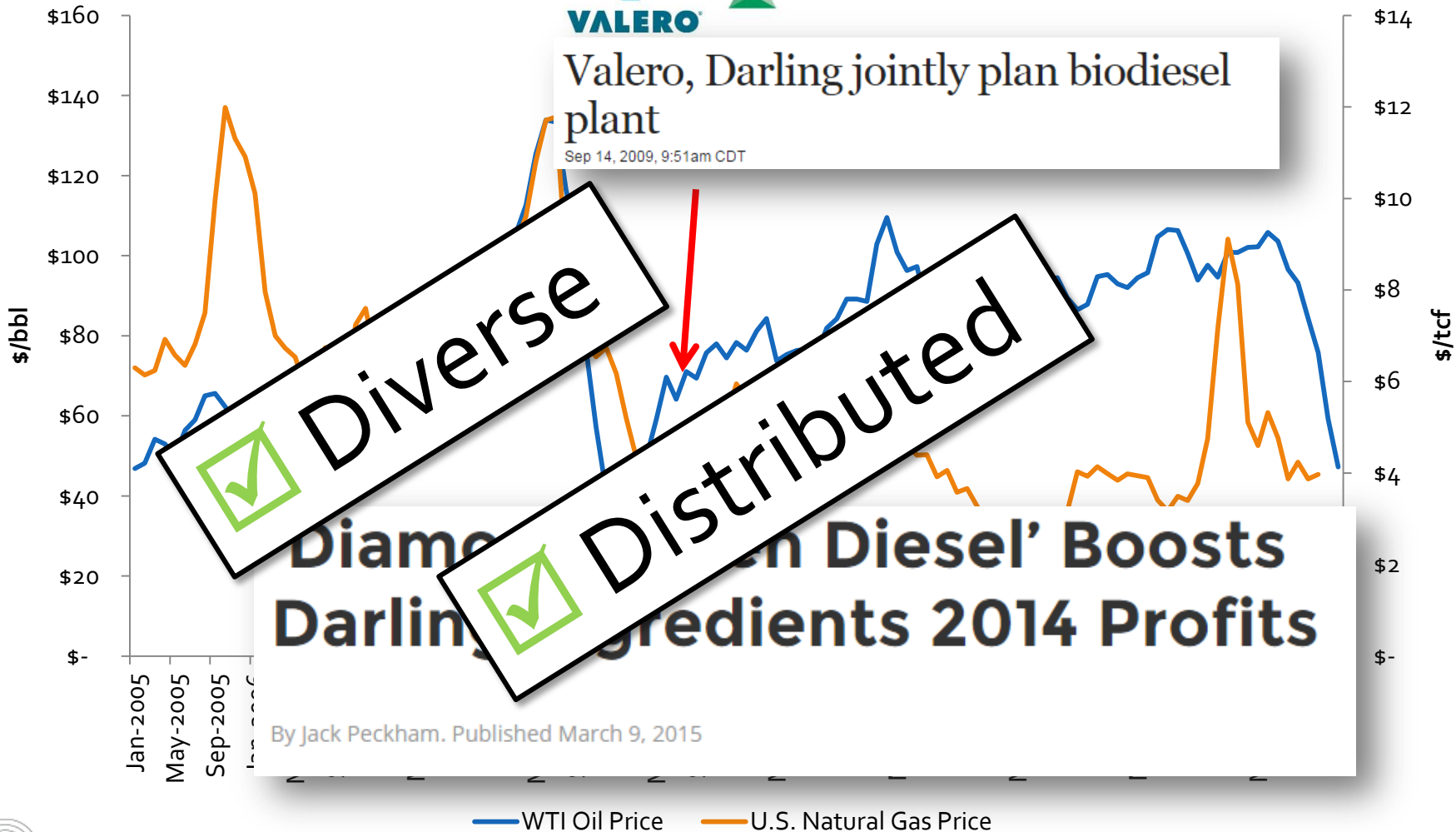
- Creative partnerships unlock opportunity today

# Daimler invested in Tesla when oil was cheap



**GM bankruptcy: End of an era**  
 After years of losses, the troubled automaker is forced into bankruptcy. GM is set to close a dozen facilities and cut more than 20,000 jobs.  
 By Chris Isidore, CNNMoney.com senior writer  
 Last Updated: June 2, 2009: 4:03 AM ET  
[EMAIL](#) | [PRINT](#) | [SHARE](#) | [RSS](#)

# Valero and Darling formed JV for renewable diesel when oil was cheap





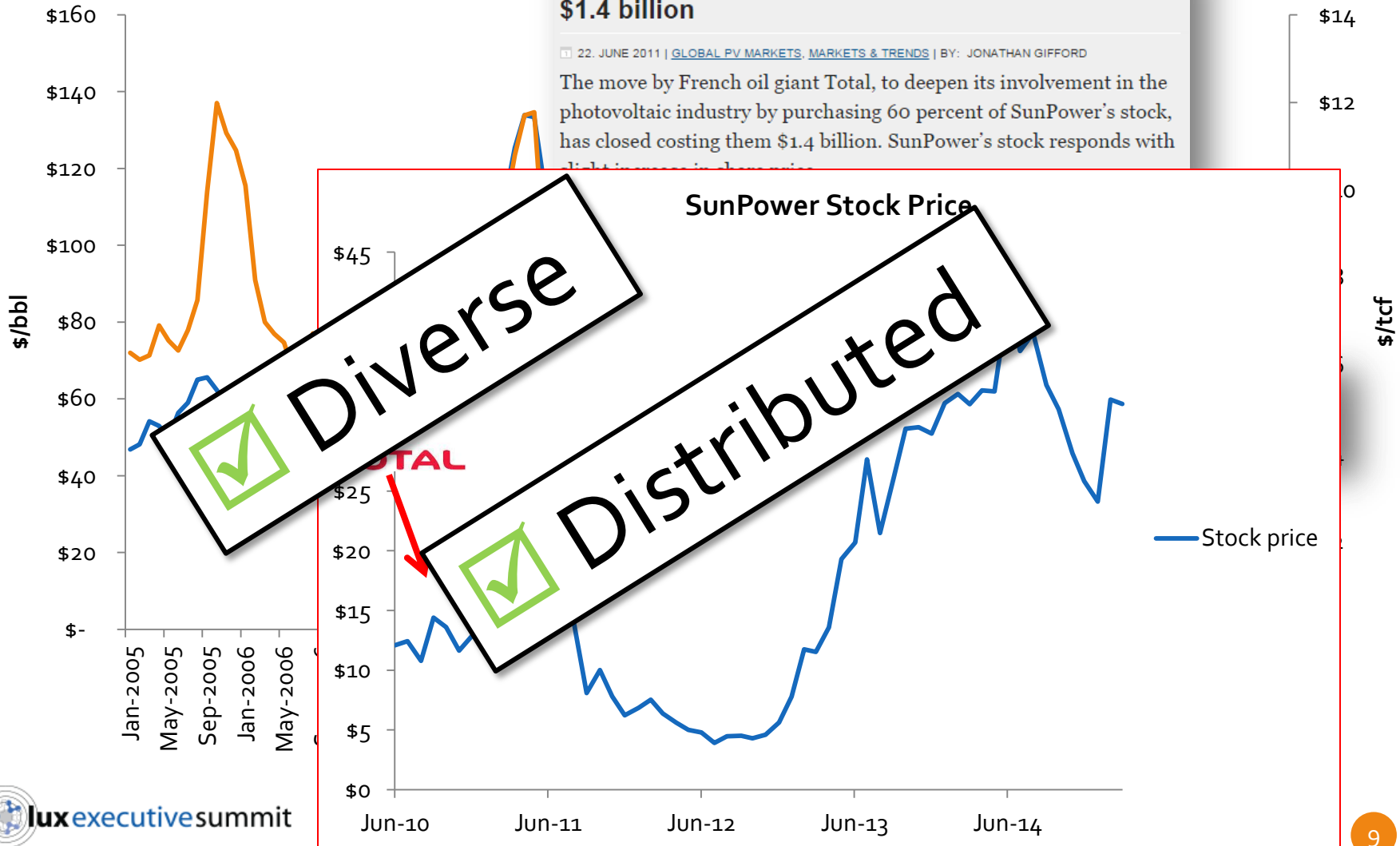
# Total acquired 60% of SunPower as oil prices were rebounding and gas was cheap



Total's SunPower 60 percent acquisition costs \$1.4 billion

22. JUNE 2011 | GLOBAL PV MARKETS, MARKETS & TRENDS | BY: JONATHAN GIFFORD

The move by French oil giant Total, to deepen its involvement in the photovoltaic industry by purchasing 60 percent of SunPower's stock, has closed costing them \$1.4 billion. SunPower's stock responds with



# Tracking innovative energy technologies

## Oil & Gas

## Electricity

Distributed?

Diverse?

Efficiency  
roadmap

Distributed?

Diverse?

Efficiency  
roadmap

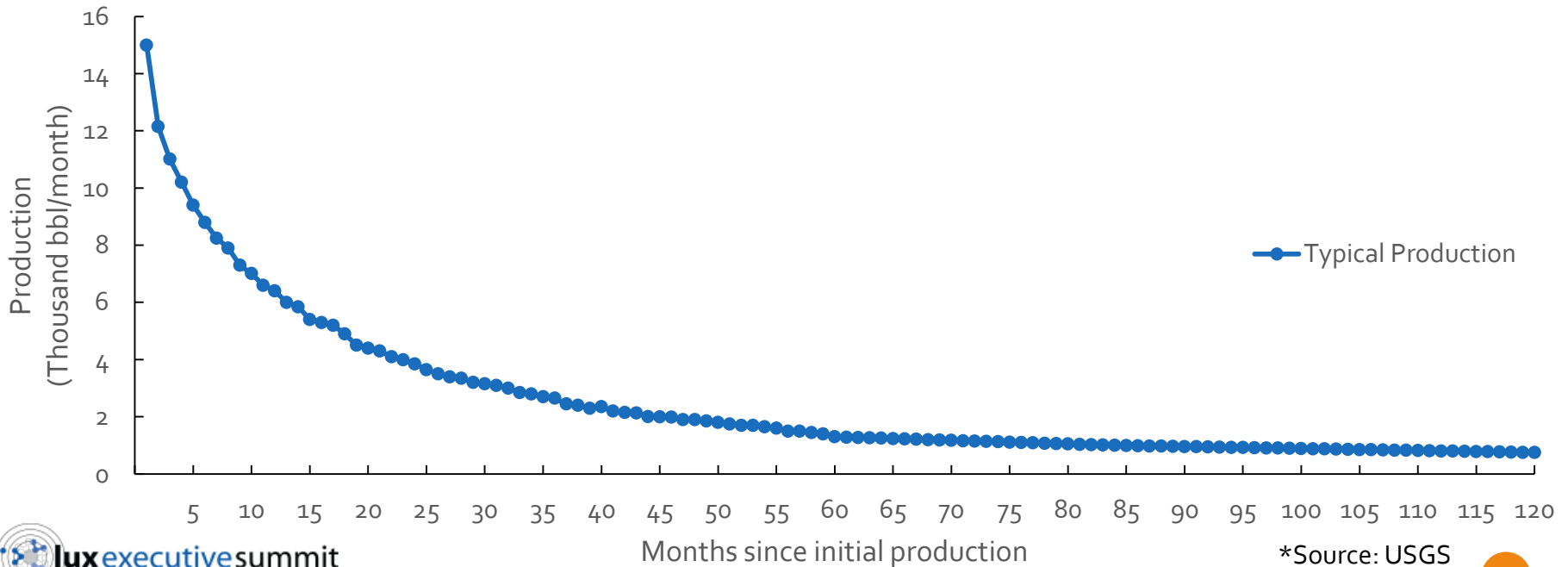
Opportunities

Opportunities

# Improving recovery factors can reduce costs at a typical Bakken well

Base Case  
(\$/bbl)

\$52



# Improving recovery factors can reduce costs at a typical Bakken well

Base Case  
(\$/bbl)

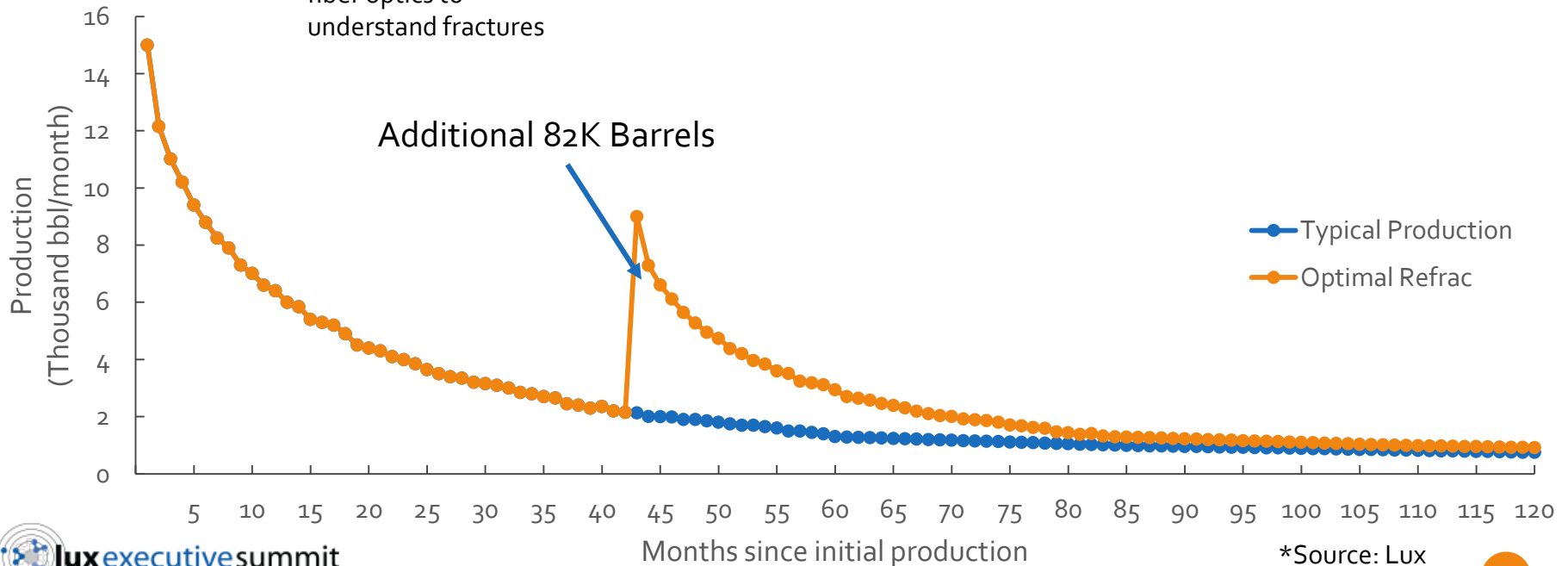


\$52

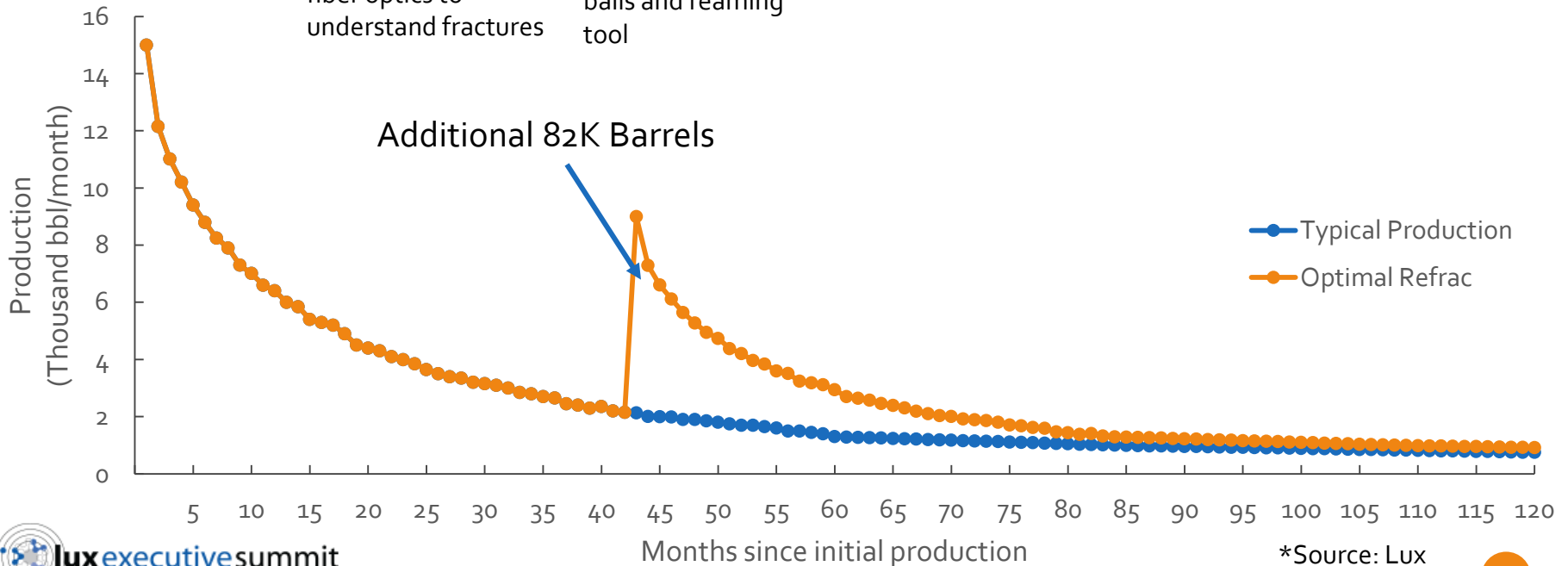
\$50

Microseismic and  
fiber optics to  
understand fractures

Additional 82K Barrels

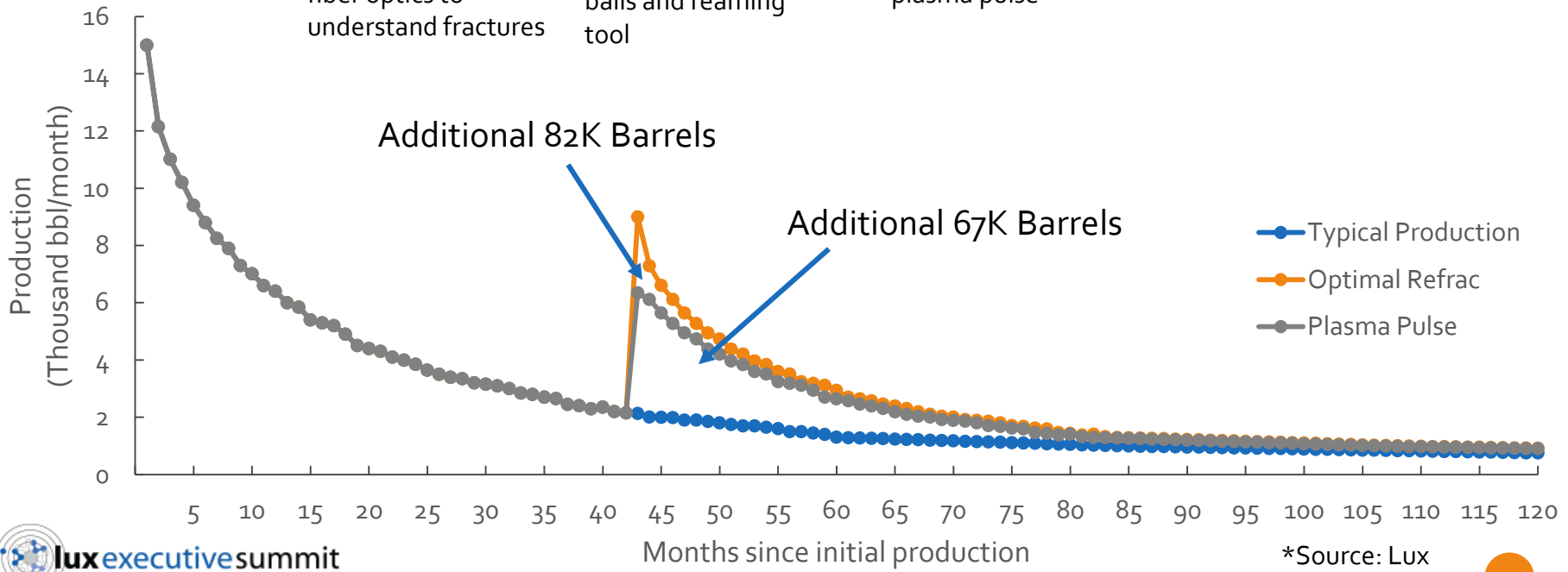


# Improving recovery factors can reduce costs at a typical Bakken well



# Improving recovery factors can reduce costs at a typical Bakken well

<p>Base Case (\$/bbl)</p>	 	 	
<p>\$52</p>	<p>\$50</p> <p>Microseismic and fiber optics to understand fractures</p>	<p>\$49</p> <p>Optimization w/ frac balls and reaming tool</p>	<p>\$44</p> <p>Stimulation with plasma pulse</p>



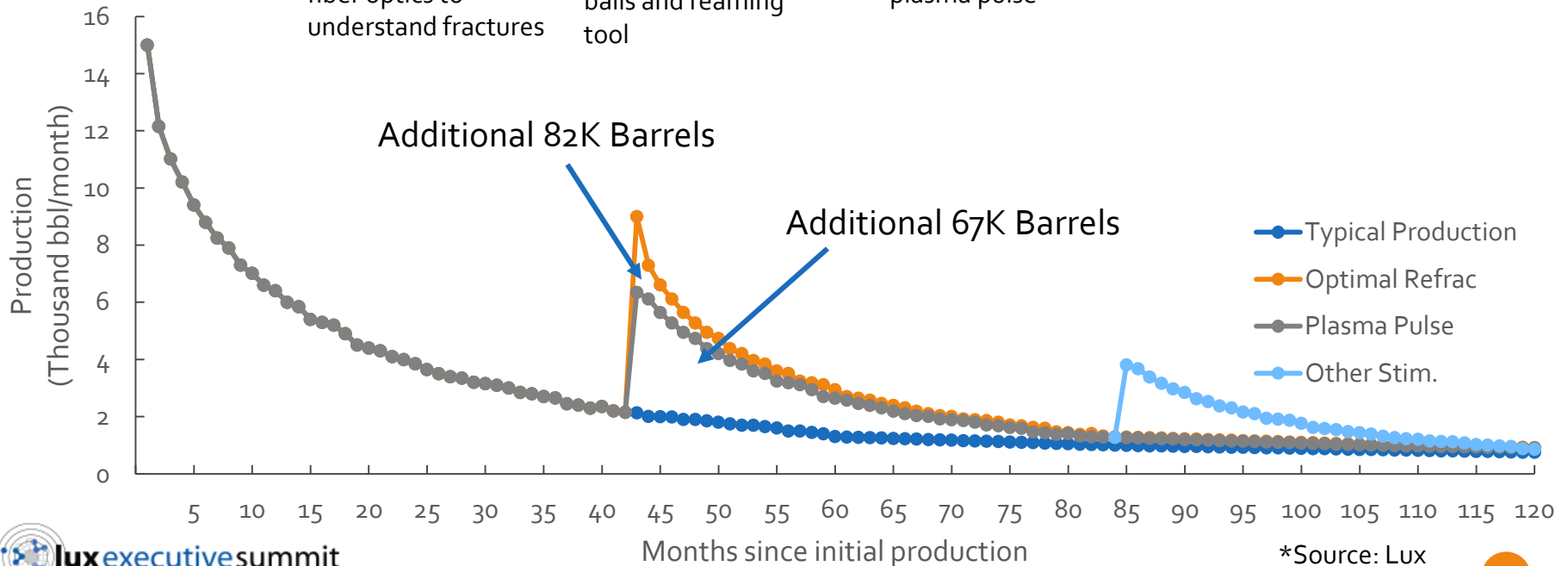
# Improving recovery factors can reduce costs at a typical Bakken well

Base Case (\$/bbl)	 	 	
\$52	\$50	\$49	\$44

Microseismic and fiber optics to understand fractures

Optimization w/ frac balls and reaming tool

Stimulation with plasma pulse



# Tracking innovative energy technologies

Oil & Gas

Electricity

Distributed?

Diverse?

Efficiency  
roadmap

Distributed?

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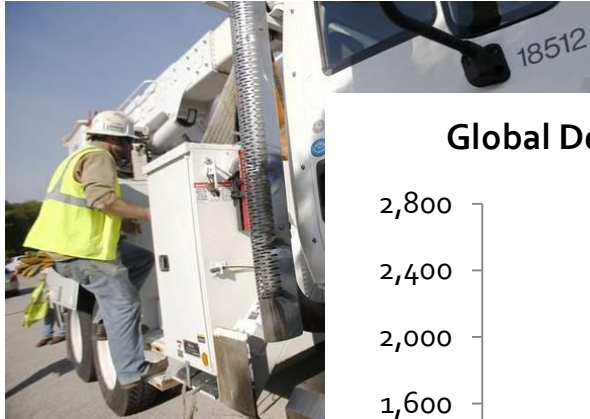
Improving recovery  
factors



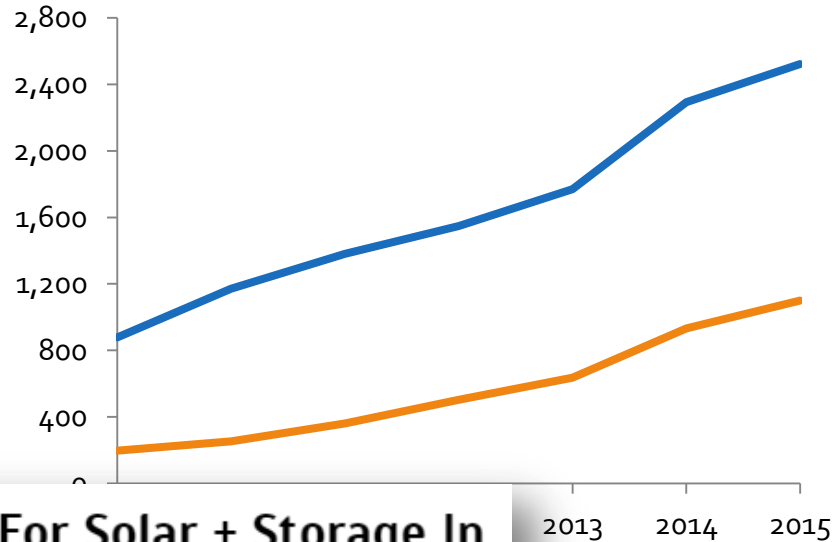
Opportunities



# Stationary energy storage is necessary for a diverse electricity grid



Global Deployed Stationary Energy Storage



## SunPower & Sunverge Team Up For Solar + Storage In US & Australia

Thursday, December 18, 2014 10:12

## SunEdison Adds Batteries to Its Arsenal with Acquisition of Solar Grid Storage

Meg Cichon, Associate Editor, RenewableEnergyWorld.com

March 05, 2015 | 2 Comments

# Tracking innovative energy technologies

## Oil & Gas

## Electricity

Distributed?

Diverse?

Efficiency  
roadmap

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factors



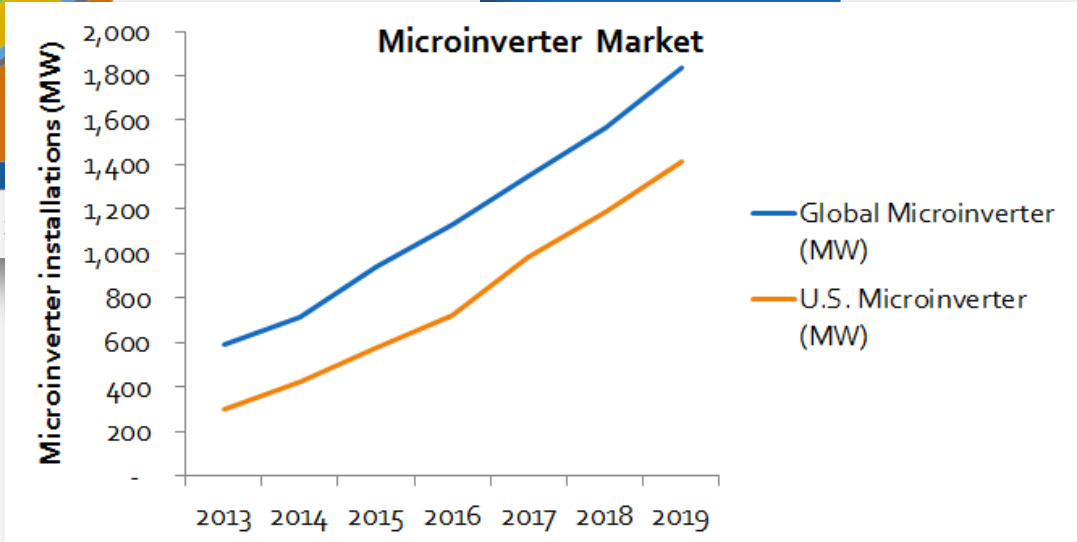
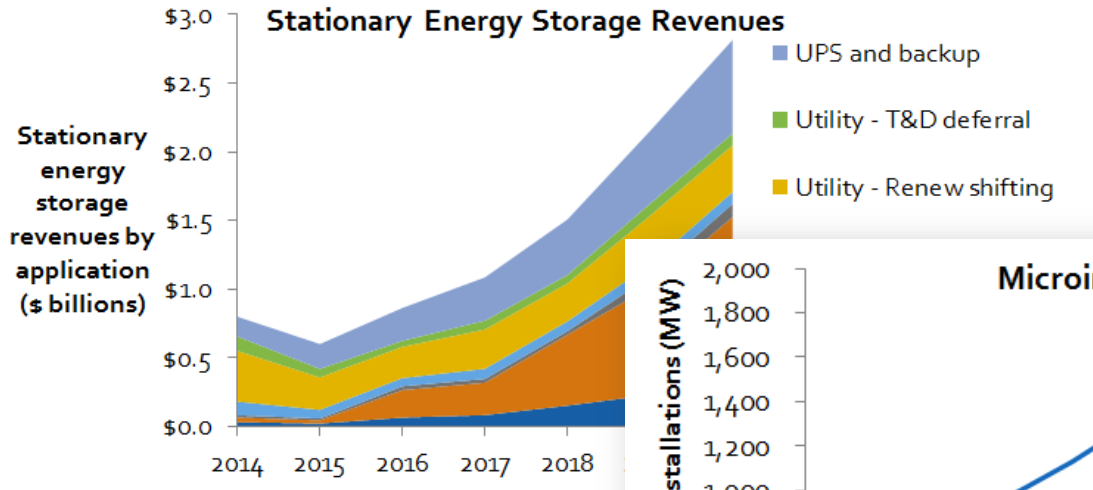
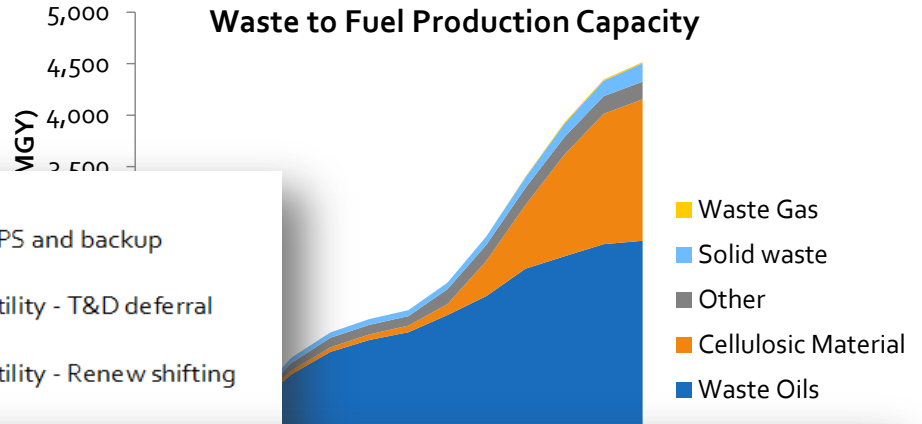
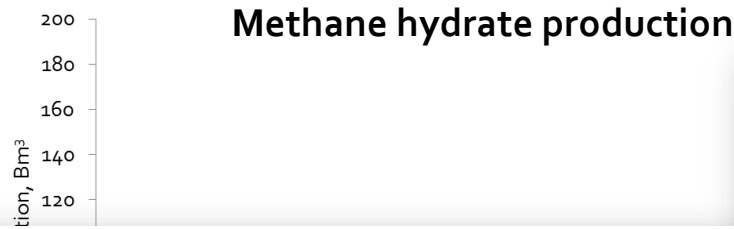
Grid Storage



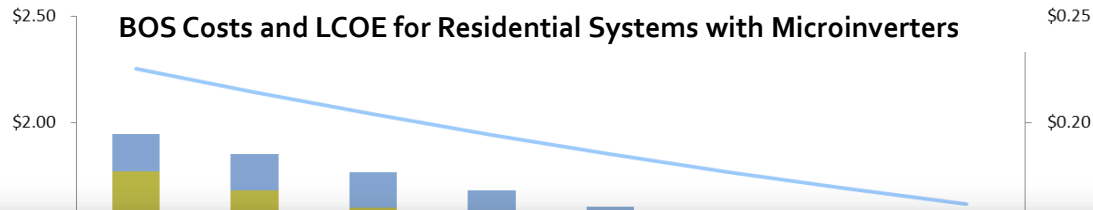
# Agenda

- Cheap oil and gas should not distract from the major evolutions of the energy industry
- Finding technologies to make the energy value chains more efficient, distributed, and diverse
- Creative partnerships unlock opportunity today

# First, identify growing markets that are driving diverse and distributed energy



# Microinverters enable distributed solar generation



February 17, 2015

Enphase Energy Reports Financial Results for the Fourth Quarter and Fiscal Year 2014

PETALUMA  
quarter and

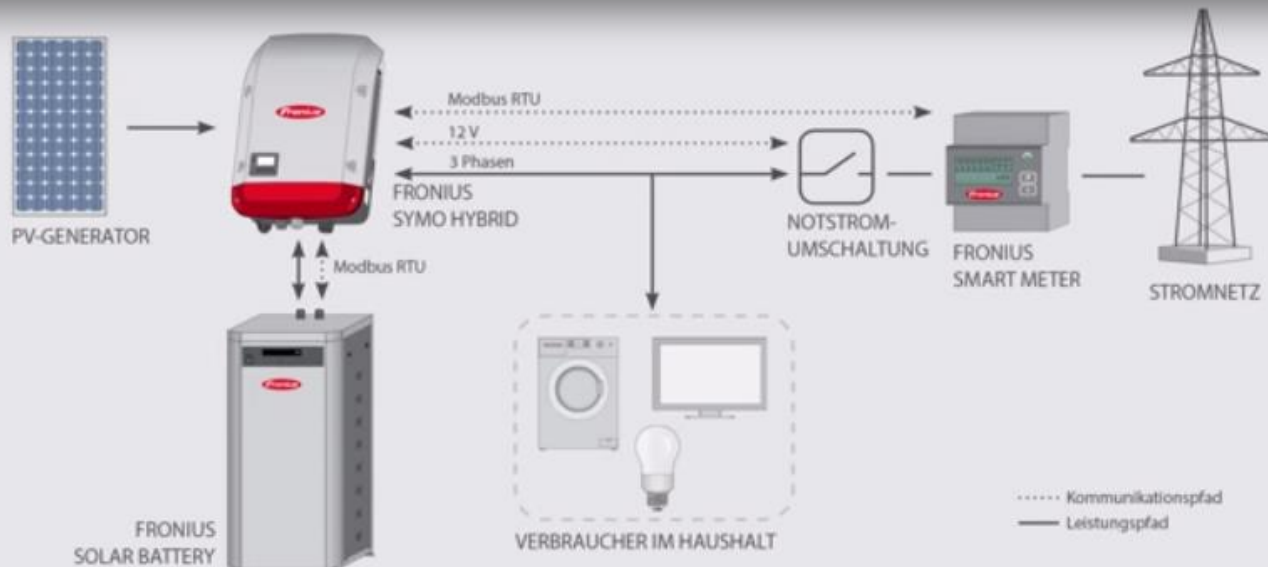


## Fortune Energy to add Fronius line of Top Tier Inverters

Top Tier distributor to supply high quality inverters to market

Fourth Quarter 2014

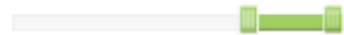
- Record revenue
- Shipped 180M
- Record non-G



# Then, identify companies to form unique partnerships

## SCORECARD METRIC FILTERS

Tech/solution value: 4 - 5



Barriers to growth: 1 - 5



Management team: 1 - 5



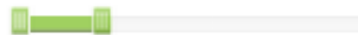
Addressable market size: 1 - 5



IP position: 1 - 5



Partnerships: 1 - 2



Competitive landscape: 1 - 5



Regulatory factors: 1 - 5



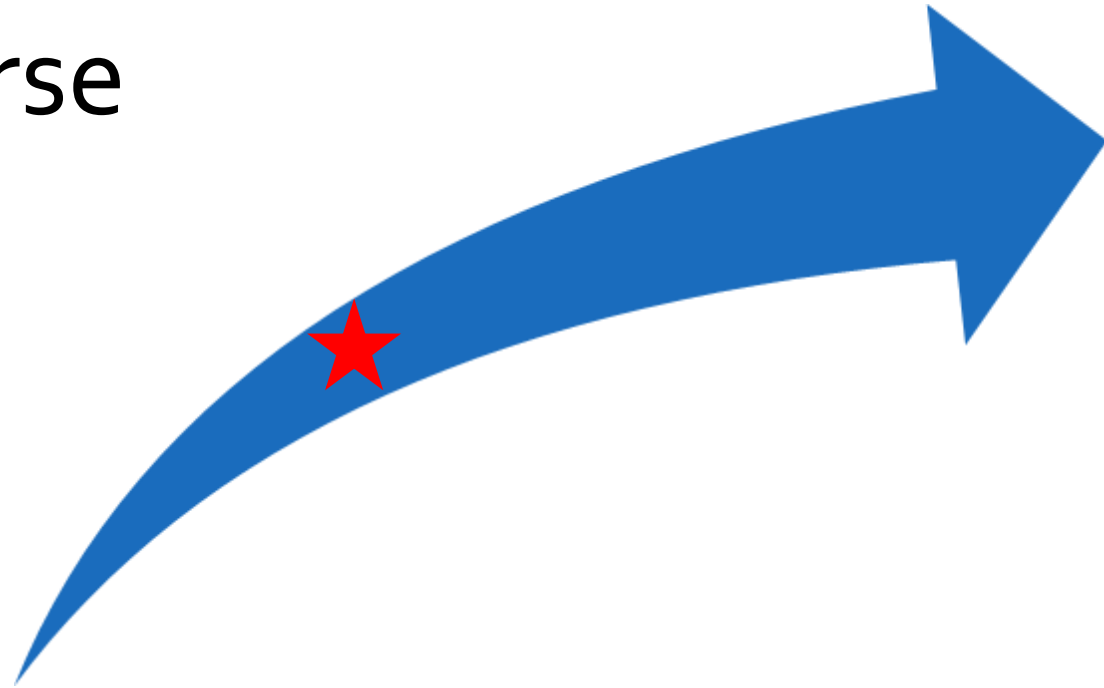
Momentum: 1 - 3





Distributed

Diverse



# Thank you



**luxresearch**

Cosmin Laslau, Ph.D.

*Senior Analyst*

[Cosmin.Laslau@luxresearchinc.com](mailto:Cosmin.Laslau@luxresearchinc.com)

+1 (857) 284-5699

Andrew Soare

*Senior Analyst*

[Andrew.Soare@luxresearchinc.com](mailto:Andrew.Soare@luxresearchinc.com)

+1 (917) 484 4877