Energy Resources – Coal/Oil/Gas

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I've been asked to give a general overview of the energy resources in the Powder River Basin. I'm going to keep most of my comments to coal. I don't know a lot about oil and gas so I'll try to stay away from that issue and talk more about coal. I'm not here to advocate the use of one fuel over the other. I'm here basically to show you where the Powder River Basin fits into the national energy policy. I think it's important for all of us here today to understand the significant role that Wyoming plays in our energy policy. I think that most of you here today really do understand that.

I'm going to start off on more of a global look right now and give you a picture of the United States. This (chart) shows the U.S. fuel recoverable resources that we have in the U.S. right now: 85% of it is coal, 10% is gas, and oil is 5%. I think if you talk to a lot of gas people the percent goes up and down in proportion to what the price is at a given time. Every time I talk to someone, they always have 7 years of reserves left in the oil and gas industry. (Chart – fuel prices of electric utilities) This is one of the reasons right now that coal plays a significant role. You look at coal right here on the very bottom line. It stays consistent. It's right at $1 or a little over per million BTUs delivered into the power plants. You see gas is the blue. It fluctuates. You remember when we had the big spike; it went up to between $9.00 and $10.00. That's one of the reasons that a lot of utilities know that they are going to get a reliable source of coal and that the price will be relatively flat. Now this shows the change of coal based electricity going all the way back to 1970. You look back to 1970; coal use has increased over 200% in that given

time. Electricity from coal has gone up 176%. What this chart shows is that emissions are in decline. Coal gets a lot of bad press out in the United States, but coal users are looking at cleaning up their act. You see what's happening right here and now. The particulates are down 84%; this started back in 1985. SO2 started down with the Clean Air Act; it's down 27%. NOX is on a decline right now; I think a lot of you know that there's a (…) call in the eastern states that's going to drive the NOX percentage down below the 1970 levels.

Again, coal is America's most abundant energy resource. A lot of you probably know where the energy is coming from. This slide shows you that coal is 52% of all generation in the United States. A lot of people don't know that nuclear is the next largest at 20%. Natural gas, right now, is 16%, Hydro, 7%, Oil, 3%, and renewables at 2%. So this gives you a quick snapshot of where the generation in the United States is coming from. This really points out again why the Powder River Basin, particularly, Wyoming, is a part of the national energy policy-when 52% of the generation is coming from coal right now.

I'll talk a little bit about the state of Wyoming right now. I think most of you know that Wyoming currently leads the nation in coal production; we have for the last four to five years. If it were a country, it would rank fourth in world coal production and seventh in the world coal reserves. In the United States right now only Illinois and Montana have larger coal reserves than the state of Wyoming, although they are higher in sulfur content. Wyoming currently has 45 billion tons of economically recoverable coal. This equates to six times the reserve of natural gas, eight times the domestic oil reserve, and over 15% of the total U.S. reserve. I said I wouldn't say much about natural gas, but

I did a little research: The natural gas reserve in Wyoming is equal to about 25 trillion cubic feet; that's the 2001 estimate. It goes up and down depending on who you're talking to, but if you look at some publications, (right now the state included coal bed methane CBM and natural gas) there's about 25 trillion cubic feet currently in the state of Wyoming. I'll give you an annual usage in the United States; it uses right at 20 to 21 trillion cubic feet, so this equates to a little bit more than one year's usage in the United States. Wyoming's production in the last year was about 1.2 trillion cubic feet, so if they've got 25 trillion cubic feet, that's about 25 years of natural gas reserves. And the numbers I'm seeing right now, the CBM currently accounts for 10 to 12% of the natural gas production in the State of Wyoming. This (chart) shows all the oil coming out of Iraq and all the natural gas consumed in the U.S. (electric Utilities). And Wyoming is capable of delivering as much electricity as the entire output of either Germany or Canada. So, again these are facts put up there to show why Wyoming coal is considered a very important part of the United States energy policy.

Some of you have not been out in the Powder River Basin before and seen the operations, but this slide will give you some idea why we are so competitive with other regions of the United States. If you look at this seam of coal right here (and this happens to be from one of the operations I was responsible for); you've got the people standing down here. You have 80 feet of coal here with very little sulfur. If you go to Montana, the coal is about 25 foot thick. If you go to Illinois, most of the coal seams are four to five foot thick. So this thick seam of coal gives us a very definite cost advantage over all the other areas in the United States. They can afford to transport it 1500 to 1800 miles in the United States. This shovel has an 80-yard bucket on it; that's quite a lot larger than

anything you see in the Middle West. These trucks are capable of hauling 400 tons in each load. These things all taken in context, gives you an idea why Powder River Basin is so competitive in the U.S.

This (chart) is a regional overview that gives you an idea where the mines are at in the Powder River Basin. I won't spend a lot of time talking about Montana. If you drop down to the Thunder Basin area where we're talking about, these are the five large mines that are down there right now. Peabody has one in the area. Kennecott, North Rochelle, Black Thunder, North Antelope, and Rochelle, the Peabody operation of Kennecott; this is where the bulk of the coal is coming from right now. This is the highest quality. You look at the trend from the northern basin, it gets better in the south, declines in the middle and the north is the lowest BTU and the highest sulfur. This is the mail (railroad) line coming up. The Burlington Northern and the UP service all the way up to Gillette. The BN is the only railroad north of Gillette. Most of the coal activity is south of Gillette. When I first came to the Powder River Basin back in the early 80's, there were 12 or 14 producers, but consolidation now has it down to 5 major producers and these are in the 5 you see down south right now.

The next slide will show you a little bit of what happened here. This goes back to the 1920's. That's when the first mines were developed. But the real development started back in the mid to late 70's when you had the energy crisis starting with the oil embargo. That's when some of the oil companies decided they would get into the Powder River Basin early, other than Amax coal. Early in the 1970's most of the players in the Powder River Basin were oil companies. They have since left the scene because the internal investments were not what they were looking for. They came into the

Powder River Basin thinking that if oil and gas did get restricted, they would get into the coal business. Now the real growth started back in 1990 when the Clean Air Act Amendment started; phases I & II (1995 and 2000) are really what drove the growth of the Powder River Basin.

The last one (slide) – Growth within this percent was driven by increased capacity utilization of plants. Both coal and nuclear, right now are running up almost to capacity. In the future, a new coal fired generation plant capacity could benefit the Powder River Basin, but a lot of people in our company think that most of those projects are going to be near a local coal source. To give you an example, Peabody, in the last two months have now two new power plants we're studying, one in Kentucky and one in Illinois right on our existing reserves, where they left that area when the Clean Air Act came back in 1990, the clean coal technology is such now that they can get out 97 to 98% of SO2. Those plants are burning cleaner and cleaner and they're moving back as we look at a move back to the Midwest, maybe some of this Powder River Basin won't grow as quickly as what everybody thought. Maybe we'll have coal-fired plants setting back over the reserves and we won't be transporting it 1500 miles across country. And it looks like that's what's happening. Now this shows the coal production. This gives you an idea of the Power Plant Construction and Clean Air Policy – what drove it to the western coal development. You look back in 1954; we were running about 500 million tons of coal at that time. The growth in this area right here back in the late 60's and early 70's, these are coal-fired plants that were being built and these were generation. You see all these plants right here and then the decline. There have been very few coal-fired plants being built since 1987-1988. But you look at the increase in production, you saw out in the west at

that point in time, all the Midwest was flat or starting to fall off. So this shows that most of this capacity now has been used up. I have another slide here I'll show you in just a minute that shows what the Department of Energy is thinking will have to be built within the next few years.

This slide goes back to 1990 and shows the move from the eastern production to the western production. In 1990 almost 60-70% of production was in the east. In 1998 it was about even. Projection into 2005, western productions, will have (…) will be moving ahead of the East considerably. It's gone from high sulfur to low sulfur. Here is U.S. low sulfur. These both are compliance coals, and the move has been from underground production to surface coal mine, and this was basically fueled by the move to the western U.S.

Our expansion opportunity for Powder River Basin Coal shows where the coal is currently going to and where people think the coal may continue to push farther to the east. There are a lot of things that are going to have to happen for this to come around. We think the prices for natural gas are going to have to stay high like they are right now for people to continue to push farther, to migrate further east. There's going to have to be a power shortage significant enough to stimulate production of new coal-fired power plants. Right now there are a lot of new coal-fired plants on the drawing board being permitted, but how many of those come to fruition has a lot to do with what happens to the price of natural gas. This third thing is rail transportation. Rails all the way back to some of these areas where you see we are pushing coal right now, is over 70 to 75% of the delivered price. As long as that price stays down, penetration may go farther into this area. The second thing that might happen is you may see the area like Illinois and

Kentucky where Peabody has their large reserves back in that country, go ahead and announce that new coal-fired power plants, they'll burn the coal right here and here and spend the money up front to scrub it out and make it cleaner than we have right now.

In conclusion, since 1970, and I know a lot of people don't understand this, they ask how did we get into such an energy crunch so quickly. You go back to 1970's, since then the U.S. energy use has increased at twice the rate of energy production. That basically says we haven't been building enough energy plants to keep up with energy demands. Our dependence on foreign oil is growing, right now at 56%, although it doesn't equate back to generation, and we're using a lot of imported oil right now. That's up 39% in the last 2 years. Natural gas prices quadrupled in 2000. They have come down, but they can go back up just as quick and they came down. A lot of people don't understand this. This just came out of recent studies by President Bush's new energy commission. They feel that we are going to have to build at least one new electric power plant per week for the next two decades to keep up with our energy consumption in the U.S. And lastly I just think it points out that the grasslands in the Powder River Basin are going to have to continue to play an important role in supplying the United States with affordable energy. It's a given right now; you've got 52% of your generation. If you want the country to continue to grow, it's going to have to come out of the Powder River Basin. It's one of the areas of primary importance in this role and in the future of the United States.