

McIlvaine Hot Topic Hour: Advanced Coal Combustion Technology

Presented by:

Sam Scupham

Black & Veatch Corporation

April 29, 2010

Agenda

- Global Coal Trends
- Current Planning
- Future of Coal

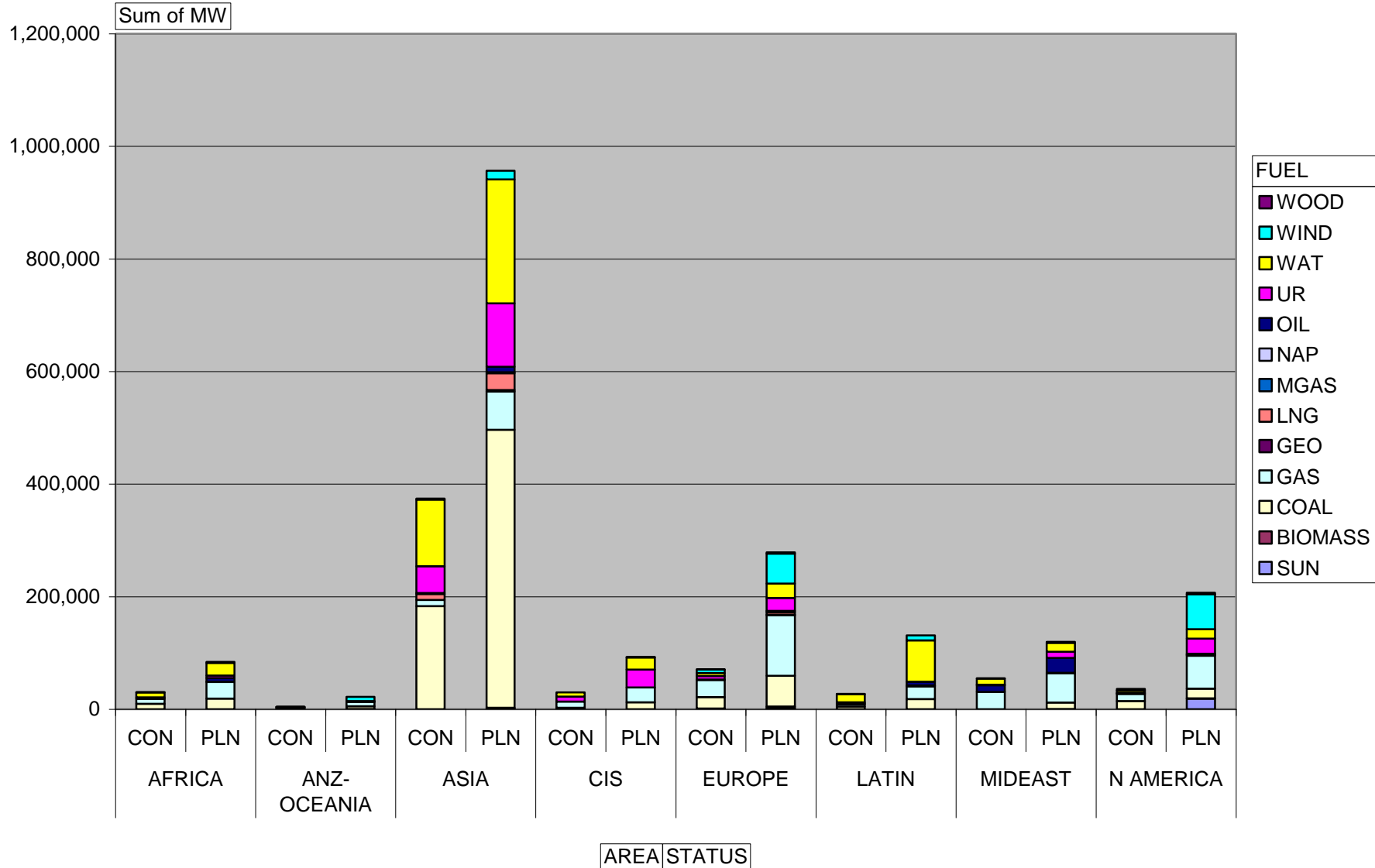
Trends - Domestic

- Recent permits in Georgia, Michigan and Texas
- Limited planning of new plants currently
- Emissions controls retrofits may have higher profile than new construction in the near term
- CO2 capture and storage demonstrations
- Environmental Defense Fund agrees not oppose Trailblazer Energy Center based on CCS and dry-cooling design

Trends - International

- Considerable Asia construction and planning
- Increased attention on emissions controls in some areas
- Chart on next slide shows comparison of North American and European coal planning against Asian
 - The planned capacity includes speculation for projects that likely won't be built

Trends - International



Current Planning

- Considerable focus on gas turbines...when/as load returns
- Continued discussion of whether PC or IGCC with CO₂ capture is more cost-effective
- Utilities must balance
 - Cost of carbon capture with coal, and
 - Potential volatility of gas prices, and
 - Cost and timing of nuclear, and
 - Integration of increased renewables

Future of Coal

- Strong international outlook
- Domestic outlook depends on
 - Ability to effectively capture carbon, either pre- or post-combustion
 - Ability to effectively use water
 - Commitment to diversified fuel supply across the generating fleet
 - Willingness or ability to replace portion of aging coal units with new units.

Key observations that summarize “the facts”

- Five-fold global population expansion since 1950 made possible by non-renewable fuels
- Renewable technologies have volume limitations
- Natural gas, like oil and coal, is an irreplaceable, one-time resource
- Coal forecasted to be the largest source of world generation by far through 2030
- Even maintaining nuclear’s contribution to world electricity generation implies a major capital program
- There is no silver bullet...all energy sources play a role



Questions/Feedback

B&V contact information for related questions:

Sam Scupham – ScuphamSK@bv.com

+1 913 458 7959



BLACK & VEATCH
Building a **world** of difference.®