Pacific Northwest Economic Region

Presentation

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July 25, 2016
• The US energy renaissance has transformed the U.S. into a energy superpower
  • Now the world’s largest producer of oil and natural gas
  • 30 years of decline reversed

• The whole petroleum transport system of the U.S. has been reversed
  • Pre-Shale (2005) – Move crude inland from production and import centers on the coast
  • Post-Shale (2006-today) – Move crude to the coasts from inland production and import centers

• How was this done?
  • Rapid Innovation driven by market dynamism through:
    • Crude by Rail
    • New shipping routes
    • Pipeline reversals
The Flood: Tight Oil Production Reverses a 30 Year Decline
The Flood: Tight Oil Production Increases
7-fold in only 5 Years

U.S. Tight Oil Production

12-fold increase in 10 years
7-fold increase in 5 years
Pre-Shale (2005) Crude Oil Supply:
Production and Imports Focused on Coasts

Consumption = 20.8 MMBD
Production = 6.9 MMBD
Imports = 13.7 MMBD

Ak produced 0.9 MMBD
1.3 MMBD imported
0.6 MMBD produced

1.1 MMBD produced
1.3 MMBD produced
1.3 MMBD produced
3.6 MMBD imported
7.3 MMBD imported
Post-Shale (2016) Crude Oil Supply:
Production and Imports Shift from Coast to Heartland

Consumption = 19.6 MMBD
Production = 12.4 MMBD (79% increase)
Imports = 10.1 MMBD (27% decrease)

- 3.8 MMBD (74% increase)
- 1.0 MMBD (1940% increase)
- 2.6 MMBD (1364% increase)
- 1.9 MMBD (47% decrease)
- 3.9 MMBD (47% decrease)
Transporting the US Energy Renaissance to Market: Pipelines transporting more crude north to south due to increased shale production

Consumption = 19.6 MMBD
Production = 12.4 MMBD (79% increase)
Imports = 10.1 MMBD (27% decrease)

2.8 MMBD
46% Decrease

0.9 MMBD
316% Increase
Transporting the US Energy Renaissance to Market: Waterborne Movements - Increased North to South Flow

Consumption = 19.6 MMBD
Production = 12.4 MMBD (79% increase)
Imports = 10.1 MMBD (27% decrease)
Annual rail movements of crude increase nine fold between 2011 and 2014.
How the US Energy Renaissance was Accommodated: New Waterborne Routes
Transporting the US Energy Renaissance to Market: Pipeline Reversals, Expansions, and New Construction Moving Crude North to South
Going Forward
Fossil Fuels Remain Dominant Energy Source in U.S.

U.S. Energy Consumption

EIA: Annual Energy Outlook, 2017
Going Forward

Fossil Fuels Remain Dominant Energy Source Globally

World Energy Consumption

The Impact of the US Energy Renaissance

• The Shale Revolution has allowed the US to:
  • Increase national security and energy independence by reducing imports of crude and products by 27 percent.
  • Demonstrate energy security by exporting crude oil to 18 different countries in 2016.
  • Grow our economy and assist our allies by serving as a net exporter of petroleum products since 2011.

• The Role of Infrastructure:
  • Infrastructure will continue to play a vital role in the energy renaissance by transporting energy safely and efficiently to consumers
  • Infrastructure development will allow energy products to more competitively reach market, grow our economy and strengthen national security
Looking to the Future

• Looking forward, EIA estimates:
  • Petroleum exports will increase 50 percent by 2030
  • Natural gas exports will triple by 2025
  • Fossil fuels are forecasted to make up 78% of our world energy consumption in 2040
  • Fossil fuels are forecasted to make up 79% of our U.S. energy consumption in 2050
  • The US will continue to be a dominant energy superpower