

Unconventional Gas & the Rail Industry

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Agenda

Fuel TraNS - Crude by Rail

- Inputs to the Shale Plays
- Outputs – Realized and Anticipated
- Impact on Coal

Inputs to the Shale Plays – No Pipe Dream

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- On average, a standard drill pad, with six vertical wells, each with horizontal wells, consumes approximately 114,000 feet of pipe or 15 rail cars worth.



Inputs to the Shale Plays – No Sandbagging

Fuel TraNS - Crude by Rail

- By comparison, that same standard drill pad, with six vertical wells, consumes 150 rail cars of sand.



Outputs – Realized and Anticipated

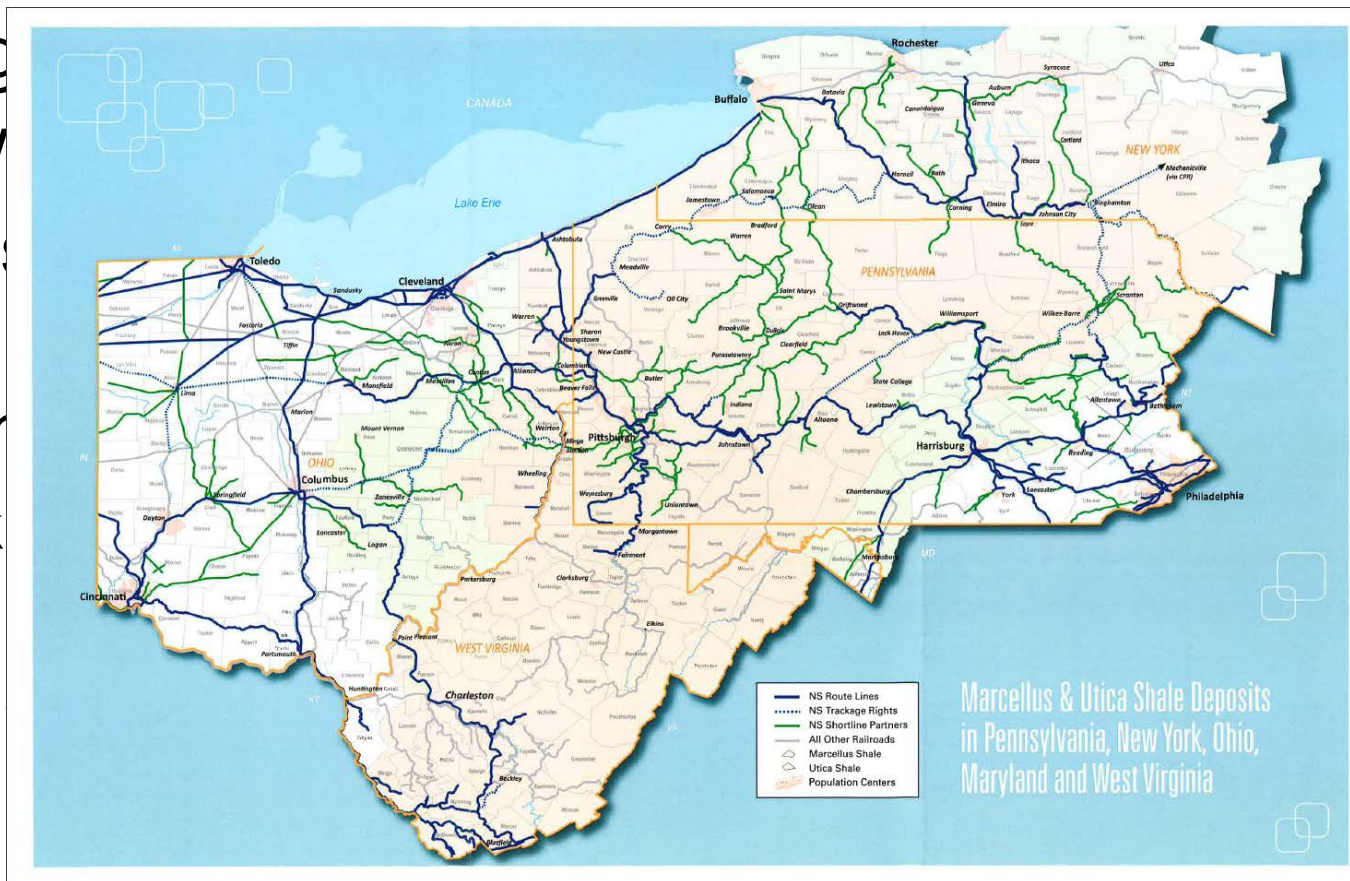
Fuel TraNS - Crude by Rail

- Small market in waste streams
 - Drill cuttings (mud), brine water

- Rich gas and water

- Biggest fields of Canada

- Bakken
- Rail transport



in Ohio
oil
Sands

Impact on the US Coal Industry

Fuel TraNS - Crude by Rail

Mild
2011/2012
Winter

Natural Gas
Prices



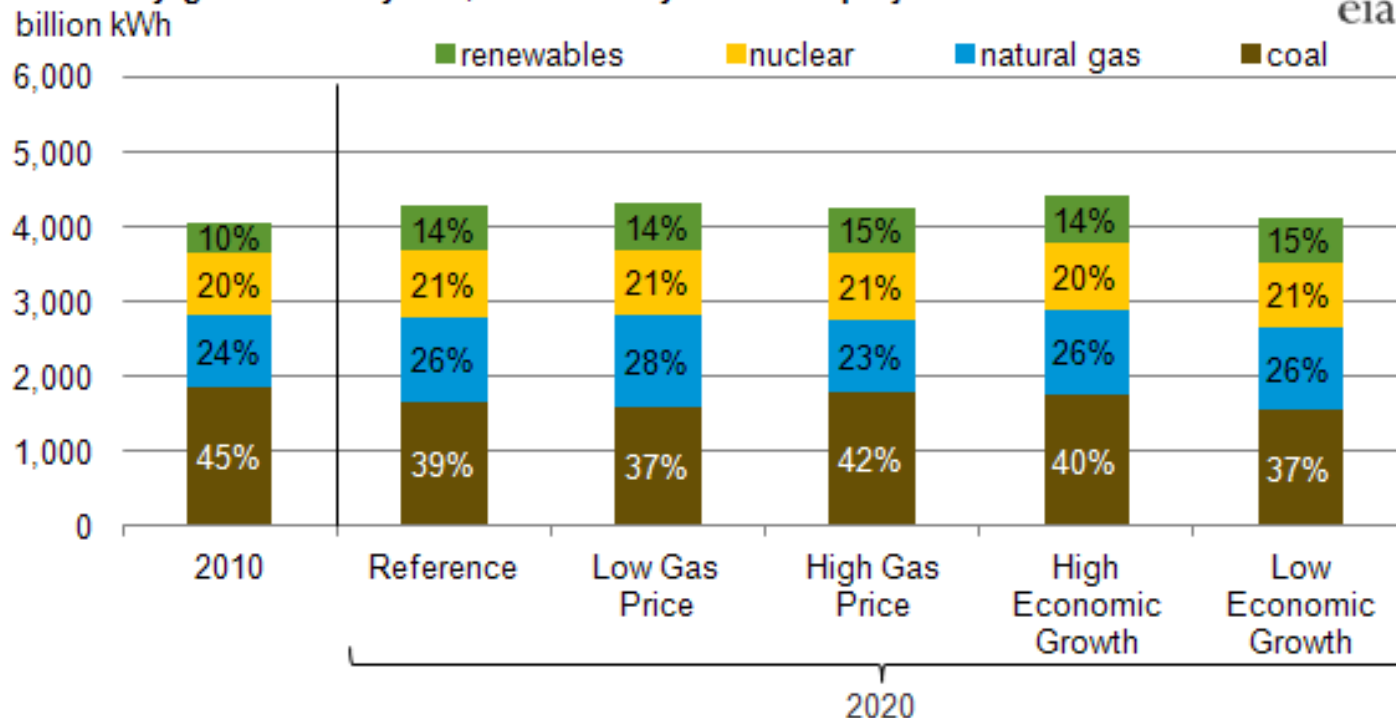
Regulation

Impact on the US Coal Industry



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Electricity generation by fuel, 2010 history and 2020 projection



Source: U.S. Energy Information Administration, [Annual Energy Outlook 2012 Electric Power Projections](#).

Assumes all coal plants must have either a Flue Gas Desulfurization (FGD) system or Direct Sorbent Injection system installed by 2015 in order to continue operation in compliance with environmental rules. Currently, over half of the coal plants in the nation have FGD systems.

Impact on the US Coal Industry



Fuel TraNS - Crude by Rail

- Haven't we seen cheap natural gas before?
 - Yes, in 2000, we had \$2 / Mcf, but...
 - Coal was cheaper
 - Cost of labor dramatically increased over last decade+
 - We've gotten the "easy stuff"
 - We didn't know about the vast U.S. reserves
 - Technology advances cresting
 - Changing regulatory environment

- Coal Industry Today
 - ~10 gigawatts (GW) of capacity has already been retired, and ~20 GW have been announced for retirement
 - The U.S. uses ~300 GW of operating US coal capacity
 - Thus this represents 10% of US' utility generating capacity
 - Older, “baby boom” plants are the ones being shut down

Impact on the US Coal Industry



Fuel TraNS - Crude by Rail

- Can't we all just get along?
 - “Sweet spot” of equilibrium estimates at \$4/Mcf
 - Economic estimates are in line with that figure as soon as 2013
- Global Markets
 - Thermal vs. Metallurgical
 - China & India demand opens opportunities in Europe

Thank you!