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### **Productivity of U.S. Unconventional Gas Reservoirs—Benchmarks for Future Plays**

Unconventional gas reservoirs are commanding increasing attention from U.S. producers. Interest is driven by several factors including increased gas prices, improved completion technologies and lack of conventional reservoir targets. While large gas resources have been attributed to unconventional reservoirs, difficulties in generating profitable production volumes has limited activity to proven plays. Many such plays were established more than a decade ago when Section 29 tax credits were applied to designated tight sand, Devonian shale and coalbed methane reservoirs. Several U.S. gas productivity patterns provide a framework to compare and contrast unconventional reservoir performance. Over the past decade, average peak gas well production and initial year production decline rates increased but average well reserves declined. It is important to understand implications of these patterns in regard to unconventional reservoirs, where lower initial production rates and erratic production patterns are concerns. Recent coalbed production, for instance, from seven basins ranged from 27 mcf/d to 900 mcf/d per well. Average peak new well production from Ft. Union coals in Wyoming improved from about 150 mcf/d to about 250 mcf/d but corresponding decline rates more than doubled to about 50 percent. Projections indicate that U.S. coalbed gas production will peak and decline after 2006 unless new reservoirs are tapped. Production plots and maps are used to quantify productivity trends for key U.S. coalbed methane, tight sand, Devonian/fractured shale, fractured carbonate and basin centered gas reservoirs. The objective is to provide benchmarks to guide investments into future unconventional gas plays.