

Appendix C

Dry Gas-Well Capacity per New Gas-Well Completions

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Dry gas-well gas productive capacity of about one billion cubic feet per day is added per 1,000 new gas-well gas completions. This is the difference between the dry gas-well productive capacity change for the *high* case and the *base* case during 1998 divided by the difference in gas-well completions between the *high* and *base* case during 1998. For productive capacity, the period of change is from December 1997 to December 1998 (Table 2). The well completions for the *base* and *high* cases are those added during 1998 (Figure 9).

The calculation for 1998 follows:

$$\begin{aligned} & \frac{\text{(Difference in capacity change for the high and base case)}}{\text{(Difference in well completions for the high and base case)}} \\ &= \frac{(81.4 \text{ Bcf/day} - 66.7 \text{ Bcf/day}) - (75.3 \text{ Bcf/day} - 66.1 \text{ Bcf/day})}{27.9 \text{ Thousand Completions} - 21.5 \text{ Thousand Completions}} \\ &\gg 1 \frac{\text{Bcf/day}}{1000 \text{ Gas-well Completions}} \\ &\gg 1 \frac{\text{MMcf/day}}{\text{Gas-well Completion}} \end{aligned}$$

The estimate of dry gas-well capacity per new gas-well completion depends on three parameters: initial flow rate (q_i); ultimate recovery (G_{ul}); and the decline exponent (B) (Table C1). These parameters are determined from nonlinear regression fits of the rate versus cumulative production relationship for hyperbolic declined. {5}

$$q = q_i \left(\frac{G_p}{G_{ul}} \right)^{\frac{1}{B}} \quad (C1)$$

where

q = gas flow rate at capacity, million cubic feet per day

q_i = initial gas flow rate at capacity, million cubic feet per day

G_p = cumulative gas produced, million cubic feet

G_{ul} = ultimate gas recovery, million cubic feet

B = hyperbolic decline exponent.

Table C1. Average Initial Flow Rates, Ultimate Recovery, and Decline Exponent on a Conventional Gas-Well Completion Basis for 1992-1994

State/Area	q _i Initial Flow Rate (MMcf/day)	G _{ul} Ultimate Recovery (MMcf)	B Decline Exponent
Gulf of Mexico	7.5	4,386	1.2
Texas (Excluding Gulf of Mexico OCS)	1.0	1,009	2.2
Louisiana (Excluding Gulf of Mexico OCS).....	2.1	1,886	1.9
California (Including Pacific OCS).....	1.0	815	1.6
Kansas	0.4	953	2.7
New Mexico	0.6	1,179	2.9
Oklahoma	0.9	1,033	2.3
Southeast	1.2	2,408	2.4
Rocky Mountain	0.7	1,624	2.9

Note: Texas and Louisiana exclude Gulf of Mexico OCS; California includes Pacific OCS.
Source: Energy Information Administration, Model GASCAP94 C102997.