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THE NATURAL GAS PROPERTY TAX/ SEVERANCE TAX DILEMMA: ARE THEY ONE AND THE SAME?

I. INTRODUCTION

Although the Natural Gas Policy Act of 1978 established price ceilings for specific categories of natural gas and, among other things, provisions for the upward adjustment of prices to enable producer recovery of severance taxes,¹ the Act failed to narrowly define "severance tax." Instead, the Act generically defined the tax as "any severance, production, or similar tax, fee, or other levy imposed on the production of natural gas."² Recently, the D.C. Circuit in *Colorado Interstate Gas Co. v. FERC*³ questioned the interpretation the Federal Energy Regulatory Commission (FERC) gave to "severance tax" and found the FERC's classification of a Kansas ad valorem tax as a severance tax and a Texas ad valorem tax as a property tax "fell short of reasoned decision making."⁴

An analysis of similarities and differences⁵ in the statutes, the means used to implement the statutes, and the results reached under the various statutes leads to certain recommendations which will prevent future

1. Natural Gas Policy Act of 1978, 15 U.S.C. §§ 3301-3432 (1982 & Supp. 1986).

2. 15 U.S.C. § 3320(c) (1982 & Supp. 1986).

3. 850 F.2d 769 (D.C. Cir. 1988); see also Foster Natural Gas Report (Foster Associates) No. 1678, at 6 (June 30, 1988).

4. *Colorado Interstate Gas Co.*, 850 F.2d at 769. Oklahoma has levied a seven percent gross production tax on minerals, oil, and gas in lieu of attaching an Oklahoma ad valorem tax on producing leases. OKLA. STAT. tit. 68, § 1001 (1981 and Supp. 1988). See also *Apache Gas Prods. Corp. v. Oklahoma Tax Comm'n*, 509 P.2d 109 (1973). The statute and its application appear to fall within the NGPA definition of severance tax.

5. This comment will not address corrective measures which will be necessary should the Kansas ad valorem tax lose its classification as a severance tax. The retroactive effect of such an action could be significant and might require compensation to the downstream parties who initially bore the tax burden. This in turn might require the collection of revenues from parties who possessed a property interest in the gas reserves when the original tax was due. See 15 U.S.C. § 717c(e) (1982 & Supp. 1986) for the Commission's grant of refund authority and *Shell Oil Co. v. FPC*, 334 F.2d 1002 (3d Cir. 1964) wherein the Commission's refund authority was held to tend toward both unjust and unreasonable as well as unlawful rates. However, with respect to retroactive refunds, the courts have held that 15 U.S.C. § 717c(e) does not require refunds of unlawful rates collected in earlier years but, rather, the Code provides that the Commission "may" order such refunds if the Commission decides the objectives of the Act require a refund. See *Cities Serv. Gas Co. v. FPC*, 535 F.2d 1278, 1290 (D.C. Cir. 1976); *Moss v. FPC*, 502 F.2d 461, 469 (D.C. Cir. 1974), *rev'd in part on other grounds*, 424 U.S. 494 (1976); *In re Hugoton-Anadarko Area Rate Case*, 466 F.2d 974, 990-91 (9th Cir. 1972).

FERC classifications from falling short of "reasoned decision making."⁶

II. BACKGROUND

Prior to 1938, state and federal regulation of the interstate flow of natural gas was minimal. Acknowledging the monopsony and monopoly powers of the interstate pipelines and the accompanying detrimental effects on interstate commerce, Congress passed the Natural Gas Act of 1938.⁷ This Act⁸ granted the Federal Power Commission (FPC) the authority to regulate "[a]ll rates and charges made, demanded, or received by any natural-gas company for or in connection with the transportation or sale of natural gas"⁹ and further provided that the rates and charges were to be "just and reasonable."¹⁰ A natural gas company was defined as "a person engaged in the transportation of natural gas in interstate commerce, or the sale in interstate commerce of such gas for resale."¹¹ In the decade following the Act, the FPC was content with ensuring just and reasonable rates for interstate transport and sales for resale. However, the Commission became increasingly sensitive to the "gap" existing between state and federal regulations concerning the price a natural gas producer could charge for gas bound for interstate transport.¹² This concern culminated in *Phillips Petroleum Co. v. Wisconsin*¹³ wherein the Supreme Court upheld the FPC's authority to regulate the prices paid to independent producers at the wellhead for gas bound for interstate commerce.¹⁴

Suddenly, the FPC encountered innumerable problems in trying to regulate the many independent producers. In acknowledging the overwhelming nature of the task, the FPC proposed dividing the United

6. *Colorado Interstate Gas Co.*, 850 F.2d at 769.

7. Natural Gas Act of 1938, 15 U.S.C. § 717 (1982 & Supp. 1986).

8. When the term Act is used in this comment, reference is being made to either the Natural Gas Act of 1938, the Natural Gas Policy Act of 1978, or both. The terms Federal Energy Regulatory Commission and Commission are used interchangeably to refer to both the Federal Energy Regulatory Commission and its predecessor, the Federal Power Commission, in their roles as administrators of the Act.

9. 15 U.S.C. § 717c(a) (1982 & Supp. 1986).

10. *Id.*

11. 15 U.S.C. § 717a(6) (1982 & Supp. 1986).

12. See R. PIERCE, JR., G. ALLISON AND P. MARTIN, *ECONOMIC REGULATION: ENERGY, TRANSPORTATION AND UTILITIES*, 455-622 (1980) [hereinafter R. PIERCE] for a general discussion and presentation of pertinent case law.

13. 347 U.S. 672, *reh'g denied*, 348 U.S. 851 (1954).

14. *Id.* at 685. *Phillips Petroleum Co.* marked the first time the Commission successfully extended its authority over an independent producer. In a prior case, *Interstate Natural Gas Co. v. FPC*, 331 U.S. 682, *reh'g denied*, 332 U.S. 785 (1947), the Commission had successfully extended its authority over a producer who was affiliated with an interstate pipeline.

States into five producing regions and establishing price ceilings in each region for old and new gas.¹⁵ The price ceilings were established to ensure sufficient recovery of expenses and capital investments and to provide an adequate return on investment. When addressing the issue of severance taxes in *Area Rate Proceeding (Permian Basin)*,¹⁶ the FPC guaranteed reimbursement to the producer by providing for the upward adjustment of the ceiling price in the amount of the tax. Treatment of severance taxes was again addressed by the FPC in *Opinion No. 699, Just and Reasonable National Rates for Sales of Natural Gas*.¹⁷ In its opinion, the Commission ordered that natural gas prices, for an applicable rate period, "shall be adjusted upward for all State or Federal production, severance, or similar taxes, effective the date deliveries are commenced, and shall be adjusted upward by 100 percent of any increase in existing State or Federal production, severance, or similar taxes subsequent to the date deliveries were commenced."¹⁸

In *Opinion No. 699-D, Just and Reasonable National Rates for Sales of Natural Gas*,¹⁹ the Kansas State Corporation Commission sought clarification of this ruling and specifically, a determination of whether the Kansas ad valorem tax was a "similar tax" in the context of the *Opinion No. 699* order.²⁰ The FPC concluded that the bulk of the Kansas ad valorem tax was based on production factors and, therefore, was a severance or production tax which bore the title of an ad valorem tax.²¹ The FPC then ordered that "if a state *ad valorem* tax is based on production factors it shall be deemed to be included as a 'similar tax' as that phrase is used."²²

However, the FPC in *Mobil Oil Corp.*²³ concluded that a Texas ad valorem tax on natural gas was not a severance or production tax.²⁴ In distinguishing *Mobil Oil* from the Commission's decision in *Opinion No.*

15. R. PIERCE, *supra*, note 12, at 509-24 (excerpt from BREYER & MACAVOY, ENERGY REGULATION BY THE FEDERAL POWER COMMISSION 58-83 (Brookings Institution 1974). This paper presents a chronological overview of FPC actions from 1960 to 1974.

16. 34 F.P.C. 159, 206 (1965), *aff'd sub nom.* Permian Basin Area Rate Cases, 390 U.S. 747, *reh'g denied*, 392 U.S. 917 (1968).

17. 51 F.P.C. 2212 (1974), *reh'g denied in relevant part*, 52 F.P.C. 1604 (1974), *aff'd sub nom.* Shell Oil Co. v. FPC, 520 F.2d 1061 (5th Cir. 1975), *reh'g denied*, 525 F.2d 1261 (5th Cir.), *cert. denied*, 426 U.S. 941 (1976) [hereinafter *Opinion No. 699*].

18. *Id.* at 2301-02.

19. 52 F.P.C. 915 (1974) [hereinafter *Opinion No. 699-D*].

20. *Opinion No. 699, supra* note 17, at 2301-02.

21. *Opinion No. 699-D, supra* note 19, at 915.

22. *Opinion No. 699-D, supra* note 19, at 916 (emphasis in original).

23. 55 F.P.C. 917 (1976).

24. *Id.* at 918.

699-D, the Commission noted that, although present and future production was used to estimate the value of the gas properties, the actual tax was not based on production, but on the value of recoverable reserves. The Commission emphasized that under Texas law an ad valorem tax applied to all properties unless specifically exempted, and oil and gas properties were classified as real properties for taxation purposes. The court also noted that in Texas "a gas property which had no production at all during a tax period due to a temporary shut-down would still have value and would incur tax liability in the period on that basis."²⁵

Congressional awareness of the FPC actions concerning severance taxes in *Opinion No. 699* and *Opinion No. 699-D* can be inferred by the inclusion of section 110 in the Natural Gas Policy Act of 1978.²⁶ The section entitled "Treatment of State severance taxes and certain production-related costs" specifically authorizes the recovery of "State severance taxes attributable to the production of such natural gas"²⁷ and defines severance tax as "any severance, production, or similar tax, fee, or other levy imposed on the production of natural gas."²⁸ Unfortunately, legislative history concerning the specific section is minimal. The statute seemingly parallels the wording of the Order given in *Opinion No. 699* with the addition of the phrase "imposed on the production of natural gas."²⁹ A conference report notes that "the term 'State severance tax' is intended to be construed broadly."³⁰ The addition of this phrase indicates a Congressional awareness of the FPC distinction based on production factors and Congressional approval of prior FPC actions.

Following the passage of the Natural Gas Policy Act of 1978, the Federal Energy Regulatory Commission³¹ continued to follow the logic of its predecessor in distinguishing the Kansas and Texas ad valorem taxes.³² In *Sun Exploration and Production Co.*,³³ the FERC stated that

25. *Id.*

26. 15 U.S.C. § 3320 (1982 & Supp. 1986).

27. *Id.* § 3320(a)(1).

28. *Id.* § 3320(c) (emphasis added).

29. *Id.*

30. H. CONF. REP. NO. 1792, 95th Cong., 2d Sess. 91 (1978), reprinted in 1978 U.S. CODE CONG. & ADMIN. NEWS 8983, 9007.

31. The Federal Power Commission was abolished by the Department of Energy Organization Act, Pub. L. No. 95-91, 91 Stat. 565 (1977). The regulatory functions pertaining to producer rates were transferred without substantive change to a new agency, the Federal Energy Regulatory Commission (FERC). A major thrust of the Act was to end in a prospective manner the dichotomy in the interstate and intrastate marketing of natural gas. See R. Pierce, *Natural Gas Policy Act of 1978—Change, Complexity, and a Major New Role for the KCC*, 47 J. KAN. B.A., 259, 262-68 (1978).

32. See *Northern Natural Gas Co.*, 38 Fed. Energy Reg. Comm'n Rep. (CCH) ¶ 61,062 (Jan.

the distinguishing characteristic between the taxes was “the degree to which production factors are taken into account in the methodology used to appraise gas properties for ad valorem tax purposes.”³⁴ However, if Congress assumed that the Kansas/Texas ad valorem tax decisions provided a bright line distinction,³⁵ the subsequent action by the D.C. Circuit in *Colorado Interstate Gas Co. v. FERC*³⁶ highlighted the ambiguities in the FERC’s previous decisions.³⁷ In this case, the court held that the Kansas/Texas ad valorem tax distinction “failed to offer

28, 1987); *Sun Exploration & Prod. Co.*, 36 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,093 (July 23, 1986).

33. 36 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,093 (July 23, 1986).

34. *Id.* at ¶ 61,224 (emphasis in original).

35. In *Sun Exploration & Prod. Co.*, the FERC referred to its earlier decision in *Trio Petroleum Corp.*, 18 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,203 (Mar. 3, 1982). The *Trio Petroleum Corp.* decision and subsequent order concerned whether the West Virginia Business and Occupation Tax, W. VA. CODE §§ 11-13-1 to 11-13-31 (1987), when applied to the increase in value of natural gas between the wellhead and the delivery point, was a “production, severance or similar tax” within the meaning of 15 U.S.C. § 3320(c). Although the West Virginia court in *Virginia Foods v. Dailey*, 161 W. Va. 94, 239 S.E.2d 770 (1977), had defined the tax as one based on the privilege of doing business within the state of West Virginia, the FERC focused its decision on the means used by the state in implementing the tax.

In determining the taxable basis, the state provided the payee with two possible alternatives. First, the tax could be based on the proceeds attributable to the increase in value from the wellhead to the delivery point. In essence, this is a value-added tax and it is applied against the entire production proceeds. The second alternative was available only to the producer and only if he delivered the natural gas. This alternative defined the taxable basis as fifteen percent of the gross production proceeds and further provided that the severance tax applies only to the remaining eighty-five percent. In *Trio Petroleum Corp.*, the passthrough of costs associated with the severance tax was not at issue. At issue was the passthrough of the business and occupation tax costs to the purchaser. The FERC concluded that when the producer performs the gathering and transportation and the tax is based on fifteen percent of the producer’s gross proceeds, the tax is on *production* and is a “*severance, production or similar tax*” under the Natural Gas Policy Act. *Trio Petroleum Corp.*, 18 Fed. Energy Reg. Comm’n Rep. at ¶ 61,203 (emphasis added).

The preceding fact situation can be distinguished from the fact situations concerning the Kansas and Texas ad valorem taxes on natural gas. In the preceding, the tax is clearly based on gross proceeds which are directly dependent upon the amount of natural gas produced. In the West Virginia Business and Occupation Tax, there is no reference made to the value of recoverable reserves. As previously noted, the tax is a type of *value-added* tax. In contrast, the Kansas and Texas ad valorem taxes are not applied against the value of the produced gas, but the taxes are applied against a tax base which is the current net value of recoverable reserves. As will be shown in the text, inclusion of the annual production rate is but one of many input parameters which are required in estimating the Kansas and Texas ad valorem tax bases (i.e., the current net value of recoverable reserves).

36. 850 F.2d 769 (D.C. Cir. 1988). Procedurally, *Colorado Interstate Gas Co.* petitioned the D.C. Circuit and Northern Natural Gas intervened. In the preceding FERC action, Northern Natural Gas Co., 38 Fed. Energy Reg. Comm’n Rep. (CCH) ¶ 61,062 (Jan. 28, 1987), Northern Natural Gas Co. sought and was denied a rehearing concerning the Kansas aspects of the *Sun Exploration* decision. In this action, Northern Natural Gas Co. was the petitioner and Colorado Interstate Gas Co. was the intervenor. The basis for the Northern Natural Gas Co. rehearing request was the prior consolidation of petitions brought by Northern Natural Gas and Sun Exploration which resulted in FERC’s *Sun Exploration* decision.

37. *Colorado Interstate Gas Co.*, 850 F.2d at 770.

any principle for determining what relation to production is enough for a tax to qualify under section 110³⁸ and, therefore, was not the result of "reasoned decision making."³⁹

III. AD VALOREM TAXES—THE CODES

A. *The Kansas Code*

The Kansas statutory code provides that "[f]or the purpose of valuation and taxation, all oil and gas leases and all oil and gas wells, producing or capable of producing oil or gas in paying quantities . . . are hereby declared to be personal property and shall be assessed and taxed as such."⁴⁰ Furthermore, the code provides that oil and gas properties shall be valued in a way which results in a "reasonable and fair value of the whole property."⁴¹ Among the factors to be considered by the assessor are the age of the wells, the quality of the oil and gas being produced, the market availability, the cost of operation, the probable life of the wells, the past production history, and the number of wells.⁴²

It is noteworthy that in 1982, Kansas enacted a distinct severance tax on oil and gas production. However, the severance tax specifically provided for a one percent credit for ad valorem taxes on oil and gas properties.⁴³

B. *The Texas Code*

The Texas statutes require that "[a]ll property, real, personal or mixed, except such as may be hereinafter expressly exempted" be subjected to ad valorem tax treatment.⁴⁴ The code directs that oil and gas properties be treated as real property for taxation purposes⁴⁵ and that property valuation is to be based on the "true and full value in money" at the time the assessment is made.⁴⁶ In establishing this value, the code directs the assessor to arrive at "such sum and price as he believes the

38. *Id.*

39. *Id.*

40. KAN. STAT. ANN. § 79-329 (1984).

41. KAN. STAT. ANN. § 79-330 (1984).

42. KAN. STAT. ANN. § 79-331 (1984).

43. KAN. STAT. ANN. § 79-4217 (1984 & Supp. 1987).

44. TEX. REV. CIV. STAT. art. 7145 (Vernon 1960 & Supp. 1988). This part of the code has been recodified as TEX. TAX CODE ANN. § 11.01(a) (Vernon 1982) but is substantively unchanged.

45. TEX. REV. CIV. STAT. art. 7176 (Vernon 1960 & Supp. 1988). This part of the code has been recodified as TEX. TAX CODE ANN. § 1.04(2) (Vernon 1982) but is substantively unchanged.

46. TEX. REV. CIV. STAT. art. 7174 (Vernon 1960 & Supp. 1988). This part of the code has been recodified as TEX. TAX CODE ANN. § 1.04(7) (Vernon 1982) but is substantively unchanged.

same to be fairly worth in money at the time such assessment is made."⁴⁷ Like Kansas, Texas has a separate severance tax for the production of oil and natural gas.⁴⁸

C. *Distinguishing the Codes*

On their face, the codes are virtually identical. Both codes require the estimation of a fair market value tax base and both specifically acknowledge the inclusion of oil and gas properties in this base. The codes are distinguishable in that the Kansas code defines oil and gas property as personal property and Texas categorizes it as real property. In either case, an ad valorem tax is applied against the fair market value of recoverable reserves at the time the assessment is conducted.

IV. AD VALOREM TAXES—THE MEANS

As previously discussed, a verbatim reading of both codes indicates the taxes are to be based on the fair market value of the remaining reserves when the assessment is conducted. However, the Texas and Kansas agencies charged with implementing the codes use different means to assess the tax. The following hypothetical provides a basis for comparing the two codes using standard economic and engineering practices to estimate the present value of a producing gas reservoir.

A. *The Hypothetical*

The estimation of recoverable reserves and their present value is an exercise routinely performed in the oil and gas industry when evaluating new discoveries, operating mature fields, and evaluating continued operation of marginal fields.⁴⁹ Presented in Figure 1 is a typical decline curve for a gas reservoir. The curve consists of an early period of constant or sustained production when for various reasons, such as the imposition of state conservation laws, lack of production or delivery capability, or lack of market, the well is producing at a rate less than the maximum rate. This period of constant production is followed by a period of exponential

47. TEX. REV. CIV. STAT. art. 7174 (Vernon 1960 & Supp. 1988). This part of the code has been recodified as TEX. TAX CODE ANN. §§ 1.04(8), 23 (Vernon 1982 & Supp. 1988) but is substantively unchanged.

48. TEX. TAX CODE ANN. § 201.051 (Vernon 1982 & Supp. 1989).

49. See generally N. CLARK, ELEMENTS OF PETROLEUM RESERVOIRS (1969); B. CRAFT & M. HAWKINS, APPLIED PETROLEUM RESERVOIR ENGINEERING (1959); C. IKOKU, ECONOMIC ANALYSIS AND INVESTMENT DECISIONS (1985); D. KATZ, HANDBOOK OF NATURAL GAS ENGINEERING (1959).

decline in deliverability attributed to the gradual decline in reservoir pressure accompanying reservoir depletion. In this regime, the rate of production is proportional to the remaining gas in the reservoir. Finally, when the production rate and gas price no longer justify continued operation, economics dictate that the reservoir be shut in.

The shape of the decline curve depends on many reservoir properties.⁵⁰ However, past production data is essential for predicting future reservoir performance. When operating in the regime of exponential decline, a plot of the logarithm of production rate against time will result in a straight line (Figure 2). The slope of this line indicates the decline rate which provides a basis for the prediction of future production (dashed line in Figure 2) and the generation of the future production curve (dashed curve in Figure 1).

Estimates of future cash flow are possible by combining net revenue price forecasts and future production rates.⁵¹ The net revenue price forecasts require assumptions concerning future gas prices and future production costs. Future cash flow can then be converted to present worth by applying an appropriate discount factor. Using this logic, the value of remaining reserves at any time during reservoir depletion can be estimated by multiplying the present production rate by a parameter referred to as the present worth factor. The value of this parameter is dependent on the discount rate, the decline rate, the time of sustained or constant production, the total production time, and the gas price and the production cost forecasts.⁵²

50. See B. CRAFT & M. HAWKINS, *APPLIED PETROLEUM RESERVOIR ENGINEERING* 259-354 (1959); D. KATZ, *HANDBOOK OF NATURAL GAS ENGINEERING* 403-34 (1959).

51. See C. IKOKU, *ECONOMIC ANALYSIS AND INVESTMENT DECISIONS* 165-90 (1985).

52. *Id.* For a fixed revenue per unit production, the present value of future production (PV) for the decline curve in Figure 1 is given by:

$$PV = \frac{1}{J} \left[(1 - e^{-Jt_1}) + \frac{J}{D + J} e^{-Jt_1} (1 - e^{-(D+J)t_2}) \right] Q$$

J in the preceding equation is the discount factor or interest rate. D is the decline rate for the reservoir. The time of sustained or constant production is t_1 and the time from well start-up to shut-in is t_2 . Q is the initial rate of sustained or constant production from startup until t_1 .

For a given reservoir and discount rate, the preceding equation reduces to:

$$PV = PWF * Q$$

where PWF is a constant referred to as the present worth factor. Although the preceding equation was for a fixed revenue per unit production (e.g., \$1.50 MCF), the form of the final equation remains the same when revenue/unit production is a function of time (i.e., $PV = PWF * Q$). The form also remains the same when reservoir production does not decrease exponentially with time, but decreases more slowly or remains the same due to a water drive.

B. *Implementation of the Texas Code*

The FERC in *Sun Exploration & Production Co.*⁵³ stated:

The Texas tax is applied to the *assessed cash market value of the remaining recoverable reserves* (i.e., real property) in place and unsevered at the time of appraisal each year. The tax assessment is based on factors used to project the prospective *future* income (discounted to present value) that a prospective buyer could reasonably expect to derive from the production and sale of the remaining recoverable reserves in place at the time of appraisal on January 1 of each year. Actual current and prior year production data is used only to arrive at a declining rate of production to project future rates of production from the remaining recoverable reserves in place at the time of appraisal.⁵⁴

In calculating the assessed market value of remaining recoverable reserves from the perspective of a prospective buyer, future income must refer to net income or the difference between gross income and operating expenses. Therefore, the preceding statement is nothing more than a restatement of the hypothetical. However, the FERC fails to acknowledge that for any given set of conditions, the present value can be estimated by multiplying the present production rate by a time dependent parameter (i.e., the present worth factor).

C. *Implementation of the Kansas Code*

For gas producers to estimate tax liability in Kansas, the Kansas Department of Revenue publishes *The Kansas Department of Revenue Oil and Gas Appraisal Guide (Kansas Guide)*.⁵⁵ As noted in the *Kansas Guide*, the producer is to file a Gas Assessment Rendition worksheet with the county appraiser by April 1 of each year. The worksheet requires (1) the calculation of either a two- or five-year production average, (2) an estimate of the present worth factor for the reservoir, (3) an estimate of the present gross value of future operating expenses, (4) an estimate of the present (time-corrected) value of the equipment on the lease site, and (5) the calculation of the net present worth of the lease.⁵⁶ The calculation procedure consists of multiplying the production average by the present worth factor, increasing this value by the lease equipment

53. *Sun Exploration & Prod. Co.*, 36 Fed. Energy Reg. Comm'n Rep. (CCH) ¶ 61,093 (July 23, 1986).

54. *Id.* at 61,224 (emphasis added).

55. KANSAS DEP'T OF REVENUE OIL AND GAS APPRAISAL GUIDE (1986) [hereinafter KANSAS GUIDE]. Changes between the 1986 KANSAS GUIDE which was cited in *Colorado Interstate Gas Co.* and the 1988 KANSAS GUIDE are only technical in nature.

56. *Id.* at 18-19.

value, and reducing the total by the present value of future operating expenses.

Although the preceding calculation can be distinguished from the hypothetical in several ways, the end result is the same: a tax on the *fair market value* of the lease. A key distinguishing factor is the manner in which the calculations are made. Kansas has opted, via the worksheet, for a relatively simple, straightforward, fill-in-the-blank approach.

Procedurally, the calculation of the present gross value of recoverable reserves is identical to the calculation of the present value of net income in the hypothetical. However, in the Kansas calculation, the state provides the present worth factor for the ten major proven gas areas and fields in Kansas.⁵⁷ These present worth factors are based on assumed discount rates, decline rates, price forecasts, and estimates of field life. The present worth factors are also corrected for the effects of future severance and ad valorem taxes. For three reservoirs, the present worth factor is further adjusted to reflect the reduced market value due to water production. The remaining gas fields (i.e., those not named in the group of ten) are treated generically and the resulting present worth factor also accounts for future operating expenses, various credits, and equipment value.⁵⁸

The present value of recoverable reserves is calculated by multiplying the present worth factor by an average production rate. The use of an average production rate instead of the current rate differs from the hypothetical. However, as shown in Figure 1, scatter in the production data frequently exists, and the use of an average will usually result in a better estimate of future production. Further, the slight offset in time from the averaging process can be corrected by adjustments to the present value factor. For large fields with slow decline rates, the *Kansas Guide* recommends a five-year average. A two-year average is recommended for the majority of fields possessing shorter lives.⁵⁹ An estimate of present gross value is then obtained by multiplying the present worth factor by the average annual production rate. The Court in *Colorado Interstate Gas Co.* heavily emphasized the inclusion of this production rate term in the calculation.⁶⁰

Net present worth is then calculated by increasing the gross present value of reserves by the present (time-corrected) value of equipment on

57. *Id.* at 12.

58. *Id.* at 15.

59. *Id.* at 12, 16.

60. *Colorado Interstate Gas Co. v. FERC*, 850 F.2d 769, 771 (D.C. Cir. 1988).

the lease site and reducing this value by the present value of future operating expenses.⁶¹ The *Kansas Guide* provides recommended values for operating equipment, expense allowances per well, and expense credits for saltwater pumping.⁶² This tabular treatment of operating expenses differs from the hypothetical. The *Kansas Guide* notes that “[w]ells with low operating costs will benefit from the published values; wells with high operating costs may be penalized,”⁶³ and that “the guide is compiled with averages of high and low operating costs.”⁶⁴

The D.C. Circuit in *Colorado Interstate Gas Co.* emphasized the approach Kansas takes for gas production commencing in the last six months of the year.⁶⁵ The procedure in the *Kansas Guide* provides for discounting the annualized production by forty percent.⁶⁶ However, the D.C. Circuit failed to grasp the apparent *Kansas Guide* rationale which was to account for the high rate of production routinely observed when a well is first brought on line, a rate which continues until flow characteristics at the wellbore are influenced by the reservoir boundaries or other wells in the area.⁶⁷ Only at this time will the production rate fall on the decline curve. Until this time, the use of actual production data can grossly overestimate recoverable reserves. The discounting procedure in the *Kansas Guide* attempts to correct for this overestimate during the first year of production.

As noted in the *Kansas Guide*, oil and gas property is to be treated as personal property and appraised at fair market value.⁶⁸ The *Kansas Guide* requires that the county assessor review the Gas Assessment Rendition worksheet and

adjust either up or down the valuation produced by applying the state guide if in his judgment such an adjustment is necessary in order for him to comply with the constitutional law of equality and the statutory requirement of assessing said property at thirty per cent of its fair market value in money.⁶⁹

This statement indicates that the Kansas tax is a tax on the present value of recoverable reserves.

61. KANSAS GUIDE, *supra* note 55, at 18-19.

62. KANSAS GUIDE, *supra* note 55, at 12, 13, 15.

63. KANSAS GUIDE, *supra* note 55, at i.

64. KANSAS GUIDE, *supra* note 55, at i.

65. *Colorado Interstate Gas Co. v. FERC*, 850 F.2d 769, 771 (D.C. Cir. 1988).

66. KANSAS GUIDE, *supra* note 55, at 1, 2, 14; *see also* KAN. STAT. ANN. § 79-331 (1984).

67. *See* B. CRAFT & M. HAWKINS, APPLIED PETROLEUM RESERVOIR ENGINEERING 283-339 (1959); D. KATZ, HANDBOOK OF NATURAL GAS ENGINEERING 403-40 (1959).

68. KANSAS GUIDE, *supra* note 55, at i.

69. KANSAS GUIDE, *supra* note 55, at i.

V. AD VALOREM TAX—THE END RESULT

Although the methodologies or means used to implement the ad valorem tax codes in Kansas and Texas differ, the end results are virtually identical. Both taxes are based on the present value of recoverable reserves. On the surface, the nexus between the Kansas methodology and the actual production rate appear to be closer. However, the real distinguishing factor is the degree of state input at various stages in the calculation of present worth. Kansas has opted for a worksheet approach wherein the producer fills in the blanks, subject to subsequent approval by the assessor. In Texas, the burden of calculation is placed directly on the producer, subject to subsequent state approval. As revealed by this analysis, the purported closer nexus to current production by the Kansas implementation procedure is but an illusion.

The FERC in *Mobil Oil Corp.*⁷⁰ tried to distinguish the Kansas and Texas ad valorem taxes on the grounds that the Texas tax would not be zero in the absence of production.⁷¹ However, for such circumstances, the *Kansas Guide* requires that the assessor reassess the property⁷² so as to be a "reasonable and fair value of the whole property."⁷³ Therefore, an ad valorem tax on reservoir reserves would exist in either Texas or Kansas in the absence of production.

From a tax perspective, in either state, the end result is the same. A tax is placed on the net value of future recoverable reserves. Viewed from a slightly different perspective, one might also classify the tax as a *preproduction* tax, that is, a tax on gas which is currently in reservoir storage and will be produced in the future.

VI. CONCLUSIONS AND RECOMMENDATIONS— WHO PAYS THE PRICE?

A key issue which must be addressed by the FERC is whether a tax on the present value of recoverable reserves falls within the definition of "severance" tax as defined in section 110 of the Natural Gas Policy Act. Section 110 defines severance tax as "any severance, production, or similar tax, fee, or other levy imposed on the *production of natural gas*."⁷⁴ The sparse amount of legislative history indicates that the term severance

70. 55 F.P.C. 917 (1976).

71. *Id.* at 918.

72. KANSAS GUIDE, *supra* note 55, at i.

73. KAN. STAT. ANN. § 79-330 (1984 and Supp. 1987).

74. 15 U.S.C. § 3320 (1982) (emphasis added).

tax is to be "construed broadly."⁷⁵ Because Congress acquiesced to the Commission's actions in distinguishing the Kansas and Texas ad valorem taxes in the past, and since there are no indications of a Congressional intent to retract those powers, the FERC apparently has been granted the authority to make the necessary decisions.⁷⁶

Because the ad valorem tax is based on recoverable reserves, the tax is levied on gas to be produced, and therefore, is a *preproduction tax*. Whether the statutory phrase *production of natural gas* refers to a yearly time frame or the time frame required to produce the natural gas reserves is a key issue. Legislative history favors a broad interpretation, and past Congressional acquiescence to the FPC's classification of the Kansas ad valorem tax as a severance tax suggests the classification of both state taxes as severance taxes is within the FERC's discretion.

If the ad valorem tax is defined as a severance tax, the cost will be passed on to the end users. If defined as a property tax, the producers will bear the cost. Principles of equity provide an alternative which is potentially fairer to all parties.⁷⁷ This alternative places the tax burden on the party better situated to bear the cost. This approach is also consistent with the Commission's mandate to ensure just and reasonable rates.⁷⁸ Although the end result is potentially fairer to all parties, the use of equitable principles places a greater burden on the Commission to explain their placement of the tax burden in well-reasoned opinions, orders, and notices, thereby ensuring that future Commission actions fall within the realm of "reasoned decision making."⁷⁹

Gary L. Haag

75. H. CONF. REP. NO. 1792, 95th Cong., 2d Sess. 91 (1978), reprinted in 1978 U.S. CODE CONG. & ADMIN. NEWS 8983, 9007.

76. "Except where otherwise expressly provided, the Commission is authorized to define, by rule, accounting, technical, and trade terms used in this Act." Federal Energy Policy Act of 1978, 15 U.S.C. § 3411(c) (1982 & Supp. 1988). Similar authority is granted to the Commission under the Federal Energy Act, 15 U.S.C. § 717(o) (1982 & Supp. 1986).

77. This approach is consistent with that advocated in Opinion No. 649-B, Mitchell Energy Corp. v. FERC, 59 F.P.C. 749, 752 (1977), vacated and remanded on other grounds, 580 F.2d 763 (5th Cir. 1978), wherein the Commission stated that the appropriate discretionary test for determining the need for refunds was a balancing of equities and not a per se legal test. See *supra* note 5 for a more detailed discussion concerning the discretionary nature of refunds.

78. 15 U.S.C. § 717(c)(a) (1982 & Supp. 1986).

79. Colorado Interstate Gas Co. v. FERC, 850 F.2d 769, 769 (D.C. Cir. 1988).

