

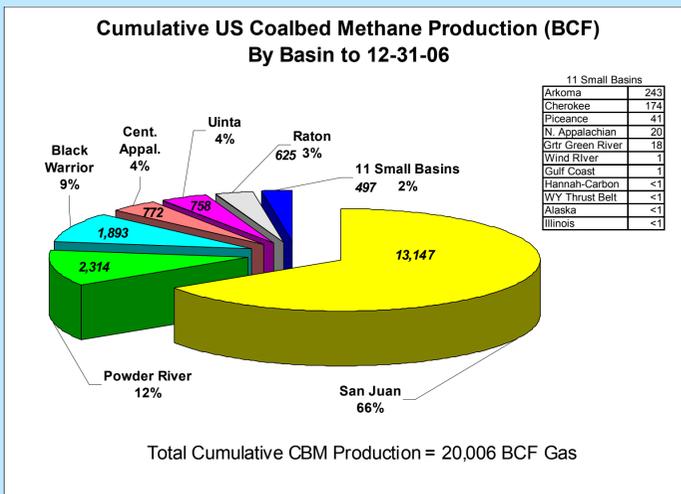
US COALBED METHANE

PAST, PRESENT, AND FUTURE

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Panel 2 of 2



The Past: Production

Annual coalbed methane gas production data through 12/31/2006 was obtained from 17 state oil & gas regulatory entities or geological surveys and one producing company. Data for 2006 were not yet available for West Virginia and Pennsylvania so the 2005 volumes were assumed to repeat in 2006. Produced CBM gas volumes from each state were classified by basin.

The cumulative production pie chart to the left shows the sum of all reported CBM gas volumes by basin through 2006. The San Juan Basin dominates the chart. The only other basin to exceed 10% is the Powder River Basin (12%). Relative cumulative production volumes by basin are spatially depicted in the choropleth map at the top right.

The CBM basins have been subdivided into four tiers based on their 2006 annual production volumes, as shown in the four graphs below the pie chart and map. This permits clear visualization of the production trends of the smaller volume basins. Note the significant vertical (volumetric) scale differences among the four graphs.

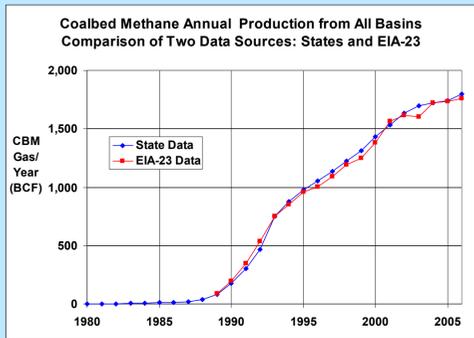
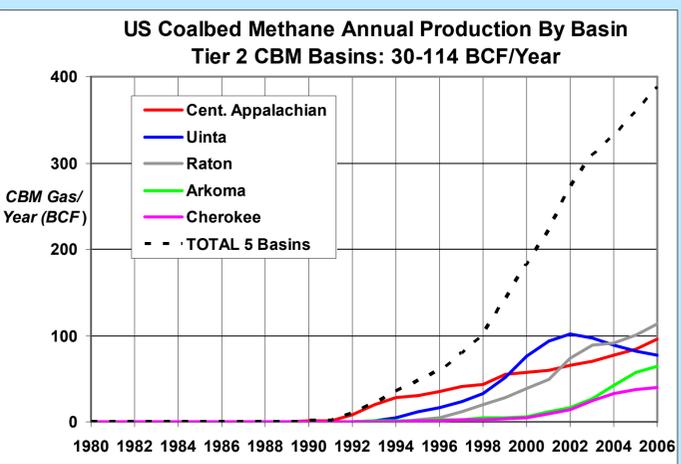
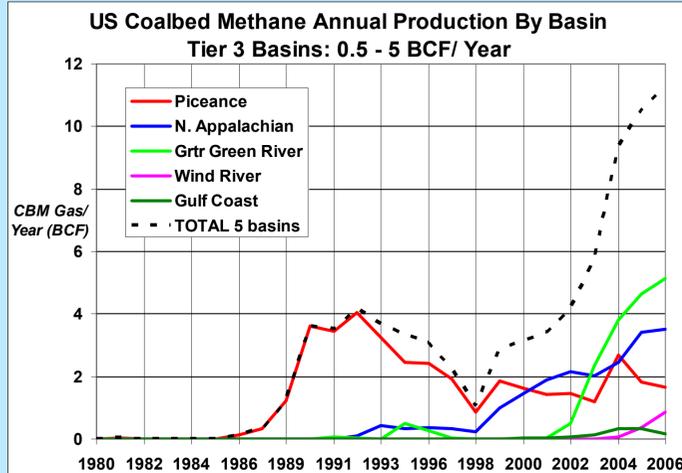
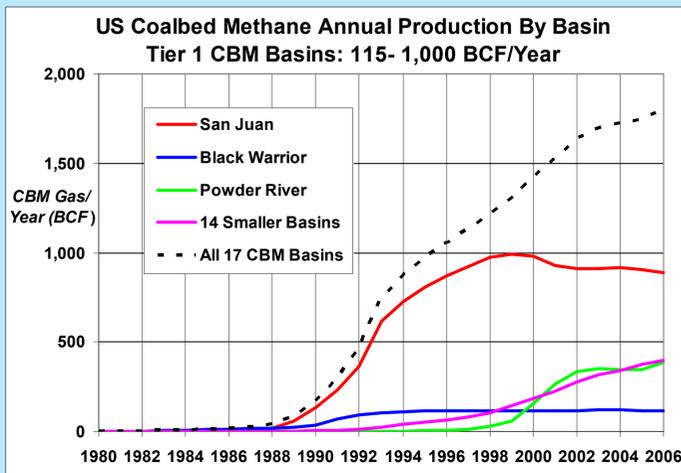
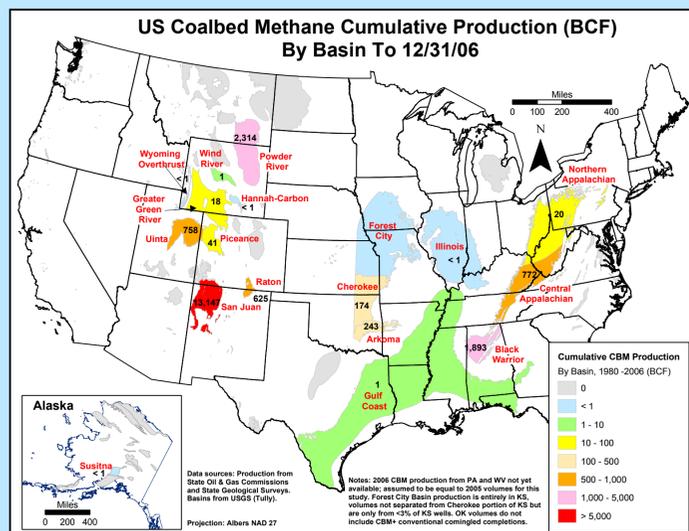
Total annual CBM production volumes from 1980 (the first separately reported CBM volumes) to 2006 for all 17 basins are shown as a dotted black line on the first graph to the left. The three CBM basins which produce between 115 and 1,000 billion cubic feet of CBM gas per year (BCF/year) (San Juan, Powder River, and Black Warrior) are classed as Tier 1 basins and are individually shown. Fourteen other (smaller) basins are combined and shown as the purple line. The most obvious trends are (1) the dominance of the San Juan Basin since the late 1980's and beginning a slight decline in 2000; and (2) the rapid increase of the Powder River Basin beginning in the late 1990's.

Tier 2 (30-115 BCF/year) is comprised of the Raton, Uinta, Central Appalachian, Arkansas, and Cherokee basins. The second graph on the left reveals that production is still increasing in all of them except the Uinta Basin. The dashed black line indicates total production of the Tier 2 basins.

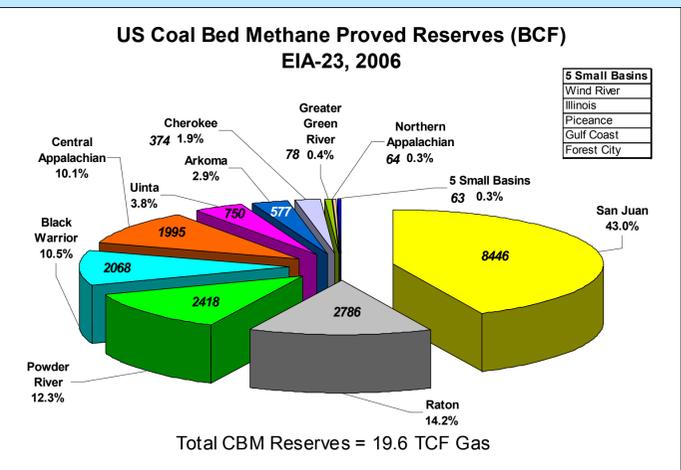
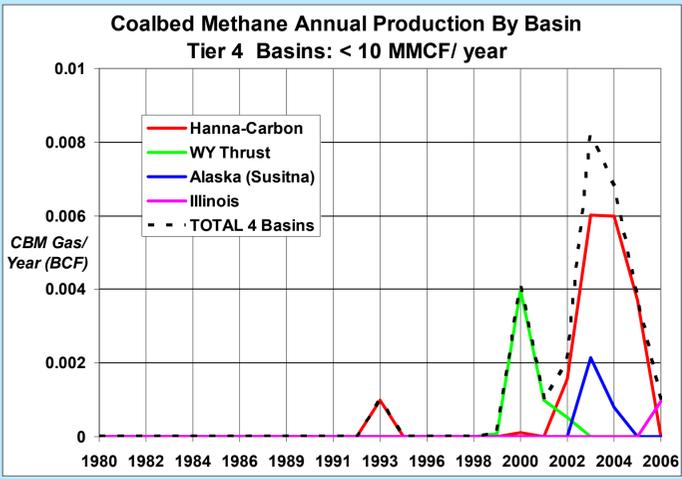
The graph for the Tier 3 basins (0.5 - 5 BCF/year, top one on right) looks more "spiky" than those of the first two tiers owing to expansion of the vertical scale. This graph contrasts growing production in the Wind River, Northern Appalachian, and Greater Green River basins with declining production in the Gulf Coast Basin and nearly flat production in the Piceance Basin.

The fourth graph (bottom one on right) displays the four smallest CBM production basins which comprise Tier 4 (<10 million cubic feet of CBM gas/year (MMCF/year)). Three of them have declined to zero production (Hanna-Carbon, Alaska-Susitna, and Wyoming Thrust Belt). Only the Illinois Basin is on the rise and those volumes represent only one operator in one field (BPI, Saline County Coal Gas Field).

Note that these production volumes came from the individual state oil and gas regulatory agencies (and BPI) and are therefore slightly different from the CBM production volumes EIA has collected annually since 1989 on its Form EIA-23 and reported in its *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Annual Report*. The graph below compares these production volume sources.



CBM PRODUCTION DATA SOURCES (if no name is listed, then source is website):
 AK Oil & Gas Conservation Commission (S. Davies);
 AK Division of Geological & Geophysical Surveys (J. Clough);
 AL State Oil & Gas Board, Geological Survey of AL (J. Pashin);
 AR Oil & Gas Commission;
 CO Oil & Gas Conservation Commission;
 L: BPI Energy, Inc. (K. Lite);
 N: No data available;
 KS Geological Survey (T. Carr);
 KY Geological Survey (B. Nuttal);
 LA Dept of Natural Resources: US Geological Survey (P. Warwick);
 MT Board of Oil & Gas Conservation;
 NM: GO-TECH (M. Cather);
 OH Division of Geological Survey (J. McDonald);
 OK Geological Survey (B. Cardott);
 PA Bureau of Topographic & Geological Survey (T. Markowski);
 TX Railroad Commission;
 UT Division of Oil, Gas & Mining;
 VA Dept. of Mines, Minerals & Energy;
 WV Geological & Economic Survey (L. Avary);
 WY Oil & Gas Conservation Commission



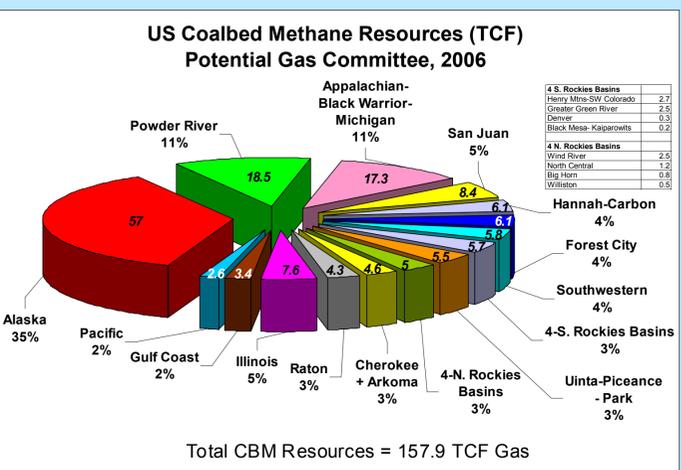
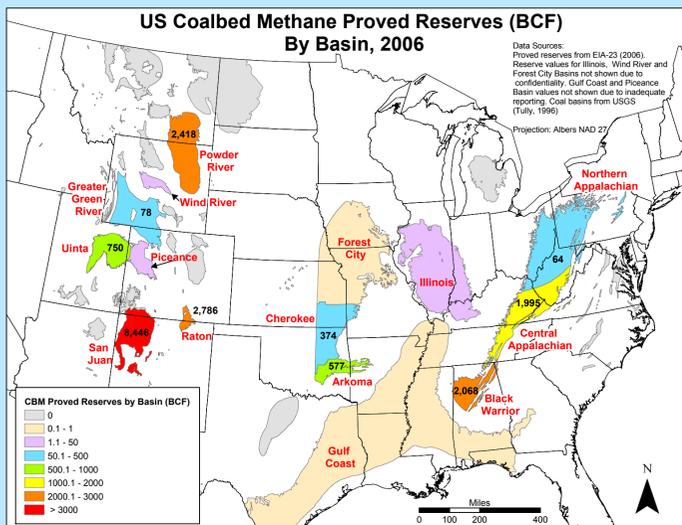
The Present: Reserves

Proved reserves are the quantities of gas that geologic and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.

The CBM proved reserves data are from the EIA's *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 2006 Annual Report*. Illinois Basin, Wind River Basin and Forest City Basin reserves are not shown to protect the confidentiality of operators' estimates, and Piceance and Gulf Coast Basin reserves are not shown due to inadequate reporting.

The pie chart at left shows the division of CBM proved reserves by basin in 2005. The San Juan Basin dominates the chart with just less than half (43%) of the total proved reserves. Four other basins exceed 10% of the reserves total: Raton (14%), Powder River (12%), Black Warrior (11%) and Central Appalachian (10%).

Relative CBM proved reserves by basin are spatially depicted in the choropleth map at the right.



The Future: Resources

Recoverable resource estimates of coalbed natural gas are those volumes which are potentially recoverable under existing and foreseen technological conditions. They have not yet been discovered or developed, and do not include proved reserves or cumulative production.

These CBM resource estimates are from *Potential Supply of Natural Gas in the United States, Report of the Potential Gas Committee (PGC), 12/31/2006* (www.mines.edu/research/pgc/index.html). The committee is comprised of volunteer experts from the gas industry, government, and academia.

The displayed volumes are the sums by basin of the estimated most likely (modal) volumes of Probable plus Possible plus Speculative resources. It would be preferable to sum the estimated mean values rather than the estimated modal values, but the former are not provided for CBM. The relative portion of each basin's resource potential within the United States is shown on the pie chart to the left. Note that some of the PGC basins were aggregated to reduce the number of pie slices. Units for the resource estimates are trillion cubic feet (TCF) of CBM gas.

The mature San Juan Basin represents only 5% of the resource total. Alaska dominates the graph with 35%, but note that Alaska is comprised of multiple basins aggregated together whereas most of the Lower 48 States basins are not aggregated. Given their relatively small areas, the Raton, Hanna-Carbon, Pacific, and Wind River basins have a relatively high resource volume.

The relative resource estimates are spatially depicted in the choropleth map at bottom right.

