



CREATING
VALUE

Foreign Service Officers Coal and Power Training

July 15, 2013

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JOYGLOBAL



Joy Global



1884

1919



Surface Mining



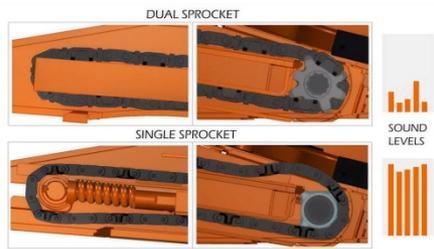
Underground Mining

Less dust

Reduced noise

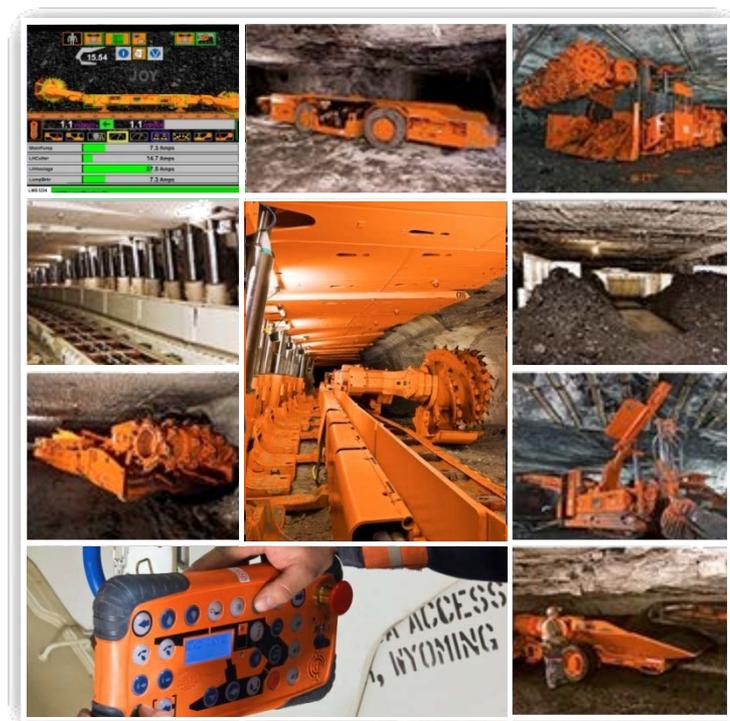
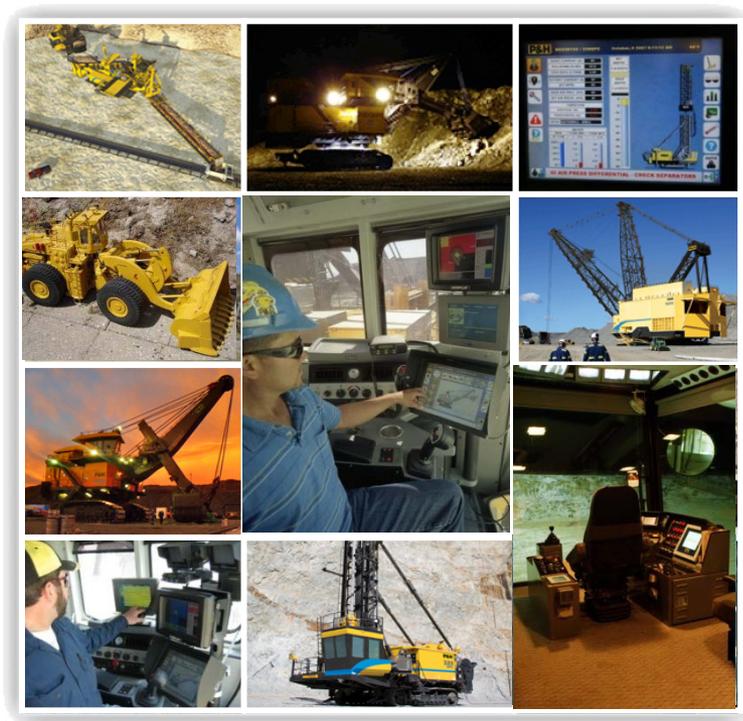
Virtual reality training

Proximity detection



Remove people from harms way

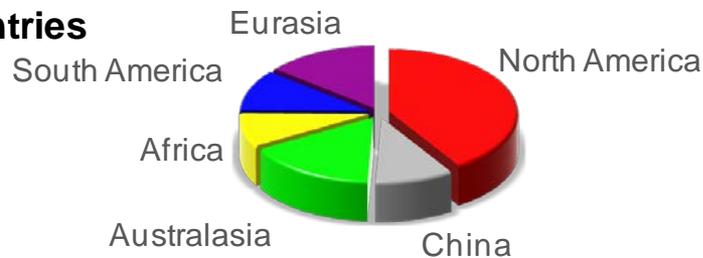
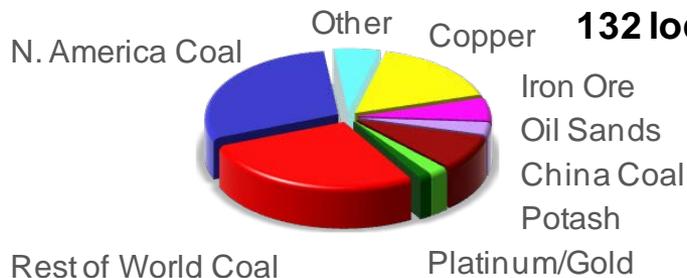
Zero Harm - Highest Production - Lowest Cost



2012 ~ \$5+ Billion

14,000+ employees

132 locations – 18 countries



is transforming to a world class company serving the mining industry

Awarded for the development of the 12ED
Entry Development Miner-Bolter



With partners AMPCONTROL and Xstrata world's
first 11kV armored face conveyor system for
installation hazardous areas.

THE Manufacturer
OF THE YEAR AWARDS 2010



Awarded to the Worcester, UK facility

Member of
S&P 500 Index



**AUSTRALIAN ENGINEERING
EXCELLENCE AWARDS 2010
WINNER**



Queens Award for Enterprise in the category of
International Trade for
The promotion of exports

Anglo American
2011 Partnership Award



bhpbilliton
ILLAWARRACOAL
Pride, passion, performance
HSEC Awards for Innovation



Digital Screenmedia
Association 2012 Industry
Excellence Award

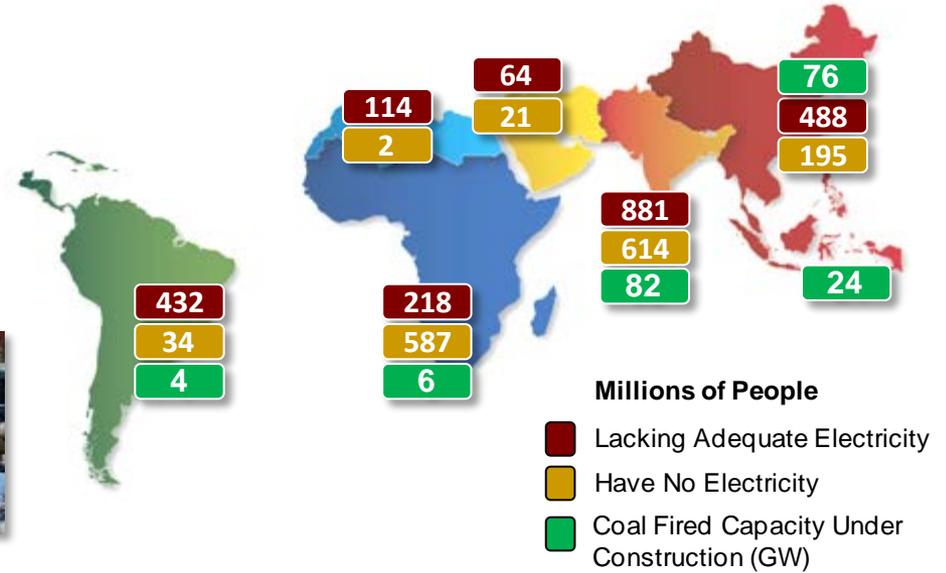


Ranked 25th among US
Manufacturers

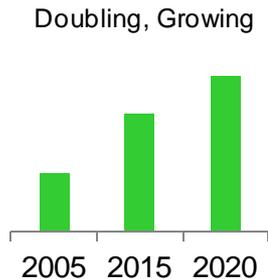
Economics for Energy Growth

Half the World's Population Does Not Have Adequate Access to Electricity

Increasing urbanization rates will drive demand for electricity and electrical infrastructure

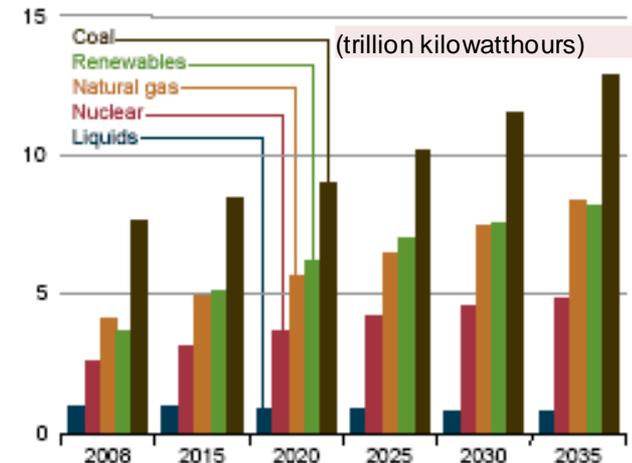


Total World Energy Consumption



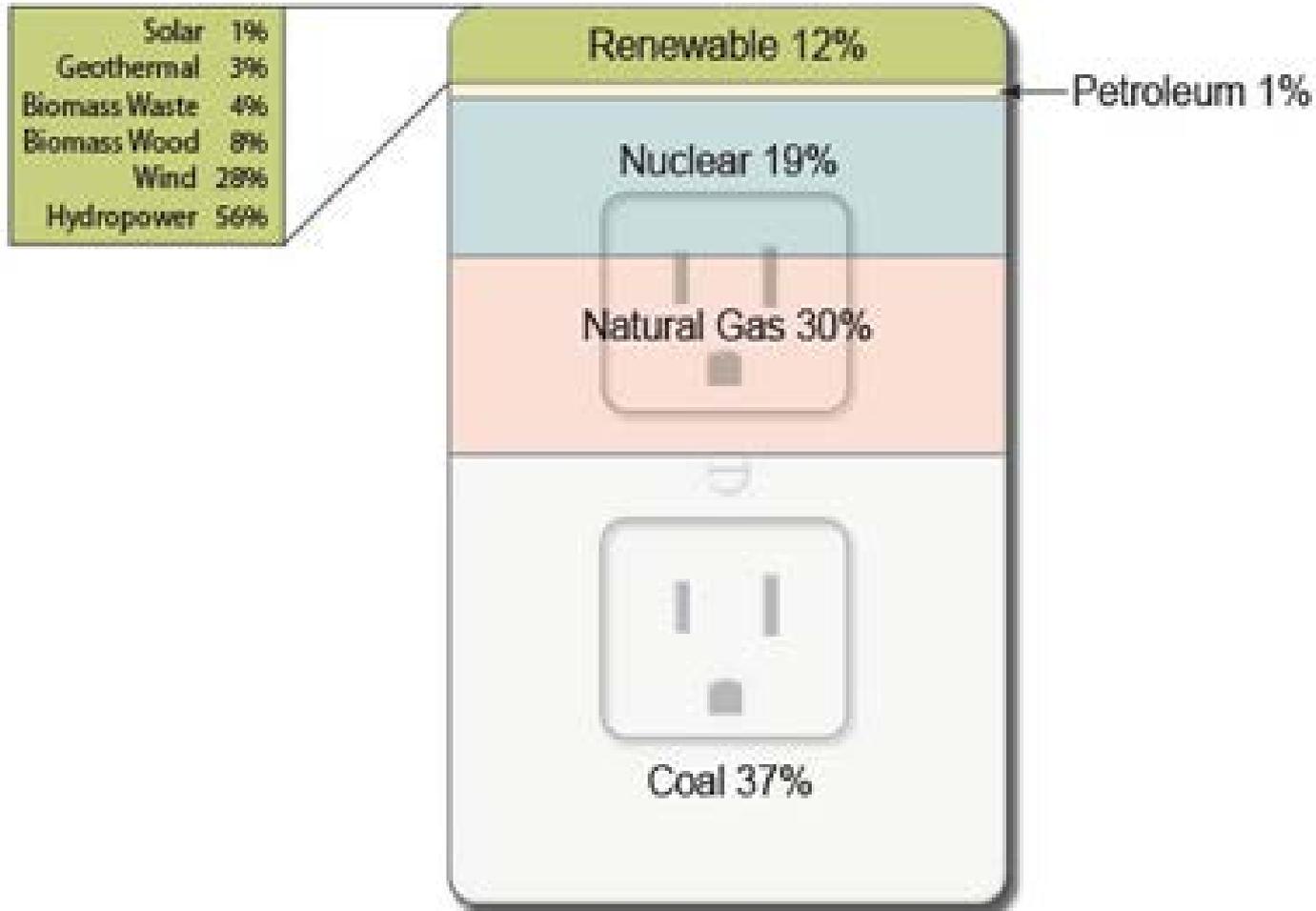
World Net Electricity Generation by Fuel

	2008	2035
Coal	40%	37%
Renew	19	23
Nat gas	22	24
Nuclear	14	14
Liquids	5	2



Source: EIA, Energy Annual, International Energy Outlook 2011, ICSG, LME

Sources of U.S. Electricity Generation 2012



Source: EIA, *Electric Power Monthly* (March 2013). Table 1.1 and 1.1a

Global Coal Production 2011

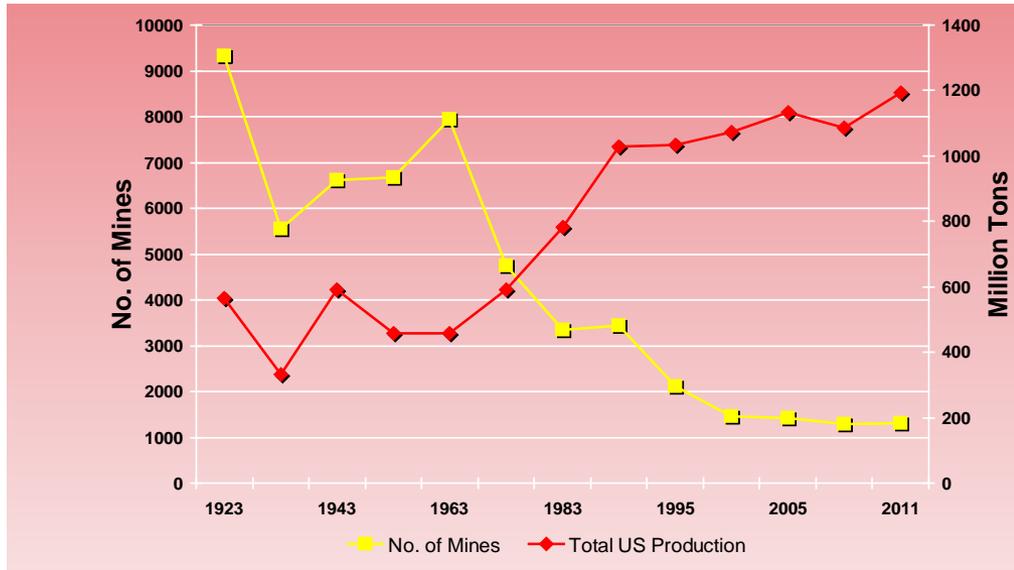
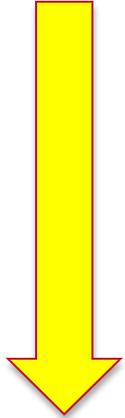
	US tons (millions)	% of total
China	3,844	46
USA	1,194	14
India	639	8
Australia	456	5
Indonesia	414	5
Russia	368	4
South Africa	279	3
Germany	208	3
Poland	153	2
Kazakhstan	129	1
Others	756	9
Total	8,440	100.0

60%

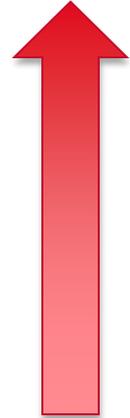
Source: EIA, International Energy Statistics

U. S. Production up – Mines/Miners Down

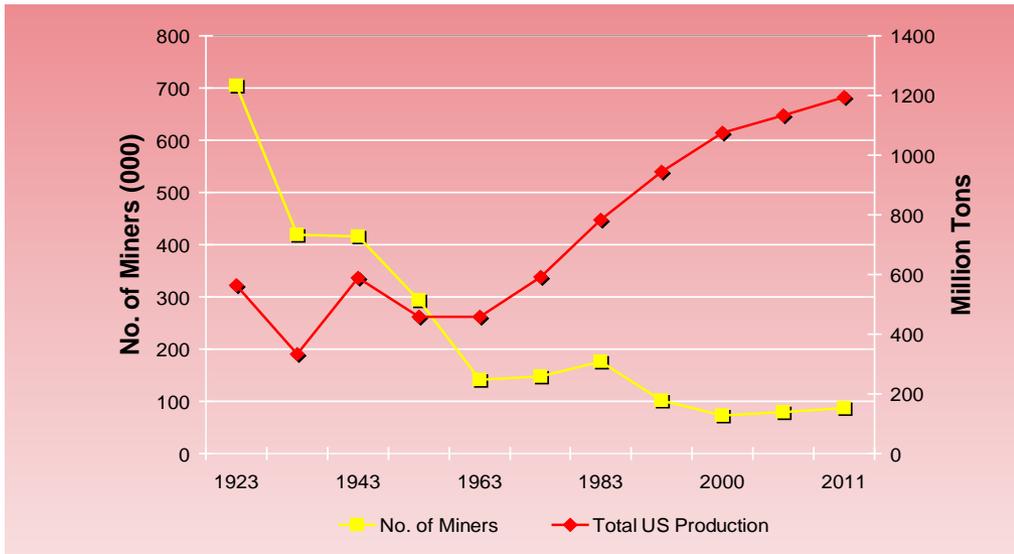
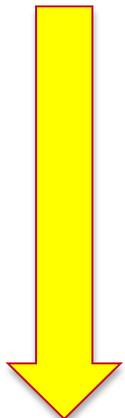
Number of Mines



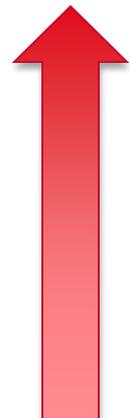
Production



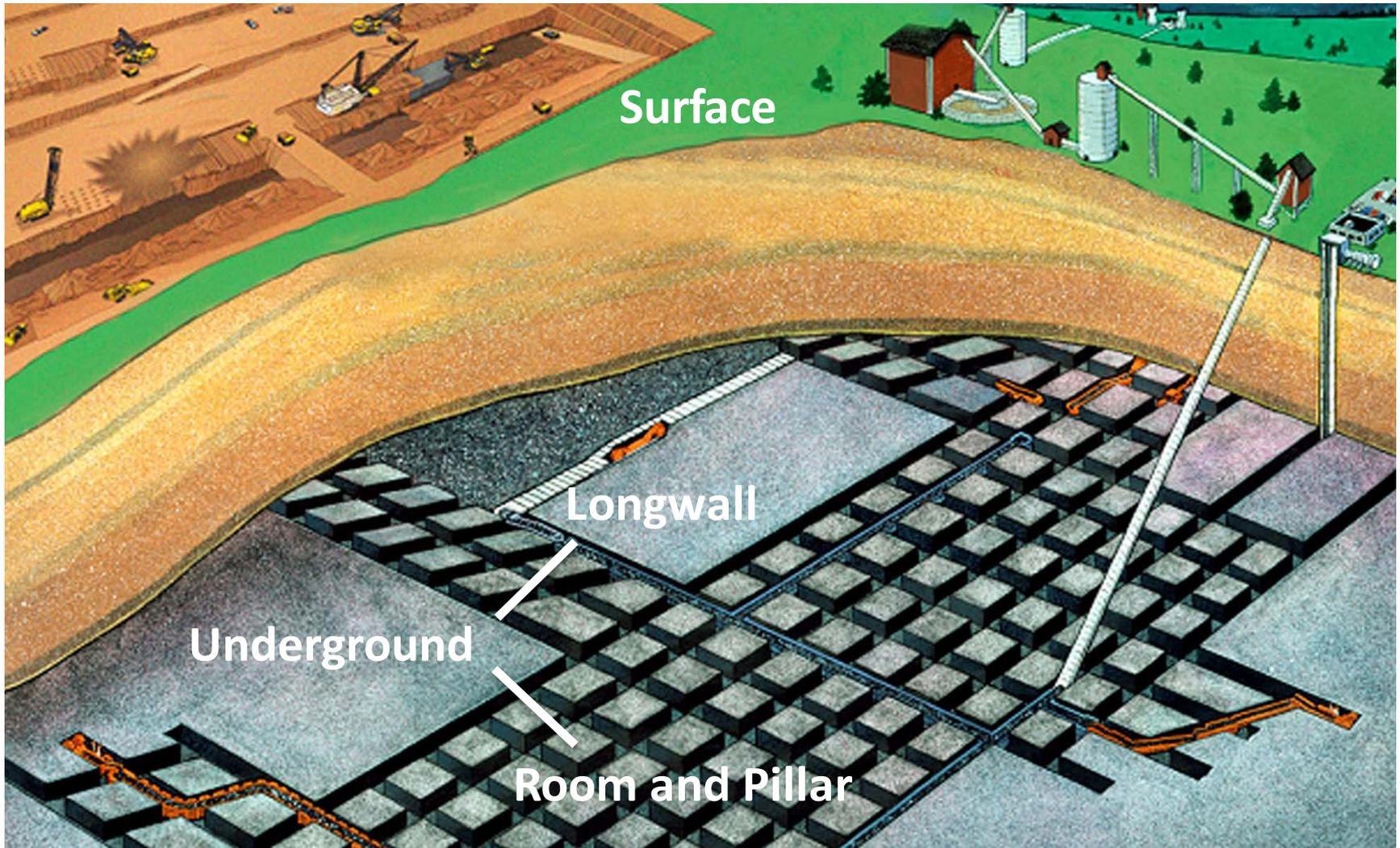
Number of Miners



Production



How is Coal Mined?



Surface Mining Equipment



Blasthole Drill

Draglines

Shovels and Trucks

Blasthole Drill



Blasthole Drill

JOYGLOBAL

P&H Blast Hole Drills
A Joy Global Product

Dragline



Dragline

JOYGLOBAL

P&H Walking Draglines
A Joy Global Product

Electric Shovel and Trucks



Electric Shovel and Trucks

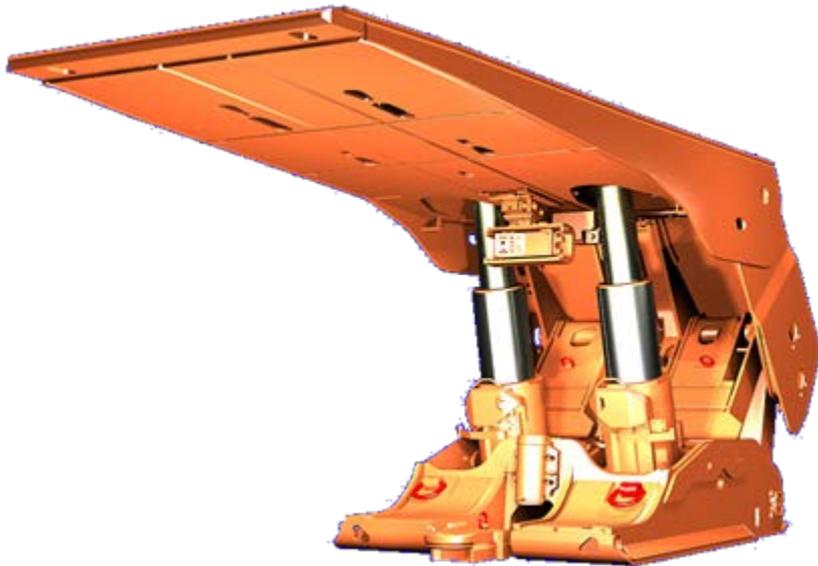
JOYGLOBAL

P&H Electric Rope Shovels
A Joy Global Product

Underground Mining



Room and pillar



Longwall mining

Underground Mining



Underground Mining



Continuous Miner

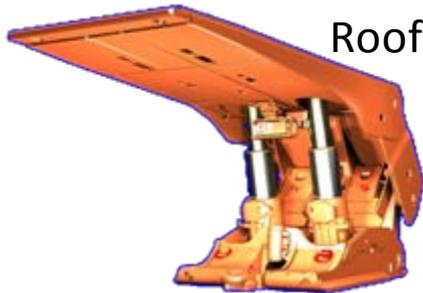


Flexible conveyortrain

Room and pillar



Shuttle car



Roof Support



Longwall mining

Armored Face Conveyor

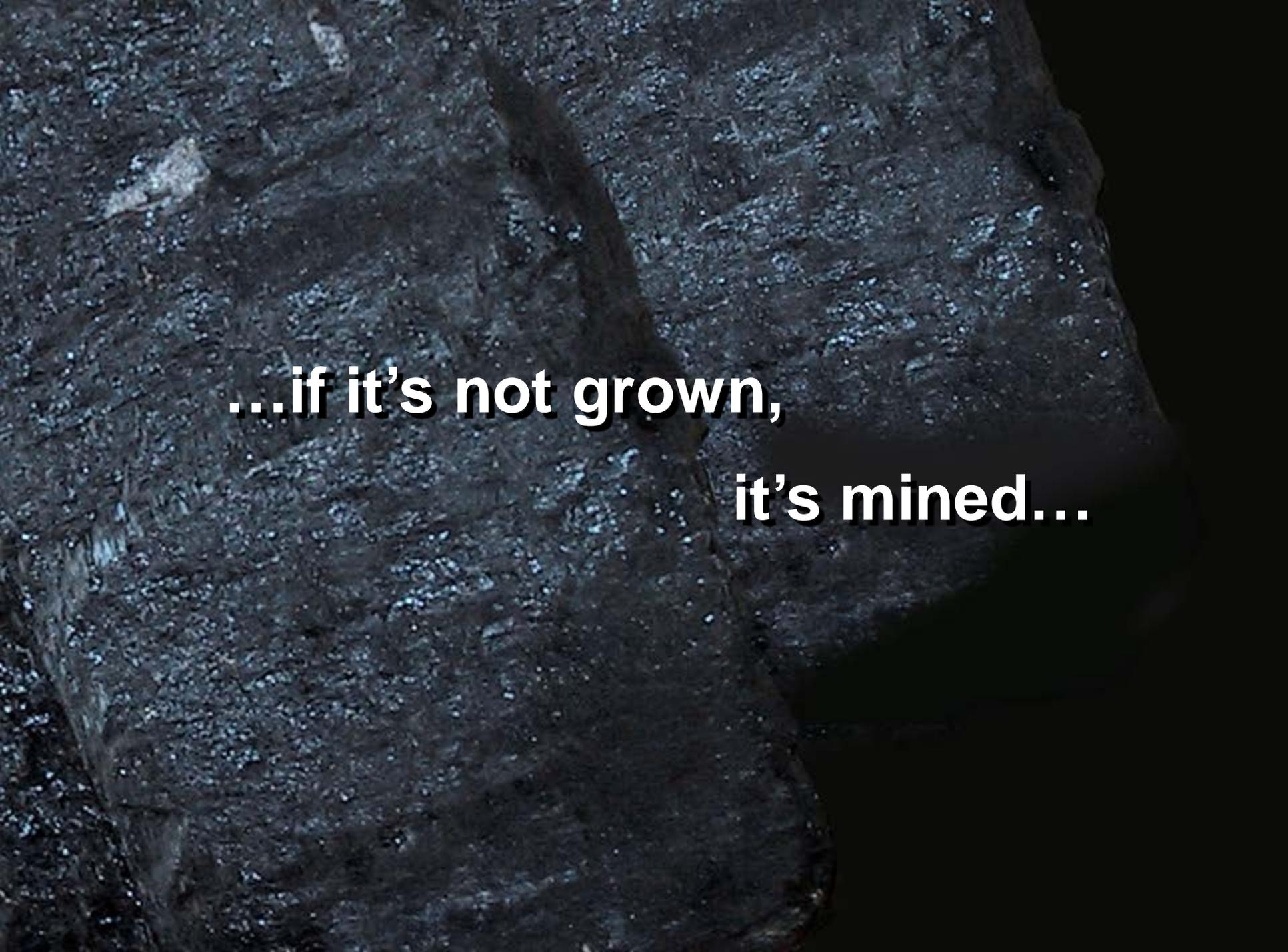


Shearer

Summary

- Coal is the leading fuel source globally for electricity generation today and is projected to be the leading fuel source in 2035
- In the United States and other countries, mining technology has resulted in higher production with fewer mines and workers
- Surface mining uses primarily blasthole drills, draglines, shovels and trucks
- Underground mining methods include room and pillar, and longwall mining





**...if it's not grown,
it's mined...**

Thank you



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