

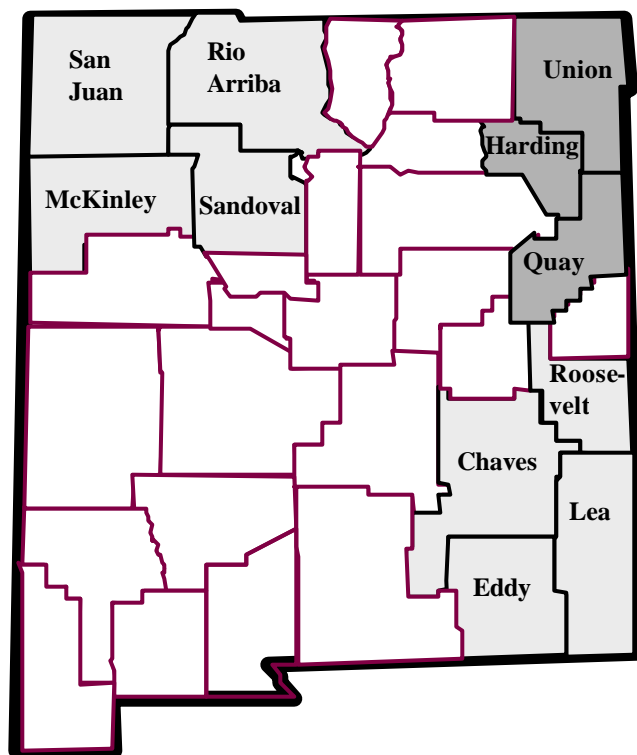
New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes -- Description and Summary of Statistical Reports

by Tom Clifford and Al Maury, Tax and Revenue Department

Introduction

New Mexico imposes "ad valorem production" and "ad valorem production equipment" taxes in lieu of property taxes on some mineral extraction properties. The taxes are in a sense hybrid taxes because net taxable values are based on production but rates but distributions and rates similar to those of locally-imposed property taxes. This document describes the taxes, statistical reports which facilitate their analysis, and revenues they generate. Essential methodology underlying New Mexico oil and natural gas tax forecasts is also discussed briefly below.

Ad valorem production and production equipment taxes are currently imposed in eleven New Mexico counties in three regions of the state. San Juan, Rio Arriba, McKinley counties in New Mexico's northwest corner are major sources of oil and natural gas extraction, but typically lead the state in natural gas production. Their products are taken from the San Juan basin. In contrast, Roosevelt, Chaves, Eddy and Lea County in New Mexico's southeast corner are major oil producers. Their oil comes from the Permian Basin. Carbon Dioxide is produced in Union, Harding and Quay Counties in New Mexico's northeast region.



Tax Description

Oil and Gas Ad Valorem Production Tax

Taxpayers

Tax is levied monthly on all interest owners.

Object Taxed

The tax is imposed on products *below* the wellhead. Assets situated at the wellhead and beyond are assessed by the New Mexico Taxation and Revenue Department's State Assessed Property Unit -- also sometimes known as the Central Assessment Bureau. By imposing the ad valorem production tax, in effect, on the value of oil or natural gas produced within a specific time period, the tax is effectively on product reserves. The advantage of imposing the tax in this manner -- in proportion to value of product sold during a specific time period -- is that interest owners are taxed in rough proportion to their income. If the tax were to be imposed on the value of reserves, during periods of high product prices producers would probably experience difficulty in paying the tax.

Tax Due Date: (Section 7-32-10 New Mexico Statutes Annotated (NMSA) 1978)

Advanced payments are required for this tax.¹ Taxes are due on or before the 25th of the second month following the month in which sales occurred. A report showing total value, volume and kind of products sold is also required.

¹ Advanced payments are required for all of the monthly oil and gas taxes. These are essentially prepayments of one month's worth of taxes. Each year, prior to July 1, taxpayers must update their advanced payment to reflect the change in their average monthly liability during the 12-month period ending March 31.

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

Tax Rate (7-32-4)

The ad valorem production tax is levied on the assessed value of products severed and sold at rates certified by the Department of Finance and Administration (DFA)'s Local Government Division under the property tax. The rate's operating portion is not subject to the yield control statute (Section 7-37-7-1 NMSA 1978).

Assessed Value (7-32-5)

Assessed value equals taxable value of the product times the uniform assessment ratio (1/3).

Taxable Value

Taxable value equals 150 percent of the value of the products after deducting: (1) royalties paid to the U.S. government, the State of New Mexico, and/or Indian tribes; and (2) trucking expenses (i.e. allowable transportation and processing expenses).

Revenue Distributions (7-32-14)

Revenues are typically distributed on a monthly basis to county treasurers who, in turn, distribute them to all property tax recipients within tax districts containing the assets on which the taxes are due. In some cases, however, property tax recipients, for example school districts, prefer to receive their distributions directly from the State of New Mexico. In other cases, counties prefer not to distribute the taxes to other recipients. Under either of these circumstances, the Taxation and Revenue Department distributes the revenues to recipients that request it. Actual payments to recipients are made by the New Mexico Department of Finance and Administration -- after receiving instructions regarding amounts to be paid from TRD.

Determination of Assessed Value for Taxing Districts: (7-32-15)

Each April, the Taxation and Revenue Department (TRD) prepares two reports which support the taxing district in establishing new ad valorem rates for the coming September. These rates are used to derive the annual Ad Valorem Equipment Tax assessment in October as well as the monthly ad valorem production taxes. The "Oil and Gas Equipment Ad Valorem Tax Preliminary Report" identifies the previous calendar year sales month reported values and the derived assessed values by county and school district. The second report, "Oil and Gas Ad valorem Production Tax Roll Distribution" identifies the total amount of the previous year's monthly Production Tax distributions.

Ad Valorem Production Equipment Tax (NMSA 7-34)

Taxpayers

Tax is levied against the operator of the property.

Object Taxed

The tax is imposed on equipment *below* the wellhead. Equipment above the wellhead is assessed by TRD's State Assessed Property Unit, as discussed above.

Tax Due Date (7-34-6)

The Tax Department is required to issue an assessment once year (October 15) that shows the amount of tax due and the assessed value and the applicable tax rates. Payment is due from operators by November 30.

Tax Rate (7-34-4)

The tax is levied on assessed value of equipment at each production unit at the rate certified by the Department of Finance and Administration (DFA)'s Local Government Division under the property tax.

Assessed Value (7-34-3)

Assessed value of equipment at each production unit is one-third of taxable value.

Taxable Value

Taxable Value is determined by multiplying the reported annual value of products during the previous calendar year sales months by 27 percent. This calculation differs from the ad valorem production tax in two important ways: First, assessed value for the ad valorem production tax recognizes the reported royalty deduction. Assessed value for the ad valorem production equipment tax does not recognize a deduction for royalties paid. Both taxes recognize deductions for certain transportation and processing expenses when the price is established at some point downstream from the wellhead. Secondly, assessed value for the ad valorem production tax takes the values reported monthly—by taxpayers to TRD in the month in which the tax is due. These correspond to the monthly *distributions* during a given year. Because taxpayers continually amend their tax returns these include amounts due to sales from prior calendar years. The ad valorem production equipment tax calculation is based on values attributable to sales months during the previous calendar year to derive the assessment in October. Again, the ad valorem production tax is a monthly tax based on current tax rates and current month sales values while the ad valorem production equipment tax is an annual tax derived from values reported from the previous calendar year sales months.

Determining Revenue Distributions -- Ad Valorem and Traditional Property Taxes

Ad valorem production and production equipment taxes totaled approximately \$43.4 million in tax year 2000. Of this total, roughly 83 percent, or \$36 million are from the oil and gas production tax. The remaining approximately \$7.4 million represents oil and gas production and equipment taxes. How the revenues are distributed in any particular county is determined by property tax rates imposed in the county. Rates are determined by a variety of institutions, but they are summarized in rate certificates produced each September by the Department of Finance and Administration's Local Government Division. A portion of the 2000 rate certificate for Lea County is shown below.

Headings of the rate certificate indicate that figures in columns three through six contain data -- primarily rates -- for properties subject to the oil and gas production and production equipment taxes. Other columns in the certificates -- not shown -- apply to traditional residential and non-residential properties. Each rate applies to a particular tax jurisdiction, shown in the fourth row of the rate certificate under the heading "category". Hence the category "1 out" contains rates applicable to school district 1 (Lovington) outside boundaries of any municipality. The category "8 in" applies to properties in school district 8 (Eunice) within municipal boundaries. The "in" or "out" designation indicates whether the district is within or outside municipal boundaries. The third row of columns three through six displays net taxable values of properties within each district. Net taxable value of oil and gas production in district 1 out is therefore \$171,211,624. Net taxable value for purposes of the oil and gas production equipment tax in the same district totals \$32,579,294. These figures multiplied by corresponding rate totals in the bottom rows of rate certificates produce figures for taxes due in each jurisdiction. Rates are expressed in mills or \$1 per \$1,000 in net taxable value. Hence, for example, the net taxable value of \$171,211,624 multiplied by the \$25.770/\$1,000 rates results in a figure of \$4,412,123.55 in oil and gas production tax obligations in district 1 out.

How the \$4.4 million in revenues is distributed is determined by the composition of rates set by jurisdictions within the district. For example, 8.6 mills of the 25.770 mill total is imposed for county operating purposes. Hence 8.6/25.77 or 33.4 percent of the \$4.4 million in oil and gas ad valorem production tax revenues in district 1 out flow to Lea County for operating purposes. Similar calculations suggest that 5.9 percent (1.529/25.770) of the revenues flow to the State of New Mexico for debt service purposes, 25.8 percent (6.641/25.770) of the revenues are distributed to the school district, and 34.9 percent (9/25.770) go to New Mexico Junior College and the NOR-Lea Hospital.

**CERTIFICATE OF TAX RATES
LEA COUNTY
TAX YEAR 2000**

MUNICIPALITY: TAXABLE VALUE: CATEGORY:	OIL & GAS Production 171,211,624 1 OUT	Equipment 32,579,294 1 OUT	<i>Eunice</i> OIL & GAS Production 3,169,157 8 IN	<i>Eunice</i> Equipment 548,823 8 IN
State Debt Service	1.529	1.529	1.529	1.529
Total State	1.529	1.529	1.529	1.529
County Operational County Debt Service	8.600	8.600	8.600	8.600
Total County	8.600	8.600	8.600	8.600
Municipal Operational Municipal Debt Service			2.225	2.225
Total Municipal			2.225	2.225
School District Operational	0.459	0.459	0.481	0.481
School District Debt Service	1.542	1.542		
School Dist. Cap. Improvement	2.000	2.000	1.924	1.924
House Bill 33	1.834	1.834	1.924	1.924
School Dist. Educ. Tech. Debt Service	0.806	0.806		
Total School District	6.641	6.641	4.329	4.329
Total State, County, Municipal, & School District	16.770	16.770	16.683	16.683
Other: NM Jr. College (1)	5.000	5.000	5.000	5.000
NOR-Lea Hospital Dist. Jal Hospital	4.000	4.000		
Total Other	9.000	9.000	5.000	5.000
GRAND TOTAL	25.770	25.770	21.683	21.683
Where Applicable:				
Cattle Indemnity	10.000			
Sheep and Goats	10.000			
Dairy Cattle	5.000			
Equine	10.000			
Bison	4.000			

Statistical Reports

All significant data pertaining to New Mexico oil and gas extraction taxes is generated by the Oil and Natural Gas Administration and Revenue Database (ONGARD). The ONGARD system processes, records, and reports information related to collection and distribution of taxes and royalties. Three state agencies contribute to, and maintain the database, however. The agencies include the State Land Office, the Energy, Minerals, and Natural Resources Department; and the Taxation and Revenue Department. Reports discussed in what follows are generated from ONGARD data.

Volume and Value Report

The oil and gas volume-value report is produced monthly by the Taxation and Revenue Department's Tax Research Office. It is distributed via e-mail in Microsoft Excel format. Users are often interested in data underlying taxes other than the ad valorem production and production equipment taxes. The other taxes include the oil and gas emergency school, the oil and gas conservation tax and the natural gas processors tax. The report provides data on volumes and values of oil and natural gas, including liquid hydrocarbons and carbon dioxide, on a monthly basis by distribution month. The report also has figures for processing, transportation and royalty deductions. Average prices by county by product in the report are the result of dividing gross sales values by volumes.

New Mexico Oil and Gas Volume/Value Report; Distribution Months 6/99 through 12/2000; run on December 1, 2000

County	Year	Month	Product	Volume	Value	Adjustments:				Total
						Price	Processing	Transport	Royalties	
Quay	2000	7	CO2	631,491	254,399	0.40	69,606	27,556	7,824	104,986
Union	2000	7	CO2	4,836,477	2,003,918	0.41	555,743	235,087	48,642	839,472
Chaves	2000	7	GAS	1,736,216	6,922,953	3.99	5,451	399,185	720,358	1,124,994
Colfax	2000	7	GAS	99,809	354,459	3.55	-	22,685	-	22,685
Eddy	2000	7	GAS	25,916,539	113,663,281	4.39	3,789,593	2,588,669	12,472,914	18,851,176
Lea	2000	7	GAS	20,507,487	80,289,719	3.92	1,513,361	864,198	6,844,622	9,222,182
Rio Arriba	2000	7	GAS	36,570,741	127,660,510	3.49	2,915,774	8,443,195	13,854,689	25,213,657
Roosevelt	2000	7	GAS	177,801	588,764	3.31	1,658	17,459	53,910	73,028
Sandoval	2000	7	GAS	157,595	625,900	3.97	7,078	43,785	84,693	135,556
San Juan	2000	7	GAS	60,386,683	226,302,757	3.75	5,315,224	15,620,973	22,566,771	43,502,969
Chaves	2000	7	OIL	53,322	1,497,893	28.09	-	327	93,859	94,186
Eddy	2000	7	OIL	2,077,553	58,630,907	28.22	-	5,754	5,301,881	5,307,634
Lea	2000	7	OIL	3,434,456	100,583,854	29.29	-	80,614	8,775,503	8,856,116
McKinley	2000	7	OIL	11,470	292,444	25.50	-	-	9,751	9,751
Rio Arriba	2000	7	OIL	132,252	3,494,287	26.42	-	-	385,876	385,876
Roosevelt	2000	7	OIL	26,998	777,680	28.81	-	-	35,698	35,698
Sandoval	2000	7	OIL	14,774	403,123	27.29	-	-	43,785	43,785
San Juan	2000	7	OIL	116,014	3,085,512	26.60	-	67	303,868	303,935
Harding	2000	8	CO2	4,572,201	1,875,777	0.41	437,025	189,899	92,741	719,664
Quay	2000	8	CO2	669,755	279,821	0.42	70,303	27,846	8,780	106,929
Union	2000	8	CO2	5,126,646	2,198,667	0.43	561,308	237,325	54,323	852,957
Chaves	2000	8	GAS	1,735,769	7,317,615	4.22	6,392	444,436	812,119	1,262,947
Colfax	2000	8	GAS	108,334	332,720	3.07	-	18,167	-	18,167

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

Since taxpayers amend returns frequently, figures for value and volume for a particular month change frequently, with the largest changes occurring in the latest months shown in the report. For example, suppose the report is for distribution months January through June, and it is run in June. If the same report were to be run in August, figures for all months are likely to vary from figures shown in the June report, but figures for June will typically display the greatest variation between the June and August reports. Data from the volume-value report is often the basis of revenue projections for the various state taxes.

Using volume-value data typically requires analysts to sort data by product, county and month and perform simple numeric calculations on the data. OGAR data is available only from about July of 1996, because ONGARD system on which it is based contains data beginning with that date. Longer time series are available from the University of New Mexico's Bureau of Business and Economic Research, as well as the DFA's economic analysis unit. A small portion of a typical volume-value report is shown above.

Percent of Ownership Report

The percent of ownership report is typically run once or twice annually by the Tax Research Office. It shows the distribution of oil, natural gas and carbon dioxide value by county by month. It also displays the percent of value produced on state, federal, private and Indian lands. Its primary use is probably for policy decisions regarding Indian taxation. In the 2000 legislature, for example, a measure (House Bill 605 and Senate Bill 518) was considered which would have provided capital improvement tax credits totaling 2 percent of taxable value of production on Indian lands. The percent of ownership report was used to determine the amount of revenue from various oil and gas extraction taxes that would be transferred to Indian nations as a result of the proposal, as well as the counties in which the credits would probably be earned. An example of the percent of ownership report is shown below.

Percent of Ownership Report -- Chaves County, 1998 by Month

County	Product	Month	Year	Volume	Value	Price	Percent of Ownership From:			
							State Land	Federal Land	Private Land	Indian Land
Chaves	GAS	1	1998	1795584	3201488	1.78	27.19	59.33	13.48	0
Chaves	GAS	2	1998	1419692	2426425	1.71	27.49	58.74	13.77	0
Chaves	GAS	3	1998	940254	1400306	1.49	30.21	59.96	9.82	0
Chaves	GAS	4	1998	1874460	3549286	1.89	27.56	57.56	14.88	0
Chaves	GAS	5	1998	1890141	4000462	2.12	29.88	57.29	12.83	0
Chaves	GAS	6	1998	1806600	4389676	2.43	30.68	56.35	12.97	0
Chaves	GAS	7	1998	1909073	4106877	2.15	30.62	57.16	12.22	0

Tax Type Report

This report is typically run several times per year and contains figures for five of the six oil and gas extraction taxes by county. Taxes summarized in the report include the emergency school tax, the oil and gas severance tax, the oil and gas conservation tax and the ad valorem production tax. The report is typically generated by the Taxation and Revenue Department's Tax Research Office, but is often analyzed, summarized and distributed by the DFA's Economic Analysis Unit. It is used for a variety of purposes, including enabling analysts to understand the distribution of various oil and gas tax revenues by county. At some point in the future, figures for oil and gas production equipment tax revenues will probably appear in the report.

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

Run Date 12/16/98

Tax Type Report by Period -- 7/97 to 6/98

Product	Year	Month	County	Emergency School	O & G Severance	O & G Conservation	Ad Valorem Production	Total
OIL	1998	2	Lea	1,372,301	1,609,836	82,755	473,620	3,538,512
OIL	1998	2	McKinley	4,995	5,946	301	2,371	13,614
OIL	1998	2	Rio Arriba	39,395	46,912	2,378	16,215	104,899
OIL	1998	2	Roosevelt	15,475	18,423	933	3,119	37,950
OIL	1998	2	Sandoval	5,067	6,032	305	1,701	13,105
OIL	1998	2	San Juan	41,581	49,469	2,505	14,673	108,228
CO2	1998	3	Harding	41,247	49,104	2,487	12,911	105,750
CO2	1998	3	Quay	6,132	7,300	370	1,899	15,702
CO2	1998	3	Union	48,087	57,247	2,900	13,787	122,021
GAS	1998	3	Chaves	129,275	121,196	6,134	38,703	295,308
GAS	1998	3	Eddy	1,529,251	1,418,127	72,590	326,681	3,346,650
GAS	1998	3	Harding	55	51	3	13	122
GAS	1998	3	Lea	1,296,351	1,202,399	61,548	311,533	2,871,830
GAS	1998	3	McKinley	1	1	0	0	3
GAS	1998	3	Rio Arriba	1,880,164	1,762,140	89,349	564,225	4,295,878
GAS	1998	3	Roosevelt	12,892	12,086	612	2,046	27,637
GAS	1998	3	Sandoval	9,969	9,346	473	2,635	22,422
GAS	1998	3	San Juan	3,164,236	2,958,211	150,237	834,216	7,106,899
OIL	1998	3	Chaves	23,924	28,262	1,442	9,302	62,930
OIL	1998	3	Eddy	720,929	843,229	43,471	201,444	1,809,073
OIL	1998	3	Lea	1,260,859	1,480,295	76,035	433,536	3,250,725
OIL	1998	3	McKinley	5,210	6,202	314	2,473	14,200
OIL	1998	3	Rio Arriba	44,481	52,972	2,687	18,273	118,412
OIL	1998	3	Roosevelt	13,142	15,645	792	2,649	32,228
OIL	1998	3	Sandoval	5,978	7,116	360	2,006	15,461
OIL	1998	3	San Juan	46,092	54,824	2,776	16,251	119,943
CO2	1998	4	Harding	41,376	49,258	2,495	12,952	106,081
CO2	1998	4	Quay	6,112	7,276	369	1,893	15,649

Ad Valorem Equipment Tax Preliminary Report

This report is distributed by the Taxation and Revenue Department's Oil and Gas Accounting Bureau in March or April of each year. As shown in the illustration below, the report's first two columns list school codes for school district and municipality. The report's first row applies to school district 1 in Lea County outside municipal boundaries. *It corresponds to school district 1 out -- Lovington -- in the rate certificate shown above.* Notice that the fourth column of the first row contains figures for assessed value within the district. This figure \$32,579,293.98 corresponds to the assessed value figure for production equipment shown in the fourth column of the rate certificate shown above. Figures in this column therefore represent assessed values on which rates are applied when the rate certificates are issued in September -- roughly five months following the report.

STATE OF NEW MEXICO
TAXATION AND REVENUE DEPARTMENT

OIL AND GAS EQUIPMENT AD VALOREM TAX PRELIMINARY REPORT

04/03/00

TREASURER OF LEA COUNTY
P.O. BOX 3-C COURTHOUSE
MS PATSY I. ROBERTS
LOVINGTON NEW MEXICO 88260

COUNTY CODE: 025
COUNTY NAME: Lea

CALENDAR YEAR: 1999

School District	Municipality	Calendar Year Value	Assessed Value
01	0000	365,028,358.21	32,579,293.98
08	0000	299,850,334.88	26,983,831.48
08	0009	6,098,640.58	5,488,223.76
16	0000	2,947,214,097.45	26,522,246.28
16	0013	22,434,063.61	2,018,863.81
19	0000	154,913,401.10	13,940,811.87
19	0015	626,014.49	56,335.66
28	0000	71,072,730.68	3,696,176.10
Total Calendar Year Value		1,181,744,641.00	
Total Assessed Value			106,346,381.94

Figures in the report's third column, for example \$365,028,358.21 represent total calendar year value for the year *including amendments*. Since net taxable value figures in the report's final column are 9 percent of annual production value, figures in the table's final column are approximately 9 percent of totals in the third column. For example, \$365,028,358.21 multiplied by 9 percent is \$32,852,552.24 -- similar to the \$32,579,293.98 shown in the report. The difference between the two figures (\$32,852,552.24 - \$32,579,293.98 = \$273,258.26) represents effect of amendments on net taxable value. Hence figures in the third column serve to indicate the extent by which mineral extraction firms amend their returns for a variety of reasons. The report's final figures represent total net taxable value of oil and gas production equipment in the county -- in this case \$106,346,381.94.

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

Oil and Gas Ad Valorem Production Tax Roll - Distribution Report

This report is also issued in April or each year by the Taxation and Revenue Department's Oil and Gas Accounting Bureau. An example of the report issued for Lea County in April of 2000 is shown below. Its purposes include providing net taxable values on which rates are based, as well as figures for revenues likely to result from the tax.



STATE OF NEW MEXICO
TAXATION AND REVENUE DEPARTMENT

OIL AND GAS AD VALOREM PRODUCTION TAX ROLL-DISTRIBUTION

04/4/00

TREASURER OF LEA COUNTY
P.O. BOX 3-C COURTHOUSE
MS PATSY I. ROBERTS
LOVINGTON NEW MEXICO 88260

COUNTY CODE: 025
COUNTY NAME: Lea

School District	Municipality	Assessed Value	State Tax	County Tax	Total Tax
01	No Municipality Code	\$171,211,623.85	\$248,569.07	\$4,105,214.97	\$4,353,784.04
08	No Municipality Code	\$48,302,745.05	\$217,501.14	\$2,674,687.13	\$2,892,188.27
08	EUNICE	\$3,169,157.26	\$4,656.80	\$65,512.38	\$70,169.18
16	No Municipality Code	\$146,003,405.33	\$223,818.78	\$3,102,991.28	\$3,326,810.06
16	Hobbs	\$12,299,955.34	\$179,233.56	\$317,659.48	\$335,583.04
19	No Municipality Code	74,436,741.65	\$110,249.75	\$1,033,175.34	\$1,143,425.09
19	JAL	\$287,781.36	\$420.11	\$6,131.43	\$6,551.54
28	No Municipality Code	\$18,886,111.11	\$27,769.22	\$501,108.32	\$528,877.54
Total Distribution		\$574,597,521.61	\$850,908.43	\$11,806,480.33	\$12,657,388.76

As in the previous cases, the school district numbers in the report's first column indicate the particular tax district in which row figures apply. Figures for school district 1 -- Lovington -- outside municipal boundaries -- are shown in the report's first row. Numbers in the report's third column represent assessed values for purposes of the oil and gas *production* tax for the tax year. The figure shown for district 1 out -- \$171,211,623.85 -- corresponds to the figure shown in the assessed value for oil and gas production tax purposes in the district shown in the rate sheet above. It is thus the basis for net taxable values shown in rate sheets issued in the following September. Figures in the report's third column represent approximate taxes flowing to the state in tax year 1999. Since the state rate in tax year 1999 was \$1.482 per \$1,000 in net taxable value, the product of \$171,211,623.85 and \$1.482/\$1,000 (\$253,735.63) represents the approximate distribution to the State of New Mexico for debt service purposes. The final column in the report shows approximate revenues for all other entities in the county in the previous year applicable to the tax district. The total rate in the 1999 tax year was \$25.525/\$1,000, while the state rate was \$1.482/\$1,000. Hence the

total rate net of the state rate was \$24.043 per \$1,000 (\$25.525 - 1.482 = \$24.043). This figure multiplied by the \$171,211,623.85 net taxable value yields \$4,116,441.07 -- similar to the \$4,105,214.97 figure shown in the table's third column. Figures in the report's final column simply represent sums of figures in the previous two columns.

Statistical Overview

Volumes, Values and Prices by County

Natural Gas Volumes

Natural gas volumes typically total approximately 1.6 trillion cubic feet per year statewide. San Juan and Rio Arriba Counties are the state's largest natural gas producers, followed by Lea and Eddy Counties. As indicated below, volumes in Eddy and Lea County average about half those in Rio Arriba and San Juan. Relative rankings by county have not changed since 1997. Some characteristics of natural gas volumes are depicted graphically in this report's Appendix A, Figures 1 through 4. As suggested by the charts, natural gas production is fairly seasonal by nature.

Table 1: Natural Gas Volumes (MCF) -- 1997 Through 2000 Calendar Years

<i>County</i>	<i>1997</i>	<i>Rank</i>	<i>1998</i>	<i>Rank</i>	<i>1999</i>	<i>Rank</i>	<i>2000</i>	<i>Rank</i>
Chaves	26,196,379	5	22,143,107	5	19,945,377	5	22,098,731	5
Eddy	271,939,950	3	286,117,959	3	280,495,365	3	303,598,782	3
Lea	229,546,443	4	221,116,468	4	212,059,345	4	221,197,520	4
Mckinley	6,457	8	3,871	8	20,233	8	10,341	8
Rio Arriba	408,568,493	2	415,035,185	2	411,735,998	2	394,751,871	2
Roosevelt	2,535,491	7	2,333,839	7	2,183,160	7	2,074,749	7
San Juan	645,370,847	1	666,438,824	1	696,055,630	1	670,753,744	1
Sandoval	5,068,971	6	3,498,316	6	3,855,420	6	6,904,572	6
Totals	1,589,233,031		1,616,687,569		1,626,350,528		1,621,390,310	

Information Source: Volume-Value Report, Run on March 20, 2000

Oil Volumes

As indicated in Table 2 below, New Mexico oil volumes total approximately 69 million barrels annually. Lea County is the leading producer with about 42 million barrels annually, followed by Eddy County. Relative rankings of oil production by county changed little between calendar years 1997 and 2000. Oil volumes in Eddy, Lea, San Jan and Rio Arriba County are portrayed graphically in Appendix A, Figures 5 and 6. As indicated in the charts, oil production exhibits some seasonal variation, but seasonal variation in oil production is less pronounced than natural gas production.

Table 2: Oil Volumes (BBLs) -- 1997 Through 2000 Calendar Years

<i>County</i>	<i>1997</i>	<i>Rank</i>	<i>1998</i>	<i>Rank</i>	<i>1999</i>	<i>Rank</i>	<i>2000</i>	<i>Rank</i>
Chaves	948,790	5	823,728	5	727,391	5	649,706	5
Eddy	24,926,696	2	22,622,325	2	21,659,876	2	23,854,156	2
Lea	43,658,226	1	42,532,251	1	41,732,168	1	41,880,007	1
Mckinley	172,594	8	150,040	8	100,574	8	120,811	7
Rio Arriba	1,583,279	4	1,508,512	3	1,531,966	3	1,535,329	3
Roosevelt	473,478	6	426,848	6	366,093	6	326,533	6
San Juan	1,701,671	3	1,358,687	4	1,441,101	4	1,392,283	4
Sandoval	241,216	7	184,802	7	145,952	7	-	8
Totals	73,705,950		69,607,193		67,705,121		69,758,825	

Information Source: Volume-Value Report, Run on March 20, 2000

Carbon Dioxide Volumes

Recent annual carbon dioxide volumes are shown in Table 3. Union County is the leading producer, followed closely by Harding. About half the state's approximately 120 million MCF of carbon dioxide was produced in Union County in calendar year 2000. About 44 percent was generated in Harding County, while the remaining 6 percent was produced in Quay County. These trends are depicted graphically in Appendix Figures 7 through 9. As indicated by Chart 8, carbon dioxide production is also seasonal by nature particularly in the early months of calendar years.

**Table 3: Carbon Dioxide Volumes (MCF)
1997 Through 2000 Calendar Years**

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Harding	64,970,538	60,855,913	47,034,725	52,865,538
Quay	9,359,051	8,785,838	6,504,584	7,613,008
Union	73,150,410	68,770,123	51,724,171	59,605,689

Information Source: Volume-Value Report, Run on March 20, 2000

Natural Gas Values

Natural gas values by county during calendar years 1997 through 2000 are shown in Table 4. Statewide total values averaged about \$3.4 million between 1997 and 1999. In calendar year 2000, they increased to slightly over \$6 million, however, due very large increases in natural gas prices. County value rankings are similar to volume rankings. Highest values are in San Juan, Rio Arriba, Eddy and Lea Counties respectively.

Table 4: Natural Gas Values -- 1997 through 2000 Calendar Years

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Chaves	61,934,271	45,169,659	44,909,206	101,824,457
Eddy	659,688,096	776,392,384	654,960,238	1,254,137,742
Lea	553,910,044	441,795,607	515,271,807	894,587,642
Mckinley	15,812	7,673	44,212	27,820
Rio Arriba	891,657,751	717,748,463	830,306,640	1,416,175,977
Roosevelt	5,390,549	4,124,486	4,306,366	6,764,972
San Juan	1,427,875,983	1,161,738,566	1,390,257,712	2,398,254,304
Sandoval	1,932,963	1,926,511	1,707,315	1,728,628
Totals	3,602,405,470	3,148,903,350	3,441,763,496	6,073,501,541

Information Source: Volume-Value Report, Run on March 20, 2000

Oil Values

Oil value totals by county during recent years are shown in Table 5. As is the case with volumes, the two leading counties by far are Lea and Eddy. In calendar year 2000, about 60 percent of the statewide total \$2 billion in oil production was in Lea County; about 34 percent was in Lea. Rio Arriba and San Juan were

Table 5: Oil Values -- 1997 through 2000 Calendar Years

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Chaves	17,349,741	9,690,149	12,306,641	18,419,667
Eddy	491,866,410	290,939,618	382,129,952	690,072,801
Lea	835,058,797	530,210,323	715,317,597	1,211,259,008
Mckinley	3,088,740	1,698,884	1,556,319	3,127,118
Rio Arriba	29,417,979	17,535,192	23,960,362	38,970,390
Roosevelt	8,963,639	5,236,284	6,406,260	9,358,247
San Juan	31,870,504	16,035,325	23,258,327	37,087,921
Sandoval	4,579,816	2,286,686	2,398,935	NA
Totals	1,422,195,627	873,632,459	1,167,334,393	2,008,295,151

Information Source: Volume-Value Report, Run on March 20, 2000

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

responsible for about 2 percent of the total, while other counties generated less than 1 percent of the statewide total oil production value.

Carbon Dioxide Values

Taxable values of carbon dioxide averaged about \$50 million annually during the past four years. Since carbon dioxide prices vary little among counties, relative ranking of carbon dioxide production by county almost mirror those of carbon dioxide production.

**Table 6: Carbon Dioxide Values -
1997 Through 2000 Calendar Years**

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Harding	22,990,380	22,573,675	18,004,764	22,091,448
Quay	3,336,880	3,299,918	2,579,574	2,991,825
Union	26,372,577	26,288,851	20,443,521	24,454,727

Information Source: Volume-Value Report, Run on March 20, 2000

Natural Gas Prices

Table 7 displays average prices per MCF of natural gas production in New Mexico Counties between 1997 and 2000. They averaged about \$2.25 per MCF in 1997, fell to about \$1.95 in 1998, increased to roughly \$2.12 in 1999, then to roughly \$3.75 in calendar year 2000! As indicated in the table, prices from natural gas in the state's northwestern region -- Rio Arriba and San Juan County (San Juan Basin) -- tend to be lower than prices of natural gas produced in the Permian Basin in southeastern part of the state. Natural gas from the San Juan Basin tends to contain less energy by volume than gas generated in the Permian Basin, hence sells for less.

**Table 7: Average Prices of Natural Gas by County
Calendar Years 1997 through 2000**

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Chaves	2.36	2.04	2.25	4.61
Eddy	2.43	2.71	2.34	4.13
Lea	2.41	2.00	2.43	4.04
Mckinley	2.45	1.98	2.19	2.69
Rio Arriba	2.18	1.73	2.02	3.59
Roosevelt	2.13	1.77	1.97	3.26
San Juan	2.21	1.74	2.00	3.58
Sandoval	2.62	1.82	2.26	3.99

Information Source: Volume-Value Report, Run on March 20, 2000

Oil Prices

Average prices per barrel of oil by county between 1997 and 2000 are displayed in Table 8. Statewide averages ranged from about \$12.55 per barrel in 1998 to slightly under \$28 per barrel in calendar year 2000. Oil prices tend to be higher in the Permian Basin than in the San Juan Basin, as indicated, for example by prices under \$27 per barrel in San Juan and Rio Arriba Counties in calendar year 2000, compared with averages prices of \$28.92 and \$28.93 in Eddy and Lea Counties during the same year.

**Table 8: Average Prices of Oil by County
Calendar Years 1997 through 2000**

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Chaves	18.29	11.76	16.92	28.35
Eddy	19.73	12.86	17.64	28.93
Lea	19.13	12.47	17.14	28.92
Mckinley	17.90	11.32	15.47	25.88
Rio Arriba	18.58	11.62	15.64	25.38
Roosevelt	18.93	12.27	17.50	28.66
San Juan	18.73	11.80	16.14	26.64
Sandoval	18.99	12.37	16.44	NA

Information Source: Volume-Value Report, Run on March 20, 2000

Carbon Dioxide Prices

Carbon dioxide prices averaged about 38 cents per MCF statewide between 1997 and 2000. As indicated in Table 9 below, very minor differences exist in carbon dioxide values among counties.

**Table 9: Average Prices of Carbon Dioxide -
1997 Through 2000 Calendar Years**

<i>County</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Harding	0.35	0.37	0.38	0.42
Quay	0.36	0.38	0.40	0.39
Union	0.36	0.38	0.40	0.41

Information Source: Volume-Value Report, Run on March 20, 2000

Distribution of Value by Land Ownership

The distribution of production value by land ownership is shown in Table 10. Figures in the table were developed from data contained in a recent "percent of ownership report" described above. Statewide averages shown in the table are weighted averages -- the result of dividing total value of product on a particular type of land by the sum of production value in all counties.

Natural Gas

As indicated in the upper portion of Table 10, about 18 percent of New Mexico's natural gas production value is from wells on state land. Roughly 65 percent is done from federal land, while only 12.75 percent is produced on private land. The high proportion of value from federal land results from the fact that roughly three-quarters of production value in the San Juan Basin -- Rio Arriba and San Juan Counties -- is on federal land.

As indicated in the table's final column, approximately 3.75 percent of the production value of natural gas is on Indian land -- primarily in Rio Arriba County, with modest amounts of production value from San Juan County. A very high fraction of production value in Sandoval County is on Indian land, but Sandoval is not a major natural gas producer. Hence its effect on the total fraction of Indian land production value is very small.

Oil

A higher percentage of oil than natural gas is produced on state land simply because relatively high fractions of oil in Eddy and Lea Counties -- the state's major oil producers -- are on state land. And whereas most of the state's gas production is on federal land, oil production is fairly evenly divided between state and federal land. Also, since very little Indian land exists in the state's southeast region, less than 1 percent of New Mexico's oil production value is on Indian lands. Moreover, as is the case with natural gas, a relatively small fraction of oil production value is on private land.

Carbon Dioxide

As portrayed in Table 10's lower region, a very small fraction carbon dioxide value -- about 6 percent of the total -- results from production on Federal land. No carbon dioxide is produced on Indian lands. Unlike oil and natural gas, most of the state's carbon dioxide production is on private land.

Table 10: Distribution of Production Value by Land Ownership

<i>County/Product</i>	<i>Percent of Value From:</i>			
	<i>State Land</i>	<i>Federal Land</i>	<i>Private Land</i>	<i>Indian Land</i>
<i>Natural Gas</i>				
Chaves	40.27	49.02	10.71	-
Colfax	-	-	100.00	-
Eddy	29.45	62.61	7.94	-
Lea	40.05	30.28	29.67	-
McKinley	-	100.00	-	-
Rio Arriba	7.59	74.87	5.51	12.04
Roosevelt	9.31	68.88	21.81	-
San Juan	9.12	75.54	13.09	2.24
Sandoval	2.24	26.77	0.70	70.29
All Counties	18.08	65.41	12.75	3.75
<i>Oil</i>				
Chaves	36.22	26.86	36.92	-
Colfax	-	-	100.00	-
Eddy	20.53	69.41	10.05	-
Lea	50.42	24.86	24.71	-
McKinley	6.95	45.19	47.70	0.16
Rio Arriba	4.50	63.01	3.84	28.65
Roosevelt	4.79	50.77	44.44	-
San Juan	8.96	73.03	7.04	10.97
Sandoval	2.01	62.34	0.41	35.24
All Counties	38.01	42.01	19.14	0.84
<i>Carbon Dioxide</i>				
Harding	46.36	5.84	47.80	-
Quay	23.26	6.01	70.74	-
Union	20.67	6.15	73.18	-
All Counties	31.79	6.01	62.20	-

Information Source: Percent of Ownership Report run on Mrch 26, 2000

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

Revenue Distribution by County

The approximate manner in which oil and gas production and production equipment tax revenues were distributed in the 2000 calendar year is shown in Table 11. Figures shown in the table are approximations, because they are the simple products of values and rates shown on the DFA rate certificates, and do not reflect actual distributions. In any case, as indicated in the table's lower right-hand portion, about 42 percent of the \$43.3 million in annual revenues flows to county governments, where they are used almost totally for operating expenditures. About 36 percent flows to school districts, where they finance various types of capital construction expenditures. Roughly 21 percent is distributed to the "other" category -- primarily in support of local community and junior colleges. About 7 percent funds state capital construction projects. Almost none of the revenues flow to municipal governments, for the simple reason that oil and gas wells are typically outside municipal boundaries.

Table 11: Oil and Gas Production and Production Equipment Tax Obligations by County, 2000 Tax Year

Recipient/County	Chaves	Eddy	Harding	Lea	McKinley	Quay	Rio Arriba	Roosevelt	San Juan	Sandoval	Union	Total
State	43,155	788,578	9,876	1,041,163	1,520	1,444	532,241	8,448	869,033	5,515	11,334	3,312,307
County	312,923	3,868,105	57,161	5,856,118	12,682	9,778	4,124,955	48,900	4,546,935	39,144	67,829	18,944,530
Operating	292,122	3,868,105	57,161	5,856,118	11,778	9,778	4,124,955	48,900	4,262,752	37,333	67,829	18,636,831
Debt	20,801				904					1,811		23,516
Other*									284,183			284,183
Municipality	-	3,797	-	90,446	-	-	-	-	18,358	-	-	112,601
Operating	-	3,797		90,446					18,358			112,601
Debt	-											-
School District	190,151	3,713,476	61,589	3,666,132	10,420	5,055	2,021,904	13,810	3,783,889	36,612	45,582	3,548,620
Operating	13,995	257,874	3,229	322,176	497	472	174,049	2,759	280,839	1,151	3,706	1,060,747
Debt	119,707	1,167,150	45,442	410,243	7,935	2,694	393,429		2,378,952	28,247	4,811	4,558,610
Cap Improvement	56,449	1,031,495	12,918	1,303,923	1,988	1,889	190,707	11,051	1,124,098	7,214	14,826	3,756,558
HB-33		1,256,957		1,465,535			1,263,719				22,239	4,008,450
Ed Technology				164,255								164,255
Other	66,478	851,189	-	4,088,408	4,970	1,417	1,479,414	-	2,898,671	-	30,897	9,421,444
Colleges**	66,478	851,189		2,961,111	2,982				2,898,671			6,780,431
Hospitals	-			1,127,297	1,988	1,417	1,479,414				30,897	2,641,013
Total***	612,707	9,225,145	128,626	14,742,267	29,592	17,694	8,158,514	71,158	12,116,886	81,271	155,642	45,339,502

Percent of Total Oil and Gas Production and Production Equipment Taxes:

	Chaves	Eddy	Harding	Lea	McKinley	Quay	Rio Arriba	Roosevelt	San Juan	Sandoval	Union	Total
State	7.04	8.55	7.68	7.06	5.14	8.16	6.52	11.87	7.17	6.79	7.28	7.31
County	51.07	41.93	44.44	39.72	42.86	55.26	50.56	68.72	37.53	48.16	43.58	41.78
Operating	47.68	41.93	44.44	39.72	39.80	55.26	50.56	68.72	35.18	45.94	43.58	41.11
Debt	3.39	-	-	-	3.05	-	-	-	-	2.23	-	0.05
Other*	-	-	-	-	-	-	-	-	2.35	-	-	0.63
Municipality	-	0.04	-	0.61	-	-	-	-	0.15	-	-	0.25
Operating	-	0.04	-	0.61	-	-	-	-	0.15	-	-	0.25
Debt	-	-	-	-	-	-	-	-	-	-	-	-
School District	31.03	40.25	47.88	24.87	35.21	28.57	24.78	19.41	31.23	45.05	29.29	29.88
Operating	2.28	2.80	2.51	2.19	1.68	2.67	2.13	3.88	2.32	1.42	2.38	2.34
Debt	19.54	12.65	35.33	2.78	26.81	15.23	4.82	-	19.63	34.76	3.09	10.05
Cap Improvement	9.21	11.18	10.04	8.84	6.72	10.68	2.34	15.53	9.28	8.88	9.53	8.29
HB-33	-	13.63	-	9.94	-	-	15.49	-	-	-	14.29	8.84
Ed Technology	-	-	-	1.11	-	-	-	-	-	-	-	0.36
Other	0.72	9.23	-	27.73	16.80	8.01	18.13	-	23.92	-	19.85	20.78
Colleges**	10.85	9.23	-	20.09	10.08	-	-	-	23.92	-	-	14.95
Hospitals	-	-	-	7.65	6.72	8.01	18.13	-	-	-	19.85	5.82
Total***	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Rate (Mills):	21.71	17.89	19.91	21.65	29.77	18.73	23.44	12.88	21.32	22.53	21.00	21.02

Information sources: calculated from rate certificates issued by the New Mexico Department of Finance and Administration.

*Communication Authority in San Juan County. **Includes Junior and Community Colleges and Vocational Schools

***Excludes \$2,531 in obligations in Colfax County.

Variation in the fraction of revenues flowing to state capital construction projects shown in the first row of the table's lower section reflects the nature of relative rates. The 1.529 mill state rate is applied in all

counties. Hence the fraction of total revenues claimed by the state rate varies inversely with aggregate rates imposed in each county. As shown in the table's final column, average rates range from 12.88 mills in Roosevelt County to 29.77 mills in McKinley. The 1.529 state rate is 11.87 percent of the rate total in Roosevelt County, but only 5.14 percent of the rate total in McKinley County.

Oil and Gas Revenue Forecasting

The simple formula for calculating oil and gas revenues expected for any time period is:

$$\text{Revenue} = (\text{Value} - \text{Deductions}) * \text{Tax Rate}$$

Where:

$$\text{Value} = \text{Price} * \text{Volume}$$

Thus, the central tasks in forecasting revenue are to forecast three components: price, volume and deductions. Once this has been done, projected revenues are the simple products of rates and anticipated values net of deductions.

Sales Volume

Introduction

Although not as difficult to forecast as prices, the sales volume is a logical starting point for analysis. Understanding the trends in sales volumes can give us a sense of the longer-term outlook for revenue. Geologists have been expecting sales volumes of both crude oil and natural gas to decline in the U.S. since the peak in domestic production was reached in the 1970's. Although production has indeed declined from peak levels, it has remained remarkably steady in New Mexico. Natural gas production actually increased significantly in the 1990's thanks to federal production incentives.

Economists have always had reservations about the geologists' outlook for non-renewable resource production. In the economic model, increasing scarcity of production is seen as leading to higher prices, which in turn encourage exploration and increased production. The complicated feedback between these two tendencies, combined with the fluctuations in demand induced by weather and economic growth, leave us without a reliable model for intermediate-term forecasting. Lacking such a model, we can do a reasonable job of forecasting sales volume using time series analysis.

Crude Oil

We begin with a plot of the historical data such as in Figure B1. The monthly fluctuations in sales volume can be "smoothed" by taking a moving average. Any period of time can be used, the most common for monthly data being a 12-month average—i.e. for each data point we substitute the number that is the simple average of it and the previous eleven data points.

Figure B1 shows that, during the 1990's oil sales in the state have fluctuated within a band of 5.5 to 6 million barrels per month, or 66 to 72 million barrels per year.

Figure B2 overlays the average price of oil to see if it helps to explain the fluctuations in sales volume. Periods of positive relationship (both increasing or both decreasing) appear but, unfortunately, the lag in response of production to price varies from time to time.

Figure B3 shows different formulas for extrapolating volumes, all readily available in the chart menu in Microsoft Excel. Although the figures do not point clearly to one choice of formula, they suggest a range of values within which the future value is likely to occur. Thanks to the relative stability of the time series, a forecast based on the midpoint of the historical series would probably be quite reasonable.

Natural Gas

Figures B4 and B5 plot volume and price information for natural gas sales in the Permian Basin. The volume series shares features with the oil volume series, which is not surprising since the two products are often produced from the same wells. Total Permian sales have fluctuated from 40 to 48 billion cubic feet (Bcf) per month—or 480 to 576 Bcf per year--over the last decade. No general upward or downward trend is evident in the ten-year history.

The price/volume correlation is even weaker for Permian gas than for oil. This may be partly due to the fact that drilling in the Permian is more responsive to oil prices than to gas prices.

Figures B6 and B7 present San Juan Basin natural gas sales. Sales increased strongly in the early 1990's, more than doubling between 1991 and 1994. This reflects the federal income tax credit for producing from coal seam formations. This credit applies to the first ten years of production from wells that were drilled before the end of 1992. Coal seam production now accounts for about half of total production in the Basin. As the coal seam wells have matured, total production in the Basin has stabilized around 90 Bcf per month or about 1.1 Trillion cubic feet (Tcf) per year. Total volume has been remarkably stable over the last few years.

Figure B7 shows average price for San Juan producers. No real correlation between price and volume is evident. While the increase of volume in the early 1990's was obviously not driven by prices, it is somewhat disappointing that the dramatic increase in prices in the last year has not stimulated a noticeable increase in production.

Figure B8 shows alternative formulas for extrapolating Permian sales. Like the oil outlook, it appears that a value near the midpoint of the ten-year series would be reasonable, or perhaps a little conservative given the current price environment.

Figure B9 shows the San Juan Basin outlook using different models. There appears to be some evidence of a decline in production in recent observations.

Deductions

Allowable deductions are comprised of three major components: royalties paid to governments (U.S., State or Tribal); processing expenses and transportation expenses to get the product to the first point of sale. Royalties are typically set as a percent of the sales value—in fact, both federal and State royalties are one-eighth of the gross value². Processing and transportation deductions should be a function of the type and quality of product and the typical contractual arrangements—i.e. does the title to the product change hands before or after extensive processing is undertaken?

² A sliding scale formula is available for both federal and State royalties for production from low-output wells.

Figures B10 and B11 provide one way of looking at the deductions rates for oil and gas. Unfortunately, the data are not organized in the most useful format because royalty deductions, which are a function of total value, are not shown separately from processing and transportation deductions³.

Statewide natural gas deductions as a percent of value increased in the mid-1990's. This probably reflects the increased role of coal seam gas, which requires more processing than "conventional" gas. After jumping to about 22% of value in 1995, total deductions fluctuated from 20 to 24% until they began declining around the beginning of 2000. The latter trend probably reflects the fact that processing and transportation expenses did not increase as quickly when prices more than doubled last year.

Oil deductions have increased slightly as a percent of value in the last year. This may reflect a trend to more production on State or Federal or Tribal lands. Almost all of the deductions for oil are for royalties since most of the processing occurs after title is transferred. The range of oil deductions has typically been in a band of 8 to 9 percent.

Prices

Forecasting oil and gas prices is a highly risky proposition, but there are certain indicators that can be used to make inferences about the near-term outlook. For the longer term, the best approach is to take a conservative approach (i.e. underestimate price to some extent) and build in a margin of error (i.e. do not budget all of the projected revenue). The state uses both approaches to offset the considerable risk in its revenue outlook. The State has the further advantage of a highly diversified portfolio of revenue sources, so that unexpected windfalls in some other revenue may offset shortfalls in oil and gas revenue. Including the contributions of both royalties and taxes, the latter comprises anywhere from 10% to 20% of the State's general Fund revenue.

Crude Oil

Crude oil prices are determined in international markets—i.e. the United States itself is a "price taker" in this market. U.S. producers must produce whatever they can afford to at the prevailing prices in World markets. Although a great deal of attention is typically focused on the OPEC cartel, they now produce a minority of the World's oil—about 40%. OPEC is significant because (1) it contains the few countries that have excess production capacity, and (2) it has demonstrated at least some ability to act in concert to influence prices.

Nonetheless, OPEC's control over prices is limited by (1) fluctuating World demand for oil and (2) the production response—however gradual and limited—of non-OPEC producers. An example of how these factors complicate life was the collapse of oil prices that began in late 1997. Worldwide demand began to drop following the Asian economic crisis. At precisely this time, OPEC decided the time had come to increase their output quotas—partly as a measure to punish those non-OPEC producers who had been benefiting from higher prices due to the cartel's production restraint.

It took OPEC over a year and a series of production cuts—as well as a recovered World economy—to bring prices up to the relatively high levels of today. As the World economy has begun to weaken in recent months, OPEC has announced that it will begin production cuts. At the same time, however, non-OPEC producers have been increasing output.

³ The ONGARD data on processing and transportation expenses may not be of high quality since some producers report the two amounts together. This is acceptable to the Department as long as the total amount is correct. For most purposes, it is probably preferable to treat the two as one total amount.

New Mexico Oil and Gas Ad Valorem Production and Production Equipment Taxes

To see how market experts think the balance of these forces will play out in coming months, one can look to the prices of futures contracts on the NYMEX exchange. These contracts reflect promises to pay for oil (and also gas) in future periods. They are reported daily in the Wall Street Journal on a page titled “Futures Prices” in the “Money and Investing section of the paper. Prices are reported as the average for each month for the next 18 to 24 months or so. The volume of contracts transacted is also reported. Since the volume of contracts is much larger for the nearer months, these represent much better information about traders’ expectations than do prices further in the future.

The current outlook for crude oil price shows it declining from \$26.80 for May 2001 to \$25.06 for April 2002. These prices reflect the price for “light, sweet” crude delivered at a Cushing Oklahoma delivery point. The light sweet quality corresponds closely with the “West Texas Intermediate” designation. Since most New Mexico crude is of lower quality, and since it is more remote than Cushing, a differential should be applied to use the future prices as an indicator for New Mexico. Based on a relatively stable relationship over a number of years, a differential of about \$2.10 per barrel seems to provide a good adjustment. Thus, based on the current futures outlook we would expect New Mexico crude to sell for between \$24.80 and \$23.00 over the next year.

As an additional point of information, the Wall Street Journal also reports the average spot market price of West Texas Intermediate at Cushing and West Texas Sour at Midland. This information can be used to keep track of how New Mexico prices correlate with these benchmarks.

Table B1 presents a forecast of New Mexico oil prices for Fiscal Years 2001 and 2002 based on a recent roll up of the NYMEX futures. Sales months from May through April correspond to the State’s July-through-June fiscal year because the taxes aren’t due at the Tax Department until the 25th of the second month after the sale, and it takes another month to get the returns processed and cash distributed. In addition to the NYMEX futures, the Navajo refinery publishes a price bulletin that provides slightly more timely information about prevailing prices than tax returns. Average price for the State is expected to be \$28.46 this year and \$24.03 next.

Natural Gas

Because of the difficulty of transportation, natural gas is traded in continental markets, rather than World markets. The U.S. currently imports only small quantities of liquefied gas from outside of North America. Thus, in thinking about gas prices, we can focus on developments within the U.S. and Canada. Mexico has yet to play a significant role in the U.S. market, either as an exporter or importer of gas.

Gas prices are influenced by both national and regional developments. To track the former, we can use the futures market information described above. The latest futures outlook for natural gas prices is a price of \$5.04 per million British thermal units (MMBtu) in May 2001 declining to \$4.59 in April 2002. Because of pipeline quality requirements, one thousand cubic feet (Mcf) of gas contains on average 1 MMBtu. Thus, the NYMEX price in MMBtu corresponds to an equivalent amount per thousand cubic feet. The latter units are easier to use in working with the ONGARD data.

The gas price outlook shows more seasonality than oil, with slightly higher prices in the summer months due to air conditioning demand for power, and a bigger bump during winter months due to heating demand.

The pricing point for natural gas futures contracts is the Henry Hub in Louisiana. New Mexico prices tend to be lower than Henry Hub because the latter is closer to the major consuming regions of the country. Exceptions to this rule arise when demand in California creates higher prices than those in the consuming east. This happened this past winter. As a long-term average, the Permian Basin has traded at about \$0.15

per Mcf less than the Henry Hub. The San Juan Basin has traded at about \$0.35 less per Mcf. These differentials have increased slightly in the last year.

Table B2 presents a forecast of New Mexico prices based on recent NYMEX futures. Since about 70% of the gas produced in the state comes from the San Juan Basin, the average price is weighted toward the San Juan price. After applying differentials to the Futures price, the Statewide forecast is \$4.84 this fiscal year and \$4.69 next year.

Conclusions

A variety of sources of data are available for anyone interested in analyzing energy markets. The U.S. Energy Information Administration provides free historical information about consumption and production of energy. Trade publications like *Inside FERC* (natural gas), *Gas Daily*, *Oil and Gas Journal* and others provide both data and market analysis. These publications usually cost from a few hundred to about \$1,000 per year for subscriptions. At a higher level, the State has received valuable energy market advice from consulting services like the Cambridge Energy Research Associates (CERA). For an annual subscription of a few thousand dollars, CERA provides regular market analysis and periodic workshops to bring subscribers up to date on national and regional market trends. These sources provide us with a better sense of WHY the market has taken a certain direction, they don't always tell us WHEN and by HOW MUCH prices are going to fluctuate!