

# The Shale Gale Blows In a New Industrial Revolution

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**Powerful Thinking**  
for the global energy industry

## The First Gusts Blow

- Financial crisis and price collapse distracted.
- Few took notice, but natural gas production began to climb here and there, mostly Texas.
- LNG deliveries slowed, but terminals continued to build.
- By 2009, the predicted LNG tsunami had hit the shale wall, but predictions of soaring imports continued.

## The Wily Greek Takes Credit

- George P. Mitchell was a man who did things his own way.
- He was fixated on exploiting the shale zones he'd been drilling through for decades.
- For 12 years, he and his team kept trying.
- In 1993, they cracked the code.
- The rest is history.

## A Few More Hints Appear

- Shuttered fertilizer plants begin to reopen.
- Shale gas drilling spreads beyond the Barnett.
- The Haynesville gets hot.
- Fayetteville is known for more than football.
- Pennsylvania's roots are remembered.
- And gas production continues to climb.
- Dow and others look at ethane economics.

## The Revolution Gains Speed

- Cheniere Energy petitions to export LNG from Sabine Pass. Other LNG importers follow.
- Natural gas liquids production rises along with gas, providing ample petchem feedstock.
- Mothballed ethane crackers reopen.
- Proposals to build greenfield ethane crackers emerge. At least five now expected.
- Derivative petchem plants will be connected.

## LNG Export Projects Grow

- About 20 projects, both existing import terminals and newbuilds, seeking approval.
- Energy Dept. study backs exports as a boon for the economy.
- Same study and others find little impact on domestic prices.
- Greater effects seen on global market where prices likely to fall.

## Natural Gas for Transportation

- LNG and CNG become choice fleet fuels.
- First phases of America's Natural Gas Highway with border-to-border chain of LNG/CNG fueling stations.
- Lower costs offset lower energy content.
- Cleaner burning, engines last longer.
- Strong growth potential.

## More Exotic Gas Industries

- Two world-scale GTL plants proposed in US.
- Modular, micro-GTL plants in development.
- Could the US challenge Qatar in GTL output?
- First new US methanol plant in decades began construction last week.
- Proposal for methanol-to-gasoline under discussion in Louisiana.



## Water the Major Challenge

- Does fracking contaminate water?
- Studies say no, but battles go on.
- Does water disposal cause earthquakes?
- Maybe. Industry, government, communities working to resolve issue.
- Moratoria continue in New York, New Jersey.
- Industry working to resolve water issues on a number of levels.

## Low Prices Another Concern

- Low prices force asset sales, weaken companies financially.
- Spread between oil and natural gas prices more important than absolute gas price.
- Investments in gas-consuming industries say big companies believe low prices will be around for a long time.

## What Do New Industries Mean

- In short, a lot more gas consumption.
- New industrial growth could add 10 Bcf/d of gas demand by 2020.
- The ripple effect through the rest of the economy could add more.
- It is the rebirth of American industry, based again on low-cost energy.