

Formulas for Determining Regional Leasing Levels^a

Formulas:

Basic formula:

$$\text{Annual shortfall} * (\text{Average mine life} * (\text{percent Federal})) = \text{Leasing level}$$

1. Production Method:

$$\text{Production forecasts} - \text{Productive capacity} = \text{Annual shortfall}$$

2. Inventory Method:

$$\text{Inventory factor} * \text{Production forecasts} = \text{Inventory requirement}$$

$$\text{Inventory requirement} - \text{Productive capacity} = \text{Annual shortfall}$$

3. Contracting Rate Method:

$$\text{Productive capacity} - \text{Contracted coal} = \text{Residual capacity}$$

$$\text{Annual new contracting} * \text{Years between sales} = \text{New contracting}$$

$$\text{Average new contract} * (\text{Inventory factor} * \text{Competition factor}) = \text{Minimum inventory}$$

$$\text{Minimum inventory} + \text{New contracting} = \text{Full inventory}$$

$$\text{Full inventory} - \text{Residual capacity} = \text{Annual shortfall}$$

4. Expressions of Interest Method:

$$\text{Expressions of interest} - \text{Nonthorough expressions} = \text{Thorough expressions}$$

$$\text{Thorough expressions} - \text{Duplicate expressions} = \text{Leasing level}$$

5. Minimum Leasing Method:

$$\text{Maintenance tracts} + \text{Bypass tracts} + \text{Expansion tonnage} + \text{New production opportunities} = \text{Leasing level}$$

Example of use of formulas:

Variable value:

Target year (TY)	= 1995
Productive capacity for TY	= 50 MTY ^b
Production forecasts for TY	= 49 MTY (low) = 55 MTY (medium) = 64 MTY (high)
Coal under contract for TY	= 46 MTY
Average mine life	= 30 years
Percent Federal ownership	= 750/0
Years between Federal lease sales	= 4 years
Annual production from new contracting	= 2.0 MTY (low) = 2.5 MTY (medium) = 3.1 MTY (high)
Inventory factor	= 0.5 (low) = 2 (medium) = 3 (high)
Competition factor	= 5 bidders
Annual production from average new contract	= 1.1 MTY
Expressions of interest	= 1.7 BT ^c
Nonthorough expressions	= 0.5 BT
Duplicate expressions	= 0.3 BT
Maintenance tracts	= 100 MT
Bypass tracts	= 0 MT

Expansion tracts = 200 M T
 New production opportunity = 100 MT

1. $(49-50) * (30 * 0.75) = 0$ MT
 $(55-50) * (30 * 0.75) = 112.5$ MT
 $(64-50) * (30 * 0.75) = 315.0$ MT
2. $((2 * 49)-50) * (30 * 0.75) = 1,080$ MT
 $((2 * 55)-50) * (30 * 0.75) = 1,350$ MT
 $((2 * 64)-50) * (30 * 0.75) = 1,755$ MT
3. $[((1.1 * 2 * 5) + (2.0 * 4))-(50-46)] * (30 * 0.75) = 337.5$ MT
 $[((1.1 * 2 * 5) + (2.5 * 4))-(50-46)] * (30 * 0.75) = 382.5$ MT
 $[((1.1 * 2 * 5) + (3.1 * 4))-(50-46)] * (30 * 0.75) = 436.5$ MT
4. $(1 * .7-0.5)-0.3 = 900$ MT
5. $100 + 200 = 300$ MT
 $100 + 200 + 100 = 400$ MT

Summary of Results of Formulas (million tons recoverable resource)

Method	Low	Medium	High
Production	0	112.5	315.0
Inventory	1,080.0	1,350.0	1,755.0
Contracting rate	337.5	382.5	436.5
Expressions of interest	900.0	—
Minimum leasing	300.0	—	400.0
DOI initial leasing level range:			
From these formulas	300.0	—	1,700.0
From pre-1982 method	0.0	—	650.0

^aSource: Bureau of Land Management, U.S. Department of the Interior,

Regional Leasing Levels, preliminary draft, Nov. 22, 1982.

^b"MTY" means million tons per year.

^c"BT" means billion tons.

Acronyms

ACEC	— area of critical environmental concern
AVF	— alluvial valley floor
BIA	— Bureau of Indian Affairs
BLM	— Bureau of Land Management
BOM	— Bureau of Mines
Btu	— British thermal unit
CEQ	— Council on Environmental Quality
CERT	— Council of Energy Resource Tribes
CFR	— Code of Federal Regulations
DOE	— Department of Energy
DOI	— Department of the Interior
EA	— environmental assessment
EIS	— environmental impact statement
EMARS	— Energy Minerals Activity Recommendation System
F&WS	— Fish and Wildlife Service
FCLAA	— Federal Coal Leasing Amendments Act of 1976
FLPMA	— Federal Land Policy and Management Act of 1976
LMU	— logical mining unit
MFP	— Management Framework Plan
MLTF	— Mineral Lease Task Force (Utah)
MMS	— Minerals Management Service
NEPA	— National Environmental Policy Act of 1969
NO	— nitrogen oxide
NRDC	— Natural Resources Defense Council
OSM	— Office of Surface Mining
OTA	— Office of Technology Assessment
PRLA	— Preference Right Lease Application
RCT	— Regional Coal Team
RMP	— Resource Management Plan
SID	— Secretarial Issue Document
SMCRA	— Surface Mining Control and Reclamation Act of 1977
SO₂	— sulfur dioxide
SSA	— site specific analysis
TSP	— total suspended particulate
usc	— United States Code
USFS	— United States Forest Service
USGS	— United States Geological Survey
WSA	— wilderness study area

Glossary

Activity planning: Planning for the development or use of specific resources on public domain lands (e.g., for a coal lease sale).

Alluvial valley floor: Those stream valleys located west of the 100th Meridian which: 1) are underlain by unconsolidated gravel, sand, silt, and clay; 2) have a stream flowing through them; 3) have a generally flat valley floor topographic surface; and 4) are agriculturally important. The relative importance of these valleys is a function of the water supplies available in the specific valley area. The agricultural activities generally include irrigated or subirrigated hay lands, developed pasture lands, critically important grazing areas, or lands that could be developed for any of these purposes.

Areas of critical environmental concern: Areas within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect, and prevent irreparable damage to, important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards.

Aquifer: A subsurface zone that yields economically important amounts of water to wells; a water-bearing stratum or permeable rock, sand, or gravel.

British thermal unit: The quantity of heat energy required to raise the temperature of 1 lb of water 1°F at or near its point of maximum density.

Bypass coal: An isolated coal deposit that cannot, for the foreseeable future, be mined economically and in an environmentally sound manner either separately or as part of any mining operation other than that of the applicant for either an emergency lease or a lease modification.

Certificate of bidding rights: A right granted by the Secretary of the Interior to apply the fair market value of a relinquished coal or other mineral lease, or right to a preference right lease, as a credit against the bonus bid or bids on a competitive lease acquired at a lease sale, or as a credit against the payment required for a coal lease modification.

Continuous operation: Requirement that a Federal lease must produce at least an annual average of one percent of logical mining unit reserves after diligent development has been achieved.

Development potential: The prospects for a lease or lease block being developed and mined within the next decade, taking into consideration the reserves, mining conditions, geographic location, status of adjacent properties, surface resource values, environmental impacts, potential markets, transportation availability, and community infrastructure.

Diligent development: Actual production of commercial quantities of coal from a Federal lease or the logical mining unit of which the lease is a part within 10 years after the lease is issued.

Land use planning: Development of a multiple resource use management strategy for the administration of public lands through identification of all potential land and resource uses and of opportunities for the development of particular resources based on their relative values.

Management Framework Plan: A land use plan prepared prior to passage of the Federal Land Policy and Management Act of 1976.

Mine plan: A detailed description of the operator's proposed method, rate, and sequence of mining, environmental protection measures, and reclamation strategies for a coal mine with Federal leases submitted to the Office of Surface Mining or State regulatory authority pursuant to the Surface Mining Control and Reclamation Act of 1977.

Multiple use: Management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account

the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment, with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.

Preference right lease application: An application for a noncompetitive coal lease issued to the holder of a prospecting permit who discovers coal in commercial quantities on the land for which the permit was issued.

Resource Management Plan: A land use plan as prescribed by the Federal Land Policy and Management Act of 1976.

Split estate: Land in which the ownership of the surface is held by persons, including governmental bodies, other than the Federal Government, and the ownership of underlying coal is, in whole or in part, reserved to the Federal Government.

Threshold levels: Specific defined levels of resource use, production or development which are established as maximum or minimum constraints in the resource management plan. Threshold levels are usually established to ensure that the plan does not permit an unacceptable level of cumulative impacts.