

Fuel Flexibility

From the Pit to the Boiler Silos



American Coal Council
2009 Fuel Flexibility Conference
Strategies & Tactics
for Coal Consumers
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Questions????



- What's going to happen in the future to my coal supply with regard to: volume, quality, price?
 - From a single mine, region, basin, country
- Can I get the coal delivered when I need it?
- Can I unload and process my coal to the boiler silos safely, timely and efficiently?
- Can I maintain an uninterrupted feed of coal to the boiler silos whenever I need to?

**If these questions are important for YOUR business,
Marston can help you get the answers!**

Coal Supply Chain Experts



- Marston's expertise covers the ENTIRE coal supply chain
 - The mine and ALL coal supply regions
 - Based on “first principals” not “rumors
 - Fact-based, gathered from exhaustive research of publicly available records
 - Kept up-to-date by ongoing due diligence, mine planning and engineering studies
 - All transportation links
 - Conveyor, truck, rail, barge, ocean vessel
 - Coal unloading, stockpiling and reclaiming
 - Our knowledge is not “contaminated” by “this is how we do it” mentality

Experience



- Marston has completed more than 1,600 projects
...for more than 350 clients
- Marston has nearly 100 employees who
...work out of 6 offices around the world
- Marston provides independent engineering, geological and consulting services worldwide regarding all mined commodities but especially coal.
 - ...We solve your mining problems
 - ...We save you money
 - ...We are independent
 - ...We are engineering-based

Fuel Supply Studies



- Marston has performed hundreds of customized Fuel Supply or “market” studies covering coal supply regions around the world
 - Central Appalachia, Illinois Basin, SPRB being the most often requested
 - Standalone or part of larger fuel supply studies or due diligence
- Marston believes that its clients are best served by reports that address their unique and specific issues and questions as opposed to multi-client, generic studies.

“Standard” Studies



- Marston does provide one type of “standard, multi-client” study on a subscription basis.
 - Uses quarterly production data reported to MSHA as the primary input
 - The raw MSHA data is critically vetted by Marston with the result being the most accurate estimate of quarterly production possible
- We provide our clients with data to allow them to complete their own analysis:
 - The vetted MSHA data
 - Estimated cost of production

Production discrepancies



Many people treat EIA estimates as the gospel when it comes to production.

Third Quarter 2007

CAPP Region	EIA		Difference	
	"First Round"	MSHA-Revised	Tons	%
Eastern KY	21.9	20.8	-1.0	-4.8%
Southern WV	25.7	27.6	1.9	7.3%
Tennessee	0.7	0.6	-0.1	-13.7%
Virginia	7.2	5.6	-1.7	-22.9%
Total CAPP	55.6	54.7	-0.9	-1.7%

While the EIA numbers may be “timely” – they’re far from accurate.

Even MSHA is suspect



Unfortunately, even the “revised” EIA numbers, based on non-vetted MSHA data are suspect.

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Non-vetted MSHA data contains errors and omissions:

- In this case, one mine reported 765,000 instead of 76,500 tons.
- Also, several mines were delinquent in reporting data and needed to be estimated.

“Typical” Fuel Supply Study



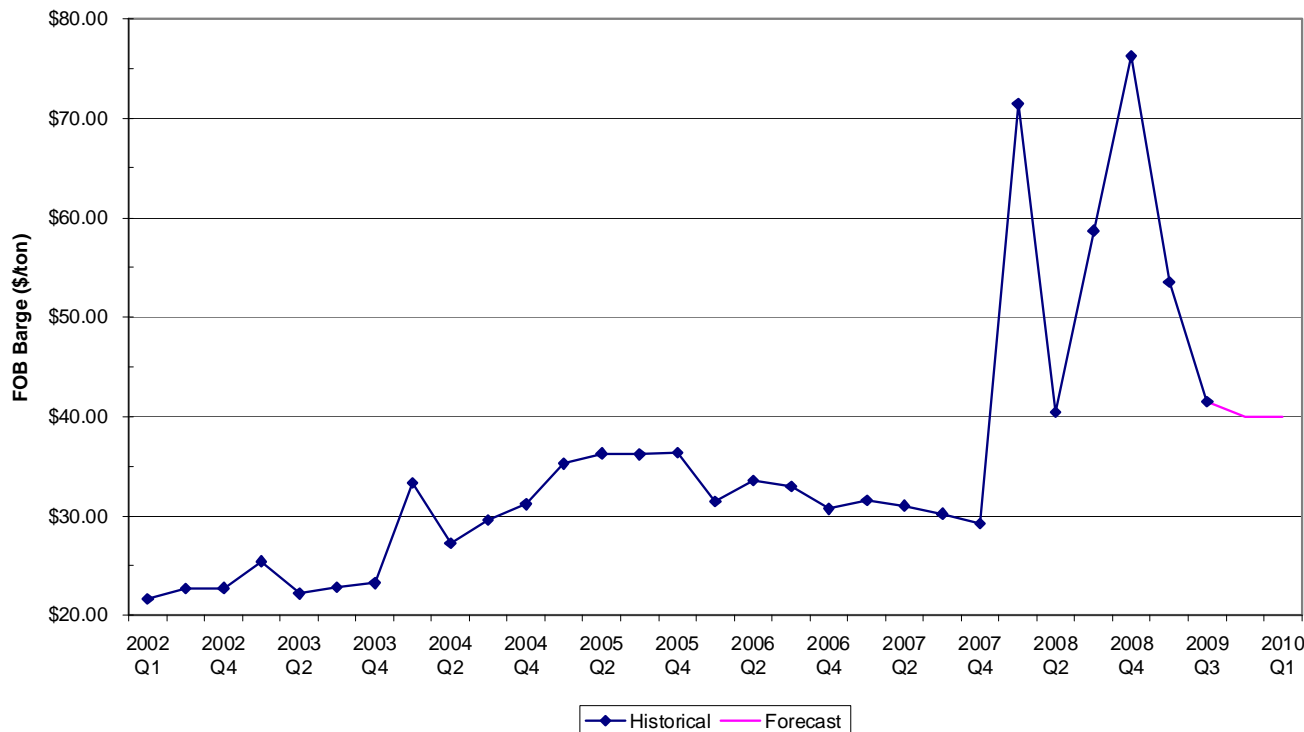
- Although no such thing as “typical” our standard Fuel Supply Studies ordinarily address some or all of the following items:
 - Production
 - Overview of geology and how it affects coal quality and production costs
 - All suppliers that meet “critical” coal quality requirements
 - Estimated cost of production for each supplier including alternate shipping points
 - Transportation
 - Cost of transportation and options available
 - Demand
 - Forecasted Market Price
 - Based on long-term production cost increases

Market Price Forecasts



- Marston believes that **NOBODY** can accurately predict the volatility of coal market prices.

Historical Average Quarterly Market Prices
Illinois Basin Coal, FOB Barge
11,000 Btu/lb, 5 lbs SO₂/MMBtu
Source: Platts



Platts and SNL Energy recently had a discrepancy of \$8 per ton in “market prices” for this quality of coal!

Marston's Opinion



- While there will be short-term volatility in market prices – sometimes even dramatic
- Nonetheless, the long-term market price will trend with either the:
 - Cash cost of production, assuming production exceeds demand
 - Total cost of production, with return on capital, assuming demand exceeds production
- Historically this has been the case, and coal miners being what they are, will hold true in the future.

Coal Handling Audits



- Marston has performed audits of coal handling processes and practices for:
 - TVA
 - Southern Company
 - TXU/Luminant
 - TUCO
- Marston has helped these companies:
 - Reduce handling costs,
 - Improve reliability of supply,
 - Along with reducing dust and improving overall coal handling.
- And Marston can help your company too!

What is an audit?



- A review of coal yard operations by experienced coal handling experts for the purpose of reducing costs or improving performance
- To achieve confidence and objectivity, experienced auditors must be independent, and must have no economic interest in the selling of equipment or construction services to the plant
- Audits can usually be accomplished in three to five weeks, depending on complexity of the coal yard operation

How is an audit done?



- An Audit Team is comprised of:
 - Selected coal handling team of power station managers and technicians
 - Experienced outside auditor (Marston)
- Conduct plant site data gathering through:
 - Observations on all shifts of practices, procedures, flow rates and schedules of the coal handling operation
 - Interviews with managers, supervisors and technicians
 - Discussions about utilization of personnel, plant and equipment, and other matters
 - Historical data (i.e.; fuel deliveries, equipment usage, labor, plant burn, unit outage, maintenance, costs, etc.)

An Audit Includes



- Train, truck, barge or vessel unloading practices
- Stockpile handling methodology
- Stockpile configuration, active and inactive storage areas
- Stockpile haulage distances and handled/rehandled coal volumes
- Shift, equipment and conveyor time: hours scheduled vs. hours used productively
- Bunker- or silo-filling conveyor systems, utilization vs. capability
- Effectiveness of supervision, maintenance and stockpile planning
- Identification of potential cost-reducing improvements in all areas
- And more...

Results of an audit are...



- Improvements in equipment and operating practices that often yield greater benefit than capital expenditures
- Finding that new capital expenditure plans often reflect overkill, and result in smaller-than-planned benefits
- Remedial programs, if any are necessary, that can be implemented smoothly and quickly by the coal handling team due to involvement during the audit
- Justification for budgets
- **REDUCED COAL HANDLING COSTS!!!**

Review of Coal Handling Process and Practice



Plant consists of multiple units that consume 4 Mtpy delivered by rail from SPRB, Uinta & Illinois Basin.

Inventory levels fell to unacceptable levels and client wanted to find out the root cause reason why this occurred.



Marston completed a Materials Handling Audit:

- Toured facility, met with management and operating staff, reviewed operating practices, and reviewed rail delivery logistics for both coal and limestone
- Collected and analyzed >38 months worth of data on deliveries, coal quality, inventory adjustments and operating practices.

RESULT - Marston developed a plan to:

- Reduce train diversions
- Increase train cut sizes by adding an additional locomotive
- Improve maintenance planning system needed

Coal Handling Assessment – Plant Scherer



Plant Scherer consists of 4 units

- Units 1 & 2 consumed 3.4 Mtpy CAPP coal
- Units 3 & 4 consumed 6.3 Mtpy SPRB coal

Plan was to convert to 100% SPRB coal.

Client was concerned if coal handling system could handle increase to 15 Mtpy after conversion to 100% sub-bituminous coal.



Marston conducted a Materials Handling Audit:

- Reviewed current coal handling capacities and procedures and simulated future coal handling system with all 4 units converted to SPRB coal
- Analyzed extensive plant and train performance data and operating procedures.

RESULT - Marston analyzed and made recommendations in three areas:

- Trains; including plans for installing expanded sidings
- Coal Handling Systems; including plans to improve & upgrade water spray system, increasing conveyor speeds and altering stocking plans
- Coal Handling Operations; including improvement in supervision and management practices.

Study of Fuel Handling System - MSEGS



Monticello Steam Electric Generating Station consumes

- Lignite delivered in 20 and 76 car unit trains
- SPRB coal delivered in 135 & possibly 150 car unit trains

TXU wanted to improve coal handling & train unloading and move to continuous blending capabilities.



Marston thoroughly analyzed existing system & potential upgrades:

- Analyzed several combinations of lignite and SPRB coal blends.
- Analyzed various potential rail and plant improvements including track extensions and loops, radial stackers and other options.

RESULT – TXU selected 7 scenarios for Marston to:

- Develop detailed estimates of capital and operating costs.
- Ranked the various options in terms of cost, ability to continuously blend coal and desirability from an operating perspective.

In Conclusion...



- Marston would be pleased to improve your fuel flexibility options
 - By getting a better understanding of your fuel supply and transportation options and costs
 - By improving your on-site coal handling procedures
- Additional case studies and other information – including 2009 SPRB Calendars - are available at Marston's table

Thank you!