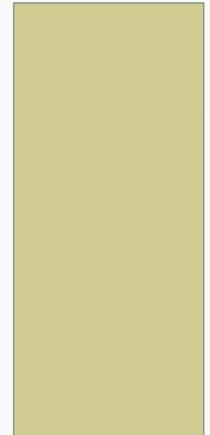




EXPLORING COAL

COLLEGE



HISTORY OF OHIO'S COAL INDUSTRY

- Coal Mining began in Ohio around 1800.
- Since 1800, over 3 billion tons of coal has been mined in Ohio.
- Coal was cut and loaded entirely by hand and transported to local markets by means of wagons, carts, and flatboats.
- As Ohio transformed into an industrial state in the late 1800s, it became one of the largest coal-producing and coal-consuming states in the nation.
- During World War I, Ohio's coal industry realized production levels that would not be seen again until the 1960s.
- In 1918, Ohio's coal work force swelled to its greatest level of more than 50,000 individuals.
- With the rise of surface mining, coal production steadily increased until 1970. Since this time, production has decreased.
- This decline is due in part to increased transportation costs, but primarily to the significant impact of the Federal Clean Air Act, which placed stringent controls on emissions, particularly SO₂ emissions, from coal-fired power plants.

1930'S COAL MINING



OHIO'S COAL INDUSTRY TODAY

- According to the Public Utilities Commission, Coal provides 78% of Ohio's electricity in 2013.
- Coal employs directly/indirectly over 33,000 Ohioans.
- Has low transportation costs for Ohio's electricity markets.
- Of 26 coal-producing states, Ohio ranks 11th. Ohio ranks fourth nationally in the consumption of coal, following Texas, Illinois and Indiana.
- The five leading counties for 2010 coal production were Belmont, Harrison, Perry, Jefferson, and Tuscarawas counties. These counties produced 81.2 percent of the 2010 total production. 27,2011,000 tons of coal were sold in 2010.

NEW SOURCE PERFORMANCE STANDARDS

- On January 8, 2013 the Obama Administrations EPA released new performance standards for future coal fired power plants.
- These new standards our unreachable with current available technology and will have a devastating affect on America's electricity market.



NSPS FACTS

- EPA is citing the Clean Air Act as it's vehicle for having authority to set these new standards.
- Clean Air Act states economic impact including affects on job loss before new standards are set.
- These new standards will not allow for any new Coal fired power plants to be built because carbon emission standards are unobtainable.
- Several reports of collusion with environmental groups and EPA have surfaced.
- NSPS compliance is scheduled for October 2015

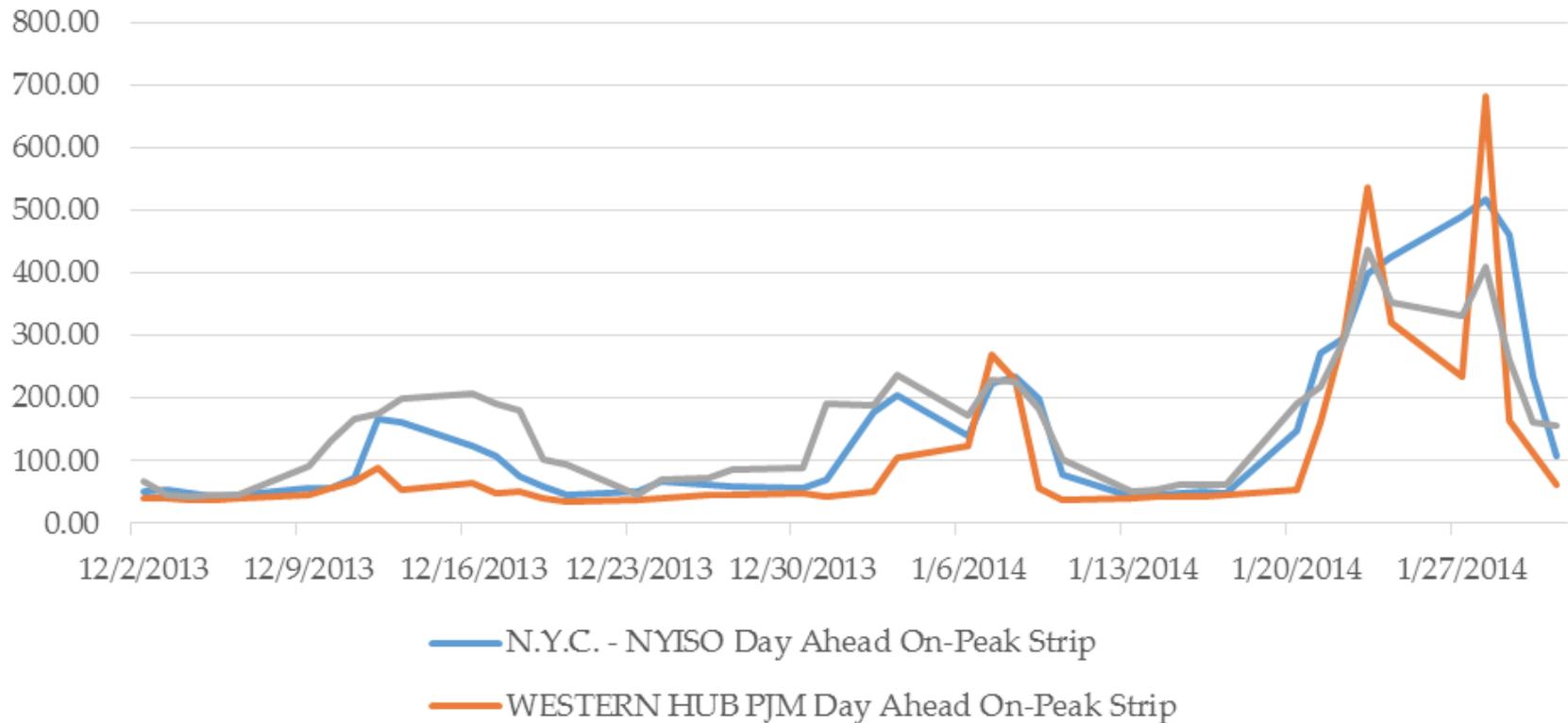
THE DEVASTATING AFFECTS OF NSPS

- In a study done by ACCCE (American Coalition for Clean Coal Electricity) Ohio would lose an estimated 3000 jobs.
- As these coal plants retire, the probability of electricity price increases and potential supply disruptions during periods of high natural gas prices is likely to increase.
- Over 20,000 MW of coal capacity may have retired already. Another 42,000 MW are slated for retirement in the next decade.
- Promotes energy uncertainty in the power grid.

NORTHEASTERN US POWER PRICES

December 2, 2013 - January 31, 2014

source: SNL Financial



ENERGY COSTS FOR FAMILIES

- For households with gross annual incomes below \$50,000 – representing one-half or more of U.S. households since 2001 – total energy costs will increase by 27%.
- Average U.S. household energy costs for residential utilities and gasoline will increase by 33% in real terms.
- More than 385,000 families in Ohio live well below the poverty line. Energy costs for the poorest households represent 72 percent of their income. This fact makes these families especially vulnerable to energy price increases.
- The impacts of increased energy costs are falling disproportionately on elderly Social Security recipients in Ohio, who represent nearly one third of the state's households.
- *Source: Americas Power Study*

HOW DO WE MINE COAL?

- So how do we get the Coal from the ground?
- Two main types of Mining Coal:
 - Underground Mining
 - Surface Mining

Let's look at some pictures of Underground and Surface Mining.

UNDERGROUND MINING

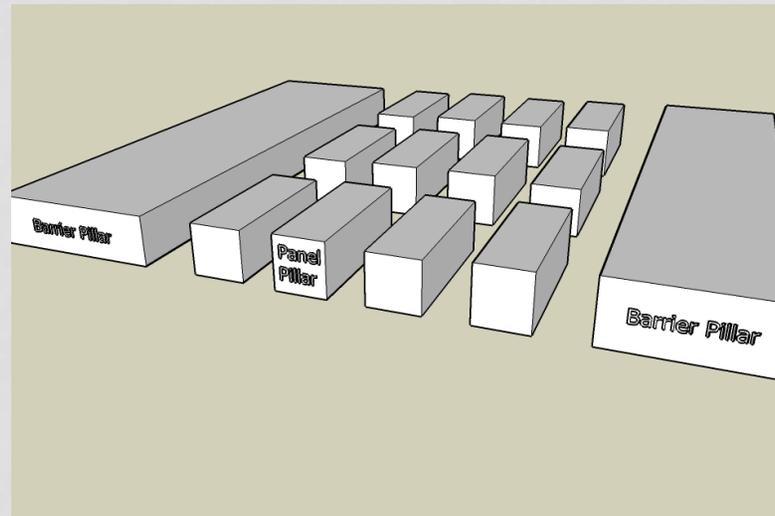


UNDERGROUND MINING



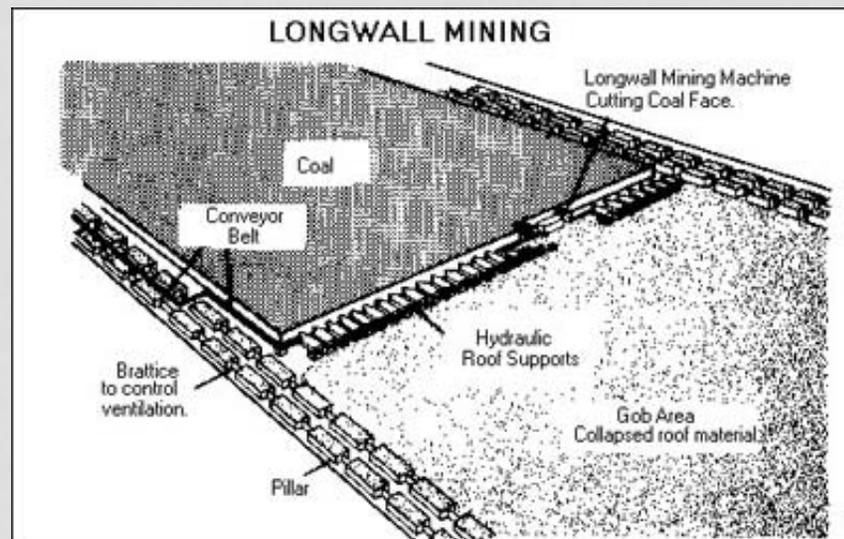
DIFFERENT TYPES OF UNDERGROUND MINING

- Room and Pillar Mining
 - Extracts minerals (tabular and massive) from a series of “rooms” along horizontal openings.
 - Each pillar tends to be the same size and shape for a particular mine, forming a pattern like a checkerboard when viewed from above.
 - This method is used to extract coal and metal ores.



DIFFERENT TYPES OF UNDERGROUND MINING

- Longwall Mining
 - A panel of coal or trona, measuring about two miles long and 750 to 1,500 ft wide, is cut by shearers or plows.
 - Conveyors bring the minerals to the surface.
 - Heavy duty shields protect the miners working along the face and the shearing edge itself.



DIFFERENT TYPES OF SURFACE MINING

- Open-pit mine
 - This type of mine is typically used for massive deposits close to the surface.
 - A quarry is a common open pit mine.
 - Quarries are often located near populated areas where the construction materials are used.



DIFFERENT TYPES OF SURFACE MINING

- Strip Mine
 - Generally used for tabular deposits
 - Mine planners carefully design the angle of the rock wall (above the coal) so that it does not fail during mining.

SURFACE MINING



COAL & THE ENVIRONMENT

- According to the U.S. EPA, emissions of criteria air pollutants considered harmful to human health have decreased almost 40% in Ohio since 1970 – even though the overall consumption of electricity has more than doubled. The use of coal to generate electricity has tripled in that same period.
- The United States' electric utilities have invested more than \$50 billion in new clean-coal technologies.
- Levels of most monitored air pollutants have dropped substantially in Ohio in the past 20 years, and continued to improve in the last study cycle, according to the 2002 report from the Ohio EPA on the agency's 20-year air quality trends report.
- Ohio is the driving force behind clean coal research and leads the nation in deployment of clean coal technologies, according to the Ohio Coal Development Office.

HOW DOES CLEAN COAL WORK?



THANKS TO OUR MEMBER COMPANIES

- B & N Coal, Inc.
- Buckingham Coal Company Inc.
- East Fairfield Coal Company
- Hopedale Mining
- Kimble Clay & Limestone
- Oxford Mining Company, LLC
- Rosebud Mining Company
- Sands Hill Mining LLC
- Sterling Mining Corporation
- The Ohio Valley Coal Company
- Waterloo Coal Company