The Future of Coal Utilization in the U.S.

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Chairman and CEO

December 8, 2008
Forward-Looking Information

This presentation contains “forward-looking statements” – that is, statements related to future, not past, events. In this context, forward-looking statements often address our expected future business and financial performance, and often contain words such as “expects,” “anticipates,” “intends,” “plans,” “believes,” “seeks,” or “will.” Forward-looking statements by their nature address matters that are, to different degrees, uncertain. For us, particular uncertainties arise from changes in the demand for our coal by the domestic electric generation industry; from legislation and regulations relating to the Clean Air Act and other environmental initiatives; from operational, geological, permit, labor and weather-related factors; from fluctuations in the amount of cash we generate from operations; from future integration of acquired businesses; and from numerous other matters of national, regional and global scale, including those of a political, economic, business, competitive or regulatory nature. These uncertainties may cause our actual future results to be materially different than those expressed in our forward-looking statements. We do not undertake to update our forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law. For a description of some of the risks and uncertainties that may affect our future results, you should see the risk factors described from time to time in the reports we file with the Securities and Exchange Commission.
Arch Coal is a leader in the energy industry

- One of the largest U.S. coal producers with 2007 revenues of $2.4 billion
- Core business is providing U.S. power generators with cleaner-burning, low-sulfur coal for electric generation
  - Supplies roughly 12% of U.S. coal needs
  - Provides source fuel for roughly 6% of U.S. electricity
- Talented 4,000-strong workforce operates large, modern mines
- Industry leader in mine safety, productivity and reclamation

Source: ACI
Arch’s future success hinges on three key pillars of performance

Operating the world’s safest coal mines
- Awarded MSHA’s Sentinels of Safety honor for operating the nation’s safest underground coal mines in 2006 and 2007
- Ranked first among coal industry peers for safety performance last year
- 2007 was second-best year on record for total incident rate

Acting as responsible citizens and good environmental stewards
- 2007 was best year for compliance in Arch history and best among peers
- Earned five National Good Neighbor Awards in past five years
- U.S. Department of Interior Award in 2007 for best surface reclamation

Achieving superior financial results
- 2007 was Arch’s second-best financial performance on record
- Operated three of top eight most productive longwall mines last year
- Forbes named Arch among America’s most trustworthy U.S. companies of 2008

Source: ACI and Public Sources
Today’s coal mine is highly mechanized and computerized

- Modern coal mining is an engineering marvel
- Workers, such as equipment operators, mechanics, electricians, engineers, are generally well-paid and highly skilled
- New generation of miners comfortable with joysticks and computers
- One of the most heavily regulated industries in the U.S.

Source: ACI
Coal is abundant, secure and widely dispersed

Based on current production levels and proven reserves, coal should outlast gas supplies and oil reserves by **more than 2x** and **4x**, respectively.

Source: Bank of America, BP Statistical Review and Blackwell Energy Research
Coal has been the world’s fastest-growing fuel source in the past seven years

Cumulative Percent Change in Global Energy Consumption
2000 – 2007
(in million tonnes of oil equivalent)

- Coal: 35%
- Hydro: 16%
- Nat. Gas: 20%
- Oil: 11%
- Nuclear: 6%

- Since 2000, **global coal use has grown by 35%**, roughly double the consumption growth in natural gas
- **Growth in coal demand** will continue to be driven by consumption in the developing world, with gains in the developed world as well
- **Fossil fuels** are expected to remain dominant global energy sources through 2030

Coal is the dominant fuel source for electricity generation around the world

Worldwide Net Electricity Generation by Source
(2006, per billion KwH)

- Coal: 41%
- Natural gas: 20%
- Hydro: 16%
- Nuclear: 15%
- Oil: 6%
- Non-Hydro Renewables: 2%

Sources: EIA, IEA World Energy Outlook 2008
Coal is a major component in steel production

Blast Furnace Iron Production & Metallurgical Coal Consumption
(in millions of metric tons per year)

Source: McCloskey Metallurgical Coal Quarterly 2Q08
The EIA predicts coal consumption will grow on a global scale for decades to come.

Source: 2008 EIA, IEO Table A7
Coal is the primary source of electric generation in the United States.

U.S. Net Electricity Generation by Source
(2006, per billion KwH)

- Coal: 49%
- Natural gas: 20%
- Nuclear: 19%
- Hydro: 7%
- Other Renewables: 3%
- Oil: 2%

Arch Coal, Inc.
Coal has a vital role in America’s energy future

U.S. Energy Reserves
(in trillion Btu)

- Coal: 94%

U.S. Petroleum Supply
(million barrels per day)

- OPEC 35%
- Other Imports 30%
- Domestic 35%

U.S. Fuel Prices
($/million Btu at 12/5/08)

- PRB 8800 FOB rail (2009)
- Natural Gas Wellhead (Jan. 2009)
- Crude Oil

- ~7x $0.82 = $5.75 per bbl
- ~9x $0.82 = $7.07 per bbl

Source: EIA, Platts, Argus Coal Daily and NYMEX

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Low-cost electricity enhances America’s standard of living and global competitiveness

**International Power Costs**
*(U.S. cents per kilowatthour)*

- **USA** 10.6¢
- **France** 15.8¢
- **Japan** 17.8¢
- **UK** 21.9¢
- **Brazil** 19.0¢
- **Chile** 13.6¢
- **Mexico** 9.3¢
- **Denmark** 32.2¢
- **S. Africa** 6.1¢
- **S. Korea** 10.2¢
- **Taiwan** 7.9¢
- **New Zealand** 16.1¢
- **Australia** 9.8¢
- **Indonesia** 6.2¢
- **India** 4.7¢
- **Taiwan** 17.8¢

Source: EIA International Electricity Prices for Households 2006-2007
Despite news coverage of cancellations, U.S. is experiencing largest coal plant build-out since 1980

- America has long had one of world’s most reliable power systems but investment must be made
- Build-out of 15.5 GW equates to 55 million tons of new coal demand annually over next four years
- NextGen Energy Council study estimates that the U.S. needs 120 GW of new generation by 2016 just to maintain the 15% capacity margin required for grid reliability
  - Need all resources including coal, natural gas, nuclear, renewables and energy efficiency to accomplish goal

Anticipated Demand for Coal Plants Under Construction (in millions of tons)

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Reserve margins for the U.S. power grid will fall below target levels without adequate investment

Year when reserve margin is expected to fall below target level, by region

America has long had one of the world’s most reliable power systems. Without investment, that could soon change.

Source: NERC 2007 Long-Term Reliability Assessment
Where will the United States get its future power?

- U.S. **natural gas** production is currently keeping pace with demand, although all-in costs for natural gas make natural gas less attractive than coal in generating 24/7 electricity.
- Since 2000, **nuclear** utilization has been at or close to 90% and the fleet is aging. At least 40 new units are needed by 2030 just to maintain current U.S. share.
- **Hydro** power is concentrated in the Northwest. No net additions to capacity are anticipated.
- **Renewable energy**, including wind and solar, currently represents just 3% of electric generation. Even with rapid growth, source is likely to remain a niche player.

Source: EIA, ACI and Baker Hughes
Obama-Biden unveil New Energy for America plan that includes clean coal technologies

“I am a big proponent of clean coal technology.”

U.S. President-Elect Barack Obama

- President-Elect Obama has announced plans to develop five “first-of-a-kind” commercial scale coal-fueled plants with carbon capture and sequestration technology
- The Obama Administration plans to create millions of new green jobs in five specific areas, including development and deployment of clean coal technologies

Source: “New Energy for America” plan, Obama.com, Change.gov and Google
Beyond electricity, coal can be converted to diesel fuel, jet fuel, natural gas and hydrogen

A plug-in hybrid is one entry for coal into the transportation market
- Perhaps the most realistic way to de-carbonize the automotive fleet

Coal can be converted into transportation fuel
- At current oil prices, coal-to-liquids facilities are economically feasible

Gasification can reduce emissions and transform coal into pipeline-quality natural gas
- IGCC and CCS are critical enabling technologies in a carbon constrained world

Source: ACI
Since 1970, coal has been used in increasingly clean ways in the United States.

Higher efficiency rates and carbon capture technologies create opportunities for reducing carbon intensity as well.

Source: NMA, EPA

NOx (Nitrogen Oxide), SO2 (Sulfur Dioxide), PM10 (Particulate Matter)

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Many public sources recognize that coal will remain part of any energy solution

- “…the priority objective with respect to coal should be the successful demonstration of a large-scale integrated CCS system – capture, transportation and storage.”

- “Our second and equally important premise is that coal will continue to play a large and indispensable role in a greenhouse gas constrained world.”

- “Coal will continue to be important in the energy mix around the world, including fast-growing economies.”

- “Extensive carbon capture and storage will be necessary to allow the continued use of fossil fuels without damage to the atmosphere…”

Source: U.S. Massachusetts Institute of Technology (MIT) Study, U.K. Stern Review
“The vast majority of new power stations in China and India will be coal-fired: not ‘may be coal-fired’; will be. So developing carbon capture and storage technology is not optional, it is literally of the essence.”

Tony Blair

“Breaking the Climate Deadlock: A Global Deal for Our Low-Carbon Future”
June 2008
The developed and developing world must work together to address the climate challenge

- The growth rate of GHG emissions in developing nations (non-OECD) is likely to significantly exceed that of the developed world
- Developed world must invest in more clean coal technology R&D

Energy-Related CO₂ Emission Trends
(in gigatonnes of carbon dioxide)

Source: International Energy Outlook 2008 pg 385

*OECD = Organization for Economic Cooperation and Development
The international community should pursue advances on a wide range of clean coal technologies

- Oxy-firing
- Carbon Utilization
- Co-firing with Biomass
- Capture-Ready Plants
- IGCC
- Carbon Capture & Storage
- Amine Scrubbing
- Coal Conversion
- Enhanced Oil Recovery
- Hydrogen
- Efficiency Gains

Source: ACI and public sources
Coal has a vital role in America’s energy future

- Abundant
- Affordable
- Increasingly Clean