

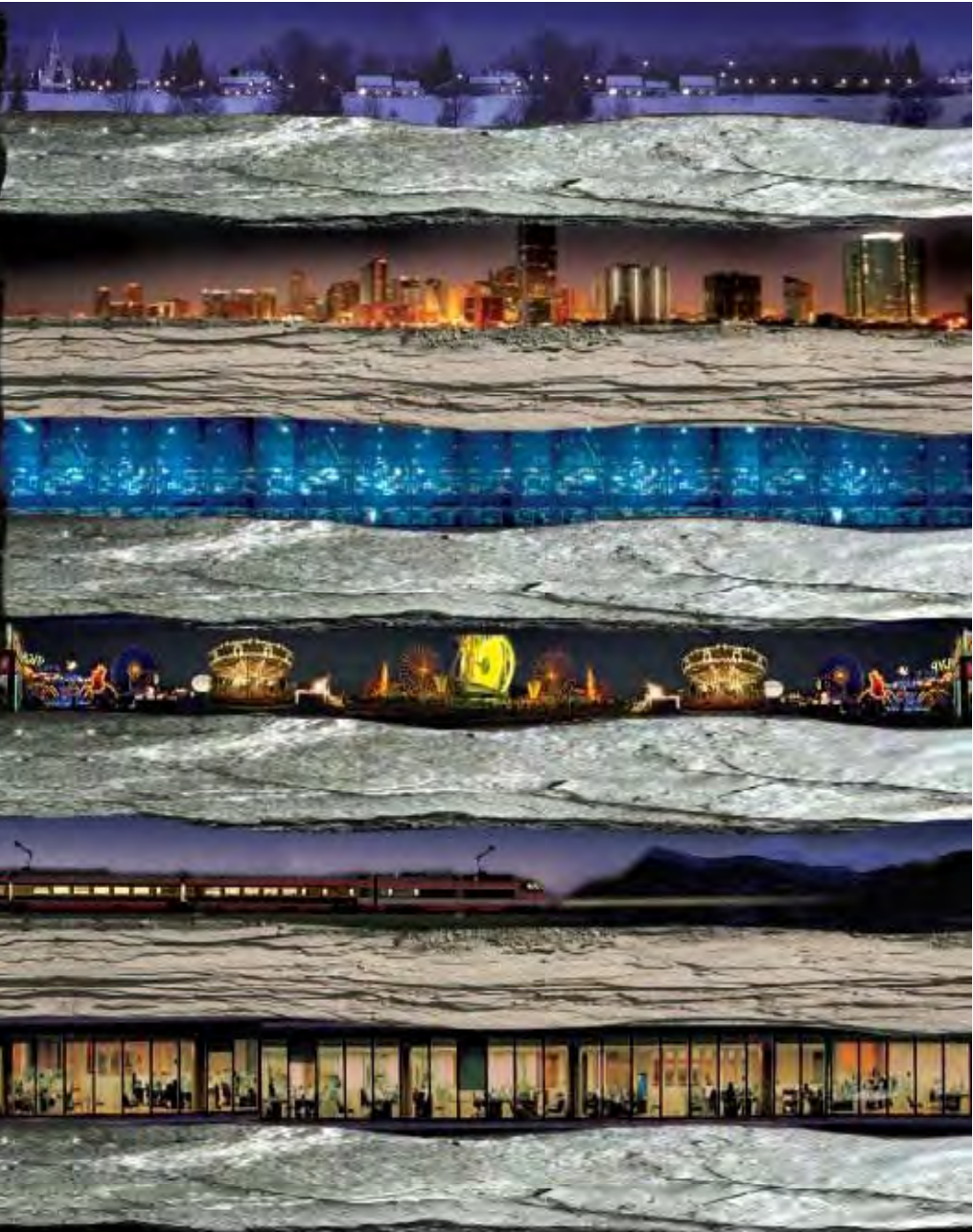


Coal-to-Liquids in Northern WV

Paul A. Spurgeon

West Virginia Energy Summit

December 9, 2008



WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.





Cautionary Statements

Some statements in this presentation contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements may relate to, among other things, future performance generally, business development activities, future capital expenditures, financing sources and availability and the effects of regulation and competition.

In addition, this presentation may contain certain financial measures, such as EBIT and EBITDA. As required by Securities and Exchange Commission Regulation G, reconciliations of these measures to amounts reported in CONSOL Energy's consolidated financial statements are provided in its quarterly earnings releases.



CONSOL Energy, Inc.

- Largest bituminous coal producer in the US with 65 million tons of production in 2008 and over 4 billion tons of reserves
- Owns 82% of CNX Gas which will produce over 70 Bcf of natural gas this year, primarily coal mine methane
- Owns 750 barges, 30 tow/harbor boats and a river terminal for transportation coal and other commodities on the upper Ohio River and tributaries
- Owns about 400,000 acres of real estate, a mining supply company and an export terminal in Baltimore



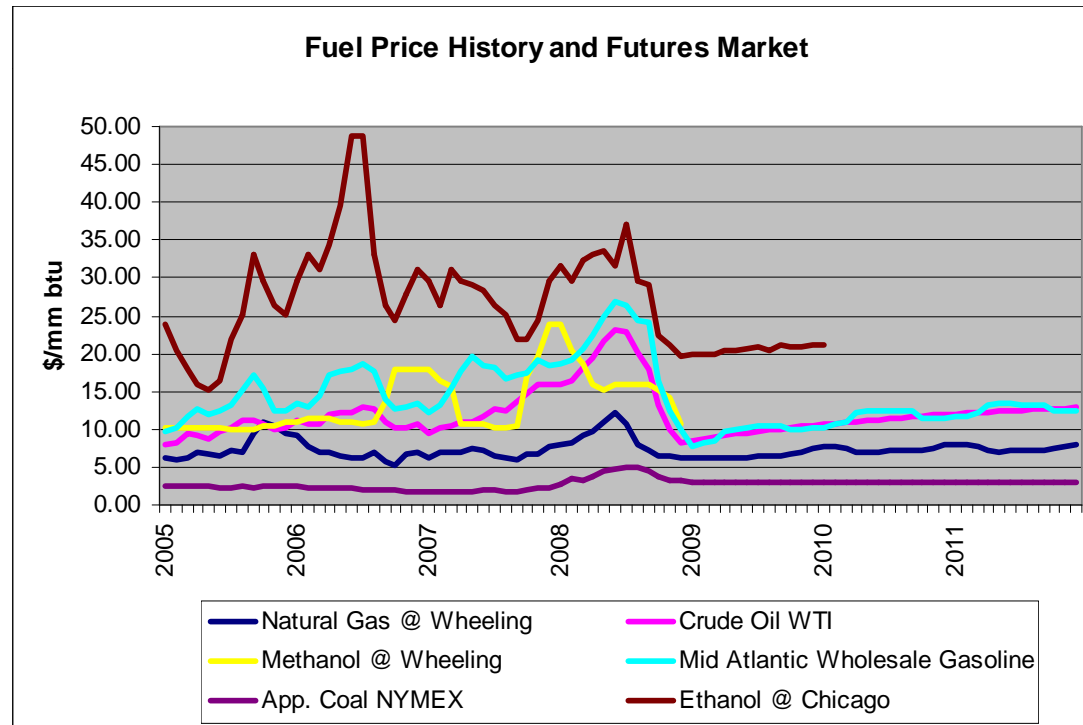
WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.

 **CONSOL ENERGY**
America's On Switch.



Why use coal to make chemicals and fuel?

- The margin between the prices of coal and transportation fuels/chemicals is increasing and coal prices are relatively stable compared to other fuels
- 2/3 of US oil demand is imported; China and India demand increasing
- No good substitutes for many chemicals and aviation fuel



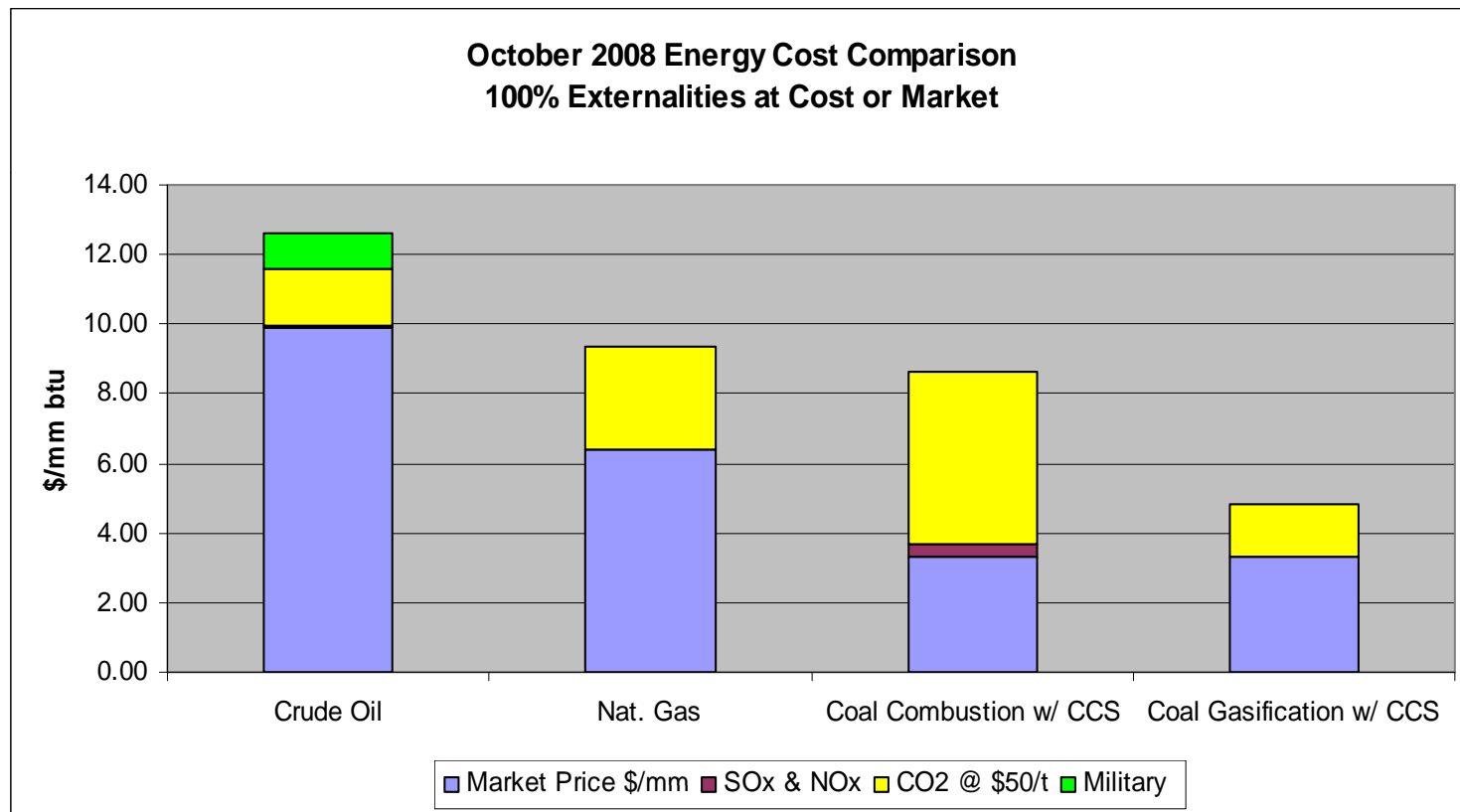
WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.

 **CONSOL ENERGY**
America's On Switch.



What is the true cost of fuel?

- Coal is the cheapest fuel for gasification including the costs of pollution and other externalities



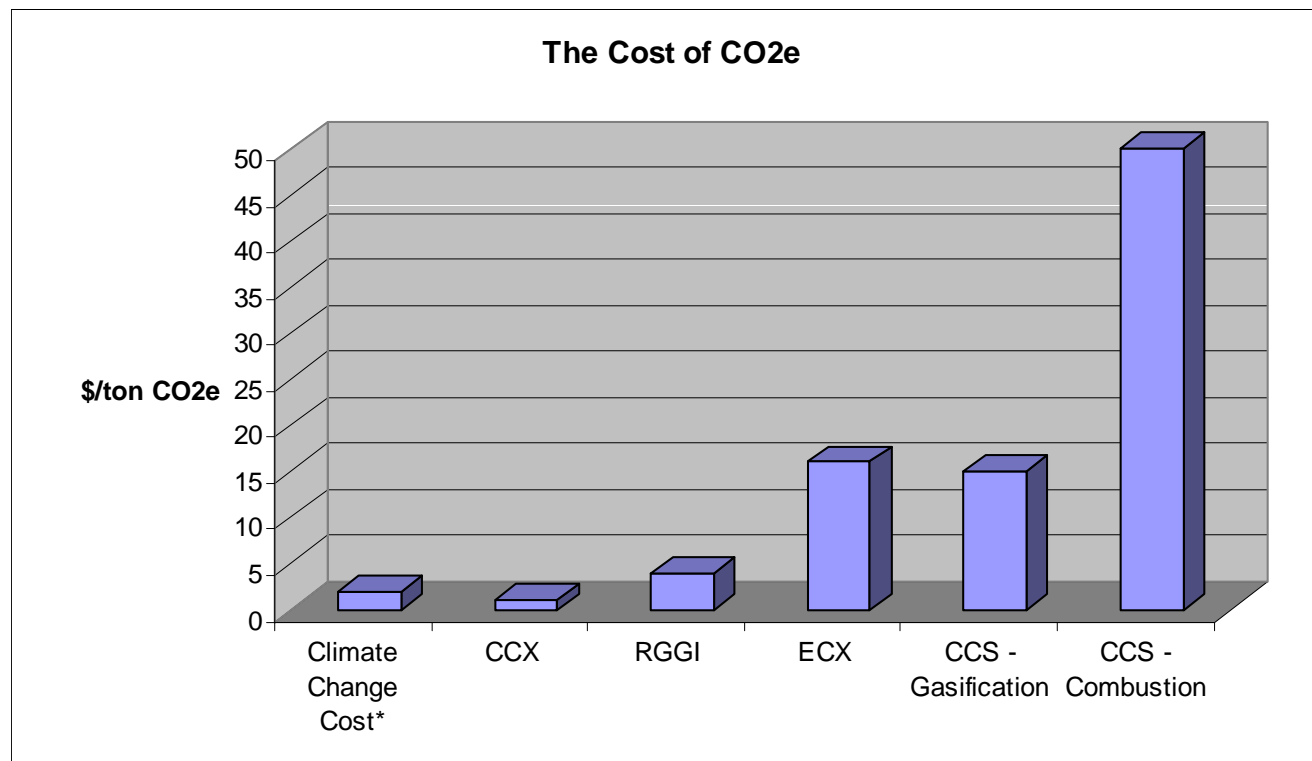
WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.

 **CONSOL ENERGY**
America's On Switch.



What should carbon cost?

- There is a great difference between the damage costs, market prices and mitigation costs



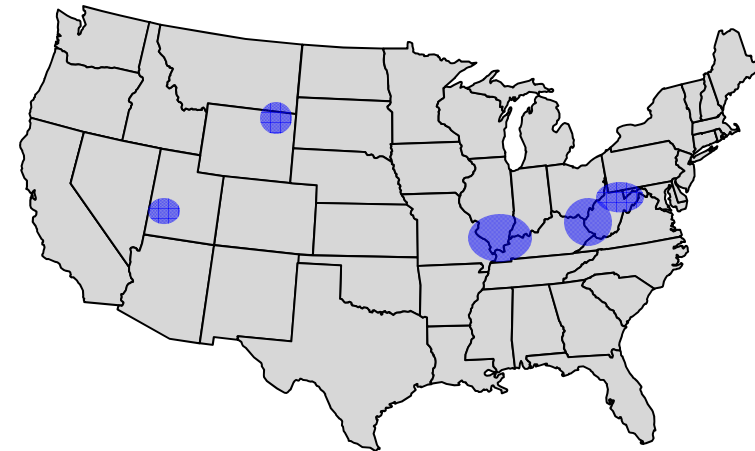
•Sources: Tol, R.S.J., 2002, 2005, 2006; Lomborg, 2007



Why is CONSOL Energy interested in CTL?

- Largest U.S. bituminous coal producer with over 4 billion tons of reserves
- Produces over 20 million tons of preparation plant tailings annually, containing 2,000 – 4,000 btu/lb, currently impounded but could be gasified
- Diversification into higher valued products; almost all production is now sold to utilities for power generation, the lowest valued use of coal other than steam production

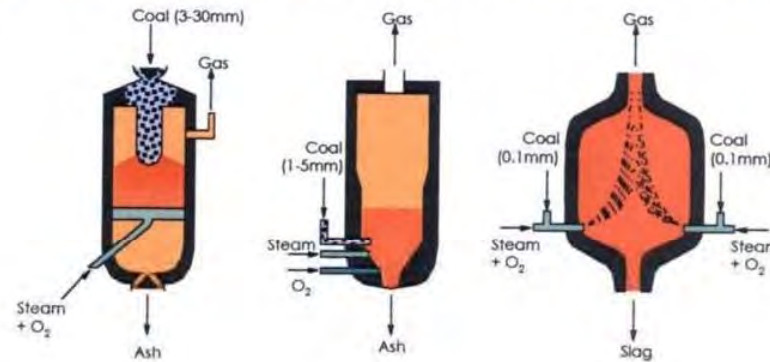
CEI Reserve Areas





Gasifier Technology Summary

Generic Coal Gasification Reactors



FIXED-BED
PROCESS

Lurgi
British Gas Lurgi

FLUIDIZED-BED
PROCESS

GTI
KRW
HTW

ENTRAINED-FLOW
PROCESS

ConocoPhillips E-Gas
GE (Texaco)
Shell
Siemens (GSP)

Temperature increasing →

Residence time decreasing →

Methane decreasing →

WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.

 **CONSOL ENERGY**
America's On Switch.



Product Choices

- **Fischer Tropsch process invented in Germany in 1923**
 - **Supplied by Sasol, Rentech, Syntroleum and Shell**
 - **Makes diesel, naphtha and LPG**
- **Methanol**
- **Methanol to Gasoline**
 - **Supplied by Exxon/Mobil and Haldor Topsoe**
- **Substitute Natural Gas**
- **Ammonia/Urea**



Sasol plant at Secunda, South Africa (150,000 bbl/day)



Great Plains SNG, ammonia



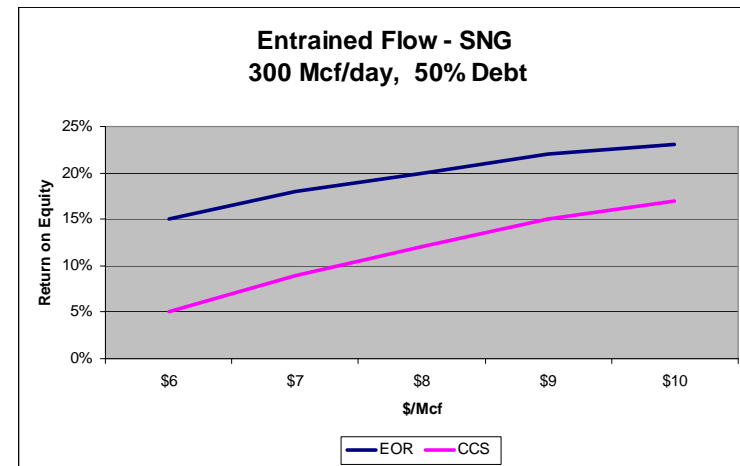
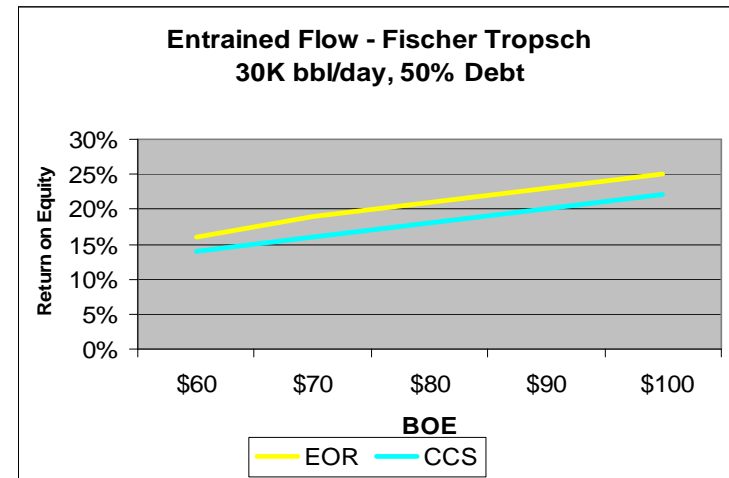
WE'RE WORKING DOWN HERE, TO KEEP AMERICA RUNNING UP THERE.

 **CONSOL ENERGY**
America's On Switch.



Economics of large plants

- Equity investors commonly demand at least a 20% return for CTL/CTG projects
- Only 50 – 60% debt is generally available due to lack of EPC wraps
- Need \$80+ oil and \$8+ gas long term to entice investment
- Enhanced oil recovery with CO₂ is necessary for most CTL and CTG projects,





CONSOL approach to CTL/CTG

■ Industrial scale

- Fixed or fluidized bed gasifiers fed by run-of-mine and waste coal from operating mines
- Low CO₂ gasification feeding methanol or urea plant
 - Urea would be sold to traditional utility customers or NO_x reduction
- Self financed if necessary

■ Refinery scale

- Partner with large chemical/oil company and government
- Integrate coal reserve into project even if mine and plant are separated
- Entrained flow - Fischer Tropsch or MTO/MTG



The Northern West Virginia Project

- CONSOL is re-evaluating the project based on recent trends in financing and commodity pricing
- If feasible, the FEED study would commence early next year
- If construction is approved by the CONSOL Board next year, the plant could be online in early 2012
- As currently planned, the plant
 - will employ 2 or 3 fixed or fluidized bed gasifiers, each sized at about 1,000 tons per day
 - will consume about 900,000 tons per year of raw coal and 400,000 tons per year of waste fines
 - will produce 1,000,000 tons of urea or 700,000 tons of methanol annually which will be transported by barge
 - will cost about \$850 million and occupy 65 acres
 - will employ several hundred construction workers and about 60 permanent workers