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About the Cover:
Foundation Coal is an industry leader in mining reclamation. The Delta Mine project is the winner of three reclamation awards including 2005 Office of Surface Mining’s award for Excellence in Surface Coal Mining, Reclamation and Sustainable Development. The photo shows the reclaimed wetlands area and wildlife habitat.
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Moving Ahead!

Jim O’Neil, President, American Coal Council & President, DTE Coal Services

In my last message, I noted that the utility-coal industry was entering into an exciting time of change. This theme also applies to your American Coal Council (ACC) as we continue to proactively implement plans developed by the ACC Board last year. We are moving ahead with an agenda that sharpens our focus on maintaining and improving existing programs, while also expanding our offerings to members and the coal community at large.

We have added two new staff positions: Conference Director and Communications Director. Our Conference agendas continue to offer industry leading opportunities for education/information distribution and networking. We have expanded our Champion and Patron sponsorship offerings in response to increased demand. Partnerships have been formed with other industry leaders such as Platts, ACAA, ACF, and CAC to ensure that our goals and objectives are met. We are launching new initiatives, such as the Awards Program and Success Stories that will allow member companies to publicize their achievements. Our membership continues to grow in all categories and we are increasing contact frequency and interaction with our members.

As we continue to implement our strategies, the coal-based generation industry continues to grow. We are witnessing significant new investments in infrastructure to move coal to its end users, and large investments continue to be made in new technologies and research. This includes investments in new combustion technologies such as coal gasification, ultra super-critical burners and more.

Finally, a new Energy Bill was just signed into law – the first major restatement of American energy policy in decades. Among the broad policy decisions in the Bill:

- Repeal of the PUHCA
- A focus on maintaining (and containing) generation costs and availability while finding ways to expand energy sources and supply
- A commitment to coal-based generation and American energy sources
- A focus on and commitment to development of new clean coal technologies

The industry is moving forward, beyond the excitement and anticipation of new energy pathways, to a proactive plan for providing the U.S. with an abundant, affordable, and increasingly clean supply of coal-based energy. Your Council is likewise moving forward to support its membership in their efforts to achieve the goals necessary to thrive in this complex environment.◆
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Opportunity and motive - the cornerstones of any good detective novel. This past year, as the ACC leadership has worked to implement plans to advance our strategic agenda, we’ve kept these two things in mind. What motivates a company to join the ACC? What opportunities can we provide to enhance the business objectives of our members?

We’ve investigated various program and service options. We’ve canvassed the utility-coal community, querying members and prospective members about their needs. We’ve examined what other associations are offering and explored opportunities to join forces with them in pursuit of common objectives. We’ve analyzed prospective priorities and plotted a course of action to commandeer the greatest value for our staff and financial resources.

One result of these efforts is the addition of this Buyers’ Guide to our portfolio of publications. Our electronic quarterly and Members Only newsletters present information on ACC activities and industry news, while our annual magazine, American Coal, serves as an advocacy piece for the utility-coal industry.

The annual Buyers’ Guide provides us with another opportunity to keep issues of importance to the industry in front of public policy makers, the media, community leaders, and business colleagues on a more frequent and timely basis. It also offers an opportunity for our member companies to showcase their success stories, products, and services. Our hope is that this directory will serve as an invaluable “whodoesit” resource to help you find the information and contacts you need and to help others in the industry find you.

We welcome your comments and suggestions on the Buyers’ Guide, as well as recommendations for other opportunities that will motivate your continued support of and participation in the American Coal Council. ◆
## 2006 Event Dates

**Mercury & Multi-Emissions Compliance**  
March 14 - 16, 2006  Columbus

**Spring Coal Forum**  
May 16 - 18, 2006  Birmingham

**PRB Coal Use Seminar (in conjunction with Coal-Gen)**  
August 15 - 17, 2006  Cincinnati

**Coal Market Strategies**  
October 10 - 12, 2006  San Antonio

**Coal Trading Conference**  
December 6 - 7, 2006  New York

For additional information  
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Through no small effort on the part of the assembled authors and our Editorial Board, we have managed to produce a solid representation of the key issues influencing the coal industry today. On behalf of the American Coal Council, I would like to offer my thanks to everyone for their efforts, most notably our Editorial Review Board:

- Trygve Gaalaas, Pace Global Energy Services
- Rick James, We Energies
- Vic Svec, Peabody Energy

In the editorial aspect of this issue, we continue the ACC’s focus on three primary areas of interest for the coal industry: coal and energy supply, environmental progress made by our members, and business and marketplace issues impacting coal supply and utilization.

By clarifying the market factors that are encouraging increased imports of foreign coal, while also considering potentially limiting factors in international markets, Larry Metzroth, with Global Energy Decisions helps illuminate international coal supply issues. Paul Newell of Newell Consulting describes the move in Ontario, Canada to replace coal-fueled generation with a mixture of conservation programs and new natural gas capacity. He considers why this move may be short sighted and how these changes would impact on American interests.

In the environmental realm, Corky Corkadel of Rentech Inc. addresses the values of coal liquefaction and reviews the process of converting coal into clean energy sources, such as Fischer-Tropsch Diesel (FTD). We also look at one example of how a member company – Foundation Coal – has employed their award winning, proactive approach in the environmental realm to reclaim mine sites. Mark Bossard of Pace Global Energy Services considers how new environmental regulations – the Clean Air Interstate Rules (CAIR) and the Clean Air Mercury Rules (CAMR) – will reshape the American steam coal markets. Rounding up the environmental section, I review the push to implement a cap & trade market for CO₂ and suggest another option.

Considering economics and the marketplace, Gary Payne with Dominion Energy reviews the past and future of NOx and SO₂ trading markets and then looks beyond to discuss how those markets are influencing utility fuel choices. Barry Palmer with the Waterways Council reviews the current state of our inland waterways infrastructure and then considers the efforts and funding available to maintain and upgrade those facilities. Mark Carr of AEP/MEMCO continues with a look at the barging system and considers how upgrades and efficiency improvements on the part of barging companies have enhanced barge services. Bob Bellamore of Utilipoint considers the burgeoning market for energy hedge funds and the integral role that coal will play in the contemporary energy market. Lastly, Andy Stewart of Power Products Engineering provides an update on the recently released ACC report on CCPs and their role in contributing to U.S. economic well-being and reducing environmental impacts.

The authors assembled in the Buyers’ Guide have provided readers with a clear and coherent conception of the issues affecting the coal industry. However, even with all of the offerings discussed above, this publication still has more to offer in the form of a detailed Buyers’ Guide. This Buyers’ Guide is just one more example of the ACC’s dedication to providing members with opportunities to showcase their services and products. As the product matures, we hope that this Guide will become an industry standard publication for those who are looking for services and suppliers in the coal industry.
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I
mported coal has become a significant factor in U.S. coal markets in the past decade. The total volume remained below 10 million tons (MT) per annum through 1999, but blossomed to nearly 20 MT by 2001 – and soared to over 27 MT in 2004. Though incomplete data are available for 2005 to date, the trend suggests that imports could match or even modestly exceed the volume recorded for 2004.

**U.S. Coal Imports**

Several factors have stimulated the consumption of imported coal. Monthly data reported by utility coal consumers to the Federal Energy Regulatory Commission (FERC) and the Energy Information Administration (EIA) for the period 2003 through May 2005 underscore that the vast majority of the coal is steam coal destined for the power sector. Although some coking coal is shipped from foreign sources to U.S. consumers, it represents a small fraction of the total import volume – mostly mid-volatile coal shipped from Canada to the Midwestern United States.

Demand for imported steam coal in the U.S. power sector is initially attributable to a desire by several utilities to diversify their coal supply. Some plants located on the Gulf Coast and in New England that are already capable of receiving water-borne coal were natural targets for foreign suppliers. Often the use of self-unloading vessels and/or routing large vessels through intermediate bulk handling facilities at major ports eliminated the need for large-scale capital investment in handling facilities at the plant sites. Furthermore, these plants are remote enough from major domestic steam coal sources that the delivered price of foreign steam coal was competitive with domestic coal railed directly, or railed and barged to their locations.

**U.S. Monthly Coal Imports**

As the surge of imports at the time of the implementation of Phase II of the Clean Air Act acid rain reduction program suggests, the low sulfur content of many foreign coals also stimulates demand. A need for very low sulfur compliance coals at some generating plants severely constrains the domestic supply of coal available to these plants. However, foreign suppliers –
especially in Colombia and Venezuela – have consistently proven themselves capable of supplying very low sulfur coals.

**Sulfur Content of U.S. Steam Coal Imports**

The combination of environmental constraints on sulfur emissions and price pressures caused by constrained domestic coal supply and high transport costs influenced power plant operators to begin investing in coal handling facilities at ports and plant sites. This expands the population of power plants that can economically receive imported coal. Further development of intermediate ports in the Southeast and Mid-Atlantic states and in New England has opened the door for large-scale seaborne-to-rail transfer of imported coal and set the stage for further penetration. As these facilities have become operational and expanded, however, the future of imported steam coal has been jeopardized by a dramatic increase of delivered prices and severe constraint of supply.
While the physical facilities to support higher imported steam coal volumes are being installed, international coal and transportation dynamics could mitigate demand expansion. Coal supply growth in the “Atlantic Market,” which is underpinned by shipments of steam coal from South Africa, Colombia, Venezuela, and Poland to Northwest and Mediterranean Europe and East and Gulf Coast North America, was stagnant in the early 2000s. Further, a shortage of bulk vessels, largely caused by an increase in Chinese trade, has driven seaborne transport rates up by 200 percent to 300 percent since mid-2003.

Coal production and coal exports in South Africa and Poland actually declined in 2004 despite some of the highest prices in the past 30 years. Production and exports in Colombia and Venezuela showed strong gains in both 2003 and 2004; however, the loss of volume from traditional suppliers to Northwest and Mediterranean Europe, like South Africa and Poland, served to siphon off South American coal to those markets and pull average prices upward.

From a strategic perspective, supply conditions in the Atlantic market could be constrained for several more years. While Russian producers are moving to increase supply, their access to the seagoing market is limited by port capacity and internal transportation bottlenecks. Further, Russian coal is being pulled into East and Central European overland markets and into Asian markets. As a condition to their accession to the European Union, the Poles are deliberately downsizing their coal industry and plan on reducing production and exports. Reserve depletion, inland transportation constraints, labor shortages, and port constraints have handicapped the South African coal industry for the past six years, and conditions will, at best, improve only slowly. Finally, Colombia – where the most optimism exists – remains constrained by internal transportation and port capacity; and Venezuela has chronic infrastructure problems that will limit rapid expansion of coal export capability.

In the face of these supply problems, demand in European markets remains strong as domestic coal operations are shuttered in Great Britain, Germany, and Spain and high natural gas prices stimulate demand for coal-fueled power. Further, the shortage of bulk commodity transport capacity, while slowly correcting, may keep waterborne rates high and very volatile for the next three to five years.

Nevertheless, the development of relatively large transfer facilities in the past few years has significantly improved the “market reach” of imported coal. Further environmental constraints will only enhance the desire of power plant operators within that reach to try imported coal. The outlook for competing domestic coal suppliers remains constrained as well, essentially creating a standoff between cautious investors in Appalachia and cautious investors in South America and South Africa. The Europeans will continue to keep this situation “interesting” by cutting back their own coal production while maintaining their steam coal burn.

The U.S. EIA projects that coal imports will grow 2.0 percent to 2.5 percent annually between 2003 and 2025. This translates to an addition of 500,000 to 1.0 MT per annum over the next five years, and could bring total volume to 30 to 35 MT by 2010. It is likely that significant further investment in U.S. handling capacity will be necessary to exceed this volume. The combination of “good” news and “bad” news about fundamentals in the steam coal import sector will make forecasting a very dicey occupation for several years.

Larry Metzroth is Vice President of Coal Advisory Services, Global Energy Decisions (www.globalenergy.com).
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Ontario is embarking on a path described by its Independent Electricity System Operator (IESO) as “the largest and most significant electricity change ever undertaken” in the province. By 2009, 7,500 MW of coal-fired generation – representing 25 percent of the province’s current supply – will be shut down and replaced with new natural gas-fired plants, renewables, cogeneration, refurbished nuclear, demand management, and hydroelectric. One generation station has already been closed in this effort.

The genesis of this policy is in Ontario’s electricity restructuring debates during the mid-1990s when environmentalists sought assurances that a new competitive electricity market would bring benefits for the environment. One group formed in late 1997 with the express goal of closing the coal-fired stations. During the 2003 provincial election campaign, the then opposition Liberal Party made it part of their platform.

In October 2003, the newly elected Liberal government began to outline the shutdown plan through a series of press releases and speeches. It was announced that by 2009, 9,000 MW of new generation was to replace the coal plants and improve the province’s power system. In April 2004, a consultant’s modelling study on the health and environmental benefits of replacing coal-fired electricity was released as the main justification for their policy. Then in June 2004, an Environment Ministry report showed that more than 50 percent of Ontario’s air quality problem comes from U.S. sources. With the coal shutdown plan in hand, the government subsequently announced it would use this “environmental leadership” to work cooperatively with U.S. authorities as well as participate in any legal actions seeking emission reductions from utilities in upwind states.

Future Generation Needs: By 2014, up to 11,600 MW of Ontario’s electricity requirements will need to be met with new supply, refurbished generation or conservation measures. Source: IESO
However, this year’s hot, humid summer, coupled with the province’s electricity supply shortages, has rekindled opposition to the coal phase-out plan. During the month of July 2005, a new record peak of 26,160 MW was set – something that was not predicted to happen until 2014. Days later, more than 3,400 MW – 13 percent of the province’s supply – was imported, highlighting Ontario’s growing dependence on imports to “keep the lights on.” On three occasions this summer, the IESO has cut voltage by five percent and asked consumers to curtail energy use.

With a 77 percent year-over-year increase in the average July spot price for electricity, industry is again expressing concerns about growing energy costs. Consumers are also worried about higher and more volatile electricity prices down the road as Ontario’s dependence on natural gas-fired generation increases. Others question how provincial natural gas consumption can increase 30 percent to fuel these plants without impacting natural gas prices for industry.

The reality of the anticipated environmental gains is also being questioned. Some believe the government is overlooking the significant advances in emission reduction demonstrated in other jurisdictions, such as those achieved with scrubbers and selective catalytic converters in Denmark and Germany, and, in the U.S. via EPA’s Clean Air Interstate (CAIR) and Clear Air Mercury (CAMR) Rules. At home, Ontario has already achieved success using cleaner coal (Powder River Basin) and by installing emission reducing technology at the Nanticoke and Lambton Stations. In fact, in contrast to the government’s April 2005 study, another by the same consultant showed the health impacts attributable to the fleet’s two biggest stations, equipped with cleaner coal technology, would be less than one percent of the health effects alleged to smog sources overall.

The Power Workers Union (PWU), representing 15,000 industry workers and the Ontario Chamber of Commerce (small business), argue that significant benefits are achievable by continuing to retrofit the province’s coal plants with emission reducing technologies. The PWU believes that retrofitting the coal plants and bringing Ontario’s mothballed nuclear reactors back online would reduce greenhouse emissions by more than 20 megatonnes.

At the local level, citizens in the affected host communities are drawing attention to the impacts closure will have on them, including loss of jobs and business contracts. Bigger impacts loom with the increasing difficulty these plants will have maintaining equipment and securing coal supplies on advantageous terms as shut down approaches.

The most recent IESO’s 10-Year Forecast (http://www.ieso.ca) is raising more flags with the coal shutdown plan. Among the challenges noted:

- New generation must resemble the overall energy capability of the existing coal-fired stations for load following and operating reserve.
- The actual capacity wind power will be able to supply is being studied.
- Continued reliance on future imports is cautioned against, given uncertain availability, economics and transmission capacity.
- Significant investments in transmission upgrades needed to accommodate new generation.

Also noteworthy was the exclusion of demand management contributions from the forecast.

Recently, the Ontario Power Authority, at the direction of the government, began a consultative energy planning exercise for the period 2015 to 2025. Ironically, the success of this exercise rests heavily on the outcome of the government’s current energy plan – one that has had no meaningful public consultation and no comprehensive, critical cost/benefit analysis. Critics are now calling for such a review of the coal shutdown plan before it is too late to change course. They want coal in the province’s future energy mix and are concerned that it will cost future governments millions of dollars and years of effort to overcome the public’s negative perception of coal. Failing to correct this perception will rob Ontario of the opportunity to benefit from North America’s abundant, accessible, secure, and affordable coal supplies and new clean coal technologies.

The situation in Ontario should be of interest to U.S. coal producers, utilities, and policy makers as the province currently imports approximately 16 MT of American coal.

Additionally, Ontario has supported northeastern Attorneys General in the court actions to force emissions reductions and their coal phase-out plans are being hailed as a positive example for U.S. policy makers. Ontario’s move to phase out coal is providing substantial traction for those who would push to see coal-fired generation eliminated from the U.S. ✆

Paul Newall owns and operates Newall Consulting and can be reached at paul.newall@rogers.com.
Using Coal to Replace Foreign Crude and Petroleum Products

By Corky Corkadel, Rentech, Inc.

Consider That:
• From 1987 to 1995 global oil demand remained in a narrow band of 66 to 70 million barrels per day.
• Over the past 10 years, global oil demand grew from 70.0 to 82.4 million barrels per day and appears to be headed toward 85 million barrels per day by yearend 2005 and 120 million barrels per day by 2025 – an increase of 35 million barrels per day.
• The U.S. demand of approximately 22 million barrels per day in 2005 is expected to increase to 28 million by 2025 of which 75 percent will be imported – a significant portion as fully refined petroleum products, not crude.
• U.S. production has declined from 8.6 million barrels per day in 1986 to its current level of 5.6 million barrels per day and is estimated to be decreasing at an annual rate of two percent.
• Most of the world’s known oil reserves are in areas which occasionally suffer from geopolitical instability. (Sources - Department of Energy and International Energy Agency)

Placed in this unenviable position of a) increasing oil usage, b) decreasing domestic oil production, c) decreasing reserve position and d) little or no new refining capacity, the U.S. faces dramatically increasing demand for imports of refined petroleum products. The only immediate solution is to transform its other large and vast resource – domestic coal – into ultra-clean fuels.

But the challenge is to find a way to maximize coal conversion in a clean and responsible manner and supply products that are readily assimilated into the existing delivery infrastructure and transportation systems. This provides the U.S. with a secure near-term source of energy at a critical time while allowing the nation to transition to other forms of alternative energy, which are not as readily available or cost effective.

Through the use of coal gasification combined with Fischer-Tropsch (FT) technology, the U.S. can begin to address its burgeoning energy needs. Furthermore, by converting to coal from natural gas or building new poly-generation facilities that co-produce FT fuels, agricultural chemicals/fertilizers and power from coal, the project economics are enhanced and we solve another issue for the U.S. – ever increasing fertilizer imports and costs due to high domestic natural gas prices.

What are Fischer-Tropsch Fuels?
Fischer-Tropsch is a proven gas-to-liquid (GTL) process, invented in 1923, to produce synthetic fuels. This process was originally deployed in Germany to supply fuel for its military in World War II. More recently, South Africa developed a large FT process using coal and later natural gas after United Nations (UN) sanctions were imposed against petroleum imports during the apartheid era.

Fischer-Tropsch Diesel (FTD) has very low environmental impact compared to petroleum-based diesel. FTD has near-zero sulfur content and low aromatics – it is colorless, odorless, and low in toxicity. FTD is interchangeable with conventional diesel fuels and can be blended with petroleum diesel with little or no modification to engines or additional delivery infrastructure. The Environmental Protection Agency (EPA) has concluded that, “Fischer-Tropsch fuels offer important emission benefits compared with diesel, reducing nitrogen oxide, carbon monoxide, and particulate matter.” FTD qualifies as an alternative fuel under the U.S. Energy Policy Act of 1992 and California State standards.
The Rentech Process Technology

There are basically three key components for a FT facility:
• the gasification and synthesis gas clean-up unit,
• the FT reactor and upgrading unit and
• the co-produced power generation unit.

Major suppliers of gasification technology include Lurgi, GE, Shell, and Conoco-Phillips. Their gasification systems convert any carbon-bearing feedstock, including coal, natural gas, petroleum coke, tires or wood chips into a synthesis gas composed of primarily H₂ and CO. This synthesis gas is fed to a slurry reactor containing Rentech’s patented and proprietary iron catalyst. In the slurry reactor, the synthesis gas is converted to ultra-low sulfur, ultra-low aromatic liquids that can then be processed into various high-grade products such as FT diesel, jet fuel, naphtha, waxes and lube oil stock.

Rentech’s GTL experience includes its three-year program with Texaco under the DOE’s Vision 21 Early Entrance Co-Production project where it validated the Rentech Process Technology at the DOE Laporte, Texas gas-to-liquids test facility in October 2000. As mentioned above, poly-generation of agricultural chemicals can be accomplished by increasing the quantity of syngas production and feeding this excess stream into a separate chemicals unit. Also, under a new initiative by the U.S. Department of Defense (DOD – http://www.dod.mil – work is underway to develop a single battlefield fuel based on a JP-8 specification and derived from coal-fed FT facilities.

What are the benefits of Rentech’s slurry reactor with iron catalyst?

Rentech’s iron-based catalyst and its efficient utilization in a fully integrated GTL complex is the key component of Rentech’s Process Technology. The end result is a relatively inexpensive and non-polluting facility that can operate with a broad range of feedstock.

Rentech’s iron-based catalyst has a wide range of operational H₂:CO ratios which provide flexibility in process design while avoiding patent disputes associated with cobalt-based technologies. The slurry reactor design with iron catalyst provides:
• The lowest per-unit capital investment and operating expense.
• High carbon conversion efficiency in a single pass system with excellent temperature control/low pressure drop.
• Ability to convert a wide range of feedstock, including remote or stranded natural gas, coal, petroleum coke, and industrial off-gas.
• Limited unit downtime with on-line catalyst withdrawal/replacement and no environmental issues with catalyst disposal.
• A clean stream of CO2 that can be easily captured and sequestered.

Using this technology with low-cost coal feedstocks, FT fuels are very competitive versus conventional petroleum products at equivalent crude values of $30 per barrel or more. This helps reduce the U.S. dependence on foreign crude and petroleum products with increased supply security. Furthermore, under the DOD Clean Fuels Initiative, a large new market driven entirely by FT production from coal will help stimulate the fast-track construction of numerous new projects.

Corky Corkadel is Vice President of Strategic Programs at Rentech Inc. (www.rentechinc.com).
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Reclaiming Land Resources for Future Generations

Editor’s Note: According to reclamation statistics, found on the National Mining Association site, more than 2.1 million acres of mined and abandoned mine lands have been reclaimed and restored in the past three decades. As this article, which describes the award-winning reclamation activities of one member company – Foundation Coal, shows mining companies are committed to returning their operating areas to a natural and productive state.

To waste, to destroy, our natural resources, to skin and exhaust the land instead of using it so as to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them.

- President Theodore Roosevelt

Words to live by. Foundation Coal and its affiliates have left a positive, indelible mark on mined land assets by adhering to regulatory standards and through their firm commitment to environmental and social responsibility. This commitment to reclamation and the environment is evidenced by: a favorable regulatory compliance record, timely bond releases after mining completion, donation of land for public use, and proactive pollution prevention measures. Statutes such as the federal 1977 Federal Surface Mining Control and Reclamation Act (SMCRA) set the framework and standards for reclamation practices, but many companies, like Foundation Coal, are seeking to exceed standards.

Since 1999, Foundation Coal affiliates and its predecessor companies have amassed many environmental awards which include highlights such as successful mitigation of archeological sites, donation of reclaimed acreage for public enjoyment, use of leading edge technology in reclamation, excellence in drainage control, successful tree and shrubbery planting, and the preservation of environment and public safety during reclamation.
One outstanding example of environmental leadership is Foundation’s affiliate, Delta Mine Holding Company. The company’s mined out site was recognized in September 2005 as the national winner of the Office of Surface Mining’s (OSM) award for Excellence in Surface Coal Mining, Reclamation and Sustainable Development. The award was given after the site had also received national Interstate Compact Commission and State of Illinois awards for extraordinary achievement in post-mine reclamation at its Delta Mine located in the Illinois Basin.

The Delta project has gained broad recognition for excellence in regulatory compliance, contemporary reclamation, drainage control, reclamation success and innovation. The multiple awards demonstrate Foundation’s commitment to achieve compliance with state and federal agency regulations in addition to providing the necessary resources to go beyond the minimum requirements. Foundation’s dedication to reclamation initiatives has led to recovery efforts which have rendered productive land with multiple uses from forestry and cropland to restored wildlife habitats and water resources. The Delta mine operated 17 years and removed approximately 34 million tons of coal over its production lifespan. The project has restored 8,200 acres back to productive land. The Delta project underscores the necessary efforts of mining companies to achieve balance between the nation’s need for reliable, domestic, low-cost energy and effective environmental restoration.

Another hallmark and legacy of Foundation’s commitment to environmental practices is a national award-winning site located near Price, Utah. The reclamation of this site was performed by Foundation’s Plateau Mining Corporation affiliate. The rugged and steep mountainous reclamation site is comprised of elevations varying between 6,000-9,500 feet, which made for challenging reclamation execution and planning. The reclamation team overcame the challenges by taking careful steps to minimize runoff through using innovative mulching techniques. Today, numerous deer and elk among other animal species can be seen foraging on the vegetation and grasses amidst restored watersheds and streams, which now dominate the landscape.

Overall, the reclamation site exceeded the expectations of state and federal oversight members by using an approximate total of 93,700 yards of cut and backfill material, which exceeded the minimum expectation by 32,700 yards. In addition, reclamation crews utilized manual seed broadcasting to introduce native plant species such as: serviceberry, chokeberry, current, mountain mahogany, bitterbush, woods rose, cottonwood, snowberry, elderberry, and rocky mountain maple, which today show significant signs of maturity and high-visibility.

Whether it is searching for new and innovative reclamation techniques, rebuilding habitats, restoring vegetation, or donating land in West Virginia, Wyoming, Indiana, Utah, Illinois, or Pennsylvania, Foundation Coal is leading the way in environmental stewardship. As a leader in corporate social responsibility, Foundation Coal is doing its part to make efficient use of our nation’s natural resources while responsibly preserving those assets for the use and enjoyment by future generations.
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It may surprise you to know that, for more than 30 years, America’s air quality has been improving. Thanks in part to advances in clean coal technology, emissions of the major pollutants regulated by the Clean Air Act are nearly half of what they were in 1970 — despite the fact that our usage of coal to generate electricity tripled during the same time. As this trend continues, EPA projections show that by 2015, emissions from America’s coal-based power plants will be 75% less than they were in 1970. And, best of all, according to Department of Energy and private-sector experts, coal-based power plants capable of zero emissions will begin to enter the marketplace as soon as 2020. To find out more about how affordable, abundant and increasingly clean electricity from coal is powering our future, visit www.balancedenergy.org.
For more than 30 years, the Clean Air Act (CAA) has been shaping coal markets in the U.S. The Environmental Protection Agency (EPA) regulations, implementing the CAA Amendments of 1970 created “compliance coal” and a market for other low-sulfur coals as well. Prior to the CAA requirements, coal generally supplied users adjacent to mine sites. With state implementation plan (SIP) standards and new source performance standards (NSPS) providing incentives for – or in some cases mandating – the use of lower sulfur coals, coal markets began to shift away from higher sulfur coals. This trend was further supported with the CAA Amendments of 1990, which created the Acid Rain Program and its market-based SO\textsubscript{2} allowance system.

EPA has again taken action that will play a key role in reshaping coal markets. Earlier this year, EPA issued regulations setting tighter emission caps for coal-fueled generating units. The Clean Air Interstate Rule (CAIR) sets the caps on SO\textsubscript{2} emissions in the eastern U.S. at 3.6 million tons (MT) in 2010 and 2.5 MT in 2015, down from actual emissions of 9.4 MT in 2003, according to the EPA. CAIR also sets annual caps for NO\textsubscript{x} emissions in the eastern states at 1.5 MT in 2009 and 1.3 MT in 2015, down from actual emissions of 3.2 MT in 2003. The Clean Air Mercury Rule (CAMR) set a national cap on mercury emissions beginning at 38 tons in 2010 and declining to 15 tons in 2018.

The new caps cannot be met with low-emitting coals. However, the CAIR and CAMR programs are market-based and allow the lowest emitting generators to sell their excess emission allowances to the highest emitting generators. This allowance market system creates a very complex marketplace with many compliance options and significant opportunities for coal producers, coal traders and coal users.

The compliance costs are substantial. For example, for SO\textsubscript{2} alone, Pace Global estimates that in the first phase of CAIR the power industry will retrofit 45 to 55 GW of scrubbers at a cumulative cost of $9 to $14 billion (constant 2005 dollars). By 2018, it is likely that another 55 GW of scrubbing capacity will be added at an additional cost of $15 to $17 billion.

While scrubbers will create market opportunities for higher sulfur coals, they do not guarantee producers a market. In reality, the retrofit technology should increase fuel flexibility and allow generators to use the lowest Btu coal available. If generators choose to build scrubbers that limit fuel choices, they are likely to give up the capital cost savings through increased fuel costs over time. Fuel flexibility and inter-regional sourcing are the primary strategies available to fuel buyers to keep costs competitive.

Scrubbed units emit very little SO\textsubscript{2} with today’s wet scrubber efficiencies, regardless of the amount of sulfur in the coal being burned. With a scrubber efficiency of 98 percent, there is less than a 0.1 lb SO\textsubscript{2}/ MMBtu difference between the emission rates of high and low-sulfur coals.
SCH Terminal Company – Calvert City Terminal

The Calvert City Terminal is a new, modern coal transloading and blending facility located at Mile 14 on the Tennessee River. This terminal offers connections with five Class I railroads through the P&L Railroad, and is in the heart of the inland river system. SCH Terminal Company’s parent company, Southern Coal Handling Company, designed and built this terminal to meet the needs of utilities interested in receiving western coal or blends of western coal and Illinois Basin coals. The facility incorporates five belt scales, interlocked with the system PLC, to monitor two and three-part blends accurately and efficiently.

The terminal includes a loop track that will accommodate up to 150 railcars and a rotary dump for efficient, low-cost handling of western trains. CCT is presently transloading over 6.5M tons per year and expects to be at 10M tons per year within the next three years. The facility operates at a nominal rate of 3500 tons per hour and there is 1,000,000 tons of ground storage available.

Please call one of the contacts below if you are interested in the services provided by CCT, or if you are interested in other coal handling concepts and services available through Southern Coal Handling Company, Inc.

Gary Quinn (423) 899-0591 gquinn@sch-ces.com
Bill Rager (270) 841-9907 brager@sch-ces.com

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debate over the need for, and potential methods of, mitigating climate change continues to rage across the United States.

For those involved in the debate, it is interesting stuff, capable of producing some dramatic headlines. Regardless of one’s personal take on the debate or the scientific accuracy of one view versus the other, the push to reduce potential human causes of global climate change has substantial political capital.

People are concerned about the potential impacts of climate change and cap and trade programs have been proposed as one way to cut CO$_2$ emissions. While most agree cap and trade programs can reduce emissions, many argue the programs are too expensive, that they will have a negligible impact on climate change, and that they will achieve no more than current voluntary approaches.

Cap & Trade: Is this the best way to regulate CO$_2$?

By Jason Hayes, American Coal Council

American industry is among the most efficient and productive in the world and hampering its ability to compete with carbon taxes and more moderate forms of the Kyoto Protocol will do more damage than good.

Cap & Trade

Very simply, a cap and trade program would establish a socially approved, mandatory limit for CO$_2$ emissions, above which no further CO$_2$ could be released into the atmosphere. A government-monitored, market-based mechanism would facilitate the trading of permits to emit CO$_2$. It is argued that leaving the cost of the permits to a market system will ensure the most cost efficient distribution of credits and allow government officials to focus on the overall results of the program.

Under the program, companies that reduce their emissions below a set level can sell excess credits to companies that expect to exceed their permitted allowances. Companies that cannot reduce emissions or purchase sufficient credits to cover their emissions will be priced out of the market or face regulatory action when they surpass the emissions cap.

EPA documents claim NOx and SOx cap and trade programs are “extremely effective, providing substantial emission reductions, complete accountability and unprecedented data quality and access.”

However, opponents of CO$_2$-based cap and trade programs argue that while the NOx and SOx trading mechanisms may appear similar, imposing this mechanism onto CO$_2$ management will have very different effects. They argue that the cap and trade setup is not suited for CO$_2$ management and that the analogies between CO$_2$ and NOx/SOx diverge at the reasons for imposing the cap. Existing trading systems were designed to mitigate pollution and its impacts. However, CO$_2$ is neither a pollutant, nor is it within the legal mandates of federal agencies – such as the Environmental Protection Agency (EPA) – to manage. Recent decisions by both the EPA and the U.S. Court of Appeals for the District of Columbia Circuit, indicating that the EPA is not in a legal position to regulate CO$_2$ (under sections 202(a) or 302 (g) of the Clean Air Act), bolster this argument substantially.

Additionally, opponents note that attempts to control CO$_2$ emissions – such as the McCain/Lieberman bills and the proposed Bingaman amendment to the Energy Bill – will have the effect of re-writing U.S. law to allow Kyoto-style regulation of CO$_2$ (read: restriction of energy production). Regulation of CO$_2$ is precisely what the above-noted EPA and court decisions, as well as past Senate and House votes, had ruled out. Opponents of these programs castigate them as “camel’s-nose-under-the-tent strategies,” arguing that once the legal and regulatory mechanisms are in place, they will only grow in size and scope – further restricting energy use and overall productivity.

Furthermore, and perhaps most importantly, opponents note that while a CO$_2$ cap and trade program will ultimately reduce emissions, it will do so at substantial cost and with minimal to non-existent impacts on potential global climate change (the ostensible reason for cutting CO$_2$ emissions). A

Many opponents of the cap and trade program argue that the impact of such a program on CO$_2$ emissions will have the same effect as a carbon tax. The carbon tax, however, would avoid issues like rent seeking and the creation of “carbon cartels.”

AMERICAN COAL COUNCIL
They note that if the government is intent on decreasing emissions by increasing the price of carbon-based fuels and society is willing to bear the costs, the most open and honest method of doing so is to simply institute the tax and be done with it. Doing so would ensure the tax revenues would at least stay in a public setting and be used to mitigate other costs associated with implementing the program.\(^3\)

If we accept these concerns about the failings of the cap and trade program, we are still left with the very real motivation to implement some sort of mitigation policy. But is the move to mandate reductions necessary?

As other studies and articles in this publication indicate, the motivation of private markets can be every bit as urgent as government mandates.

Consumer and market forces are not only pressing for improvements in an economic sense, they are pushing for improvements in environmental and social performance as well. Recognizing the movement of investment dollars in this direction, market forces have already brought about substantial changes.

For instance, the formation of the Chicago Climate Exchange, with its voluntary requirements to reduce emissions – in advance of government regulation – gives strong evidence that proactive companies will find ways to meet this economic, environmental and social focus of consumers. The increasing popularity of “green” investment funds, the move toward corporate social responsibility, and the inclusion of environmental sections into many company quarterly reports all lend credibility to the notion that consumers and investors are seeking out companies with a long-term and environmentally sound view of

![Comparison of Growth Areas](image)

Source: Center for Energy and Economic Development
their operations – and that companies will heed their desires.

Even if one chooses to ignore environmental and social pressures, the above information shows that in the contemporary market, “being green can make green.”

Additionally, despite rapidly increasing demand for energy and fuel over the past several decades, American environmental indicators are overwhelmingly positive. Whether privately motivated or brought about by government regulation, the facts associated with American environmental performance are abundantly clear. We are using more and more energy and yet we are enjoying increasingly clean environmental conditions and the motivation to continue that pattern is pervasive.

As a recent editorial piece by the Competitive Enterprise Institute noted, those dedicated to implementing some form of carbon regulation are caught within a dilemma. Their assertion that carbon must be regulated as a means of protecting the environment entails economic pressures that few would be willing to bear. However, a willingness to moderate their demands for caps on carbon emissions only serves to enhance the alleged threat of climate change. That is, if the threat is so great, how can we possibly approach the issue with baby steps?

On the whole, industry’s history shows a clear pattern of addressing issues that are brought to them by consumers. Most recently, that includes the issue of climate change and CO₂ emissions. American industry is among the most efficient and productive in the world and hampering its ability to compete with carbon taxes and more moderate forms of the Kyoto Protocol will do more damage than good.⁴◆
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The allowance markets for SO₂ and NOx have followed the same path as other energy commodities over the past two years: increased volatility coupled with higher prices.

Since January of 2004, current vintage SO₂ prices have rapidly increased from about $225 per ton to $850 per ton today – a nearly 400 percent change. While NOx prices have not shown huge increases, they have not been immune to significant volatility. Since January of this year, vintage 2005 NOx prices have moved from $3,650 per ton, to as low as $2,000 per ton, then back up to more than $3,000, to a recent trade of $2,600 per ton. These price movements, coupled with increased regulatory certainty (if that is possible), have coerced generation owners to take a closer look at the value of environmental portfolios and the necessity of properly managing them.

The SO₂ Market
The continued significant rise in SO₂ prices has raised many questions in the utility industry:
- What is the schedule for scrubber installations?
- What are the premiums being paid for low sulfur coal?
- Are the rail difficulties for Powder River Basin (PRB) moving prices higher?
- Why are those holding a large bank of allowances NOT selling?
- Are the financial firms moving prices higher?
- Has the expansion of PJM had an impact on the SO₂ market?
- Is SO₂ moving up just because coal, oil and natural gas prices have increased?
- What about EPA’s Clean Air Interstate Rule (CAIR)?
- What is the impact of this warm summer?

As is the case with significant market movements for any commodity, a combination of variables has likely contributed to historically high prices.
- CAIR – The EPA’s Clean Air Interstate Rule (CAIR) cuts allowable 2010 SO₂ emissions in half. Under CAIR, two allowances for each ton of SO₂ will be required to reach compliance, as opposed to just one allowance. This has huge demand and supply implications as the net buyers in the market now need more allowances to comply in the future and the net sellers have less motivation to sell as the pre-2010 allowances can be used for compliance on a 1-for-1 basis post 2010.
- Flue Gas Desulfurization (FGD) – The lead-time for installation of FGD units is an interesting dynamic in the market. While trading opportunities make it economic to install, the 2-3 years and substantial capital needed to fund installation provides little downward pressures in the spot market.
- Coal, Oil, Natural Gas – While most models indicate no strong historical connection in the price of SO₂ versus other energy commodities, the psychological impact is real and motivates buyers to accept higher price levels.
- Compliance – Sellers of allowances are in control because they have the ability to wait. Regulated entities typically have little incentive to sell and are comfortable retaining allowances for future use. However, net buyers of allowances must purchase allowances to comply.
- Financial Firms – While the participation of these entities may not have a bullish impact on prices, they certainly have contributed to volatility.

The future looks to be filled with continued high prices and volatility. As the installation of scrubbers increases in the 2008-2010 time frame, it is likely that prices will level out. Until that time, prices will stay supported above the $800 level and probably trade at over $1,000/ton.

The NOx Market
The NOx market differs from the SO₂ market in that one of the more critical influences on the market today is Progressive Flow Control (PFC). The PFC is triggered when the number of NOx allowances banked for future use exceeds 10 percent of the total allocation in a given year. PFC basically generates and applies a discount factor to banked allowances that are to be used for compliance in the current year. There is a relationship between the size of the allowance bank and the discount; the larger the bank, the steeper the discount to future vintages. Most of the fundamental variables that exist for SO₂ also exist for NOx; however, PFC has been a big market driver. The spread between the vintages creates an interesting dynamic in the NOx market.

Most generators have varying views and strategies for compliance. As a result, the spreads between vintage years – including cashless
vintage swaps where volumes are adjusted rather than price – are actively traded. A huge bank of NOx allowances was banked forward in 2004 and PFC was easily triggered. While the market believes that the bank to be carried forward from 2005 into 2006 will be large enough to trigger flow control, the discount will not be as great.

As selective catalytic reduction (SCR) removes NOx from flue gas emissions, the installation of an SCR unit will lessen the demand for trading allowances. Generators are reporting positive results for SCRs as they are running well, with no significant outages reported and achieving higher than expected emissions reductions.

As we move forward we can expect prices of current vintage allowances to stay in the range of $2,200 to $2,900. After the compliance period ends, in November, look for vintage 2004 and 2005 allowances to trade as the same product and for vintage 2006 to become the premium product with the discount to vintage 2004-2005 allowances being driven by PFC.

Generating Decisions
Generators are more aggressively looking at ways to optimize environmental portfolios. In the earlier years of the program when allowance prices had a smaller impact on generation costs, utilities managed mostly from a compliance standpoint. However, now that many of the plants with the ability to change from Eastern to PRB coal or from oil to natural gas have made these changes and allowance prices are so high, utilities are balancing not only the need for compliance but the capital costs associated with technology installations and the allowance markets.

As competitive pressures and allowances are becoming more valuable, utilities are pondering these questions.

What is the cost of our next removed ton of SO\textsubscript{2}? What is the cost from a SO\textsubscript{2} perspective for low sulfur fuel? Can we synthetically create SO\textsubscript{2} allowances by burning a lower sulfur coal? Can we change the schedule of our FGD installations and sell the allowances “created” to the market?

Those who find the right answers and can tweak their operations to cut emissions and market their allowances effectively will lead the market.◆

Gary Payne is an Emissions Trader with Dominion Energy Clearinghouse (http://dom.com).

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Coal is among the principal “building block” commodities transported on the inland waterways system of the United States. The inland system of rivers, which transports more than 660 million tons (MT) of our most critical goods and materials, is an integral component of the manufacturing, distribution, and industrial economy of the U.S. This system also facilitates our nation’s ability to compete in world markets.

On the shallow draft portion of the waterways system, coal comprises about 180 MT on an annual basis, which is about 27 percent of the total traffic. This coal has a market value of more than $4.9 billion.

Waterborne coal is loaded onto the inland waterway system in 12 states; West Virginia is the leading state with nearly 52 MT or 28.5 percent of coal originated. West Virginia, Illinois, Kentucky, and Pennsylvania combined account for more than 83 percent of coal originated. Most of the coal is destined for electric power generating facilities (investor and public owned) and for steel production facilities located adjacent to the river system.

There are 16 states that receive waterborne coal; Ohio is the leading receiver, with more than 35 MT or 20 percent, followed by Pennsylvania at 29.4 MT or 16.5 percent. Inbound coal is more broadly distributed among the states, with eight states accounting for 94 percent of coal delivered by inland waterways.

Work completed by Dr. Don Matzzie of the U.S. Department of Transportation, Maritime Administration (MARAD) demonstrated the contributions of the coal industry to the U.S. economy. Dr. Matzzie generated “enhanced profiles” of four major commodities that transit America’s inland navigation system and found that 87,500 jobs can be directly attributed to the production and consumption of coal transported on the inland waterways. The Direct Output resulting from these jobs has a value of $41.3 billion. The power generation and supply sector of the coal industry itself has 55,000 jobs associated with waterborne coal. The total number of indirect (or associated) jobs is 474,200, including those related to coal shipments in industries patronizing and/or supplying associated industries and industries associated through employee expenditures. The total output associated with these jobs amounts to $91 billion.

If we intend to move this high volume of coal efficiently, we must consider the condition of the inland waterways. This industry’s infrastructure – the ports, locks, and dams, loading/unloading facilities, terminals and docks – are critical to the waterways’ efficiency and value to the economy. Modernization and care for this port and waterway infrastructure is essential to consumers and producers needing the full benefits of low-cost, fuel efficient environmentally sound waterborne transportation.

But more than half of the waterways infrastructure, the locks and dams that...
allow for these positive benefits, are more than 50 years old; increasingly beyond their economic design lives. These locks are susceptible to closures and long delays for repairs and, in some cases, are capacity-constrained. Today, time consumed by unscheduled lock closures is approximately equal to that expected for scheduled closures – about 120,000 hours annually. Simply put, the nation needs to invest more funds to modernize and maintain the locks and dams. Failure to modernize the system will bring about higher costs for electricity and staple products, such as groceries, as well as fewer jobs.

We are pleased to report that over the last few years, waterways interests have steadily been more successful at getting higher appropriations levels targeted at infrastructure needs. Waterways Council, Inc. expressed its support for the Bush Administration’s proposed budget for the Corps Civil Works Program in FY 06, as it contained the highest level of support for the inland waterways ever from any Administration. The House of Representatives added more than $200 million to the Administration’s $4.51 billion proposal in passing the Energy and Water Development Appropriations Act last spring. The Senate followed by increasing the Corps budget in its version of the legislation: the $5.3 billion for the Corps Civil Works Program included $378 million to complete critical Inland Waterway Trust Fund financed lock and dam improvement projects on the nation’s inland waterways system.

Clearly, the inland waterways system is of great value to shippers, users and American consumers and budgetary commitments to these lock and dam projects will produce a tremendous return on this investment, benefiting our economy and every American.

Given the central role of the inland waterways in this country’s economy, we must nurture, not neglect, this vital system that brings so much to America and her citizens.

R. Barry Palmer is President and CEO of Waterways Council, Inc., the national public policy organization advocating a modern and well-maintained national system of ports and inland waterways. (www.waterwayscouncil.org).
America’s coal traffic patterns are dominated by steam coal on the 981 miles of the Ohio River serving utility plants. The utility and manufacturing industries ship 173 million tons of coal on the inland rivers of the U.S., according to market tracker Criton Corp., of Silver Spring, Maryland. This is primarily Powder River Basin (PRB) and Appalachian tonnage with lower amounts of Illinois, Indiana and import coal.

Efficiency

Barges are the most efficient way to transport coal and other bulk commodities where navigable rivers are available. A single barge moves the equivalent of 15 railcars or 58 tractor-trailers. The average coal tow on locking rivers, such as the Ohio and Illinois, is 15 barges — the equivalent of 225 railcars or 870 trucks — according to the Iowa Department of Transportation. On the Lower Mississippi, which does not have locks, tows of 35 or more barges are common.

As utilities strive to improve productivity, the barge industry is responding. “We are rapidly introducing new barges into our fleet designed to meet the needs of coal-burning power plants and factories,” says Mark Knoy, President of American Electric Power (AEP) River Operations, the third largest inland carrier with about 2,350 dry bulk hopper barges. “Coal shippers are demanding dedicated, efficient equipment and we are providing it.”

The new barges are heavier and deeper to expand capacity. Other specific improvements include double slope sheets, specified combing heights, customized deck fittings and better overall stability. These and related features support faster unloading and lower overall handling costs.

Also driving efficiencies are the back office systems deployed for automated quoting, equipment availability, barge/boat tracking, barge trip analysis and accounting/claims — all of which lower end-user costs. AEP River Operations is among the major barge lines that use such logistics technology. System access is provided to shippers and terminal representatives (via secure login systems) as well as to AEP’s logistics professionals.

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Challenges

Against this backdrop of improvements there are hurdles. The first is longer coal hauls. In support of environmental requirements, the barge industry is moving low-sulfur Powder River Basin (PRB) coal 600-700 miles to get it to the heart of the Ohio Valley utility market. In contrast, Appalachian coal runs have historically covered only a couple hundred miles. This long-haul trend constricts the barge supply by tying up more barge days. This challenges many barge operators’ fleet capacity while also supporting recent strong barge rates.

Additionally, the U.S. barge industry faces infrastructure challenges. The inland waterways contain a series of outdated and antiquated locks and dams that, unless rehabilitated and/or expanded, will continue to hinder the movement of coal. Almost half of the locks in the system have exceeded their 50-year design lives.

There was some good news in the most recent presidential budget: the $869 million budget request for Inland Waterways is the best ever. The bad news is that it still falls $831 million short of the need, based on information provided by the U.S. Army Corps of Engineers. The aging lock and dam system causes downtime and eats into the progress made on other areas of coal transportation.

The Ohio River route is a major target for infrastructure improvements for reliability and safety – two significant values for AEP River Operations and other barge lines. System-wide, unscheduled lock outages reduce lock access about 10 percent annually.

“We can’t run barges on a ‘water highway’ built 70 years ago any more than 80,000 pound trucks can haul down narrow two-lane roads on a cross-country haul,” Knoy continued. “The nation needs to keep the waterway infrastructure as current as we keep our superhighways.”

Consolidation

Major coal carriers include Ingram, the largest dry-bulk barge line by number of barges, ACBL, newly emerged from bankruptcy, and Crounse and Campbell. Third is AEP River Operations, a St. Louis, Missouri-based company and a division of American Electric Power. The carrier handles about 20 percent of barged U.S. coal, about 36 million tons, primarily on the Ohio River. This coal represents about 60 percent of AEP River Operations’ business.

The barge industry has undergone a period of consolidation. During the period 1990 to 2003, the market position shared by numerous smaller barge lines fell to 34 percent from 53 percent. Substantial changes include AEP’s purchase of MEMCO, Blaske, Huffman, and others to form AEP River Operations, Ingram’s recent purchase of Midland and Riverway, and ACBL’s roll-up of Valley, Peavey and others.

America’s rivers and inland waterways system plays a critical role in transporting bulk commodities like coal. The barge industry is dedicated to providing the most inexpensive coal transportation and will continue to innovate to further lower costs.

Committed to the community, the environment, and the safe, reliable generation of electricity.
New financial players are entering the energy business. They are being drawn in by an underinvestment in the oil and gas industry globally along with tightening environmental and energy supply constraints. UtiliPoint counts more than 400 energy-related hedge funds now scouring the sector for deals. Some of these players invest in equities, others provide capital for fledging or growth-oriented operations, while others are looking at trading energy commodities and related renewable and emission credits.

It might seem strange to discuss “green” and “coal” issues together, but the Btu values of different energy commodities are being tied more closely together as the environmental products of their use become further unbundled into other tradable components such as SOx, NOx and CO₂ emissions. The new financial players are hoping to drive this type of business model because it fits well with the way they transact business in other commodities. In what may be a telling sign of things to come, Tradition Financial Services (TFS), an over-the-counter brokerage firm, has placed its coal and environmental activities in one products desk. On Aug. 3, 2005, TFS announced that it had brokered the first transaction on NYMEX for vintage 2006 NOx allowances at a transaction price of $2,800 per allowance for 100 allowances.

Carbon dioxide is the next type of emission exchange ripe for market development that could impact the coal industry. Exchanges are sprouting up in Europe as emission caps ramp in. In the U.S., some energy companies are not waiting for CO₂ regulations to be imposed before taking action. Central Vermont Public Service, for instance, recently joined four utilities and two-dozen other entities in the Chicago Climate Exchange (CCX), where participants pledge to reduce their greenhouse gas (GHG) emissions by five percent below a 1998-2001 baseline average. American Electric Power (AEP) also announced it will be expanding its CO₂ reduction targets and that it will continue its membership in the CCX.

Coal is Part of this Green Future

The coal industry is not going to be left behind in this greening future. With no end in sight to high natural gas prices and the fact that the U.S. has approximately 10 times more coal reserves than it does oil or gas, more than 100 new coal power plants are now under consideration. Market forces within the coal sector are changing as well and creating other types of investment opportunities. Contracts for coal supply are becoming more sophisticated and the volumes of coal traded over the counter are increasing, opening the door to more commodity trading-type companies to enter the sector. The result is likely to be a continued increase in trading volumes and price volatility and tighter price correlations to other commodities such as natural gas. Further consolidation of the industry – that now has over 600 mining companies – is also anticipated. The need for capital to fuel growth, along with increased trading and consolidation in the sector, is attracting a new set of investors to the industry.

Foundation Coal (NYSE:FCL) is the nation’s fourth largest coal company and was formed when a private equity consortium consisting of First Reserve Corporation, The Blackstone Group, and the owners of American Metals and Coal International (AMCI) completed a leveraged buyout of RAG American Coal Holding, Inc., on July 30, 2004. The company went public on Dec. 8, 2004, raising more than $500 million; investors pocketed nearly $400 million in dividends from the transaction.

Prospect Energy Corporation (NASDAQ: PSEC) is another company eyeing the coal sector, with two such investments recently announced. In 2004, Prospect raised an energy investment fund through an initial public offering (IPO) that generated nearly $105 million in gross proceeds. It has started to put that money to work in the coal sector with a $3.9 million investment in Unity Virginia Holdings LLC (UVH) and a $4.9 million investment in Whymore Coal Company to help expand their operations. And entirely new coal companies have formed. Existing coal companies will struggle with their pension and environmental liabilities, so starting a new coal company from scratch can have its economic advantages. CAM Holdings, LLC. was formed in 2003 with the purchase of assets from the bankruptcy of Lodestar Energy Corp. CAM is owned by investment funds managed by Wexford Capital LLC of Greenwich, Connecticut.

The entrance of new investors into the energy business is by no means a watershed event. Many will fail as they overreach in their expectations of new market dynamics. We are, however, likely to see fundamental changes in fuel markets as the environmental consequences of fuel use are separated off into other traded commodities. That expected trend has nontraditional players searching for the real “green” in these markets.

Bob Bellemare is President & CEO of UtiliPoint International, Inc. (www.utilipoint.com).
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Electricity provides society with many of the necessities of life, as well as many of the luxuries. Without electricity, preserving foods would still require the use of iceboxes and the transportation of ice from our northern climates. Additionally, cooking and preparation of food would be by more primitive means, such as open fire. Electricity provides our society with the ability to purify our drinking water and clean our waste water. Electricity has brought many advances to our healthcare industry; without it the average life span of humans would be drastically reduced. Electricity provides us with the ability to live our lives outside the restraints of sunrise to sunset.

Fifty-one percent (51%) of current U.S. electric energy needs are generated through the combustion of coal. The U.S. has more than 275 billion tons of proven coal reserves, enough to last more than 200 years at current rates of usage. Coal can and will continue to be used to generate electricity in an increasingly clean and efficient manner, as a result of advancements in technology. Since 1985, an estimated 3.1 million-ton reduction in SO₂ emissions has occurred annually. For NOx, an excess of 2 million-ton reduction has been achieved annually since the year 2000.

The U.S. Energy Information Administration (EIA) projects that coal consumption will increase from 1,095 million short tons in 2003 to 1,508 million short tons in 2005. The growth in coal consumption will result in an increase in the production of Coal Combustion Products (CCPs). The American Coal Council (ACC) recently retained the services of Power Products Engineering to perform an assessment of the financial impact that CCPs have on the U.S. economy. The study, entitled “The Value of Coal Combustion Products: An Economic Assessment of CCP Utilization for the U.S. Economy,” indicates that CCPs provide significant economic value for the nation.

CCPs are created when coal is burned in the generation of electricity and also in other industrial processes where coal-fueled boilers are utilized. CCPs are
primarily of four types; fly ash – the fine particles removed from the air prior to exiting a chimney; bottom ash – the heavier sand and gravel like particles collected in the bottom of the boiler; slag – a glass like material collected in some types of boilers; and flue gas desulfurization (FGD) material – the material that is produced when the exit gas has sulfur dioxide removed in order to prevent acid rain.

More than 125 million tons of CCPs are produced annually in the U.S.; fly ash being the predominant CCP with production estimated at just over 36 million tons. Currently, more than 96 million tons of CCPs are landfilled annually. These landfilled CCPs represent a financial impact for utilities, and ultimately consumers, of more than $560 million per year. Utilization of these materials in value-added applications results in a reduction of landfill requirements, as well as a reduction in costs for electricity consumers and a savings in raw material costs for the displaced materials. Current utilization numbers indicate that over 34 million tons of CCPs were utilized in 2003. This utilization resulted in avoided disposal cost savings for utilities and consumers of nearly $200 million and revenues to utilities from sales of an additional $142 million.

Utilization of CCPs is the direct result of marketing the materials to end users and specifiers. This marketing effort is generally accomplished through the use of specialty marketing firms. These firms perform marketing, education and research services resulting in value-added utilization opportunities for utilities. The estimated financial benefits generated by the marketing firms associated with CCP utilization is estimated to be more than $485 million per year. Services such as transportation of CCPs to markets, along with the necessary support and research activities, results in an additional benefit of over $350 million annually.

Tax revenues associated with the utilization of CCPs for both the utilities and the services portion of utilization are estimated to be more than $100 million at the federal level and more than $70 million at the state level.

The net effect of the beneficial utilization of CCPs results in an economic value to the U.S. of more than $4.4 billion annually. This economic impact is vitally important to the continued success and future of the U.S. However, the economic impact is not the only benefit of CCP utilization. The environmental benefits are a large factor in utilization. The use of CCPs reduces the amount of landfill space required and thus saves land from being taken out of productive use. The use of CCPs results in the need for a reduction in the use of natural materials and thus reduces mining and production costs and land disturbance. Finally, the use of CCPs in many cases produces a superior end product that reduces the need for energy to construct or produce replacement infrastructure or products.◆

For details and ordering information on the ACC’s Economic Assessment of CCPs study, contact the ACC at (602) 485-4737, info@americancoalcouncil.org or visit www.americancoalcouncil.org/whats_new.cfm.

Andy Stewart can be reached at Power Products Engineering, (952) 974-3954 or astewart@mn.rr.com.

### Annual CCP Production (values in short tons)

<table>
<thead>
<tr>
<th>CCP</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fly Ash</td>
<td>76,013,930</td>
<td>68,869,740</td>
<td>77,239,710</td>
</tr>
<tr>
<td>Bottom Ash</td>
<td>21,846,100</td>
<td>22,107,060</td>
<td>26,658,240</td>
</tr>
<tr>
<td>FGD Sludge</td>
<td>16,686,700</td>
<td>17,045,140</td>
<td>14,311,500</td>
</tr>
<tr>
<td>Gypsum</td>
<td>9,326,100</td>
<td>9,550,700</td>
<td>8,599,400</td>
</tr>
<tr>
<td>Other</td>
<td>1,164,900</td>
<td>957,000</td>
<td>1,986,780</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>125,037,730</strong></td>
<td><strong>118,529,640</strong></td>
<td><strong>128,795,630</strong></td>
</tr>
</tbody>
</table>

Source: EIA Form 767
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