PUBLIC VERSION

BEFORE THE
SURFACE TRANSPORTATION BOARD

STB Docket No. 42088

WESTERN FUELS ASSOCIATION, INC. AND
BASIN ELECTRIC POWER COOPERATIVE, INC.
v.
BNSF RAILWAY COMPANY

Opening Evidence of
BNSF Railway Company

NARRATIVE & EXHIBITS

Volume I of I

Richard E. Weicher
Michael E. Roper
BNSF RAILWAY COMPANY
2500 Lou Menk Drive
Fort Worth, TX 76131
(817) 352-2353

Samuel M. Sipe, Jr.
Anthony J. LaRocca
David F. Rifkind
STEPTOE & JOHNSON LLP
1330 Connecticut Ave, N.W.
Washington, DC 20036
(202) 429-3000

ATTORNEYS FOR
BNSF RAILWAY COMPANY

April 19, 2005

TABLE OF CONTENTS

Abbreviations

Terms:	
AAR	Association of American Railroads
ATSF	The Atchison, Topeka and Santa Fe Railway Company
Basin Electric	Basin Electric Power Cooperative
BN	Burlington Northern Railroad Company
BNSF	BNSF Railway Company
GTM	Gross Ton Mile
ICC	Interstate Commerce Commission
Laramie River	Laramie River Station
LUM	Locomotive Unit Mile
MOW	Maintenance of Way
PBR	Wyoming Powder River Basin
PPI	Producer Price Index
RCAF	Rail Cost Adjustment Factor
RCAF-A	Rail Cost Adjustment Factor-Adjusted for Changes in Productivity
RCAF-U	Rail Cost Adjustment Factor-Unadjusted for Changed in Productivity
RSAM	Revenue Shortfall Allocation Method
R/VC	Revenue-To-Variable Cost
SAC	Stand-Alone Cost
SEM	Switch Engine Minute
UMF	URCS Master File
URCS	Uniform Rail Costing System
WFA	Western Fuels Association, Inc.

Case Names

Coal Rate Guidelines	*Coal Rate Guidelines, Nationwide*, 1 I.C.C.2d 520 (1985)
CP&L/NS	*Carolina Power and Light Company v. Norfolk Southern Railway Company*, STB Docket No. 42072 (STB served December 23, 2003)
FMC	*FMC Wyoming Corp. v. Union Pacific R.R.*, STB Docket 42022 (served May 12, 2000)
Interim Guidelines	*Coal Rate Guidelines, Nationwide*, Ex Parte No. 347 (Sub-No.1) (served Feb. 24, 1983)
TMPA	*Texas Municipal Power Agency v. The Burlington Northern and Santa Fe Ry. Co.*, STB Docket No. 42056 (served Mar. 24, 2003)
WFA	*Western Fuels Association, Inc. and Basin Electric Power Cooperative, Inc. v. The Burlington Northern and Santa Fe Ry. Co.*, STB Docket 42088
Xcel	*Public Service Company of Colorado D/B/A Xcel Energy v. The Burlington Northern and Santa Fe Ry. Co.*, STB Docket No. 42057 (served June 7, 2004)

I: Counsel's Argument and Summary of Evidence

I. COUNSEL'S ARGUMENT AND SUMMARY OF EVIDENCE

A. INTRODUCTION

This is the opening evidence and argument of defendant BNSF Railway Company ("BNSF") in the rate reasonableness proceeding *Western Fuels Association, Inc. and Basin Electric Power Cooperative v. BNSF Railway Company*,[1] STB Docket No. 42088.

This case involves a challenge to the reasonableness of BNSF's common carrier rates for the transportation of coal from the Wyoming Powder River Basin ("PRB") to the Laramie River Station ("Laramie River") operated by Basin Electric Power Cooperative ("Basin Electric"), a member of the Western Fuels Association ("WFA"). Laramie River is located near Moba, Wyoming. The challenged rates are set out in Common Carrier Pricing Authority BNSF 90077 ("CCPA-BNSF 90077"). CCPA-BNSF 90077 groups the PRB mine origins into three geographic regions -- South,[2] Central,[3] and North[4] -- and establishes a separate common carrier rate for each region. WFA/Basin Electric's complaint has challenged the reasonableness of rates for transportation from each of the three regions.

CCPA-BNSF 90077 became effective on October 1, 2004, upon the expiration of a prior twenty-year transportation contract between BNSF and WFA. BNSF and WFA/Basin Electric attempted to reach an agreement over the terms of a transportation contract that would replace the expiring contract, but the negotiations were unsuccessful. WFA/Basin Electric

---

[1] Following the filing of the complaint in this case, The Burlington Northern and Santa Fe Railway Company changed its name to BNSF Railway Company.

[2] South PRB Mines include Jacobs Ranch, Black Thunder, Black Thunder South, Antelope, North Antelope, and Rochelle.

[3] Central PRB Mines include Caballo, Belle Ayr, Caballo Rojo, Cordero, and Coal Creek.

[4] North PRB Mines include Buckskin, Rawhide, Eagle Butte, Dry Fork, Fort Union, and Clovis Point.

therefore requested that BNSF provide common carrier rates for the movement of PRB coal to Laramie River to become effective when the existing contract expired and BNSF responded by establishing the rates that are the subject of this proceeding.

B. VARIABLE COST EVIDENCE

Section II.A.1 of this Narrative describes BNSF's analysis of the variable costs of providing service to Laramie River. BNSF's variable cost evidence is supported by the testimony of Mr. Benton V. Fisher, a Director at FTI Consulting, Inc., Ms. Deborah G. Newland, a Senior Consultant at FTI Consulting, Inc., and B. Scott Castleberry, BNSF's Director - Regulatory Costs. The bases and methodologies used by BNSF to calculate variable costs are described in detail in Section II.A.1 of the Narrative and do not need to be addressed further here. The R/VC ratios for transportation at issue in this proceeding are set out below and in Section II.A.2 of the Narrative.

Table I-1
R/VC Ratios
Fourth Quarter 2004

MINE	RATE	VC	R/VC
Northern PRB			
Dry Fork	$6.15	$2.01	306%
Eagle Butte	$6.15	$2.05	299%
Central PRB			
Caballo Rojo	$5.97	$1.80	331%
Cordero	$5.97	$1.76	339%
Southern PRB			
Jacobs Ranch	$5.69	$1.61	353%

Source: Exhibit II.A-1

C. THE R/VC RATIOS ON THE ISSUE TRAFFIC REFLECT A REASONABLE EXERCISE OF DIFFERENTIAL PRICING

BNSF acknowledges that the R/VC ratios for the Laramie River movement exceed the jurisdictional threshold. However, the Laramie River movement is one of BNSF's shortest PRB coal hauls. Therefore, the variable costs for this movement would be expected to be among the lowest for BNSF's PRB movements. In addition, as discussed in Section II.A.1, the variable costs for this movement would be expected to be relatively low because the Laramie River train is significantly longer than the average PRB train. The variable costs for Laramie River are therefore spread over more tons producing a lower variable cost per ton. Under these circumstances, the R/VC ratios for a movement like the Laramie River movement would be expected to be relatively high.

Rates that generate relatively high R/VC ratios on a heavy, short-haul movement are entirely consistent with BNSF's revenue adequacy needs. Congress has made revenue adequacy for railroads part of the national transportation policy, stating that it is the policy of the United States: "to promote a safe and efficient rail transportation system by allowing rail carriers to earn adequate revenues, as determined by the Board." 49 U.S.C. § 10101(3).[5] The Board is explicitly required to give "due consideration" when determining the reasonableness of rates to "the policy . . . that rail carriers *shall* earn adequate revenues." 49 U.S.C. § 10701(d)(2) (emphasis added). *See also* 49 U.S.C. § 10704(a)(2).

Both the Board's predecessor and the courts have acknowledged that the Board is obligated to apply its rate reasonableness authority in a way that gives railroads an opportunity to

---

[5] Congress also stated that it is the policy of the United States: "to maintain reasonable rates where there is an absence of effective competition and *where rail rates provide revenues which exceed the amount necessary to maintain the rail system and to attract capital.*" 49 U.S.C. § 10101(6) (emphasis added).

achieve and sustain revenue adequacy. *See, e.g., Burlington Northern and Santa Fe Railway Co. v. Surface Transportation Board*, No. 04-1162, slip op. at 11 (D.C. Cir. April 8, 2005) ("the rate prescribed must satisfy the dual purpose of protecting the shipper from monopolistic practice while ensuring a carrier adequate revenue"); *Consolidated Rail Corp. v. U.S.*, 812 F.2d 1444, 1450 (3rd Cir. 1987) (rate-setting methodology must be "consistent with the basic requirement of revenue adequacy"); *Coal Rate Guidelines, Nationwide*, Ex Parte No. 347 (Sub-No. 1), slip op. at 7 (served Feb. 24, 1983) ("*Interim Guidelines*") (noting that some rates must "exceed, perhaps substantially," the jurisdictional revenue to variable cost ratio because of the "basic concept" of revenue adequacy embodied in statute).

The ICC determined that the appropriate measure of revenue adequacy is whether a rail carrier earns a return on net investment equal to its current cost of capital. *Standards for Railroad Revenue Adequacy*, 364 I.C.C. 803 (1981), *aff'd sub nom. Bessemer & Lake Erie Railroad Co. v. I.C.C.*, 691 F.2d 1104 (3rd Cir. 1982), *cert. denied*, 462 U.S. 1110 (1983). As the ICC explained in the final *Coal Rate Guidelines*:

> This is the revenue level necessary for a railroad to compete equally with other firms for available financing in order to maintain, replace, modernize, and, where appropriate, expand its facilities and services. If railroads cannot earn the fair market rate of return, their ability both to retain existing investments and obtain new capital will be impaired, because both the existing and prospective funds could be invested elsewhere at a more attractive rate of return.

1 I.C.C. 2d at 535. The Board annually evaluates whether each Class I railroad is revenue adequate. Despite the statutory revenue adequacy policy, however, BNSF remains revenue

inadequate under the applicable standard. The Board has never found that BNSF achieved revenue adequacy for any year.[6]

In promulgating the *Coal Rate Guidelines*, the ICC attempted to create a regime of rate regulation that would allow railroads to achieve revenue adequacy through meaningful differential pricing. The ICC recognized that railroads face competition for the vast majority of their shipments and that a railroad's marginal cost of providing service on many movements is lower than the "average" cost. Competition forces railroads to price many of their shipments at levels that do not enable the railroad to recover a substantial portion of unattributable costs from those movements. The ICC concluded, therefore, that "the cost structure of the railroad industry necessitates differential pricing of rail services." *Final Guidelines*, 1 I.C.C. 2d at 526. Because shippers with competitive options do not pay enough to contribute significantly to the coverage of unattributable costs, other shippers with fewer or no competitive options must pay more.[7] Only by charging some shippers higher rates can a railroad cover its full costs and become revenue adequate.

The revenue to variable cost ratios in this case, which range from 299 to 353 percent, are well within the range of differential prices that BNSF must charge in order to achieve revenue adequacy. For each Class I railroad, the Board annually calculates the Revenue

---

[6] Between passage of the Staggers Act in 1980 and the merger of Burlington Northern Railroad Company ("BN") and The Atchison, Topeka and Santa Fe Railway Company ("ATSF") to form BNSF, neither the Board nor the ICC ever found that ATSF achieved revenue adequacy and the ICC concluded that BN did so in only one year, 1989. *Railroad Revenue Adequacy – 1989 Determination*, 7 I.C.C. 2d 580 (1991).

[7] Shippers who bear a higher proportion of costs nonetheless benefit from the presence on a railroad's network of shippers who pay a lower portion. Such shippers contribute, albeit modestly, to covering the fixed costs of the railroad, and therefore reduce the overall cost borne by all other shippers. Any effort to obtain higher rates from shippers with competitive options would cause those shippers to stop using the railroad, thereby increasing costs for all other shippers.

Shortfall Allocation Method ("RSAM") percentage – the average markup to variable cost BNSF would need to charge for its traffic that generates revenue in excess of 180 percent of variable cost in order to earn adequate revenues.[8] In its most recent decision, the Board found that for the period 1999 to 2002, BNSF would have needed to earn average revenues of 316 percent of its variable costs for traffic that generates revenue in excess of 180 percent of variable cost in order to achieve revenue adequacy. *Rate Guidelines – Non-Coal Proceedings*, STB Ex Parte No. 347 (Sub-No. 2) (served May 21, 2004). Since the RSAM is an average, it is clear that some shippers – those with the most inelastic demand for transportation – will be expected to pay rates that exceed 316 percent of variable cost to offset the lower rates paid by shippers with less inelastic demand. The R/VC ratios at issue here are fully consistent with the statutory policy of promoting railroad revenue adequacy.

D. THE FACT THAT THE RATES INCREASED WHEN THE PRIOR CONTRACT EXPIRED IS NOT MEANINGFUL IN ASSESSING THE REASONABLENESS OF THE RATES

In Section II.C below, Professor Joseph P. Kalt, Ford Foundation Professor of International Economy at the John F. Kennedy School of Government, Harvard University, responds to claims made by Complainants in the complaint and in various public statements to the effect that the rates at issue here should be deemed unreasonable because they represent a significant increase over the rates paid under the expiring contract. While the Board will evaluate the reasonableness of the challenged rates under the SAC test, Professor Kalt explains that it is important for the Board to have an accurate understanding of the commercial background of this dispute. Professor Kalt discusses several factors that suggest that the prior

---

[8] The Board views such traffic as the pool of "potentially captive" traffic from which railroads could make up revenue shortfalls. *Rate Guidelines – Non-Coal Proceedings*, STB Ex Parte No. 347 (Sub-No. 2) (served May 8, 2002).

contract rates were significantly below market and that a rate increase was warranted by current market conditions.

Complainants' assertions about the commercial unreasonableness of the rate increase ignore the context under which BNSF's predecessor set the previous contract rate. The prior contract was the product of a litigation settlement. The contract had a favorable escalation provision that {

} The favorable rates produced by this contract contributed to complainant's position as one of the lowest cost producers of electricity in the country. It also permitted Basin Electric to provide rebates to its members over the past five years of $140 million. Under these circumstances, a significant rate increase was to be expected.

Professor Kalt also explains that the market conditions today are very different from the conditions under which the earlier contract was established. Current demand for PRB coal is strong and is expected to increase. At the same time, rail capacity needed to satisfy this demand is tight. These market conditions are in stark contrast to the conditions in effect in the early 1980s when the prior contract was negotiated. It is therefore not surprising that rates would increase significantly with the expiration of a long-term contract that had become out of step with changes in market conditions.

Respectfully submitted,

Samuel M. Sipe, Jr.
Anthony J. LaRocca
David F. Rifkind
STEPTOE & JOHNSON LLP
1330 Connecticut Avenue, N.W.
Washington, DC 20036
(202) 429-6486

ATTORNEYS FOR BNSF RAILWAY COMPANY

Richard E. Weicher
Michael E. Roper
BNSF RAILWAY COMPANY
2500 Lou Menk Drive
Fort Worth, TX 76131

April 19, 2005

CERTIFICATE OF SERVICE

I hereby certify that on April 19, 2005, I caused six copies of the foregoing Opening Evidence of BNSF Railway Company, to be served by hand upon the following counsel for Western Fuels Association and Basin Electric Power Cooperative, Inc.

John H. LeSuer
Christopher A. Mills
Andrew B. Kolesar, III
Peter Pfohl
Slover & Loftus
1224 Seventeenth Street, NW
Washington, DC 20036

Anthony J. LaRocca

II: Market Dominance

II. **MARKET DOMINANCE**

A. QUANTITATIVE EVIDENCE

1. Variable Costs

This section of the Narrative explains the bases for BNSF's calculation of the variable costs to transport coal to Basin Electric's Laramie River plant. The variable cost evidence presented in this Narrative is supported by Benton V. Fisher, Deborah G. Newland, and B. Scott Castleberry. The qualifications and verifications of each witness, which are set out in Section IV to this Narrative, describe the portions of this Narrative that are sponsored by each witness. Briefly, Mr. Fisher is a Managing Director and Ms. Newland is a Senior Consultant at FTI Consulting, Inc. They specialize in the economic and financial analysis of network industries, including rail transportation. Mr. Castleberry is BNSF's Director, Regulatory Costs.

Common Carrier Pricing Authority BNSF 90077 ("CCPA-BNSF 90077"), which became effective October 1, 2004, establishes the rates for the Laramie River move. The pricing authority divides the PRB origin mines geographically into three regions: North PRB,[1] Central PRB,[2] and South PRB.[3] It establishes a separate rate for each region.

The Laramie River move is unusual in a number of respects. First, the Laramie River generating plant is in very close proximity to the Wyoming PRB mines, making the Laramie River move one of BNSF's shortest PRB coal movements. The movement is also unusual in terms of train length. Laramie River trains average 136 coal cars and are typically

[1] North PRB includes the following mines: Buckskin, Rawhide, Eagle Butte, Dry Fork, Fort Union, and Clovis Point.

[2] Central PRB includes the following mines: Caballo, Belle Ayr, Caballo Rojo, Cordero, and Coal Creek.

[3] South PRB includes the following mines: Jacobs Ranch, Black Thunder, Black Thunder South, Antelope, North Antelope, and Rochelle.

powered by four SD70MACs. This makes the Laramie River trains among the longest and heaviest of BNSF's coal trains. Another distinguishing feature of the Laramie River move is that the Laramie River trains do not pass through a major BNSF yard. As a result, locomotive and car inspection and servicing and car repair are principally performed at the plant, in this case by a third-party contractor. Moreover, when locomotives must be returned to a yard for inspection and/or repair, BNSF must exchange locomotives with units from other trains somewhere along the Laramie River route.

Mr. Fisher and Ms. Newland developed variable cost evidence for the Laramie River movement for each mine origin that originated coal the Fourth Quarter 2004, the first quarter in which Laramie River trains moved under the challenged rates. To develop BNSF's variable costs for transportation provided under the challenged rates, they relied on Uniform Rail Costing System ("URCS") costs that are based on the URCS Master File ("UMF") for 2003 and were developed using procedures previously accepted by the Board.[4] They made a movement-specific adjustment to locomotive-ownership costs to reflect the fact that Laramie River trains utilized significantly more locomotives than the system-average unit train and that those locomotives are predominantly high-horsepower SD70MACs, which are more expensive than the system-average locomotive. In addition, they made a movement-specific adjustment for fuel consumption to reflect the fact that Laramie River trains consume more fuel than the system-average. They incorporated the results of these movement-specific adjustments in lieu of BNSF

[4] To develop costs, Mr. Fisher and Ms. Newland adjusted the Board's UMF to include Account 90 and exclude Account 76. *See TMPA* at 40, *CP&L/NS* at 114.

system-average costs in their calculation of variable costs. Finally, they did not apply the URCS linking factor, which has become obsolete.[5]

Mr. Fisher and Ms. Newland calculated variable costs for the Laramie River movement that ranged from $1.61 per ton to $2.05 per ton. Based on the applicable rate, the R/VC ratios for the issue traffic range from 2.99 to 3.53.

The variable cost evidence is presented in the following sequence. Section II.A.1.a. identifies the specific traffic and operating characteristics that underlie Mr. Fisher's and Ms. Newland's variable cost calculations. Section II.A.1.b. explains the methodologies used to calculate the various components of variable costs and describes the movement-specific adjustments employed (in lieu of system-average data) to reflect more accurately the variable costs of the issue traffic service. The detailed variable cost calculations are presented in Exhibit II.A-1.

a. <u>Traffic and Operating Characteristics of the Laramie River Movement</u>

As discussed above, Mr. Fisher and Ms. Newland primarily used URCS system-average costs to estimate variable costs for Laramie River shipments moving under the challenged rate. Mr. Fisher and Ms. Newland made movement-specific adjustments to locomotive-ownership and fuel consumption costs. Developing URCS system-average costs for the Laramie River movement requires identification of the following movement-specific inputs: lading and tare weights, cars per train, route miles, and car owner. The locomotive ownership and fuel consumption adjustments further required identification of the specific locomotives

[5] Use of the linking factor is not required. *See* Ex Parte No. 431 (Sub-No. 1), *Adoption of the Uniform Railroad Costing System for All Regulatory Costing Purposes*, 5 I.C.C. 2d 894, 899 n.15 (Decided Sept. 8, 1989). The linking factor is based on outdated data from the 1980s.

utilized by the Laramie River trains, the amount of time each locomotive was used in Laramie River service, the locomotive consist sizes, and the locomotive cycle times. Exhibit II.A-2 presents the characteristics used to develop BNSF's variable costs consistent with *Potomac Electric Power Co. v. Consolidated Rail Corp.*[6] The sources of the data are identified below.

(1) Name of Mines and Power Plant

Laramie River trains originated coal in the Fourth Quarter 2004 from the following PRB mines: Eagle Butte, Dry Fork, Caballo Rojo, Cordero, and Jacobs Ranch.

The destination is the Laramie River Generating Station near Moba, Wyoming.

(2) Milepost at Origins; Milepost at Destination

Exhibit II.A-2 presents the mileposts for the origin mines and the turnout at Laramie River, as identified from track charts BNSF produced in discovery. The Laramie River plant is located on a spur track approximately three miles from the BNSF mainline.[7]

(3) Annual Tons

In the Fourth Quarter 2004, BNSF transported a total of 2,157,536 tons to Laramie River.[8]

(4) Date of First Shipment

The first shipment to move under the challenged rate was waybilled on October 1, 2004.[9]

---

[6] I.C.C. Docket No. 36114 (Sub-No. 1), served April 7, 1982.

[7] Electronic workpaper "WFA Miles.xls."

[8] Electronic workpaper "Operating Stats.xls," tab "Summary."

[9] Electronic workpaper "Operating Stats.xls," tab "Basin Elect."

(5) Alpha-Numeric Car Type

Plain gondolas (AAR car type "J") are predominantly used to move Laramie River coal.

(6) Lading Weight per Car

Mr. Castleberry developed the average lading weight per car for the shipments to Laramie River from freight bills for Laramie River trains moving in the Fourth Quarter 2004. Exhibit II.A-2 presents the average lading weights by origin mine.[10]

(7) Tare Weight per Car

Like lading weights, Mr. Castleberry developed the average tare weight per car from freight bills for Laramie River trains moving in the Fourth Quarter 2004. The average tare weight per car is 21.7 tons.[11]

(8) Identity of Car Owner

CCPA-BNSF 90077 specifies that the shipper supply the rail cars used to transport coal to Laramie River. CCPA-BNSF 90077 also provides that, at the shipper's request and if available, BNSF will provide up to 75 cars to supplement the shipper's car fleet. WFA/Basin Electric pay BNSF a separate charge for such cars on a per car basis. No ownership costs or revenues associated with those cars have been included in the variable cost calculations.

(9) Identity of Locomotive Owner

BNSF provides the locomotives used to move the Laramie River trains. *See* Item 21.

---

[10] Electronic workpaper "Operating Stats.xls," tab "Summary."

[11] *Id.*

(10) Car Lease Rental

Not applicable.

(11) Locomotive Lease Rental

BNSF acquired the locomotives used to power Laramie River trains through purchases and operating leases. Mr. Fisher and Ms. Newland used detailed accounting data produced by BNSF in discovery to calculate locomotive ownership costs.[12] The calculation of these costs is described below in Section II.A.1.b.(1)(b).

(12) Present Rate

The present rates per net ton are as follows:

South PRB Mines	$5.69
Central PRB Mines	$5.97
North PRB Mines	$6.15

(13) Proposed Rate

See Item (12) above.

(14) Initial Rate and Effective Date

The rates set out in Item (12) above took effect on October 1, 2004.

[12] Electronic workpaper "Loco Ownership.xls," tab "Ownership Data."

(15) Amounts (or Percent) of Rate Escalation

CCPA-BNSF 90077 provides for escalation of the rates on January 1, 2006 and again on January 1, 2007 as follows:

	1/1/06	1/1/07
South PRB Mines	$6.54	$7.52
Central PRB Mines	$6.87	$7.90
North PRB Mines	$7.07	$8.13

(16) Cars per Train

Mr. Castleberry developed the average number of cars per train for shipments to Laramie River from the Laramie River freight bills for the Fourth Quarter 2004. Laramie River trains average 136 cars per train.[13]

(17) Loaded Miles

Mr. Fisher and Ms. Newland developed the loaded and empty miles between origin mine and destination using BNSF's track charts.[14] The loaded and empty miles are set forth in Exhibit II.A-2.

(18) Empty Miles

See Item (17) above.

(19) Length of Origin Loop Track

Mr. Fisher and Ms. Newland used BNSF URCS system-average origination costs, adjusted to reflect unit train service,[15] to estimate variable costs for the issue movement.

---

[13] Electronic workpaper "Operating Stats.xls," tab "Summary."

[14] Electronic workpaper "WFA Miles.xls."

[15] Ex Parte No. 270 (Sub-No. 4), *Investigation of Railroad Freight Rate Structure – Coal*, 345 I.C.C. 71, 227 (Decided Dec. 3, 1974).

(20) Length of Destination Track

Mr. Fisher and Ms. Newland used BNSF URCS system-average destination costs, adjusted to reflect unit train service,[16] to estimate variable costs for the issue movement.

(21) Number of Locomotives

The Laramie River trains are powered by approximately four 4000HP SD70MAC units for the entire round trip.[17]

(22) Loading Hours

Included in Item (24).

(23) Unloading Hours

Included in Item (24).

(24) Cycle Time

Mr. Castleberry developed an average locomotive cycle time for Laramie River trains by mine origin from BNSF Fourth Quarter 2003 – Third Quarter 2004 train movement data produced in discovery.[18] Exhibit II.A-2 presents the average cycle time by origin mine.

(25) Number of Train Sets Required

Not applicable.

(26) Trips per Year per Train Set

Not applicable.

---

[16] *Id.*

[17] Electronic workpaper "Cycle Time & LUM Summary.xls," tab, "LUMS Summary."

[18] Electronic workpaper "Cycle Time & LUM Summary.xls," tab "Cycle Summary."

(27) Crew Districts, Loaded Direction

Mr. Fisher and Ms. Newland used BNSF URCS system-average crew costs to estimate variable costs for the Laramie River movement.

(28) Crew Districts, Empty Direction

See Item (27) above.

(29) Turnaround Crews

See Item (27) above.

(30) Locomotive Units

Mr. Castleberry identified the specific locomotive units used on the Laramie River trains from BNSF Fourth Quarter 2003 – Third Quarter 2004 train movement data produced in discovery. During this period, 96 percent of the locomotive hours on Laramie River trains were provided by 4000HP SD70MACs and the remaining hours were provided by AC4400CWs.[19] The BNSF variable costs reflect locomotive-ownership costs for the actual units that powered the Laramie River trains, based on purchase and lease information that BNSF provided in discovery.[20]

(31) Cars Required

See Item (8) above.

[19] Electronic workpaper "Cycle Time & LUM Summary.xls," tab "Hours by Loco."

[20] Electronic workpaper "Loco Ownership.xls," tab "Ownership Data."

(32) Cabooses Required

Laramie River trains use end-of-train devices. By using system-average costs, Mr. Fisher and Ms. Newland incorporate system-average end-of-train equipment expenses in developing variable costs for the issue movement.

(33) Locomotive Spare Margin

Mr. Fisher and Ms. Newland include a locomotive spare margin of { } percent based on a special study of BNSF data provided in discovery and described below in Section II.A.1.b.(1)(b).[21]

(34) Car Spare Margin

See item (31) above.

(35) Switching by Road-Haul Locomotives

Mr. Fisher and Ms. Newland use BNSF URCS system-average switching costs adjusted to reflect unit train service.[22] They allocated the system-average switch engine minutes based on BNSF's system-wide mix of road and yard switching.[23]

(36) Switching by Yard Locomotives.

See Item (35) above.

---

[21] Electronic workpaper "Spare Margin.xls," tab "Summary."

[22] Ex Parte No. 270 (Sub-No. 4), *Investigation of Railroad Freight Rate Structure – Coal*, 345 I.C.C. 71, 227 (Decided Dec. 3, 1974).

[23] Electronic workpaper "BNSF-03-SWITCH SPLIT-.123."

(37) Helper Service

By using BNSF URCS system-average train mile and locomotive unit mile costs, Mr. Fisher and Ms. Newland incorporate system-average helper service costs in the variable costs for the issue movement.

(38) Helper Crews

See Item (27) above.

(39) Location of Interchanges

There are no interchanges for the Laramie River movement.

(40) Location of Inter and Intra-Train Switching

See Item (35) above.

(41) Joint Facility Payments

By using URCS system-average maintenance-of-way costs ("MOW"), Mr. Fisher and Ms. Newland incorporate system-average joint facility expenses in the variable costs for the issue movement.

b. Variable Costs of the Laramie River Movements

Variable costs are costs that change in direct proportion to changes in output. The Board requires that URCS be used to calculate variable costs in railroad rate proceedings.[24] Variable costs for the Laramie River traffic were calculated using the Board's 2003 UMF

[24] URCS is the cost accounting tool that the Board uses to estimate variable costs. Each year, using cost and operating statistics from each Class I carrier's Annual R-1 Report, the Waybill Sample, Annual Report of Cars Loaded and Terminated (Form CS-54), and the Report of Freight Commodity Statistics (Form QCS), the Board develops the URCS unit costs for each carrier.

adjusted to include Account 90 and exclude Account 76.[25] In order to calculate the variable costs of service for the Laramie River traffic, Mr. Fisher and Ms. Newland used BNSF 2003 URCS system-average costs indexed to the Fourth Quarter 2004. For locomotive ownership costs, they used actual BNSF costs to make movement-specific adjustments that reflect the actual traffic and operating characteristics of the Laramie River trains. They also used fuel consumption data for Laramie River trains that BNSF maintains in the ordinary course of business. The methodologies used in making these movement-specific adjustments are explained in the following sections of this Narrative.

(1) Gross Ton-Mile Costs

URCS develops gross ton-mile unit costs for road property maintenance and ownership. Gross ton-mile costs also include a portion of the expenses associated with train fuel, locomotive ownership, locomotive maintenance, and locomotive and train administration activities. With the exception of fuel consumption, fuel expense overheads, and locomotive ownership, Mr. Fisher and Ms. Newland use URCS system-average gross ton-mile costs for the Laramie River traffic.

(a) Fuel

Mr. Fisher and Ms. Newland based their variable cost calculations on the actual fuel consumption for Laramie River trains. Actual fuel consumption was determined using BNSF's fuel consumption data for Laramie River trains produced in discovery for the period March 1, 2004 to December 31, 2004.[26] Mr. Castleberry explains that these data are maintained

[25] *See TMPA* at 40, *CP&L/NS* at 114. Electronic workpaper "BNSF URCS 2003.zip," file "BNSF809PHSE11A.Y03," worktable A4 Part 1, lines 142 and 144.

[26] BNSF/LR/CD 0031.

in the ordinary course of business. They are developed from event recorder data downloaded from trains that pass through designated data collection stations. BNSF recently began collecting these data as part of a program that measures the performance of its engineers. The event recorder data are used to estimate fuel consumption by applying the same basic methodologies that BNSF used in the fuel studies that were accepted by the Board in the *TMPA v. BNSF* and *Xcel v. BNSF* coal rate reasonableness cases.[27]

BNSF's fuel consumption calculations begin with the collection of raw data from locomotive event recorders on locomotives used in PRB coal service. Event recorders track a variety of operating characteristics, such as speed and distance traveled. They also keep track of a locomotive's throttle position by time. The amount of fuel consumed by modern diesel locomotive engines is a function of the locomotive's throttle positions. Because the locomotive diesel engine simply creates electricity for traction motors, the amount of fuel consumed by the diesel engine at each throttle position is constant and does not vary with operating conditions. The manufacturers of the locomotives used by BNSF perform extensive tests to develop highly precise fuel consumption figures for each throttle position on each locomotive model. It is therefore possible to calculate fuel consumption with a high degree of accuracy using the manufacturer's fuel consumption specifications and data from locomotive event recorders on the amount of time a locomotive spends in various throttle positions.

Several of BNSF's locomotives, including some of the units used in Laramie River service, are equipped with communication technology that permits wireless transmission of the locomotive event recorder data to data collection stations that BNSF has installed at various points on its system. As a locomotive equipped with the wireless technology passes a

---

[27] *TMPA* at 58; *Xcel* at 138.

download station, event recorder data are transmitted to the station and then relayed to BNSF's central data warehouse in Fort Worth. In Fort Worth, a computer program correlates the locomotive event data with train operating data to produce a segment-by-segment profile for each locomotive and train. This profile includes the train identification, locomotive identification, model, position in consist, date, time, and station of departure and arrival, number of cars, tonnage, and throttle position time, among other data. The data are also matched against operating and mechanical data to determine whether particular locomotives are contributing tractive effort.

These segment profiles are then analyzed using the Fuel Burn Model that BNSF developed to determine fuel consumption by train and by locomotive for each segment. Specifically, the Fuel Burn Model multiplies the time that the locomotive spends in each throttle position by the fuel consumption rate for each throttle position as determined by the locomotive manufacturer to produce total fuel consumption for the segment. The Fuel Burn Model adjusts for the time that a locomotive is dead-in-consist or is otherwise not contributing tractive effort. Fuel consumption for all of the segments between origin and destination can then be summed to produce total fuel consumption for the line-haul portion of the movement for each train.[28]

Mr. Fisher and Ms. Newland calculated the average line-haul fuel consumption for Laramie River trains for each mine origin that originated coal in Fourth Quarter 2004 using

---

[28] Electronic workpaper "MOBA Event Recorder Fuel Burn Data.xls," tab "MOBA TRAINS." Occasionally, the locomotive event recorder data downloaded for a segment are incomplete, resulting in an understatement of fuel consumption for the segment. This appears to happen when too much time elapses between downloads. Locomotive event recorders have a finite memory capacity. Once the memory is full, the recorder restarts at the beginning and overwrites the old data. If the locomotive does not pass through a data collection station before this happens, data are lost and the Fuel Burn Model calculates fuel consumption using incomplete throttle position data. Mr. Fisher and Ms. Newland identified a few instances where the total throttle position time was inconsistent with the total run time and excluded those records from their calculations of average fuel consumption. *Id.*

BNSF's fuel consumption data.[29] They also calculated the average line-haul fuel consumption by mine origin using BNSF's URCS system-average fuel consumption and compared the results to the actual fuel consumption to produce an adjustment ratio for each mine origin.[30] Finally, they weighted the ratio for each mine origin by the number of trains originated at that mine in Fourth Quarter 2004 to produce a single fuel consumption adjustment factor.[31] They found that Laramie River trains consumed on average 26 percent more fuel than the system-average based on URCS.[32] Mr. Fisher and Ms. Newland therefore adjusted the URCS system-average line-haul fuel consumption to account for the above-average level of fuel consumption on Laramie River trains.

(b) Locomotive Ownership Costs

As indicated above, Mr. Fisher and Ms. Newland calculated the locomotive-ownership costs for Fourth Quarter 2004 based on data produced in discovery that identify the actual units that powered the Laramie River trains in the prior four quarters. For each BNSF locomotive that appeared in a Laramie River train consist, Mr. Fisher and Ms. Newland

---

[29] *Id.*

[30] Electronic workpaper "MOBA_FUEL_BURN_ADJ.123," tab "ADJMT FACTORS." URCS generates a fuel cost per GTM, LUM and SEM. To calculate URCS system-average fuel consumption for the line-haul portion of the Laramie River move, Mr. Fisher and Ms. Newland developed the average operating characteristics for the Laramie River trains moving in Fourth Quarter 2004 by mine origin using operating statistics drawn from freight bills and mileage data. Next they calculated the total line-haul GTM and LUM fuel cost using URCS and they calculated BNSF's average cost per gallon based on Schedule 750 in BNSF's R-1. They then divided the total fuel cost for each mine origin by the average cost per gallon to arrive at the line-haul system-average fuel consumption for Laramie River trains by mine origin. As switching is included at system-average, Mr. Fisher and Ms. Newland did not include the SEM fuel cost component in calculating URCS system-average fuel consumption.

[31] *Id.*

[32] *Id.*

identified the gross investment and age (if the locomotive was purchased or acquired through a capital lease) or the annual payment normalized over the life of the lease (if the locomotive was acquired under an operating lease) from accounting information provided to Laramie River in discovery.[33] With this information, Mr. Fisher and Ms. Newland then calculated a composite annual ownership cost weighting each locomotive's costs by its proportion of the total locomotive unit-hours used to power Laramie River traffic in the Fourth Quarter 2003 – Third Quarter 2004 period. Mr. Fisher and Ms. Newland converted the annual cost to a cost per locomotive unit-hour, and multiplied the cost by the round-trip locomotive cycle hours. They then substituted the resulting figure for the URCS system-average locomotive-ownership costs.

Mr. Fisher and Ms. Newland also calculated a locomotive spare margin based on a special study of the SD70MAC locomotives in BNSF's Alliance pool[34] using data maintained by BNSF in the ordinary course of business and produced to Laramie River in discovery and using the methodology previously accepted by the Board in the *Xcel v. BNSF* rate reasonableness case.[35] Their study examined the *availability* (the total time that a locomotive is capable of being used to power a train) and *utilization* (the time that the locomotives are available, but not being "utilized" on a train) of the locomotives in the Alliance pool, which is the pool from which

---

[33] Electronic workpaper "Loco Ownership.xls."

[34] The detailed train movement records produced to Complainants indicate that SD70MACs comprised 96 percent of the locomotive hours for the Laramie River trains. Electronic workpaper "Cycle Time & LUM Summary.xls," tab "Hours by Loco." In addition, , BNSF uses its SD70MACs almost exclusively for coal transportation. The remaining four percent of the locomotive hours in Laramie River service are provided by AC4400s drawn from BNSF's Lincoln and Havre locomotive pools. Mr. Fisher and Ms. Newland also calculated a spare margin for these units using the same methodology that they used for the Alliance pool units. The spare margin that they used to develop variable costs for Laramie River movements reflects the spare margin for both SD70MACs and AC4400s weighted by locomotive hours in Laramie River service.

[35] *Xcel* at 142-43.

locomotives in Laramie River service are primarily drawn. From these data, Mr. Fisher and Ms. Newland developed an annual composite spare margin that accounts for both unavailable and non-utilized time, neither of which is included in the locomotive cycle times they developed for the Laramie River trains.[36] They applied this additive to the locomotive cycle times. By applying the composite factor to the locomotive cycle times for the Laramie River trains, Mr. Fisher and Ms. Newland account for BNSF's full locomotive-ownership requirements for powering the issue traffic.

(2) Locomotive Unit-Mile Costs

URCS develops costs per locomotive unit-mile that include a portion of the expenses associated with train fuel, locomotive ownership, locomotive maintenance, locomotive repair and servicing, and locomotive and train administration. Treatment of locomotive fuel and ownership expenses is discussed in Section II.A.1.b.(1) above. All other locomotive unit-mile costs are included at system-average levels.

(3) Indexing

Mr. Fisher and Ms. Newland indexed 2003 base-year costs to Fourth Quarter 2004 using the method adopted in ICC Statement 1E3-80 (April 1980), as supplemented in Complaints Filed Under Section 229 of the Staggers Rail Act of 1980, 365 I.C.C. 507 (1980). To index from base-year levels to Fourth Quarter 2004, Mr. Fisher and Ms. Newland segregated BNSF expenses into six categories: (1) wages; (2) wage supplements; (3) materials and supplies without fuel; (4) fuel; (5) other indexable expenses, including purchased services, taxes and general expenses; and (6) non-indexable expenses not subject to price changes, which include depreciation, equipment rents and leases, and unemployment insurance taxes. Mr. Fisher and

[36] Electronic workpaper "Spare Margin.xls," tab "Summary."

Ms. Newland used AAR indices and the Bureau of Labor Statistics' Producer Price Index[37] (to index other indexable expenses) to develop a composite index for all groups except fuel and non-indexable expenses.

Mr. Fisher and Ms. Newland, in developing variable costs for the issue movement, used the actual BNSF fuel cost per gallon at Moba, Wyoming for the Fourth Quarter 2004 calculated from cost data produced in discovery.[38]

---

[37] The use of the PPI conforms to the method suggested by the Board in the *FMC* decision. *See FMC* at 91.

[38] Electronic workpapers "BNSF-03to04-IE3-INDEX.123, and "AAR & PPI Indices.pdf."

2. Rate and Resulting R/VC Calculation

Based on the procedures described above in Section II.A.1 of this Narrative, Mr. Fisher and Ms. Newland calculated variable costs and revenue-to-variable cost ratios by origin mine for Fourth Quarter 2004. Table II.A-1 summarizes the results for transportation from each of the mines used in Fourth Quarter 2004 to Laramie River. Exhibit II.A-1 provides totals by individual URCS cost component; the detailed calculations are provided in the workpapers.[39]

Table II.A-1
Revenue to Variable Cost Ratio Fourth Quarter 2004

Origin Mine	Rate/Ton	Variable Cost/Ton	R/VC Ratio
Northern PRB			
Dry Fork	$6.15	$2.01	3.06
Eagle Butte	$6.15	$2.05	2.99
Central PRB			
Caballo Rojo	$5.97	$1.80	3.31
Cordero	$5.97	$1.76	3.39
Southern PRB			
Jacobs Ranch	$5.69	$1.61	3.53

Source: Exhibit II.A-1

[39] Electronic workpaper "BNSF MOBA OPEN PRG.123."

B. QUALITATIVE MARKET DOMINANCE

Under the Board's procedural rules, Complainants bear the burden on proof on qualitative market dominance.

C. OTHER: COMPLAINANTS' UNFOUNDED CLAIMS ABOUT THE COMMERCIAL REASONABLENESS OF THE RATE INCREASE THAT PRODUCED THE CHALLENGED RATES

Professor Joseph P. Kalt was asked by BNSF to evaluate and respond to various statements by Complainants in this proceeding and in other public settings, statements to the effect that common carrier rates BNSF recently established are commercially unreasonable because they represent a significant increase over pre-existing rates. Professor Kalt is the Ford Foundation Professor of International Political Economy at the John F. Kennedy School of Government, Harvard University. Professor Kalt's qualifications are described further in Section IV of this Narrative.

As discussed above, the complaint at issue here was filed in October 2004 by Western Fuels Association, Inc. ("WFA") and Basin Electric Power Cooperative, Inc. ("Basin Electric"), challenging the reasonableness of common carrier rates that are being charged by BNSF for transportation of coal from BNSF-served Powder River Basin ("PRB") origins in Wyoming to the Laramie River electric generating stations ("Laramie River") located near Moba, Wyoming. WFA procures coal for member electric utilities, including the negotiation of coal contracts and the purchase of transportation. Basin Electric, a member of WFA, is a cooperative that generates and transmits power to district cooperatives that distribute power to approximately 120 cooperative members in Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Nebraska, Minnesota, and Iowa. Laramie River is owned by Basin Electric (42.27%) in conjunction with five other partners and is operated on a day-to-day basis by Basin Electric.[40] WFA obtains and pays for coal (including transportation) to Laramie River. In 2003, BNSF delivered approximately 8.3 million tons of coal to Laramie River.[41]

From 1984 until October 2004, BNSF provided transportation to deliver coal to Laramie River pursuant to a rail transportation contract. When that contract expired in October 2004 and negotiations regarding ongoing contract rates for transportation were unsuccessful, BNSF provided WFA with common carrier rates from Wyoming coal locations to Laramie River. It is these rates that WFA/Basin Electric are challenging before the STB.

Complainants have requested that the challenged rates be evaluated under the stand-alone cost test. Prior to filing their stand-alone cost evidence, however, Complainants have sought to create the appearance that as a commercial matter, the challenged rates are unreasonable and that BNSF has not acted in a commercially reasonable manner. The complaint itself alleges that BNSF's common carrier rates "impose draconian rate increases," that produced commercially unreasonable rates.[42] Complainants convinced several members of Congress to send the Board a letter noting the "tremendous challenge" created by the rate increase.[43]

---

[40] "Basin Electric General Media Kit," http://www.basinelectric.com/Miscellaneous/assets/pdf/Mediakit/MediaKitWhole1.pdf, April 12, 2004, at 2 and 14.

[41] Docket 42088, *Western Fuels Association, Inc. and Basin Electric Power Cooperative, Inc. v. The Burlington Northern and Santa Fe Railway Company*, Verified Complaint, October 19, 2004, at ¶5.

[42] *Id.* at ¶12; see also WFA press release, "Western Fuels, Basin Electric File STB Rate Complaint," October 25, 2004.

[43] March 14, 2005 letter to The Honorable Roger Nober from members of Congress.

Complainants have repeatedly complained that the challenged rates are not consistent with BNSF's costs, given the close proximity of Laramie River to the PRB mines.[44]

BNSF has asked Professor Kalt to evaluate these claims regarding the commercial reasonableness of the rates at issue. While the Board will ultimately judge the reasonableness of the challenged rates under the *Coal Rate Guidelines*, it is important that the Board have an accurate view of the commercial background of the dispute. In examining the commercial setting for the rates at issue, Professor Kalt has examined the economic and marketplace conditions in which BNSF has established the challenged rates, including competitive conditions, the context in which the previous rates were established (*i.e.*, as part of a negotiated settlement to litigation), and the market setting for coal transportation.

Professor Kalt finds that the available evidence does not support Complainants' assertions that the challenged rates are commercially unreasonable. The fact that the rates at issue represent a significant increase over the prior contract rates does not have any commercial significance in this case since the pre-existing rates had been suppressed by the settlement that produced those rates. In addition, market conditions have changed substantially since the prior rates were set – today there are far greater demand and tighter rail capacity than in the early 1980s when the earlier rates were set. The challenged rates represent a move to rate levels that are more consistent with market conditions.

1. The Economic and Marketplace Context of BNSF's Rate Increase

Complainants' assertions about the commercial unreasonableness of the challenged rates focus on the fact that the challenged rates are a significant increase from the pre-

[44] "Basin Electric, WFA File Rate Case Against BNSF," *Platts Coal Outlook*, November 1, 2004.

existing rates under the contract that expired in October 2004. But several factors suggest that the prior rates did not represent market rates and that a rate increase was warranted by current market conditions. These market conditions include the increasing demand for PRB coal and constraints on existing rail capacity. The market in which the pre-existing rates were set was very different from the current market for PRB coal transportation. As a result, a comparison of the challenged rates to the pre-existing rates is not commercially meaningful. A number of factors indicate that current market conditions are consistent with increased rates.

a. Base Rates Under the 1984 Settlement

Prior to October 2004, BNSF provided transportation of coal to Laramie River under a confidential long-term contract. This contract, which went into effect on October 2, 1984, and was in force for 20 years, was the result of a settlement to an antitrust case brought by WFA against BN.[45] The suit claimed BN violated antitrust laws by exploiting a purported monopoly position in the PRB. As part of the settlement to that litigation, BN negotiated a 20-year contract to transport coal from mines in the PRB to Laramie River in Wyoming. WFA's acceptance of the settlement's base rates suggests that WFA received a favorable starting point for its coal contract in return for giving up its claim against BN.

Since the rates under the prior contract were the product of a litigation settlement, those rates are not relevant in assessing the commercial reasonableness of the newly established rates. The level of prior WFA contract rates certainly cannot be taken as an indicator of market conditions of supply and demand at the time the contract expired. In a situation in which an initial base rate is favorable to a shipper, *i.e.*, below-market condition rates, and the rate is

---

[45] Coal Transportation Contract between Burlington Northern Railroad Company and Western Fuels, Inc., September 28, 1984; "Burlington Northern Rail in Long-Term Coal Transport Pacts," Dow Jones News Service, October 1, 1984.

adjusted each year by an escalator that does not move rates up to market levels, rates can be expected to remain below market-determined levels. Thus, it can be expected that when a new rate is established, the new rate will move upward as the rate is recalibrated to current market conditions.

b. Escalation Clause

The 1984 contract between BN and WFA also provided a mechanism for carrying forward the base rates. {

}

{

}

{

}

The shipper-favorable rates realized by WFA under the settlement contract are indicated by the data in Figure 1 (Exh. II.C-1). Basin Electric's rates declined over the 20-year period from { }[47] In inflation-adjusted terms, this represents a decrease of over { } in coal transportation rates. At the same time, railroad costs, as measured by the Rail Cost Adjustment Factor ("RCAF-U") as calculated by the Association of American Railroads, increased approximately 60%.[48] Given that Basin Electric has benefited from a very shipper-favorable rate adjustment mechanism, it is not surprising that in order to readjust rates back to marketplace levels, rate levels for rail transportation would increase.

---

[46] Coal Transportation Contract between Burlington Northern Railroad Company and Western Fuels, Inc., September 28, 1984, at 12.

[47] BNSF Rail Rate Data for Laramie River. {

}

[48] AAR Railroad Cost Indexes, December 2004.

c. Basin Electric's Position in the Marketplace

The very shipper-favorable transportation rates realized under the settlement contract have been one of the factors contributing to Basin Electric's generally very positive financial performance. The { } led to a decline in rail rates and has contributed to the credits (rebates) that Basin Electric has provided to its coop members. These rebates have been substantial. In 2003, the rebate was $50 million, essentially providing two months of free electric power to members. Over the past five years, the credits amounted to $140 million. In the 2003 Basin Electric annual report, Basin Electric's CEO touts his company's strong performance: "I know of no other G&T [electricity generation and transmission company] that has revenue deferrals of $150 million, to be in the position to reduce rates, and to have provided $140 million in bill credits...there is no doubt; we are in good times."[49]

Basin Electric's favorable position under the settlement contract's rates has also been reflected in the low production costs for electricity at Laramie River. Laramie River is notably a low-cost producer of electricity. As shown in Figure 2 (Exh. II.C-2), in 2003, Laramie River's costs were among the lowest among coal-fired plants in the nine-state area that Basin Electric serves.[50] Consistent with these low costs of power, the Laramie River plant is highly utilized and operates at near capacity. In 2003, the plant operated at around 90% capacity, which is very high by industry standards.[51]

---

[49] Basin Electric's 2003 Annual Report at 2.

[50] Basin Electric member cooperatives serve retail customers in Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Nebraska, Minnesota, and Iowa.

[51] Platts PowerDat data.

Even with the upward adjustment in coal transportation rates that is reflected in the common carrier rates that are the subject of this proceeding, Basin Electric's costs are still notably low as compared to other coal-fired plants in the nine-state area served by Basin Electric. Figure 3 (Exh. II.C-3) shows the impact on Basin Electric of an increase in the rail rates paid to ship coal to Laramie River relative to the average of coal-fired power producers in this region. The increased rates are set at the level of BNSF's challenged common carrier rates. As Figure 3 indicates, the rise in rates to the new level continues to leave Laramie River well below the average of other power producers in the nine-state area that Basin Electric serves. Under these conditions, there is no reason to believe that BNSF's rate increase would make Basin Electric uncompetitive or otherwise cause Basin Electric to curtail coal usage and power production. In light of this evidence, Basin Electric's claims that a rise in BNSF's rates will make them somehow uncompetitive are unfounded; prior to the BNSF rate increase, Laramie River's costs were below the average of other coal-fired plants, and after the BNSF rate increase, Laramie River's costs will continue to be below average.

d. Demand for Powder River Basin Coal

Another factor that makes the increase in rail transportation rates unsurprising is growing demand and tight rail capacity for PRB coal. The situation in which BNSF's coal rates are now being established is much different than it was in 1984. Currently, market demand for PRB coal is strong and is expected to continue to grow. In the current market, one cause of continuing pressure on the demand for PRB coal is that utilities in midwestern and eastern states increasingly have been switching to low-sulfur coal produced in the PRB. This comes in response to Clean Air Act Amendments with more stringent emissions requirements that went into effect in 2000.

The increased penetration of PRB coal into electric power markets farther to the east has supported increased production for PRB coal. As shown in Figure 4 (Exh. II.C-4), the production of Wyoming coal has increased over 150% from the mid-1980s to 2003, with southern PRB coal increasing over 300%. Moreover, the increase in demand that is spurring PRB coal production shows no signs of abating. According to a recent U.S. government forecast, between 2003 and 2025 there will be a 270 million ton increase in annual production of Wyoming Powder River Basin coal.[52]

Much of PRB coal moves out of the PRB on track over which Union Pacific Railroad ("UP") and BNSF operate jointly. With the large and increasing volume of coal that is being transported through the southern PRB – over the same lines used to provide transportation for Laramie River's coal – capacity expansions have not kept pace with increased demand. On the line that runs south out of the PRB, capacity has been tight and scheduling conflicts have arisen.[53]

Over the last decade, BNSF has invested heavily in tracks, terminal capacity, train sets, and locomotives in order to serve the increased demand. Since 1994, BNSF has invested $2.2 billion to increase its coal-carrying capacity.[54] As an example, the original Orin line, which runs north-south through the PRB, was constructed in 1979 as a single track. From 1994 to 1999, 38.7 miles of double track and 46 miles of triple track were constructed. Projects to

---

[52] Energy Information Administration, *Energy Outlook 2005*, Supplemental Table 111.

[53] *See*, for example, Energy Information Administration, *Annual Coal Report 2001*, at 3-4; "Capacity Issues and Trends in the PRB," *Platts Coal Outlook*, November 17, 2003; "PRB Demand Boosts Railroad Outlooks, Pressures on Train Capacity," *Platts Coal Outlook*, February 28, 2005; and "Grand River Dam Authority," *Platts Coal Outlook*, November 8, 2004.

[54] *See* comments of Matt Rose, BNSF CEO, "This Capacity Crunch May Not Be the Last," *Railway Age,* September 1, 2004.

upgrade this heavily utilized line have continued: In October 2004, another 8.3-mile section of a third main line track was added from Walker to Shawnee Junction.[55]

Despite these investments, track expansion has not been able to keep pace with the very rapid growth in demand for PRB coal. Coal produced in mines in the southern PRB along the track that is jointly operated over by BNSF and UP has increased by a factor of four, while track miles have increased by less than a factor of two.[56] As a result, capacity in the PRB has become considerably tighter in recent years than it was at the time the settlement contract with WFA was originally signed in 1984.

Economically, this tightness in capacity has implications for the rates that BNSF charges to move coal through the PRB. Tight supply of capacity relative to demand is one of the factors that influence prices in any market. As capacity tightens, it can cost more to supply additional units of a product. In the railroad context, these additional costs at the margin tend to include adding new tracks, upgrading current tracks to carry heavier trains, installing additional sidings to accommodate more trains, installing more advanced signaling equipment, purchasing additional locomotives, etc.[57]

The rates that are charged for coal transportation in 2004 need to reflect the realities of the marketplace setting for the movement of PRB coal, a marketplace setting that is quite different from the less-congested conditions that existed around the time that the earlier contract was signed. Thus, given the additional congestion that has developed since 1984, it is

---

[55] *See* "Section of Third Main Line Track in Wyoming Cutover Today," BNSF Press Release, October 27, 2004. The press release notes that another 5.8 miles of triple track will be coming on line in early 2005.

[56] In 1984, there were 181 running track miles on the Orin line. By 2004, this had increased to 304.

[57] *See* June 23, 2004 letter to The Honorable Roger Nober from Matt Rose.

not surprising that rates would rise as they come out from under a long-term contract that had become out of step with market conditions. In such situations, proper public policy allows railroads to serve the public interest in providing efficient transportation for a high demand commodity with notably tight capacity. It is the role of prices to bring supply and demand back into balance. With accurate price signals, supply and demand will be brought back into balance through two channels: first, higher prices dampen demand and allow the customers who value the transportation of PRB coal the most to use the network's constrained capacity; and second, higher prices provide railroads with the means to make additional capital investments in PRB infrastructure and thereby expand the ability of the rail network to carry additional traffic.

In short, Professor Kalt finds that, because the prior rates were determined by a settlement to litigation, because of the rates' notably favorable escalation clause, and because of the tight market conditions in the PRB, the rates under which coal previously was transported were extremely favorable to Complainants. Given these factors, from a commercial standpoint, it would be expected that commercial considerations would lead to higher rates upon expiry of the WFA-BN settlement contract. At the very least, because the prior rates were not determined by supply and demand conditions, we cannot conclude anything about the commercial reasonableness of the current common carrier rates based on a dollar or percentage comparison to the previous rates. Complainants' assertions to the effect that the rate increase under BNSF's common carrier rates was dramatic and commercially unreasonable are not supported by the evidence.

IV: Witness Qualifications and Verifications

IV. WITNESS QUALIFICATIONS AND VERIFICATION

A. B. Scott Castleberry

B. Scott Castleberry is BNSF Railway Company's Director, Regulatory Costs. His business address is 2650 Lou Menk Drive, Fort Worth, Texas 76131-2830. Since joining BNSF (then the Atchison Topeka and Santa Fe) in 1991, Mr. Castleberry has held a variety of positions including Manager -- Measurement and Profitability Systems, Manager -- Operations Budget, and Senior Manager -- Performance Measurement. Through these positions, Mr. Castleberry has first-hand knowledge and familiarity with many of BNSF's data and performance measurement systems. Mr. Castleberry holds a Bachelor of Science in Industrial Engineering degree from University of Oklahoma and a Master of Science in Management degree from Baker University.

Mr. Castleberry is sponsoring evidence relating to BNSF's variable costs for the issue movement. Specifically, Mr. Castleberry is sponsoring evidence relating to the operating characteristics of the Laramie River trains and BNSF's fuel consumption data. His evidence is incorporated in Section II.A of the Narrative. Mr. Castleberry has signed a verification of the truth of the statements contained therein. A copy of Mr. Castleberry's verification is attached hereto.

I declare under penalty of perjury that I have read the Opening Evidence that I have sponsored, as described in the foregoing Statement of Qualifications, and that the contents thereof are true and correct. Further, I certify that I am qualified and authorized to sponsor this testimony.

Executed on April 14, 2005

Scott C

B. Scott Castleberry

B. Benton V. Fisher

Benton V. Fisher is a Managing Director at FTI Consulting, Inc., an economic and financial consulting firm with offices located at 1201 Eye Street, N.W., Suite 400, Washington, DC, 20005. Since 1991, Mr. Fisher has been involved in various aspects of transportation consulting including economic studies involving costs and revenues, traffic and operating analyses, and work with performance measurement and financial reporting systems.

Mr. Fisher holds a Bachelor of Science in Engineering degree from Princeton University. In 1991, he joined Klick, Kent & Allen, Inc., which was acquired by FTI Consulting, Inc. in 1998. While with KK&A and FTI, Mr. Fisher has performed numerous analyses for and assisted in the preparation of expert testimony related to merger applications, rate reasonableness proceedings, contract disputes, and other regulatory costing issues before the Interstate Commerce Commission, Surface Transportation Board, Federal Energy Regulatory Commission, Postal Rate Commission, Federal Court, and State Utility Commissions.

Mr. Fisher is sponsoring evidence relating to BNSF's variable costs for the issue movement. His evidence is incorporated in Section II.A of the Narrative. Mr. Fisher has signed a verification of the truth of the statements contained therein. A copy of Mr. Fisher's verification is attached hereto.

I declare under penalty of perjury that I have read the Opening Evidence that I have sponsored, as described in the foregoing Statement of Qualifications, and that the contents thereof are true and correct. Further, I certify that I am qualified and authorized to sponsor this testimony.

Executed on April 18, 2005

Benton V. Fisher

Benton V. Fisher

C. Joseph P. Kalt, Ph.D.

Joseph P. Kalt is the Ford Foundation Professor of International Political Economy at the John F. Kennedy School of Government, Harvard University. The Kennedy School of Government is Harvard's graduate school of public policy and public administration. He also works as a senior economist with Lexecon, an economics consulting firm and a division of FTI Consulting. Professor Kalt holds B.A., M.A., and Ph.D. degrees in economics and is a specialist in the economics of competition and industrial organization, with particular emphasis on the regulated industries. Over his career, he has researched, published, taught, and testified extensively in these areas. Professor Kalt has provided expert testimony on numerous occasions to the Surface Transportation Board, both in rulemaking proceedings and in litigated disputes. His full curriculum vitae is attached.

Professor Kalt is sponsoring evidence relating to the commercial reasonableness of the common carrier rate for the issue movement. His evidence is incorporated in Section II.C. of the Narrative. Professor Kalt has signed a verification of the truth of the statements contained therein. A copy of Professor Kalt's verification is attached hereto.

JOSEPH PEGGS KALT

John F. Kennedy School of Government
Harvard University
Cambridge, MA 02138
(617) 495-4966

PROFESSIONAL EXPERIENCE

JOHN F. KENNEDY SCHOOL OF GOVERNMENT, HARVARD UNIVERSITY, CAMBRIDGE, MA
Ford Foundation Professor of International Political Economy, 1992 - present

Areas of specialization include Industrial Organization, Economics of Antitrust and Regulation, Natural Resource Economics, Public Choice and Political Economy, Microeconomic Theory.

Member, Standing Committee on Higher Degrees in Political Economy and Government, 2002 - present
Faculty Chair, Interfaculty Initiative, Harvard University Native American Program, 2000 - present
Co-Director, The Harvard Project on American Indian Economic Development, 1987 - present
Chair, Economics and Quantitative Methods Cluster, 1995 - 2000
Professor of Political Economy, 1986 - 1992
Faculty Chair and Academic Dean for Research, 1992 - 1994
Chairman, Environment and Natural Resources Program, Center for Science and International Affairs, 1990 - 1994
Chairman of Degree Programs, 1990 - 1992
Chairman of Ph.D. Programs, 1989 - 1990
Assistant Director for Natural Resources, Energy and Environmental Policy Center, 1985 - 1990
Co-Director, Harvard Study on the Future of Natural Gas Policy (with Frank C. Schuller), Energy and Environmental Policy Center, John F. Kennedy School of Government, 1984 - 1986

LEXECON INC, AN FTI COMPANY (AND PREDECESSOR CONSULTING ENTERPRISES)
Senior Economist, 2003 – present (and since 1983 with predecessor enterprises)

DEPARTMENT OF ECONOMICS, HARVARD UNIVERSITY, CAMBRIDGE, MA
Associate Professor of Economics, 1983 - 1986
Assistant Professor of Economics, 1980 - 1983
Instructor in Economics, 1978 - 1980

Taught Economics of Antitrust and Regulation, Intermediate Microeconomics, and Principles of Economics.

PRESIDENT'S COUNCIL OF ECONOMIC ADVISERS, WASHINGTON DC
Junior Staff Economist, 1974 - 1975

Analyzed federal energy, environmental, transportation, and tax policies.

EDUCATION

University of California, Los Angeles
Ph.D. in Economics, 1980
Dissertation: "Federal Control of Petroleum Prices: A Case Study of the Theory of Regulation"
M.A. in Economics, 1977

Stanford University, Stanford, CA
B.A. in Economics, 1973

EXPERT TESTIMONY

PPL Exelon Corporation and Public Service Enterprise Group Incorporated
United States of America, Before the Federal Energy Regulatory Commission, Docket No. EC05-43-000, Protest of The PPL Companies, Prepared Direct Testimony, April 11, 2005.

Sovereign Risk Insurance Limited
Before the American Arbitration Association, in the matter of ZC Specialty Insurance Company v. Sovereign Risk Insurance Limited, Case No. 50 T 153 0055203, Expert Report, March 10, 2005; Supplemental Report, April 11, 2005.

ExxonMobil Corporation
In the matter of ExxonMobil Royalty Settlement Agreement Reopener: Destination Value, Expert Report, March 4, 2005; Expert Rebuttal Report, March 24, 2005; Oral Testimony, April 7, 2005.

PPL Montana
United States of America, Before the Federal Energy Regulatory Commission, Answer of the PPL Montana Parties to Montana Consumer Counsel's New Uncommitted Capacity Pivotal Supplier Analysis and Uncommitted Capacity Market Share Analysis, Affidavit (filed with A. Joseph Cavicchi), February 28, 2005.

T-Mobile
In the Superior Court of the State of California, County of Alameda, Judicial Council Coordination Proceeding No. 4332, Cellphone Termination Fee Cases. Affidavit, January 17, 2005.

Shell Oil Company, Texaco Refining and Marketing Inc., Equilon Enterprises LLC.
In the United States District Court for the Central District of California, Case No. SACV- 03-565-JVS (JTLx), Andre Van Der Valk, et al., v. Shell Oil Company, Texaco Refining and Marketing Inc., and Equilon Enterprises LLC. Expert Report, October 8, 2004; Rebuttal Report, November 8, 2004; Deposition, December 13, 2004; Second Rebuttal Report, April 4, 2005.

Shell Oil Products Company, LLC, Shell Oil Company, and Motiva Enterprises, LLC

In the United States District Court for the District of Massachusetts, Case No. 01-CV-11300-RWZ, Mac's Shell Service, Inc., et al., v. Shell Oil Products Company, LLC, Shell Oil Company, and Motiva Enterprises, LLC. Expert Report, July 6, 2004; Deposition, July 29, 2004; Oral Testimony, November 30 – December 1, 2004.

Equilon Pipeline Company

In the United States District Court, Western District of Washington at Seattle, Case No. C01-1310L, Olympic Pipeline Co. vs. Equilon Pipeline Co., LLC, et al. Expert Report, June 18, 2004; Deposition, June 29 - 30, 2004; Supplemental Expert Report, October 27, 2004.

ExxonMobil Corporation

In the District Court of Monroe County, Alabama, Aline Moye, et al., *v. ExxonMobil Corporation,* et al. *CV-98-20.* Expert Report, June 15, 2004.

CSX Transportation Inc.

In the United States District Court for the Northern District of Florida, Tallahassee Division, Case No. 4:03CV169-RH, CSX Transportation, Inc. v The Department of Revenue of the State of Florida and Jim Zingale, as the Executive Director of the Department of Revenue of the State of Florida. Expert Report, May 14, 2004.

TTX Company

Before the Surface Transportation Board, Finance Docket No. 27590 (Sub-No.3), Application for Approval of Polling Of Car Service With Respect to Flatcars. January 5, 2004. Rebuttal Verified Statement of Joseph P. Kalt, May 10, 2004.

British Columbia Lumber Trade Council and the Province of British Columbia

In the Matter of Certain Softwood Lumber Products from Canada (C-122-839), International Trade Administration, U.S. Department of Commerce. "Log Export Restraints, Price 'Gaps,' and the Transmission of Softwood Log Price Effects Across Canada," December 12, 2001; "Response to Reports of Stoner and Mercurio Dated January 2002," January 16, 2002, "Statement for the First Administrative Review," March 15, 2004 (filed with David Reishus), "Response to *Price Impact of Canadian Log Restraints*" March 16, 2004 (Filed with David Reishus). "Response to Coalition Submission on Passthrough Issues," April 15, 2004 (Filed with David Reishus.)

CSX Transportation, Inc.

In the United States District Court for the Northern District of Georgia, Civil Action No. 1:02-CV-2634CAP, CSX Transportation, Inc. v. State Board of Equalization of the State of Georgia, et al. Expert Report, April 15, 2004.

El Paso Natural Gas Company and Burlington Resources Oil & Gas Company

In the District Court of Washita County State of Oklahoma, Nations Bank, N.A., as Trustee of the Virginia C. Earman Trust; et al. v. El Paso Natural Gas Company and Burlington Resources Oil & Gas Company Case No. CJ-97-68. Expert Report, March 30, 2004.

Chevron U.S.A. Inc.

Before the District Court, 17th Judicial District, Parish of LaFourche, LA, Chevron U.S.A. Inc. v. State of Louisiana, Louisiana State Mineral Board, and Louisiana Department of Natural Resources. Expert Report, November 21, 2003; Supplemental Expert Report, January 9, 2004; Oral Testimony, March 16, 2004.

Arizona Competitive Power Alliance

Before the Arizona Corporation Commission, Docket No. E-01345-03-zz. Direct Testimony, February 3, 2004.

Shell Oil Company

In the Court of Common Pleas, Cuyahoga County, Ohio, Donald J. Casserlie, et al., *v. Shell Oil Company,* et al. Expert Report, January 30, 2004.

Shell Oil Company, Shell Western E&P, Inc., Shell Cortez Pipeline Company, Kinder Morgan CO_2 Company, L.P., Mobil Oil Corporation, Mobil Producing Texas and New Mexico, Inc., and Cortez Pipeline Company

Before the District Court, County of Montezuma, State of Colorado, Celeste C. Grynberg, individually and as trustee on behalf of the Rachel Susan Trust, the Stephen Mark Trust, and the Miriam Zela Trust; and Jack J. Grynberg v. Shell Oil Company, Shell Western E&P, Inc., Shell Cortez Pipeline Company, ExxonMobil Corporation formerly known as Mobil Oil Corporation, Mobil Producing Texas and New Mexico, Inc., Cortez Pipeline Company, Kinder Morgan CO_2 Company, L.P. formerly known as Shell CO_2 Company, Ltd., and John Does 1-10 Whose True Names Are Unknown. Affidavit, June 12, 2003; Expert Report, June 20, 2003; Supplemental Expert Report, August 15, 2003; Deposition, December 2, 2003; Affidavits, January 6, 2004; Affidavit, January 22, 2004; Oral Hearing Testimony, October 14, 2004.

Motiva Enterprises, LLC, Shell Oil Company, Shell Oil Products Company, LLC, and Equiva Trading Company

Superior Court, Complex Litigation Docket at Waterbury, Wyatt Energy, Inc., v. Motiva Enterprises, LLC, Shell Oil Company, Shell Oil Products Company, LLC (as successor to Shell Oil Company), and Equiva Trading Company. Expert Report, November 20, 2003.

SDDS, Inc.

In the Circuit Court, Sixth Judicial District, SDDS, Inc., v. State of South Dakota. Affidavit in Support of Motion in Limine, December 23, 2002; Affidavit, January 17, 2003; Expert Report, February 24, 2003; Expert Report, April 25, 2003; Deposition, May 13, 2003; Oral Testimony, July 2, 2003, July 11, 2003; Oral Rebuttal Testimony, July 17, 2003; Affidavit, October 22, 2003.

Shell Western E & P Inc., Shell Gas Trading Company, and Shell Oil Company

United States District Court, 112th Judicial District, Crockett County, TX, Minnie S. Hobbs Estate, et al., v. Shell Western E & P Inc., Shell Gas Trading Company, and Shell Oil Company. Expert Report, August 28, 2002; Deposition, December 14, 2002; Supplemental Expert Report, August 1, 2003; Affidavit, August 20, 2003; Oral Testimony, October 7, 2003.

The Burlington Northern & Santa Fe Railway Company

In the United States District Court for the Northern District of California, San Francisco Division, Truck-Rail Handling, Inc. and Quality Transport, Inc. v. The Burlington Northern & Santa Fe Railway Company. Expert Witness Report, August 18, 2003; Supplemental Expert Witness Report, September 22, 2003; Deposition, September 25, 2003.

Dex Holdings, LLC

Before the Washington Utilities and Transportation Commission, In the Matter of the Application of Qwest Corporation Regarding the Sale and Transfer of Qwest Dex to Dex Holdings, LLC. Rebuttal Testimony, April 17, 2003; Oral Testimony, May 23, 2003.

Amerada Hess Corporation

First Judicial District, State of New Mexico, County of Santa Fe, Patrick H. Lyons, Commissioner of Public Lands of the State of New Mexico, Trustee, v. Amerada Hess Corporation. Second Supplemental Expert Report, April 7, 2003; Deposition, May 8, 2003.

Oxy USA, Inc.

In the Twenty-Sixth Judicial District, District Court, Stevens County, Kansas, Civil Department, Opal Littell, Cherry Rider, and Bonnie Beelman vs. Oxy USA, Inc. Expert Witness Report, October 7, 2002; Expert Witness Rebuttal Report, October 29, 2002; Oral Testimony, April 8, 2003.

El Paso Merchant Energy, L.P.

United States of America before the Federal Energy Regulatory Commission, Public Utilities Commission of the State of California, California Electricity Oversight Board v. Sellers of Long-Term Contracts to the California Department of Water Resources, Sellers of Energy and Capacity Under Long-Term Contracts with the California Department of Water Resources. Prepared Direct Testimony, October 17, 2002; Rebuttal Testimony, November 14, 2002; Deposition, November 24, 2002; Oral Testimony, December 10, 2002; Prepared Reply Testimony, March 20, 2003.

Department of Defense Jet Fuel Contract Litigation

In the United States Court of Federal Claims, declarations in various individual cases, December 2002 - present.

El Paso Merchant Energy, L.P.

United States of America, Before the Federal Energy Regulatory Commission, PacifiCorp v. Reliant Energy Services, Inc., Morgan Stanley Capital Group Inc., Williams Energy Marketing & Trading Company, El Paso Merchant Energy L.P. Prepared Direct Testimony, October 8, 2002; Prepared Rebuttal Testimony, November 26, 2002; Deposition, December 5, 2002; Oral Testimony, December 18, 2002.

Powerex Corp.

Before the American Arbitration Association, In the Matter of an International Commercial Arbitration Between Powerex Corp., formerly British Columbia Power Exchange Corporation, and Alcan Inc., formerly Alcan Aluminum Limited. Expert Report, November 20, 2002; Oral Testimony, December 12, 2002.

Mardi Gras Transportation System Inc.

United States of America, Before the Federal Energy Regulatory Commission, Caesar Oil Pipeline Company, LLC. Affidavit, December 5, 2002.

United States of America, Before the Federal Energy Regulatory Commission, Proteus Oil Pipeline Company, LLC.

Affidavit, December 5, 2002.

The Burlington Northern & Santa Fe Railway Company

In the United States District Court for the Western District of Texas, Austin Division, South Orient Railroad Company, Ltd., v. The Burlington Northern & Santa Fe Railway Company and Union Pacific Railway Company. Expert Witness Report, October 30, 2002; Deposition, November 15, 2002.

Texaco Inc., Texaco Exploration and Production Inc., Texaco Trading and Transportation Inc.

In the District Court, 19th Judicial District, Parish of East Baton Rouge, LA, State of Louisiana and Secretary of the Department of Revenue and Taxation v. Texaco Inc.; State of Louisiana and Secretary of the Department of Revenue and Taxation v. Texaco Exploration and Production Inc.; State of Louisiana and Secretary of the Department of Revenue and Taxation v. Texaco Trading and Transportation Inc. Expert Report, November 11, 2002.

Ticketmaster Corporation

United States District Court, Central District of California, Tickets.com, Inc., v. *Ticketmaster Corporation and Ticketmaster-Online Citysearch, Inc.* Rebuttal Expert Report, November 8, 2002; Deposition, November 20, 2002.

ExxonMobil

United States Department of the Interior, Board of Land Appeals, Appeal of July 2, 2001 Decision; Request for Value Determination Regarding the Arm's-Length Nature of a Gas Sales Contract. Affidavit, October 8, 2002.

El Paso Merchant Energy, L.P. and Calpine Energy Services, L.P.

United States of America, Before the Federal Energy Regulatory Commission, Nevada Power Company and Sierra Pacific Power Company v. Duke Energy Trading and Marketing, L.L.C., Enron Power Marketing, Inc., El Paso Merchant Energy, L.P., American Electric Power Services Corp.; Nevada Power Company v. Morgan Stanley Capital Group Inc., Calpine Energy Services, L.P., Mirant Americas Energy Marketing, L.P., Reliant Energy Services, Inc., BP Energy Company, Allegheny Energy Supply Company, L.L.C.; Southern California Water Company v. Mirant Americas Energy Marketing, L.P.; Public Utility District No. 1 , Snohomish County, Washington, v. Morgan Stanley Capital Group Inc. Prepared Direct Testimony, June 28, 2002; Prepared Answering Testimony, August 27, 2002; Deposition, September 24, 2002.

Conoco Inc. and Phillips Petroleum Company

United States District Court for the Northern District of Oklahoma, Transeuro Amertrans Worldwide Moving and Relocations Limited vs. Conoco Inc. and Phillips Petroleum Company. Affidavit, August 21, 2002; Oral Testimony, September 17, 2002.

Amoco Production Company

In the District Court, La Plata County, Colorado, Richard Parry, Linda Parry, Evelyn L. Payne and David Groblebe, et al., v. Amoco Production Company. Expert Report, May 1, 2002; Oral Testimony, August 29, 2002.

Conoco Inc., Amoco Production Company, and Amoco Energy Trading Corp.

United States District Court for the District of New Mexico, Elliott Industries Limited Partnership v. Conoco Inc., Amoco Production Company, and Amoco Energy Trading Corporation. Expert Report, July 1, 2002; Affidavit, July 6, 2002; Deposition, August 13, 2002.

CFM International, Inc.

United States District Court for the Central District of California, Western Division, Aviation Upgrade Technologies, Inc., v. The Boeing Company, CFM International, Inc., and Rolls Royce plc. Expert Report, June 28, 2002.

Elkem Metals Company and CC Metals & Alloys, Inc.

Before the United States International Trade Commission, Ferrosilicon from Brazil, China, Kazakhstan, Russia, Ukraine, and Venezuela, Remand Proceedings. Affidavit, May 23, 2002; Oral Testimony, June 6, 2002.

Chevron U.S.A., Conoco, and Murphy Exploration & Production Company

In the United States Court of Federal Claims, Chevron U.S.A., Inc.; Conoco Inc.; and Murphy Exploration & Production Company v. United States of America. Expert Report, May 1, 2002.

El Paso Merchant Energy, L.P.

United States of America before the Federal Energy Regulatory Commission, Public Utilities Commission of the State of California v. El Paso Natural Gas Company, El Paso Merchant-Gas, L.P., and El Paso Merchant Energy Company. Prepared Direct Testimony, May 8, 2001; Oral Testimony, May 29 - 30, Oral Rebuttal Testimony, June 6 - 8, 2001; Oral Surrebuttal Testimony, June 19, 2001; Prepared Rebuttal Testimony, March 11, 2002; Oral Testimony, March 26 - 27, 2002.

American Quarter Horse Association

In the 251st District Court, Potter County, Texas, Kay Floyd, et al., v. American Quarter Horse Association. Affidavit, October 30, 2001; Expert Report, February 1, 2002.

Amoco Production Company, Amerada Hess Corporation, Shell Western E&P, Inc., Shell Land & Energy Co.

First Judicial District, State of New Mexico, County of Santa Fe, Ray Powell, Commissioner of Public Lands of the State of New Mexico, Trustee, v. Amoco Production Company, Amerada Hess Corporation, Shell Western E&P, Inc., and Shell Land & Energy Co. Expert Report, September 21, 2001; Deposition, November 7, 2001; Supplemental Expert Report, January 31, 2002.

Shell Oil Company

Montana Sixteenth Judicial District Court, Fallon County, Fidelity Oil Company v. Shell Western E & P, Inc., and Shell Oil Company. Expert Report, September 7, 2001.

Anne E. Meyer and Mary E. Hauf, et al., v. Shell Western E & P, Inc., and Shell Oil Company. Rebuttal Report, September 7, 2001.

Fran Fox Trust, et al., v. Shell Western E & P, Inc., and Shell Oil Company. Rebuttal Report, September 7, 2001.

Marvel Lowrance and S-W Company v. Shell Western E & P, Inc., and Shell Oil Company. Rebuttal Report, September 7, 2001.

Bass Enterprises Production Company

Bass Enterprises Production Company, et al., v. United States of America, Assessment of Bass Enterprises Production Company's and Enron Oil and Gas Company's Economic Losses Arising from the Temporary Taking of Oil and Gas Lease. Expert Report, March 19, 1999; Deposition, May 13, 1999; Oral Testimony, October 24 - 25, 2000; Supplemental Expert Report, June 11, 2001; Deposition, June 30, 2001; Oral Testimony, July 23 - 24, 2001.

Tosco Corporation

In the United States District Court for the District of Hawaii, Carl L. Anzai, Attorney General, for the State of Hawaii, As Parens Patriae for the Natural Persons Residing in Hawaii, and on behalf of the State of Hawaii, its Political Subdivisions and Governmental Agencies, vs. Chevron Corporation, et al. Expert Report, October 23, 2000; Deposition, January 8 - 9, 2001; Supplemental Report, April 16, 2001; Deposition, April 24, 2001.

Shell Oil Company and Shell Western E&P, Inc., Mobil Producing Texas and New Mexico, Inc., and Cortez Pipeline Company

In the United States District Court, District of Colorado, United States Government and CO2 Claims Coalition, LLC, vs. Shell Oil Company and Shell Western E&P, Inc., Mobil Producing Texas and New Mexico, Inc., and Cortez Pipeline Company. Expert Report, November 23, 1998; Deposition, January 11 - 12, 1999; Affidavit, January 21, 1999; Supplemental Expert Report, April 30, 1999; Second Supplemental Expert Report, March 30, 2001.

American Airlines

In the Matter of the United States Department of Justice v. AMR Corporation. Expert Report, October 11, 2000; Deposition, October 31 - November 1, 2000; Supplemental Expert Report, November 16, 2000; Revised Supplemental and Rebuttal Expert Report, December 4, 2000; Deposition, December 14 - 15, 2000; Declaration, January 5, 2001; Declaration, March 14, 2001.

Teléfonos de Mexico

In the United States District Court for the Western District of Texas, San Antonio Division, Access Telecom, Inc., v. MCI Telecommunications Corp., MCI International, Inc., SBC Communications, Inc., SBC International, Inc., SBC International Latin America, Inc., and

Teléfonos de Mexico. Expert Report, January 22, 2001; Supplement to the Expert Report, February 14, 2001; Deposition, February 22, 2001.

Exxon Corporation

In the Matter of Allapattah Services, Inc., et al. v. Exxon Corporation, U.S. District Court for the Southern District of Florida. Affidavit, November 25, 1996; Expert Report, January 22, 1997; Deposition, September 22 and November 11, 1998; Expert Report, April 15, 1999; Deposition, May 3 - 4, 1999; Affidavit, May 16, 1999; Affidavit, June 6, 1999; Deposition, July 12, 1999; Daubert Testimony, July 15 - 17, 1999; Oral Testimony, August 24 - 25, 1999; Oral Testimony, February 6, 7, 8, 12, 2001.

Burlington Northern Santa Fe

Before the Surface Transportation Board, STB Ex Parte No. 582, Public Views on Major Rail Consolidations. Statement (with Amy Bertin Candell), February 29, 2000.

Before the Surface Transportation Board, STB Ex Parte No. 582 (Sub-No. 1), Public Views on Major Rail Consolidations. Verified Statement (with José A. Gómez-Ibáñez), November 17, 2000; Verified Rebuttal Statement (with José A. Gómez-Ibáñez), January 11, 2001.

Compaq Computer Corporation

In the United States District Court for the Eastern District of Texas, Beaumont Division, Charles Thurmond, Hal LaPray, Tracy D. Wilson, Jr., and Alisha Seale Owens vs. Compaq Computer Corporation. Opinion, December 15, 2000; Deposition, January 4, 2001.

Phillips Petroleum Company, GPM Gas Corporation, Phillips Gas Marketing Company, Phillips Gas Company, and GPM Gas Trading Company

In the District Court of Fort Bend, Texas, 268th Judicial District, Kathryn Aylor Bowden, Beulah Poorman Vick, Omer F. Poorman, and Monte Cluck vs. Phillips Petroleum Company, GPM Gas Corporation, Phillips Gas Marketing Company, Phillips Gas Company, and GPM Gas Trading Company. Deposition, August 1, 2000; Oral Testimony at class certification hearing, September 8, 2000.

Exxon Corporation, Shell Oil Company, and Union Oil Company of California

In the United States District Court for the Eastern District of Texas, Lufkin Division, J. Benjamin Johnson, Jr., and John M. Martineck, Relators, Bringing this Action on Behalf of the United States of America, vs. Shell Oil Company, et al. Expert Reports on behalf of Exxon Corporation, Shell Oil Company and Union Oil Company of California, June 16, 2000; Deposition on behalf of Shell Oil Company, August 8 - 11, 2000.

Union Oil Company of California and Shell Oil Company

Review of the Federal Royalties Owed on Crude Oil Produced from Federal Leases in California. Expert Report, June 30, 1997; Supplemental Report, July 28, 2000.

Government of Canada

In the Matter of Arbitration Under Chapter Eleven of the North American Free Trade Agreement: Between Pope & Talbot, Inc., and The Government of Canada. Affidavit, March 27, 2000; Second Affidavit, April 17, 2000; Oral Testimony, May 2, 2000.

Exxon Company, U.S.A.

Before the Hearing Officer of the Taxation and Revenue Department of the State of New Mexico, In the Matter of Protest to Assessment No. EX-001. Expert Report, April 17, 2000.

Crow Indian Tribe

Rose v. Adams in the Crow Tribal Court, Montana. Report Concerning the Crow Tribe Resort Tax (with David Reishus), November 27, 1996; Testimony, January 23, 1997; Surrebuttal Report (with David Reishus), February 25, 1997; Report (with David Reishus), March 31, 2000.

BP Amoco, PLC, and Atlantic Richfield Company

In the United States District Court for the Northern District of California, San Francisco Division, Federal Trade Commission vs. BP Amoco, PLC, and Atlantic Richfield Company. Expert Report, March 1, 2000; Deposition, March 7, 2000.

Williams Production Company et al.

San Juan 1990-A, L.P., K&W Gas Partners, L.P., Map 1992-A Partners, L.P. and the Board of Trustees of Leland Stanford Junior University v. Williams Production Company and John Doe, in the First Judicial District, County of Santa Fe, State of New Mexico. Affidavit, August 29, 1997.

San Juan 1990-A, L.P., K&W Gas Partners, L.P., Map 1992-A Partners, L.P. and the Board of Trustees of Leland Stanford Junior University v. El Paso Production Company, Meridian Oil Inc., and John Doe, in the First Judicial District, County of Santa Fe, State of New Mexico. Second Affidavit, February 7, 2000

Te Ohu Kai Moana (Treaty of Waitangi Fisheries Commission)

In the High Court of New Zealand, Auckland Registry, between Te Waka Hi Ika O Te Arawa and Anor, and Treaty of Waitangi Fisheries Commission and ORs; between Te Runanganui O Te Upoko o Te Ika and ORS, and Treaty of Waitangi Fisheries Commission and ORS (Defendants); between Ryder and ORS, and Treaty of Waitangi Fisheries Commission and ORS; between Te Kotahitanga O Te Arawa Waka and ORS, and Treaty of Waitangi Fisheries Commission and ORS. Affidavit, February 4, 2000.

American Petroleum Institute

Before the United States of America Department of the Interior Minerals Management Service, Further Supplementary Proposed Rule for Establishing Oil Value for Royalty Due on Federal Leases. Declaration (with Kenneth W. Grant), January 31, 2000.

Amoco Production Company and Amoco Energy Trading Corporation

In the First Judicial District Court, County of Santa Fe, State of New Mexico, The Florance Limited Company, The M.J. Florance Trust No. 2, and The Florence A. Florance Trust vs. Amoco Production Co. and Amoco Energy Trading Corporation. Expert Report, December 15, 1999; Deposition, January 11 - 12, 2000.

Reliant Technologies, Inc.

In the U.S. District Court, Northern District of California/Oakland Division, Reliant Technologies, Inc., vs. Laser Industries, Ltd., and Sharplan Lasers, Inc. Expert Report, October 15, 1999; Deposition, December 2 - 3, 1999.

El Paso Natural Gas Company

In the District Court of Dallas County, Texas, Transamerican Natural Gas Corporation vs. El Paso Natural Gas Company, Meridian Oil, Inc., Burlington Resources Inc., Richard M. Bressler, Travis H. Petty, William A. Wise, Oscar S. Wyatt, The Coastal Corporation, and Coastal Oil and Gas Corporation. Expert Report, September 24, 1999; Deposition, September 28, 1999; Affidavit, November 19, 1999.

Rockwell International Corporation and Rockwell Collins, Inc.

In the United States District Court for the District of Arizona, Universal Avionics Systems Corporation, an Arizona corporation, v. Rockwell International Corporation, a Delaware corporation; Rockwell Collins, Inc., a Delaware corporation. Expert Report, September 15, 1998; Second Expert Report, November 18, 1998; Supplement to September 15, 1998, Expert Report, July 30, 1999; Supplement to November 18, 1998, Amended Second Expert Report, July 30, 1999; Deposition, September 22 - 23, 1999

Exxon Corporation

Before the Superior Court, State of California, Los Angeles, In the Matter of the People of the State of California, City of Long Beach, et al., v. Exxon Corporation, et al. Deposition, May 11 - 12, 19, 1999; Oral Testimony, July 22 - 23, 26 - 29, 1999.

Texaco, Inc.

In the Matter of Long, et al., v. Texaco, Inc., et al., Before the United States District Court for the Middle District of Louisiana. Expert Report (with Kenneth Grant), August 14, 1998; Deposition, October 2 - 3, 1998.

In the matter of John M. Duhe, Jr., et al. v. Texaco Inc., et al., Before the 16th Judicial District Court, Parish of Iberia, State of Louisiana. Oral Testimony, March 2, 1999.

In the Matter of Texaco Inc., et al., v. Duhe, et al., Before the United District Court for the Western District of Louisiana. Expert Report (with Kenneth Grant), June 30, 1999.

AIMCOR, American Alloys, Inc., Elkem Metals Company, and SKW Metals & Alloys, Inc.

Before the United States International Trade Commission, In the Matter of Ferrosilicon from Brazil, China, Kazakhstan, Russia, Ukraine, and Venezuela. Oral Testimony, April 13, 1999.

Elkem Metals Company, L.P. and Elkem ASA

In the United States District Court for the Western District of Pennsylvania, Bethlehem Steel Corporation vs. Elkem Metals Company, L.P., and Elkem ASA. Expert Report, December 9, 1998; Deposition, March 26-27, 1999.

El Paso Energy Corporation and El Paso Tennessee Pipeline Co.

EPEC Gas Latin America, Inc., and EPEC Baja California Corporation, Plaintiffs, v. Intratec S.A. de C.V. and Intratec Resource Co., L.L.C., Defendants and Third Party Plaintiffs, v. El Paso Energy Corporation and El Paso Tennessee Pipeline Co., Third Party Defendants. Expert Report, March 26, 1999.

Government of Canada
Before the Arbitration Panel Convened Pursuant to Article V of the Softwood Lumber Agreement Between The Government of Canada and The Government of the United States of America, Canada-United States Softwood Lumber Agreement: In the Matter of British Columbia's June 1, 1998 Stumpage Reduction. Economic Report, March 12, 1999.

Honeywell, Inc.
In the matter of Litton Systems, Inc., v. Honeywell Inc., before the United States District Court, Central District of California, Case No. CV-90-4823 MPR (EX), Report on Assessment of Litton's Antitrust Damages, August 3, 1998; Deposition, August 24 - 26, 1998; Oral Testimony, December 2 - 4, 1998.

American Alloys, Inc., Globe Metallurgical, Inc. and Minerais U.S. Inc.
In re Industrial Silicon Antitrust Litigation: Civil No. 95-2104, before the United States District Court, Western District of Pennsylvania. Oral Testimony, November 2, 1998.

Burlington Northern Santa Fe
Before the Surface Transportation Board In the Matter of Union Pacific Corp., Union Pacific RR Co. and Missouri Pacific RR. Co. -- Control and Merger -- Southern Pacific Rail Corp., Southern Pacific Trans. Co., St. Louis Southwestern RW, Co. SPCSL Corp., and the Denver and Rio Grande Western Corp. Verified Statement, April 27, 1996; Deposition, May 14, 1996. Merger Oversight Proceeding, Verified Statement, July 8, 1998; Verified Statement, October 16, 1998.

Group of Oil Company Defendants
In re: Lease Oil Antitrust Litigation No. II, MDL No. 1206, before the United States District Court, Southern District of Texas, Corpus Christi Division. Deposition, September 28, October 15, 1998; Affidavit, October 8, 1998.

American Alloys, Inc., Globe Metallurgical, Inc., Minerais U.S. Inc., and SKW Metals and Alloys, Inc.
In re Industrial Silicon Antitrust Litigation: Civil No. 95-2104, before the United States District Court, Western District of Pennsylvania. Daubert Testimony, September 14, 1998.

North West Shelf Gas Project
In the Matter of an Arbitration Between Western Power Corporation and Woodside Petroleum Development Pty. Ltd. (ACN 006 325 631), et al. First Statement, May 6, 1998; Second Statement, May 15, 1998; Third Statement, July 22, 1998; Oral Testimony, July 22 - 28, 1998.

TransCanada Gas Services Limited
Paladin Associates, Inc., et al. v. Montana Power Company, et al., In the United States District Court for the District of Montana. Expert Report, November 19, 1997; Expert Rebuttal Report, December 22, 1997; Deposition, January, 1998; Affidavit May 19, 1998.

Association of American Railroads

Review of Rail Access and Competition Issues, Before the Surface Transportation Board. Joint Verified Statement (with David Reishus), March 26, 1998; Oral Testimony, April 3, 1998.

Market Dominance Determinations—Product and Geographic Competition, Before the Surface Transportation Board. Joint Verified Statement (with Robert D. Willig), May 29, 1998; Reply Verified Statement (with Robert D. Willig), June 29, 1998.

Northern Natural Gas Company

United States of America before the Federal Energy Regulatory Commission, In the Matter of Northern Natural Gas Company. Prepared Direct Testimony, May 1, 1998.

Koch Pipeline Company, L.P.

In the Matter of CF Industries, Inc. v. Koch Pipeline Company, L.P., Before the Surface Transportation Board. Verified Statement (with Amy B. Candell), November 10, 1997; Deposition, December 12, 1997; Reply Verified Statement, January 9, 1998; Rebuttal Verified Statement, February 23, 1998.

Exxon Corporation and Affiliated Companies

In the United States Tax Court, Exxon Corporation and Affiliated Companies v. Commissioner of Internal Revenue. Rebuttal Report, February 19, 1998.

Exxon Company

Before the United States of America Department of the Interior Minerals Management Service, Review of the Federal Royalties Owed on Crude Oil Produced from Federal Leases in California. Affidavit, February 17, 1998.

Elkem Metals Company, L.P.

In Re Industrial Silicon Antitrust Litigation and Related Cases, In the United States District Court for the Western District of Pennsylvania. Expert Report, January 9, 1998; Deposition, February 5 - 6, 1998.

CSX Corporation and CSX Transportation, Inc., Norfolk Southern Corporation and Norfolk Southern Railway Company

Before the Surface Transportation Board. Direct Testimony June 12, 1997; Rebuttal Verified Statement, December 15, 1997.

Group of Oil Company Defendants

In the Matter of Doris Feerer, et al. v. Amoco Production Company. et al., In the United States District Court for the District of New Mexico. Expert Report, May 5, 1997; Supplemental Expert Report, July 14, 1997; Deposition, December 4 - 5, 1997

Phillips Petroleum Company

In the Matter of Canyon Oil & Gas Co. v. Phillips Petroleum Company, Before the United States District Court. Expert Report (with Kenneth Grant), September 30, 1997.

Pro Se Testimony

In the Matter of United States of America, Department of the Interior, Minerals Management Service, Establishing Oil Value for Royalty Due on Federal Leases, and on Sale of Federal Royalty Oil. Comments, May 27, 1997; Supplemental Comments (with Kenneth W. Grant), August 4, 1997.

Pennsylvania Power & Light Company

Before the Pennsylvania Public Utilities Commission. Direct Testimony, April 1, 1997; Rebuttal Testimony, August 1997.

Exxon Corporation

Before the Department of Revenue, State of Alaska, In the Matter of Exxon Corporation & Affiliated Companies. Rebuttal Report, April 29, 1996; Deposition, May 21, 1996; Pre-filed Expert Testimony, August 26, 1996; Hearing Testimony, March 10 - 11, 1997.

Honeywell, Inc.

In the Matter of Litton Systems, Inc., v. Honeywell Inc., before the United States District Court, Central District of California, Case No. CV-90-0093 MR., Preliminary Expert Report, March 7, 1997.

Public Service Company of New Hampshire

Testimony on market power and antitrust issues before the New Hampshire Public Utilities Commission. January 21, 1997.

Group of Oil Company Defendants

In the Matter of Carl Engwall, et al. v. Amerada Hess Corp., et al., Fifth Judicial District Court, County of Chaves, State of New Mexico. Deposition, November 1 - 2, December 6, 1996; Testimony in class certification proceeding, January 16 - 17, 1997.

Fond du Lac Band of Chippewa Indians

In the Matter of Fond du Lac Band of Chippewa Indians, et al. v. Arne Carlson, et. al., U.S. District Court, District of Minnesota, Fourth Division. Report, December 4, 1996; Supplemental Report, December 20, 1996.

Group of Oil Company Defendants

In the Matter of Laura Kershaw, et al. v. Amoco Production Co., et al., District Court of Seminole County, State of Oklahoma. Deposition, November 5 and December 6, 1996.

Northeast Utilities

Direct Testimony before the State of New Hampshire Public Utilities Commission, Electric Industry Restructuring (with Adam B. Jaffe), October 18, 1996.

Pro Se Testimony

United States of America before the Federal Energy Regulatory Commission Alternatives to Traditional Cost-of-Service Ratemaking for Natural Gas Pipelines, Regulation of Negotiated Transportation Services of Natural Gas Pipelines (with Adam B. Jaffe). May 30, 1996.

Burlington Northern Railroad Company
Before the Surface Transportation Board In the Matter of Burlington Railroad Company -- Crossing Compensation -- Omaha Public Power District. Verified Statement, April 1996.

Pennzoil Company
Lazy Oil Co., et al. v. Witco Corporation, et al. Expert Report, January 29, 1996; Deposition, March 1996.

Yavapai-Prescott Indian Tribe
Yavapai-Prescott Indian Tribe v. Harold Scott (Director of Revenue, State of Arizona), et al. Declaration, June 27, 1995; Second Declaration, August 10, 1995.

Northeast Utilities
Before the Massachusetts Department of Public Utilities, In the Matter of Electric Industry Restructuring (rulemaking proceeding). Testimony, April and June 1995.

State of Michigan
Before the Court of Claims, State of Michigan, Carnagel Oil Associates, et al., v. State of Michigan, The Department of Natural Resources, et al; Miller Brothers, et al., v. State of Michigan, The Department of Natural Resources, et al. Deposition, May 30, 1995.

Burlington Northern Railroad Company
Before the Interstate Commerce Commission In the Matter of Burlington Northern Railroad Company -- Control and Merger -- The Atchison, Topeka and Santa Fe Railway Company, Washington, DC. Verified Statements, October 1994 and April/May 1995.

Northern Natural Gas Pipeline Co.
United States of America before the Federal Energy Regulatory Commission In the Matter of Northern Natural Gas Pipeline Co. (rate filing). Filed Testimony, March 1995.

Houston Lighting and Power Company
Before the Public Utility Commission of Texas, In the Matter of Houston Lighting and Power Company (rate proceeding). Filed Testimony, September, December 1994, and February 1995.

Atlantic Richfield Corp., Exxon U.S.A., Inc., and British Petroleum, Inc.
In the Superior Court for the State of Alaska, First Judicial District at Juneau, In the Matter of ANS Royalty Litigation. Report on Economic Analysis of the Fuel Gas Supply, June 6, 1994; Deposition, October 1994.

Esso Standard Oil Company (Puerto Rico)
Esso Standard Oil Company (Puerto Rico), et al. v. Department of Consumer Affairs, Commonwealth of Puerto Rico in Federal District Court, Puerto Rico. Deposition, April, 1994; Testimony, July - August, 1994.

Governments of British Columbia and Canada

In the Matter of Certain Softwood Products from Canada, International Trade Administration, United States Department of Commerce, Report for the First Administrative Review. Filed Statement, April 12, 1994.

Southwestern Public Service Company

United States of America before the Federal Energy Regulatory Commission, In the Matter of El Paso Electric Company and Central and South West Services, Inc. Affidavit, February 25, 1994.

Mojave Pipeline Company

United States of America before the Federal Energy Regulatory Commission, In the Matter of Mojave Pipeline Company, Economic Analysis of Public Policy with Respect to Mojave Pipeline Company's Proposed Expansion. Filed Testimony, January 1994.

ARCO Pipe Line Company, Four Corners Pipe Line Company, and ARCO Transportation Alaska, Inc.

United States of America before the Federal Energy Regulatory Commission, In the Matter of Market-Based Ratemaking for Oil Pipelines, Comments in Response to Notice of Inquiry. Statement, January 1994.

Exxon

In Re: Columbia Gas Transmission Corporation, Claims Quantification Proceedings, U.S. Bankruptcy Court. Testimony, July 1993, October 1993.

El Paso Natural Gas Company

El Paso Natural Gas Company v. Windward Energy & Marketing, et al. Report, August 1993. Affidavit, September 4, 1993.

SAGASCO Holdings Ltd.

Federal Court of Australia, In the Matter of Santos Ltd. acquisition of SAGASCO Holdings Ltd. Filed Testimony, August 1993.

PSI Resources, Inc.

Indiana Utility Regulatory Commission, In the Matter of the Proposed Merger between PSI Resources, Inc., PSI Energy, Inc., Cincinnati Gas & Electric Co., and CINergy Corp. Filed Statement, June 1993.

Gulf Central Pipeline Company

Interstate Commerce Commission In the Matter of Farmland Industries, Inc. v. Gulf Central Pipeline Company, et al. Verified Statement, May 1993.

United States of America before the Federal Energy Regulatory Commission, Revisions to Oil Pipeline Regulations Pursuant to the Energy Policy Act of 1992, Comments on the Commission Staff's Proposal. Filed Testimony, May 1993.

White Mountain Apache Tribe

United States Fish and Wildlife Service, U.S. Department of the Interior, In the Matter of the Proposed Endangered Species Act Designation of Critical Habitat for Salix Arizonica (Arizona Willow) on the Fort Apache Indian Reservation. Statement, April 1993.

General Chemical Corporation

Bureau of Land Management, U.S. Department of the Interior, In the Matter of the Proposed Increase in Royalty Rates on Soda Ash. Prepared Statements, February 1993.

Association of American Railroads

Interstate Commerce Commission In the Matter of Ex Parte No. 346 (Sub-No. 28) Rail General Exemption Authority: Export Corn and Export Soybeans. Verified Statement, December 1992.

Coalition of Petroleum Refiners

Office of Hearings and Appeals, U.S. Department of Energy, In the Matter of The Citronelle Exception Relief. Filed Statement, July 1992; Testimony, October 1992, November 1992, December 1992.

Exxon

State of California, et al. v. Standard Oil Co. of California, et al. Deposition, October 1992.

Burlington Northern Railroad Company

American Arbitration Association In the Matter of the Arbitration between Wisconsin Power & Light Company and Burlington Northern Railroad Company and Soo Line Railroad Company. Filed Testimony, August, September 1992.

Atlantic Richfield Company

Don Van Vranken, et al. v. Atlantic Richfield Company. Deposition, February 1992; Testimony, August 1992.

National Council on Compensation Insurance

State Corporation Commission, Commonwealth of Virginia, In the Matter of Revision of Workers' Compensation Insurance Rates. Testimony, April, July 1992.

Governments of British Columbia and Canada

International Trade Administration, U.S. Department of Commerce, In the Matter of Certain Softwood Lumber Products from Canada, Economic Analysis of Canadian Log Export Policy. Filed Statement, February, March, April 1992; Testimony, April 1992, May 1992.

British Petroleum and Exxon Corporation

In the Superior Court for the State of Alaska, First Judicial District at Juneau, In the Matter of ANS Royalty Litigation, State of Alaska, et al. v. Amerada Hess, et al. Expert report, April 1991; deposition, June, September 1991; supplemental report, April 1992.

Transcontinental Gas Pipe Line Corporation

United States of America before the Federal Energy Regulatory Commission. Testimony, March 1992.

Atlantic Richfield Company
Greater Rockford Energy and Technology, et al. v. Shell Oil Company, et al. Deposition, December 1991.

Better Home Heat Council
Commonwealth of Massachusetts Department of Public Utilities, In the Matter of the Petition of Boston Gas Company for Preapproval of Supplemental Residential Demand-Side Management Programs. Testimony, June 15, 1991.

Burlington Northern Company
Interstate Commerce Commission, In the Matter of National Grain and Feed Association v. Burlington Northern Railroad Co., et al. Testimony, May 14, 1991.

Arco Pipe Line Company
Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of ARCO Pipe Line Company, et al. February 1, 1991.

Liberty Mutual Insurance Company
Minnesota Workers' Compensation Insurance Antitrust Litigation, on behalf of Liberty Mutual Insurance Company, et al. Deposition, November 1990.

Misle Bus and Equipment Company
United States of America v. Misle Bus and Equipment Company. Testimony, September 1990.

Northeast Utilities Service Company
Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Northeast Utilities Service Company (Re: Public Service Company of New Hampshire). Testimony, March, July 1990.

Amoco Production Company
The Kansas Power and Light Company, et al., v. Amoco Production Company, et al. Deposition, March 1990 through June 1990.

Esso Standard Oil Company (Puerto Rico)
Esso Standard Oil Company (Puerto Rico) before the Department of Consumer Affairs, Commonwealth of Puerto Rico. Testimony, August 1989, April, May 1990.

Coalition of Petroleum Refiners
Office of Hearings and Appeals, U.S. Department of Energy, In the Matter of The Citronelle Exception Relief. Testimony, March and July, 1989.

Santa Fe Industries
Texas Utilities Company and Chaco Energy Company v. Santa Fe Industries, Inc., et al. Deposition, November 1988, March, July 1989.

Arizona Public Service
Utah International v. Arizona Public Service, et al., an arbitration proceeding, June 1989.

Atlantic Richfield Company

Department of Revenue, State of Alaska, In the Matter of Atlantic Richfield Company and Combined Subsidiaries, Oil and Gas Corporate Income Tax for 1978 - 1981. Testimony, December 1988.

El Paso Natural Gas

Doyle Hartman v. Burlington Northern, Inc., El Paso Natural Gas Co., et al. Deposition, October 1988.

Honeywell Inc.

MidAmerican Long Distance Company v. Honeywell, Inc. Deposition, August 1988.

Exxon

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Brokering of Interstate Natural Gas Pipeline Capacity. Testimony, July 1988.

Natural Gas Pipeline Company of America

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Natural Gas Pipeline Company of America. Testimony, November 1987.

Mojave Pipeline Company

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Mojave Pipeline Company, et al. Testimony, June, October 1987.

Exxon

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Columbia Gas Transmission Company. Testimony, April 1987.

Villa Banfi

L. Knife & Sons v. Villa Banfi. Testimony, February, March 1987.

Cities Service Corp.

Office of Hearings and Appeals, U.S. Department of Energy, In the Matter of U.S. Department of Energy v. Cities Service Corporation. Testimony, December 1986, February 1987.

Exxon

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Texas Eastern Transmission Corp. Testimony, August 1986.

Mobil Oil Corporation

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of Northwest Central Pipeline Corp. Testimony, August 1986.

Bethlehem Steel Corporation

Federal Energy Regulatory Commission, U.S. Department of Energy, In the Matter of ANR Pipeline Co., et al. Testimony, May 1986.

Natural Gas Supply Association

Federal Energy Regulatory Commission, U.S. Department of Energy, Request for Supplemental Comments Re: FERC Order No. 436 and Related Proposed Rulemakings, Old Gas Decontrol, FERC's Block Billing for Pipelines, and the Winners and Losers in Natural Gas Policy. February 25, 1986.

Oil Refiners

Office of Hearings and Appeals, U.S. Department of Energy, In the Matter of MDL-378 Stripper Well Exemption Litigation. Testimony, July, September 1984.

Dorchester Gas Corp.

Office of Hearings and Appeals, U.S. Department of Energy, In the Matter of U.S. Department of Energy v. Dorchester Gas Corporation, on behalf of Dorchester Gas Corp. Testimony, January 1984.

PUBLICATIONS AND RESEARCH: BOOKS AND MONOGRAPHS

American Indians on Reservations: A Databook of Socioeconomic Change Between the 1990 and 2000 Censuses (with Jonathan B. Taylor), The Harvard Project on American Indian Economic Development, January 2005.

Annotated Bibliography: The Social and Economic Impacts of Indian and Other Gaming (with Leigh Gardner and Katherine A. Spilde), The Harvard Project on American Indian Economic Development, January 2005.

Current Issues in Native American Research, editor and co-author of two chapters, Harvard University Native American Program, forthcoming (manuscript, 2005).

What Can Tribes Do: Strategies and Institutions in American Indian Economic Development, Vol. II, ed. (with Amy L. Besaw and Stephen Cornell) and co-author of one chapter, UCLA American Indian Studies Program, University of California Press, forthcoming Summer 2005.

Native America at the New Millennium (with the research staff of the Harvard Project on American Indian Economic Development), February 2002 (forthcoming book manuscript Fall 2005).

New Horizons in Natural Gas Deregulation, ed. (with Jerry Ellig) and co-author of two chapters, Greenwood Press, 1995.

What Can Tribes Do? Strategies and Institutions in American Indian Economic Development, ed. (with Stephen Cornell), University of California, 1992.

National Parks for the 21st Century: The Vail Agenda, editor and primary author of the Report of the Steering Committee, National Park Foundation, Chelsea Green Publishing Co., 1992.

Cases in Microeconomics (with Jose A. Gomez-Ibanez), Prentice Hall, 1990.

Drawing the Line on Natural Gas Regulation, ed. (with F. C. Schuller) and author of two chapters, Greenwood-Praeger Press/Quorum Books, 1987.

The FACS/Ford Study of Economic and Business Journalism (with James T. Hamilton), Foundation for American Communications and the Ford Foundation, 1987.

The Economics and Politics of Oil Price Regulation: Federal Policy in the Post-Embargo Era, MIT Press, 1981; paperback edition, 1983.

Petroleum Price Regulation: Should We Decontrol? (with Kenneth J. Arrow), American Enterprise Institute, 1979.

PUBLICATIONS AND RESEARCH: ARTICLES

"Constitutional Rule and the Effective Governance of Native Nations," forthcoming in *Contemporary American Indian Constitutionalism and the Rebuilding of Native Nations,* Eric D. Lemont, ed., University of Texas Press, 2005.

"Establishing a Tribal Development Corporation," *Forum on Establishing a Tribally Owned Development Corporation,* the United States Senate Committee on Indian Affairs, July 20, 2004.

"Economics, Law, and Politics: What Will Drive Energy's Future," *Proceedings of the 50th Annual Institute of the Rocky Mountain Mineral Law Foundation,* (forthcoming), July 2004.

"Roundtable: Recent Developments in Section 2" (with Arron Edlin, A. Douglas Melamed, and Gary L. Roberts), *Antitrust Magazine,* vol. 18, No. 1, Fall 2003.

"Myths and Realities of Tribal Sovereignty: The Law and Economics of Indian Self-Rule" (with Joseph William Singer), Faculty Research Working Paper Series, John F. Kennedy School of Government, Harvard University, January 2004; and forthcoming in *Current Issues in Native American Research* (ed. by Joseph P. Kalt, Harvard University Native American Program).

"Seizing the Future: Why Some Native Nations Do and Others Don't" (with Stephen Cornell, Miriam Jorgensen, and Katherine A. Spilde), working paper, Harvard Project on American Indian Economic Development, October 2003.

"One Works, the Other Doesn't: Two Approaches to Economic Development on American Indian Reservations" (with Stephen Cornell), working paper, Harvard Project on American Indian Economic Development, November 2002.

The First Nations Governance Act: Implications of Research Findings from the United States and Canada (with Stephen Cornell and Miriam Jorgensen), Report to the British Columbia Assembly of First Nations, July 2002.

"Public Policy Analysis of Indian Gaming in Massachusetts" (with Kenneth Grant and Jonathan B. Taylor), Faculty Research Working Paper Series #RWP02-019, John F. Kennedy School of Government, Harvard University, May 13, 2002.

"Means-Testing Indian Governments: Taxing What Works" (with Jonathan Taylor), in Richard C. Monk, ed., *Taking Sides: Race and Ethnicity*, McGraw-Hill/Dushkin, 2001.

"Where's the Glue? Institutional and Cultural Foundations of American Indian Economic Development" (with Stephen Cornell), *The Journal of Socio-Economics*, vol. 29, 2000.

"Open Access for Railroads? Implications for a Non-Hub, Congestible Network Industry" (with Amy B. Candell), Advanced Workshop in Regulation and Competition, Center for Research in Regulated Industries, May 2000 (unpublished working paper).

"What Tribes Can Do: An Interview with Joseph P. Kalt," *American Indian Report*, March 1999.

"Sovereignty and Nation-Building: The Development Challenge in Indian Country Today" (with Stephen Cornell), *The American Indian Culture and Research Journal*, vol. 22, no. 3, February 1999.

"Making Research Count in Indian Country: The Harvard Project on American Indian Economic Development" (with Manley A. Begay, Jr., and Stephen Cornell), *Journal of Public Service and Outreach*, vol. 3, no. 1, Spring 1998.

"Successful Economic Development and Heterogeneity of Governmental Form on American Indian Reservations" (with Stephen Cornell), in Merilee S. Grindle, ed., *Getting Good Government: Capacity Building in the Public Sector of Developing Countries*, Harvard University Press, 1997.

"Cultural Evolution and Constitutional Public Choice: Institutional Diversity and Economic Performance on American Indian Reservations" (with Stephen Cornell), Faculty Research Working Paper Series, John F. Kennedy School of Government, January 1995; reprinted in John Lott, ed., *Uncertainty and Economic Evolution: Essays in Honor of Armen A. Alchian*, Routledge Press, 1997.

"Regulatory Reform and the Economics of Contract Confidentiality: The Example of Natural Gas Pipelines" (with A. B. Jaffe, S. T. Jones, and F. A. Felder), *Regulation*, 1996, No. 1.

"Precedent and Legal Argument in U.S. Trade Policy: Do They Matter to the Political Economy of the Lumber Dispute?" in *The Political Economy of American Trade Policy*, Anne O. Krueger, ed., University of Chicago Press, 1996.

"Do Precedent and Legal Argument Matter in the Lumber CVD Cases?" in *The Political Economy of Trade Protection*, Anne O. Krueger, ed., University of Chicago Press, 1996.

"Introduction: The New World of Gas Regulation" (with Jerry Ellig), J. Ellig and J. P. Kalt, eds., *New Directions in Natural Gas Deregulation*, Greenwood Press, 1995.

"Incentive Regulation for Natural Gas Pipelines" (with Adam B. Jaffe), in J. Ellig and J. P. Kalt, eds., *New Directions in Natural Gas Deregulation*, Greenwood Press, 1995.

"Where Does Economic Development Really Come From? Constitutional Rule Among the Modern Sioux and Apache" (with Stephen Cornell), *Economic Inquiry*, Western Economic Association International, Vol. XXXIII, July 1995, pp. 402 - 426.

"Insight on Oversight" (with Adam B. Jaffe), *Public Utilities Fortnightly*, April 1995.

"The Redefinition of Property Rights in American Indian Reservations: A Comparative Analysis of Native American Economic Development" (with Stephen Cornell), L. H. Legters and F. J. Lyden, eds., *American Indian Policy: Self-Governance and Economic Development*, Greenwood Press, 1994.

"Reloading the Dice: Improving the Chances for Economic Development on American Indian Reservations" (with Stephen Cornell), in J. P. Kalt and S. Cornell, eds., *What Can Tribes Do? Strategies and Institutions in American Indian Economic Development*, University of California, 1992, pp. 1 - 59.

"Culture and Institutions as Public Goods: American Indian Economic Development as a Problem of Collective Action" (with Stephen Cornell), in Terry L. Anderson, ed., *Property Rights and Indian Economies*, Rowman and Littlefield, 1992.

"The Regulation of Exhaustible Resource Markets" (with Shanta Devarajan), Environmental and Natural Resources Program, Center for Science and International Affairs, Kennedy School of Government, April 1991.

"Comment on Pierce," *Research in Law and Economics*, Vol. 13, 1991, pp. 57-61.

"Pathways from Poverty: Economic Development and Institution-Building on American Indian Reservations" (with Stephen Cornell), *American Indian Culture and Research Journal*, 1990.

"The Apparent Ideological Behavior of Legislators: Testing for Principal-Agent Slack in Political Institutions" (with Mark A. Zupan), *Journal of Law and Economics*, April 1990.

"How Natural Is Monopoly? The Case of Bypass in Natural Gas Distribution Markets" (with Harry G. Broadman), *Yale Journal on Regulation*, Summer 1989.

"Culture and Institutions as Collective Goods: Issues in the Modeling of Economic Development on American Indian Reservations" (with Stephen Cornell), *Project Report*, Harvard Project on American Indian Economic Development, June 1989.

"Public Choice, Culture and American Indian Economic Development" (with Stephen E. Cornell), *Project Report*, Harvard Project on American Indian Economic Development, July 1988.

"The Political Economy of Protectionism: Tariffs and Retaliation in the Timber Industry," in R. Baldwin, ed., *Trade Policy Issues and Empirical Analysis*, University of Chicago Press, 1988.

"The Impact of Domestic Environmental Regulatory Policy on U.S. International Competitiveness," *International Competitiveness*, A.M. Spence and H.A. Hazard, eds., Ballinger Publishing Co., 1988.

"Re-Establishing the Regulatory Bargain in the Electric Utility Industry," *Discussion Paper Series*, Energy and Environmental Policy Center, Kennedy School of Government, March 1987, published as Appendix V in *Final Report of the Boston Edison Review Panel*, W. Hogan, B. Cherry and D. Foy, March 1987.

"Natural Gas Policy in Turmoil" (with Frank C. Schuller), in J. P. Kalt and F. C. Schuller, eds., *Drawing the Line on Natural Gas Regulation: The Harvard Study on the Future of Natural Gas Policy*, Greenwood-Praeger Press/Quorum Books, 1987.

"Market Power and Possibilities for Competition," in J. P. Kalt and F. C. Schuller, eds., *Drawing the Line on Natural Gas Regulation: The Harvard Study on the Future of Natural Gas Policy*, Greenwood-Praeger Press/Quorum Books, 1987.

"The Political Economy of Coal Regulation: The Power of the Underground Coal Industry," in R. Rogowsky and B. Yandle, eds., *The Political Economy of Regulation*, Federal Trade Commission, GPO, 1986, and in *Regulation and Competitive Strategy*, University Press of America, 1989.

"Exhaustible Resource Price Policy, International Trade, and Intertemporal Welfare," February 1986 (revised June 1988), *Journal of Environmental Economics and Management*, 1989.

"Regional Effects of Energy Price Decontrol: The Roles of Interregional Trade, Stockholding, and Microeconomic Incidence" (with Robert A. Leone), *Rand Journal of Economics*, Summer 1986.

"A Framework for Diagnosing the Regional Impacts of Energy Price Policies: An Application to Natural Gas Deregulation" (with Susan Bender and Henry Lee), *Resources and Energy Journal*, March 1986.

"Intertemporal Consumer Surplus in Lagged-Adjustment Demand Models" (with Michael G. Baumann), *Energy Economics Journal*, January 1986.

"A Note on Nonrenewable Resource Extraction Under Discontinuous Price Policy" (with Anthony L. Otten), *Journal of Environmental Economics and Management*, December 1985.

"Capture and Ideology in the Economic Theory of Politics" (with Mark A. Zupan), *American Economic Review*, June 1984.

"The Ideological Behavior of Legislators: Rational On-the-Job Consumption of Just a Residual?" (with Mark A. Zupan), Harvard Institute of Economic Research, Discussion Paper No. 1043, March 1984 (revised November 1984, Stanford University Conference on *The Political Economy of Public Policy*, R. Noll, ed.).

"A Comment on 'The Congressional-Bureaucratic System: A Principal Agent Perspective,'" *Public Choice*, Martinus Nijhoff Publishers, Dordrecht, The Netherlands, Vol. 44, 1984, pp. 193-95.

"The Creation, Growth and Entrenchment of Special Interests in Oil Price Policy," in *Political Economy of Deregulation*, Roger G. Noll and Bruce M. Owen, eds., American Enterprise Institute, 1983.

"The Costs and Benefits of Federal Regulation of Coal Strip Mining," *Natural Resources Journal*, October 1983.

"Oil and Ideology in the United States Senate," *The Energy Journal*, April 1982.

"Public Goods and the Theory of Government," *The Cato Journal*, Fall 1981.

"The Role of Governmental Incentives in Energy Production" (with Robert S. Stillman), *Annual Review of Energy*, Vol. 5, Annual Reviews Inc., 1980, pp. 1-32.

"Why Oil Prices Should be Decontrolled" (with Kenneth J. Arrow), *Regulation*, September/October 1979, pp. 13-17.

"Technological Change and Factor Substitution in the United States, 1929 - 67," *International Economic Review*, Spring/Summer 1977.

"The Capital Shortage: Concept and Measurement" (with George M. von Furstenberg), *The Journal of Economics and Business*, Spring/Summer 1977, pp. 198-210.

"Problems of Stabilization in an Inflationary Environment: Discussion of Three Papers," *1975 Proceedings of the Business and Economic Statistics Section: American Statistical Association Annual Meetings*, pp. 20-22.

PUBLICATIONS AND RESEARCH: RESEARCH REPORTS AND MONOGRAPHS

"The Links Between Air Quality Policies, Electric Power and Natural Gas Markets, and Macroeconomic Impacts: *Clear Skies Versus The Clean Air Planning Act*" (with Charles Augustine and Stephen Makowka), A Policy Analysis Study by Lexecon, an FTI Consulting Company, March 2004.

"The Context and Meaning of Family Strengthening in Indian America: A Report to the Annie E. Casey Foundation" (with Amy Besaw, Andrew Lee, Jasmin Sethi, Julie Boatright Wilson, Marie Zemler), The Harvard Project on American Indian Economic Development, John F. Kennedy School of Government, Harvard University, November 2003.

Alaska Native Self-Government and Service Delivery: What Works? (with Stephen Cornell), Report to the Alaskan Federation of Natives, The Harvard Project on American Indian Economic Development, John F. Kennedy School of Government, Harvard University, August 2003.

"The Costs, Benefits, and Public Policy Merits of the Proposed Western Navajo-Hopi Lake Powell Pipeline" (with Jonathan B. Taylor and Kenneth W. Grant II), December 22, 1999.

"A Public Policy Evaluation of the Arizona State Land Department's Treatment of the Island Lands Trust Properties at Lake Havasu City" (with Jonathan B. Taylor and Matthew S. Hellman), August 16, 1999.

"Reserve-Based Economic Development: Impacts and Consequences for Caldwell Land Claims" (with Kenneth W. Grant, Eric C. Henson, and Manley A. Begay, Jr.), August 10, 1999.

"Policy Recommendations for the Indonesian Petrochemical Industry" (with Robert Lawrence, Henry Lee, Sri Mulyani and LPEM, and DeWitt & Company), March 1, 1999.

"American Indian Gaming Policy and Its Socio-Economic Effects: A Report to the National Gambling Impact Study Commission" (with Stephen Cornell, Matthew Krepps, and Jonathan Taylor), July 31, 1998.

Preliminary Report in Response to an IRS Report (with David Reishus), August 8, 1997, and *Preliminary Report Concerning the Value of a Business Opportunity* (with David Reishus), September 12, 1997. Reports prepared on behalf of a large international petroleum company in connection with IRS tax assessment.

"Public Interest Assessment of the Proposed BLM/Del Webb Land Exchange in Nevada," report submitted to the U.S. Department of the Interior on behalf of Del Webb Conservation Holding Corporation, June 25, 1996.

"Politics Versus Policy in the Restructuring Debate," The Economics Resource Group, Inc., funded by Northeast Utilities System Companies, June 1995.

"Indexing Natural Gas Pipeline Rates" (with Amy B. Candell, Sheila M. Lyons, Stephen D. Makowka, and Steven R. Peterson), The Economics Resource Group, Inc., April 1995.

"An Economic Analysis of Electricity Industry Restructuring in New England" (with Adam B. Jaffe), The Economics Resource Group, Inc., funded by Northeast Utilities System Companies, April 1995.

"Oversight of Regulated Utilities' Fuel Supply Contracts: Achieving Maximum Benefit from Competitive Natural Gas and Emission Allowance Markets" (with Adam B. Jaffe), The Economics Resource Group, Inc., funded by Enron Gas Services Corporation, April 1993.

"Incentives and Taxes: Improving the Proposed BTU Tax and Fostering Competition in Electric Power Generation," Harvard University and The Economics Resource Group, Inc., March 10, 1993.

"An Assessment of the Impact of the PT Chandra Asri Petrochemical Project on Indonesia's Economy" (with Henry Lee, Dr. Robert Lawrence, Dr. Ronald M. Whitefield, and Bradley Blesie), The Economics Resource Group, Inc., December 1991.

"The Federal Energy Regulatory Commission's Proposed Policy Statement on Gas Inventory Charges (PL 89-1-000)" (with Charles J. Cicchetti and William W. Hogan), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, July 1989.

"The Redesign of Rate Structures and Capacity Auctioning in the Natural Gas Pipeline Industry," *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, June 1988.

"The Redefinition of Property Rights in American Indian Reservations: A Comparative Analysis of Native American Economic Development," *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, June 1987

"A Review of the Adequacy of Electric Power Generating Capacity in the United States, 1985 - 93 and 1993-Beyond" (with James T. Hamilton and Henry Lee), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, June 1986.

"Energy Issues in Thailand: An Analysis of the Organizational and Analytical Needs of the Thailand Development Research Institute," Harvard Institute for International Development, March 1986.

"Old Gas Decontrol, FERC's Block Billing for Pipelines, and the Winners and Losers in Natural Gas Policy," prepared for the Natural Gas Supply Association (NGSA), December 1985.

"Possibilities for Competition in the Gas Industry: The Roles of Market Structure and Contracts," prepared for Harvard Study on the Future of Natural Gas Policy, Working Group Meeting, October 1985.

"Natural Gas Decontrol, Oil Tariffs, and Price Controls: An Intertemporal Comparison," Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, April 1985.

"Market Structure, Vertical Integration, and Long-Term Contracts in the (Partially) Deregulated Natural Gas Industry," *Discussion Paper Series*, Harvard Institute of Economic Research, Harvard University, April 1985.

"Can a Consuming Region Win under Gas Decontrol?: A Model of Income Accrual, Trade, and Stockholding" (with Robert A. Leone), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, February 1984.

"Natural Gas Decontrol: A Northwest Industrial Perspective" (with Susan Bender and Henry Lee), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, November 1983.

"Natural Gas Decontrol: A Northeast Industrial Perspective" (with Henry Lee and Robert A. Leone), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, October 1982.

"Television Industry Self-Regulation: Protecting Children from Competition in Broadcasting" (with George J. Holder), Harvard Institute of Economic Research, Discussion Paper No. 896, April 1982.

"The Use of Political Pressure as a Policy Tool During the 1979 Oil Supply Crisis" (with Stephen Erfle and John Pound), *Discussion Paper Series*, John F. Kennedy School of Government, Harvard University, April 1981.

"Problems of Minority Fuel Oil Dealers" (with Henry Lee), *Discussion Paper Series*, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, April 1981.

OTHER PUBLICATIONS AND LEGISLATIVE TESTIMONY

Statement to U.S. Senate Committee on Indian Affairs, *Lessons in Economic Development*, Hearings Regarding International Lessons in Economic Development, September 12, 2002 (hearings cancelled September 11, 2002); published in U.S. Senate Committee on Indian Affairs, F*orum on Establishing a Tribally Owned Development Corporation*, July 20, 2004.

"Institution Building: Organizing for Effective Management" in *Building Native Nations: Environment, Natural Resources, and Governance*, ed. by Stephanie Carroll Rainie, Udall Center for Studies in Public Policy, The University of Arizona, 2003.

Statement to U.S. House of Representatives Committee on Government Reform, Subcommittee for Energy Policy, Natural Resources and Regulatory Affairs, Hearings Regarding Natural Gas Capacity, Infrastructure Constraints, and Promotion of Healthy Natural Gas Markets, Especially in California, October 16, 2001.

Statement to U.S. Senate Committee on Indian Affairs, *Harvard University Native American Program*, Hearings Regarding Native American Program Initiatives at the College and University Level (with Dr. Ken Pepion), June 21, 2001.

Statement to The Surface Transportation Board, *Public Views on Major Rail Consolidations* (with José A. Gómez-Ibáñez), November 17, 2000, and January 11, 2001.

Statement to U.S. Senate Committee on Indian Affairs, *Impact of Federal Development Initiatives in Indian Country,* Hearing Regarding S.2052, of September 27, 2000.

Foreword to *Impossible to Fail,* J.Y. Jones, Hillsboro Press, 1999.

Statement to U.S. House of Representatives, Subcommittee on Energy and Mineral Resources, *Federal Oil Royalty Valuation* (HB 3334), Hearing of May 21, 1998.

Statement to the National Gambling Impact Study Commission, *Economic Impact of Gaming by American Indian Tribes,* Hearing of March 16, 1998.

"Measures Against Tribes Are Counterproductive," editorial (with Jonathan B. Taylor), *Indian Country Today*, September 22 - 29, 1997.

"American Indian Economic Development," *Tribal Pathways Technical Assistant Program Newsletter,* February 1997, p. 3.

Statement to U.S. Senate Committee on Indian Affairs, *Economic Development in Indian Country,* Hearing of September 17, 1996.

"A Harvard Professor Looks at the Effects of Allowing U.S. Hunters to Import Polar Bear Trophies," *Safari Times,* April 1994.

Statement to U.S. Congress, Joint Economic Committee, Subcommittee on Trade, Productivity and Economic Growth, *The Economic Impact of Lower Oil Price,* Hearing of March 12, 1986.

"Administration Backsliding on Energy Policy" (with Peter Navarro), *Wall Street Journal,* editorial page, February 9, 1982.

Statement to the Energy and Natural Resources Committee, U.S. Senate, *Government Responses to Oil Supply Disruptions,* Hearing of July 28 - 29, 1981, U.S. Government Printing Office, 1981, pp. 623-630 and 787-801.

"Staff Report on Effects of Restrictions on Advertising and Commercial Practice in the Professions: The Case of Optometry," Ronald S. Bond, *et al.*, Executive Summary, Bureau of Economics, Federal Trade Commission, September 1980.

"Redistribution of Wealth in Federal Oil Policy," *San Diego Business Journal,* August 18, 1980, pp. 22-23.

"The Energy Crisis—Moral Equivalent of Civil War" (with Peter Navarro), *Regulation,* January/February 1980, pp. 41-43.

"Windfall Profits Tax Will Reap Bonanza—But For Whom?" (with Peter Navarro), *The Miami Herald,* December 23, 1979, editorial page.

SELECTED PRESENTATIONS

"The State of U.S. Railroads and the Challenges Ahead," briefing of Capitol Hill staff, Association of American Railroads, April 17, 2003.

"The State of the Railroad Industry and the Challenges Ahead," briefing of Roger Nober, Chairman, US Surface Transportation Board, Association of American Railroads, January 28, 2003.

"The Wealth of American Indian Nations: Culture and Institutions," Federal Reserve Bank of Boston, December 11, 2002.

"The Roots of California's Energy Crisis: Law, Policy, Politics, and Economics," Regulation Seminar, Center for Business and Government, Kennedy School, Harvard University, November 7, 2002.

"Public Policy Foundations of Nation Building in Indian Country," National Symposium on Legal Foundations of American Indian Self-Governance," Mashantucket Pequot Nation, February 9, 2001.

"Twenty-Five Years of Self-Determination: Lessons from the Harvard Project on American Indian Economic Development," Udall Center for Studies in Public Policy, University of Arizona, November 13 - 14, 1999.

Proceedings of the Fourth Annual DOE-NARUC Natural Gas Conference, Orlando, FL, February 1995.

Keynote Address, "Sovereignty and American Indian Economic Development," Arizona Town Hall, Grand Canyon, AZ, October 1994.

"Is the Movement Toward a Less-Regulated, More Competitive LDC Sector Inexorable?, (Re)Inventing State/Federal Partnerships: Policies for Optimal Gas Use," U.S. Department of Energy and The National Association of Regulatory Utility Commissioners Annual Conference, Nashville, TN, February 1994.

"Cultural Evolution and Constitutional Public Choice: Institutional Diversity and Economic Performance on American Indian Reservations," Festschrift in Honor of Armen A. Alchian, Western Economic Association, Vancouver, BC, July 1994.

"Precedent and Legal Argument in U.S. Trade Policy: Do they Matter to the Political Economy of the Lumber Dispute?" National Bureau of Economic Research, Conference on Political Economy of Trade Protection, February, September 1994.

"The Redesign of Rate Structures and Capacity Auctioning in the Natural Gas Pipeline Industry," Natural Gas Supply Association, Houston, TX, March 1988.

"Property Rights and American Indian Economic Development," Pacific Research Institute Conference, Alexandria, VA, May 1987.

"The Development of Private Property Markets in Wilderness Recreation: An Assessment of the Policy of Self-Determination by American Indians," Political Economy Research Center Conference, Big Sky, MT, December 4 - 7, 1985.

"Lessons from the U.S. Experience with Energy Price Regulation," International Association of Energy Economists Delegation to the People's Republic of China, Beijing and Shanghai, PRC, June 1985.

"The Impact of Domestic Regulation on the International Competitiveness of American Industry," Harvard/NEC Conference on International Competition, Ft. Lauderdale, FL, March 7 - 9, 1985.

"The Welfare and Competitive Effects of Natural Gas Pricing," American Economic Association Annual Meetings, December 1984.

"The Ideological Behavior of Legislators," Stanford University Conference on the Political Economy of Public Policy, March 1984.

"Principal-Agent Slack in the Theory of Bureaucratic Behavior," Columbia University Center for Law and Economic Studies, 1984.

"The Political Power of the Underground Coal Industry," FTC Conference on the Strategic Use of Regulation, March 1984.

"Decontrolling Natural Gas Prices: The Intertemporal Implications of Theory," International Association of Energy Economists Annual Meetings, Houston, TX, November 1981.

"The Role of Government and the Marketplace in the Production and Distribution of Energy," Brown University Symposium on Energy and Economics, March 1981.

"A Political Pressure Theory of Oil Pricing," Conference on New Strategies for Managing U.S. Oil Shortages, Yale University, November 1980.

"The Politics of Energy," Eastern Economic Association Annual Meetings, 1977.

WORKSHOPS PRESENTED

Federal Reserve Bank of Boston; University of Indiana; University of Montana; Oglala Lakota College; University of New Mexico; Columbia University Law School; Department of Economics and John F. Kennedy School of Government, Harvard University; MIT; University of Chicago; Duke University; University of Rochester; Yale University; Virginia Polytechnic Institute; U.S. Federal Trade Commission; University of Texas; University of Arizona; Federal Reserve Bank of Dallas; U.S. Department of Justice; Rice University; Washington University; University of Michigan; University of Saskatchewan; Montana State University; UCLA; University of Maryland; National Bureau of Economic Research; University of Southern California.

OTHER PROFESSIONAL ACTIVITIES

Board of Trustees, The Communications Institute, 2003 - present

Board of Trustees, Fort Apache Heritage Foundation, 2000 - present

Mediator (with Keith G. Allred), Nez Perce Tribe and the North Central Idaho Jurisdictional Alliance, MOU signed December 2002

Mediator, *In the Matter of the White Mountain Apache Tribe v. United States Fish and Wildlife Service*, re: endangered species management authority, May - December, 1994

Steering Committee, National Park Service, 75th Anniversary Symposium, 1991 - 1993

Board of Trustees, Foundation for American Communications, 1989 - 2003

Editorial Board, *Economic Inquiry*, 1988 - 2002

Advisory Committee, Oak Ridge National Laboratory, Energy Division, 1987 - 1989

Commissioner, President's Aviation Safety Commission, 1987 - 1988

Principal Lecturer in the Program of Economics for Journalists, Foundation for American Communications, teaching economic principles to working journalists in the broadcast and print media, 1979 - present

Lecturer in the Economics Institute for Federal Administrative Law Judges, University of Miami School of Law, 1983 - 1991

Research Fellow, Energy and Environmental Policy Center, John F. Kennedy School of Government, Harvard University, 1981 - 1987

Editorial Board, MIT Press Series on *Regulation of Economic Activity*, 1984 - 1992

Research Advisory Committee, American Enterprise Institute, 1979 - 1985

Editor, *Quarterly Journal of Economics*, 1979 - 1984

Referee for *American Economic Review, Bell Journal of Economics, Economic Inquiry, Journal of Political Economy, Review of Economics and Statistics, Science Magazine, Journal of Policy Analysis and Management, Social Choice and Welfare, Quarterly Journal of Economics,* MIT Press, North-Holland Press, Harvard University Press, *American Indian Culture and Research Journal*

TEACHING EXPERIENCE

Native Americans in the 21st Century: Nation Building I & II (University-wide, graduate and undergraduate); Introduction to Environment and Natural Resource Policy (Graduate, Kennedy School of Government); Seminar in Positive Political Economy (Graduate, Kennedy School of Government); Intermediate Microeconomics for Public Policy (Graduate, Kennedy School of Government); Natural Resources and Public Lands Policy (Graduate, Kennedy School of Government); Economics of Regulation and Antitrust (Graduate); Economics of Regulation (Undergraduate); Introduction to Energy and Environmental Policy (Graduate, Kennedy School of Government); Graduate Seminar in Industrial Organization and Regulation; Intermediate Microeconomics (Undergraduate); Principles of Economics (Undergraduate); Seminar in Energy and Environmental Policy (Graduate, Kennedy School of Government)

HONORS AND AWARDS

Allyn Young Prize for Excellence in the Teaching of the Principles of Economics, Harvard University, 1978 - 1979 and 1979 - 1980

Chancellor's Intern Fellowship in Economics, September 1973 to July 1978, one of two awarded in 1973, University of California, Los Angeles

Smith-Richardson Dissertation Fellowship in Political Economy, Foundation for Research in Economics and Education, June 1977 to September 1977, UCLA

Summer Research Fellowship, UCLA Foundation, June 1976 to September 1976

Dissertation Fellowship, Hoover Institution, Stanford University, September 1977 to June 1978

Four years of undergraduate academic scholarships, 1969 - 1973; graduated with University Distinction and Departmental Honors, Stanford University

Research funding sources have included: The National Science Foundation; USAID (IRIS Foundation); Pew Charitable Trust; Christian A. Johnson Family Endeavor Foundation; The Ford Foundation; The Kellogg Foundation; Harvard Program on the Environment; The Northwest Area Foundation; the U.S. Department of Energy; the Research Center for Managerial Economics and Public Policy, UCLA Graduate School of Management; the MIT Energy Laboratory; Harvard's Energy and Environmental Policy Center; the Political Economy Research Center; the Center for Economic Policy Research, Stanford University; the Federal Trade Commission; and Resources for the Future; The Rockefeller Foundation.

I declare under penalty of perjury that I have read the Opening Evidence that I have sponsored, as described in the foregoing Statement of Qualifications, and that the contents thereof are true and correct. Further, I certify that I am qualified and authorized to sponsor this testimony.

Executed on April 12, 2005

Joseph P. Kalt

D. Deborah G. Newland

Deborah G. Newland is a Senior Consultant with FTI Consulting, Inc., an economic and financial consulting firm with offices located at 1201 Eye Street, N.W., Suite 400, Washington DC, 20005. Since 2001, Ms. Newland has been involved in various aspects of transportation consulting, including detailed cost analyses for several of the country's largest railroads, studies of historic rail rates and long term coal traffic and revenue forecasts, and extensive statistical analysis, such as modeling fuel consumption variation with cycle times and evaluating historical changes in rail transportation rates.

Ms. Newland holds a Bachelor of Arts degree in Economics from Furman University, graduating *cum laude.* She has also received a Masters of Science degree in Economics from the University of North Carolina at Chapel Hill, and has also completed extensive econometric coursework at the doctoral level, covering such topics as measure-theoretic probability, statistical theory, and applied econometrics. Since joining FTI in 2001, Ms Newland has performed economic and financial consulting services to regulated and newly deregulated industries, including the transportation and postal sectors. Her focus is on costing and statistical analyses in support of expert testimony within regulatory proceedings, and she has assisted in the preparation of expert testimony in proceedings before the Surface Transportation Board and the Postal Rate Commission.

Ms. Newland is sponsoring evidence relating to BNSF's variable costs for the issue movement. Her evidence is contained in Section II of the Narrative. Ms. Newland has signed a verification of the truth of the statements contained therein. A copy of that verification is attached hereto.

I declare under penalty of perjury that I have read the Opening Evidence that I have sponsored, as described in the foregoing Statement of Qualifications, and that the contents thereof are true and correct. Further, I certify that I am qualified and authorized to sponsor this testimony.

Executed on April 18, 2005

Deborah Newland
Deborah G. Newland

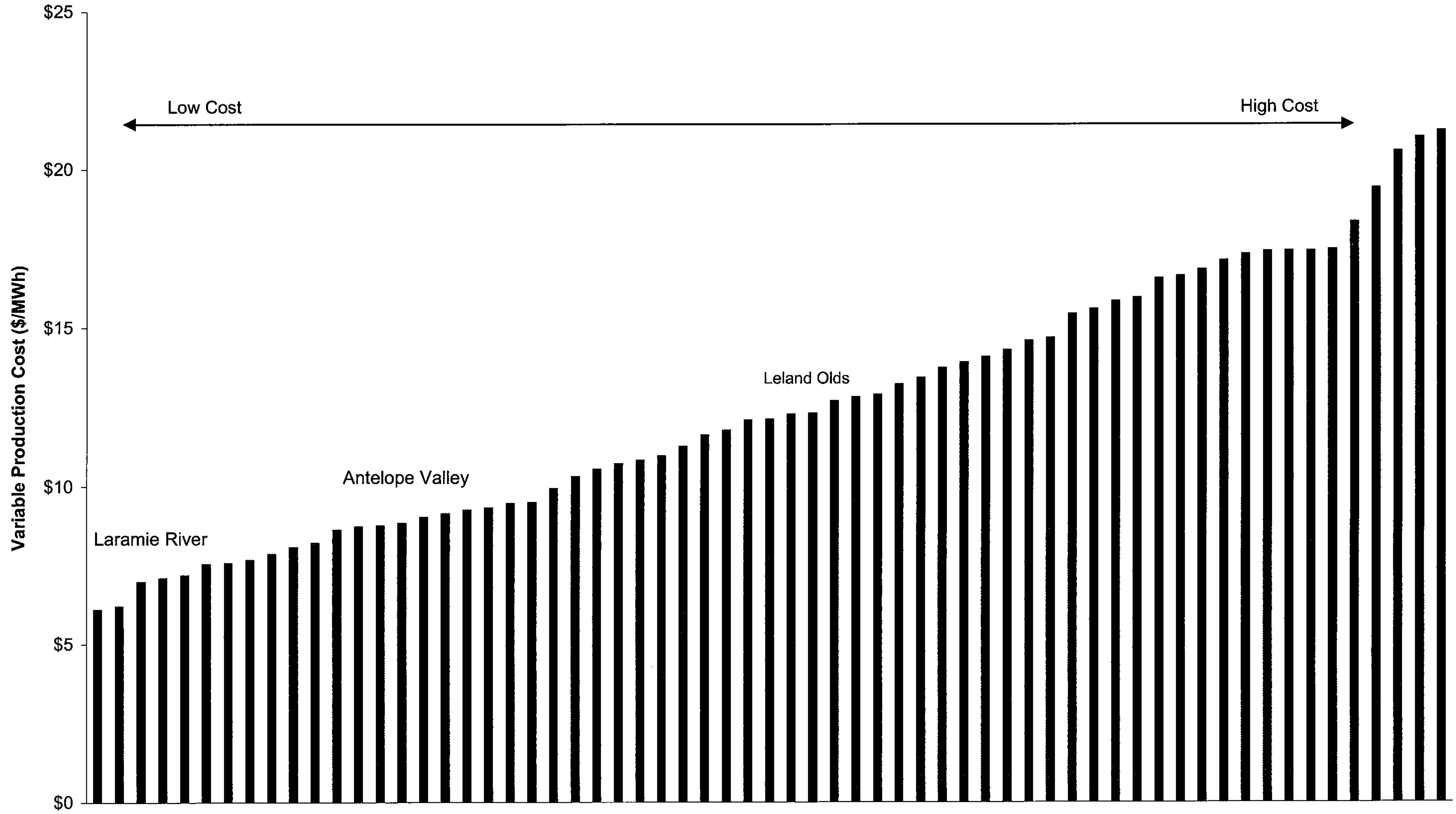
Exhibits

Redacted

Redacted

Redacted

2003 Variable Production Costs For Coal-Fired Power Plants In Basin Electric's Nine-State Service Area

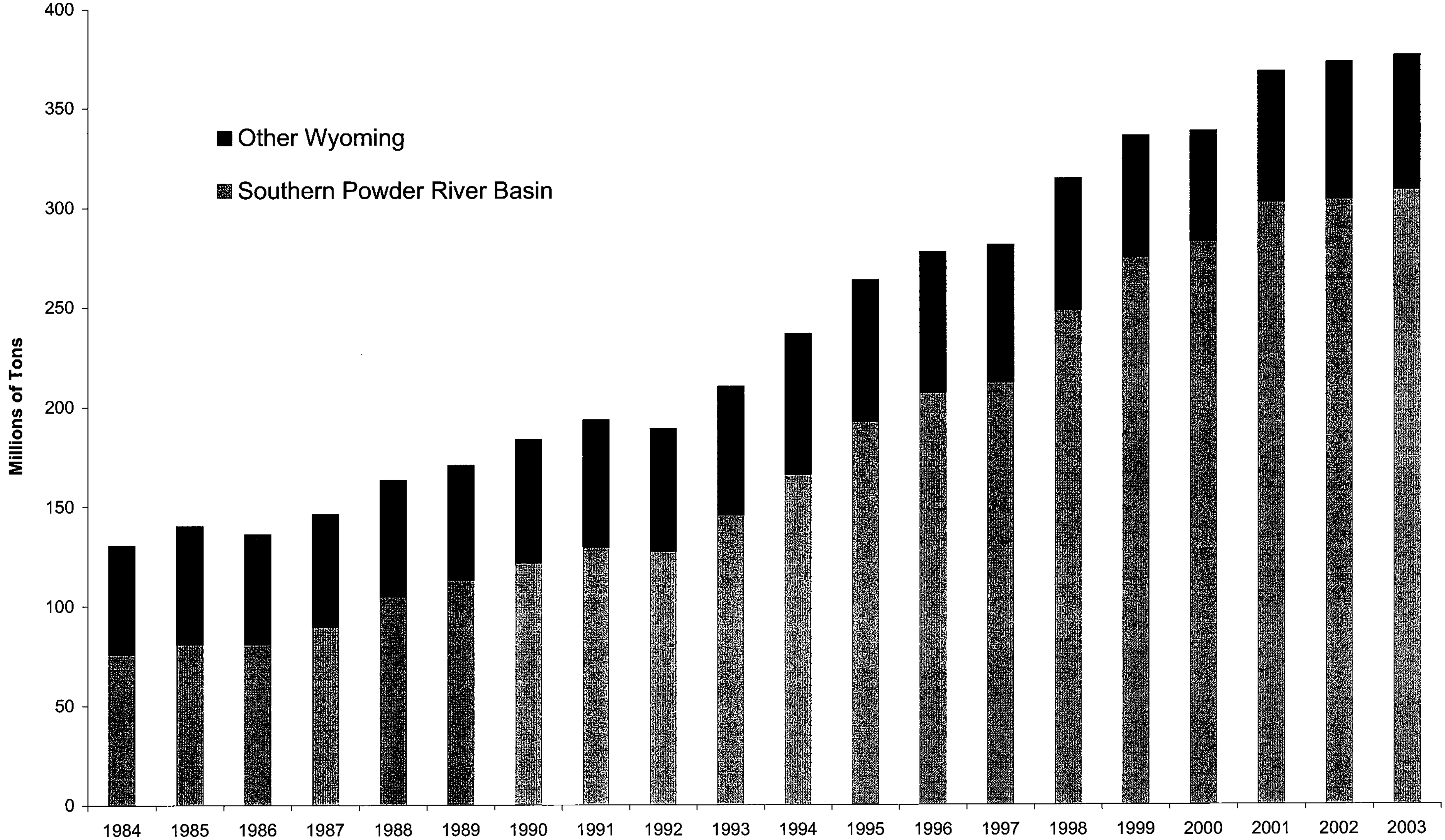


Notes: Variable production costs include fuel costs and variable operations and maintenance costs.
Plants above are all coal-fired plants in North Dakota, South Dakota, Wyoming, Montana, Minnesota, Iowa, Nebraska, Colorado and New Mexico, excluding dual-fuel plants and plants with capacity factors less than 50%.

Source: Platts PowerDat Data for 2003.

Redacted

Coal Production In The Southern Powder River Basin And The Rest Of Wyoming 1984 - 2003



Note: The Southern Powder River Basin mines consist of mines located on the BNSF-UP jointly served rail line.
Source: Wyoming Mining Association.