TAPS

Is TAPS settlement the best deal the state could get?

By CHANCY CROFT

points of view from our community

compass

The proposed agreement on the rate the owners of the trans-Alaska oil pipeline (TAPS) can charge for shipping oil from Prudhoe Bay to Valdez will play a major role in determining future state revenues: A change of one penny per barrel in the shipping price (called a "tariff") can result in $1.5 million per year in revenues to the state. Despite its magnitude, the TAPS tarriff issue is so complicated that few people seem to understand the significance — or the effects — of the agreement the state recently signed with two major owners of the pipeline.

The Department of Law, the architect and major proponent of the settlement, claims its handiwork will give the state $12 billion out of a potential $15 billion (the maximum that continued litigation might produce) over the life of the settlement, which runs through 2011. But these figures have little meaning. The state's own documents reveal that the bargain the state has struck with the oil industry may produce far less revenue than settlement advocates claim.

An analysis prepared by another state agency, the Department of Revenue, converts the Department of Law figures into 1985 dollars. These figures indicate that between now and the year 2000, the settlement should produce $2.1 billion more revenue for the state than the existing pipeline tarriffs. By comparison, the Department of Revenue estimates indicate a victory in court would produce $4.6 billion between now and the year 2000.

In other words, over the next 15 years the state would really get about $150 million per year — far less than the Department of Law figures seem to indicate. And what the state has settled for amounts to less than half the total sought in litigation — a far cry from the 80 percent victory touted by the Department of Law.

Moreover, there is no real down-side risk to continued litigation: Even a complete defeat (which is considered highly unlikely) would not result in the state receiving less than it is now, while a more likely "losing" scenario would still net the state $1.5 billion in constant 1985 dollars.

The TAPS tarriff vitally affects state revenues because pipeline costs are subtracted from the market before the state's royalties and taxes from Prudhoe Bay are calculated. The higher the tariff, the lower the base on which state revenues are calculated — and the fewer the revenues for the state.

Back in 1977 when the owners of the Prudhoe Bay oil field put their $9 billion pipeline into operation to carry their bonanza to tankers at Valdez, the owner-shippers instituted an excessive tariff of more than $6 per barrel (more than half the price of a barrel of oil at that time). The U.S. Justice Department's anti-trust division, other federal energy agencies, the state, the Arctic Slope Regional Corporation and the Alaska Public Interest Research Group (AkPIRG) protested, launching a marathon case.

As a result of the protest, the Inter-State Commerce Commission (now part of the Federal Energy Regulation Commission, or FERC) suspended the oil company tariffs and imposed a much lower temporary tariff. Before the first oil left Valdez, the oil companies went to court, claiming that ICC/FERC did not have the authority to impose lower tariffs, or to impose refunds if a lower tariff was subsequently found valid.

After seven months at a lower tariff (the maximum time allowed the statute) the oil companies went back to their $6 tariffs. In 1978 in a unanimous decision, the U.S. Supreme Court ruled that ICC/FERC could require refunds if lower tariffs were found to be justified. The decision was a major victory for the State of Alaska.

Since that time, the FERC rate-making proceeding has been generating paperwork and lawyers fees (estimated at $100 million for the industry and $35 million for the state).

Late in 1984 the Sheffield administration announced it had found a way out of the legal quagmire: Stripped to its essence, the settlement allows the oil companies to keep the revenues extracted from excessive past tariffs (estimated in excess of $1 billion in 1982; higher now) in exchange for lower tariffs and somewhat higher state revenues in the future.

The state claims it will gain from lower tariffs in the future, when lower pipeline costs might encourage continued production or development of marginal fields. This rationale has some validity, but the benefit we get is too small for the price we are paying. This general approach could have been used without forfeiting potential refunds, the legality of which is already guaranteed by U.S. Supreme Court decision.

Why did the state give up the refunds? The best explanation the Department of Law can offer is that it's just too complicated to collect funds retroactively. That doesn't make sense: The companies that charge and collect the tariff (essentially from themselves) are the same companies with which we are negotiating. With billions of dollars at stake, there's nothing too complicated about demanding that they live up to their obligation.

In 1981 proponents of the oil industry pushed through a change of oil tax laws at the end of the legislative session. Oil industry and state officials assured the legislature and the public that the little-understood change would not adversely affect state revenues. But it turned out that the state has already lost hundreds of millions of dollars as a result of the 1981 tax changes.

Are we doing it again with the TAPS settlement?

☐ Chancy Croft, an Anchorage attorney, is former president of the Alaska State Senate and a former Democratic gubernatorial nominee. Also contributing to this article were Anchorage attorney Hugh Fleischer, RuralCAP director Bob Lohr and former Anchorage legislator Bill Parker.

Anchorage Daily News 6/21/85

Alyeska president criticizes editorial, newspaper's coverage

I write in reply to your lead editorial of Saturday, June 15, criticizing Alyeska Pipeline Service Company's supposed "imperial demeanor" in dealing with critics and asserting the need for Alyeska to develop a "better approach."

The subject was a meeting between representatives of Alyeska and members of the Cordova District Fishermen United [illegible]

dent that they will confirm that the plant is and has been operating in accordance with all government permits.

Unfortunately, the coverage of these allegations by the Daily News has aggravated the problem and done a disservice to legitimately interested parties.

The allegations come from Mr. Charles Hamel, characterized in [illegible]

qualified crews employed by a well known and reputable contractor in this field, using protective safety gear in accordance with industry and governmental standards.

The Cordova District Fishermen United, apparently concerned about the allegations which have appeared in the press, are considering joining Mr. Hamel in potential future [illegible]

ed those people who have the greatest knowledge about the Ballast Water Treatment Plant and its operation. After the fishermen have identified further specific concerns, we will involve additional people if necessary to address those concerns.

Your editorial also was critical of the fact that Alyeska requested the social security [illegible]

Synopsis of APUC Staff Brief and Expert Testimony

The APUC staff characterized its opposition to the settlement as "reluctant." According to its brief, the results of the settlement are so divergent from traditional regulatory approaches that the offer must be rejected as unjust, unreasonable and inconsistent with the public interest The brief and its supporting analysis identify six elements of TSM that lead to tariffs which are as much as $3.00 per barrel too high in certain years. According to the brief, the major causes of excessive tariffs are:

1. The settlement makes no adjustment for excess tariffs collected from 1978 through 1981, eliminating any refund obligation for those years.
2. The hyper-accelerated depreciation schedule that allows the companies to front-load the tariff (and therefore to pay little in the way of refunds) does not match costs and benefits to shippers.
3. Because the accelerated depreciation ensures that line is 80% depreciated by 1990, it was necessary to introduce non-cost-related profits in later years through the fixed, $0.35-per-barrel return provision.
4. TSM allows the shippers to earn income on a 100% equity capital structure. This aspect of TSM is contrary to Commission practice and results in unjust rates; by comparison, a 1985 APUC pipeline proceeding set up a 50/50 debt/equity structure, with debt gradually retired to reach 100% equity in 2011.
5. TSM's $450 million reduction from rate-base for cost over-runs (the so-called "Phase II" issues) is inadequate; APUC staff contends that the treatment of this item effectively removes only $177 million from the rate-base, compared to $1.8 billion sought by the State in litigation.
6. TSM's Dismantling, Removal and Restoration (DR&R) provision allows the TAPS owners to earn what the APUC staff describes as "an unconscionable windfall" of $7.6 billion in 1987 dollars; according to the testimony, this profit, is "hidden" from the tariff proceeding and the rate-base and is additional to the $5.0 billion in excess tariffs resulting from items 1 through 5, above.

Additionally, the Staff believes that provisions of the TSM such as the "pumpability factor" and "cost allocation provisions" are discriminatory and anti-competitive.

The APUC staff believes the APUC should reject TSM for in-state shipments to Alaska refiners because the settlement's results are unjust, unreasonable and not in the public interest.

STATE OF ALASKA

BEFORE THE

ALASKA PUBLIC UTILITIES COMMISSION

Before Commissioners: Marvin R. Weatherly, Chairman
Carolyn S. Guess
Susan M. Knowles
Louis E. Agi
Kathleen L. Whiteaker

In the Matter of the Consideration of an Offer of Settlement of Tariff Rates for the Intrastate Transportation of Petroleum Over the Trans Alaska Pipeline Sytem by AMERADA HESS PIPELINE CORPORATION, ARCO PIPE LINE COMPANY, BP PIPELINES INC., EXXON PIPELINE COMPANY, MOBIL ALASKA PIPELINE COMPANY, PHILLIPS ALASKA PIPELINE CORPORATION, SOHIO PIPE LINE COMPANY and UNOCAL PIPELINE COMPANY	DOCKET NO. P-86-2

BRIEF OF THE STAFF OF THE ALASKA PUBLIC UTILITIES COMMISSION ON THE OFFER OF SETTLEMENT

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STATE OF ALASKA

BEFORE THE

ALASKA PUBLIC UTILITIES COMMISSION

Before Commissioners:	Marvin R. Weatherly, Chairman Carolyn S. Guess Susan M. Knowles Louis E. Agi Kathleen L. Whiteaker
In the Matter of the Consideration of an Offer of Settlement of Tariff Rates for the Intrastate Transportation of Petroleum Over the Trans Alaska Pipeline Sytem by AMERADA HESS PIPELINE CORPORATION, ARCO PIPE LINE COMPANY, BP PIPELINES INC., EXXON PIPELINE COMPANY, MOBIL ALASKA PIPELINE COMPANY, PHILLIPS ALASKA PIPELINE CORPORATION, SOHIO PIPE LINE COMPANY and UNOCAL PIPELINE COMPANY	DOCKET NO. P-86-2

BRIEF OF THE STAFF OF THE ALASKA PUBLIC UTILITIES COMMISSION ON THE OFFER OF SETTLEMENT

Pursuant to the Administrative Law Judge's ***Order Prescribing Commission Procedure for Consideration of Settlement Offer***, Docket Nos. P-77-8 *et al.* (May 16, 1986) and the ***Order Establishing Filing And Hearing Schedules***, Docket No. P-86-2 (August 26, 1986), the Staff of the Alaska Public Utilities Commission ("Staff") hereby respectfully submits its response to the Offer of Settlement filed by the owners of the Trans Alaska Pipeline System ("TAPS Owners") and the State of Alaska ("State") on May 30, 1986. The Staff's response includes its comments and argument and is proffered in conjunction with the prefiled testimony and exhibits of Rudolph L. Bertschi. The Staff's response is also offered in concert with whatever argument and/or comments may be forthcoming at the hearing on this matter or in post hearing briefs.[1]

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1. The Commission's ***Order Opening Docket For Consideration Of Offer Of Settlement And Establishing Scheduling Guidelines***, Order No. 1, Docket No. P-86-2 (July 7, 1986), anticipates the filing of post-hearing briefs. The Staff supports such a filing as an appropriate means of addressing the issues raised here in the light of anticipated questioning during the scheduled hearings.

I. INTRODUCTION

The Staff opposes the Offer of Settlement proposed by the TAPS Owners and the State. It does so reluctantly. Under proper circumstances, settlement of these protracted proceedings would serve several worthwhile purposes. Unfortunately the results of this Settlement Offer are so divergent from those results produced by traditional regulatory approaches that the Settlement Offer must be rejected as unjust and unreasonable and inconsistent with the public interest.

As demonstrated by the testimony of Staff Witness Rudolph Bertschi, the TAPS Settlement Methodology ("TSM") produces tariffs which are as much as $3.00 too high in certain years. As a result of those excessive tariffs, over the life of the proposed settlement the TAPS Owners will receive more than $20 billion in excess revenues over and above what traditional regulatory methodologies would permit. Consequently, the State will lose more than $5 billion in revenues over the life of the settlement.

Mr. Bertschi identifies six elements of TSM, in particular, that lead to TSM's unjust and unreasonable results. First, the carriers are allowed to collect their filed tariffs for the years 1978-1981. This collection completely eliminates any refund obligation for those years. Second, a hyper-accelerated depreciation schedule prevents any reasonable matching of costs and benefits to shippers. Third, the TSM implements a $0.35 per barrel real return provision which has no identifiable relationship to costs and which produces extraordinarily high returns for the TAPS Owners in later years. Fourth, the TSM utilizes a 100% equity capital structure, which is contrary to Commission practice and policy and which produces unjust rates and revenues. Fifth, the TSM's $450 million reduction from rate base establishes an illusory adjustment which inadequately accounts for necessary reductions for Phase II issues. Sixth, the Dismantling, Removal and Restoration ("DR&R") provision is not cost-based and allows the TAPS Owners to earn an unconscionable windfall of billions of dollars of return over and above the $20 billion in excess revenues discussed above.

In addition to Mr. Bertschi's testimony concerning these factors, the Staff has analyzed assorted provisions of the TSM, such as the "Pumpability Factor" and the "Cost Allocation Provisions" which render the Settlement Offer discriminatory and anti-competitive. Such provisions are violative of various statutory prohibitions including AS 42.06.380(a).

These findings have led the Staff ineluctably to its opposition to the Offer of Settlement. Indeed, the results of this Settlement so contradict the traditional regulatory approaches required by both statute and common law and regularly ascribed to and implemented by this Commission, that the Offer of Settlement must be deemed inconsistent with the public interest. Accordingly, while the Staff applauds the State's and TAPS Owners' laudable efforts to resolve these proceedings without further litigation, it is constrained to report and oppose TSM's inequities and anomalies. In the final analysis TSM's divergence from the established norm is too stark to be justified by the "benefits" of ending litigation. And, as discussed below, even the public interest "benefits" of the Settlement Offer prove, under close scrutiny, to be illusory or suspect.

This prehearing submittal addresses various issues raised by the Settlement Offer. First, the Staff demonstrates that the appropriate standard to be applied by the Commission in considering this contested settlement offer is that established by the provisions of AS 42.06.370(a). That statute constrains the Commission to consider the TSM against the strictures of the "just and reasonable" standard.

The lesser measures proffered by the settling parties, such as whether the rates produced are "fair and reasonable and in the public interest," are unworkable constructs without authority or merit in the context of this proceeding. But even if the Commission were to treat the Settlement Offer as uncontested or otherwise elevate its consideration of public interest factors, it would be constrained to reject the TSM. The Settlement Offer produces results so divergent in nature and scope from traditional regulatory approaches as to render this settlement inconsistent with the public interest.

Second, the Staff's brief demonstrates how the prefiled testimony of Rudolph Bertschi establishes that the TSM rates and procedures are unjust and unreasonable.

Third, the Staff contests the settling parties' claims that the Settlement Offer is in the public interest. As discussed below, the excessive revenues to be earned by the TAPS Owners and the disparity between reasonable and TSM rates belie the value of this settlement to both the public and intrastate shippers. Moreover, there is reason to question whether future tariffs set by TSM will provide as much enticement to exploration and development as would prices set according to traditional ratemaking methodology.

There is even reason to doubt the TAPS Owners' claims that this settlement will end litigation. Of course, if the TAPS Owners' predictions are accurate, local interest shippers such as Petro Star, Inc. ("Petro Star") will not be able to afford the cost of challenging the TSM's past, present or future rates. Accordingly, the TAPS Owners' lofty promises that non-settling parties can have their cake (*i.e.*, lower tariffs) and eat it too (*i.e.*, rate challenges) prove to be so much pie-in-the-sky rhetoric.

Similarly, the TAPS Owners' protestations about consistency with interstate rates prove on closer look to be based on empty fears. These thinly veiled threats about Federal Energy Regulatory Commission ("FERC") invocation of Section 13(4) of the Interstate Commerce Act are without substance. In the last analysis this argument says more about the TAPS Owners' tactics then it does about the true likelihood of a successful Section 13(4) action in this matter.

The excesses and exorbitancies of this settlement should not be the price tag for putting an end to TAPS litigation. It is respectfully submitted that the Commission's duties require settlements such as this to meet higher standards than those suggested by the settling parties. The record in this case does not establish a "reasonable basis" for not proceeding with litigation. *Cf. Jager v. State*, 537 P.2d 1100, 1107 (Alaska 1975). Accordingly, the Commission is urged to reject the Offer of Settlement.

II. STANDARDS TO BE APPLIED IN REVIEWING THE OFFER OF SETTLEMENT

A. The Commission Should Consider Several Traditional Factors In The Context Of The "Just and Reasonable" Standard

Alaska Statute 42.06.370(a) sets forth the standard that must be applied in assessing the Offer of Settlement. That statute mandates that "[a]ll rates demanded or received by a pipeline carrier, or by any two or more pipeline carriers jointly, for a service furnished or to be furnished shall be just and reasonable." (Emphasis added). There are no Alaska statutes or Commission regulations that allow the Commission to use some other, lesser standard in assessing the reasonableness of the Offer of Settlement.

1. The Zone of Reasonableness

In order to determine if the rates that result from the Offer of Settlement are just and reasonable, the Commission must examine several factors. First, while questioned rates need not be set with mathematical precision in order for them to be just and reasonable, they must fall within a zone of reasonableness. ***FERC v. Pennzoil Producing Co.***, 439 U.S. 508, 517, 99 S.Ct. 765, 771 (1979); ***Farmers Union Cent. Exchange, Inc. v. F.E.R.C.***, 734 F.2d 1486, 1502 (D.C. Cir.), ***cert. den.***, ____U.S. ___ (1984). Moreover, the revenues and returns produced by the questioned rates must also fall within a zone of reasonableness.

Both the TAPS Owners and the Staff agree that the Commission must determine whether the settlement produces results that are within a zone of reasonableness. (***See***: Hildahl Testimony, pp. 15-20). The testimony of Mr. Bertshi supplies the proper guidance in establishing an appropriate zone of reasonableness and determining whether the Offer of Settlement produces results that are within that zone.

2. Assessment On An Annual Basis

Second, the results produced by the Offer of Settlement should be judged on an annual basis. Thus, the tariffs, revenues, and returns that result from TSM must be within a zone of reasonableness

for each year of the TAPS operations. The settling parties erroneously assert that the Commission should analyze the results of TSM as a whole, rather than looking at annual results (Hildahl Testimony, p. 16). The State argues that if the total results are reasonable, the Offer of Settlement can be approved even if tariffs in certain years of the settlement are excessive [Explanatory Statement of the State of Alaska and the United States Department of Justice In Support of Settlement Offer ("Explanatory Statement"), p. 21].

This "totality of results" approach is contrary to standard regulatory practice before this Commission. The Commission's analysis of cost-of-service issues is consistently done on an annual basis. For example, the Commission's regulations require that utilities and pipeline carriers justify their tariffs with data compiled on an annual basis (3 AAC 48.275(a)). In addition, the TAPS Owners file annual reports to the Commission, to allow the Commission to analyze pipeline operations on an annual basis. The Commission is urged not to deviate from its standard procedure in analyzing the Offer of Settlement.

The "totality of results" approach is also inconsistent with standard regulatory practice elsewhere. During the TAPS evidentiary proceedings before the Commission and FERC, the TAPS Owners argued that the tariffs for the years 1977-1981 should be evaluated on a "composite period" approach rather than on an annual basis. FERC Staff, in its Phase II Non Cost of Construction ("NCC") brief before FERC, criticized this argument on the grounds that tariffs are typically computed on an annual basis in all rate proceedings before FERC. FERC Staff argued that comparing costs and revenues on an annual basis is the standard ratemaking custom. [*See*: FERC Staff Phase II NCC Brief, pp. 287-289.]

The settling parties' position is also contrary to the State's position during the TAPS evidentiary proceedings. In their Phase II NCC Brief before FERC, the State rejected the TAPS Owners' "composite approach" and argued that tariffs must be assessed on an annual basis, rather than being averaged out over several years. As the State pointed out, the ". . . use of annual data is likewise part

of the language of American finance, and should continue to be used in this proceeding." [State's Phase II NCC Brief before FERC, p. 299.]

Mr. Bertschi demonstrates how analyzing the results of the Offer of Settlement as a totality can be misleading (Bertschi Testimony, pp. 7-10). Tariff streams resulting from two different methodologies could have identical present value, and yet the first could have just and reasonable tariffs every year while the second's tariffs were unjust and unreasonable every year. Under normal, annual rate analysis, the second tariff methodology would have to be rejected by the Commission.

Clearly, it is not appropriate for this Commission to look solely to the total results of TSM and disregard the results in individual years. Effecting the parties' bargain and ending litigation cannot properly justify unjust and unreasonable rates for any individual shippers. To permit such anomolies would be contrary to the Commission's regulations and standard rate review procedure (3 AAC 48.275(a)). A tariff methodology must yield results that are lawful at all times.

3. Unreasonable Prejudice Or Disadvantage

Third, the Commission must analyze the Offer of Settlement to ensure that it does not unreasonably prejudice or disadvantage any person or customer. If it does, then it must be rejected. [*See*: Alaska Statute 42.06.320, 380.] As discussed more fully below, at least one procedure established by the TSM, *i.e.*, the "pumpability provision," violates the strictures of AS 42.06.320, 380.

4. Cost-Based Principles

Fourth, the Commission should determine whether the Offer of Settlement is a cost-based methodology by which the tariffs match the carriers' costs of providing service. It is a fundamental tenet of regulatory ratemaking that rates should be cost-based. As Professor Bonbright has said, ". . . the basic principle of rate making . . . is that of service at cost." [Bonbright, James C., ***Principles of Public Utility Rates*** (1961), p. 240; see also: Kahn, Alfred E., ***The Economics***

of Regulation: Principles and Institutions, Vol. 1 (1970), p. 26.]

The courts too have recognized that in order to determine whether rates are within an appropriate zone of reasonableness, ". . . the most useful and reliable starting point for rate regulation is an inquiry into costs." ***Farmers Union Central Exchange, Inc. v. FERC, supra***, at 1502.

This Commission's regulations recognize the importance of cost-based rates, as well. The provisions of 3 AAC 48.275 require that any proposed rate change must be supported by actual cost data. This Commission regularly relies on the actual cost of service as the basis for establishing just and reasonable rates.

As discussed below, the TSM is composed of several non-cost-based elements. The use of such factors in the TSM renders the Offer of Settlement inherently suspect. Thus, if the Commission finds that the Offer of Settlement is not completely cost-based, a heightened scrutiny is required to ensure that any non-cost-based factors are justified and justify the resulting rates. As Mr. Bertschi's testimony demonstrates, these non-cost-based elements produce unjust and unreasonable rates.

5. Assessment Of Essential Elements

Fifth, the Commission is urged to analyze TSM's individual elements and not just accept the settlement as an agreed-upon "end result." It is suggested that each of the essential elements of TSM must be supported by substantial record evidence. As discussed below, this is consistent with the Commission's general ratemaking practices. The settling parties assert, on the other hand, that TSM must be evaluated as a "whole package." (Explanatory Statement, pp. 3-4.) In essence they suggest that the end result justifies the methodology used to reach it. [Explanatory Statement, pp. 3-4.]

The Commission's regulations require that the Staff analyze the methodology used in every pipeline carrier's rate filing. 3 AAC 48.275(j). In addition, 3 AAC 48.275, in general, requires pipeline carriers to supply supporting data with every rate filing sufficient to allow the Commission to analyze each element of the proposed

methodology.

This Commission and its predecessor, the Alaska Pipeline Commission ("APC"), have consistently set rates by analyzing each operative ratemaking element. Moreover, each commission has required record evidence to support its findings as to individual elements. *See*: ***Order Prescribing Regulatory Methodology and Directing Cook Inlet Pipeline Company To File Revised Revenue Requirement***, Docket P-82-1, Order No. 12, January 14, 1985 ("***Cook Inlet Decision***"); ***Order Adopting Ratemaking Methodology***, Docket No. P-78-5, Order No. 25, September 17, 1980.

This approach is consistent with accepted regulatory ratemaking practices. As discussed by Mr. Bertschi, the normal procedure used to analyze the end results is to investigate the elements that go into calculating the tariffs. [Bertschi Testimony, p. 13.] As the court noted in ***City of Charlottesville, Virginia v. FERC***, 661 F.2d 945, 950 (D.C. Cir. 1981),

> Experience has taught that a determination of whether the result reached is just and reasonable requires an examination of the method employed in reaching that result.

And each essential element must have substantial evidentiary support. ***Permian Basin Area Cases***, 390 U.S. 747, 791-792, 88 S.Ct. 1344, 1373 (1968).

Thus, the Commission, consistent with its own practices and regulations, must assess the TSM methodology on an element-by-element basis. As noted by our Supreme Court, "[O]ne indication of whether an agency has proceeded in the manner required by law is compliance with its own regulations." ***Jager v. State***, 537 P.2d 1100, 1108 (Alaska 1975).

B. <u>The Commission's Standards Should Not Be Lowered In This Case Merely To Accommodate Settlement Or The Parties' Sense of Public Interest</u>

There is apparent agreement that the Commission's legislative mandate is to protect the public interest of Alaska and its citizens

(*See*: ***Brief of the TAPS Carriers In Support of the Offer of Settlement*** ("***Carriers' Brief***") p. 5). But the settling parties cite no authority for the proposition that that mandate is separate and apart from the Commission's duties to set just and reasonable rates. As discussed above, the standard by which the Commission is bound to act on the Offer of Settement is whether or not it produces results which are just and reasonable. This standard was established by the Legislature and it is the Staff's position that the standard embodies the Legislature's determination that the public interest is best served when just and reasonable rates are set. The Commission is, therefore, bound to consider the merits of this settlement within the four corners of the "just and reasonable" standard. Factors involving the salutary effects of settlement, the extraneous benefits to be gleaned by the settling and non-settling parties, and the "consistency" of interstate and intrastate rates must be weighed in the context of whether TSM produces just and reasonable rates. The parties and the Commission are free to balance and weigh all relevant factors and set rates accordingly so long as the end result falls within the zone of reasonableness.

The settling parties erroneously suggest that a different, much lower standard than "just and reasonable" should be used in assessing the Offer of Settlement. *See:* ***Brief of the State of Alaska In Support of Commission Approval of the Offer of Settlement*** ("State's Brief"), p. 2; ***Carriers' Brief***, pp. 6-8. Although the TAPS Owners never suggest how to apply the lower standard, they do use such euphemisms as "accept[ing] settlements without exhaustive verification and ". . . substantive evidence proving with precision the correctness of its specific result is unnecessary" (***Ibid***). The TAPS Owners' protestations notwithstanding (***cf.***, ***Carriers' Brief***, p. 17), the essence of these arguments is that the Commission should "rubberstamp" TSM over the protest of "minor" parties such as Petro Star and Arctic Energy Co. ("Arctic Energy").

In regulatory ratemaking proceedings, commissions are not free to merely rubberstamp approvals to offers of settlement. In fact, a contested offer of settlement, such as the instant one, should

be analyzed in accordance with the standards of a fully litigated rate case. As FERC Administrative Law Judge Benkin has said:

> When the Commission has before it a contested settlement proposal . . . its action on the proposal must be supported by substantial evidence . . . .
>
> Is the 'substantial evidence' required to buttress the Commission's approval of a contested settlement proposal somehow less burdensome than the 'substantial evidence' which must support the Commission's disposition of a fully-litigated rate case where no settlement proposal has been submitted? I do not think so. Nor do I agree with Staff's concomitant thesis that, in a rate case where a contested settlement is before the Commission, considerable deference should be paid to the fact that the settlement rates were produced by the give-and-take of vigorous negotiations between parties having potentially adverse interests. ***Northern Natural Gas Co.***, 3 F.E.R.C. (CCH) ¶65,286.

In prosecuting its responsibilities the level of Commission involvement and participation should not be lowered. The Commission is required to actively pursue each of its responsibilities, including protecting the public interest. As stated by the court in ***Scenic Hudson Preservation Conf. v. FPC***, 354 F.2d 608, 620 (2d Cir. 1965):

> The Commission [is] the representative of the public interest. This role does not permit it to act as an umpire blandly calling balls and strikes for adversaries appearing before it; the right of the public must receive active and affirmative protection at the hands of the Commission . . . . The Commission must see to it that the record is complete. The Commission has an affirmative duty to inquire into and consider all relevant facts. ***Scenic Hudson Preservation Conf. v. FPC***, 354 F.2d 608, 620 (2d Cir. 1965), *cert. denied*, 384 U.S. 941 (1966).

Notwithstanding the clear directives of AS 42.06.370(a) the settling parties urge the Commission to apply the FERC standard for uncontested settlements (Carriers' Brief, pp. 3-8). The FERC standard, ***i.e.***, whether the settlement's results are "fair, reasonable and in the public interest," is inapposite for several reasons. First, FERC is authorized to use a lesser standard of review by specific regulation which sets out the standard of review for uncontested settlements before FERC. (***See***: 18 C.F.R. § 602(g)(3) (1985).) There are no such Commission rules articulating lesser standards for settlements before this Commission.

The TAPS Owners errantly argue that 3 AAC § 48.090(d)(4)

(1984) gives the Commission authority to adopt the lesser FERC standard in this proceeding. That section provides no support for the settling parties. Although Section 48.090(d)(4) allows the Commission to terminate a proceeding on its own motion, it establishes no standards for such termination. There is clearly nothing in the language of the regulation that allows the Commission to terminate a rate proceeding on its own motion and set tariffs in contravention of the statutory requirement that rates be just and reasonable. (AS 42.06.370 (a)(1983)).

Second, FERC's Rule 602 standard applies only to uncontested settlements. Even before the FERC, contested settlements must meet the just and reasonable standard. Petrostar, an intrastate shipper on TAPS, is contesting the Offer of Settlement and is urging the Commission to reject it. In addition, Arctic Energy, an Alaskan company that plans to have intrastate shipments on TAPS in the near future, has stated its interest in contesting the settlement, and has been granted intervention in this proceeding. Furthermore, through these Comments and Mr. Bertschi's testimony, the Staff is contesting the Offer of Settlement. Thus, even under the FERC rules articulated by the settling parties, the appropriate standard for settlement review is whether the settlement is just and reasonable.

The TAPS Owners seek to circumvent the contested nature of these hearings through the deft use of legal legerdemain. They suggest that the "just and reasonable" standard need not be met if the Commission labels the settlement as "uncontested" (Carriers' Brief, pp. 7-8). It is urged that the opposition of Petro Star, Arctic Energy and the Staff be "severed" so that the Commission might proceed

> . . . to approve the settlement as to the consenting parties under the standard applicable to uncontested settlements (i.e., fair and reasonable and in the public interest). Carriers' Brief, p. 7-8.

The authority to effect this "severance" is supposedly "inherent" to the Commission's power as an administrative agency (*Ibid.*)

The TAPS Owners' proposal is pure Orwellian doublespeak. The effect of this strategy in the context of TAPS is chilling. By the waive of a magic wand the TAPS Owners would change a "contested

settlement" into an "uncontested" one. Such a tactic would effectively gut the active challenges to these rates. Not only will this procedure be unfair in the context of TAPS, but it also promises to establish unworkable precedent for other proceedings.

The TAPS Owners also suggest that the Commission is empowered to approve the Offer of Settlement without "exhaustive verification;" in other words without record proof that TSM rates are just and reasonable (***See: Carriers' Brief***, pp. 6-8). The TAPS Owners allude to "broad discretion granted . . . in other respects where a final adjudication is not in question" (***See***: Carriers' Brief, p. 6). These vague references offer no apposite authority for avoiding the mandate of AS 42.06.370(a). The "general power" to resolve disputes is not open-ended in the context of the Commission's obligation to set just and reasonable rates.

Even the TAPS Owners' reliance on ***Jager v. State, supra,*** gives limited support to their position. ***Jager*** merely defines the Commission's power to investigate and weigh competing factors before deciding whether it is in the public interest to proceed with litigation. The Staff does not suggest that the Commission's power is otherwise.

Jager does not, however, instruct the Commission as to how it should define what the public interest is or how to weigh competing public interests in the context of a settlement. As discussed above, it is the Staff's position that the Commission's assessment of public interest must be forged in reference to just and reasonable rates. In other words, so long as a settlement falls somewhere within a zone of reasonableness of such rates it will be in the public interest to approve the settlement. If the settling parties' proposed rates do not fall within a reasonable ambit of just and reasonable rates they must be rejected.

C. <u>Even Should The Commission Apply A Lowered Standard Of Review The Offer Of Settlement Should Be Rejected As Inconsistent With The Public Interest</u>

Even if the Commission were to lower its standard of review

the Offer of Settlement must be rejected. As the TAPS Owners readily acknowledge in their brief and through Mr. Hildahl's testimony, TSM must be shown to be

> . . . not so far from more traditional regulatory approaches that this Commission would have to deem it inconsistent with the public interest. ***Carriers' Brief***, p. 19.

As demonstrated by the testimony of Rudolph Bertschi, when measured against traditional regulatory approaches the results of the "bargain arrived at by the parties" are so divergent as to be unjust, unreasonable and inconsistent with the public interest.

Contrary to the TAPS Owners suggestion, Mr. Hildahl's presentation does not provide the Commission

> with a reasonable basis for determining that the public interest does not require further litigation at this time as an alternative to accepting this settlement. ***Carriers' Brief***, p. 19.

In fact, the failure of the Hildahl presentation graphically demonstrates the opposite -- further litigation is required. No matter how hard the settling parties might try they cannot dress this settlement up as a silk purse.

III. THE OFFER OF SETTLEMENT MUST BE REJECTED BECAUSE IT IS UNJUST AND UNREASONABLE.

The Staff's analysis shows that the Offer of Settlement must be rejected because it is not just and reasonable, and it is not in the public interest.

A. The Results of The Offer of Settlement Are Unjust And Unreasonable, And Not In The Public Interest.

The Staff's testimony presents conclusive evidence that the results of the Offer of Settlement are not just and reasonable and that the settlement is not in the public interest. The basis of the Staff's analysis of TSM is Mr. Bertschi's comparison of TSM with the results obtained from a traditional regulatory approach previously applied by the Commission. Since Mr. Hildahl utilized the same

approach in his attempt to justify TSM (*See*: Hildahl Testimony, pp. 15-20), the Staff and the TAPS Owners are apparently in agreement as to the manner of assessing the reasonableness of TSM. The Staff and the TAPS Owners also seem to agree that if the results of TSM are radically different from the results produced by more traditional regulatory approaches, then the Commission would have to deem the settlement inconsistent with the public interest. (*See*: Carriers' Brief, p. 19.)

1. The Staff's Tariff Methodology Demonstrates That TSM Is Neither Just Nor Reasonable Nor Consistent With The Public Interest

Mr. Bertschi has compared the results of TSM with the results of a tariff methodology which is primarily based on the more traditional regulatory approach adopted by this Commission in its *Cook Inlet* Decision. The Staff's methodology is referred to here as the Benchmark Tariff Methodology ("BTM"). In order to minimize disputes as to the accuracy of the Staff's benchmark analysis, BTM was designed to produce very conservative numbers. For example, BTM differs considerably from the Staff's litigation position in the TAPS proceedings. Because BTM takes into account the various litigation positions of all the parties, as well as the Phase I decisions, BTM results in substantially higher tariffs and revenues than those that would result from the Staff's recommended just and reasonable tariffs.

As demonstrated by Mr. Bertschi, TSM produces results that are so disparate from traditional regulatory approaches as to render TSM rates unjust, unreasonable and inconsistent with the public interest. This conclusion is underscored by the fact that the Staff's benchmark, BTM, produces results which are probably so high as to be unjust and unreasonable themselves. Yet, TSM produces tariffs that are as much as $3.00 higher than BTM's tariffs in the same year [*See e.g.*, 1982 (RLB-4), Schedule 1]. In comparison, Judge Kane, in his TAPS Initial Decision before FERC, established just and reasonable tariffs and decided that tariffs as little as $0.14 above his tariffs were outside a zone of reasonableness and unjust and unreasonable

(*See*: Initial Decision Phase I Issues, pp. 119-120).

There are myriad indicia of the size of the disparity between TSM and reasonable rates. For instance, the present value in 1987 dollars of the excess revenues to be collected by the carriers as the result of TSM is $20,055,274,000. Thus, of the total $66.249 billion in present value revenues that will be collected by the carriers under TSM, $20.055 billion will be excess. In fact, the present value of the carriers' collected revenues to date under TSM is almost as great as the present value of all the revenues that would be collected under a more traditional regulatory approach over the full life of the settlement.

Of the $20 billion in excess revenues, the State will lose a present value of approximately $5 billion in revenues (Bertschi, Testimony, pp. 34-35). As Mr. Bertschi points out, that amount today, if available to the State, would almost double the size of the Alaska Permanent Fund. If the State earned a return in 1987 on this amount, based on projections by the Alaska Department of Natural Resources, the State would earn a return equivalent to about $671 for every man, woman, and child in the State of Alaska. (*Id.*)

The return on rate base earned by the carriers under TSM is higher than the return on rate base earned under BTM in each of the years of the settlement. And for the period 1990-2011 TSM rates of return become extraordinarily high. By the year 2000, for example, using the throughput assumptions found in the settlement, the carriers will be earning real returns of 43.87%. Those rates will continue to increase throughout the remaining life of the settlement.

2. Analysis Of The Specific Elements Of TSM Demonstrates The Basis Of The Staff's Conclusion That TSM Is Unjust, Unreasonable And Inconsistent With The Public Interest

Mr. Bertschi's testimony also identifies the specific elements of the Offer of Settlement which lead to such radically disparate results. These elements are discussed below.

a. Hyper-Accelerated Depreciation Schedule

Perhaps the most obvious divergence from traditional cost-based regulatory methodology concerns TSM's hyper-accelerated depreciation schedule. TSM depreciates TAPS assets at such an accelerated rate that by 1990 nearly 80 percent of the TAPS Owners' initial investment costs will be depreciated while nearly two-thirds of the economic life of the pipeline remains (Explanatory Statement, pp. 31-32). As a result, TSM does not correctly match shipper costs and benefits. This in turn has produced the need for non-cost-based and jerry-rigged ratemaking devices in TSM, such as the $0.35 per barrel return provision.

This depreciation schedule is clearly a radical departure from traditional regulatory approaches. Neither the TAPS Owners nor the State attempt to justify this device on the basis of traditional ratemaking principles. Nor is there evidence in the record from which one can demonstrate either a reasonable basis for this depreciation schedule or how it results in rational, cost-based rates. In fact, Mr. Bertschi's analysis shows that it results in rates far outside a zone of reasonableness (Bertschi Testimony, pp. 45-51).

BTM, on the other hand, incorporates a more traditional straight-line, unit-of-time depreciation schedule used by the Commission in its ***Cook Inlet*** Decision. In addition, Mr. Bertschi has calculated BTM based on another reasonable depreciation technique, unit-of-throughput. Comparison of the BTM and the TSM demonstrates that the settling parties' hyper-accelerated depreciation schedule produces radically different results from those produced by more traditional approaches.

b. Capital Structure

The Offer of Settlement adopts the most extreme carrier litigation position for its capital structure. Consequently, TSM includes a 100 percent equity capital structure. This approach was expressly rejected by the Commission when proposed to it in ***Cook Inlet*** (***See: Cook Inlet Decision***, p. 18). It has also been rejected by the APC and the FERC ALJ in their respective TAPS Phase I decisions. BTM

adopts an initial capital structure of 50 percent equity/50 percent debt, based on the APC Phase I decision and the various litigation positions of the parties (Bertschi Testimony, pp. 21-23). Mr. Bertschi's BTM gradually retires debt until it is 100 percent equity in the year 2011. This approach conforms to the more traditional regulatory approach adopted by the Commission in ***Cook Inlet*** (***Cook Inlet Decision***, p. 21).

The use of a 100 percent equity capital structure leads to a substantially higher income tax component in TSM than is found in BTM. This in turn results in substantially higher TSM tariffs.

c. Rate Of Return

The rate of return component of the Offer of Settlement is perhaps the element of TSM that is the most radical departure from traditional regulatory approaches. Beginning in 1989, the carriers do not earn a return based on their costs but, instead, receive $0.35 in 1983 dollars per each barrel shipped, regardless of their costs. One of the basic tenets of regulation is that tariffs be cost-based. This provision of the Offer of Settlement does not conform to that fundamental regulatory principle.

As is the case with other TSM elements, there is no evidence in the record that demonstrates how this non-cost-based return results in rational, cost-based rates. In fact, Mr. Bertschi's analysis shows that it results in rates outside a zone of reasonableness. In addition, Mr. Bertschi's analysis shows that the resulting returns are far greater than any returns in the evidentiary record, even those offered by the carriers. For example, the TSM return on rate base in the year 2000 is 43.87%, based on the throughput assumption in TSM.

It is important to note that because the return is non-cost-based and instead is a return per barrel, the carriers will receive even greater returns if the actual throughput is higher than that assumed in TSM. Present evidence suggests that higher than projected throughput is quite possible. This is particularly true after 1995, given the reserve potential in the Arctic National Wildlife Refuge.

d. DR&R

The DR&R component of the Offer of Settlement is also a radical departure from traditional regulatory approaches. As utilized in TSM it is non-cost-based and allows the carrier to earn extraordinary profits on an expense item.

As discussed by Mr. Bertschi, the settling parties have stipulated to amounts to be collected from the shippers for DR&R. As set forth in the Offer of Settlement, the TAPS Owners will continue to be paid the stipulated amounts for DR&R, regardless of any change in circumstances. Thus, notwithstanding Mr, Bertschi's calculation that the TAPS Owners will begin overcollecting for DR&R on January 1, 1987, as a result of the changes in the federal tax laws, the TAPS Owners will continue to collect the stipulated DR&R amounts. The DR&R component, therefore, clearly has no relation at all to the actual monies required for the ultimate DR&R work. As in other instances, there is no evidence in the record that demonstrates how the stipulated, non-cost-based DR&R amounts result in rational, cost-based rates.

As further discussed by Mr. Bertschi, the carriers and their parent companies will have unlimited use of the DR&R collections prior to the time when the DR&R work will actually be performed. In light of this unlimited use and the imputed rate of return used to compute the amount of DR&R collections, the carriers and their parents will earn extraordinary profits on their DR&R collections. In fact, Mr. Bertschi has calculated that the TAPS Owners will earn over $46 billion in pure profit dollars on the DR&R collection supplied by the TAPS shippers. This is the equivalent of $7 billion in 1987 dollars (Bertschi Testimony, pp. 65-70).

These excess billions are paid for by the TAPS shippers through tariffs which are higher than they otherwise should be. Thus, the DR&R component of the Offer of Settlement clearly violates the fundamental principle of regulatory ratemaking that regulated entities should not be allowed to earn a return on an expense item, such as DR&R. This Commission followed this principle in *Cook Inlet*, by requiring the carrier to maintain detailed records of the DR&R

collected in order to allow reimbursements to the shippers of overcollections of DR&R funds (*Cook Inlet Decision*, p. 40).

This $7 billion profit does not appear in the $20 billion present value difference between BTM and TSM revenues calculated by Mr. Bertschi. Thus, the carriers and their parents will collect a total present value of over $27 billion in excess revenues when compared to a traditional cost-based methodology. Because the DR&R provision allows the carriers and their parents to reap the benefits of a completely unjustified gross windfall of $46 billion in profits, the Staff believes that the DR&R provision alone renders the Offer of Settlement patently unjust and unreasonable and inconsistent with the public interest.

e. Phase II Issues

The Offer of Settlement is heavily weighted to the carriers' litigation position and thereby fails to properly account for the Phase II issues of cost of construction and the haul road. In fact, the amortized deduction of $450 million from rate base is very close to the carriers' litigation position of no deduction from rate base. Mr. Bertschi, on the other hand, has taken a more reasonable position of splitting the difference between the carriers' and the protestants' litigation positions, even though the Staff believes that just and reasonable rates require a full deduction of $1.6 billion from rate base.

f. 1978-1981 Tariffs

The Offer of Settlement allows the carriers to collect their filed tariffs from 1978-1981, thus disallowing any refunds for those years. Those tariffs are based solely on the litigation position of the carriers and do not consider the *Cook Inlet Decision*, the TAPS Phase I decisions, or the litigation positions of any of the other parties to the TAPS proceedings. In light of the fact that the filed tariffs for 1979-1981 are even higher than the tariffs calculated under TSM, it is patently clear that the settlement tariffs for 1978-1981 are unjust and unreasonable.

3. Additional Check Analyses Demonstrate The Accuracy Of The Staff's Conclusions

As noted above, Mr. Bertschi's BTM was formulated so that the tariffs and revenues that resulted from the BTM would probably be so high as to be outside a zone of reasonableness. This was done in order to ensure that any conclusions reached by the Staff regarding the level of TSM tariffs and revenues would be conservative. To further confirm the accuracy of his conclusions, Mr. Bertschi performed two additional analyses.

In the first of these checks, Mr. Bertschi altered BTM to incorporate certain extreme carrier litigation positions, such as 100% equity capital structure, no deductions for ADIT, no rate base deduction for Phase II issues, and an extremely high rate of return. That analysis demonstrates that clearly unacceptable carrier litigation positions would have to be incorporated into BTM in order to match the large tariffs and revenues generated by TSM (Bertschi Testimony, pp. 75-77).

In his second such analysis, Mr. Bertschi assumes a zone of reasonableness of $0.50 above the already high BTM tariffs. The tariffs and revenues that result from TSM are still substantially higher than even that distended zone of reasonableness (Bertschi Testimony, pp. 77-79).

Mr. Bertschi has clearly shown that the results of TSM are unjust and unreasonable. TSM results are so radically different from the results of the more traditional regulatory approach adopted by this Commission in *Cook Inlet* that the Offer of Settlement is patently unreasonable and inconsistent with the public interest. The Bertschi analyses establish beyond peradventure that the Offer of Settlement should be rejected.

B. Other Elements of The Offer of Settlement Are Unlawful.

In addition to the unjust and unreasonable results produced by TSM, the Offer of Settlement contains specific features which are unlawful and consequently must be rejected by the Commission.

1. Pumpability Factor

Section II-2(c) of the Intrastate Settlement Agreement and Section II-10(f) of the Interstate Settlement Agreement contain provisions concerning the "Pumpability Factor."

The Pumpability Factor is designed to convert any barrel of non-Standard Petroleum to an equivalent amount of Standard Petroleum. The Pumpability Factor is the decimal fraction which expresses the relationship of the ability of TAPS to transport a particular type of petroleum relative to the ability of TAPS to transport Standard Petroleum, as measured under the TAPS Operating Agreement, as amended.

This provision is apparently derived from the arguments presented by two of the carriers, Exxon Pipeline Co. and British Petroleum Pipelines, Inc. during the TAPS evidentiary proceedings. Those carriers argued that the tariffs charged to ship Kuparuk oil should be higher than the tariffs for Sadlerochit oil because TAPS could transport more barrels of oil of low viscosity crude (Sadlerochit) than of high viscosity crude (Kuparuk). The two carriers argued that the shipments of Kuparuk crude reduced the pipeline capacity and the carriers needed to be compensated for the reduction. Consequently, a "surcharge" on Kuparuk shipments was advocated. In short, it was urged that the tariffs for Kuparuk petroleum would be higher than the tariffs for Sadlerochit oil.

In its Phase II NCC brief before FERC, the State strongly disagreed with this argument and urged that the additional charges for Kuparuk petroleum be disallowed (State's Phase II NCC Brief, pp. 284-292). The State argued that the justifications for the surcharge were based on a theoretical loss of capacity due to displacement of Sadlerochit barrels by Kuparuk barrels. The State argued further that Kuparuk oil has never displaced any Sadlerochit oil, and that the TAPS capacity will be sufficient to handle all of the Sadlerochit and Kuparuk crude that is tendered. The State concluded that the additional charges for Kuparuk petroleum should be disallowed. In addition, as the State pointed out, there is no record evidence that

it is more costly to the carriers to ship higher viscosity oil (*See*: State's Phase II NCC Brief, pp. 284-292).

Notwithstanding this, the Offer of Settlement allows the carriers to charge shippers of Kuparuk oil higher tariffs than shippers who ship Sadlerochit oil. The Staff supports the State's arguments in its Phase II NCC brief and opposes tariff adjustments based on the pumpability of various types of crude. If, in fact, TAPS was at capacity, and the higher viscosity crude was reducing the total carrying capacity, then perhaps the pumpability provision would be warranted. However, as the State has argued, that clearly has not been the case; nor is there any record evidence that TAPS is currently at capacity. Given the arguments presented by the settling parties as to the declining throughput on TAPS in the future, it appears highly unlikely that TAPS will ever reach its full capacity. As the State demonstrated, without a preemption of capacity, shippers should not have to pay a "pumpability surcharge" as is contained in the Settlement Agreement.

Consequently, for every year in which the settling parties cannot present proof that higher viscosity oil actually displaces lower viscosity oil, the Offer of Settlement results in unjustly discriminatory tariffs to those shippers who ship anything other than Standard Petroleum. This unjust discrimination is in violation of Alaska Statute 42.06.320, 380 in that the carriers will be subjecting shippers of higher viscosity crude to an unreasonable prejudice or disadvantage. Thus, the Commission must reject the Offer of Settlement, or, at the very least, reject the provision for pumpability factors in any years when no barrels of crude are preempted from shipment on TAPS.

2. Cost Allocation Provisions

The settling parties assert that the Offer of Settlement merely calculates rate ceilings above which the carriers cannot set their tariffs. The carriers are theoretically free to set tariffs that are lower than the calculated ceiling. However, Section II-2(f) of the Interstate Settlement Agreement contains provisions that create

tremendous disincentives for the carriers to reduce their tariffs below the ceiling amounts. These provisions restrain competition. As such, this section of the Settlement Agreement should be rejected by the Commission.

As explained by Dr. Horst, Section II-2(f) of the Interstate Settlement Agreement provides that: (1) fixed operating costs incurred by Alyeska; (2) ad valorem or other taxes imposed by the State of Alaska on the value of property; (3) the DR&R allowance; and (4) depreciation will be allocated among the TAPS Owners based on their Barrel-Mile Shares (Horst Testimony, p. 39). In other words, the Settlement converts unavoidable fixed costs into avoidable variable costs. Any carrier whose Barrel-Mile Share exceeds its composite ownership share in any particular year will save to pay for these new "additional variable costs" based on the additional throughput.

While the purpose of the provisions is apparently to "relieve perceived inequities of the Agreement" as applied to certain carriers (Horst Testimony, p. 36), the result of the provisions is to greatly reduce incentives among the TAPS Owners to compete for a larger share of TAPS transportation.

The Cost Allocation provisions will work a significant disincentive on the carriers to lower their tariffs to compete for available throughput. If any carrier lowers its tariffs and indeed is able to obtain a greater share of the throughput, that carrier is penalized by the Cost Allocation provisions by being forced to pay part of its revenue collections to the carriers' Agent for distribution to the other carriers.

In effect, the carrier that increases its throughput beyond its ownership share will actually incur a penalty charge for attempting to compete with the other TAPS owners. This will eliminate any incentive that a carrier may have to increase its throughput by reducing its tariff to attract more shipments.

The Cost Allocation provision of the Offer of Settlement eliminates all incentives fo competition among the TAPS Owners. It accomplishes this by penalizing any carrier that attempts to lower its tariff to capture additional throughput. The result of these

provisions will be to maintain the TAPS tariffs at high levels, even if excess capacity occurs in the later years of TAPS operations. The Commission should not countenance such a blatent attempt to maintain high tariffs and to restrain competition.

IV. THE OFFER OF SETTLEMENT SHOULD NOT BE APPROVED ON PUBLIC POLICY GROUNDS

A. The Promise Of An End to Litigation Is Illusory And Provides Insufficient Benefit to Justify the Results of TSM.

The TAPS Owners place unwarranted stock in their public policy arguments. Their most enticing lure is the seductive promise of an end to TAPS litigation. The TAPS Owners promise to relieve the process of a "gargantuan drain on resources" and "years of additional controversy" *(Carrier's Brief*, p.12). These arguments are little more than attractive wrapping for an empty box.

Moreover, such arguments turn the Commission's regulatory role on its head. If settlement of protracted and costly litigation were as important to the regulatory process as the settling parties suggest, the Commission's statutory obligations to insure the setting of proper rates in such cases would be greatly minimized. Indeed, the settling parties arguments implicitly suggest that "the benefit of their bargain" should be accorded more weight in this case than the reasonableness (or lack of it) of their rates.

The Staff respectfully suggests that the promise of an early end to this protracted litigation should not deter the Commission from engaging in the scrutiny and analysis required by the Legislature. If settlement becomes that important, parties with the economic clout and/or staying power to force a settlement would secure favorable rates for reasons other than their reasonableness.

There is much to suggest that the Settlement Offer will, in fact, not put an end to this litigation. Petro Star and Arctic Energy have protested the reasonableness of the Settlement Offer. Those protests will require analysis and resolution of the same issues which the TAPS Owners have promised to resolve by this settlement.

It is also suggested that fair and complete litigation of

these issues can be resolved by the Commission expeditiously now that the Supreme Court has remanded the case to the Commission. Much of the record needed for Commission decisions is already assembled. Necessary supplementation of that record need not be protracted if appropriate direction is imposed on the parties.

The true value of an "end of litigation" can only be assessed by visualizing its attendant costs. It is suggested that the heaviest costs will be exorbitant rates and revenues, inadequate refunds, and unfair treatment of local shippers. It is respectfully urged that these costs are too high. Whatever the inherent value of ending litigation might be, in this case it simply is not enough to justify the inequities and shortcomings of TSM.

B. Non-Parties To The Settlement Are Unfairly Prejudiced By The Offer Of Settlement

The TAPS Owners somewhat disingenuously suggest that the rights of non-settling parties are "preserved," since the Offer of Settlement anticipates that non-settling parties will retain the right to pursue litigation before the Commission (*See: Carriers' Brief*, pp. 13-14, 16). Indeed, the TAPS Owners' footnoted reference to Petro Star (*See: Ibid.*, p. 14, footnote 19) illustrates the transparency of this position. As predicted by the TAPS Owners, once the Commission resolves the questions raised by the Offer of Settlement, Petro Star (and presumably Arctic Energy and any other small, intrastate entity interested in protesting the reasonableness of these rates) will eschew further litigation. The essence of this rather brazen suggestion is that the cost of litigation against the TAPS Owners will be so great that small, local entities could not afford the contest. The record of these proceedings gives much credence to the TAPS Owners' prediction.

The TAPS Owners' almost cavalier disdain for Petro Star sheds meaningful light on the Offer of Settlement. The TAPS Owners have asked the Commission to measure their settlement against significantly lower standards than are traditionally applied by the Commission. The TAPS Owners have sought this in great part on the grounds that most of

the parties to this proceeding have agreed to settle and that the non-settling parties have the right to continue should they wish to. The obvious catch to the TAPS Owners' strategy is that the non-settling parties and later intrastate shippers will not, as a practical matter, be able to challenge the rates established by TSM. Should the TAPS Owners' strategy prove successful the Offer of Settlement will never be judged against the just and reasonable standards established by the Legislature and will, accordingly, be imposed on non-settling parties and future intrastate shippers without the close Commission scrutiny required by law.

The practical result for non-settling intra-state shippers, such as Petro Star or Arctic Energy, who do not have the resources to either pursue the ongoing challenge to the TAPS Owners' filed rates or to file new callenges to future rates, is that, even with the promised rate reductions, intrastate shippers will be required to pay exorbitant rates which unjustly exceed levels this Commission would normally require. If the TAPS Owners' prediction is accurate, then it is respectfully suggested that public policy concerning the non-settling intrastate interests requires expeditious resolution of the existing challenges to the filed rates according to the Commission's traditional standards.

Continued litigation need not be at the expense of Tesoro and MAPCO. Tesoro has argued forcefully that the Commission has the power to set reduced, interim rates and otherwise require the payment of refunds to intrastate shippers pending resolution of existing challenges to the filed rates (*See*: Tesoro's Formal Complaint and Request to the APUC to Set an Interim Rate, Require Refund, and to Expedite the Proceedings to Estabish a Permanent Tariff Rate, Docket No. P-78-5, pp. 5-11). Should the Commission adopt this course of action, MAPCO and Tesoro would not unfairly suffer from patently unreasonable rates while the Commission proceeds to set just and reasonable rates.

C. The Parties' "Strategic Goals" Cannot Justify Unjust And Unreasonable Rates

The TAPS Owners urge the Commission to accept their settlement because

> . . . the parties were able to structure this settlement in a manner that conformed more closely to each sides overall strategic goals than a litigated decision likely would have done. ***Carriers' Brief***, p. 14.

It is not explained how just and reasonable rates set in a manner consistent with the Commission's traditional regulatory approaches would not conform to each side's strategic goals. Presumably the TAPS Owners concluded that the rates set by the Commission would be too low and the State concluded that rates set by the Commission in outlying years would be too high to encourage continued development.

As demonstrated by the testimony of Mr. Bertschi, the rates set by TSM are in excess of those that would be allowed by the Commission's traditional regulatory approaches. This holds true even for the outlying years. Thus, the State's compromise does not necessarily serve its announced strategic goals as effectively as rates set by more traditional approaches.

It is also not so clear that TSM and its excesses are the necessary ***quid pro quo*** for encouraging future development. There is ample evidence of the existence of ready supplies of crude oil in the immediate environs of TAPS. Most recently, announcements concerning exploration and development of the Arctic National Wildlife Refuge have added to existing evidence that the level of TAPS rates will not hinder long-range development of Alaskan oil.

No matter how one views the effectiveness of TSM in relation to the State's goals, Mr. Bertschi has clearly demonstrated how successful the TAPS Owners have been at meeting their "strategic goals." TSM clearly provides the TAPS Owners with revenues which far exceed those that "are commensurate with the risks [the TAPS Owners] have borne" (***Cf. Carriers Brief***, p. 15). For this reason alone the "strategic goals" argument must fail. Nor can these "goals" justify the intertemporal discrimination produced by TSM at the expense of early shippers, or the "cost allocation provisions" which dampen

competition on the TAPS.

The Staff's opposition to the Offer of Settlement does not suggest that parties should be prevented from fashioning creative solutions to vexing differences. To the contrary, such settlements are to be encouraged; but only to the extent that they produce rates which fall somewhere in the permissible zone of reasonableness and otherwise meet the standards set by the Legislature for pipeline rules, regulations and rates. The State's efforts to meet its strategic goals are laudable and impressive. But they have come at too great a cost in terms of traditional regulatory principles. Indeed, the true irony of this settlement may be that in the long run traditional regulatory principles would probably serve the goals articulated by the State as well or better than TSM.

The implicit suggestion made by the settling parties is that their strategic goals outweigh the Commission's obligations to actively participate in the setting of just and reasonable rates. Rates which are not just and reasonable cannot be set merely to satisfy the parties' concept of public interest. As the court in ***Michigan Consolidated Gas Co. v. Federal Power Commission***, 283 F.2d 204 (D.C. Cir. 1960) said,

> In viewing the public interest, the Commission's vision is not to be limited to the horizons of the private parties to the proceeding. ***Michigan Consolidated Gas Co. v. Federal Power Commission***, 283 F.2d 204, 226, *cert. denied*, 364 U.S. 913, 81 S.Ct. 276 (1960).

D. Approval Of The Offer Of Settlement On The Grounds Of "Consistency To The Interstate Tariff Regime" Is Inconsistent With The Commission's Statutory Duties

The TAPS Owners' argument that Section 13(4) of the Interstate Commerce Act might be invoked to undo the Commission's rejection of the Settlement Offer stretches credulity well past the breaking point. The TAPS Owners' appeals to the promotion of federal-state comity abuse any reasonable concept of "public policy" and constitute unfounded scare tactics.

This Commission has considered and rejected the concept that

it is required to follow FERC methodology in pipeline cases involving both interstate and intrastate service *(Cook Inlet Decision*, p. 14). As the Commission stated in that case:

> This Commission performs its obligations by setting a rate that is based on intrastate property and operations. A fair procedure to identify intrastate property and operations is all that is required. *(Ibid.)*

Here such a procedure not only exists, it has been in place since nearly the inception of the TAPS operations. Accordingly, the TAPS Owners' suggestion that approval of the TSM settlement "will virtually eliminate the possibility that [Section 13(4)] would need to be involved" *(See: Carriers Brief*, p. 17) is empty rhetoric apparently calculated to induce the Commission into passive acceptance of the Settlement Offer.

It should also be noted that Section 13(4) does not prohibit all disparities between interstate and intrastate rates. Its structures apply only to "undue burdens" on interstate commerce or rates that discriminate against the interstate shippers or carrier. *North Carolina v. United States*, 325 U.S. 507 (1945). There is no reason to believe that any disparity between interstate and intrastate rates will produce sufficient divergence to constitute "undue burden" on interstate commerce.

Of course, such concerns are clearly premature at this point in time. The FERC has never set "just and reasonable" rates for TAPS. FERC's actions to date involve findings based on the lower "fair and unreasonable and in the public interest" standard. It is very doubtful that rates set as just and reasonable by this Commission can be unduly burdensome on shippers and carriers who have agreed to pay higher interstate rates for reasons extraneous to whether the rates are just and reasonable. As the Supreme Court has said in *Georgia Public Service Commission v. United States*, 283 U.S. 765 (1931):

> . . . when state rates are assailed on the ground that they result in undue prejudice to interstate shippers or discriminate against interstate commerce, the Commission must determine whether the existing interstate rates are reasonable, as it may not require intrastate rates to be raised above a reasonable level. *Georgia Public Service*

Commission, supra, at 770.

Finally, this Commission has yet to consider the merits of these rates. It is, therefore, impossible to know what, if any, discrepency may result from the Commission's deliberations. In these circumstances the TAPS Owners entreaties concerning Section 13(4) are patent scare tactics. Should the Commission follow the logic proffered here by the TAPS Owners, the Commission's jurisdiction over any interstate-intrastate pipeline will effectively be abdicated to the FERC. Such a result is contrary to the Commission's legislative mandate, the provisions of the Interstate Commerce Act, including Section 13(4), and the Commission's own precedent.

V. CONCLUSION

The lesson of the Staff's evidence and comments is clear. The Offer of Settlement must be rejected. It must be rejected because it produces results which are not just and reasonable.

But even if the Commission does not adhere to the standard mandated by AS 42.06.370(a) and opts for some lesser standard as proposed by the settling parties, it must reject the Offer of Settlement. Initially, this is so because the public policy arguments made by the settling parties are either devoid of merit or otherwise critically suspect. Ultimately, however, the Offer of Settlement does not meet any of the lower standards urged by the settling parties. Since TSM produces results which are so radically divergent from those produced by traditional regulatory approaches it is inconsistent with the public interest.

Once the Offer of Settlement is rejected the Commission is urged to expedite its conclusion to these proceedings. The manner of that conclusion should be addressed in separate pleadings. On the other hand, should the Commission accept the Offer of Settlement as to the settling parties, it still must proceed to the conclusion of these proceedings. The objections of Petro Star and Arctic Energy require hearing and resolution. That can only be effected through full prosecution of the remand ordered by the Supreme Court and completion

of Phase II of the TAPS proceedings. Those tasks should be undertaken with alacrity.

DATED: December 17, 1986

Respectfully submitted,

Terry W. Bird

Terry W. Bird
Special Counsel to the Staff
of the Alaska Public Utilities
Commission

TWB/P10010108

CERTIFICATE OF SERVICE

I hereby certify that I have this day served copies of the foregoing document upon all parties in Docket No. P-86-2.

Dated: December 17, 1986

Terry W. Bird

STATE OF ALASKA

BEFORE THE

ALASKA PUBLIC UTILITIES COMMISSION

Before Commissioners: Marvin R. Weatherly, Chairman

Carolyn S. Guess
Susan M. Knowles
Louis E. Agi
Kathleen L. Whiteaker

In the Matter of the Consideration of an Offer of Settlement of Tariff Rates for the Intrastate Transportation of Petroleum Over the Trans Alaska Pipeline Sytem by AMERADA HESS PIPELINE CORORATION, ARCO PIPE LINE COMPANY, BP PIPEINES INC., EXXON PIPELINE COMPANY, MOBIL ALASKA PIPELINE COMPANY, PHILLIPS ALASKA PIPELINE CORPORATION, SOHIO PIPE LINE COMPANY and UNOCAL PIPELINE COMPANY	DOCKET NO. P-86-2

PREFILED TESTIMONY OF RUDOLPH L. BERTSCHI

ITPUC

December 17, 1986

PREFILED TESTIMONY OF RUDOLPH L. BERTSCHI

I. INTRODUCTION

Q. Please state your name and address.

A. My name is Rudolph L. Bertschi. My address is 616 38th Avenue, Seattle, Washington.

Q. For whom are you offering testimony in this matter?

A. I am appearing on behalf of the Staff of the Alaska Public Utilities Commission.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to provide some guidance to the Commission in its determination as to whether the proposed Offer of Settlement should be accepted as a resolution of the TAPS proceedings. Specifically, I have developed a tariff methodology which I use as a benchmark against which to compare the TAPS Settlement Methodology ("TSM"), in order to assess the reasonableness of the tariffs and revenues produced by TSM.

Q. Briefly state your qualifications and experience relative to your testimony and the matter before the Alaska Public Utilities Commission (APUC or Commission).

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A. I am a consulting engineer/economist, providing services in matters affecting price-regulated industries. I hold Master of Science (M.S.) and Bachelor of Science (B.S.) degrees from the University of Illinois at Urbana-Champaign. My Bachelor's degree is in Teaching Engineering Technology, and my Master's degree is in Mechanical Engineering with concentration in thermal systems. I have also done post-M.S. studies in engineering systems and economics. I am a registered professional engineer in the State of Illinois. I have testified before more than a dozen different state and federal regulatory commissions on issues including power supply planning, cost of service, rate design, and financial planning.

From 1982 through 1985, I was employed by the Alaska Public Utilities Commission (APUC) under the classification of Utility Engineer IV. My work dealt primarily with matters related to electric utilities and petroleum pipeline common carriers. More specifically, I was responsible for conducting analyses and studies of questions concerning cost allocations, rate base valuations, and determinations of revenue requirements for these entities.

From 1978 to 1982, I was employed by the Illinois Office of Consumer Services. While working there, I conducted various utility studies and offered expert testimony on various issues of regulatory concern.

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My qualifications and background are more fully detailed in Exhibit APUC Staff _____ (RLB-1).

Q. Describe the materials that you have reviewed in preparation of your testimony.

A. I have reviewed (1) the Offer of Settlement and the explanatory notes accompanying the Offer; (2) the prefiled testimony of Messrs. Hildahl and Horst in this Docket; (3) the briefs filed by the State and the carriers in this Docket; (4) the APC Phase I orders for TAPS; (5) the Commission's Order No. 12 in Docket P-82-1 (re Cook Inlet Pipeline Company); (6) the FERC ALJ's (Judge Kane) Initial Decision in TAPS; (7) the State's Phase II NCC brief in FERC; and (8) other material cited herein.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. Summarize your conclusions and recommendations.

A. I recommend that the Commission reject the Offer of Settlement. This recommendation is based on the following conclusions:

(1) TSM results in tariffs that are unjust and unreasonable in most years of the settlement in that they are not within a zone of reasonableness, as defined by traditional cost-based regulatory approaches;

(2) The TSM results are so radically different from those produced by more traditional regulatory approaches that TSM's acceptance would not be in the public interest;

(3) Over the life of the settlement, the carriers will receive more than $20 billion ($1987) in unjust and unreasonable revenues;

(4) The State will lose more than $5 billion in revenues as a result of the unjust and unreasonable tariffs;

(5) The carriers will earn returns far in excess of any returns supported by record evidence, and which are patently unjust and unreasonable;

(6) TSM's hyper-accelerated depreciation schedule does not match costs and benefits to the shippers, and there is no record evidence to support its use;

(7) The $0.35 per barrel return provision is unjust and unreasonable in that it is not cost-based, has no support in the record, results in excessive carrier returns, and results in tariffs that are unjust and unreasonable;

(8) The 100% equity capital structure results in unjust and unreasonable tariffs;

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(9) The amortized $450 million deduction from rate base for Phase II issues is too small and results in unjust and unreasonable tariffs; and

(10) The Dismantling, Removal and Restoration ("DR&R") provision is not cost-based and allows the carriers to earn billions of dollars of return on an expense item, thus allowing the carriers an unjust and unreasonable return.

Q. Explain how your testimony is organized.

A. The balance of my testimony is presented in six parts:

(III) Criteria for Consideration of Offer of Settlement

In that section, I discuss the criteria that the Commission should use in assessing the Offer of Settlement;

(IV) TSM

In that section, I briefly describe TSM and tabulate the tariffs, revenues, and returns resulting from that methodology;

(V) Benchmark Tariff Methodology ("BTM")

In that section, I present the model which is the benchmark against which I assess the reasonableness of TSM;

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(VI) Comparison of TSM and BTM

In that section, I compare the tariffs, revenues, and returns resulting from those methodologies; and present a number of analyses to make that comparison; and

(VII) Conclusions

In that section, I summarize my findings and conclusions.

III. CRITERIA FOR CONSIDERATION OF OFFER OF SETTLEMENT

Q. Explain what you believe are the criteria that the Commission should use in considering the Offer of Settlement.

A. I believe that the Commission should compare the results of TSM with the results of a plausible tariff methodology based on the more traditional regulatory approach used by the Commission in its *Cook Inlet* decision, Docket P-82-1, Order No. 12, January 14, 1985 ("*Cook Inlet* decision"), and on the evidentiary record in the TAPS proceedings. This is the same type of approach used by the settling parties in Mr. Hildahl's testimony. A comparison of the results should be made as to the annual tariffs, and the revenues and returns received by the carriers. In this way, the Commission can determine if TSM produces results that are within a zone of reasonableness.

Q. Why is it important that the Commission determine if the TSM rates fall within a zone of reasonableness?

A. Generally, the regulatory standard for tariff rates is that in order for them to be acceptable they must be within a zone of

reasonableness. Thus, the results produced by the Offer of Settlement should be analyzed to determine if they fall within a zone of reasonableness. Apparently, the settling parties agree because Mr. Hildahl performed an analysis purporting to determine whether the settlement produces results that are within a zone of reasonableness.

Q. The settling parties assert that the Offer of Settlement should be assessed as a whole rather than looking at the tariffs that result in certain years. Do you agree with that assertion?

A. No, I do not. The Commission should assess the results of TSM primarily on an annual basis. The results of an acceptable settlement should lie within a zone of reasonableness each year.

The settling parties argue that the Offer of Settlement should be assessed as a whole and that the Settlement can be approved even if it results in tariffs that are too high in certain years, as long as those high tariffs are compensated for by lower tariffs in other years. For example, in describing the results of TSM, the Explanatory Statement of the State of Alaska and the Department of Justice submitted to the Commission states that "[t]he resulting early year tariffs, if judged alone, could be viewed as excessive; but when weighed with tariffs in the later years and judged as a part of a comprehensive and early settlement, they are acceptable."

[*See*, Explanatory Statement of the State of Alaska and the United States Department of Justice in Support of Settlement Offer ("Explanatory Statement") p. 21].

This is contrary to the State's position during the TAPS evidentiary proceedings. During those proceedings, the carriers argued that the tariffs for the years 1977-1981 should be evaluated on a "composite period" approach rather than on an annual basis. The State disagreed and stated that tariffs must be assessed on an annual basis, rather than averaging several years. [*See*: State's Phase II NCC Brief before FERC, pp. 298-299]. I agree with the approach used by the State during litigation and believe that the Commission should follow that approach in assessing the Offer of Settlement.

The carriers have also argued that the Offer of Settlement should be assessed by looking at the total results. Mr. Hildahl compares what he argues is the present value of the total TSM revenues with the present value of the total revenues resulting from a depreciated original cost methodology. The carriers state in their Brief in Support of the Offer of Settlement ("carriers' brief") that even if the tariff methodologies produce significantly different tariff patterns, as long as they have roughly equivalent present values, they have the same long-term value to both the carriers and the shippers. (*See* Carriers Brief, p. 18).

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I disagree with that way of assessing the Offer of Settlement. While two different tariff streams that have the same present value may have the same long-term value for the TAPS carriers, that will be true only for shippers who ship the same percentage of throughput each year over the entire life of TAPS. It certainly will not be true for a shipper who will only ship oil through TAPS for a portion of the TAPS settlement life, or a shipper who ships different percentages of the total throughput each year. For example, a shipper who only has throughput on TAPS from 1986-2000 does not care about the present value of the revenues for the entire TSM life. That shipper is concerned only about the tariffs for the years 1986-2000. Tariff levels in one year cannot be used to justify tariff levels in another year. As the State pointed out in its Phase II brief, each year must be analyzed individually.

I do agree, however, that in order to compare TSM to a more traditional tariff methodology, it is helpful to compare the present value of the revenues that result from the two methodologies. If the present value revenue requirements of the two methodologies are roughly equivalent, then we can conclude that the carriers are earning reasonable returns and revenues over the life of the system.

However, as I have already emphasized, the results should be compared on an annual basis; consequently, a present value analysis is not sufficient. TSM tariffs could be unreasonably

high or low each and every year and still result in revenues that have the same present value of revenues that result from a more traditional methodology.

While I have calculated the present value of TSM revenues and compared it to the present value of the revenues that result from other methodologies, this comparison is only one analytic tool useful in determining whether the Offer of Settlement should be approved. It primarily measures the value of the settlement to the carriers, rather than to the individual shippers on TAPS. The focus of my analysis has been the yearly tariffs that result from TSM. If those tariffs are so high as to be outside a zone of reasonableness, then present value analysis can be used to determine the impact of those tariffs by measuring the excess monies paid by shippers and collected by the carriers.

Q. Explain how you have calculated the present value of revenue requirements for TSM and the other methodologies used in your analysis.

A. In order to compare the present value of the total revenues produced under TSM with the present value of total revenues produced under other ratemaking methodologies introduced in my testimony, I have calculated the present value of the differences in revenues collected under these methodologies. This is mathematically equivalent to calculating the present value of the revenues produced under each methodology, and

then subtracting one from the other. However, I believe that directly calculating the present value of the revenue differences produces results that are more meaningful.

I have calculated the present value differences in 1987 dollars because that is the year in which the Commission will be considering the Offer of Settlement. It is also the dollars with which we will all be most familiar.

In order to calculate the present value difference of revenues collected from 1978 to 1986, I have relied on the fact that the carriers must pay interest on the refunds owed to the TAPS shippers. I have used the statutory interest rates to calculate the present value differences for past collections of revenues. For the years 1978-1982, that interest rate is 5 percent. [*See*: Renewal of the Petition of the State of Alaska for Declaratory Order Concerning TAPS Refund Interest Rates, 5/28/82, p. 12, in FERC Docket Nos. OR78-1 and RM77-22]. For the years 1983-1986, the interest rate is based on the prime rate charged by commercial banks for short-term business loans. [FERC Docket No. RM77-22, Order No. 273 at 1]. I have calculated these rates on a quarterly basis as reported by the ***New York Times***.

In order to calculate the present value difference for the years 1987-2011, I have used a 0% real discount rate with inflation accounted for by using the inflation rates projected in TSM. I have used a 0% real discount rate because that is

apparently what the State used in analyzing the present value of the Settlement, and it is consistent with the view that the future tariff levels are as important as the past and present levels. [*See*: A Review of the TAPS-Tariff Agreement between the State of Alaska and ARCO, by ARTA, Inc., 3/15/85, p. 10].

While I believe that a 0% real discount rate is appropriate in this matter, to argue over the discount rate would introduce an unnecessary controversy, because the choice of a discount rate does not affect the final conclusions. Later in my testimony I will calculate the present value difference of revenues produced by TSM and my benchmark tariff methodology using 0%, 5% and 10% real discount rates. As will be seen, the discount rate makes no difference in my conclusions.

Q. Why do you calculate the present value difference of the total revenues, rather than just the intrastate revenues?

A. I understand that this Commission only has jurisdiction over intrastate shipments on TAPS. However, I believe that the easiest way to analyze the present value of TSM and other methodologies is to look at the total revenues produced, regardless of whether they are interstate or intrastate revenues. This is the same technique used by Mr. Hildahl in his analysis supporting the Offer of Settlement. In addition, I have not analyzed the difference in tariffs to the GVEA mid-point connection that would result from TSM as compared to other methodologies. Since everyone agrees that the rolled-

in-barrel-mile method will be used to calculate those tariffs, only the full-length tariffs are at issue.

Q. The settling parties also assert that TSM should be assessed as a whole package rather than analyzing each and every element. Do you agree?

A. No, I do not. The general regulatory standard is that it is the end results that count, that is, that the tariffs must lie within a zone of reasonableness. However, the normal procedure in analyzing those tariffs is to investigate the elements that go into their calculation. Therefore, I believe that analyzing the separate elements of TSM is a useful and necessary tool to assess the reasonableness of the Offer of Settlement.

IV. TSM

Q. Please describe TSM.

A. TSM is a trended original cost (TOC) ratemaking model whose most prominent feature is a hyper-accelerated depreciation schedule. A detailed description of TSM appears in the testimony of Dr. Horst as well as in documents filed with the Commission by the settling parties. As described by Dr. Horst, the prominent features of TSM include: (1) the

aforementioned depreciation schedule and TOC rate base; (2) a capital structure consisting of 100% equity; (3) a 6.4 percent real return on equity through 1988 and a return of $0.35 per barrel (1983$) of throughput thereafter; (4) a $450 million deduction from rate base amortized from 1978 through 1984 to account for a variety of Phase II issues including cost of construction and the haul road; and (5) no carrier refund obligation until 1982.

Using the data supplied by the settling parties and apparently used by Mr. Hildahl in his testimony, viz. Appendix 5 to the Explanatory Statement filed by the State and the Department of Justice in the FERC settlement proceedings, and the computer program "TSM-6," I have calculated the tariffs, revenues, and return on rate base for the years 1978 through 2011 that result from TSM. Appendix 5 and TSM-6 are supposedly based on historical data and agreed-upon projections of future data. The output of TSM-6 is presented in significant part in APUC Staff Exhibit ___ (RLB-2).

V. BENCHMARK TARIFF METHODOLOGY ("BTM")

Q. Describe how you developed the model which you use as the benchmark to assess the reasonableness of TSM's rates.

A. I agree with Mr. Hildahl that the depreciated original cost

(DOC) methodology adopted by the Commission in its *Cook Inlet* decision is an appropriate benchmark to determine whether the results produced by the Offer of Settlement are within a zone of reasonableness. Thus, the model that I have developed is generally based on the *Cook Inlet* decision methodology. As discussed below, in developing the individual components of that benchmark, I have been guided by the precedents established by the Commission in the *Cook Inlet* decision, by the APC and Judge Kane in their TAPS Phase I Initial Decisions, and by the parties' litigation positions as found in the evidentiary record of the TAPS proceedings.

Q. Describe the derivation of the depreciated original cost rate base in BTM.

A. The depreciated original cost rate base is comprised of the following elements:

(1) carrier property;
(2) adjustment for Phase II issues;
(3) AFUDC;
(4) accrued depreciation;
(5) working capital; and
(6) ADIT.

Q. Describe how you calculated the carrier property balances.

A. In order to calculate the base carrier property balances for

the years 1978-1982, I started with the 13-month average of the balances stipulated by the parties to the TAPS proceeding as found in the State's Phase II NCC brief filed with FERC, deducting an amount for interest during construction. For the years 1983 and beyond, I used the 1982 carrier property balances adjusted for net additions as found in TSM.

Q. What adjustments did you make for the Phase II issues?

A. I adjusted the base carrier property balances to take into account the Phase II issues of cost of construction and the haul road. In Phase II of TAPS, all of the protestants argued that a deduction from carrier property must be made due to imprudent expenditures by the carriers during construction of the pipeline. The State, Staff, and Arctic Slope Regional Corporation ("ASRC") argued that $1.57 billion should be deducted for those imprudent expenditures. The carriers' position was that no deduction was warranted.

In addition, the Staff and State argued that, since the haul road was used by North Slope producers as well as the carriers, a deduction from carrier property should be made to recognize that use by the producers. That deduction was calculated to be $114.925 million. The carriers argued that no deduction should be made.

Recognizing the wide range of possible outcomes as a result of those widely disparate litigation views, for BTM I have

elected to deduct only half of the $1.687 billion deduction that the Staff has asserted was necessary to achieve just and reasonable rates.

In order to calculate that deduction from carrier property, I used data from the Appendices found in the State's Phase II NCC FERC brief. The State calculated carrier property balances based on a zero deduction from rate base as well as on a deduction of the total $1.687 billion. To calculate the carrier property balances resulting from a deduction of half of the $1.687 billion total, I averaged the two State carrier property balances. The resulting carrier property balances are found in APUC Staff Exhibit ___ (RLB-3), Schedule 2.

Q. Please describe how you calculated AFUDC.

A. The AFUDC balances in BTM reflect both the amount of carrier property included in rate base and the appropriate cost of capital. In BTM the adjusted carrier property balances are determined by taking the average of the unadjusted stipulated carrier property balances reported in the State's Phase II, NCC Brief, Appendix B, and the State's adjusted ($1.687 billion deduction) carrier property balances shown in Appendix A. The State's Brief also contains the amounts of AFUDC associated with the carrier property balances shown in Appendices A and B. I have averaged these amounts to determine the AFUDC associated with the average carrier property balances.

That result has been adjusted to reflect the cost of capital used in BTM (12.0 percent) as opposed to that used to develop the AFUDC amounts in the State's brief (11.5 percent); *i.e.*, I have increased the AFUDC to reflect this difference. The results are shown in Exhibit APUC Staff ____ (RLB-3), Schedule 3.

The BTM AFUDC numbers are probably higher than they would be if I had followed the AFUDC methodology adopted by this Commission in its ***Cook Inlet*** decision. In that decision, the Commission stated that AFUDC should only include amounts actually expended and that the actual carrier capital structures at the time of the construction expenditure should be used to calculate AFUDC.

During construction of TAPS, the carriers' actual weighted capital structure was about 89% debt and 11% equity. Because debt generally costs less than equity, my use of a 50% debt/50% equity capital structure may well result in AFUDC numbers that are higher than those dictated by the ***Cook Inlet*** methodology. However, I adopted that capital structure to ensure that BTM tariffs are amply high, and in order to avoid a theoretical economic argument over the changing costs of debt and equity as a result of capital structure changes.

Q. Describe how you calculated accrued depreciation.

A. The depreciation and amortization is based on the ***Cook Inlet***

decision, in which the Commission used a straight-line, unit-of-time depreciation schedule. In addition, the parties in the TAPS proceeding entered into a depreciation stipulation whereby carrier property would be depreciated on a straight-line basis. In accordance with that stipulation, for the years 1978-1981, the annual depreciation rate is based on a 25-year life; and, for the years 1982 and beyond, depreciation amounts are based on a 30-year life of the balance remaining after 1981.

I also depreciated the net additions to carrier property, as found in TSM-6, according to the stipulated depreciation rate.

Q. Describe your derivation of the working capital component of the rate base.

A. Working capital consists of materials and supplies, prepayments, and cash working capital. I have used the working capital numbers found in TSM-6 for all years.

Q. Explain the derivation of Accumulated Deferred Income Taxes ("ADIT") in the benchmark model.

A. The treatment of ADIT is derived from the ***Cook Inlet*** decision, where the Commission decided that the ADIT balance resulting from normalization should be deducted from the rate base.

The difference between straight-line book depreciation and

accelerated state and federal tax depreciation gives rise to ADIT in the early years of TAPS life when the carriers' tax expense (what is paid to tax authorities) is exceeded by the tax allowance (what is charged to shippers in rates). Thus, in the early years of TAPS life, the carriers receive the benefit of a cost-free source of capital.

In Phase I of this proceeding the State argued that the income tax allowance in the cost of service should be determined on the basis of the liberalized tax depreciation rates; *i.e.*, the benefits should "flow through" to the shippers. The carriers argued, on the other hand, that they should be permanent recipients of the benefits of book/tax depreciation differences. The Staff's position was for "normalization," which creates a book/tax timing difference where, eventually, the ADIT is returned to the shippers in the form of reduced rates. In the Phase I decisions, both Judge Kane and the APC embraced normalization.

A subsidiary issue is what, if any, return the carriers should be allowed to earn on investment supported by ADIT. In Phase I, the carriers argued that they should earn a full return on all invested funds, regardless of their source. The Staff asserted that an amount equal to the ADIT should be deducted from rate base, in effect denying the carriers any return on funds not supplied by investors. Judge Kane, in his Phase I decision, opted to deduct the ADIT balance from rate base. The APC chose instead to reduce rates by the balance of ADIT

times the prevailing rate for risk-free securities.

In the benchmark model, just as in the ***Cook Inlet*** decision and TSM-6, ADIT is normalized and deducted from rate base. The computation of ADIT in my model is based on the same tax depreciation rates that are employed in TSM-6. My book depreciation rates are based on a straight-line, unit-of-time method, such as in ***Cook Inlet***, whereas TSM book depreciation rates are based on a hyper-accelerated, unit-of-throughput method. As a result, the early book/tax differences in my model are greater than those in TSM, which lead to higher ADIT balances. The results of my calculations are shown in Exhibit APUC Staff ____ (RLB-3), Schedule 4.

Q. Explain the derivation of the return requirement in BTM.

A. The return requirement equals the weighted cost of capital, which is a function of the capital structure, the cost of debt, and the cost of equity.

Q. What capital structure have you employed in your methodology?

A. For a number of reasons, I have chosen to use a hypothetical 50 percent debt and 50 percent equity capital structure in 1978-1982. First, the Commission decided in the ***Cook Inlet*** decision that hypothetical capital structures may be appropriate. Second, it is the Staff's litigation position as to the capital structure that will produce just and reasonable

tariffs. Third, I believe it is a fair compromise of the various litigation positions of the parties. Those proposed capital structures included the following: State-89% debt/11% equity, or, alternatively, 75% debt/25% equity; FERC Staff -- parent company capital structures; ASRC -- 66.66% debt/ 33.33% equity; carriers -- a range of 46% debt/54% equity to 0% debt/100% equity. Fourth, the APC in its Phase I decision adopted the parent company capital structures. This equaled a weighted cost of capital of 53.31% equity/46.69% debt, which is very close to a 50/50 capital structure. Judge Kane declined to find any specific capital structure.

Q. Explain how you calculated the capital structure beyond 1982.

A. For the years between 1983 and 2011, I have followed the Commission's ***Cook Inlet*** decision. In that case, the Commission imputed a capital structure to Cook Inlet Pipeline Company, specifying a beginning and ending capital structure and finding intermediate values by linear interpolation. In formulating BTM I have also done a straight-line interpolation resulting in the imputed debt for TAPS being retired evenly from year to year.

Q. What ending capital structure did you specify for TAPS?

A. I have used an ending capital structure of 100% equity. In the ***Cook Inlet*** decision, the Commission stated that ". . . an entity which is going out of business should be allowed to

retire its debt sometime prior to actual shutdown of operations." (*Cook Inlet* decision, p. 21). This is because the risk associated with a single-asset enterprise reputed to be going out of business would preclude long-term debt financing. Thus, it is reasonable to anticipate that by 2011, the last year of TAPS stipulated life and the last year of TSM, any investment in the pipeline will be 100 percent equity. This is what I have specified in the benchmark model.

However, this may well result in an overstatement of equity in the BTM because the evidence indicates that there is reasonable assurance of TAPS operation through at least 2011. In fact, the life of TAPS may extend beyond 2011, and the provision for "Depreciation of Eligible New Property In Service" in TSM anticipates the possible use of TAPS after that time.

Q. Describe the rates of return which you have included in your methodology.

A. For the years 1978-1982 I have used a nominal 12% return for the overall cost of capital. That return is equal to the Staff's litigation position and is based on a cost of debt of 9% and a cost of equity of 15%. In addition, I believe a 1978 return of 12% is well supported by the Phase I decisions and is a reasonable compromise of the parties' litigation positions.

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In its Phase I decision, the APC concluded that the cost of debt should be 8.89% and the cost of equity should be 15%, for an overall weighted cost of capital of 12.15%. Judge Kane decided on an 11.5% overall return. The State argued for an overall return of 10.0-10.25%. The carriers' overall cost of capital positions ranged from 12.4-20.0%. In the FERC proceeding, FERC Staff argued for a 10.8% overall cost of capital, and ASRC advocated an 8.86% overall cost of capital.

Q. Why have you used a 12% nominal return only for the years 1978-1982?

A. While the Staff in its evidentiary presentation used a 12% return for the years 1978-1982, and while I believe it is reasonable to assume that the APC and Judge Kane envisioned that the rates of return that they ordered would be in effect prospectively for several years, I don't believe that it is reasonable to assume that the same rate of return would be in effect over the life of TAPS. It was therefore necessary in deriving BTM to calculate rates of return for the years 1983-2011.

In order to derive rates of return for those years, I decided to follow the TSM methodology of using a real rate of return in order to arrive at a nominal rate of return. Since my methodology uses a DOC rate base rather than a TOC rate base, I needed to add an inflation factor to the real rate of return to derive a nominal rate of return. I therefore added the

annual inflation factors found in TSM-6 to the real return to arrive at the nominal cost of capital for each year for 1983-2011.

Since all of the parties and both Commissions looked at only nominal returns in the TAPS proceedings, there is no record evidence as to just and reasonable real returns. Therefore, I converted the 12% nominal return in 1978 to a real return to arrive at a real rate of return. In order to do that, I looked at the inflation at that time. As found in TSM-6, inflation for 1977 was 6.452% and for 1978 it was 7.658%. Therefore, I chose to use 7% as the inflation component of the 12% nominal return. Use of a 12% cost of capital converts to a imputed 5% real cost of capital, with a real debt cost of 2% and an equity cost of 8%. By way of comparison, the use of 7% inflation results in a real cost of debt of 1.89% and a real cost of equity of 8% in the APC Phase I decision and a 4.5% real overall cost of capital in Judge Kane's decision.

The real overall cost of capital found in BTM gradually changes between 1983-2011 from 5% to 8% as the equity ratio increases from 50% to 100%. Consequently, the cost of capital may well be too high in the later years, in that the changing capital structure may not necessarily affec. the overall cost of capital. However, once again, I wanted to ensure that BTM results in tariffs that are on the high side.

The overall cost of capital for each year can be found in

Exhibit APUC Staff ____ (RLB-3), Schedule 1, Line 42.

Q. Please explain the derivation of the operations and maintenance expense component of your benchmark methodology.

A. For all the years 1978-2011, I have used the numbers found in TSM-6. The benchmark operations and maintenance expense numbers can be found in Exhibit APUC Staff ___ (RLB-3), Schedule 1, Line 49.

Q. How have you specified depreciation expense in the benchmark model?

A. As noted above in discussing the provision for accumulated depreciation, book depreciation amounts through 1981 are calculated on a straight-line, 25-year life basis, and are a function of the allowed cost of carrier property in rate base. Subsequent to 1981, depreciation expense is calculated on a straight-line, 30-year basis.

TSM-6 posits a series of net additions to rate base occurring between 1978 and 2011, and by means of an "Eligibility Fraction" allocates the cost to be recovered through depreciation to periods extending beyond 2011. In the benchmark model, book depreciation associated with net additions is computed on a straight-line basis. This results in a relatively small balance of undepreciated carrier property at the end of 2011, an assumption similar to that

evident in TSM-6.

The annual depreciation expense for the years 1978-2011 is shown in Exhibit APUC Staff ___ (RLB-3), Schedule 1, line 68.

Q. How have you calculated the income tax allowance in the benchmark model?

A. The income tax allowance results from the gross-up of the carriers' equity return, the equity portion of AFUDC, and the current collection of funds for DR&R.

For the years 1977-1978, the gross-up factor is 1.1226, based on a marginal federal income tax rate of 48 percent and a state income tax rate of 9.4 percent. For 1981, the gross-up factor is 1.0807, based on a marginal federal income tax rate of 46 percent and a state income tax rate of 11 percent.

For all other years, the gross-up factor is 1.0440, based on a marginal federal income tax rate of 46 percent and a state income tax rate of 9.4 percent. In order to maintain consistency with TSM-6 on the issue of tax rates, I have not attempted to incorporate the newly enacted federal tax code revisions into the benchmark model.

Q. Please explain the derivation of the DR&R component of your benchmark methodology.

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A. I have used the Staff's litigation position methodology and numbers for the years 1978-2011. That position was based on the cost estimate of DR&R made by the Army Corps of Engineers, a projected 7% inflation rate, normalization of the tax deduction associated with the DR&R expense, a return on accumulated DR&R funds resulting from their actual investment in government securities, and, perhaps most importantly, a periodic review of the aforementioned and other factors to ensure that the DR&R allowance remained cost-based at all times.

The Army Corps estimate of $602 million in 1977$ was sponsored by the FERC staff and adopted by the State. The carriers' estimate for DR&R was $1,049 billion in 1977$.

The carriers argued that the tax-timing difference related to DR&R should be construed as a permanent difference and therefore should not be used to offset rates. All other parties argued that the timing difference should be treated as a temporary difference to be normalized so that shippers would share the benefit of the tax savings associated with the DR&R expense.

As to the return imputed to the accumulated DR&R funds, the carriers argued that the earning rate for an internal fund should be an after-tax risk-free rate. The State held that an internal fund should be credited with income at a rate equal to the carriers' parents' return on equity. APUC staff argued

that the carriers' parents' cost of capital was the appropriate earnings rate for an internal fund, but held as its preferred position that the DR&R funds should be administered by an independent trustee and should be credited with the income actually earned on a portfolio of government securities.

The calculation of DR&R was a Phase II issue and thus neither the APC Phase I decision nor Judge Kane's decision gives any guidance as to the probable result of litigation on this point. I still believe that the Staff's position results in just and reasonable tariffs and thus have used it.

Q. What is the basis for your throughput numbers in your benchmark methodology?

A. For all years 1978-2011, I have used the same throughput numbers as are found in TSM-6.

Q. What are the tariffs and revenues that result from your benchmark methodology?

A. Exhibit APUC Staff ___ (RLB-3), Schedule 1, sets forth the calculation of tariffs and revenues generated as a result of the benchmark methodology for the years 1978-2011.

In Table 1, below, I have compared the tariffs that result from BTM in 1978-1981 with the weighted average tariffs that

the Staff recommended would be just and reasonable for those years. It is important to note, however, that the Staff tariffs do not include any rate base deduction for any Phase II issues, and thus the actual Staff litigation position as to a level of just and reasonable tariffs would now be substantially lower. Nonetheless, the tariffs that result from the benchmark methodology are nearly as high as the Staff's unadjusted tariffs.

In addition, I have compared the BTM tariffs with the 1978 and 1979 weighted average just and reasonable tariffs that result from Judge Kane's Initial Decision. Like the Staff's litigation tariffs, they do not include any deduction from rate base for any Phase II issues, but the benchmark tariffs are still higher than those tariffs. Thus, given the fact that Judge Kane used a DOC methodology, it is likely that tariffs resulting from his methodology would be at least as low as the BTM tariffs through 2011, even though they contain no Phase II adjustments.

TABLE 1

YEAR	BTM	STAFF	JUDGE KANE
1978	$6.45	$6.52	$5.67
1979	$4.99	$5.19	$4.93
1980	$4.20	$4.40	
1981	$4.12	$4.33	

The tariffs and revenues resulting from the benchmark methodology are certainly on the high side, and may even be so high as to be outside a zone of reasonableness. Consequently, it is important to bear in mind that for the remainder of my testimony I will be comparing TSM tariffs and revenues to tariffs and revenues that may themselves be so high as to be outside a zone of reasonableness.

VI. COMPARISON OF TSM AND BTM

Q. Please compare the results produced using TSM and those produced using the benchmark model you have described.

A. Exhibit APUC Staff ___ (RLB-4) is a side-by-side comparison of the revenues, real tariffs, and rates of return produced under TSM and the benchmark model. Schedule 1 is a tabulation of these data. Schedule 2 is a bar chart which shows the revenue streams. Schedule 3 shows the cumulative present value of revenue requirements for TSM and BTM from 1978-2011. Schedule 4 is a bar chart which shows the real tariffs. Schedule 5 is a bar chart which shows the rates of return.

Table 2, below, displays the present value of revenue requirements (PVRR) for the two methodologies.

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TABLE 2

PRESENT VALUE OF REVENUE REQUIREMENTS

(1,000's of 1987 $)

PERIOD	TSM	BTM	DIFFERENCE
1978-1986	$40,986,202	$26,582,109	$14,404,093
1987-2011	$25,262,692	$19,611,116	$ 5,651,576
1978-2011	$66,248,894	$46,193,225	$20,055,669

The differences in results between BTM and TSM are substantial. As can be seen, the present value difference between the revenues produced by BTM and TSM is over $20 billion. These excess revenues will be paid by the shippers in the form of tariffs. In light of the fact that the present value of the BTM tariffs is $46 billion, the $20 billion excess is a huge percentage revenue overrun.

As shown in Schedule 3, the tariffs and revenues resulting from TSM are so high that the PVRR for 1978-1986 is almost as great as the PVRR that results from a more traditional regulatory approach for the entire life of the settlement. Thus, under TSM, the carriers have already collected almost as much money as BTM calculates that they should collect over the entire life of the settlement. In fact, by the end of 1988,

TSM revenues will be greater than the total BTM revenues. Schedules 1 and 2 show that the revenues produced by TSM are higher for most years than those produced by BTM. In 1978 BTM shows a revenue requirement greater than TSM, and in the period 1996 to 2011 the revenue requirements are very similar, with BTM's being marginally higher in 1997-2004 and 2009-2011. TSM produces revenues that are substantially higher than BTM revenues for the years 1979-1995. In fact, they are as much as twice as great in certain years.

Q. How is your analysis affected by the choice of discount rate?

A. As I stated earlier in my testimony, given the magnitude of the numbers involved, the choice of discount rate in computing the present value of the revenue differences makes little difference in the results. Table 3, below, compares the total present value difference between BTM and TSM revenues using 0%, 5%, and 10% real discount rates. As can be seen, the differences between TSM and BTM are large, regardless of the discount factor.

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TABLE 3

Discount Factor	Present Value Difference (1,000's of 1987 $)
0% real	$20,055,669
5% real	$19,344,233
10% real	$18,757,009

Q. What impact do these revenue differences have on the State of Alaska?

A. As a result of the huge differences in revenues, the State of Alaska stands to lose substantial revenues as a result of TSM. The wellhead price for Alaska North Slope ("ANS") crude oil is calculated as the oil's price in the lower-48 states less transportation costs, which include TAPS tariffs. This imputed "net-back" price forms the basis for computing taxes and royalties on ANS crude oil. For a given oil price in the lower-48 market, higher TAPS tariffs result in lower ANS wellhead prices, and therefore lost revenue to the State of Alaska.

Because of the "net-back" pricing mechanism used to compute State of Alaska severance taxes and royalties, the State stands to lose income equal to about 25% of the carriers' excess revenues, or about $5 billion in today's dollars. If

the State had that $5 billion today and invested it in the Alaska Permanent Fund, it would nearly double the size of the Fund. Furthermore, if that $5 billion earned a real return of 7% in 1987, which is the Permanent Fund return for 1987 projected by the Alaska Department of Revenue in June 1986, the earnings on the $5 billion for 1987 alone would be $350 million. This equals $671 for every one of the approximately 521,000 men, women, and children in the State of Alaska.

Q. What is the difference in the tariffs that result from BTM and TSM?

A. Exhibit APUC Staff __ (RLB-4), Schedules 1 and 4 show that the real (1987$) tariffs follow the same general pattern as revenues. Acceptance of TSM would result in securely established tariffs, but it would not result in low tariffs.

One of the purported advantages of the settlement accruing to the State is the certainty of low tariffs into the next century, which is intended to encourage new exploration and production of ANS crude oil. However, examination of Exhibit APUC Staff __ (RLB-4), Schedules 1 and 4 shows that the tariffs developed under BTM and TSM are nearly identical after 1996. The most that may be said for acceptance of TSM, therefore, is that it would create some certainty as to the level of tariffs. It does not secure rates significantly different than those calculated under BTM, and because BTM rates are probably higher than just and reasonable rates, it

is possible that the true opportunity for the State to secure lower rates after 1995 will have been needlessly sacrificed.

Q. Describe the returns that result from BTM and TSM.

A. Schedules 1 and 4 indicate a return on rate base under BTM which varies within a relatively narrow band. Any variation is due to changes in the assumed inflation rates and a steadily increasing equity ratio. In marked contrast, the return on rate base earned under TSM begins to grow after 1988 and reaches triple-digit values by 2010. As explained below, this results from TSM's hyper-accelerated depreciation schedule and the real $0.35 (1983$) per barrel margin guaranteed to carriers beginning in 1989. The rapidly depreciated rate base allegedly creates the need for an inducement to the carriers to continue to operate TAPS. The large double- and triple-digit returns on rate base are one measure of that inducement.

Q. What conclusion have you reached as a result of your comparison?

A. I have concluded that the results of TSM are so radically different from the results obtained from a more traditional regulatory approach that they are not remotely within a zone of reasonableness. Thus, the tariffs and revenues that result from TSM are not just and reasonable, and the Offer of Settlement is not in the public interest.

The size of the TSM tariffs as compared to the BTM tariffs is striking, and the excess revenues that the carriers will be earning is enormous. Not only are the tariffs too high in the early years, which even the State appears to admit, but they continue to be too high well into the 1990's. Thus, the State's purpose of low tariffs in the 1990's does not appear to have been achieved. These differences result even though BTM itself may result in tariffs and revenues that are so high as to be outside a zone of reasonableness.

As the carriers and Mr. Hildahl acknowledge in their brief and testimony, respectively, if the results from TSM are radically different from the results obtained from a more traditional regulatory approach, then it could well be a patently unreasonable methodology, and the Commission would have to deem it inconsistent with the public interest. I believe that my analysis shows that TSM results in such radically different tariffs, revenues, and returns, that to accept the Offer of Settlement would not be in the public interest. Thus, the Offer of Settlement should be rejected because it results in tariffs, revenues, and returns that are not just and reasonable, and because it is inconsistent with the public interest.

Q. In Exhibit ____ (RNH-2), Mr. Hildahl also presented a comparison of present value revenue requirements between TSM and a depreciated original cost methodology. His results are considerably different than yours. Have you analyzed his

methodology and results?

A. I have not analyzed them to any great extent, primarily because he has not presented sufficient supporting material to analyze either his methodology or results in detail. I do have a few general comments, however.

First, in tabulating his TSM revenues, for the years 1978-1981, Mr. Hildahl used the revenues found in Appendix 5 of the Explanatory Statement rather than the revenues actually collected under the Offer of Settlement, *i.e.*, revenues based on the carriers' actual filed tariffs. For the years 1985-1988, Mr. Hildahl used the same TSM revenues as I do, that is, those found in TSM-6. For the years 1989-2011, Mr. Hildahl used revenue numbers different than those found in TSM-6. I have no idea from where those numbers are derived.

Second, although there is insufficient supporting material to fully analyze his depreciated original cost methodology, the information presented shows that there are substantial problems with it. For example, he used the parent company capital structures as of December 31, 1985 as the appropriate capital structure. However, the exhibit does not indicate what that capital structure is, nor is there any explanation as to why it is a reasonable capital structure over the entire life of TAPS. In addition, Mr. Hildahl used a 17% nominal cost of equity, apparently because that is what the Commission decided would be appropriate for Cook Inlet Pipeline Company

in January 1985. I am totally at a loss as to why Mr. Hildahl believes that that is an appropriate cost of equity for TAPS, especially for its entire life. Even if the assumption is made that a 17% nominal return is reasonable for TAPS in 1985, this Commission in its ***Cook Inlet*** decision specifically stated the limitation of its finding regarding the 17% return on equity:

> It should be noted that this return is based on 1981 and 1982 data and on a record which is also not entirely satisfactory. However, CIPL has two pending tariff filings which relate to periods after 1982 which will be adjudicated in the near future. It is expected that in these proceedings the carrier will present current and complete data supporting its requested return on equity. In short, CIPL is placed on notice that the 17 percent allowed herein will not have any precedential value in future determinations of the appropriate cost of equity capital.
>
> P-82-1 (12), p. 27, n. 1.

The 17% return included an inflation provision, but Mr. Hildahl made no attempt to adjust his return on equity for changes in inflation. In sum, I believe that his use of 17% return on equity alone makes his analysis extremely suspect.

Third, it is impossible to determine from his exhibit how DR&R is treated under his depreciated original cost methodology. I don't know whether he took the DR&R amounts directly from TSM-6, which are based on a hyper-accelerated depreciation schedule, or whether he changed them to match his straight-line depreciation.

Fourth, although his discount rate of 15% is quite a bit different than mine, as I said earlier in my testimony, the choice of discount rates does not make a great deal of difference in this analysis. I might add, however, that I don't agree with Mr. Hildahl's justifications for his choice of 15%. I don't agree that 15% is a commonly used discount rate, nor do I agree that because it is equal to the cost of capital in *Cook Inlet*, it is appropriate to use as the discount rate in an analysis of TAPS. One has nothing to do with the other.

Q. Have you attempted to reconcile the disparate results of TSM and those of BTM, and to explain why TSM results in such high tariffs and revenues?

A. Yes. In order to explain the wide variations in revenues and tariffs produced by TSM and BTM, I have compared each method's treatment of the essential components of cost of service. Those include the following:

I. Rate Base

A. Carrier Property

B. Phase II Adjustments

C. AFUDC

D. Accumulated Depreciation

E. ADIT

F. Working Capital

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II. Return

A. Capital Structure

B. Real Return

C. Inflation

III. Expenses

A. Operating and Maintenance Expense

B. Depreciation and Amortization

C. DR&R

D. Income Taxes

IV. Throughput

Q. Please compare the rate bases of BTM and TSM.

A. TSM is a variant of a trended original cost rate base ("TOC"), whereas BTM is a depreciated original cost methodology ("DOC").

All the parties seem to agree that at least a somewhat front-loaded tariff is desireable on TAPS, to allow the carriers to more quickly recover their investment, and to have low tariffs in the out-years to enhance further exploration. This effect is achieved under a DOC methodology, but not under a TOC methodology.

Under TOC, the inflation component of return is deferred each year and added to the rate base. Consequently, other things being equal, tariffs in the early years under a TOC methodology will be lower than those under a DOC methodology.

Because TSM is based on a TOC methodology, in order to achieve the settling parties' desire for front-loaded tariffs, TSM had to include the hyper-accelerated depreciation schedule to counterbalance the undesirable effects of TOC. Thus, the tariff stream resulting from TSM is more similar to a DOC tariff stream than it is to a TOC tariff stream.

In the FERC Williams II decision, which sets forth a TOC-type methodology, FERC specifically stated that TOC was a necessary methodology for pipelines in the lower-48 states in a competitive setting. However, TAPS clearly doesn't fit that description, and there is no evidence that FERC intended to apply Williams II to TAPS. Therefore, given the record evidence and the precedents of ***Cook Inlet*** and the Phase I TAPS decisions, I believe that a DOC methodology is the most appropriate methodology with which to analyze the results produced by TSM. Apparently, Mr. Hildahl agrees because that is what he used in his analysis of TSM.

Both Mr. Hildahl and I used a DOC methodology to determine if the results produced by the Offer of Settlement are within a zone of reasonableness. I used a DOC rate base in BTM because that was what was used by this Commission in ***Cook Inlet***, and by the APC and Judge Kane in their TAPS Phase I decisions. There is no evidence in the record to support a TOC rate base.

Q. What differences have you observed in the specification of carrier property accounts under TSM and BTM?

A. In 1978, the unadjusted base carrier property balance under BTM is $7.939 billion. For TSM, the comparable figure is $7.805 billion. Thus, BTM begins with a somewhat higher carrier property balance. All other things being equal, this would result in higher tariffs. Thus, the differences in revenues for BTM and TSM cannot be considered a function of the unadjusted carrier property balances.

Q. What are the differences in the treatment of the Phase II issues of cost of construction and the haul road?

A. As I explained above, the Staff and State argued that more than $1.6 billion should be deducted from carrier property as a result of imprudent construction expenditures and as a result of the usage of the haul road by the North Slope producers. The carriers argued that no deduction was warranted. I have deducted half of the contested amounts, or $843.5 million, from carrier property in formulating BTM in recognition of these Phase II issues.

TSM, on the other hand, includes a $450 million deduction from carrier property in 1976. The amount of this deduction is amortized over the seven-year period from 1978 through 1984. (It is amortized on a throughput basis rather than a unit-of-time basis.) Amortizing the amount of the deduction

results in the carriers being denied a return on the unamortized portion of the $450 million deduction but allows them to fully recover the $450 million itself.

In order to compare the two deductions, I have calculated the permanent deduction from carrier property which would be economically equivalent to the treatment specified by TSM, namely the amortization of a $450 million deduction. This allows a direct comparison with the amount that was deducted in BTM.

This calculation is presented in Exhibit APUC Staff ___ (RLB-5). As can be seen, the TSM treatment of the deduction is equivalent to a $171.71 million permanent deduction. Thus, while BTM includes a $843.5 million deduction, TSM deducts only $171.71 million. This $171.71 million deduction compares to the zero deduction from carrier property previously advocated by the carriers and the $1.687 billion deduction advocated by the Staff and the State.

Q. Have you calculated the impact of the differences in carrier property deductions on tariffs and revenues?

A. Yes, I have. Exhibit APUC Staff ___ (RLB-6) is BTM with no deduction from carrier property to account for Phase II issues. In all other respects it is just like BTM. As is shown in that exhibit, the resulting tariffs and revenues are significantly higher under this variant of BTM. For example,

in 1987, the BTM tariff is $2.39 and the BTM with no deduction is $2.57. It is interesting to note that even though there is a significant change in the tariffs between BTM and BTM with no rate base deduction, it accounts for a relatively small amount of the difference between BTM and TSM tariffs and revenues. For example, the 1987 tariff under TSM is $4.55, $1.98 more than that under BTM with no deduction. Inasmuch as it is the Staff's position that no deduction from carrier property for Phase II issues results in unjust and unreasonable rates, it is evident that TSM results in rates that are too high.

Q. What are the differences between TSM and BTM with regard to the calculation of AFUDC?

A. AFUDC as computed for TSM is less than that computed for BTM. Under TSM the 1978 balance of AFUDC is $1.247 billion, whereas under BTM the 1978 balance of AFUDC is $1.564 billion. All other things being equal, the greater amount of AFUDC in BTM would result in higher revenues and tariffs than those derived from TSM. Therefore, I conclude that the disparity in revenues and tariffs produced by TSM and BTM is not a function of the AFUDC calculations.

Q. What are the differences between TSM and BTM with regard to the calculation of depreciation?

A. The differences between TSM and BTM with regard to depreciation are central to the different results produced by these methodologies. BTM uses a traditional straight-line, unit-of-time depreciation schedule, based on the *Cook Inlet* decision and the parties' TAPS depreciation stipulation.

On the other hand, perhaps the most distinguishing feature of TSM is its hyper-accelerated depreciation schedule. The radical nature of the TSM depreciation schedule is obvious when it is compared to familiar standards for book and tax depreciation.

Book depreciation for a pipeline enterprise would ordinarily be computed on either a straight-line basis or a unit-of-throughput basis. Respectively, these methods result in invested capital being recovered ratably over time during the pipeline's projected life, or ratably according to the pipeline's projected throughput profile. Both methods attempt to correctly match costs and benefits to the shippers.

Tax policy over the past several decades has led to the introduction of liberalized depreciation methodologies (*e.g.*, double declining balance (DDB) and sum-of-the-years digits (SYD)). In general these methods have not found widespread use for book purposes, but are rather used to create tax subsidies for capital-intensive industries.

Exhibit APUC Staff ____ (RLB-7) is a comparison of several depreciation methods that might be applied to TAPS: (1) straight-line, unit-of-time; (2) unit-of-throughput; (3) DDB/SYD; and (4) TSM's depreciation methodology. It may be observed that TSM's depreciation methodology represents a radical departure from those commonly used for book purposes, and even exceeds the liberality of methods used for tax purposes.

It might be expected that TSM's hyper-accelerated depreciation leads to economic distortion in the resulting tariff stream. Indeed, there is ample evidence from TSM and explanatory statements by the settling parties that the settling parties recognized that distortion.

The cascading effects of the depreciation schedule supposedly include the diminution of economic incentives for the carriers to operate TAPS responsibly and to honor their legal obligations. As a result, TSM grew to contain provisions to counterbalance the deleterious effects of its hyper-accelerated depreciation rates. According to Dr. Horst, the State acceded to the carriers' unanimous opposition "to a methodology under which their profit element disappeared as their original investment was recovered through depreciation." [Horst, p. 20] In its Explanatory Statement, the State asserted that:

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> . . . by 1990 the depreciated cost arising from pre-operational investments in TAPS would be approximately one-fifth of its initial 1977 historic cost, even though about two-thirds of the system's economic life still remain.
>
> In response to concerns that an accelerated depreciation schedule would result in a smaller rate base and little incentive for the owners to continue to provide reliable pipeline capacity and that the carriers would bear the full legal responsibility for any environmental damage that resulted from, for example, earthquake or sabotage, the parties agreed that after 1988 a per barrel allowance would be allowed as a substitute for the return on the 'original' rate base remaining at the end of 1988. [footnote omitted]
>
> Explanatory Statement at pp. 31-32.

Thus, after 1988, TSM provides the carriers a real after-tax return of $0.35 (1983$) per barrel.

This, in turn, creates another disincentive to efficient operation of TAPS:

> The parties recognized, however, that while the per barrel allowance could provide a return over that otherwise allowed, and thereby promote the maintenance of reliable capacity sufficient to meet demand, use of the allowance did not necessarily ensure that the TAPS Carriers would employ the most efficient means of providing pipeline capacity. By itself, the allowance may discourage the TAPS Carriers from making capital investments that would enhance pipeline capacity or reduce costs, even when those are the least costly means of augmenting or preserving capacity. The reason is that capacity-enhancing additives, such as drag reduction agents, are considered operating expenses under the TSM and therefore can be recovered immediately and fully through the tariffs charged in a given

year, whereas a capital addition, such as an additional pump station, does not earn the real component of the rate of return after 1988.

To rectify this possible disincentive, the parties agreed to divide depreciable plant in service into two subcategories: 'original' and 'new.' New investments continue to earn the allowed real rate of return after 1988. Original investments and subsequent caretaker-type investments (*i.e.*, those designed to perpetuate, rather than expand or improve upon, the existing system) do not earn a real rate of return after 1988; the per barrel allowance provides an incentive to make these investments.

Ibid., pp. 32-33.

The economic distortion fostered by an unrealistic depreciation schedule leads to tariffs that do not correctly match costs and benefits to the shippers, and to non-cost-based and awkward ratemaking devices that produce excessive rates that are clearly unreasonable.

Q. You stated earlier that a unit-of-throughput depreciation schedule can also be used to compute book depreciation on pipelines. Have you calculated BTM based on a unit-of-throughput depreciation schedule?

A. Yes, I have. As can be seen from Exhibit APUC Staff ___ (RLB-7), a unit-of-throughput depreciation schedule on TAPS will be more accelerated than straight-line depreciation. Given the settling parties' goal of front-loading the tariffs, I wanted to see what tariffs and revenues would result from an accelerated depreciation schedule that would

still rationally match costs and benefits to shippers.

The results of modifying BTM so as to use a unit-of-throughput depreciation schedule are shown in Exhibit APUC Staff ____ (RLB-8). As can be seen, the resulting tariffs are higher than BTM in 1980-1990 as a result of the front-loading, and they are lower in all the rest of the years.

When compared with TSM, unit-of-throughput BTM produces some rather startling results. The BTM tariffs are lower than the TSM tariffs in every year of the settlement. The present value revenue difference between the two is $21.0 billion, even greater than the $20.1 billion difference between standard BTM and TSM. In addition, the tariffs in the later year are substantially lower than the TSM tariffs, thus further enhancing exploration incentives, as desired by the settling parties.

In short, BTM depreciated on a unit-of-throughput basis clearly shows that the settling parties' objectives of a more front-loaded tariff stream and low tariffs in the later years can be achieved with a rationally accelerated depreciation schedule.

In my opinion, both a unit-of-throughput depreciation schedule and a straight-line, unit-of-time depreciation schedule will rationally match costs and benefits to shippers on TAPS. As I stated earlier, I chose straight-line, unit-

of-time for BTM because of this Commission's *Cook Inlet* decision, the Phase I decisions, and the depreciation stipulation of the parties. As can be seen from the above analysis, however, the choice of another rationally based depreciation schedule does not affect my analysis or conclusions regarding the level of tariffs and revenues produced by TSM. Again, when compared with a more traditional, regulatory approach, TSM produces radically different results.

Q. How do TSM and BTM differ with respect to ADIT?

A. As discussed above, there are essentially no differences in the ADIT calculations used in TSM and BTM. However, the use of widely disparate book depreciation rates and somewhat different carrier property balances creates very different ADIT balances for BTM as compared to TSM.

In the early years the spread between book and tax depreciation rates is greater under BTM than under TSM. This gives rise to greater ADIT balances under BTM. All other things being equal, since ADIT is deducted from rate base in computing a return allowance, the greater ADIT balances in BTM should result in a lower return allowance, and therefore lower rates.

Q. Do the higher ADIT balances produced in BTM explain the disparity in revenues and tariffs observed in BTM and TSM?

A. Only to a limited degree. To measure the effect of the differences in revenues and tariffs produced by the different ADIT balances, I have modified BTM so as to entirely eliminate the ADIT deduction from the BTM rate base. As discussed above, this is equivalent to the carriers' extreme position in Phase I of these proceedings. However, even when no deduction from rate base for ADIT is included in the calculation of BTM, the revenues and tariffs, although higher than those in BTM, do not rise to the level of those produced by TSM. Exhibit APUC Staff ____ (RLB-9) displays the results of those calculations. For example, in 1987 the BTM tariff is $2.39 and BTM with no ADIT deduction tariff is $2.88. By comparison, the 1987 tariff under TSM is $4.55, still $1.67 higher than the modified BTM.

Q. What, if any, differences are there in BTM and TSM with respect to working capital?

A. There are no differences. BTM uses the same working capital amounts as used in TSM.

Q. Are there differences between the return components that lead to a portion of the differences between tariffs and revenues resulting from BTM as opposed to TSM?

A. Yes, there are. There are differences in both the capital structure and the rates of return.

Q. Explain the differences between the two methodologies as regards capital structure.

A. As I explained above, I have included a beginning hypothetical capital structure in BTM of 50% debt and 50% equity. In making that decision, I was guided by the following: the ***Cook Inlet*** decision; the APC Phase I decision to use the parent company capital structures -- 46.69% debt and 53.31% equity; the Staff's litigation position of 50% debt and 50% equity; and the various litigation positions of the State -- 89% debt and 11% equity, or, alternatively, 75% debt and 25% equity, ASRC in the FERC proceedings -- 66.66% debt and 33.33% equity, and the carriers -- ranging from 46% debt and 54% equity to 0% debt and 100% equity.

For the years after 1982, I increased the equity component of capital structure until 2011, when the capital structure is 0% debt and 100% equity. This comports with the methodology adopted by the Commission in its ***Cook Inlet*** decision. In that decision, the Commission calculated the carrier's capital structure as if the debt were retired prior to shutdown on a straight-line basis.

The use of a 100% equity capital structure for TAPS in 2011 may well overstate the equity component, since there is no certainty that TAPS will be shut down at that time. It may well have a service life beyond that time.

TSM, on the other hand, uses a capital structure of 0% debt and 100% equity for all years, which is the carriers' extreme litigation position.

Q. How do these different capital structures affect the calculation of tariffs?

A. The capital structure primarily affects the calculation of income taxes. Because interest payments are deductible for income tax purposes, income taxes are calculated only on the equity portion of the return rather than on the entire return. Thus, the greater the equity portion of the return, the greater will be the income tax portion of the revenue requirement. This in turn leads to a higher overall revenue requirement and higher tariffs.

In order to measure the impact of a 100% equity capital structure on TSM tariffs and revenues, I have calculated what TSM tariffs and revenues would result if the capital structure which I used in BTM were used in TSM. Exhibit APUC Staff ___ (RLB-10) shows the results of that calculation. As can be seen from that exhibit, changing the capital structure to a reasonable level of equity leads to significantly lower TSM tariffs and revenues. For example, in 1987, the tariff goes from $4.55 in TSM to $4.32. However, that tariff is still far greater than the 1987 tariff of $2.39 found in BTM. Thus, even using a reasonable capital structure, TSM still results in extremely high tariffs.

Q. Explain the differences in rates of return between the two methodologies.

A. For the years 1978-1981, the rate of return in TSM is unknown because the carriers collect their filed tariffs. For the years 1982-1988, TSM uses a 6.4% real rate of return on a trended rate base. The inflation portion of the return is deferred by adding it into the rate base. BTM uses a 12% nominal return for the years 1978-1981 and then for the years 1982-1988 uses a 2% real return on debt and an 8% real return on equity inflated by the same inflation factors used in TSM. Thus, the inflation factors used in both methodologies are identical and will not cause any differences between the tariffs and revenues.

Although the 6.4% real return found in TSM may be too high in light of the Phase I decisions by the APC and Judge Kane, and the Staff's litigation position, the differences between the 2% return on debt and the 8% return on equity, and the 6.4% overall return explain only a small portion of the disparity in tariffs and revenues between TSM and BTM.

Q. What return methodologies are used for the years 1989-2011?

A. The BTM return is a nominal return based on a 2% real rate of return on debt, an 8% real rate of return on equity, inflation rates equal to those projected in TSM-6, and the changing capital structure discussed above.

Beginning in 1989, the methodology used in TSM to calculate the return component changes radically. For old rate base, which is the vast majority of the total rate base, the return component is based on $0.35 per barrel in 1983 dollars. This provision of TSM is not cost-based. Thus, whereas rates of return are normally cost-based; *i.e.*, are a percentage return on remaining rate base; the $0.35 provision has nothing to do with costs. It requires shippers to pay the carriers a flat $0.35 per barrel in 1983 dollars for every barrel shipped regardless of the carriers' required return on net investment.

Q. Is this a normal practice?

A. No, it is not. The hallmark of just and reasonable rates is that they be cost-based. The $0.35 provision of TSM violates this standard. Thus, the Commission must be particularly vigilant that this component of TSM is justified and produces just and reasonable results.

Q. Why does the TSM switch from a cost-based rate of return to a return component that has nothing to do with carrier net investment?

A. As I discussed above, according to the testimony of Dr. Horst and the Explanatory Statement of the State and the Department of Justice, the $0.35 provision was apparently included due to the carriers' opposition to a cost-based methodology under

which their profit element disappeared as their original investment was recovered through depreciation.

Cost-based regulation requires that the carriers not be allowed to earn a return on recovered investment. In other words, the return component of a cost-based tariff is based on the depreciated rate base, not the portion of the rate base already recovered through depreciation. The $0.35 provision attempts to circumvent this basic tenet of regulation.

The settling parties should not be allowed to introduce a non-cost-based element into TSM in order to compensate for the distorting influence which the hyper-accelerated depreciation schedule has on the orderly recovery of invested capital.

Q. What is the impact of the $0.35 provision on tariffs and revenues?

A. The potential impact of this provision on future shippers and carriers is substantial. It allows the carriers to earn huge and unwarranted rates of return and forces the tariffs that the future shippers must pay to a much higher level than would result from a reasonable cost-based methodology.

As shown in Exhibit APUC Staff ___ (RLB-4), Schedules 1 and 5, given the throughput profile assumed in TSM-6, as a result

of the $0.35 provision, the carriers will be earning returns in the later years of the settlement far in excess of any return advocated in this proceeding by any party, including the carriers. Thus, there is no evidence in the record to support these returns. For example, by the year 2000, the carriers will be earning a real return of 44% on their net investment. This rate of return continues to increase until, in the year 2011, the carriers will be earning a real return of 497% on their net investment.

Shippers will be forced to pay tariffs based on those high returns, rather than tariffs calculated from a cost-based methodology. In the later years of TSM, when the tariffs are supposed to be low to induce further oil exploration, the tariffs will be substantially higher than they would be under TSM with any conceivable cost-based rate of return. The $0.35 provision apparently defeats the purpose of the State's primary settlement goal.

Q. What methodology is used in TSM to calculate the return component for the so-called "new rate base"?

A. The return on new rate base is based on a 6.4% real return on the undepreciated new rate base. However, because of the $0.35 provision for each barrel of throughput, the carriers will be able to earn a "double" return on any new investment which creates additional throughput before 2011. Not only will they earn a 6.4% real return on the investment but will

also earn a return for each additional barrel of oil shipped as a result of the investment.

I have prepared Exhibit APUC Staff ___ (RLB-11) to provide an example of this potential "double" return.

As can be seen from that exhibit, I have assumed that a $100,000,000 addition is made to TAPS in 1995 in order to increase capacity. That addition increases throughput by 25 million barrels a year, beginning in 1996. Although TSM states that the return on New Rate Base will be 6.4%, because of the $0.35 provision, this new investment will actually earn a double return of 6.4%, as well as $0.35 (in 1983 dollars) for each barrel attributable to the new investment.

Consequently, the carriers would earn a return of 23.84% in 1996 instead of the 6.4% supposedly allowed under TSM. (In this example, I have not adjusted the $100 million investment for the inflation write-up or depreciation in 1996.)

Q. Does the $0.35 provision affect any other elements of TSM?

A. Yes, it does. The higher amount of the return component as a result of the $0.35 provision is exacerbated by the fact that a 100% equity capital structure is used. Thus, the shippers will be forced to pay not only the high return component, but also taxes on the entire amount.

Q. Have you prepared an exhibit to quantify the impact of the non-cost-based return component on TSM tariffs and returns?

A. Yes, I have. Exhibit APUC Staff ___ (RLB-12) is TSM with a 6.4% return included for all years on both old and new rate bases. As can be seen, the tariffs after 1988, with the $0.35 provision removed, are significantly lower than those under TSM. For example, in the year 2000, the TSM tariff is $2.03, whereas TSM with a 6.4% return used throughout results in a tariff of $1.34.

Q. What will happen if the actual TAPS throughput after 1988 is greater than the throughput profile shown in TSM-6?

A. If actual throughput is greater than the throughput profile assumed in TSM-6, the impact of the $0.35 provision will give the carriers even greater returns and will result in an even greater disparity between cost-based and TSM tariffs. In order to show the impact of an increase in throughput, I have prepared Exhibit APUC Staff ____ (RLB-13). In that exhibit, I have assumed that throughput will be 50 million barrels higher than the throughput in TSM-6 for each year beginning in 1989. Under cost-based regulation, the carriers' rate of return would not change with various throughput levels. However, as can be seen in that exhibit, the returns earned by the carriers are even greater than under TSM. For example, in the year 2000, the return is 51%, compared to 44% under TSM.

In addition, the exhibit demonstrates that the disparity between cost-based tariffs and TSM tariffs increases as the throughput increases. For example, in the year 1995, the difference between BTM and TSM tariffs is $0.35, whereas the difference between BTM and TSM tariffs with a 50 million barrel increase in throughput is $0.41.

Q. How likely is it that actual TAPS throughput will be greater than that in TSM-6?

A. Given the recent disclosures in the public media about the proposed drilling within the Arctic National Wildlife Refuge, I would guess that we will see substantially higher throughputs in the later years than are included in TSM-6. According to the reports I have seen, the "mean" estimate for the recoverable reserves is 3.2 billion barrels of oil, and the oil would probably be put on the market 10-15 years from now.

Obviously, accurate throughput predictions are difficult to make, and I am not criticizing TSM on the basis of its throughput projections. However, it is important that the Commission remember that, because the Settlement Methodology is not cost-based, the carriers will earn even higher returns as the throughput increases.

Q. Have you prepared an exhibit to demonstrate the cumulative

impact of both the non-cost-based return provision and the 100% equity capital structure on TSM?

A. Yes, I have. As can be seen from Exhibit APUC Staff ____ (RLB-14), there is a significant difference between the resulting tariffs and revenues and those under TSM. For example, in the year 2000, the TSM tariff is $2.03, whereas TSM with both a reasonable capital structure and a 6.4% real return throughout results in a tariff of $1.33.

Q. What are your conclusions regarding the return provisions of TSM?

A. It is clear to me that each of the return provisions by itself -- the 100% equity capital structure and the $0.35 provision -- results in tariffs that are outside the zone of reasonableness. Indeed, even the 6.4% real return may be too high. Yet, as can be seen by comparing the tariffs resulting from BTM with the tariffs found in Exhibit APUC Staff ____ (RLB-14), those provisions still only account for a relatively small portion of the difference between TSM and BTM tariffs. I can only conclude that TSM results in unjust and unreasonable tariffs.

Q. Are operating and maintenance expenses different under TSM and BTM?

A. No. BTM uses the O&M expenses projected in TSM-6 for all

years. Therefore, O&M expenses cannot account for any of the differences in revenues and rates produced under the two methodologies.

Q. What are the differences between TSM and BTM with regard to the calculation of depreciation expense?

A. As explained above, there are substantial differences due to the different depreciation schedules used. The TSM-6 depreciation schedule results in very high depreciation expense numbers in the early years of TAPS.

Q. How do differences in the DR&R allowances in TSM-6 and BTM affect the revenues and rates produced by those methodologies?

A. Until about 1989 the DR&R allowance under TSM is greater than that under BTM. Thereafter the DR&R allowance under BTM becomes the greater of the two. However, the magnitude of the differences is relatively small and cannot account for the wide difference in revenues and rates produced by TSM and BTM. For example, in 1980, when the DR&R allowance is greatest under TSM, shippers pay $127.182 million (including income taxes), whereas the DR&R allowance under BTM is $77.449 million (including income taxes). The difference in these two DR&R allowances pales in comparison to the difference in overall revenue requirements for that year.

However, there are three important differences between the two DR&R methodologies.

The first difference is that the TSM DR&R methodology is not cost-based. The settling parties have developed a methodology to generate the DR&R amounts in TSM-6, and have then stipulated to those amounts for each year of the settlement. The settling parties have agreed that those stipulated numbers will not change, regardless of any changes in economic conditions or the physical properties of TAPS. As Dr. Horst explained in his testimony, ". . . the DR&R Allowances will not be adjusted on account of changes in inflation rates, bond yields, state or federal tax laws, or other factors underlying the DR&R schedule." (*See*: Horst, p. 13)

Thus, if any of the assumptions used to calculate the DR&R amounts begins to differ radically from reality, nothing can be done under the settlement to change the assumptions, and the DR&R collections will not be based on the amounts actually needed for DR&R work. This has already happened as a result of the new tax laws. The DR&R amounts to be paid by the shippers were computed based on a federal tax rate of 46%. However, the carriers will now only have to pay federal taxes on contributions at the rate of 40% in 1987 and 34% thereafter. The carriers' DR&R allowance will therefore be more than they actually need. Modifying Dr. Horst's Exhibit Alaska ___ (TOH-2), I have calculated the amount of this

excess in Exhibit APUC Staff ___ (RLB-15), Schedule 1. As can be seen, the excess profit to the carriers resulting from the known and measurable change in the federal tax rate is $989 million by 2015.

Likewise, any changes in the ultimate cost of DR&R, the inflation rates, the life of TAPS, or any of the other DR&R components will render the DR&R amounts inaccurate. In Phase II, Staff argued that because of the vagaries of computing a DR&R allowance, it is essential to periodically review and update the data that form the basis of the allowance. Without these periodic corrections it is very likely that the accumulated DR&R funds will not equal the DR&R cost. Thus, to treat the DR&R issue with neglect will almost certainly result in the establishment of non-cost-based rates. As I discussed above in relation to the $0.35 provision, non-cost-based ratemaking breaks one of the basic tenets of regulation. Consequently, the Commission should be particularly vigilant that this component of TSM is justified and produces just and reasonable results.

The second difference is that the DR&R monies under TSM are collected on the same hyper-accelerated depreciation schedule that is used to depreciate carrier property. Thus, the collections do not correctly match costs and benefits to the shippers.

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The third difference concerns the imputed earnings rates and has a tremendous impact on the revenues earned by the carriers under TSM.

Q. Please explain this third difference.

A. The amounts included each year for DR&R under both BTM and TSM methodologies are based on the assumption that the funds collected each year by the carriers from the shippers will earn a return until the funds are completely used to do the actual DR&R work. Thus, the annuity formula used to calculate DR&R includes an imputed earnings rate on the accumulated funds. The imputed earnings rate used to calculate DR&R under BTM was about a 5.5% after-tax return. The imputed earnings rate under TSM is based on Moody's Aa corporate bond yield. Those rates varied from 8.9% to 14.8% for the years 1978-1984. After 1984, an assumed 12% return was used. As can be seen from Dr. Horst's Exhibit Alaska ____ (TOH-2), those yields are treated as pre-tax returns. Thus, the 12.0% yield after 1984 is really about a 5.87% after-tax return (based on 1986 federal tax rate). This is very close to the 5.5% after-tax return imputed for the BTM DR&R.

However, there is one very significant difference between the two imputed earnings rates. The BTM earnings rate is based on the assumption that the collected DR&R monies will be placed in an external fund. That is, the fund will be under

the control of an independent trustee, and the money will actually be invested in risk-free investments that earn the return used in the BTM DR&R calculation. Thus, in the years 2010-2015, the carriers will have no less nor any more than what they need for the DR&R work.

TSM, on the other hand, assumes that the DR&R monies collected from the shippers will be placed in an internal fund. That is, that the carriers and their parent companies will have free use of the money until 2015. During litigation, both the State and Staff argued that if DR&R funds were put into an internal fund then the imputed earnings rate should be much higher than a risk-free rate. The State argued, in its Phase II NCC brief before FERC, that the parent companies' return on equity was the proper measure because, since the parent companies had the ultimate DR&R obligation, they would control the money and invest it in their own companies. The money earned would be net income and would be available to increase retained earnings or to pay increased dividends. The State also argued that if any rate other than the parent companies' return on equity is imputed to an internal fund then, in the years 2012-2015, the carriers will have more than enough money to do the DR&R work. What is left over will be extra profit to the carriers, above and beyond the profit they have already earned on their original TAPS investment. This would result in an unwarranted windfall for the carriers, based on the difference between the earnings rates of the parent companies

and the earnings rate imputed to the DR&R funds. [State Phase II NCC FERC brief, pp. 241-249]

If the DR&R methodology is based on an internal fund, then any imputed earnings rate on those funds lower than the return earned on the parent companies' investments will result in a windfall to the carriers and their parents. It would also be contrary to a basic tenet of ratemaking that companies are not allowed profits on expense items, such as DR&R.

Q. Have you measured this "windfall profit" to the carriers?

A. Yes, I have. I based my calculations on Dr. Horst's Exhibit Alaska ___ (TOH-2). I substituted the parent companies' weighted cost of equity for the Moody's Aa bond yield for the imputed interest, since that is what could actually be earned on the DR&R collections. For the years 1977-1985 I used Standard & Poor's Standard NYSE Stock Reports, Vol. 53 as the source for the parent companies' return on equity. For the years 1986-2011 I used the average return over 1983-1985 as a reasonable approximation for the future earnings rate. Because those are after-tax returns, I then grossed-up those returns by the applicable tax gross-up factors. In addition, beginning in 1987, I changed the effective tax rates to reflect the new federal tax rates that will be in effect. I believe that my effective tax rates, at least as to the earnings on the DR&R collections, are still too high, because

probably only a small portion of the parent companies' investments would be subject to Alaska state tax. Nonetheless, to be conservative, I have applied the state tax rate to the entire amount.

My calculation also subtracts out the actual money needed for the DR&R work, as shown in Dr. Horst's Exhibit Alaska ___ (TOH-2). Thus, the bottom-line numbers shown on my exhibit are the monies left to the carriers and their parents after they have completely performed the DR&R work.

Exhibit APUC Staff _____ (RLB-15), Schedule 2 shows the results of my calculations. As can be seen, by the end of the year 2015, the carriers and their parents will have earned $46.200 billion more than will be needed for DR&R. This is excess profit to them. Adjusted for inflation, that difference in 1987 dollars is $7.577 billion. This is an enormous sum, especially considering that it is pure profit on an expense item, on which no return at all should be earned.

I think of this $7.577 billion as hidden profit in TSM, since it doesn't explicitly show up in the revenue requirement of TSM, even though it actually accrues to the carriers. It is important to remember that this $7.577 billion is in addition to the $20.055 billion present value difference between TSM and BTM already calculated. Thus, if TSM is accepted, the carriers and their parents will earn a total present value of

$27.632 billion in excess profits and the shippers will pay that same amount in excess tariffs.

This Commission, in its *Cook Inlet* decision, recognized that, as a result of DR&R collections, the carrier might well collect more than the amount actually needed. The Commission clearly recognized that the carrier should not be allowed to keep those overcollections. Thus, the Commission ordered the carrier to maintain detailed records of the amounts actually collected from each shipper so that the Commission could order disbursement of any overcollections to former shippers on the system. Consequently, consistent with Commission precedent, the TAPS carriers should not be allowed to keep the excess $7.577 billion nor any excess they collect as a result of TSM not using a cost-based DR&R methodology.

The DR&R provision of TSM results in unjust and unreasonable tariffs and revenues in that it is not cost-based and is based on the TSM hyper-accelerated depreciation schedule. It also permits the carriers to earn enormous excess profits; *i.e.*, $7.577 billion in 1987 dollars, due to their unlimited use of the collected funds. For these reasons, the Offer of Settlement should be rejected because of the DR&R provision alone.

Q. How do income taxes as computed under TSM and BTM affect the revenues and rates produced by each method?

A. The inequities of TSM's capital structure and its provision for a guaranteed after-tax return of $0.35 per barrel (1983$) after 1988 are manifested through the computation of the income tax allowance. The difference in computed equity returns under BTM and TSM leads to concomitant disparities in computed income tax allowances.

This difference is partly offset by differences in treatment of income taxes for DR&R between TSM and BTM. The DR&R allowance under TSM includes associated income taxes, whereas the DR&R allowance under BTM is included in the base on which the income tax allowance is computed. Thus, all other things being equal, BTM would show a higher income tax allowance than TSM.

However, due to the tremendous impact of the 100% equity capital structure and the $0.35 provision found in TSM, TSM has a much higher income tax component in spite of the DR&R difference. For example, as can be seen in Exhibit APUC Staff ____ (RLB-2), in 1990 the income tax provision in TSM is $819.737 million compared with $339.858 million in BTM attributable to taxes on return.

Q. Are there any differences in the throughput numbers in TSM and BTM?

A. No, there aren't. I have used exactly the same throughput numbers in BTM as are assumed in TSM-6. Thus, none of the

differences in tariffs and revenues between TSM and BTM can be attributed to throughput differences.

It is important to remember, however, that, because of the $0.35 provision in TSM, if the throughput projections are incorrect, as they almost certainly will be, there will be significant changes to the revenues received from shippers compared to those that would be received as determined by a cost-based return provision.

Q. Summarize your findings as to the significant differences between TSM and BTM that lead to the substantial differences between the tariffs and revenues of the two methodologies.

A. My analysis indicates that there are six major factors that lead to the differences in tariffs and revenues between TSM and BTM. First, for the years 1978-1981, the tariffs and revenues in TSM are the result of the carriers' litigation position, *i.e.*, their filed tariffs. Thus, those tariffs give no consideration to the Phase I decisions, the *Cook Inlet* decision, or the litigation position of any of the parties besides the carriers. Even though the TSM methodology itself results in tariffs in the years 1979-1981 which are lower than the filed tariffs, the carriers are still allowed to collect their filed tariffs for those years.

The BTM methodology, on the other hand, for all years, including 1978-1981, has been constructed by looking to the

Commission's *Cook Inlet* decision, the TAPS Phase I decisions by the APC and Judge Kane, and the various parties' litigation positions. Consequently, BTM is a more traditional regulatory methodology which is based on the evidentiary record in the TAPS proceeding and should be used to assess the reasonableness of TSM.

Second, for the years 1982-2011, TSM tariffs are based on a hyper-accelerated depreciation schedule. This appears to be the main driving force of TSM and, in fact, leads to the need to incorporate other provisions, such as the $0.35 return per barrel. It is the primary cause of the early period tariffs being so much higher than the BTM tariffs, due to the high depreciation expense and DR&R components of the revenue requirement, as well as a smaller rate base deduction for ADIT. There is no evidence in the record to support such a depreciation schedule, and it fails to match costs and benefits properly. BTM, for all years, uses the straight-line depreciation schedule stipulated to by all the parties in these proceedings.

Third, for the years 1982-2011, TSM tariffs are based on a 100% equity capital structure. This capital structure was the carriers' extreme litigation position and was specifically rejected by the APC and Judge Kane in their Phase I decisions, and the APUC in its *Cook Inlet* decision. As discussed above, that capital structure leads to a very high income tax component.

BTM, on the other hand, begins with a 50/50 capital structure, which takes into consideration the APC Phase I decision and the parties' various litigation positions. For the years after 1982, BTM uses the procedure used by the Commission in its ***Cook Inlet*** decision to retire the debt over the life of the settlement. The resulting income tax component of BTM is significantly lower than the tax component in TSM.

Fourth, for the years 1989-2011, TSM uses a non-cost-based rate of return of $0.35 (in 1983$) per barrel of throughput. There is no evidence in the record for such a return methodology, and it results in rates of return far in excess of any returns supported in the evidentiary record, including those offered by the carriers. In addition, any increase in throughput will result in even greater returns to the carriers.

BTM uses a nominal return of 12% for the years 1978-1982 and, thereafter, a real return on debt of 2% and a real return on equity of 8%, with the TSM inflation rate added to arrive at the total nominal return. The nominal 12% return and the real returns are based on the APC's and Judge Kane's Phase I decisions, and the parties' litigation positions.

Fifth, to account for the Phase II issues of the cost of construction and the haul road, TSM deducts $450 million from carrier property in 1976 and amortizes that amount in 1978-

1984. This is equivalent to a disallowance of $171.71 million. This amount is substantially closer to the carriers' litigation position of a zero deduction than to the Staff's and State's position of a $1.687 billion deduction. BTM, on the other hand, splits the difference between the two litigation positions and deducts $843.5 million for carrier property.

Sixth, DR&R is not cost-based. In addition, in calculating DR&R, TSM uses an imputed earnings rate close to a risk-free rate even though the carriers and their parents have unlimited use of the collections. This allows the carriers to earn $7.577 billion (1987$) in profits on the DR&R expense collections. BTM allows the carriers to collect just what they need to accomplish DR&R.

Those six factors are the major reasons why the tariffs and revenues that result from TSM are so much greater than those that result from BTM, and are so clearly outside a zone of reasonableness.

Q. Have you done any other analyses to give the Commission some guidance as to the magnitude of the difference between the tariffs that result from BTM and from TSM?

A. Yes. I have done two additional analyses both to assess the magnitude of the difference and to further assure myself that the tariffs resulting from TSM are unjust and unreasonable.

Q. Describe your first additional analysis.

A. I have altered BTM in order to assess how much the State and Staff would have to "lose" in litigation in order to have a litigated decision that resulted in tariffs at the level of those obtained from TSM.

The first assumption I used to alter BTM was that the State and Staff completely lost their Phase II arguments regarding cost of construction and the haul road. I therefore made no deduction at all from the rate base. The results of that adjustment are shown in Exhibit APUC Staff ____ (RLB-6). As can be seen, the BTM modified tariffs are still lower than TSM tariffs in most years and the present value difference of the revenues from the modified BTM and TSM is still $16.5 billion.

The second adjustment I made was to assume that the State and Staff also completely lost their arguments regarding capital structure, and a 100% equity capital structure was adopted. I therefore changed BTM so as to incorporate a 100% equity capital structure. The results of that additional adjustment are shown in Exhibit APUC Staff ____ (RLB-16). As can be seen, the modified BTM tariffs are still substantially lower than TSM tariffs in the early years, and the present value difference of the revenues from the modified BTM and TSM is still $11.0 billion.

The third adjustment I made was to assume that the State and Staff also lost all their arguments regarding ADIT. I therefore changed BTM so that there is no deduction from rate base and the carriers have full use of the funds. Exhibit APUC Staff ____ (RLB-17) shows the results of that added adjustment. As can be seen, the modified BTM tariffs are now higher than the TSM tariffs in most years. However, because of the huge front-loading of TSM tariffs, the present value difference still results in TSM revenues being greater by $2.9 billion.

I modified BTM in one final way. First, I made no deduction from rate base for Phase II issues and assumed a 100% equity capital structure. However, I put the ADIT deduction back in, and then calculated what rate of return BTM would have to include to make the cumulative TSM and BTM PVRR equal. The results of that calculation are shown in Exhibit APUC Staff ____ (RLB-18). As can be seen, in order to match the present value of the TSM revenues, the shippers would have to pay tariffs based on a 19.33% nominal rate of return. This return almost exactly matches the carriers' most extreme litigation position.

Since the adoption of any of these extreme carrier litigation positions would result in tariffs that are outside a zone of reasonableness when compared with more traditional regulatory approaches, I believe this analysis which combines these various positions is helpful in understanding the magnitude

of the difference between TSM and BTM.

Q. Describe the second additional analysis you did.

A. In my second analysis I adopted an extremely wide zone of reasonableness around the BTM tariffs. Thus, although I believe that BTM results in tariffs and revenues that are already on the high side and probably outside a zone of reasonableness, I made an analysis to determine if the TSM tariffs were within an even wider zone of reasonableness about the BTM tariffs. For this analysis I assumed that any TSM tariff that was within $0.50 (1987$) of the BTM tariff for that same year was just and reasonable.

By this analysis I do not at all mean to imply that I believe that tariffs $0.50 higher than tariffs resulting from BTM would be just and reasonable. However, I wanted to ensure that this analysis used an extremely wide zone of reasonableness. I don't believe that any of the protestants during TAPS litigation, including the State, would have accepted filed tariffs that were $0.50 higher than the tariffs that they believed were within a zone of reasonableness. For example, during the TAPS evidentiary proceedings, the parties certainly argued strongly about issues that would have made only pennies difference in the tariffs, such as the affiliated interest transactions component of operating expenses.

Exhibit APUC Staff ____ (RLB-19) shows the results of my analysis. Even when the TSM tariffs are compared to those $0.50 higher than the already high BTM tariffs, the tariffs under TSM are still too high in 15 years and the present value difference between the revenues produced and the TSM revenues is still $13.100 billion. This analysis also further justifies my conclusions that TSM does not produce just and reasonable tariffs.

VII

CONCLUSIONS

Q. Summarize your conclusions and recommendations.

A. I recommend that the Commission reject the Offer of Settlement. This recommendation is based on the following conclusions:

(1) TSM results in tariffs that are unjust and unreasonable in most years of the settlement in that they are not within a zone of reasonableness, as defined by traditional cost-based regulatory approaches;

(2) The TSM results are so radically different from those produced by more traditional regulatory approaches that TSM's acceptance would not be in the public interest;

(3) Over the life of the settlement, the carriers will receive more than $20 billion ($1987) in unjust and unreasonable revenues;

(4) The State will lose more than $5 billion in revenues as a result of the unjust and unreasonable tariffs;

(5) The carriers will earn returns far in excess of any returns supported by record evidence, and which are patently unjust and unreasonable;

(6) TSM's hyper-accelerated depreciation schedule does not match costs and benefits to the shippers, and there is no record evidence to support its use;

(7) The $0.35 per barrel return provision is unjust and unreasonable in that it is not cost-based, has no support in the record, results in excessive carrier returns, and results in tariffs that are unjust and unreasonable;

(8) The 100% equity capital structure results in unjust and unreasonable tariffs;

(9) The amortized $450 million deduction from rate base for Phase II issues is too small and results in unjust and unreasonable tariffs; and

(10) The Dismantling, Removal and Restoration ("DR&R") provision is not cost-based and allows the carriers to earn billions of dollars of return on an expense item, thus allowing the carriers an unjust and unreasonable return.

The tariffs and revenues that result from the Offer of Settlement are so radically different from those that result from traditional regulatory methodologies that the Settlement is unjust and unreasonable and is not in the public interest. Therefore, it should be rejected by the Commission.

Q. Does this conclude your testimony?

A. Yes, it does.

CURRICULUM VITA
August, 1986

Personal

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Education

University of Illinois at Urbana-Champaign, B.S., 1969
Teaching Engineering Technology

University of Illinois at Urbana-Champaign, M.S., 1976
Mechanical Engineering/Thermal Systems

University of Illinois at Urbana-Champaign, post-M.S.
Studies in Engineering Systems and Economics

Professional Standing

Registered Professional Engineer
State of Illinois

Associate Member
American Society of Heating, Refrigerating and Air-Conditioning Engineers

Publications

with W.F. Stoecker, "Designing Duct Systems for Minimum Life Cycle Cost," Proceedings of the Conference on Improving Efficiency and Proformance of HVAC Equipment and Systems for Commercial and Industrial Buildings, Purdue University, April 1976.

"A Computer Program to Optimize the Life Cycle Cost of a Fan-Duct System," Master's Thesis, University of Illinois at Urbana-Champaign, Urbana, Illinois, May 1976.

with Bruce M. Hannon and Barr Z. Segal, "Labor Cost of Living: 1960-61," CAC Technical Publication No. 99, Energy Research Group, Center for Advanced Computation, University of Illinois at Urbana-Champaign, Urbana, Illinois, June 1978.

Previous Employment

Alaska Public Utilities Commission
April 1982 to September 1985
Utility and Pipeline Common Carrier Studies and Expert Testimony in Regulatory Affairs

Illinois Office of Consumer Services
February 1978 to March 1982
Utility Studies and Expert Testimony in Regulatory Affairs

Bertschi & Knecht, Engineers & Consultants
January 1977 to January 1978
Utility Studies and Expert Testimony in Regulatory Affairs

University of Illinois at Urbana-Champaign
Operation & Maintenance Division
Utilities Section
June 1974 to January 1977
Energy Conservation and Load Management Engineering

University of Illinois at Urbana-Champaign
Center for Advanced Computation
Energy Research Group
December 1973 to June 1974, and January 1977 to February 1978
Contract Research for Federal Energy Agencies

University of Illinois at Urbana-Champaign
Department of Mechanical Engineering
August 1973 to December 1973
Teaching Assistant

Lincoln Trail College, Robinson, Illinois
August 1972 to August 1973
Lead Instructor for Engineering Technology Curriculum
Instructor/Management and Industrial Psychology

EIRENE/Centre de Formation Professionnelle, Oujda, Morocco
January 1970 to August 1972
Administrator of Vocational Training School for Electric Trades

Detroit Metropolitan Water Services, Detroit, Michigan
January 1969 to January 1970
Mechanical Engineering Design
Contract Administration

N.V. Koninklijke Nederlandsche Machinefabriek v/h E.H. begemann, Helmond, Netherlands
Summer 1968
Industrial Engineering

Frasca Aviation, Champaign, Illinois
September 1966 to January 1968
Electro-Mechanical Systems Construction and Maintenance

Woodward Iron, Inc.
Golden Foundry Co., Columbus, Indiana
Summer 1966
Industrial Engineering

Testimony Before the Illinois Commerce Commission

Docket No. 76-0435
Illinois Power Company
re: General Increase in Gas and Electric Rates
Cost of Service
Rate Design

Docket No. 78-0075
Iowa-Illinois Gas & Electric Company
re: General Increase in Gas and Electric Rates
Power Plant Availability

Docket No. 78-0457
All Electric Utilities in Illinois
re: Uniform Fuel Adjustment Clause
Incentives for Powerplant Productivity

Docket No. 78-0646
Commonwealth Edison Company
re: Investigation of Construction Program
Generation Planning and Economics

Docket No. 79-0071
Illinois Power Company
re: General Increase in Gas and Electric Rates
Load Forecasting
Financial Goals and Bond Ratings
Powerplant Cost Overruns

Docket No. 80-0318
Central Illinois Public Service Company
re: General Increase in Electric Rates
CWIP

Docket No. 80-0418
All Electric and Gas Utilities in Illinois
re: Rules for Service Termination

Docket No. 80-0544
Illinois Power Company
re: General Increase in Electric Rates
Financial Goals and Bond Ratings

Docket No. 80-0546
Commonwealth Edison Company
re: General Increase in Electric Rates
CWIP

Docket No. 82-0152
Illinois Power Company
re: General Increase in Electric Rates
CWIP

Docket No. 80-0167
Commonwealth Edison Company
re: Investigation of Construction Program
Load Forecasting

Docket No. 84-0480
Illinois Power Company
re: General Increase in Electric Rates
Policy re Abandoned Plant

Testimony Before the Alaska Public Utilities Commission

Docket P-82-001
Cook Inlet Pipeline Company
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds

Docket P-81-001, Phase II
Trans-Alaska Pipeline System
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds

Docket U-83-46
Alaska Power & Telephone Company
re: General Increase in Electric Rates
Evaluation of Rate Base

Docket U-83-57
Chugach Electric Association, Inc.
re: General Increase in Electric Rates
TIER Requirement

Docket U-82-47
Chugach Electric Association, Inc.
re: Formation of a G&T Cooperative

Testimony Before Other Agencies

Indiana Public Service Commission
Cause No. 34859
Indiana Statewide/Hoosier Energy Division
re: Certification of Public Convenience and Necessity
Merom Generating Station
Load and Energy Forecasting

City of Springfield (Illinois)
re: Review of Cost of Service Study for City Water Light and Power
Rate Design/Cost of Service

Public Service Commission of Wisconsin
Docket No. 05-EP-1
re: Advance Plan of Western Wisconsin Utilities
Capital Costs for Fossil and Nuclear Generation

Massachusetts Department of Public Utilities
Docket No. DPU 19494
Boston Edison Company
re: Certification of Public Convenience and Necessity
Pilgrim Generating Station
Life Cycle Costs for Fossil and Nuclear Generation

Michigan Public Service Commission
Case No. U-62-17
Detroit Edison Company
re: Authorization to Market Securities
Life Cycle Costs for Fossil and Nuclear Generation

Michigan State Legislature
Special Joint Committee on Nuclear Energy
re: Impact on Rates and Cost Allocation of Nuclear Construction Costs

Minnesota Public Service Commission
Docket No. E-002/D-79-956
Northern States Power Company
re: Decommissioning Nuclear Powerplants
Accounting Treatment for Decommissioning Funds

Maine Public Utilities Commission
Docket No. 80-25/80-66
Central Maine Power Company
re: General Increase in Electric Rates
Powerplant Productivity

Washington Utilities & Transportation Commission
Cause No. U-80-13
Washington Water Power Company
re: General Increase in Electric Rates
CWIP

Public Utilities Commission of the State of Colorado
Docket No. I & S 1425
Public Service Company of Colorado
re: General Increase in Electric Rates
CWIP

Idaho Public Utilities Commission
Case Nos. U-1008-155 and U-10080156
Washington Water Power Company
re: General Increase in Electric Rates
CWIP

Federal Energy Regulatory Commission
Docket No. OR78-1, Phase II
Trans-Alaska Pipeline System
re: Oil Pipeline Dismantlement
Accounting Treatment for Dismantlement Funds
Jurisdicitonal Cost Allocation

New York Public Service Commission
PSC Case No. 27563
Long Island Lighting Company
re: Cost of Shoreham Nuclear Generating Facility

ITEM/ELEMENT	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
CPI-U	Data Entry	1	298.4	311.5	324.5	339.4	355.3	374.9
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2		4.390%	4.173%	4.592%	4.685%	5.516%
		3						
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4						
ADDITIONS TO LAND	Data Entry	5		0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6		45.049	25.000	5.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	7		0.000	1.000	1.000	2.000	2.000
$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	$15 times ratio of #1 to #1 in 1984	8		15.000	15.626	16.343	17.109	18.053
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	9		0.000	8.374	0.000	0.000	0.000
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	10		45.049	16.626	5.000	10.000	10.000
		11						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		12						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	13		0.130043	0.140910	0.154120	0.177089	0.193408
ORIGINAL DEPRECIATION	#14 times previous #20	14		569.053	538.417	508.185	494.447	445.928
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	15		45.049	16.626	5.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	16		30.883	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	17		1.000	1.000	0.980	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	18		30.883	2.000	1.960	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	19		3820.996	3297.206	2792.080	2305.634	1867.706
		20	4375.883					
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23			8.374	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24			0.000	0.040	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25			1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26			8.374	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27			0.000	0.040	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28			0.000	1.291	1.247	1.121
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29			8.374	7.043	5.796	4.675
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30		0.000	8.374	7.043	5.796	4.675
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33			0.479	0.902	0.823	0.771
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #28	34			0.479	0.090	-0.314	-0.884
STATE INCOME TAX RATE	Data Entry	35		0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36		0.460	0.460	0.460	0.460	0.460
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37			0.024	0.005	-0.017	-0.035
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38			1.256	1.842	1.758	1.759
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39			1.256	1.808	2.319	2.957
NEW FEDERAL DEFERRED TAX	#36 times #39	40			0.578	0.832	1.067	1.360
NEW DEFERRED TAX	#37 plus #40	41			0.602	0.836	1.050	1.325
		42						
		43						
		44						
CWIP AT YEAR END	Data Entry	45	17.915	5.124	8.000	2.000	1.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46		32.258	28.000	0.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47		0.000	0.000	0.000	0.000	0.000
INTERIM CWIP BALANCE	Previous #45 plus #46 minus #47	48		50.173	30.124	5.000	12.000	11.000
ORIGINAL INTO SERVICE RATIO	[#5 plus #11] divided by #48	49		0.898	0.552	1.000	0.833	0.909
NEW INTO SERVICE RATIO	#10 divided by #48	50		0.000	0.278	0.000	0.000	0.000
		51						
		52						
		53						
ADDITIONS TO AFUDC	[8.4% plus #2] times [Previous #45 plus Previous #58]	54		2.059	0.577	0.587	0.222	0.124
INTERIM AFUDC	Previous #58 plus #54	55		3.226	0.906	0.721	0.222	0.161
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56		2.896	0.500	0.721	0.185	0.146
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57		0.000	0.252	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	58	1.167	0.329	0.154	0.000	0.037	0.015
		59						

ITEM ELEMENT	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61		561.220	576.220	585.218	617.723	602.037
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62		7561.263	6795.634	6000.983	5168.119	4370.451
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63		331.946	283.606	275.548	242.113	241.094
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64		2.896	0.500	0.721	0.185	0.146
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	4315.653	4089.274	3797.181	3488.209	3112.783	2751.986
		66						
ELEMENTS OF NEW DEFERRED RETURN		67						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	68			0.000	0.039	0.097	0.144
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	69			0.000	7.296	8.247	5.275
NEW INFLATION ADJUSTMENT	#2 times #69	70			0.000	0.335	0.293	0.291
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	71			0.252	0.000	0.000	0.000
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	72		0.000	0.252	0.548	0.744	0.891
ELIGIBILITY FRACTION	#25	73			1.000	1.000	1.000	1.000
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	74			0.252	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	75			0.000	7.296	8.247	5.275
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	76			0.000	0.335	0.293	0.291
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	77		0.000	0.252	0.548	0.744	0.891
		78						
NON-DEPRECIABLE PROPERTY		79						
ADDITIONS TO LAND	#5	80		0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81		0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	16.997	16.997	16.997	16.997	16.997	16.997
WORKING CAPITAL AT YEAR END	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	47.188	43.376	25.452	25.452	25.452	25.452
NON-DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	7.459	11.271	29.195	29.195	29.195	29.195
		86						
ORIGINAL RATE BASE		87						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	4375.883	3820.998	3297.208	2792.080	2305.634	1867.706
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	4315.653	4089.274	3797.181	3488.209	3112.783	2751.986
NON-DEPRECIABLE PROPERTY AT YEAR END	#85	90	7.459	11.271	29.195	29.195	29.195	29.195
ORIGINAL DEFERRED TAX AT YEAR END	#178 minus #41	91	495.417	505.395	508.971	499.513	488.538	431.644
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	8203.578	7418.147	6614.590	5809.971	4979.073	4217.243
RETURN ON ORIGINAL RATE BASE	8.4% of Previous #92	93		525.029	474.033	423.334	371.038	318.661
ALLOWANCE PER BARREL	8.35 multiplied by ratio of #1 to #1 for 1983	94	0.350	0.365	0.381	0.398	0.417	0.440
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95		807.135	813.200	820.500	853.351	840.575
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96		221.828	233.392	247.015	272.277	281.879
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	97		525.029	474.033	423.334	371.038	318.661
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	101			8.374	7.043	6.798	4.875
NEW DEFERRED RETURN AT YEAR END	#72	102			0.252	0.548	0.744	0.891
NEW DEFERRED TAX AT YEAR END	#41	103			0.602	0.836	1.050	1.325
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104			8.024	6.755	6.490	4.241
RETURN ON NEW RATE BASE	6.4% of Previous #104	105				0.514	0.432	0.351
		106						
AFTER-TAX MARGIN	#97 plus #105	107		525.029	474.033	423.847	372.271	319.012
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110		561.220	576.220	585.257	617.820	602.181
		111						
INCOME TAX BASE	#107 plus #110	112		1086.249	1050.853	1009.104	990.091	921.193
COMBINED RATE OF TAX	#35 plus [#36 times (unity minus #35)]	113		0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by (unity minus #113)	114		1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115		1134.030	1097.076	1053.492	1033.642	961.713
		116						

ITEM ELEMENT	HOW DERIVED	LINE #	1983	1984	1985	1986	1987	1988
OF&R ALLOWANCE	Exhibit E	117		110.377	104.048	97.766	95.023	85.401
OPERATING EXPENSES	Data Entry	118		434.330	455.779	466.873	501.517	499.952
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II-3	119		72.701				
DEPRECIATION	#15 plus #28	120		569.053	538.417	509.456	495.894	447.04
RECOVERY OF DEFERRED RETURN	#110	121		561.220	576.220	585.257	617.820	602.191
AFTER-TAX MARGIN	#107	122		525.029	474.833	423.847	372.271	319.012
INCOME TAX ALLOWANCE	#115	123		1134.030	1097.076	1053.492	1033.642	961.713
NON-TRANSPORTATION REVENUES	Data Entry	124		0.513	2.700	2.700	2.700	2.700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126			4838.442	4888.942	4960.309	5230.950
TAPS CARRIERS STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127			1030.588	1040.919	1058.546	1114.171
TAPS CARRIERS BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128			0.213	0.213	0.213	0.213
TAPS CARR. B.M SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129			725.526	690.860	667.540	663.126
TAPS CARRIERS REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130			725.526	690.860	667.540	663.126
TAPS CARRIERS REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131			0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132			0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133			11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	134			0.000	0.000	0.000	0.000
TAPS CARRIERS VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135			0.000	0.000	0.000	0.000
TAPS CARRIERS REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136			0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137			0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	138			0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139			0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140		3408.227	3243.473	3133.991	3113.267	2912.608
		141						
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142		0.121	0.132	0.205	0.524	0.408
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143		601.014	607.088	641.295	631.842	477.219
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144		0.000	0.000	73.000	114.975	156.950
INTRASTATE PUMPABILITY FACTOR	Data Entry	145		1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146		1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147		1.000	1.000	1.028	1.028	1.028
INTRASTATE STANDARD BARREL MILES	4.89 times #142 times #145	148		28.707	28.759	29.101	30.044	30.044
STSP STANDARD BARREL MILES	0.0027 times #143 times #148	149		4809.735	4858.183	4231.821	4258.172	3819.040
STNSP STANDARD BARREL MILES	0.0027 times #144 times #147	150		0.000	0.000	599.388	944.033	1288.680
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151		4838.442	4888.942	4960.309	5230.850	5137.765
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152		0.0059332	0.0058849	0.0058669	0.0058584	0.0058477
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153		0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154		20.822	19.701	18.007	18.892	17.673
INTRASTATE TARIFF	#154 divided by #142	155		3.400	3.210	3.000	2.890	2.760
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156		3385.405	3223.772	3114.984	3094.374	2894.935
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157		4809.735	4858.183	4931.209	5200.205	5107.721
RATIO OF STNSP STD B-M'S TO TOTAL INTERSTATE STD B-M'S	#150 divided by #157	158		0.000	0.000	0.122	0.182	0.252
STNSP ADDITIONAL UNIT COST	Data Entry	159		0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160		0.000	0.000	378.625	581.746	730.394
STNSP TARIFF	#160 divided by #144	161		#N/A	#N/A	5.190	4.890	4.650
STSP REVENUE REQUIREMENT	#156 minus #160	162		3385.405	3223.772	2736.359	2532.629	2164.542
STSP TARIFF RATE	#162 divided by #143	163		5.630	5.310	5.080	4.780	4.540
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	165		722.355	676.963	629.246	580.709	532.469
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	166		573.828	532.212	476.184	419.442	358.017
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168		2066.977	2009.383	1942.806	1938.717	1797.488
STATE INCOME TAX RATE	#35	169		0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	170		194.296	188.882	182.624	182.239	168.964
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171		2021.208	1965.252	1913.244	1917.746	1802.974
FEDERAL INCOME TAX RATE	#36	172		0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173		929.756	904.016	880.092	882.163	829.368
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174		1124.052	1092.898	1062.716	1064.402	998.332
NET ADDITION TO DEFERRED TAX	#115 minus #174	175		9.978	4.179	-9.225	-30.761	-36.619
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	495.417	505.395	509.574	500.349	469.588	432.969

TSMELEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
CPI-U	Data Entry	1	395.5	417.2	440.2	487.5	498.5	527.3
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2	5.495%	5.487%	5.513%	6.202%	6.203%	6.203%
		3						
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4						
ADDITIONS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	30.000	30.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN		7						
SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	8	2.000	0.000	4.000	2.000	2.000	2.000
$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	$15 times ratio of #1 to #1 in 1984	9	19.045	20.090	21.197	22.512	23.909	25.392
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	10	0.000	9.910	4.803	0.000	0.000	0.000
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	11	10.000	20.090	25.197	10.000	10.000	10.000
		12						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.205565	0.214587	0.228137	0.234534	0.238915	0.242761
ORIGINAL DEPRECIATION	#14 times previous #20	15	383.935	320.115	269.046	221.378	173.072	137.269
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	20.090	25.197	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	19	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	20	1491.771	1189.746	943.898	730.522	565.450	436.181
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	9.910	4.803	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	9.910	4.803	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27	0.000	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	0.961	0.797	2.901	3.454	2.671	2.089
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29	3.714	12.827	14.729	11.275	8.603	6.515
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	3.714	12.827	14.729	11.275	8.603	6.515
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	0.720	1.228	1.989	2.087	1.899	1.757
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #29	34	-0.925	-0.487	-1.429	-2.829	-3.599	-3.930
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.460	0.460	0.460	0.460	0.460	0.460
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37	-0.047	-0.025	-0.073	-0.143	-0.183	-0.200
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	1.759	1.487	2.901	3.138	3.090	3.090
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #29	39	3.754	4.444	4.443	4.127	4.545	5.546
NEW FEDERAL DEFERRED TAX	#38 times #39	40	1.727	2.044	2.044	1.898	2.091	2.551
NEW DEFERRED TAX	#37 plus #40	41	1.680	2.019	1.971	1.755	1.908	2.352
		42						
		43						
		44						
CWIP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46	10.000	30.000	30.000	10.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM CWIP BALANCE	Previous #45 plus #46 minus #47	48	10.000	30.000	30.000	10.000	10.000	10.000
ORIGINAL INTO-SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	0.670	0.840	1.000	1.000	1.000
NEW INTO-SERVICE RATIO	#10 divided by #48	50	0.000	0.330	0.160	0.000	0.000	0.000
		51						
		52						
		53						
ADDITIONS TO AFUDC	[8.4% plus #2] times [Previous #45 plus Previous #58]	54	0.002	0.000	0.000	0.000	0.000	0.000
INTERIM AFUDC	Previous #58 plus #54	55	0.016	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56	0.016	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	58	0.000	0.000	0.000	0.000	0.000	0.000
		59						

TSM ELEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	565.712	512.423	461.934	403.091	341.031	292.091
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62	3670.045	3047.185	2501.485	2038.121	1657.917	1339.294
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	201.662	167.191	137.905	126.399	102.838	83.062
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0.016	0.000	0.000	0.000	0.000	0.000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	2387.952	2042.719	1718.690	1441.998	1203.205	994.196
		66						
ELEMENTS OF NEW DEFERRED RETURN		67						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	68	0.183	0.204	0.214	0.210	0.420	0.478
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	69	4.422	3.864	10.980	12.288	9.957	8.007
NEW INFLATION ADJUSTMENT	#2 times #69	70	0.243	0.201	0.588	0.762	0.618	0.497
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	71	0.000	0.000	0.000	0.000	0.000	0.000
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	72	0.951	0.948	1.321	1.773	1.971	1.989
ELIGIBILITY FRACTION	#25	73	1.000	1.000	1.000	1.000	1.000	1.000
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	74	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	75	4.422	3.864	10.980	12.288	9.957	8.007
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	76	0.243	0.201	0.588	0.762	0.618	0.497
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	77	0.951	0.948	1.321	1.773	1.971	1.989
		78						
NON-DEPRECIABLE PROPERTY		79						
ADDITIONS TO LAND	#5	80	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81	0.000	0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	16.997	16.997	16.997	16.997	16.997	16.997
WORKING CAPITAL AT YEAR END	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	25.452	25.452	25.452	25.452	25.452	25.452
NON-DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	29.195	29.195	29.195	29.195	29.195	29.195
		86						
ORIGINAL RATE BASE		87						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	1491.771	1189.748	943.698	730.522	585.450	430.181
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	2387.952	2042.719	1718.690	1441.998	1203.205	994.196
NON-DEPRECIABLE PROPERTY AT YEAR END	#85	90	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL DEFERRED TAX AT YEAR END	#176 minus #41	91	398.604	373.818	352.911	323.035	293.615	256.031
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	3510.313	2887.842	2339.172	1878.679	1504.235	1201.541
RETURN ON ORIGINAL RATE BASE	6.4% of Previous #92	93	269.904	224.680	184.822	149.707	120.235	96.271
ALLOWANCE PER BARREL	$.35 multiplied by ratio of #1 to #1 for 1983	94	0.484	0.488	0.518	0.548	0.582	0.618
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95	804.075	656.625	618.300	478.413	428.875	402.413
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96	280.225	272.381	267.609	260.089	249.758	248.885
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	97	280.225	272.381	267.609	260.089	249.758	248.885
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	101	3.714	12.827	14.729	11.275	8.602	6.515
NEW DEFERRED RETURN AT YEAR END	#72	102	0.951	0.948	1.321	1.773	1.971	1.989
NEW DEFERRED TAX AT YEAR END	#41	103	1.680	2.019	1.971	1.795	1.909	2.352
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104	2.985	11.756	14.079	11.293	8.668	6.152
RETURN ON NEW RATE BASE	6.4% of Previous #104	105	0.271	0.191	0.752	0.901	0.723	0.555
		106						
AFTER-TAX MARGIN	#97 plus #105	107	280.496	272.572	268.361	261.690	250.481	249.440
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110	565.895	512.627	462.149	403.401	342.051	292.570
		111						
INCOME TAX BASE	#107 plus #110	112	846.391	785.199	730.510	664.991	592.532	542.009
COMBINED RATE OF TAX	#35 plus [#36 times [unity minus #35]]	113	0.511	0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by [unity minus #113]	114	1.044	1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115	883.621	819.737	762.643	694.241	618.595	565.850
		116						

TSM ELEMENT	HOW DERIVED	LINE #	1989	1990	1991	1992	1993	1994
DRAW ALLOWANCE	Exhibit E	117	73.214	60.717	50.254	40.334	31.188	24.386
OPERATING EXPENSES	Data Entry	118	487.734	477.938	481.092	492.828	499.960	516.076
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II.3	119						
DEPRECIATION	#15 plus #28	120	384.896	320.912	271.948	224.821	175.743	139.358
RECOVERY OF DEFERRED RETURN	#110	121	565.895	512.627	462.149	403.401	342.051	292.570
AFTER TAX MARGIN	#107	122	280.496	272.572	266.361	261.590	250.481	249.440
INCOME TAX ALLOWANCE	#115	123	883.621	819.737	762.643	694.241	618.595	565.850
NON-TRANSPORATION REVENUES	Data Entry	124	2.700	2.700	2.700	2.700	2.700	2.700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	5137.785	4850.672	4472.139	4106.324	3823.205	3450.227
TAPS CARRIER'S STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	1094.344	1033.192	952.569	887.427	814.343	734.898
TAPS CARRIER'S BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B-M SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	620.386	569.382	524.364	488.568	450.394	407.963
TAPS CARRIER'S REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	620.386	569.382	524.364	488.568	450.394	407.963
TAPS CARRIER'S REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	134	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIER'S VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	5.000	5.000	5.000	5.000	5.000	5.000
TAPS CARRIER'S REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	138	0.000	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140	2873.157	2461.803	2293.745	2114.525	1915.317	1784.980
		141						
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142	8.041	8.569	8.183	4.784	4.289	4.024
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	422.834	377.884	341.987	309.498	280.461	233.226
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	179.200	173.378	171.890	169.163	155.125	165.163
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.020	1.020	1.020	1.020	1.020	1.020
INTRASTATE STANDARD BARREL MILES	4.69 times #142 times #145	148	20.232	20.105	24.308	22.290	20.119	19.073
STSP STANDARD BARREL MILES	0.0027 times #143 times #146	149	3383.814	3022.492	2733.488	2444.793	2156.418	1866.438
STNSP STANDARD BARREL MILES	0.0027 times #144 times #147	150	1438.527	1422.542	1408.858	1356.118	1273.698	1356.118
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	4050.573	4472.139	4186.324	3823.205	3450.227	3241.428
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0058409	0.0058371	0.0058345	0.0058310	0.0058302	0.0058223
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.10	0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154	16.218	14.927	13.901	12.807	11.699	10.795
INTRASTATE TARIFF	#154 divided by #142	155	2.880	2.880	2.880	2.880	2.700	2.880
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	2856.939	2446.877	2279.844	2101.718	1903.722	1774.185
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	4822.341	4446.034	4162.016	3800.906	3430.111	3222.593
RATIO OF STNSP STD B-M'S TO TOTAL INTERSTATE STD B-M'S	#150 divided by #157	158	0.298	0.320	0.340	0.357	0.371	0.421
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160	792.677	783.447	778.297	749.888	709.905	748.613
STNSP TARIFF	#160 divided by #144	161	4.520	4.520	4.520	4.540	4.580	4.520
STSP REVENUE REQUIREMENT	#156 minus #160	162	1864.261	1663.430	1504.947	1351.852	1196.817	1027.572
STSP TARIFF RATE	#162 divided by #143	163	4.410	4.400	4.400	4.430	4.440	4.410
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	165	484.144	436.907	390.814	170.367	121.490	72.612
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	166	302.890	254.965	212.848	166.073	118.106	70.331
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168	1630.765	1488.941	1374.485	1413.896	1295.379	1174.805
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	170	153.292	139.960	129.202	132.883	118.948	110.413
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171	1658.727	1530.923	1422.250	1285.102	1149.818	1068.474
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173	763.014	704.224	654.035	591.147	529.016	490.578
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	916.306	844.185	783.896	724.034	647.862	600.991
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-32.685	-24.448	-21.254	-29.793	-29.287	-35.140
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	400.284	375.837	354.583	324.790	295.523	260.383

ISM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
CPI-U	Data Entry	1	559.9	594.7	635.1	676.3	724.4	772.7
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2	6.182%	6.215%	6.793%	6.802%	6.796%	6.806%
		3						
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4						
ADDITIONS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	7	2.000	2.000	2.000	2.000	2.000	2.000
		8						
$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	$15 times ratio of #1 to #1 in 1984	9	28.961	28.637	30.583	32.683	34.883	37.257
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	10	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	11	10.000	10.000	10.000	10.000	10.000	10.000
		12						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.253562	0.243085	0.195574	0.112804	0.118241	0.134914
ORIGINAL DEPRECIATION	#14 times previous #20	15	110.599	81.089	50.946	24.497	23.772	24.997
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	19	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	20	333.582	260.493	217.548	201.051	185.278	168.282
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27	0.000	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	1.852	1.182	0.720	0.333	0.311	0.313
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29	4.863	3.681	2.961	2.628	2.317	2.004
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	4.863	3.681	2.961	2.628	2.317	2.004
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	1.815	1.474	1.332	1.190	1.048	0.908
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #28	34	-2.967	-2.978	-3.084	-2.207	-1.469	-0.875
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.480	0.480	0.480	0.480	0.480	0.480
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37	-0.201	-0.187	-0.150	-0.112	-0.075	-0.044
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	1.009	0.000	0.000	0.000	0.000	0.000
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39	4.903	3.721	3.001	2.688	2.357	2.044
NEW FEDERAL DEFERRED TAX	#36 times #39	40	2.255	1.712	1.380	1.227	1.084	0.940
NEW DEFERRED TAX	#37 plus #40	41	2.054	1.525	1.229	1.115	1.010	0.899
		42						
		43						
		44						
CWIP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46	10.000	10.000	10.000	10.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM CWIP BALANCE	Previous #45 plus #46 minus #47	48	10.000	10.000	10.000	10.000	10.000	10.000
ORIGINAL INTO-SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	1.000	1.000	1.000	1.000	1.000
NEW INTO-SERVICE RATIO	#10 divided by #48	50	0.000	0.000	0.000	0.000	0.000	0.000
		51						
		52						
		53						
ADDITIONS TO AFUDC	[6.4% plus #2] times [Previous #45 plus Previous #58]	54	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM AFUDC	Previous #58 plus #54	55	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	58	0.000	0.000	0.000	0.000	0.000	0.000
		59						

TSM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	252.090	196.441	130.132	95.989	87.205	73.836
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62	1067.687	864.187	744.801	712.932	678.448	633.728
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	66.009	53.711	50.597	48.494	48.110	43.129
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0.000	0.000	0.000	0.000	0.000	0.000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	808.114	865.385	585.850	568.375	547.280	516.573
		66						
ELEMENTS OF NEW DEFERRED RETURN		67						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	68	0.504	0.456	0.340	0.191	0.211	0.248
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	69	6.348	5.102	4.359	4.131	3.890	3.594
NEW INFLATION ADJUSTMENT	#2 times #69	70	0.392	0.317	0.296	0.281	0.264	0.245
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	71	0.000	0.000	0.000	0.000	0.000	0.000
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	72	1.877	1.738	1.694	1.784	1.838	1.834
ELIGIBILITY FRACTION	#25	73	1.000	1.000	1.000	1.000	1.000	1.000
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	74	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	75	6.348	5.102	4.359	4.131	3.890	3.594
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	76	0.392	0.317	0.296	0.281	0.264	0.245
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	77	1.877	1.738	1.694	1.784	1.838	1.834
		78						
NON-DEPRECIABLE PROPERTY		79						
ADDITIONS TO LAND	#5	80	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81	0.000	0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	18.997	18.997	18.997	18.997	18.997	18.997
WORKING CAPITAL AT YEAR END	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	25.452	25.452	25.452	25.452	25.452	25.452
NON DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	29.195	29.195	29.195	29.195	29.195	29.195
		86						
ORIGINAL RATE BASE		87						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	333.582	280.493	217.548	201.061	185.278	168.282
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	808.114	865.385	585.850	568.375	547.280	516.573
NON DEPRECIABLE PROPERTY AT YEAR END	#85	90	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL DEFERRED TAX AT YEAR END	#178 minus #41	91	210.844	179.910	155.300	148.122	141.250	133.700
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	960.247	770.484	677.293	650.499	620.504	580.350
RETURN ON ORIGINAL RATE BASE	8.4% of Previous #92	93	78.899	61.456	48.888	42.347	41.832	39.712
ALLOWANCE PER BARREL	$.35 multiplied by ratio of #1 to #1 for 1983	94	0.857	0.898	0.745	0.798	0.850	0.907
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95	397.851	379.600	348.751	321.200	299.300	301.125
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96	281.278	264.785	258.303	255.645	254.305	273.268
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-89, #93; after 1989, #96	97	281.278	264.785	258.303	255.645	254.305	273.268
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	101	4.883	3.881	2.881	2.628	2.317	2.004
NEW DEFERRED RETURN AT YEAR END	#72	102	1.877	1.738	1.694	1.784	1.838	1.834
NEW DEFERRED TAX AT YEAR END	#41	103	2.054	1.525	1.225	1.115	1.010	0.896
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104	4.688	3.894	3.430	3.297	3.145	2.943
RETURN ON NEW RATE BASE	8.4% of Previous #104	105	0.394	0.300	0.249	0.220	0.211	0.201
		106						
AFTER-TAX MARGIN	#97 plus #105	107	281.670	265.085	258.552	255.784	254.516	273.469
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110	252.595	196.897	130.472	96.180	87.416	74.084
		111						
INCOME TAX BASE	#107 plus #110	112	514.265	461.982	389.024	321.924	321.932	347.553
COMBINED RATE OF TAX	#35 plus [#36 times [unity minus #35]]	113	0.511	0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by [unity minus #113]	114	1.044	1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115	536.885	482.303	406.136	336.084	336.093	362.841
		116						

TSM ELEMENT	HOW DERIVED	LINE #	1995	1996	1997	1998	1999	2000
OTHER ALLOWANCE	Exhibit E	117	19.288	13.802	8.405	3.893	3.628	3.650
OPERATING EXPENSES	Data Entry	118	536.262	557.033	579.420	598.851	627.260	659.642
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II-3	119						
DEPRECIATION	#15 plus #28	120	112.251	82.271	51.868	24.830	24.083	- 25.309
RECOVERY OF DEFERRED RETURN	#110	121	252.595	196.897	130.472	68.180	67.416	74.084
AFTER-TAX MARGIN	#107	122	281.670	265.085	258.552	255.764	254.516	273.469
INCOME TAX ALLOWANCE	#115	123	536.885	482.303	408.136	336.084	336.093	362.841
NON-TRANSPORTATION REVENUES	Data Entry	124	2.700	2.700	2.700	2.700	2.700	2.700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	3241.426	3209.813	3065.501	2800.869	2594.782	2418.709
TAPS CARRIER'S STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	690.424	683.890	652.852	596.543	552.884	515.185
TAPS CARRIER'S BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B-M SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	380.201	365.561	339.669	305.005	273.254	279.093
TAPS CARRIER'S REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	380.201	365.561	339.669	305.005	273.254	279.093
TAPS CARRIER'S REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	134	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIER'S VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIER'S REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	138	0.000	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140	1716.251	1594.090	1431.950	1282.882	1310.296	1396.295
		141						
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142	3.979	3.798	3.488	3.212	2.993	3.011
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	205.897	182.254	164.432	150.088	135.707	121.089
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	187.975	193.450	178.050	167.900	- 180.800	177.025
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.026	1.026	1.026	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.69 times #142 times #145	148	18.662	17.803	16.265	15.084	14.037	14.122
STSP STANDARD BARREL MILES	8.0027 times #143 times #146	149	1647.732	1459.324	1316.908	1201.109	1086.022	969.039
STNSP STANDARD BARREL MILES	8.0027 times #144 times #147	150	1543.420	1588.373	1488.496	1378.588	1318.650	1453.512
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	3209.813	3065.901	2800.668	2594.782	2418.709	2436.672
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0058139	0.0058078	0.0058079	0.0058057	0.0058036	0.0057954
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.10	0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154	10.378	9.641	8.663	7.769	7.904	8.393
INTRASTATE TARIFF	#154 divided by #142	155	2.610	2.540	2.500	2.420	2.540	2.790
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	1705.875	1585.049	1422.287	1275.113	1302.392	1387.901
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	3191.151	3047.098	2784.404	2579.698	2406.672	2422.551
RATIO OF STNSP STD B-M'S TO TOTAL INTERSTATE STD B-M'S	#150 divided by #157	158	0.484	0.521	0.527	0.534	0.548	0.600
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160	825.057	826.083	750.643	681.419	714.193	832.730
STNSP TARIFF	#160 divided by #144	161	4.390	4.270	4.200	4.060	4.450	4.700
STSP REVENUE REQUIREMENT	#156 minus #160	162	880.818	758.967	672.645	593.694	588.199	555.171
STSP TARIFF RATE	#162 divided by #143	163	4.280	4.180	4.090	3.960	4.330	4.580
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	165	23.680	20.109	17.020	15.653	14.243	13.072
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	166	18.364	11.819	10.618	10.000	10.000	10.000
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168	1139.721	1006.447	829.205	687.185	687.685	722.630
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	170	107.134	94.606	77.943	62.715	62.278	67.927
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171	1037.904	920.131	758.262	610.123	609.328	657.775
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173	477.436	423.260	348.801	280.657	280.291	302.577
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	584.569	517.866	426.746	343.372	343.070	370.504
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-47.684	-35.563	-20.610	-7.288	-6.978	-7.663
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	212.698	177.135	156.525	149.237	142.259	134.596

ITEM ELEMENT	HOW DERIVED	LINE #	2001	2002	2003	2004	2005	2006
CPI-U	Data Entry	1	826.3	882.5	942.5	1008.8	1075.0	1148.1
INFLATION RATE [%]	Ratio #1 to Previous #1 minus unity	2	6.799%	6.801%	6.799%	6.801%	6.795%	6.800%
		3						
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4						
ADDITIONS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN		7						
SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	8	2.000	2.000	2.000	2.000	2.000	2.000
$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	$15 times ratio of #1 to #1 in 1984	9	39.790	42.496	45.385	48.472	51.766	55.286
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	10	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	11	10.000	10.000	10.000	10.000	10.000	10.000
		12						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13						
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.147448	0.181883	0.170635	0.188198	0.214145	0.252500
ORIGINAL DEPRECIATION	#14 times previous #20	15	24.813	24.517	23.027	22.569	22.561	22.925
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	19	2.000	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	20	151.469	134.952	119.924	105.355	90.794	75.868
		21						
NEW DEPRECIABLE PROPERTY IN SERVICE		22						
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27	0.000	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	0.296	0.277	0.244	0.224	0.208	0.191
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29	1.709	1.432	1.188	0.964	0.758	0.566
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	1.709	1.432	1.188	0.964	0.758	0.566
		31						
NEW DEFERRED TAX		32						
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	0.785	0.622	0.481	0.381	0.301	0.210
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #28	34	-0.490	-0.060	0.177	0.344	0.428	0.457
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.460	0.460	0.460	0.460	0.460	0.460
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37	-0.021	-0.003	0.009	0.017	0.022	0.023
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	0.000	0.000	0.000	0.000	0.000	0.000
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39	1.749	1.472	1.228	1.004	0.798	0.606
NEW FEDERAL DEFERRED TAX	#36 times #39	40	0.804	0.677	0.565	0.462	0.367	0.279
NEW DEFERRED TAX	#37 plus #40	41	0.784	0.674	0.574	0.479	0.389	0.302
		42						
		43						
		44						
CWIP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46	10.000	10.000	10.000	10.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM CWIP BALANCE	Previous #45 plus #46 minus #47	48	10.000	10.000	10.000	10.000	10.000	10.000
ORIGINAL INTO-SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	1.000	1.000	1.000	1.000	1.000
NEW INTO-SERVICE RATIO	#10 divided by #48	50	0.000	0.000	0.000	0.000	0.000	0.000
		51						
		52						
		53						
ADDITIONS TO AFUDC	[8.4% plus #7] times [Previous #45 plus Previous #58]	54	0.000	0.000	0.000	0.000	0.000	0.000
INTERIM AFUDC	Previous #58 plus #54	55	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57	0.000	0.000	0.000	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	58	0.000	0.000	0.000	0.000	0.000	0.000
		59						

ITEM ELEMENT	HOW DERIVED	LINE #	2001	2002	2003	2004	2005	2006
ELEMENTS OF ORIGINAL DEFERRED RETURN		60						
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	78.169	77.710	74.805	74.911	74.926	75.586
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #20 minus #61 minus #15	62	583.875	529.342	475.512	418.781	357.753	291.572
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	39.695	36.003	32.329	28.480	24.330	19.827
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0.000	0.000	0.000	0.000	0.000	0.000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	480,100	438.393	395,917	349,888	299,270	243,531
		66						
ELEMENTS OF NEW DEFERRED RETURN		67						
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	68	0.270	0.289	0.289	0.298	0.308	0.318
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #28	69	3.273	2.929	2.595	2.250	1.888	1,507
NEW INFLATION ADJUSTMENT	#2 times #69	70	0.222	0.199	0.176	0.153	0.128	0.102
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	71	0.000	0.000	0.000	0.000	0.000	0.000
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	72	1.786	1.697	1.583	1.438	1.259	1.043
ELIGIBILITY FRACTION	#25	73	1.000	1.000	1.000	1.000	1.000	1.000
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	74	0.000	0.000	0.000	0.000	0.000	0.000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	75	3.273	2.929	2.595	2.250	1.888	1.507
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	76	0.222	0.199	0.176	0.153	0.128	0.102
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	77	1.786	1.697	1.583	1.438	1.259	1.043
		78						
NON-DEPRECIABLE PROPERTY		79						
ADDITIONS TO LAND	#5	80	0.000	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81	0.000	0.000	0.000	0.000	0.000	0.000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	18.997	18.997	18.997	18.997	18.997	18.997
WORKING CAPITAL AT YEAR END	Data Entry	83	37.650	37.650	37.650	37.650	37.650	37.650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	25.452	25.452	25.452	25.452	25.452	25.452
NON-DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	29.195	29.195	29.195	29.195	29.195	29.195
		86						
ORIGINAL RATE BASE		87						
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	151.469	134.952	119.824	105.355	90.794	76.869
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	480.100	438.393	395.917	349.888	299.270	243.531
NON-DEPRECIABLE PROPERTY AT YEAR END	#85	90	29.195	29.195	29.195	29.195	29.195	29.195
ORIGINAL DEFERRED TAX AT YEAR END	#178 minus #41	91	126.205	110.841	112.229	105.846	98.458	.877
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	534.560	483.698	432.807	378.590	318.800	255.717
RETURN ON ORIGINAL RATE BASE	6.4% of Previous #92	93	37.142	34.212	30.957	27.700	24.230	20.487
ALLOWANCE PER BARREL	3.35 multiplied by ratio of #1 to #1 for 1983	94	0.989	1.035	1.105	1.181	1.261	1.347
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95	284.700	260.491	235.425	215.351	198.925	184.325
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96	275.927	275.804	260.257	254.257	250.823	248.218
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-88, #93; after 1988, #96	97	275.927	275.804	260.257	254.257	250.823	248.218
		98						
		99						
NEW RATE BASE		100						
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	101	1.709	1.432	1.188	0.994	0.758	0.569
NEW DEFERRED RETURN AT YEAR END	#72	102	1.786	1.697	1.583	1.438	1.259	1.043
NEW DEFERRED TAX AT YEAR END	#41	103	0.784	0.574	0.574	0.479	0.389	0.302
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104	2.711	2.455	2.197	1.923	1.627	1.308
RETURN ON NEW RATE BASE	6.4% of Previous #104	105	0.188	0.174	0.157	0.141	0.123	0.104
		106						
AFTER-TAX MARGIN	#97 plus #105	107	276.115	275.978	260.415	254.398	250.946	248.322
		108						
		109						
RECOVERY OF DEFERRED RETURN	#61 plus #68	110	76.438	78.000	75.095	74.809	75.234	75.883
		111						
INCOME TAX BASE	#107 plus #110	112	352.554	353.978	335.509	329.206	326.180	324.206
COMBINED RATE OF TAX	#35 plus [#36 times [unity minus #35]]	113	0.511	0.511	0.511	0.511	0.511	0.511
INCOME TAX ALLOWANCE FACTOR	#113 divided by [unity minus #113]	114	1.044	1.044	1.044	1.044	1.044	1.044
INCOME TAX ALLOWANCE	#112 times #114	115	368.061	369.548	350.267	343.687	340.528	338.466
		116						

TSM ELEMENT	HOW DERIVED	LINE #	2001	2002	2003	2004	2005	2006
INVEST ALLOWANCE	Exhibit E	117	3.451	3.229	2.853	2.610	2.411	2.234
OPERATING EXPENSES	Data Entry	118	691.666	726.859	760.095	787.813	834.365	874.265
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II-3	119						
DEPRECIATION	#15 plus #28	120	25.108	24.794	23.272	22.793	22.768	23.117
RECOVERY OF DEFERRED RETURN	#110	121	78.438	78.000	75.095	74.809	75.234	75.883
AFTER-TAX MARGIN	#107	122	276.115	275.978	260.415	254.398	250.946	249.322
INCOME TAX ALLOWANCE	#115	123	368.061	369.548	350.267	343.687	340.528	338.466
NON-TRANSPORATION REVENUES	Data Entry	124	2.700	2.700	2.700	2.700	2.700	2.700
		125						
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	2438.672	2305.391	2156.434	1908.998	1745.113	1613.068
TAPS CARRIER'S STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	519.011	491.048	459.746	406.190	371.709	343.584
TAPS CARRIER'S BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B-M SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	297.411	306.324	314.283	312.960	318.096	324.517
TAPS CARRIER'S REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	297.411	306.324	314.283	312.960	318.096	324.517
TAPS CARRIER'S REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	134	0.000	0.000	0.000	0.000	0.000	0.000
TAPS CARRIER'S VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	5.000	5.000	5.000	5.000	5.000	5.000
TAPS CARRIER'S REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	138	0.000	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140	1438.140	1475.507	1469.296	1493.410	1523.552	1559.587
		141						
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142	2.847	2.665	2.354	2.184	1.989	1.843
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	106.853	95.886	85.248	74.497	63.711	56.557
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	175.200	167.900	147.825	139.700	133.225	125.925
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.026	1.026	1.026	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.69 times #142 times #145	148	13.352	12.499	11.040	10.102	9.328	8.644
STSP STANDARD BARREL MILES	9.0027 times #143 times #146	149	853.512	787.347	692.198	598.177	509.980	452.609
STNSP STANDARD BARREL MILES	9.0027 times #144 times #147	150	1438.827	1378.980	1213.787	1138.934	1093.880	1033.941
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	2305.391	2158.434	1908.998	1745.113	1613.068	1495.194
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0057910	0.0057907	0.0057893	0.0057889	0.0057830	0.0057810
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.10	0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154	8.614	8.811	8.742	8.881	9.010	9.200
INTRASTATE TARIFF	#154 divided by #142	155	3.030	3.310	3.710	4.110	4.630	4.990
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	1429.526	1466.697	1460.554	1484.549	1514.542	1550.387
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	2292.039	2145.935	1895.958	1736.011	1603.740	1486.550
RATIO OF STNSP STD B-M'S TO TOTAL INTERSTATE STD B-M'S	#150 divided by #157	158	0.628	0.642	0.640	0.658	0.682	0.696
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160	897.188	942.233	936.021	974.435	1033.040	1078.342
STNSP TARIFF	#160 divided by #144	161	5.120	5.610	6.330	7.030	7.750	8.560
STSP REVENUE REQUIREMENT	#156 minus #160	162	532.339	524.464	524.533	510.114	481.502	472.045
STSP TARIFF RATE	#162 divided by #143	163	4.990	5.470	6.150	6.850	7.560	8.350
		164						
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	165	12.149	11.627	11.320	11.105	10.860	10.614
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	166	10.000	10.000	10.000	10.000	10.000	10.000
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167						
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168	733.574	736.892	697.728	684.581	678.018	675.174
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	170	68.956	69.248	65.586	64.351	63.749	63.466
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171	666.767	669.070	633.462	621.338	615.886	612.322
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.460	0.460	0.460	0.460
FEDERAL INCOME TAX	#171 times #172	173	306.713	307.772	291.392	285.815	283.216	281.668
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	375.669	377.021	356.979	350.165	347.005	345.135
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-7.608	-7.473	-6.712	-6.478	-6.478	-6.668
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	126.988	119.515	112.803	106.325	99.848	93.179

TSM ELEMENT	HOW DERIVED	LINE #	2007	2008	2009	2010	2011
CPI-U	Data Entry	1	1226.2	1309.6	1398.6	1493.7	1595.3
INFLATION RATE (%)	Ratio #1 to Previous #1 minus unity	2	6.803%	6.802%	6.796%	6.800%	6.802%
		3					
ORIGINAL VERSUS NEW RATE BASE ADDITIONS		4					
ADDITIONS TO LAND	Data Entry	5	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO DEPRECIABLE PROPERTY IN SERVICE	Data Entry	6	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM ORIGINAL DEPRECIABLE PROPERTY IN		7					
SERVICE RETIRED AS A CONSEQUENCE OF THOSE ADDITIONS	Data Entry	8	2.000	2.000	2.000	2.000	2.000
$15 MILLION ADJUSTED FOR CPI-U INFLATION SINCE 1984	$15 times ratio of #1 to #1 in 1984	9	59.047	63.063	67.348	71.928	76.820
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	0 in 1984; thereafter excess of #6 over sum of #8 plus #9	10	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#6 minus #10	11	10.000	10.000	10.000	10.000	10.000
		12					
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE		13					
DEPRECIATION FACTOR	Stipulated decimal per Exhibit F	14	0.290970	0.353774	0.423358	0.544304	1.000000
ORIGINAL DEPRECIATION	#14 times previous #20	15	22.075	21.861	20.292	19.399	24.241
ADDITIONS TO ORIGINAL DEPRECIABLE PROPERTY IN SERVICE	#11	16	10.000	10.000	10.000	10.000	10.000
NET PROCEEDS FROM DEPRECIABLE PROPERTY IN SERVICE RETIRED	Data Entry	17	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY FRACTION	Data Entry	18	1.000	1.000	1.000	1.000	1.000
NET PROCEEDS FROM ORIG. DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times #18	19	2.000	2.000	2.000	2.000	2.000
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #20 minus #15 plus #16 minus #19	20	61.793	47.932	35.640	24.241	0.000
		21					
NEW DEPRECIABLE PROPERTY IN SERVICE		22					
ADDITIONS TO NEW DEPRECIABLE PROPERTY IN SERVICE	#10	23	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM NEW DEPRECIABLE PROPERTY IN SERVICE RET.	#17 times [unity minus #18]	24	0.000	0.000	0.000	0.000	0.000
ELIGIBILITY FRACTION	Data Entry	25	1.000	1.000	1.000	1.000	1.000
ADDITIONS TO ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE	#23 times #25	26	0.000	0.000	0.000	0.000	0.000
NET PROCEEDS FROM ELIG. NEW DEP. PROPERTY IN SERVICE RET.	#17 times #25 times [unity minus #18]	27	0.000	0.000	0.000	0.000	0.000
NEW DEPRECIATION	#14 times previous #29	28	0.165	0.142	0.110	0.081	0.068
ELIGIBLE NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #29 plus #26 minus #27 minus #28	29	0.402	0.260	0.150	0.068	0.000
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	Previous #30 plus #23 minus #24 minus #28	30	0.402	0.260	0.150	0.068	0.000
		31					
NEW DEFERRED TAX		32					
STATE TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit L factors applied to current and previous #23	33	0.120	0.029	0.000	0.000	0.000
CUMULATIVE STATE TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #33 and cumulative #28	34	0.412	0.300	0.190	0.108	0.040
STATE INCOME TAX RATE	Data Entry	35	0.094	0.094	0.094	0.094	0.094
FEDERAL INCOME TAX RATE	Data Entry	36	0.460	0.460	0.460	0.460	0.460
NEW STATE DEFERRED TAX	#34 times #35 times [unity minus #36]	37	0.021	0.018	0.010	0.005	0.002
FEDERAL TAX DEPRECIATION WITH RESPECT TO THE NEW RATE BASE	Exhibit K factors applied to current and previous #23	38	0.000	0.000	0.000	0.000	0.000
CUMULATIVE FEDERAL TAX DEPR. MINUS CUMULATIVE NEW DEPR.	Difference between cumulative #38 and cumulative #28	39	0.442	0.300	0.190	0.108	0.040
NEW FEDERAL DEFERRED TAX	#36 times #39	40	0.203	0.138	0.087	0.050	0.018
NEW DEFERRED TAX	#37 plus #40	41	0.224	0.153	0.097	0.055	0.020
		42					
		43					
		44					
CWIP AT YEAR END	Data Entry	45	0.000	0.000	0.000	0.000	0.000
ADDITIONS TO ALL CARRIER PROPERTY ACCOUNTS	Data Entry	46	10.000	10.000	10.000	10.000	10.000
RETIREMENTS FROM CWIP	Data Entry	47	0.000	0.000	0.000	0.000	0.000
INTERIM CWIP BALANCE	Previous #45 plus #46 minus #47	48	10.000	10.000	10.000	10.000	10.000
ORIGINAL INTO-SERVICE RATIO	[#5 plus #11] divided by #48	49	1.000	1.000	1.000	1.000	1.000
NEW INTO-SERVICE RATIO	#10 divided by #48	50	0.000	0.000	0.000	0.000	0.000
		51					
		52					
		53					
ADDITIONS TO AFUDC	[6.4% plus #2] times [Previous #45 plus Previous #58]	54	0.000	0.000	0.000	0.000	0.000
INTERIM AFUDC	Previous #58 plus #54	55	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#55 times #49	56	0.000	0.000	0.000	0.000	0.000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#55 times #50	57	0.000	0.000	0.000	0.000	0.000
AFUDC AT YEAR END	#55 minus #56 minus #57	58	0.000	0.000	0.000	0.000	0.000
		59					

TSM ELEMENT	HOW DERIVED	LINE #	2007	2008	2009	2010	2011
ELEMENTS OF ORIGINAL DEFERRED RETURN		60					
ORIGINAL DEFERRED RETURN RECOVERY	#14 times Previous #65	61	70,880	66,636	58,104	45,444	41,737
ORIGINAL INFLATION ADJUSTMENT BASE	Previous #65 plus Previous #70 minus #61 minus #15	62	220,464	161,472	104,058	54,287	0,000
ORIGINAL INFLATION ADJUSTMENT	#2 times #62	63	15,405	10,983	7,072	3,691	0,000
AFUDC TRANSFER TO ORIGINAL DEFERRED RETURN	#56	64	0,000	0,000	0,000	0,000	0,000
ORIGINAL DEFERRED RETURN AT YEAR END	Previous #65 minus #61 plus #63 plus #64	65	166,076	132,522	83,490	41,737	0,000
		66					
ELEMENTS OF NEW DEFERRED RETURN		67					
NEW DEFERRED RETURN RECOVERY	#14 times Previous #77	68	0,304	0,269	0,240	0,201	0,184
NEW INFLATION ADJUSTMENT BASE	Previous #72 plus Previous #30 minus #68 minus #20	69	1,141	0,788	0,485	0,236	0,000
NEW INFLATION ADJUSTMENT	#2 times #69	70	0,078	0,054	0,033	0,016	0,000
AFUDC TRANSFER TO NEW DEFERRED RETURN	#57	71	0,000	0,000	0,000	0,000	0,000
BALANCE OF NEW DEFERRED RETURN	Previous #72 minus #68 plus #70 plus #71	72	0,817	0,582	0,388	0,184	0,000
ELIGIBILITY FRACTION	#25	73	1,000	1,000	1,000	1,000	1,000
ELIGIBLE AFUDC TRANSFER TO NEW DEFERRED RETURN	#73 times #71	74	0,000	0,000	0,000	0,000	0,000
ELIGIBLE NEW INFLATION ADJUSTMENT BASE	Previous #77 plus Previous #29 minus #68 minus #28	75	1,141	0,788	0,485	0,236	0,000
ELIGIBLE NEW INFLATION ADJUSTMENT	#2 times #75	76	0,078	0,054	0,033	0,016	0,000
ELIGIBLE NEW DEFERRED RETURN AT YEAR END	Previous #77 minus #68 plus #74 plus #76	77	0,817	0,582	0,388	0,184	0,000
		78					
NON-DEPRECIABLE PROPERTY		79					
ADDITIONS TO LAND	#5	80	0,000	0,000	0,000	0,000	0,000
NET PROCEEDS FROM LAND RETIRED	Data Entry	81	0,000	0,000	0,000	0,000	0,000
LAND AT YEAR END	Previous #82 plus #80 minus #81	82	16,997	16,997	16,997	16,997	16,997
WORKING CAPITAL AT YEAR END	Data Entry	83	37,650	37,650	37,650	37,650	37,650
MISCELLANEOUS ADJUSTMENT	Data Entry	84	25,452	25,452	25,452	25,452	25,452
NON-DEPRECIABLE PROPERTY AT YEAR END	#82 plus #83 minus #84	85	29,195	29,195	29,195	29,195	29,195
		86					
ORIGINAL RATE BASE		87					
ORIGINAL DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#20	88	81,793	47,032	30,040	24,241	0,000
ORIGINAL DEFERRED RETURN AT YEAR END	#65	89	166,076	132,522	83,490	41,737	0,000
NON-DEPRECIABLE PROPERTY AT YEAR END	#85	90	29,195	29,195	29,195	29,195	29,195
ORIGINAL DEFERRED TAX AT YEAR END	#178 minus #41	91	86,722	80,869	75,412	70,611	63,338
ORIGINAL RATE BASE AT YEAR END	#88 plus #89 plus #90 minus #91	92	192,342	128,880	72,912	24,562	-20,143
RETURN ON ORIGINAL RATE BASE	6.4% of Previous #92	93	10,368	12,310	8,255	4,666	1,572
ALLOWANCE PER BARREL	8.35 multiplied by ratio of #1 to #1 for 1983	94	1,439	1,536	1,640	1,752	1,871
TOTAL NET DELIVERIES	#142 plus #143 plus #144	95	158,775	136,879	105,051	78,478	65,700
ALLOWANCE PER BARREL TIMES TOTAL NET DELIVERIES	#94 times #95	96	228,356	210,248	173,043	137,488	122,935
AFTER-TAX MARGIN FOR ORIGINAL RATE BASE	For 1984-86, #93; after 1986, #96	97	228,356	210,248	173,043	137,488	122,935
		98					
		99					
NEW RATE BASE		100					
NEW DEPRECIABLE PROPERTY IN SERVICE AT YEAR END	#30	101	0,402	0,260	0,150	0,068	0,000
NEW DEFERRED RETURN AT YEAR END	#72	102	0,817	0,582	0,388	0,184	0,000
NEW DEFERRED TAX AT YEAR END	#41	103	0,224	0,153	0,097	0,055	0,020
NEW RATE BASE AT YEAR END	#101 plus #102 minus #103	104	0,995	0,688	0,421	0,197	-0,020
RETURN ON NEW RATE BASE	6.4% of Previous #104	105	0,064	0,064	0,044	0,027	0,013
		106					
AFTER-TAX MARGIN	#97 plus #105	107	228,440	210,312	173,087	137,515	122,948
		108					
		109					
RECOVERY OF DEFERRED RETURN	#61 plus #68	110	71,184	66,826	58,351	45,644	41,921
		111					
INCOME TAX BASE	#107 plus #110	112	299,804	277,137	230,038	183,159	164,869
COMBINED RATE OF TAX	#35 plus [#36 times [unity minus #35]]	113	0,511	0,511	0,511	0,511	0,511
INCOME TAX ALLOWANCE FACTOR	#113 divided by [unity minus #113]	114	1,044	1,044	1,044	1,044	1,044
INCOME TAX ALLOWANCE	#112 times #114	115	312,787	289,328	240,156	191,216	172,121
		116					

TSM ELEMENT	HOW DERIVED	LINE #	2007	2008	2009	2010	2011
D&R ALLOWANCE	Exhibit E	117	1.924	1.659	1.285	0.951	0.796
OPERATING EXPENSES	Data Entry	118	916.942	983.951	1031.201	1088.470	1270.428
AMORTIZATION OF EXCLUDED COSTS	Agreement Section II-3	119					
DEPRECIATION	#15 plus #28	120	22.240	22.003	20.402	19.480	24.309
RECOVERY OF DEFERRED RETURN	#110	121	71.164	66.826	56.351	45.644	41.921
AFTER-TAX MARGIN	#107	122	228.440	210.312	173.697	137.515	122.948
INCOME TAX ALLOWANCE	#115	123	312.782	289.328	240.156	191.216	172.121
NON-TRANSPORTATION REVENUES	Data Entry	124	2.700	2.700	2.700	2.700	2.700
		125					
TOTAL STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Sum of Previous #148, Previous #149, and Previous #150	126	1495.194	1287.772	1110.980	859.534	637.942
TAPS CARRIER'S STANDARD BARREL MILES FOR THE PREVIOUS YEAR	Data Entry	127	318.476	274.295	236.634	183.081	135.882
TAPS CARRIER'S BARREL MILE SHARE FOR THE PREVIOUS YEAR	Ratio of #127 to #126	128	0.213	0.213	0.213	0.213	0.213
TAPS CARR. B-M SHARE OF TOT. REV. REQ. FOR THE PREV. YEAR	#128 times Previous #140	129	332.192	330.319	330.443	323.841	315.363
TAPS CARRIER'S REVENUES RECEIVED FOR THE PREVIOUS YEAR	Data Entry	130	332.192	330.319	330.443	323.841	315.363
TAPS CARRIER'S REVENUE EXCESS FOR THE PREVIOUS YEAR	#130 minus #129, if positive; zero if not positive	131	0.000	0.000	0.000	0.000	0.000
REVENUE EXCESS FOR THE PREVIOUS YEAR	#131 divided by #128	132	0.000	0.000	0.000	0.000	0.000
INTEREST RATE FOR THE CURRENT YEAR	Data Entry	133	11.00%	11.00%	11.00%	11.00%	11.00%
INTEREST ON REVENUE EXCESS FOR THE PREVIOUS YEAR	#133 times #132	134	0.000	0.000	0.000	0.000	0.000
TAPS CARRIER'S VOLUNTARY REVENUE REDUCTION FOR PREV. YEAR	Data Entry	135	5.000	5.000	5.000	5.000	5.000
TAPS CARRIER'S REVENUE DEFICIT FOR PREVIOUS YEAR	#129 minus #130 minus #135, if positive; zero if not	136	0.000	0.000	0.000	0.000	0.000
REVENUE DEFICIT FOR THE PREVIOUS YEAR	#136 divided by #128	137	0.000	0.000	0.000	0.000	0.000
INTEREST ON REVENUE DEFICIT FOR THE PREVIOUS YEAR	#133 times #137	138	0.000	0.000	0.000	0.000	0.000
NET CARRYOVER	#132 plus #134 minus #137 minus #138	139	0.000	0.000	0.000	0.000	0.000
TOTAL REVENUE REQUIREMENT	[Sum of #117 through #123] minus #124 minus #139	140	1550.792	1551.378	1520.381	1480.576	1629.623
		141					
INTRASTATE NET DELIVERIES (GVEA CONNECTION ONLY)	Data Entry	142	1.588	1.389	1.059	0.785	0.657
STANDARD TRANSPORTATION STANDARD PETROLEUM (STSP)	Data Entry	143	49.512	39.781	28.142	17.485	10.293
STANDARD TRANSPORTATION NON-STANDARD PETROLEUM (STNSP)	Data Entry	144	107.875	96.725	78.850	60.225	54.750
INTRASTATE PUMPABILITY FACTOR	Data Entry	145	1.000	1.000	1.000	1.000	1.000
STSP PUMPABILITY FACTOR	Data Entry	146	1.000	1.000	1.000	1.000	1.000
STNSP PUMPABILITY FACTOR	Data Entry	147	1.026	1.026	1.026	1.026	1.026
INTRASTATE STANDARD BARREL MILES	4.89 times #142 times #145	148	7.448	6.421	4.997	3.882	3.081
STSP STANDARD BARREL MILES	6.0027 times #143 times #146	149	396.230	310.353	225.212	139.787	82.372
STNSP STANDARD BARREL MILES	6.0027 times #144 times #147	150	884.095	794.187	628.358	494.494	449.540
TOTAL STANDARD BARREL MILES	#148 plus #149 plus #150	151	1287.772	1110.980	858.524	637.942	534.993
INTRASTATE APPORTIONMENT FRACTION	#148 divided by #151	152	0.0057834	0.0057793	0.0057784	0.0057711	0.0057598
INTRASTATE ADDITIONAL UNIT COST	Data Entry	153	0.10	0.10	0.10	0.10	0.10
INTRASTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	[#152 times #140] plus [#153 times #142]	154	9.128	9.103	8.991	8.823	9.463
INTRASTATE TARIFF	#154 divided by #142	155	5.750	6.550	8.400	10.980	14.390
INTERSTATE PORTION OF THE TOTAL REVENUE REQUIREMENT	#140 minus #154	156	1541.664	1542.275	1511.489	1471.953	1620.371
INTERSTATE STANDARD BARREL MILES	#151 minus #148	157	1280.324	1104.539	854.568	634.281	531.911
RATIO OF STNSP STD B-M'S TO TOTAL INTERSTATE STD B-M'S	#150 divided by #157	158	0.691	0.719	0.736	0.780	0.845
STNSP ADDITIONAL UNIT COST	Data Entry	159	0.000	0.000	0.000	0.000	0.000
STNSP REVENUE REQUIREMENT	[#158 times #156] plus [#159 times #144]	160	1064.556	1108.928	1113.153	1147.590	1369.440
STNSP TARIFF	#160 divided by #144	161	9.890	11.460	14.820	19.080	25.010
STSP REVENUE REQUIREMENT	#156 minus #160	162	477.108	433.347	398.337	324.363	250.931
STSP TARIFF RATE	#162 divided by #143	163	9.640	11.170	14.150	18.570	24.380
		164					
STATE TAX DEPRECIATION	Ex. J amounts plus Ex. L applied to curr. and prev. #6	165	10.368	10.123	10.000	10.000	10.000
FEDERAL TAX DEPRECIATION	Ex. I amounts plus Ex. K applied to curr. and prev. #6	166	10.000	10.000	10.000	10.000	10.000
INVESTMENT EXPENSED DURING CONSTRUCTION	Data Entry	167					
STATE TAXABLE INCOME	[Sum of #120 through #123] minus #165	168	624.258	578.345	480.597	393.855	351.299
STATE INCOME TAX RATE	#35	169	0.094	0.094	0.094	0.094	0.094
STATE INCOME TAX	#169 times #168	170	58.680	54.364	45.176	39.082	33.022
FEDERAL TAXABLE INCOME	[Sum of #120 through #123] minus #166 minus #170	171	565.946	524.103	435.421	347.772	318.277
FEDERAL INCOME TAX RATE	#36	172	0.460	0.460	0.480	0.480	0.460
FEDERAL INCOME TAX	#171 times #172	173	260.335	241.088	200.293	159.975	146.408
TOTAL STATE & FEDERAL INCOME TAX	#170 plus #173	174	319.015	295.452	245.470	199.058	179.430
NET ADDITION TO DEFERRED TAX	#115 minus #174	175	-6.233	-6.124	-5.313	-4.842	-7.308
TOTAL DEFERRED TAX AT YEAR END	Previous #176 plus #175	176	86.946	80.822	75.509	70.667	63.358

	J	K	L	M	N	O	P	Q	R	S	Y	U	V
1	EXHIBIT APUC STAFF (RLB-3)												
2	Schedule 1, Page 1 of 5												
3	BTM: Statement of Results												
4													
5													
6						Year	1977/2	1978	1979	1980	1981	1982	1983
7	Calculation of Rate Base												
8	Carrier Property												
9	Property in Service (BOP)						7,095,746	7,095,746	7,095,746	7,128,746	7,281,252	7,321,392	7,371,749
10	Additions								33,000	152,504	40,140	50,357	75,237
11	Net Proceeds I/Retirements											0	0
12	Property in Service (EOP)						7,095,746	7,095,746	7,128,746	7,281,252	7,321,392	7,371,749	7,446,986
13	Average Property in Service						7,095,746	7,095,746	7,112,247	7,205,000	7,301,322	7,346,571	7,409,368
14													
15	Accrued Depreciation (EOP)						141,915	425,745	710,235	998,435	1,290,488	1,491,294	1,693,816
16	Net Carrier Property (EOP)						6,953,831	6,670,001	6,418,513	6,282,817	6,030,904	5,880,455	5,753,170
17	Accrued Depreciation (Average)						70,957	283,830	567,990	854,335	1,144,461	1,390,891	1,592,555
18	Average Net Carrier Property						7,024,789	6,811,916	6,544,257	6,350,665	6,156,861	5,955,680	5,816,812
19													
20	Average AFUDC						1,564,632	1,564,632	1,563,002	1,560,980	1,563,937	1,567,286	1,567,286
21	Accumulated Amortization						31,290	93,878	156,398	218,837	281,395	324,234	367,073
22	Average Accumulated Amortization						15,646	62,585	125,138	187,618	250,116	302,814	345,653
23	Average Net AFUDC						1,5[illegible],986	1,502,047	1,437,864	1,373,362	1,313,821	1,264,472	1,221,633
24													
25	Average Working Capital						65,665	56,587	52,212	57,324	47,638	37,311	37,365
26													
27	Accumulated Deferred Income Taxes						(139,390)	(370,161)	(560,846)	(734,559)	(892,633)	(1,104,671)	(1,299,952)
28													
29	Total Rate Base						8,500,050	8,000,389	7,473,487	7,046,792	6,625,686	6,152,791	5,775,858
30													
31	Rate of Return												
32	CPI-U (EOP)						181.5	195.4	217.4	246.8	272.4	289.1	298.4
33	Inflation Rate						6.45%	7.66%	11.26%	13.52%	10.37%	6.13%	3.22%
34	Nominal Debt Cost						9.00%	9.00%	9.00%	9.00%	9.00%	8.13%	5.22%
35	Real Debt Cost											2.00%	2.00%
36	Debt Ratio						50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	48.28%
37	Debt Return						4.50%	4.50%	4.50%	4.50%	4.50%	4.07%	2.52%
38	Nominal Equity Cost						15.00%	15.00%	15.00%	15.00%	15.00%	14.13%	11.22%
39	Real Equity Cost											8.00%	8.00%
40	Equity Ratio						50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	51.72%
41	Equity Return						7.50%	7.50%	7.50%	7.50%	7.50%	7.07%	5.80%
42	Average Return						12.00%	12.00%	12.00%	12.00%	12.00%	12.00%	8.32%
43													
44	Total Return Allowance						510,003	960,047	896,818	845,615	795,082	738,335	480,570
45	Equity Return						318,752	600,029	560,511	528,509	496,926	434,716	335,106
46	Debt Return						191,251	360,017	336,307	317,106	298,156	250,132	145,465
47													
48	Overall Revenue Requirement												
49	Operating and Maintenance Expense						223,974	449,768	384,043	453,548	462,477	461,445	442,947
50	Depreciation Expense												
51	Carrier Property						7,095,746	7,095,746	7,112,247	7,205,000	7,301,322	7,346,571	7,409,368
52	Rate						2.00%	4.00%	4.00%	4.00%	4.00%	2.73%	2.73%
53	Depreciation Expense on Property						141,915	283,830	284,490	288,200	292,053	200,806	202,523
54													
55	AFUDC (Debt Portion)						586,737	586,737	586,126	585,368	586,476	587,732	587,732
56	Rate of Amortization						2.00%	4.00%	4.00%	4.00%	4.00%	2.73%	2.73%
57	Amortization Expense						11,735	23,469	23,445	23,415	23,459	16,065	16,065
58													
59	AFUDC (Equity Portion)						977,895	977,895	976,876	975,613	977,461	979,554	979,554
60	Rate of Amortization						2.00%	4.00%	4.00%	4.00%	4.00%	2.73%	2.73%
61	Amortization Expense						19,558	39,116	39,075	39,025	39,098	26,774	26,774
62													
63	Total AFUDC Amortization Expense						31,293	62,585	62,520	62,439	62,557	42,839	42,839
64	Total Depreciation & Amortization						173,208	346,415	347,010	350,639	354,610	243,645	245,362
65	DR&R						18,946	37,891	37,891	37,891	37,891	37,891	37,891
66	Income Taxes												
67	Income Tax Base						357,255	677,026	637,478	605,425	573,818	499,381	399,771
68	Gross Multiplier						1.1226	1.1226	1.0440	1.0440	1.0807	1.0440	1.0440
69	Income Tax Allowance						401,055	760,042	665,518	632,0[illegible]	620,249	521,348	417,356
70													
71	Total Revenue Requirement						1,327,185	2,554,162	2,331,280	2,318,749	2,270,310	2,002,864	1,624,126
72													
73	Miscellaneous Statistics												
74	Throughput (Bbls)						97,094	795,905	466,759	552,294	551,085	587,985	596,869
75	Revenue Received							2,400,843	2,888,401	3,413,383	3,409,848	3,547,835	3,523,996
76													
77	BTM Revenue Requirement							2,554,162	2,331,280	2,318,749	2,270,310	2,002,864	1,624,126
78													
79	TSM Revenue Requirement							2,400,843	2,888,401	3,413,383	3,409,848	3,547,835	3,523,992
80													
81	Difference in Revenue Requirement							153,319	(555,121)	(1,093,614)	(1,139,538)	(1,544,971)	(1,899,867)
82	Zero Real Discount Factor												
83	PV Rev. Req. Difference												
84	Current Refund							(153,519)	555,121	1,093,614	1,139,538	1,544,971	1,899,870
85	Interest on Refunds							5.00%	5.00%	5.00%	5.00%	5.00%	10.75%
86	Refund, 1978-1986 (BOP-1987$)							(153,519)	393,925	1,507,236	2,715,933	4,396,701	6,769,217
87	Cum. Diff. PVRR, 1987-2011 (BOP-1987$)												
88	Cum. Diff. PVRR, 1978-2011 (BOP-1987$)												
89													
90	BTM Tariff (Nominal)							6.45	4.99	4.20	4.12	3.41	2.72
91	BTM Tariff (Real)							11.21	7.80	5.78	5.13	4.00	3.09
92													
93	TSM Tariff (Nominal)							6.20	6.20	6.20	6.20	6.03	5.90
94	TSM Tariff (Real)							10.77	9.68	8.53	7.72	7.08	6.72

	J	K	L	M	N	O	W	X	Y	Z	AA	AB	AC
1	EXHIBIT APUC STAFF (RLB-3)												
2	Schedule 1, Page 2 of 5												
3	BTM: Statement of Results												
4													
5													
6						Year	1984	1985	1986	1987	1988	1989	1990
7	Calculation of Rate Base												
8		Carrier Property											
9			Property in Service (BOP)				7,446,986	7,492,035	7,518,035	7,520,035	7,528,035	7,536,035	7,544,035
10				Additions			45,049	26,000	5,000	10,000	10,000	10,000	30,000
11				Net Proceeds I/Retirements			0	1,000	1,000	2,000	2,000	2,000	0
12			Property in Service (EOP)				7,492,035	7,518,035	7,520,035	7,528,035	7,536,035	7,544,035	7,574,035
13			Average Property in Service				7,469,511	7,504,035	7,518,035	7,524,035	7,532,035	7,540,035	7,559,035
14													
15				Accrued Depreciation (EOP)			1,897,983	2,103,093	2,308,586	2,514,243	2,720,119	2,926,213	3,132,827
16				Net Carrier Property (EOP)			5,594,052	5,412,942	5,211,449	5,013,792	4,815,916	4,617,822	4,441,208
17				Accurued Depreciation (Average)			1,795,900	2,000,538	2,205,840	2,411,416	2,617,181	2,823,166	3,029,520
18				Average Net Carrier Property			5,673,611	5,503,497	5,312,195	5,112,620	4,914,854	4,716,869	4,529,515
19													
20				Average AFUDC			1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286
21				Accumulated Amortization			409,912	452,751	495,590	538,430	581,269	624,108	666,947
22				Average Accumulated Amortization			388,493	431,332	474,171	517,010	559,849	602,688	645,527
23				Average Net AFUDC			1,178,793	1,135,954	1,093,115	1,050,276	1,007,437	964,598	921,759
24													
25				Average Working Capital			37,650	37,650	37,650	37,650	37,650	37,650	37,650
26													
27				Accumulated Deferred Income Taxes			(1,477,145)	(1,633,972)	(1,764,838)	(1,868,619)	(1,943,153)	(1,991,328)	(2,016,362)
28													
29					Total Rate Base		5,412,910	5,043,129	4,678,122	4,331,927	4,016,788	3,727,789	3,472,561
30													
31	Rate of Return												
32		CPI-U (EOP)					311.5	324.5	339.4	355.3	374.9	395.5	417.2
33		Inflation Rate					4.39%	4.17%	4.59%	4.68%	5.52%	5.49%	5.49%
34		Nominal Debt Cost					6.39%	6.17%	6.59%	6.68%	7.52%	7.49%	7.49%
35			Real Debt Cost				2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
36		Debt Ratio					46.55%	44.83%	43.10%	41.38%	39.66%	37.93%	36.21%
37			Debt Return				2.97%	2.77%	2.84%	2.77%	2.98%	2.84%	2.71%
38		Nominal Equity Cost					12.39%	12.17%	12.59%	12.68%	13.52%	13.49%	13.49%
39			Real Equity Cost				8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
40		Equity Ratio					53.45%	55.17%	56.90%	58.62%	60.34%	62.07%	63.79%
41			Equity Return				6.62%	6.72%	7.16%	7.44%	8.16%	8.38%	8.62%
42		Average Return					9.60%	9.48%	10.01%	10.20%	11.14%	11.22%	11.31%
43													
44			Total Return Allowance				519,476	478,275	468,068	441,942	447,356	418,218	392,896
45			Equity Return				358,458	338,713	335,152	322,117	327,629	312,243	298,765
46			Debt Return				161,017	139,562	132,917	119,825	119,727	105,976	94,131
47													
48	Overall Revenue Requirement												
49		Operating and Maintenance Expense					434,330	455,779	466,873	501,517	499,952	487,734	477,935
50		Depreciation Expense											
51			Carrier Property				7,469,511	7,504,035	7,518,035	7,524,035	7,532,035	7,540,035	7,559,035
52			Rate				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
53			Depreciation Expense on Property				204,187	205,110	205,493	205,657	205,876	206,094	206,614
54													
55			AFUDC (Debt Portion)				587,732	587,732	587,732	587,732	587,732	587,732	587,732
56			Rate of Amortization				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
57			Amortization Expense				16,065	16,065	16,065	16,065	16,065	16,065	16,065
58													
59			AFUDC (Equity Portion)				979,554	979,554	979,554	979,554	979,554	979,554	979,554
60			Rate of Amortization				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
61			Amortization Expense				26,774	26,774	26,774	26,774	26,774	26,774	26,774
62													
63			Total AFUDC Amortization Expense				42,839	42,839	42,839	42,839	42,839	42,839	42,839
64			Total Depreciation & Amortization				247,026	247,949	248,332	248,496	248,715	248,933	249,453
65		DR&R					37,891	37,891	37,891	37,891	37,891	37,891	37,891
66		Income Taxes											
67			Income Tax Base				423,124	409,379	399,817	386,782	392,294	376,908	363,431
68			Gross Multiplier				1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
69			Income Tax Allowance				441,738	421,122	417,404	403,798	409,550	393,487	379,417
70													
71				Total Revenue Requirement			1,680,438	1,641,017	1,638,568	1,633,842	1,643,484	1,586,264	1,537,595
72													
73	Miscellaneous Statistics												
74		Throughput (Bbls)					807,135	813,200	820,500	853,350	840,575	804,075	556,625
75		Revenue Received					3,406,227	3,243,473	3,133,991				
76													
77		BTM Revenue Requirement					1,680,438	1,641,017	1,638,568	1,633,842	1,643,484	1,586,264	1,537,595
78													
79		TSM Revenue Requirement					3,406,227	3,243,473	3,133,991	3,113,287	2,912,808	2,873,157	2,461,803
80													
81		Difference in Revenue Requirement					(1,725,789)	(1,602,456)	(1,495,423)	(1,479,625)	(1,269,144)	(1,086,893)	(924,208)
82			Zero-Real Discount Factor						1.000	0.955	0.905	0.858	0.814
83		PV Rev. Req. Difference								(1,413,410)	(1,148,967)	(932,722)	(751,860)
84			Current Refund				1,725,789	1,602,456	1,495,423				
85				Interest on Refunds			11.73%	10.30%	6.95%				
86			Refund, 1978-1986 (BOP-1987$)				9,288,696	11,847,886	14,403,697				
87			Cum. Diff. PVRR, 1987-2011 (BOP-1987$)							(1,413,410)	(2,562,377)	(3,495,099)	(4,246,960)
88			Cum. Diff. PVRR, 1978-2011 (BOP-1987$)							(15,817,108)	(16,966,075)	(17,898,797)	(18,650,657)
89													
90		BTM Tariff (Nominal)					2.77	2.68	2.64	2.50	2.57	2.63	2.76
91		BTM Tariff (Real)					3.02	2.80	2.64	2.39	2.32	2.25	2.25
92													
93		TSM Tariff (Nominal)					5.61	5.29	5.05	4.77	4.55	4.43	4.42
94		TSM Tariff (Real)					6.11	5.53	5.05	4.55	4.12	3.80	3.63

	J	K	L	M	N	O	AD	AE	AF	AG	AH	AI	AJ
1	EXHIBIT APUC STAFF (RLB-3)												
2	Schedule 1, Page 3 of 5												
3	BTM: Statement of Results												
4													
5													
6						Year	1991	1992	1993	1994	1995	1996	1997
7	Calculation of Rate Base												
8		Carrier Property											
9			Property in Service (BOP)				7,574,035	7,800,035	7,808,035	7,816,035	7,824,035	7,832,035	7,840,035
10				Additions			30,000	10,000	10,000	10,000	10,000	10,000	10,000
11				Net Proceeds I/Retirements			4,000	2,000	2,000	2,000	2,000	2,000	2,000
12			Property in Service (EOP)				7,800,035	7,808,035	7,816,035	7,824,035	7,832,035	7,840,035	7,848,035
13			Average Property in Service				7,587,035	7,804,035	7,812,035	7,820,035	7,828,035	7,836,035	7,844,035
14													
15				Accrued Depreciation (EOP)			3,340,208	3,548,049	3,756,112	3,964,393	4,172,892	4,381,611	4,590,548
16				Net Carrier Property (EOP)			4,259,829	4,059,986	3,859,923	3,659,642	3,459,143	3,258,424	3,057,487
17				Accurved Depreciation (Average)			3,236,516	3,444,128	3,652,081	3,860,252	4,068,642	4,277,251	4,486,079
18				Average Net Carrier Property			4,350,519	4,159,907	3,959,954	3,759,783	3,559,393	3,358,784	3,157,956
19													
20				Average AFUDC			1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286
21				Accumulated Amortization			709,786	752,825	795,484	838,304	881,143	923,982	966,821
22				Average Accumulated Amortization			688,367	731,206	774,045	816,884	859,723	902,562	945,402
23				Average Net AFUDC			878,919	836,080	793,241	750,402	707,563	664,724	621,884
24													
25				Average Working Capital			37,650	37,650	37,650	37,650	37,650	37,650	37,650
26													
27				Accumulated Deferred Income Taxes			(2,020,754)	(1,994,445)	(1,945,043)	(1,872,639)	(1,775,299)	(1,675,274)	(1,574,493)
28													
29					Total Rate Base		3,246,334	3,039,193	2,845,803	2,675,196	2,529,306	2,385,883	2,242,997
30													
31	Rate of Return												
32		CPI-U (EOP)					440.2	467.5	496.5	527.3	559.9	594.7	635.1
33		Inflation Rate					5.51%	6.20%	6.20%	6.20%	6.18%	6.22%	6.79%
34		Nominal Debt Cost					7.51%	8.20%	8.20%	8.20%	8.18%	8.22%	8.79%
35			Real Debt Cost				2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
36		Debt Ratio					34.48%	32.76%	31.03%	29.31%	27.59%	25.86%	24.14%
37			Debt Return				2.59%	2.69%	2.55%	2.40%	2.26%	2.12%	2.12%
38		Nominal Equity Cost					13.51%	14.20%	14.20%	14.20%	14.18%	14.22%	14.79%
39			Real Equity Cost				8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
40		Equity Ratio					65.52%	67.24%	68.97%	70.69%	72.41%	74.14%	75.86%
41			Equity Return				8.85%	9.55%	9.80%	10.04%	10.27%	10.54%	11.22%
42		Average Return					11.44%	12.24%	12.34%	12.44%	12.53%	12.66%	13.35%
43													
44			Total Return Allowance				371,510	371,882	351,205	332,923	316,853	302,140	299,329
45			Equity Return				287,408	290,226	278,755	268,599	259,761	251,448	251,721
46			Debt Return				84,102	81,656	72,449	64,324	57,092	50,692	47,608
47													
48	Overall Revenue Requirement												
49		Operating and Maintenance Expense					481,092	492,828	499,950	518,076	536,262	557,033	579,420
50		Depreciation Expense											
51			Carrier Property				7,587,035	7,804,035	7,812,035	7,820,035	7,828,035	7,836,035	7,844,035
52			Rate				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
53			Depreciation Expense on Property				207,379	207,844	208,062	208,281	208,500	208,718	208,937
54													
55			AFUDC (Debt Portion)				587,732	587,732	587,732	587,732	587,732	587,732	587,732
56			Rate of Amortization				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
57			Amortization Expense				16,065	16,065	16,065	16,065	16,065	16,065	16,065
58													
59			AFUDC (Equity Portion)				979,554	979,554	979,554	979,554	979,554	979,554	979,554
60			Rate of Amortization				2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
61			Amortization Expense				26,774	26,774	26,774	26,774	26,774	26,774	26,774
62													
63			Total AFUDC Amortization Expense				42,839	42,839	42,839	42,839	42,839	42,839	42,839
64			Total Depreciation & Amortization				250,218	250,683	250,901	251,120	251,339	251,557	251,776
65		DR&R					37,891	37,891	37,891	37,891	37,891	37,891	37,891
66		Income Taxes											
67			Income Tax Base				352,073	354,891	343,421	332,265	324,426	316,114	316,287
68			Gross Multiplier				1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
69			Income Tax Allowance				367,560	370,502	358,527	347,024	338,697	330,018	330,203
70													
71					Total Revenue Requirement		1,508,271	1,523,785	1,498,484	1,485,934	1,481,041	1,478,640	1,498,720
72													
73	Miscellaneous Statistics												
74		Throughput (Bbls)					518,300	475,413	428,875	402,413	397,850	379,600	346,750
75		Revenue Received											
76													
77		BTM Revenue Requirement					1,508,271	1,523,785	1,498,484	1,485,934	1,481,041	1,478,640	1,498,720
78													
79		TSM Revenue Requirement					2,299,745	2,114,525	1,815,317	1,784,980	1,716,251	1,594,690	1,431,950
80													
81		Difference in Revenue Requirement					(785,474)	(590,740)	(416,833)	(299,046)	(235,210)	(116,050)	66,770
82			Zero-Real Discount Factor				0.771	0.726	0.684	0.644	0.606	0.571	0.534
83		PV Rev. Req. Difference					(605,611)	(428,871)	(284,941)	(192,483)	(142,579)	(66,231)	35,682
84			Current Refund										
85				Interest on Refunds									
86			Refund, 1978-1986 (BOP-1987$)										
87			Cum. Dif. PVRR, 1987-2011 (BOP-1987				(4,852,571)	(5,281,441)	(5,566,382)	(5,758,865)	(5,901,445)	(5,967,675)	(5,931,993)
88			Cum. Dif. PVRR, 1978-2011 (BOP-1987				(19,256,268)	(19,685,139)	(19,970,080)	(20,162,563)	(20,305,142)	(20,371,373)	(20,335,691)
89													
90		BTM Tariff (Nominal)					2.91	3.21	3.49	3.69	3.72	3.90	4.32
91		BTM Tariff (Real)					2.24	2.33	2.39	2.38	2.26	2.22	2.31
92													
93		TSM Tariff (Nominal)					4.43	4.45	4.47	4.44	4.31	4.20	4.13
94		TSM Tariff (Real)					3.41	3.23	3.05	2.86	2.61	2.40	2.21

	J	K	L	M	N	O	AK	AL	AM	AN	AO	AP	AQ
1	EXHIBIT APUC STAFF (RLB-3)												
2	Schedule 1, Page 4 of 5												
3	BTM: Statement of Results												
4													
5													
6						Year	1998	1999	2000	2001	2002	2003	2004
7	Calculation of Rate Base												
8	Carrier Property												
9	Property in Service (BOP)						7,648,035	7,656,035	7,664,035	7,672,035	7,680,035	7,688,035	7,696,035
10	Additions						10,000	10,000	10,000	10,000	10,000	10,000	10,000
11	Net Proceeds I/Retirements						2,000	2,000	2,000	2,000	2,000	2,000	2,000
12	Property in Service (EOP)						7,656,035	7,664,035	7,672,035	7,680,035	7,688,035	7,696,035	7,704,035
13	Average Property in Service						7,652,035	7,660,035	7,668,035	7,676,035	7,684,035	7,692,035	7,700,035
14													
15	Accrued Depreciation (EOP)						4,799,703	5,009,077	5,218,670	5,428,482	5,638,512	5,848,761	6,059,229
16	Net Carrier Property (EOP)						2,856,332	2,654,958	2,453,365	2,251,553	2,049,523	1,847,274	1,644,806
17	Accrued Depreciation (Average)						4,695,125	4,904,390	5,113,874	5,323,576	5,533,497	5,743,637	5,953,995
18	Average Net Carrier Property						2,956,910	2,755,645	2,554,161	2,352,459	2,150,538	1,948,398	1,746,040
19													
20	Average AFUDC						1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286
21	Accumulated Amortization						1,009,680	1,052,499	1,095,399	1,138,178	1,181,017	1,223,856	1,266,695
22	Average Accumulated Amortization						988,241	1,031,090	1,073,919	1,116,758	1,159,597	1,202,436	1,245,276
23	Average Net AFUDC						579,045	536,206	493,367	450,528	407,689	364,850	322,010
24													
25	Average Working Capital						37,650	37,650	37,650	37,650	37,650	37,650	37,650
26													
27	Accumulated Deferred Income Taxes						(1,473,057)	(1,371,440)	(1,269,852)	(1,167,705)	(1,065,820)	(963,406)	(861,073)
28													
29	Total Rate Base						2,100,548	1,958,081	1,815,528	1,672,932	1,530,256	1,387,490	1,244,627
30													
31	Rate of Return												
32	CPI-U (EOP)						678.3	724.4	773.7	826.3	882.5	942.5	1006.6
33	Inflation Rate						6.80%	6.80%	6.81%	6.80%	6.80%	6.80%	6.80%
34	Nominal Debt Cost						8.80%	8.80%	8.81%	8.80%	8.80%	8.80%	8.80%
35	Real Debt Cost						2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
36	Debt Ratio						22.41%	20.69%	18.97%	17.24%	15.52%	13.79%	12.07%
37	Debt Return						1.97%	1.82%	1.67%	1.52%	1.37%	1.21%	1.06%
38	Nominal Equity Cost						14.80%	14.80%	14.81%	14.80%	14.80%	14.80%	14.80%
39	Real Equity Cost						8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
40	Equity Ratio						77.59%	79.31%	81.03%	82.76%	84.48%	86.21%	87.93%
41	Equity Return						11.48%	11.74%	12.00%	12.25%	12.50%	12.76%	13.01%
42	Average Return						13.46%	13.56%	13.67%	13.76%	13.87%	13.97%	14.08%
43													
44	Total Return Allowance						282,676	265,416	248,141	230,263	212,252	193,850	175,205
45	Equity Return						241,235	229,780	217,821	204,885	191,353	177,011	161,985
46	Debt Return						41,441	35,636	30,320	25,378	20,899	16,839	13,220
47													
48	Overall Revenue Requirement												
49	Operating and Maintenance Expense						598,851	627,260	659,642	691,666	726,659	760,095	797,813
50	Depreciation Expense												
51	Carrier Property						7,652,035	7,660,035	7,668,035	7,676,035	7,684,035	7,692,035	7,700,035
52	Rate						2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
53	Depreciation Expense on Property						209,156	209,374	209,593	209,812	210,030	210,249	210,468
54													
55	AFUDC (Debt Portion)						587,732	587,732	587,732	587,732	587,732	587,732	587,732
56	Rate of Amortization						2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
57	Amortization Expense						16,065	16,065	16,065	16,065	16,065	16,065	16,065
58													
59	AFUDC (Equity Portion)						979,554	979,554	979,554	979,554	979,554	979,554	979,554
60	Rate of Amortization						2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
61	Amortization Expense						26,774	26,774	26,774	26,774	26,774	26,774	26,774
62													
63	Total AFUDC Amortization Expense						42,839	42,839	42,839	42,839	42,839	42,839	42,839
64	Total Depreciation & Amortization						251,995	252,213	252,432	252,651	252,869	253,088	253,307
65	DR&R						37,891	37,891	37,891	37,891	37,891	37,891	37,891
66	Income Taxes												
67	Income Tax Base						305,900	294,445	282,486	269,550	256,018	241,678	226,650
68	Gross Multiplier						1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
69	Income Tax Allowance						319,356	307,397	294,912	281,407	267,280	252,307	236,620
70													
71	Total Revenue Requirement						1,490,769	1,490,177	1,493,018	1,493,877	1,498,951	1,497,231	1,500,836
72													
73	Miscellaneous Statistics												
74	Throughput (Bbls)						321,200	299,300	301,125	264,700	298,450	235,425	215,350
75	Revenue Received												
76													
77	BTM Revenue Requirement						1,490,769	1,490,177	1,493,018	1,493,877	1,498,951	1,497,231	1,500,836
78													
79	TSM Revenue Requirement						1,282,862	1,310,298	1,398,285	1,438,140	1,457,507	1,469,298	1,493,410
80													
81	Difference in Revenue Requirement						207,847	179,881	94,723	55,737	39,444	27,935	7,426
82	Zero Real Discount Factor						0.500	0.469	0.439	0.411	0.385	0.360	0.337
83	PV Rev. Req. Difference						104,020	84,279	42,429	22,894	15,170	10,060	2,504
84	Current Refund												
85	Interest on Refunds												
86	Refund, 1978-1986 (BOP-1978)												
87	Cum. Diff. PVRR, 1987-2011 (BOP-1987						(5,827,873)	(5,743,894)	(5,701,265)	(5,678,371)	(5,663,201)	(5,653,141)	(5,650,638)
88	Cum. Diff. PVRR, 1978-2011 (BOP-1987						(20,231,871)	(20,147,392)	(20,104,962)	(20,082,068)	(20,066,899)	(20,056,839)	(20,054,335)
89													
90	BTM Tariff (Nominal)						4.64	4.99	4.96	5.25	5.62	6.36	6.97
91	BTM Tariff (Real)						2.32	2.33	2.17	2.16	2.16	2.29	2.35
92													
93	TSM Tariff (Nominal)						3.99	4.38	4.64	5.05	5.47	6.24	6.93
94	TSM Tariff (Real)						2.00	2.05	2.03	2.07	2.10	2.25	2.34

	J K L M N O	AR	AS	AT	AU	AV	AW	AX
1	EXHIBIT APUC STAFF (RLB-3)							
2	Schedule 1, Page 5 of 5							
3	BTM: Statement of Results							
4								
5								
6	Year	2005	2006	2007	2008	2009	2010	2011
7	Calculation of Rate Base							
8	Carrier Property							
9	Property in Service (BOP)	7,704,035	7,712,035	7,720,035	7,728,035	7,736,035	7,744,035	7,752,035
10	Additions	10,000	10,000	10,000	10,000	10,000	10,000	10,000
11	Net Proceeds f/Retirements	2,000	2,000	2,000	2,000	2,000	2,000	2,000
12	Property in Service (EOP)	7,712,035	7,720,035	7,728,035	7,736,035	7,744,035	7,752,035	7,760,035
13	Average Property in Service	7,708,035	7,716,035	7,724,035	7,732,035	7,740,035	7,748,035	7,756,035
14								
15	Accrued Depreciation (EOP)	6,269,915	6,480,820	6,691,944	6,902,296	7,114,847	7,326,627	7,538,625
16	Net Carrier Property (EOP)	1,442,120	1,239,215	1,036,091	833,749	629,188	425,408	221,410
17	Accurved Depreciation (Average)	6,164,572	6,375,368	6,586,382	6,797,615	7,008,067	7,220,737	7,432,626
18	Average Net Carrier Property	1,543,463	1,340,667	1,137,653	934,420	730,958	527,298	323,409
19								
20	Average AFUDC	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286	1,567,286
21	Accumulated Amortization	1,309,534	1,352,373	1,395,213	1,438,052	1,480,891	1,523,730	1,566,569
22	Average Accumulated Amortization	1,288,115	1,330,954	1,373,793	1,416,632	1,459,471	1,502,310	1,545,150
23	Average Net AFUDC	279,171	236,332	193,493	150,654	107,815	64,976	22,136
24								
25	Average Working Capital	37,650	37,650	37,650	37,650	37,650	37,650	37,650
26								
27	Accumulated Deferred Income Taxes	(756,614)	(656,031)	(553,324)	(450,492)	(347,543)	(244,483)	(141,310)
28								
29	Total Rate Base	1,101,670	958,618	815,472	672,231	528,890	385,441	241,886
30								
31	Rate of Return							
32	CPI-U (EOP)	1075	1148.1	1226.2	1309.6	1398.6	1493.7	1595.3
33	Inflation Rate	6.80%	6.80%	6.80%	6.80%	6.80%	6.80%	6.80%
34	Nominal Debt Cost	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%	8.80%
35	Real Debt Cost	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
36	Debt Ratio	10.34%	8.62%	6.90%	5.17%	3.45%	1.72%	0.00%
37	Debt Return	0.91%	0.76%	0.61%	0.46%	0.30%	0.15%	0.00%
38	Nominal Equity Cost	14.80%	14.80%	14.80%	14.80%	14.80%	14.80%	14.80%
39	Real Equity Cost	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%	8.00%
40	Equity Ratio	89.66%	91.38%	93.10%	94.83%	96.55%	98.28%	100.00%
41	Equity Return	13.26%	13.52%	13.78%	14.04%	14.29%	14.54%	14.80%
42	Average Return	14.17%	14.28%	14.39%	14.49%	14.59%	14.70%	14.80%
43								
44	Total Return Allowance	156,156	136,917	117,336	97,414	77,160	56,645	35,824
45	Equity Return	146,132	129,645	112,386	94,354	75,556	56,060	35,824
46	Debt Return	10,023	7,272	4,951	3,060	1,604	585	0
47								
48	Overall Revenue Requirement							
49	Operating and Maintenance Expense	834,365	874,265	916,942	963,951	1,031,201	1,088,470	1,270,428
50	Depreciation Expense							
51	Carrier Property	7,708,035	7,716,035	7,724,035	7,732,035	7,740,035	7,748,035	7,756,035
52	Rate	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
53	Depreciation Expense on Property	210,686	210,905	211,124	211,342	211,561	211,780	211,998
54								
55	AFUDC (Debt Portion)	587,732	587,732	587,732	587,732	587,732	587,732	587,732
56	Rate of Amortization	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
57	Amortization Expense	16,065	16,065	16,065	16,065	16,065	16,065	16,065
58								
59	AFUDC (Equity Portion)	979,554	979,554	979,554	979,554	979,554	979,554	979,554
60	Rate of Amortization	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%	2.73%
61	Amortization Expense	26,774	26,774	26,774	26,774	26,774	26,774	26,774
62								
63	Total AFUDC Amortization Expense	42,839	42,839	42,839	42,839	42,839	42,839	42,839
64	Total Depreciation & Amortization	253,525	253,744	253,963	254,181	254,400	254,619	254,837
65	DR&A	37,891	37,891	37,891	37,891	37,891	37,891	37,891
66	Income Taxes							
67	Income Tax Base	210,798	194,310	177,051	159,019	140,221	120,726	100,469
68	Gross Multiplier	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440	1.0440
69	Income Tax Allowance	220,070	202,857	184,839	166,014	146,389	126,036	104,888
70								
71	Total Revenue Requirement	1,502,007	1,505,675	1,510,971	1,519,451	1,547,041	1,563,661	1,703,849
72								
73	Miscellaneous Statistics							
74	Throughput (Bbls)	198,975	184,325	158,775	136,875	105,850	78,475	65,700
75	Revenue Received							
76								
77	BTM Revenue Requirement	1,502,007	1,505,675	1,510,971	1,519,451	1,547,041	1,563,661	1,703,849
78								
79	TSM Revenue Requirement	1,523,552	1,559,587	1,550,792	1,551,378	1,520,381	1,480,576	1,629,823
80								
81	Difference in Revenue Requirement	(21,545)	(53,912)	(39,821)	(31,927)	26,660	83,085	74,026
82	Zero-Real Discount Factor	0.316	0.296	0.277	0.259	0.243	0.227	0.213
83	PV Rev. Req. Difference	(6,802)	(15,936)	(11,022)	(8,274)	6,470	18,879	15,749
84	Current Refund							
85	Interest on Refunds							
86	Refund, 1978-1986 (BOP-1978)							
87	Cum. Dif. PVRR, 1987-2011 (BOP-1987	(5,657,440)	(5,673,377)	(5,684,399)	(5,692,674)	(5,686,204)	(5,667,325)	(5,651,576)
88	Cum. Dif. PVRR, 1978-2011 (BOP-1987	(20,061,137)	(20,077,075)	(20,088,097)	(20,096,371)	(20,089,901)	(20,071,023)	(20,055,274)
89								
90	BTM Tariff (Nominal)	7.55	8.17	9.52	11.10	14.62	19.93	25.92
91	BTM Tariff (Real)	2.38	2.41	2.63	2.88	3.55	4.53	5.52
92								
93	TSM Tariff (Nominal)	7.66	8.46	9.77	11.33	14.36	18.87	24.81
94	TSM Tariff (Real)	2.42	2.50	2.70	2.94	3.49	4.29	5.28

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 2, Page 1 of 1
Carrier Property ($1,000's)

No Deduction Scenario

Carrier	1978	1979	1980	1981
AHPC	120,178	121,743	123,207	124,496
ARCO	1,670,315	1,691,960	1,717,929	1,757,141
BP	1,265,783	1,263,822	1,285,491	1,355,679
EXXON	1,583,266	1,582,608	1,605,802	1,645,008
MAPL	396,578	396,644	387,609	338,641
PAPCO	132,269	131,937	128,750	112,591
SOHIO	2,638,412	2,634,437	2,670,045	2,697,820
UAPL	132,468	132,619	129,691	113,470
Total Property	7,939,269	7,955,770	8,048,524	8,144,846

Full Deduction Scenario

Carrier	1978	1979	1980	1981
AHPC	94,872	96,437	97,901	99,190
ARCO	1,316,035	1,337,680	1,362,449	1,396,877
BP	998,555	996,594	1,016,622	1,074,372
EXXON	1,245,857	1,245,199	1,267,250	1,301,899
MAPL	312,226	312,292	306,354	269,734
PAPCO	104,264	103,932	101,773	89,713
SOHIO	2,075,950	2,071,975	2,106,413	2,135,420
UAPL	104,463	104,614	102,714	90,592
Total Property	6,252,222	6,268,723	6,361,476	6,457,797

Average Deduction Scenario

Carrier	1978	1979	1980	1981
AHPC	107,525	109,090	110,554	111,843
ARCO	1,493,175	1,514,820	1,540,189	1,577,009
BP	1,132,169	1,130,208	1,151,057	1,215,026
EXXON	1,414,562	1,413,904	1,436,526	1,473,454
MAPL	354,402	354,468	346,982	304,188
PAPCO	118,267	117,935	115,262	101,152
SOHIO	2,357,181	2,353,206	2,388,229	2,416,620
UAPL	118,466	118,617	116,20^	102,031
Total Property	7,095,746	7,112,247	7,205,000	7,301,322

SOURCE: EXHIBIT APUC STAFF ___ (RLB-3), Schedule 3

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 1 of 10
AFUDC Calculation

No Deduction Scenario

AFUDC @12%	1978	1979	1980	1981
AHPC	26,654	26,631	26,607	26,651
ARCO	371,642	371,308	372,116	377,314
BP	280,900	280,645	281,931	294,587
EXXON	353,945	353,623	354,366	359,311
MAPL	88,879	88,780	85,538	73,839
PAPCO	29,778	29,743	28,582	24,698
SOHIO	591,995	591,458	592,010	591,591
UAPL	29,389	29,363	28,381	24,496
Total AFUDC	1,773,182	1,771,552	1,769,530	1,772,488
Equity (62.5%)	1,108,238	1,107,220	1,105,957	1,107,805
Debt (37.5%)	664,943	664,332	663,574	664,683

Full Deduction Scenario

AFUDC @ 12%	1978	1979	1980	1981
AHPC	20,397	20,374	20,350	20,395
ARCO	284,051	283,718	284,228	288,244
BP	214,831	214,576	215,456	225,039
EXXON	270,525	270,203	270,664	274,483
MAPL	68,024	67,925	65,449	56,802
PAPCO	22,854	22,820	21,912	19,041
SOHIO	452,934	452,397	452,660	452,544
UAPL	22,465	22,440	21,711	18,839
Total AFUDC	1,356,082	1,354,453	1,352,429	1,355,386
Equity (62.5%)	847,552	846,533	845,268	847,117
Debt (37.5%)	508,531	507,920	507,161	508,270

Average Deduction Scenario

AFUDC @ 12%	1978	1979	1980	1981
AHPC	23,525	23,502	23,478	23,523
ARCO	327,847	327,513	328,172	332,779
BP	247,866	247,610	248,694	259,813
EXXON	312,235	311,913	312,515	316,897
MAPL	78,452	78,353	75,494	65,320
PAPCO	26,316	26,282	25,247	21,870
SOHIO	522,465	521,927	522,335	522,067
UAPL	25,927	25,902	25,046	21,667
Total AFUDC	1,564,632	1,563,002	1,560,980	1,563,937
Equity (62.5%)	977,895	976,876	975,612	977,461
Debt (37.5%)	586,737	586,126	585,367	586,476

SOURCE: EXHIBIT APUC STAFF ___ (RLB-3), Schedule 3, Page 2 of 10
NOTE: 12% AFUDC = 11.5% AFUDC * 12/11.5

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 2 of 10
AFUDC Calculation

No Deduction Scenario

AFUDC @ 11.5%	1978	1979	1980	1981
AHPC	25,543	25,521	25,498	25,541
ARCO	356,157	355,837	356,611	361,593
BP	269,196	268,951	270,184	282,313
EXXON	339,197	338,889	339,601	344,340
MAPL	85,176	85,081	81,974	70,762
PAPCO	28,537	28,504	27,391	23,669
SOHIO	567,329	566,814	567,343	566,941
UAPL	28,164	28,140	27,198	23,475
Total AFUDC	1,699,299	1,697,737	1,695,800	1,698,634

Full Deduction Scenario

AFUDC @ 11.5%	1978	1979	1980	1981
AHPC	19,547	19,525	19,502	19,545
ARCO	272,216	271,896	272,385	276,234
BP	205,880	205,635	206,479	215,662
EXXON	259,253	258,945	259,386	263,046
MAPL	65,190	65,095	62,722	54,435
PAPCO	21,902	21,869	20,999	18,248
SOHIO	434,062	433,547	433,799	433,688
UAPL	21,529	21,505	20,806	18,054
Total AFUDC	1,299,579	1,298,017	1,296,078	1,298,912

Average Deduction Scenario

AFUDC @ 11.5%	1978	1979	1980	1981
AHPC	22,545	22,523	22,500	22,543
ARCO	314,187	313,867	314,498	318,914
BP	237,538	237,293	238,332	248,988
EXXON	299,225	298,917	299,494	303,693
MAPL	75,183	75,088	72,348	62,599
PAPCO	25,220	25,187	24,195	20,959
SOHIO	500,696	500,181	500,571	500,315
UAPL	24,847	24,823	24,002	20,765
Total AFUDC	1,499,439	1,497,877	1,495,939	1,498,773

SOURCE: EXHIBIT APUC STAFF ___ (RLB-3), Schedule 3, Pages 3-10 of 10

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 3 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
AHPC				
Carrier Property	141,812	143,377	144,841	146,130
IDC	(21,634)	(21,634)	(21,634)	(21,634)
Total Carrier Property	120,178	121,743	123,207	124,496
AFUDC@ 11.5%	25,442	25,442	25,442	25,442
Direct AFUDC	103	103	103	103
P.S. #2 &7	0	0	6	55
Retirements	(2)	(24)	(53)	(59)
Net AFUDC	25,543	25,521	25,498	25,541
Equity AFUDC (62.5%	15,964	15,951	15,936	15,963
Debt AFUDC (37.5%)	9,579	9,570	9,562	9,578
Total Investment	145,721	147,264	148,705	150,037

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
AHPC				
Carrier Property	141,812	143,377	144,841	146,130
IDC	(21,634)	(21,634)	(21,634)	(21,634)
Cost of Const. Adjustme	(23,582)	(23,582)	(23,582)	(23,582)
Haul Road Adjustment	(1,724)	(1,724)	(1,724)	(1,724)
Total Carrier Property	94,872	96,437	97,901	99,190
AFUDC@ 11.5%	25,442	25,442	25,442	25,442
Direct AFUDC	103	103	103	103
Cost of Const. AFUDC	(5,440)	(5,440)	(5,440)	(5,440)
Haul Road AFUDC	(556)	(556)	(556)	(556)
P.S. #2&7 AFUDC	0	0	6	55
AFUDC Retired	(2)	(24)	(53)	(59)
Total AFUDC	19,547	19,525	19,502	19,545
Equity AFUDC (62.5%)	12,217	12,203	12,189	12,216
Debt AFUDC (37.5%)	7,330	7,322	7,313	7,329
Total Investment	114,419	115,962	117,403	118,735

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 4 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
ARCO				
Carrier Property	1,918,199	1,940,097	1,967,037	2,008,997
IDC	(247,884)	(248,137)	(249,108)	(251,856)
Total Carrier Property	1,670,315	1,691,960	1,717,929	1,757,141
AFUDC@ 11.5%	356,181	356,181	357,265	361,587
Direct AFUDC	0	0	0	0
P.S. #2 &7	0	0	98	844
Retirements	(24)	(344)	(752)	(838)
Net AFUDC	356,157	355,837	356,611	361,593
Equity AFUDC	222,598	222,398	222,882	225,996
Debt AFUDC	133,559	133,439	133,729	135,597
Total Investment	2,026,472	2,047,797	2,074,540	2,118,734

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
ARCO				
Carrier Property	1,918,199	1,940,097	1,967,037	2,008,997
IDC	(247,884)	(248,137)	(249,108)	(251,856)
Cost of Const. Adjustme	(330,146)	(330,146)	(331,264)	(335,722)
Haul Road Adjustment	(24,134)	(24,134)	(24,216)	(24,542)
Total Carrier Property	1,316,035	1,337,680	1,362,449	1,396,877
AFUDC@ 11.5%	356,181	356,181	357,265	361,587
Direct AFUDC	0	0	0	0
Cost of Const. AFUDC	(76,158)	(76,158)	(76,416)	(77,444)
Haul Road AFUDC	(7,783)	(7,783)	(7,810)	(7,915)
P.S. #2&7 AFUDC	0	0	98	844
AFUDC Retired	(24)	(344)	(752)	(838)
Total AFUDC	272,216	271,896	272,385	276,234
Equity AFUDC (62.5%)	170,135	169,935	170,241	172,646
Debt AFUDC (37.5%)	102,081	101,961	102,144	103,588
Total Investment	1,588,251	1,609,576	1,634,834	1,673,111

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 5 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
BP				
Carrier Property	1,265,783	1,263,822	1,285,491	1,355,679
IDC	0	0	0	0
Total Carrier Property	1,265,783	1,263,822	1,285,491	1,355,679
AFUDC@ 11.5%	268,662	268,662	270,150	281,453
Direct AFUDC	552	552	552	552
P.S. #2 &7	0	0	102	1,005
Retirements	(18)	(263)	(620)	(697)
Net AFUDC	269,196	268,951	270,184	282,313
Equity AFUDC	168,248	168,094	168,865	176,446
Debt AFUDC	100,949	100,857	101,319	105,867
Total Investment	1,534,979	1,532,773	1,555,675	1,637,992

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
BP				
Carrier Property	1,265,783	1,263,822	1,285,491	1,355,679
IDC	0	0	0	0
Cost of Const. Adjustme	(249,024)	(249,024)	(250,553)	(262,144)
Haul Road Adjustment	(18,204)	(18,204)	(18,316)	(19,163)
Total Carrier Property	998,555	996,594	1,016,622	1,074,372
AFUDC@ 11.5%	268,662	268,662	270,150	281,453
Direct AFUDC	552	552	552	552
Cost of Const. AFUDC	(57,445)	(57,445)	(57,798)	(60,471)
Haul Road AFUDC	(5,871)	(5,871)	(5,907)	(6,180)
P.S. #2&7 AFUDC	0	0	102	1,005
AFUDC Retired	(18)	(263)	(620)	(697)
Total AFUDC	205,880	205,635	206,479	215,662
Equity AFUDC (62.5%)	128,675	128,522	129,049	134,789
Debt AFUDC (37.5%)	77,205	77,113	77,430	80,873
Total Investment	1,204,435	1,202,229	1,223,101	1,290,034

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 6 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
EXXON				
Carrier Property	1,794,342	1,793,684	1,817,588	1,859,626
IDC	(211,076)	(211,076)	(211,786)	(214,618)
Total Carrier Property	1,583,266	1,582,608	1,605,802	1,645,008
AFUDC@ 11.5%	339,220	339,220	340,252	344,365
Direct AFUDC	0	0	0	0
P.S. #2 &7	0	0	93	803
Retirements	(23)	(331)	(744)	(828)
Net AFUDC	339,197	338,889	339,601	344,340
Equity AFUDC	211,998	211,806	212,251	215,213
Debt AFUDC	127,199	127,083	127,350	129,128
Total Investment	1,922,463	1,921,497	1,945,403	1,989,348

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
EXXON				
Carrier Property	1,794,342	1,793,684	1,817,588	1,859,626
IDC	(211,076)	(211,076)	(211,786)	(214,618)
Cost of Const. Adjustme	(314,424)	(314,424)	(315,489)	(319,735)
Haul Road Adjustment	(22,985)	(22,985)	(23,063)	(23,374)
Total Carrier Property	1,245,857	1,245,199	1,267,250	1,301,899
AFUDC@ 11.5%	339,220	339,220	340,252	344,365
Direct AFUDC	0	0	0	0
Cost of Const. AFUDC	(72,531)	(72,531)	(72,777)	(73,756)
Haul Road AFUDC	(7,413)	(7,413)	(7,438)	(7,538)
P.S. #2&7 AFUDC	0	0	93	803
AFUDC Retired	(23)	(331)	(744)	(828)
Total AFUDC	259,250	258,945	259,386	263,046
Equity AFUDC (62.5%)	162,033	161,841	162,116	164,404
Debt AFUDC (37.5%)	97,220	97,104	97,270	98,642
Total Investment	1,505,110	1,504,144	1,526,636	1,564,945

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 7 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
MAPL				
Carrier Property	396,578	396,644	387,609	338,641
IDC	0	0	0	0
Total Carrier Property	396,578	396,644	387,609	338,641
AFUDC@ 11.5%	84,805	84,805	82,005	70,810
Direct AFUDC	377	377	377	377
P.S. #2 &7	0	0	0	0
Retirements	(6)	(101)	(408)	(425)
Net AFUDC	85,176	85,081	81,974	70,762
Equity AFUDC	53,235	53,176	51,234	44,226
Debt AFUDC	31,941	31,905	30,740	26,536
Total Investment	481,754	481,725	469,583	409,403

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
MAPL				
Carrier Property	396,578	396,644	387,609	338,641
IDC	0	0	0	0
Cost of Const. Adjustme	(78,606)	(78,606)	(75,720)	(64,213)
Haul Road Adjustment	(5,746)	(5,746)	(5,535)	(4,694)
Total Carrier Property	312,226	312,292	306,354	269,734
AFUDC@ 11.5%	84,805	84,805	82,005	70,810
Direct AFUDC	377	377	377	377
Cost of Const. AFUDC	(18,133)	(18,133)	(17,467)	(14,813)
Haul Road AFUDC	(1,853)	(1,853)	(1,785)	(1,514)
P.S. #2&7 AFUDC	0	0	0	0
AFUDC Retired	(6)	(101)	(408)	(425)
Total AFUDC	65,190	65,095	62,722	54,435
Equity AFUDC (62.5%)	40,744	40,684	39,201	34,022
Debt AFUDC (37.5%)	24,446	24,411	23,521	20,413
Total Investment	377,416	377,387	369,076	324,169

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 8 of 10
AFUDC Calculation

No Deduction Scenario

PAPCO	1978	1979	1980	1981
Carrier Property	132,269	131,937	128,750	112,591
IDC	0	0	0	0
Total Carrier Property	132,269	131,937	128,750	112,591
AFUDC@ 11.5%	28,155	28,155	27,226	23,510
Direct AFUDC	384	384	384	384
P.S. #2 &7	0	0	0	0
Retirements	(2)	(35)	(219)	(225)
Net AFUDC	28,537	28,504	27,391	23,669
Equity AFUDC	17,836	17,815	17,119	14,793
Debt AFUDC	10,701	10,689	10,272	8,876
Total Investment	160,806	160,441	156,141	136,260

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

PAPCO	1978	1979	1980	1981
Carrier Property	132,269	131,937	128,750	112,591
IDC	0	0	0	0
Cost of Const. Adjustme	(26,097)	(26,097)	(25,139)	(21,319)
Haul Road Adjustment	(1,908)	(1,908)	(1,838)	(1,559)
Total Carrier Property	104,264	103,932	101,773	89,713
AFUDC@ 11.5%	28,155	28,155	27,226	23,510
Direct AFUDC	384	384	384	384
Cost of Const. AFUDC	(6,020)	(6,020)	(5,799)	(4,918)
Haul Road AFUDC	(615)	(615)	(593)	(503)
P.S. #2&7 AFUDC	0	0	0	0
AFUDC Retired	(2)	(35)	(219)	(225)
Total AFUDC	21,902	21,869	20,999	18,248
Equity AFUDC (62.5%)	13,689	13,668	13,124	11,405
Debt AFUDC (37.5%)	8,213	8,201	7,875	6,843
Total Investment	126,166	125,801	122,772	107,961

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 9 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
SOHIO				
Carrier Property	2,638,412	2,634,437	2,670,045	2,697,820
IDC	0	0	0	0
Total Carrier Property	2,638,412	2,634,437	2,670,045	2,697,820
AFUDC@ 11.5%	565,480	565,480	566,536	565,430
Direct AFUDC	1,887	1,887	1,887	1,887
P.S. #2 &7	0	0	126	969
Retirements	(38)	(553)	(1,206)	(1,345)
Net AFUDC	567,329	566,814	567,343	566,941
Equity AFUDC	354,581	354,259	354,589	354,338
Debt AFUDC	212,748	212,555	212,754	212,603
Total Investment	3,205,741	3,201,251	3,237,388	3,264,761

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
SOHIO				
Carrier Property	2,638,412	2,634,437	2,670,045	2,697,820
IDC	0	0	0	0
Cost of Const. Adjustme	(524,146)	(524,146)	(525,236)	(524,088)
Haul Road Adjustment	(38,316)	(38,316)	(38,396)	(38,312)
Total Carrier Property	2,075,950	2,071,975	2,106,413	2,135,420
AFUDC@ 11.5%	565,480	565,480	566,536	565,430
Direct AFUDC	1,887	1,887	1,887	1,887
Cost of Const. AFUDC	(120,910)	(120,910)	(121,161)	(120,897)
Haul Road AFUDC	(12,357)	(12,357)	(12,383)	(12,356)
P.S. #2&7 AFUDC	0	0	126	969
AFUDC Retired	(38)	(553)	(1,206)	(1,345)
Total AFUDC	434,062	433,547	433,799	433,688
Equity AFUDC (62.5%)	271,289	270,967	271,124	271,055
Debt AFUDC (37.5%)	162,773	162,580	162,675	162,633
Total Investment	2,510,012	2,505,522	2,540,212	2,569,108

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

EXHIBIT APUC STAFF ___ (RLB-3)
Schedule 3, Page 10 of 10
AFUDC Calculation

No Deduction Scenario

	1978	1979	1980	1981
UAPL				
Carrier Property	132,468	132,619	129,691	113,470
IDC	0	0	0	0
Total Carrier Property	132,468	132,619	129,691	113,470
AFUDC@ 11.5%	28,155	28,155	27,226	23,510
Direct AFUDC	11	11	11	11
P.S. #2 &7	0	0	0	0
Retirements	(2)	(26)	(39)	(46)
Net AFUDC	28,164	28,140	27,198	23,475
Equity AFUDC	17,603	17,588	16,999	14,672
Debt AFUDC	10,562	10,553	10,199	8,803
Total Investment	160,632	160,759	156,889	136,945

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix B

Full Deduction Scenario

	1978	1979	1980	1981
UAPL				
Carrier Property	132,468	132,619	129,691	113,470
IDC	0	0	0	0
Cost of Const. Adjustme	(26,097)	(26,097)	(25,139)	(21,319)
Haul Road Adjustment	(1,908)	(1,908)	(1,838)	(1,559)
Total Carrier Property	104,463	104,614	102,714	90,592
AFUDC@ 11.5%	28,155	28,155	27,226	23,510
Direct AFUDC	11	11	11	11
Cost of Const. AFUDC	(6,020)	(6,020)	(5,799)	(4,918)
Haul Road AFUDC	(615)	(615)	(593)	(503)
P.S. #2&7 AFUDC	0	0	0	0
AFUDC Retired	(2)	(26)	(39)	(46)
Total AFUDC	21,529	21,505	20,806	18,054
Equity AFUDC (62.5%)	13,456	13,441	13,004	11,284
Debt AFUDC (37.5%)	8,073	8,064	7,802	6,770
Total Investment	125,992	126,119	123,520	108,646

SOURCE: State of Alaska, Phase II, NCC Brief, Appendix A

	E	F	G	H	I	J	K	L	M
85	EXHIBIT APUC STAFF (RLB-3)								
86	Schedule A Page 1 of 5								
87	ADIT Calculation								
88									
89	FEDERAL TAX DEPRECIATION								
100									
101								1977-1980	1981-2011
102		YEAR		BASE	DDB-FACTOR	SYD-FACTOR	DDB-DEPR	DEPRECIATION	ACRS
103		1977		1.000 000	0.057 143		0.057 143	0.057 143	0.150 000
104		1978	17	0.942 857	0.114 286	0.104 762	0.107 755	0.107 755	0.220 000
105		1979	16	0.835 102	0.114 286	0.098 247	0.096 440	0.098 247	0.210 000
106		1980	15	0.738 662	0.114 286	0.092 107		0.092 107	0.210 000
107		1981	14	0.738 662	0.114 286	0.085 966		0.085 966	0.210 000
108		1982	13	0.738 662	0.114 286	0.079 826		0.079 826	
109		1983	12	0.738 662	0.114 286	0.073 685		0.073 685	
110		1984	11	0.738 662	0.114 286	0.067 545		0.067 545	
111		1985	10	0.738 662	0.114 286	0.061 405		0.061 405	
112		1986	9	0.738 662	0.114 286	0.055 264		0.055 264	
113		1987	8	0.738 662	0.114 286	0.049 124		0.049 124	
114		1988	7	0.738 662	0.114 286	0.042 983		0.042 983	
115		1989	6	0.738 662	0.114 286	0.036 843		0.036 843	
116		1990	5	0.738 662	0.114 286	0.030 702		0.030 702	
117		1991	4	0.738 662	0.114 286	0.024 562		0.024 562	
118		1992	3	0.738 662	0.114 286	0.018 421		0.018 421	
119		1993	2	0.738 662	0.114 286	0.012 281		0.012 281	
120		1994	1	0.738 662	0.114 286	0.006 140		0.006 140	
121									
122							TOTALS	1.000 000	1.000 000
123									
124									
125									
126									
127									
128									
129									
130									
131									
132									
133									
134									
135									
136									
137									
138									
139									
140	STATE OF ALASKA TAX DEPRECIATION								
141									
142		YEAR		1.977	1.978	1.979	1.980	1.981	1982-2011
143		1977	18	0.057 143	0.020 000	0.020 000	0.020 000	0.020 000	0.057 143
144		1978	17	0.040 000	0.040 000	0.040 000	0.040 000	0.111 468	0.107 755
145		1979	16	0.040 000	0.040 000	0.040 000	0.106 737	0.101 952	0.098 247
146		1980	15	0.040 000	0.040 000	0.108 421	0.102 597	0.095 821	0.092 107
147		1981	14	0.040 000	0.107 492	0.102 281	0.096 436	0.089 681	0.085 966
148		1982	13	0.102 233	0.101 351	0.096 140	0.090 316	0.083 540	0.079 826
149		1983	12	0.096 093	0.095 211	0.090 000	0.084 175	0.077 400	0.073 685
150		1984	11	0.089 953	0.089 070	0.083 860	0.078 035	0.071 259	0.067 545
151		1985	10	0.083 812	0.082 930	0.077 719	0.071 894	0.065 119	0.061 405
152		1986	9	0.077 672	0.076 789	0.071 579	0.065 754	0.058 978	0.055 264
153		1987	8	0.071 531	0.070 649	0.065 438	0.059 613	0.052 838	0.049 124
154		1988	7	0.065 391	0.064 508	0.059 298	0.053 473	0.046 983	0.042 983
155		1989	6	0.059 250	0.058 368	0.053 157	0.047 332	0.041 142	0.036 843
156		1990	5	0.053 110	0.052 227	0.047 017	0.041 192	0.035 302	0.030 702
157		1991	4	0.046 969	0.046 087	0.040 876	0.035 051	0.029 461	0.024 562
158		1992	3	0.040 829	0.039 946	0.034 736	0.028 910	0.023 620	0.018 421
159		1993	2	0.034 688	0.033 806	0.028 595	0.022 769	0.017 780	0.012 281
160		1994	1	0.028 548	0.027 665	0.022 455	0.016 629	0.011 939	0.006 140
161			TOTALS	1.000 000	1.000 000	1.000 000	1.000 000	1.000 000	1.000 000

	N	O	Q	R	S	Y	U	V	W	X
95	EXHIBIT APUC STAFF (RLB-3)									
96	Schedule 4, Page 2 of 5									
97	ADIT Calculation									
98										
99	FEDERAL TAX DEPRECIATION									
100		ADDITIONS	0	33.002	152.504	40.140	50.357	75.237	45.048	25.000
101										
102		YEAR	1978	1979	1980	1981	1982	1983	1984	1985
103		1977/2								
104		1978	0							
105		1979	0	1.848						
106		1980	0	3.556	8.715					
107		1981	0	3.262	16.433	8.021				
108		1982	0	3.040	14.963	8.831	7.554			
109		1983	0	2.837	14.047	8.429	11.078	11.286		
110		1984	0	2.634	13.110	8.429	10.579	16.552	6.757	
111		1985	0	2.432	12.174	8.429	10.579	15.800	9.911	3.750
112		1986	0	2.229	11.237		10.579	15.800	9.460	5.500
113		1987	0	2.026	10.301			15.800	9.460	5.250
114		1988	0	1.824	9.364				9.460	5.250
115		1989	0	1.621	8.428					5.250
116		1990	0	1.418	7.492					
117		1991	0	1.216	6.555					
118		1992	0	1.013	5.619					
119		1993	0	811	4.682					
120		1994	0	608	3.746					
121		1995	0	405	2.809					
122		1996		203	1.873					
123		1997			936					
124		1998								
125		1999								
126		2000								
127		2001								
128		2002								
129		2003								
130		2004								
131		2005								
132		2006								
133		2007								
134		2008								
135		2009								
136		2010								
137		2011								
138		TOTALS	0	33.002	152.504	40.140	50.357	75.237	45.048	25.000
139										
140	STATE OF ALASKA TAX DEPRECIA									
141										
142		ADDITIONS	0	33.002	152.504	40.140	50.357	75.237	45.048	25.000
143										
144		YEAR	1978	1979	1980	1981	1982	1983	1984	1985
145		1977/2								
146		1978	0							
147		1979	0	660						
148		1980	0	1.320	3.050					
149		1981	0	1.320	6.100	803				
150		1982	0	3.578	16.583	4.474	2.878			
151		1983	0	3.375	15.646	4.093	5.428	4.299		
152		1984	0	3.173	14.710	3.846	4.947	8.107	2.574	
153		1985	0	2.970	13.774	3.600	4.638	7.392	4.854	1.429
154		1986	0	2.768	12.837	3.353	4.329	6.930	4.428	2.694
155		1987	0	2.565	11.901	3.107	4.020	6.468	4.149	2.456
156		1988	0	2.362	10.964	2.860	3.711	6.006	3.873	2.303
157		1989	0	2.160	10.028	2.614	3.401	5.544	3.596	2.149
158		1990	0	1.957	9.091	2.367	3.092	5.082	3.319	1.996
159		1991	0	1.754	8.155	2.121	2.783	4.620	3.043	1.842
160		1992	0	1.013	5.619	1.725	2.474	4.158	2.766	1.689
161		1993	0	811	4.682	1.478	2.165	3.696	2.490	1.535
162		1994	0	608	3.746	1.232	1.855	3.234	2.213	1.382
163		1995	0	405	2.809	986	1.548	2.772	1.936	1.228
164		1996		203	1.873	739	1.237	2.310	1.660	1.075
165		1997			936	493	928	1.848	1.383	921
166		1998				246	618	1.388	1.106	768
167		1999					309	926	830	614
168		2000						462	553	461
169		2001							277	307
170		2002								154
171		2003								
172		2004								
173		2005								
174		2006								
175		2007								
176		2008								
177		2009								
178		2010								
179		2011								
180		TOTALS	0	33.002	152.504	40.140	50.357	75.237	45.048	25.000
181										
182		YEAR	1978	1979	1980	1981	1982	1983	1984	1985
183										
184	BOOK DEPRECIATION		283.830	284.490	288.200	292.053	300.609	308.523	304.187	305.110
185	STATE TAX DEPRECIATION		283.830	284.490	288.200	292.053	752.832	714.592	673.641	633.365
186	FEDERAL TAX DEPRECIATION		764.603	899.024	663.837	635.693	600.832	570.531	537.341	498.762
187										
188	STATE SPREAD		0	0	0	0	451.824	393.939	369.446	327.455
189	STATE INCOME TAX RATE		0.094	0.094	0.094	0.110	0.094	0.094	0.094	0.094
190	STATE DEFERRED INCOME TAX		0	0	0	0	42.474	37.051	34.744	30.795
191										
192	FEDERAL SPREAD		480.773	614.534	375.637	343.639	300.023	260.008	233.154	193.671
193	FEDERAL INCOME TAX RATE		0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.480
194	FEDERAL DEFERRED INCOME T		230.771	190.688	172.713	158.074	160.138	147.137	132.874	116.571
195	TOTAL DEFERRED INCOME TAX		230.771	190.688	172.713	158.074	212.038	195.283	177.192	156.827
196	ADIT		370.161	560.848	734.358	892.432	1.104.471	1.299.752	1.477.145	1.633.972

	E	N	O	P	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH
85	EXHIBIT APUC STAFF (RUE-3)													
86	Schedule 4 Page 3 of 5													
87	ADIT Calculation													
88														
89	FEDERAL TAX DEPRECIATION													
100			ADDITIONS	7,095,746	5,000	10,000	10,000	10,000	30,000	30,000	10,000	10,000	10,000	10,000
101														
102			YEAR	1977/2	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
103			1977/2	405,471										
104			1978	784,803										
105			1979	697,138										
106			1980	633,567										
107			1981	608,986										
108			1982	566,423										
109			1983	522,853										
110			1984	479,282										
111			1985	435,711										
112			1986	392,140	750									
113			1987	348,569	1,100	1,500								
114			1988	304,998	1,050	2,200	1,500							
115			1989	261,427	1,050	2,100	2,200	1,500						
116			1990	217,856	1,050	2,100	2,100	2,200	4,500					
117			1991	174,284		2,100	2,100	2,100	6,600	4,500				
118			1992	130,713			2,100	2,100	6,300	6,600	1,500			
119			1993	87,142				2,100	6,300	6,300	2,700	1,500		
120			1994	43,571					6,300	6,300	2,100	2,700	1,500	
121			1995							6,300	2,100	2,100	2,700	1,500
122			1996								2,100	2,100	2,100	2,700
123			1997									2,100	2,100	2,100
124			1998										2,100	2,100
125			1999											2,100
126			2000											
127			2001											
128			2002											
129			2003											
130			2004											
131			2005											
132			2006											
133			2007											
134			2008											
135			2009											
136			2010											
137			2011											
138			TOTALS	7,095,746	5,000	10,000	10,000	10,000	30,000	30,000	10,000	10,000	10,000	10,000
139														
140	STATE OF ALASKA TAX DEPRECIATION													
141														
142			ADDITIONS	7,095,746	5,000	10,000	10,000	10,000	30,000	30,000	10,000	10,000	10,000	10,000
143														
144			YEAR	1977/2	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
145			1977/2	405,471										
146			1978	283,830										
147			1979	283,830										
148			1980	283,830										
149			1981	283,830										
150			1982	725,419										
151			1983	681,852										
152			1984	638,284										
153			1985	594,709										
154			1986	551,141	286									
155			1987	507,566	539	571								
156			1988	463,998	491	1,078	571							
157			1989	420,423	461	882	1,078	571						
158			1990	376,855	430	921	882	1,078	1,714					
159			1991	333,280	399	860	921	882	3,233	1,714				
160			1992	130,713	368	798	860	921	2,947	3,233	571			
161			1993	87,142	338	737	798	860	2,763	2,947	1,078	571		
162			1994	43,571	307	675	737	798	2,579	2,762	882	1,078	571	
163			1995		276	614	675	737	2,395	2,578	921	882	1,078	571
164			1996		246	553	614	675	2,211	2,395	860	921	882	1,078
165			1997		215	491	553	614	2,026	2,211	798	860	921	882
166			1998		184	430	491	553	1,842	2,026	737	798	860	921
167			1999		154	368	430	491	1,658	1,842	675	737	798	860
168			2000		123	307	368	430	1,474	1,658	614	675	737	798
169			2001		92	246	307	368	1,289	1,474	553	614	675	737
170			2002		61	184	246	307	1,105	1,289	491	553	614	675
171			2003		31	123	184	246	921	1,105	430	491	553	614
172			2004			61	123	184	737	921	368	430	491	553
173			2005				61	123	553	737	307	368	430	491
174			2006					61	368	553	246	307	368	430
175			2007						184	368	184	246	307	368
176			2008							184	123	184	246	307
177			2009								61	123	184	246
178			2010									61	123	184
179			2011										61	123
180			TOTALS	7,095,743	5,000	10,000	10,000	10,000	30,000	30,000	10,000	10,000	10,000	9,939
181														
182			YEAR	1977	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
183														
184	BOOK DEPRECIATION			141,915	205,452	205,657	205,878	206,094	206,614	207,378	207,660	208,087	208,281	208,506
185	STATE TAX DEPRECIATION			405,471	568,783	543,342	498,217	453,007	408,889	365,707	159,836	114,091	68,332	22,512
186	FEDERAL TAX DEPRECIATION			405,471	447,692	394,006	335,648	283,378	238,718	199,655	155,845	111,035	86,325	17,611
187														
188	STATE SPREAD			263,556	363,270	337,685	292,341	246,912	202,271	155,328	-47,988	-93,971	-139,949	-185,994
189	STATE INCOME TAX RATE			0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
190	STATE DEFERRED INCOME TAX			24,774	34,147	31,742	27,488	23,210	19,014	14,603	-4,511	-8,833	-13,155	-17,483
191														
192	FEDERAL SPREAD			292,556	242,189	188,349	129,771	77,482	32,102	-7,823	-51,898	-87,027	-141,936	-191,241
193	FEDERAL INCOME TAX RATE			0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.480	0.480
194	FEDERAL DEFERRED INCOME T			114,613	94,838	73,038	47,054	26,865	6,031	-10,491	-21,799	-30,268	-50,268	-75,851
195	TOTAL DEFERRED INCOME TAX			139,390	130,868	103,782	74,534	48,175	25,034	4,392	-26,309	-49,403	-72,404	-97,334
196	ADIT			139,390	1,784,638	1,888,619	1,843,153	1,891,328	2,016,362	2,020,754	1,994,445	1,945,043	1,872,639	1,775,305

	E	N	O	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
83	EXHIBIT APUC STAFF (RLB-3)													
86	Schedule 4, Page 4 of 5													
87	ADIT Calculation													
88														
89	FEDERAL TAX DEPRECIATION													
100			ADDITIONS	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
101														
102			YEAR	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
103			1977/2											
104			1978											
105			1979											
106			1980											
107			1981											
108			1982											
109			1983											
110			1984											
111			1985											
112			1986											
113			1987											
114			1988											
115			1989											
116			1990											
117			1991											
118			1992											
119			1993											
120			1994											
121			1995											
122			1996	1,500										
123			1997	2,200	1,500									
124			1998	2,100	2,200	1,500								
125			1999	2,100	2,100	2,200	1,500							
126			2000	2,100	2,100	2,100	2,200	1,500						
127			2001		2,100	2,100	2,100	2,200	1,500					
128			2002			2,100	2,100	2,100	2,200	1,500				
129			2003				2,100	2,100	2,100	2,200	1,500			
130			2004					2,100	2,100	2,100	2,200	1,500		
131			2005						2,100	2,100	2,100	2,200	1,500	
132			2006							2,100	2,100	2,100	2,200	1,500
133			2007								2,100	2,100	2,100	2,200
134			2008									2,100	2,100	2,100
135			2009										2,100	2,100
136			2010											2,100
137			2011											
138			TOTALS	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
139														
140	STATE OF ALASKA TAX DEPRECIATION													
141														
142			ADDITIONS	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
143														
144			YEAR	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
145			1977/2											
146			1978											
147			1979											
148			1980											
149			1981											
150			1982											
151			1983											
152			1984											
153			1985											
154			1986											
155			1987											
156			1988											
157			1989											
158			1990											
159			1991											
160			1992											
161			1993											
162			1994											
163			1995											
164			1996	571										
165			1997	1,078	571									
166			1998	982	1,078	571								
167			1999	921	982	1,078	571							
168			2000	860	921	982	1,078	571						
169			2001	798	860	921	982	1,078	571					
170			2002	737	798	860	921	982	1,078	571				
171			2003	675	737	798	860	921	982	1,078	571			
172			2004	614	675	737	798	860	921	982	1,078	571		
173			2005	553	614	675	737	798	860	921	982	1,078	571	
174			2006	491	553	614	675	737	798	860	921	982	1,078	571
175			2007	430	491	553	614	675	737	798	860	921	982	1,078
176			2008	368	430	491	553	614	675	737	798	860	921	982
177			2009	307	368	430	491	553	614	675	737	798	860	921
178			2010	246	307	368	430	491	553	614	675	737	798	860
179			2011	184	246	307	368	430	491	553	614	675	737	798
180			TOTALS	9,816	9,632	9,386	9,078	8,711	8,281	7,789	7,237	6,623	5,947	5,213
181														
182			YEAR	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
183														
184	BOOK DEPRECIATION			208,710	208,937	209,156	209,374	209,593	209,812	210,030	210,249	210,468	210,686	210,905
185	STATE TAX DEPRECIATION			20,201	17,828	15,592	14,243	13,072	12,149	11,627	11,320	11,103	10,865	10,614
186	FEDERAL TAX DEPRECIATION			12,076	10,936	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
187														
188	STATE SPREAD			-188,509	-191,109	-193,537	-195,131	-196,521	-197,662	-198,403	-198,929	-199,365	-199,821	-200,291
189	STATE INCOME TAX RATE			0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094	0.094
190	STATE DEFERRED INCOME TAX			-17,721	-17,964	-18,184	-18,343	-18,473	-18,583	-18,659	-18,709	-18,750	-18,794	-18,839
191														
192	FEDERAL SPREAD			-196,643	-198,001	-199,156	-199,374	-199,593	-199,812	-200,030	-200,249	-200,468	-200,686	-200,905
193	FEDERAL INCOME TAX RATE			0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460	0.460
194	FEDERAL DEFERRED INCOME T			-82,306	-82,817	-83,242	-83,275	-83,315	-83,348	-83,433	-83,513	-83,593	-83,675	-83,756
195	TOTAL DEFERRED INCOME TAX			-100,026	-100,781	-101,427	-101,617	-101,788	-101,947	-102,093	-102,212	-102,339	-102,469	-102,595
196	AD *			1,675,276	1,574,493	1,473,057	1,371,440	1,269,652	1,167,705	1,065,620	963,408	861,073	758,614	656,019

	E	N	O	AY	AU	AV	AW	AX	AY
85	EXHIBIT APUC STAFF (RUE-3)								
86	Schedule 4 Page 5 of 5								
87	ADIT Calculation								
88									
89	FEDERAL TAX DEPRECIATION								
90			ADDITIONS	10.000	10.000	10.000	10.000	10.000	TOTALS
91									7.812.035
92			YEAR	2007	2008	2009	2010	2011	
93			1977.2						
94			1978						405.471
95			1979						784.603
96			1980						998.024
97			1981						865.837
98			1982						635.892
99			1983						809.632
100			1984						570.531
101			1985						537.341
102			1986						496.762
103			1987						447.892
104			1988						394.006
105			1989						335.848
106			1990						283.576
107			1991						238.718
108			1992						199.455
109			1993						156.845
110			1994						111.035
111			1995						84.329
112			1996						17.419
113			1997						12.078
114			1998						10.836
115			1999						10.000
116			2000						10.000
117			2001						10.000
118			2002						10.000
119			2003						10.000
120			2004						10.000
121			2005						10.000
122			2006						10.000
123			2007	1.500					10.000
124			2008	2.200	1.500				10.000
125			2009	2.100	2.200	1.500			10.000
126			2010	2.100	2.100	2.200	1.500		10.000
127			2011	2.100	2.100	2.100	2.200	1.500	10.000
128			TOTALS	10.000	7.900	5.800	3.700	1.500	10.000
129									7.759.935
140	STATE OF ALASKA TAX DEPRECIATION								
141									
142			ADDITIONS	10.000	10.000	10.000	10.000	10.000	
143									7.812.035
144			YEAR	2007	2008	2009	2010	2011	
145			1977.2						
146			1978						405.471
147			1979						283.830
148			1980						286.490
149			1981						288.200
150			1982						292.053
151			1983						752.932
152			1984						714.892
153			1985						575.641
154			1986						533.365
155			1987						548.763
156			1988						543.342
157			1989						498.217
158			1990						453.007
159			1991						408.883
160			1992						365.727
161			1993						159.856
162			1994						116.081
163			1995						88.332
164			1996						22.512
165			1997						20.201
166			1998						17.829
167			1999						15.599
168			2000						14.263
169			2001						13.072
170			2002						12.148
171			2003						11.627
172			2004						11.320
173			2005						11.103
174			2006						10.860
175			2007	571					10.614
176			2008	1.078	571				10.368
177			2009	862	1.078	571			10.173
178			2010	921	862	1.078	571		10.000
179			2011	860	921	862	1.078	571	10.000
180			TOTALS	4.412	3.553	2.631	1.649	571	10.000
181									7.752.687
182			YEAR	2007	2008	2009	2010	2011	0
183									
184	BOOK DEPRECIATION			211.126	211.342	211.561	211.780	211.998	
185	STATE TAX DEPRECIATION			10.368	10.173	10.000	10.000	10.000	
186	FEDERAL TAX DEPRECIATION			10.000	10.000	10.000	10.000	10.000	
187									
188	STATE SPREAD			-200.758	-201.218	-201.561	-201.780	-201.998	
189	STATE INCOME TAX RATE			0.094	0.094	0.094	0.094	0.094	
190	STATE DEFERRED INCOME TAX			-18.871	-18.915	-18.947	-18.967	-18.988	
191									
192	FEDERAL SPREAD			-201.126	-201.342	-201.561	-201.780	-201.998	
193	FEDERAL INCOME TAX RATE			0.440	0.440	0.440	0.440	0.440	
194	FEDERAL DEFERRED INCOME T			-83.836	-83.917	-84.002	-84.094	-84.183	
195	TOTAL DEFERRED INCOME TAX			-102.707	-102.831	-102.949	-103.061	-103.173	
196	ADIT			353.326	450.493	347.543	244.483	141.310	

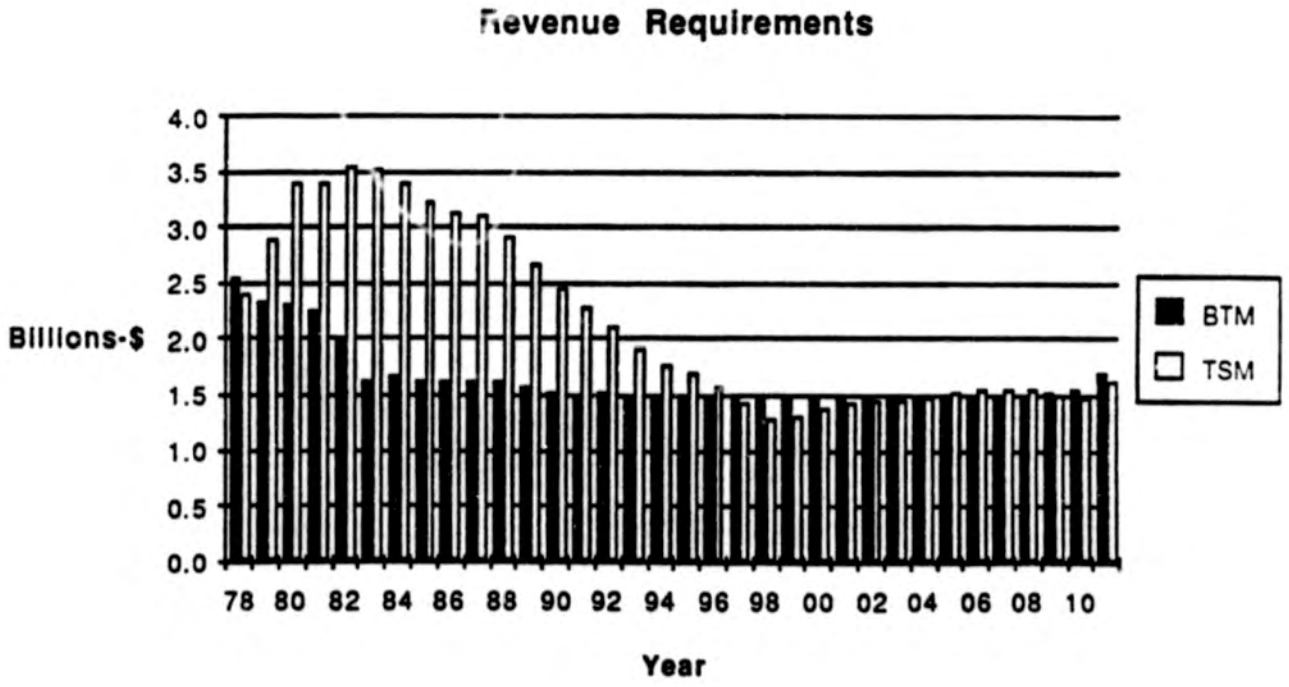
EXHIBIT APUC STAFF ___ (RLB-4)
Schedule 1, Page 1 of 1
Summary of Results: BTM vs. TSM

Year	Revenue Requirements ($1,000's) BTM (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM (d)	Return on Rate Base BTM (e)	TSM (f)
1978	2,554,162	2,400,643	11.21	10.77	4.3%	6.4%
1979	2,331,280	2,886,401	7.80	9.68	0.7%	6.4%
1980	2,319,749	3,413,363	5.78	8.53	-1.5%	6.4%
1981	2,270,310	3,403,646	5.13	7.72	1.6%	6.4%
1982	2,002,664	3,547,635	4.00	7.08	5.9%	6.4%
1983	1,624,126	3,523,988	3.09	6.72	5.1%	6.4%
1984	1,680,438	3,406,227	3.02	6.11	5.2%	6.4%
1985	1,641,017	3,243,473	2.80	5.53	5.3%	6.4%
1986	1,638,568	3,133,991	2.64	5.05	5.4%	6.4%
1987	1,633,642	3,113,267	2.39	4.55	5.5%	6.4%
1988	1,643,464	2,912,608	2.32	4.12	5.6%	6.4%
1989	1,586,264	2,673,157	2.25	3.80	5.7%	6.6%
1990	1,537,595	2,461,803	2.25	3.60	5.8%	7.8%
1991	1,508,271	2,293,745	2.24	3.41	5.9%	9.3%
1992	1,523,785	2,114,525	2.33	3.23	6.0%	11.1%
1993	1,498,484	1,915,317	2.39	3.05	6.1%	13.3%
1994	1,485,934	1,784,980	2.38	2.86	6.2%	16.5%
1995	1,481,041	1,716,251	2.26	2.61	6.3%	21.7%
1996	1,478,640	1,594,690	2.22	2.40	6.4%	27.5%
1997	1,498,720	1,431,950	2.31	2.21	6.6%	33.0%
1998	1,490,769	1,282,882	2.32	2.00	6.7%	37.6%
1999	1,490,177	1,310,296	2.33	2.05	6.8%	38.9%
2000	1,493,018	1,396,295	2.17	2.03	6.9%	43.8%
2001	1,493,877	1,438,140	2.16	2.07	7.0%	47.3%
2002	1,496,951	1,457,507	2.16	2.10	7.1%	51.4%
2003	1,497,231	1,469,296	2.29	2.25	7.2%	53.6%
2004	1,500,836	1,493,410	2.35	2.34	7.3%	58.5%
2005	1,502,007	1,523,552	2.38	2.42	7.4%	65.9%
2006	1,505,675	1,559,587	2.41	2.50	7.5%	77.3%
2007	1,510,971	1,550,792	2.63	2.70	7.6%	88.9%
2008	1,519,451	1,551,378	2.88	2.94	7.7%	108.8%
2009	1,547,041	1,520,381	3.55	3.49	7.8%	133.9%
2010	1,563,661	1,480,576	4.53	4.29	7.9%	187.5%
2011	1,703,849	1,629,823	5.52	5.28	8.0%	496.6%

PVRR Difference, 1978-1986	14,403,697 (g)
PVRR Difference, 1987-2011	5,651,576 (h)
PVRR Difference, 1978-2011	20,055,274 (i)

Notes

(a) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Line 77
(b) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Line 79
(c) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Line 91
(d) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Line 94
(e) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, (Line 44/Line 29) - Line 33
(f) EXHIBIT APUC STAFF ___ (RLB-2), Line 107/(preveious Line 92 + previous Line 104)
(g) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Cell Y86
(h) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Cell AX87
(i) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Cell AX88


Revenue Requirements
Billions-$
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
Year
BTM
TSM

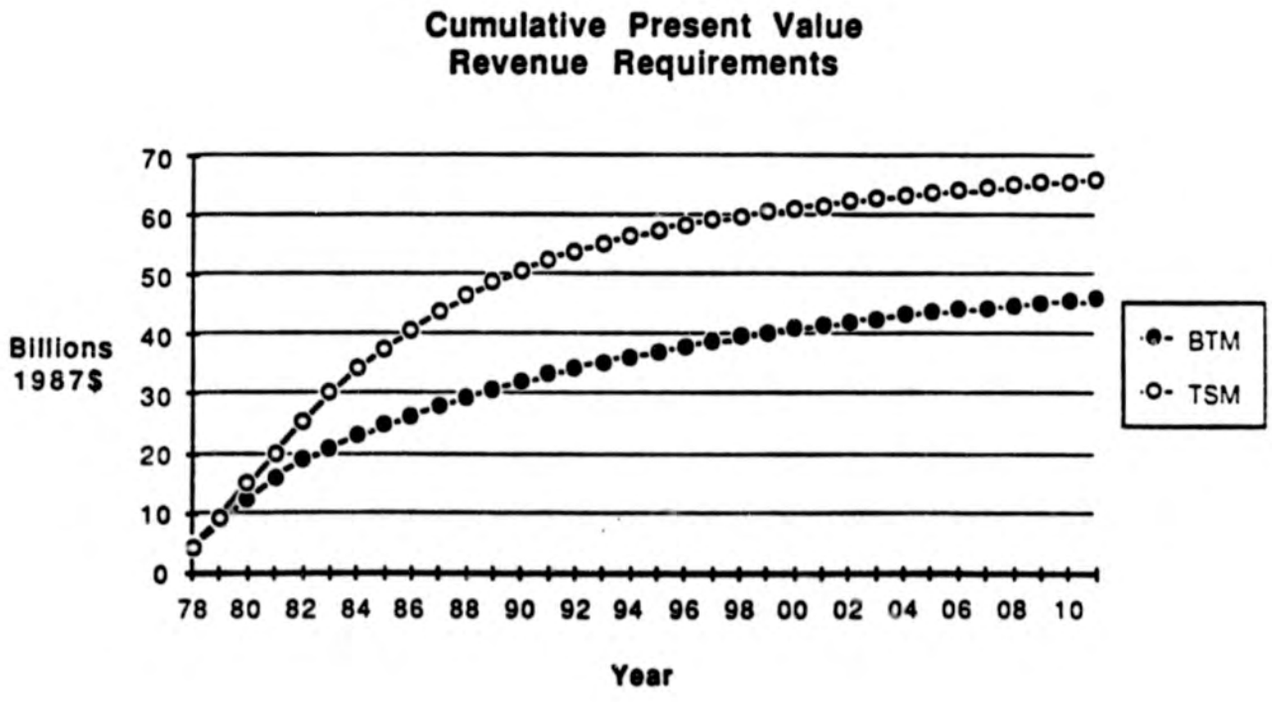
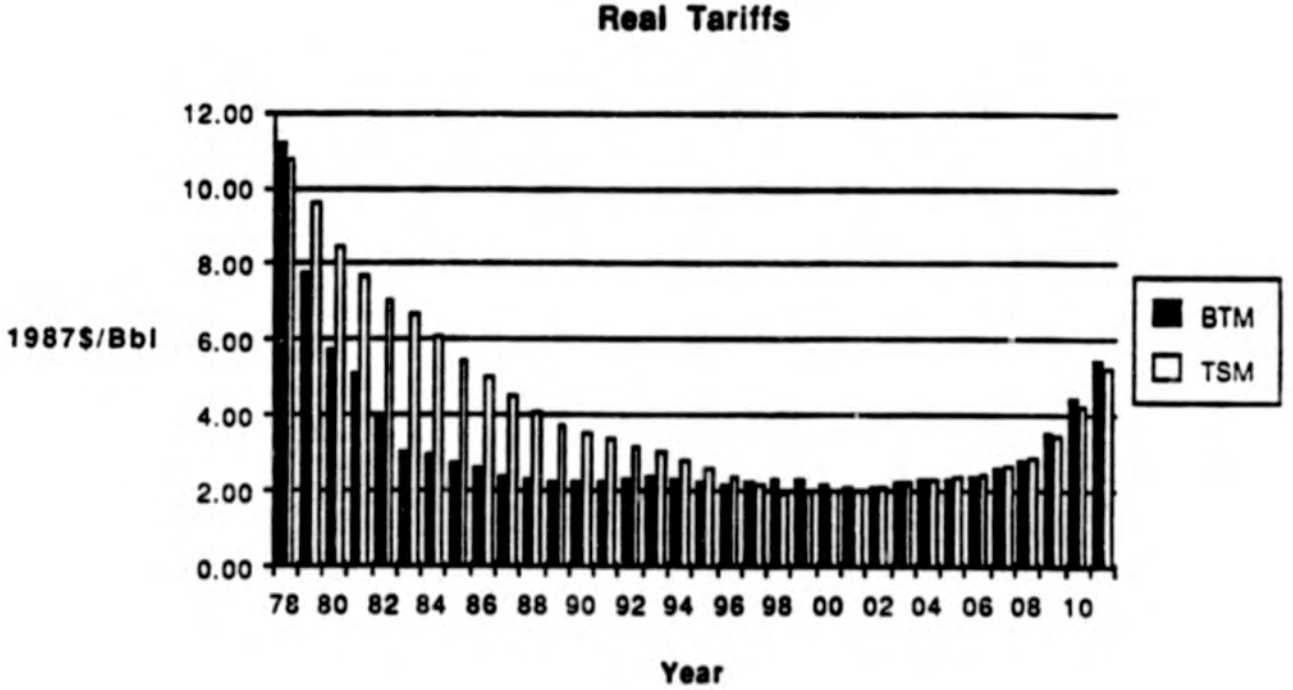

Cumulative Present Value
Revenue Requirements
Billions
1987$
70
60
50
40
30
20
10
0
78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
Year
BTM
TSM

EXHIBIT APUC STAFF ___ (RLB-4), Schedule 4



Real Return on Rate Base

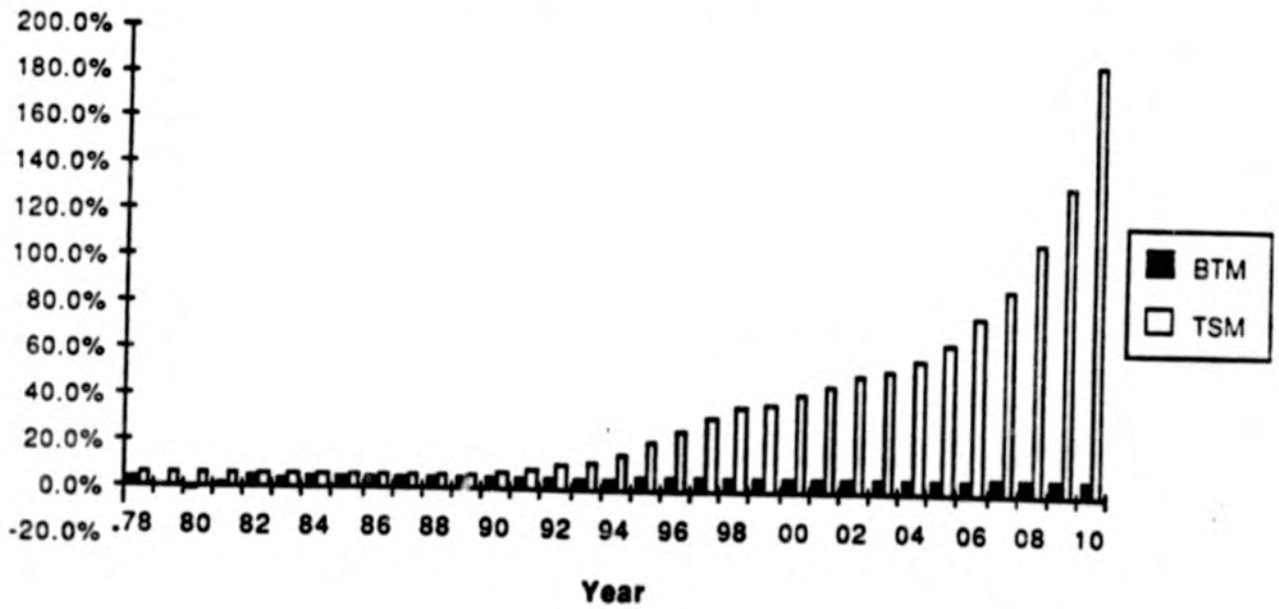


EXHIBIT APUC STAFF ___ (RLB-5)
Value of $450-million Amortization

Year	Amortization ($1,000's) (a)	CPI-U (Index) (b)	Inflation Rate (Percent)	Present Value Factor (1976$)	Present Value of Amortization ($1,000's)	Value of Disallowanc ($1,000's)
1975		161.2				450,000
1976	0	170.5	5.77%	0.9455	0	
1977	0	181.5	6.45%	0.8882	0	
1978	47,407	195.4	7.66%	0.8250	39,110	
1979	55,891	217.4	11.26%	0.7415	41,443	
1980	66,134	246.8	13.52%	0.6532	43,196	
1981	65,989	272.4	10.37%	0.5918	39,051	
1982	70,407	289.1	6.13%	0.5576	39,258	
1983	71,471	298.4	3.22%	0.5402	38,610	
1984	72,701	311.5	4.39%	0.5175	37,622	
				Total (1976$)	278,290	278,290
				Net Present Value of Disallowance		171,710

Notes
(a) State of Alaska's Explanatory Statement before FERC, Appendix 5
(b) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 1, Line 32

EXHIBIT APUC STAFF ___ (RLB-6)
Schedule 1, Page 1 of 1
Summary of Results: BTM, Modified* vs. TSM

Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM-Modified (c)	TSM (d)
1978	2,799,348	2,400,643	12.28	10.77
1979	2,557,534	2,886,401	8.55	9.68
1980	2,533,648	3,413,363	6.31	8.53
1981	2,474,667	3,403,646	5.60	7.72
1982	2,174,647	3,547,635	4.34	7.08
1983	1,752,974	3,523,988	3.34	6.72
1984	1,815,819	3,406,227	3.26	6.11
1985	1,768,981	3,243,473	3.02	5.53
1986	1,764,960	3,133,991	2.84	5.05
1987	1,755,588	3,113,267	2.57	4.55
1988	1,766,649	2,912,608	2.50	4.12
1989	1,704,135	2,673,157	2.42	3.80
1990	1,650,565	2,461,803	2.41	3.60
1991	1,616,890	2,293,745	2.41	3.41
1992	1,632,463	2,114,525	2.49	3.23
1993	1,603,377	1,915,317	2.56	3.05
1994	1,587,481	1,784,980	2.54	2.86
1995	1,579,612	1,716,251	2.41	2.61
1996	1,574,379	1,594,690	2.37	2.40
1997	1,593,933	1,431,950	2.46	2.21
1998	1,582,626	1,282,882	2.47	2.00
1999	1,578,493	1,310,296	2.47	2.05
2000	1,577,723	1,396,295	2.30	2.03
2001	1,574,786	1,438,140	2.27	2.07
2002	1,573,974	1,457,507	2.27	2.10
2003	1,570,224	1,469,296	2.40	2.25
2004	1,569,687	1,493,410	2.46	2.34
2005	1,566,572	1,523,552	2.49	2.42
2006	1,565,851	1,559,587	2.51	2.50
2007	1,566,628	1,550,792	2.73	2.70
2008	1,570,456	1,551,378	2.97	2.94
2009	1,593,265	1,520,381	3.65	3.49
2010	1,604,988	1,480,576	4.65	4.29
2011	1,740,149	1,629,823	5.63	5.28

PVRR Difference, 1978-1986	12,044,150	(e)
PVRR Difference, 1987-2011	4,433,546	(f)
PVRR Difference, 1978-2011	16,477,696	(g)

* No Cost of Construction Deduction from Rate Base

Notes
(a) Workpaper (RLB-6), Line 77
(b) Workpaper (RLB-6), Line 79
(c) Workpaper (RLB-6), Line 91
(d) Workpaper (RLB-6), Line 94
(e) Workpaper (RLB-6), Cell Y86
(f) Workpaper (RLB-6), Cell AX87
(g) Workpaper (RLB-6), Cell AX88

EXHIBIT APUC STAFF ___(RLB-6), Schedule 2

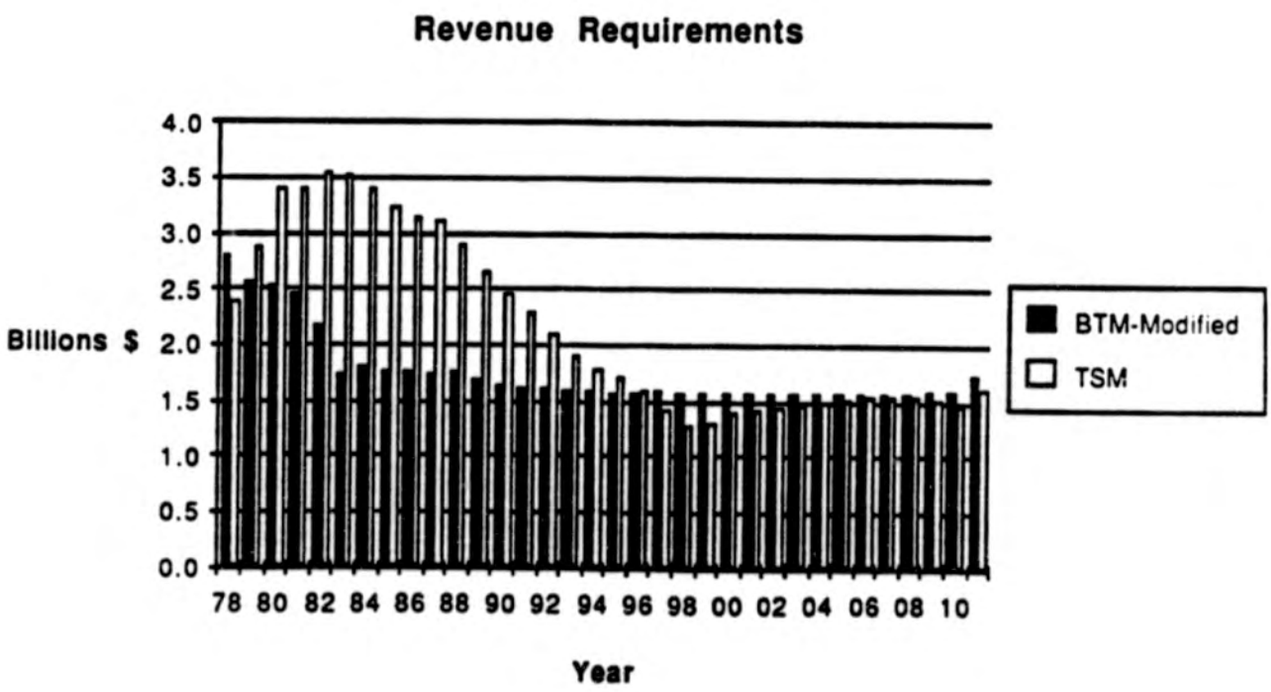


EXHIBIT APUC STAFF ___ (RLB-6), Schedule 3

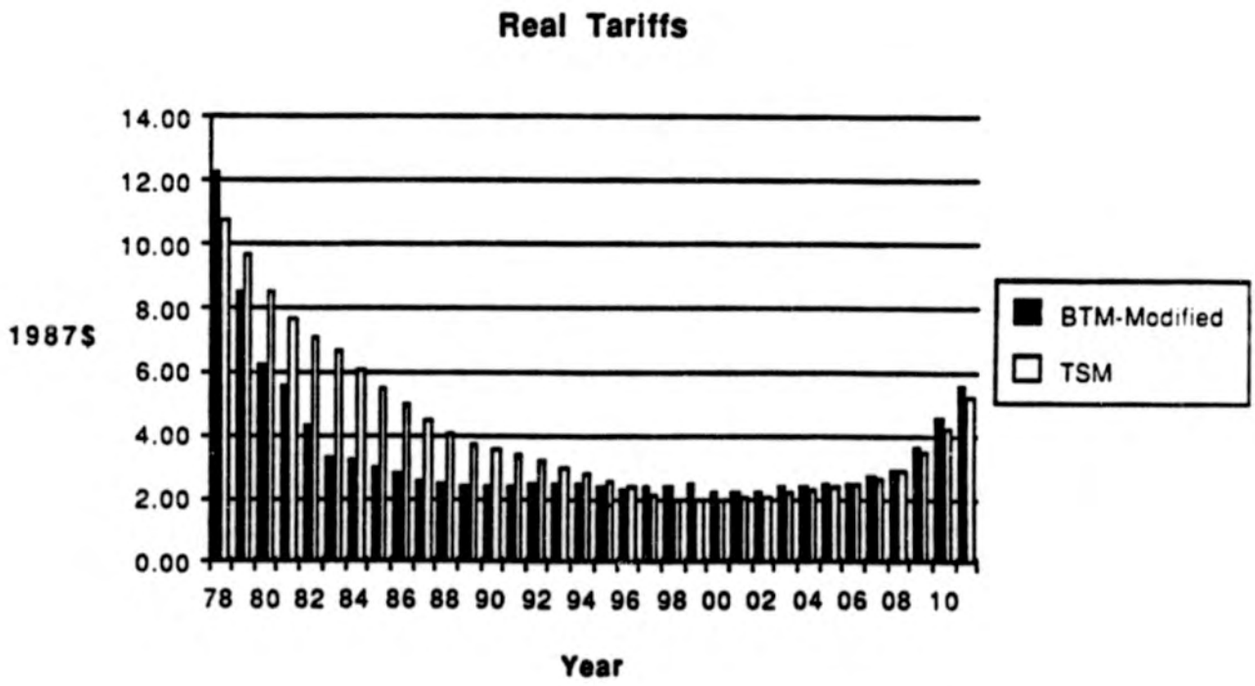


EXHIBIT APUC STAFF ___ (RLB-7)
Schedule 1, Page 1 of 1
Annual Deprection Rates for Various Methodologies

Year	TAPS Throughput 1,000 Bbls (a)	Adjustment Factor (b)	Adjusted Throughput	DDB-SYD Base	DDB-SYD Depreciation	Throughput Depreciation	TSM Depreciation	Straight Line Depreciation
1977	97,094	1.000 000	97,094	1.000 000	0.028 986	0.007 276	0.015 032	0.020 000
1978	395,905	1.000 000	395,905	0.971 014	0.055 487	0.029 667	0.061 293	0.040 000
1979	466,759	1.000 000	466,759		0.053 855	0.034 975	0.072 262	0.040 000
1980	552,294	0.950 000	524,679		0.052 223	0.041 385	0.081 229	0.040 000
1981	551,085	0.900 000	495,977		0.050 591	0.041 295	0.076 785	0.040 000
1982	587,985	0.850 000	499,787		0.048 959	0.044 060	0.077 375	0.027 333
1983	596,896	0.800 000	477,517		0.047 327	0.044 728	0.073 927	0.027 333
1984	607,135	0.750 000	455,351		0.045 695	0.045 495	0.070 496	0.027 333
1985	613,200	0.700 000	429,240		0.044 063	0.045 949	0.066 453	0.027 333
1986	620,500	0.650 000	403,325		0.042 431	0.046 496	0.062 441	0.027 333
1987	653,350	0.600 000	392,010		0.040 799	0.048 958	0.060 690	0.027 333
1988	640,575	0.550 000	352,316		0.039 167	0.048 001	0.054 544	0.027 333
1989	604,075	0.500 000	302,038		0.037 535	0.045 265	0.046 760	0.027 333
1990	556,625	0.450 000	250,481		0.035 903	0.041 710	0.038 779	0.027 333
1991	518,300	0.400 000	207,320		0.034 271	0.038 838	0.032 097	0.027 333
1992	475,413	0.350 000	166,395		0.032 639	0.035 624	0.025 761	0.027 333
1993	428,875	0.300 000	128,663		0.031 007	0.032 137	0.019 919	0.027 333
1994	402,413	0.250 000	100,603		0.029 375	0.030 154	0.015 575	0.027 333
1995	397,850	0.200 000	79,570		0.027 743	0.029 812	0.012 319	0.027 333
1996	379,600	0.150 000	56,940		0.026 111	0.028 445	0.008 815	0.027 333
1997	346,750	0.100 000	34,675		0.024 479	0.025 983	0.005 368	0.027 333
1998	321,200	0.050 000	16,060		0.022 847	0.024 069	0.002 486	0.027 333
1999	299,300	0.050 000	14,965		0.021 215	0.022 428	0.002 317	0.027 333
2000	301,125	0.050 000	15,056		0.019 583	0.022 564	0.002 331	0.027 333
2001	284,700	0.050 000	14,235		0.017 952	0.021 334	0.002 204	0.027 333
2002	266,450	0.050 000	13,323		0.016 320	0.019 966	0.002 063	0.027 333
2003	235,425	0.050 000	11,771		0.014 688	0.017 641	0.001 822	0.027 333
2004	215,350	0.050 000	10,768		0.013 056	0.016 137	0.001 667	0.027 333
2005	198,925	0.050 000	9,946		0.011 424	0.014 906	0.001 540	0.027 333
2006	184,325	0.050 000	9,216		0.009 792	0.013 812	0.001 427	0.027 333
2007	158,775	0.050 000	7,939		0.008 160	0.011 898	0.001 229	0.027 333
2008	136,875	0.050 000	6,844		0.006 528	0.010 257	0.001 060	0.027 333
2009	105,850	0.050 000	5,293		0.004 896	0.007 932	0.000 819	0.027 333
2010	78,475	0.050 000	3,924		0.003 264	0.005 880	0.000 607	0.027 333
2011	65,700	0.050 000	3,285		0.001 632	0.004 923	0.000 509	0.027 333
Totals	13,345,154		6,459,268		1.000 000	1.000 000	1.000 000	1.000 000

NOTES
(a) EXHIBIT ALASKA ___ (TOH-1), Column 1
(b) EXHIBIT ALASKA ___ (TOH-1), Column 2

EXHIBIT APUC STAFF ___ (RLB-7), Schedule 2

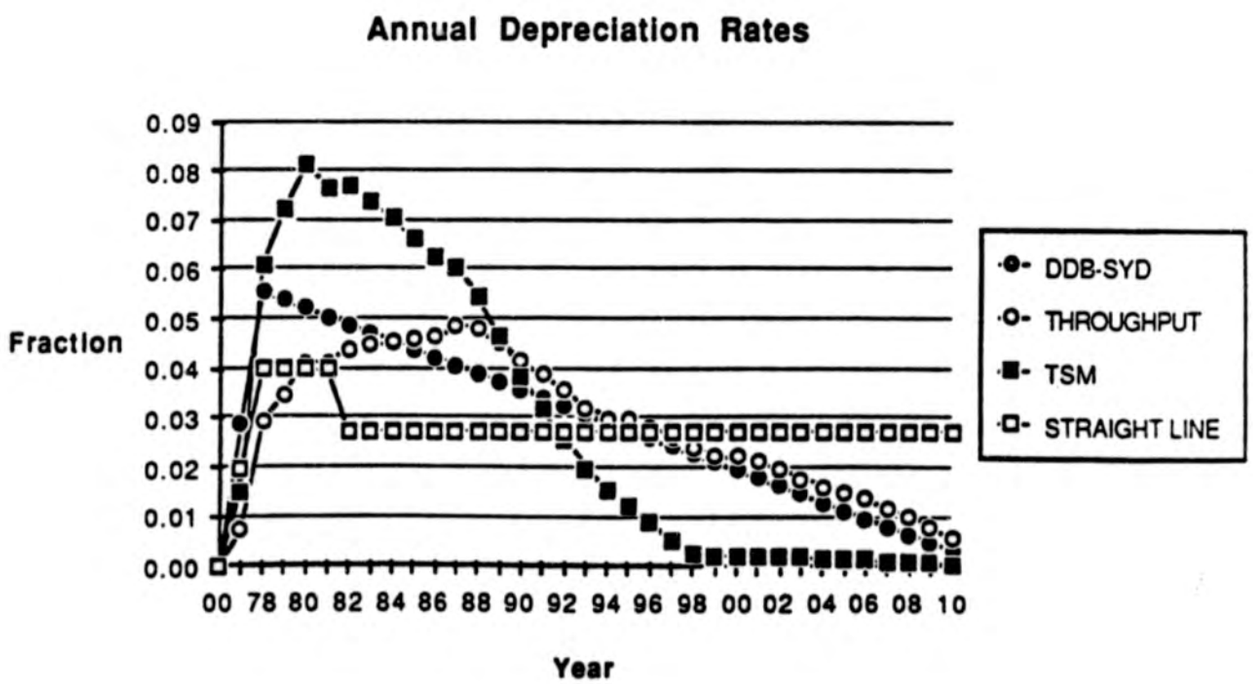


EXHIBIT APUC STAFF ___ (RLB-8)
Schedule 1, Page 1 of 1
Summary of Results: BTM, Unit of Throughput vs. TSM

Year	Revenue Requirements ($1,000's) BTM (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM (d)
1978	2,444,637	2,400,643	10.73	10.77
1979	2,296,371	2,886,401	7.68	9.68
1980	2,363,712	3,413,363	5.89	8.53
1981	2,310,987	3,403,646	5.22	7.72
1982	2,199,125	3,547,635	4.39	7.08
1983	1,811,459	3,523,988	3.45	6.72
1984	1,863,617	3,406,227	3.34	6.11
1985	1,814,610	3,243,473	3.10	5.53
1986	1,800,318	3,133,991	2.90	5.05
1987	1,805,591	3,113,267	2.64	4.55
1988	1,775,789	2,912,608	2.51	4.12
1989	1,662,965	2,673,157	2.36	3.80
1990	1,551,078	2,461,803	2.27	3.60
1991	1,469,476	2,293,745	2.19	3.41
1992	1,421,871	2,114,525	2.17	3.23
1993	1,342,023	1,915,317	2.14	3.05
1994	1,296,860	1,784,980	2.07	2.86
1995	1,281,614	1,716,251	1.95	2.61
1996	1,256,019	1,594,690	1.89	2.40
1997	1,232,586	1,431,950	1.90	2.21
1998	1,199,983	1,282,882	1.87	2.00
1999	1,180,917	1,310,296	1.85	2.05
2000	1,188,816	1,396,295	1.73	2.03
2001	1,178,549	1,438,140	1.70	2.07
2002	1,170,640	1,457,507	1.69	2.10
2003	1,150,709	1,469,296	1.76	2.25
2004	1,147,619	1,493,410	1.80	2.34
2005	1,148,120	1,523,552	1.82	2.42
2006	1,154,940	1,559,587	1.85	2.50
2007	1,155,703	1,550,792	2.01	2.70
2008	1,166,499	1,551,378	2.21	2.94
2009	1,191,378	1,520,381	2.73	3.49
2010	1,212,916	1,480,576	3.51	4.29
2011	1,375,353	1,629,823	4.45	5.28

PVRR Difference, 1978-1986	13,411,509 (e)
PVRR Difference, 1987-2011	7,577,304 (f)
PVRR Difference, 1978-2011	20,988,813 (g)

Notes
(a) Workpaper (RLB-8), Line 77
(b) Workpaper (RLB-8), Line 79
(c) Workpaper (RLB-8), Line 91
(d) Workpaper (RLB-8), Line 94
(e) Workpaper (RLB-8), Cell Y86
(f) Workpaper (RLB-8), Cell AX87
(g) Workpaper (RLB-8), Cell AX88

EXHIBIT APUC STAFF ___ (RLB-8), Schedule 2

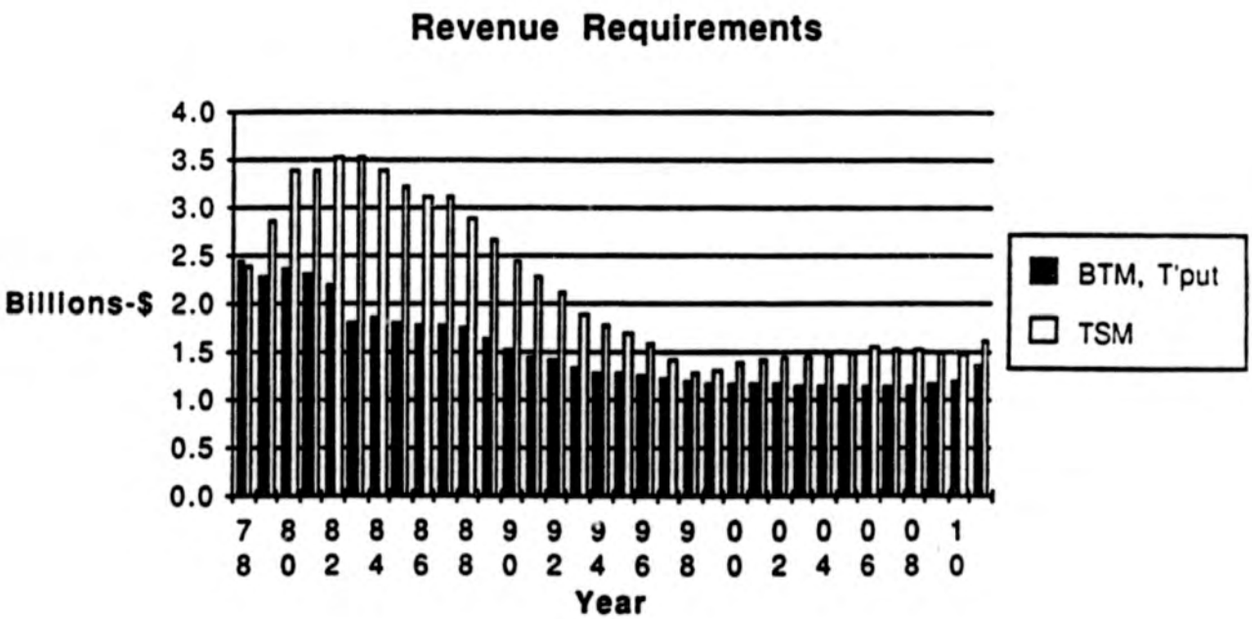


EXHIBIT APUC STAFF ___ (RLB-8), Schedule 3

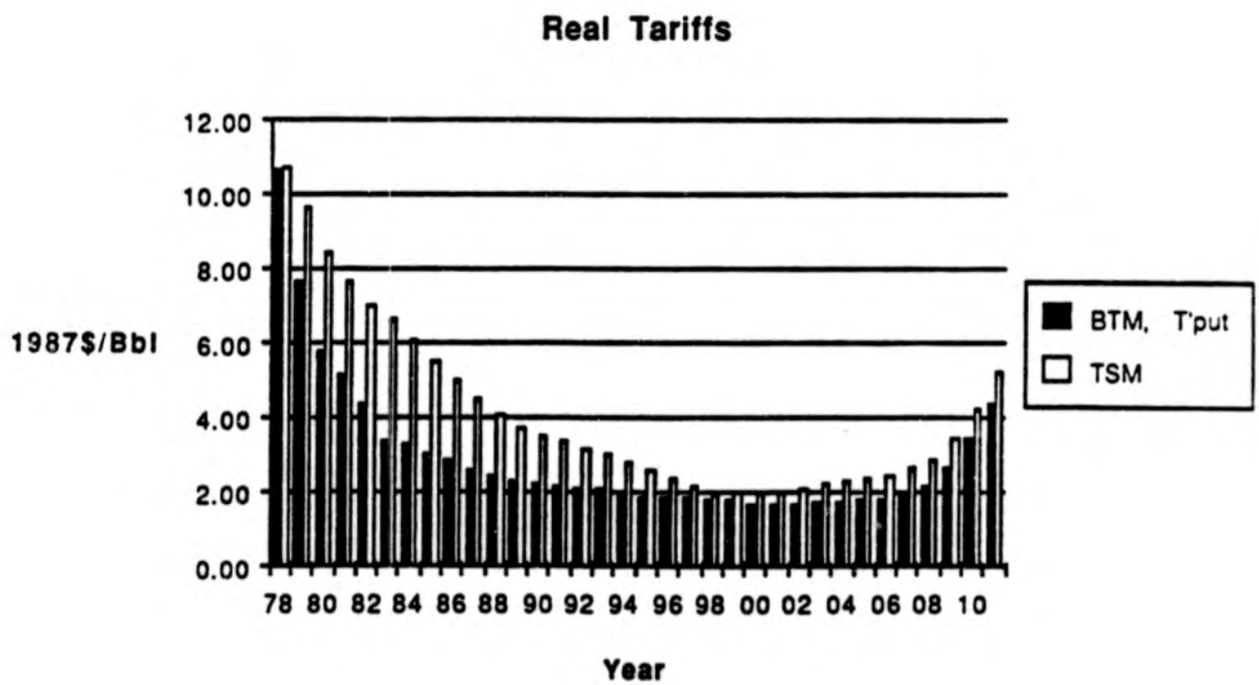


EXHIBIT APUC STAFF ___ (RLB-9)
Schedule 1, Page 1 of 1
Summary of Results: BTM-Modified* vs. TSM

Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (198 BTM-Modified (c)
1978	2,629,747	2,400,643	11.54
1979	2,442,496	2,886,401	8.17
1980	2,465,411	3,413,363	6.14
1981	2,449,779	3,403,646	5.54
1982	2,216,706	3,547,635	4.43
1983	1,811,025	3,523,988	3.45
1984	1,924,323	3,406,227	3.45
1985	1,910,548	3,243,473	3.26
1986	1,947,147	3,133,991	3.14
1987	1,969,338	3,113,267	2.88
1988	2,025,340	2,912,608	2.86
1989	1,983,802	2,673,157	2.82
1990	1,946,843	2,461,803	2.85
1991	1,926,298	2,293,745	2.87
1992	1,966,666	2,114,525	3.00
1993	1,937,428	1,915,317	3.09
1994	1,915,270	1,784,980	3.06
1995	1,893,782	1,716,251	2.89
1996	1,875,115	1,594,690	2.82
1997	1,893,307	1,431,950	2.92
1998	1,865,614	1,282,882	2.91
1999	1,844,095	1,310,296	2.89
2000	1,825,579	1,396,295	2.66
2001	1,803,900	1,438,140	2.60
2002	1,783,870	1,457,507	2.57
2003	1,760,146	1,469,296	2.69
2004	1,739,044	1,493,410	2.72
2005	1,714,590	1,523,552	2.72
2006	1,691,999	1,559,587	2.71
2007	1,670,199	1,550,792	2.91
2008	1,650,745	1,551,378	3.13
2009	1,649,578	1,520,381	3.78
2010	1,636,714	1,480,576	4.74
2011	1,746,602	1,629,823	5.66

PVRR Difference, 1978-1986	12,092,130 (e)
PVRR Difference, 1987-2011	1,240,718 (f)
PVRR Difference, 1978-2011	13,332,848 (g)

* No ADIT Deduction from Rate Base

Notes
(a) Worksheet (RLB-9), Line 77
(b) Worksheet (RLB-9), Line 79
(c) Worksheet (RLB-9), Line 91
(d) Worksheet (RLB-9), Line 94
(e) Worksheet (RLB-9), Cell Y86
(f) Worksheet (RLB-9), Cell AX87
(g) Worksheet (RLB-9), Cell AX88

EXHIBIT APUC STAFF ___ (RLB-9), Schedule 2

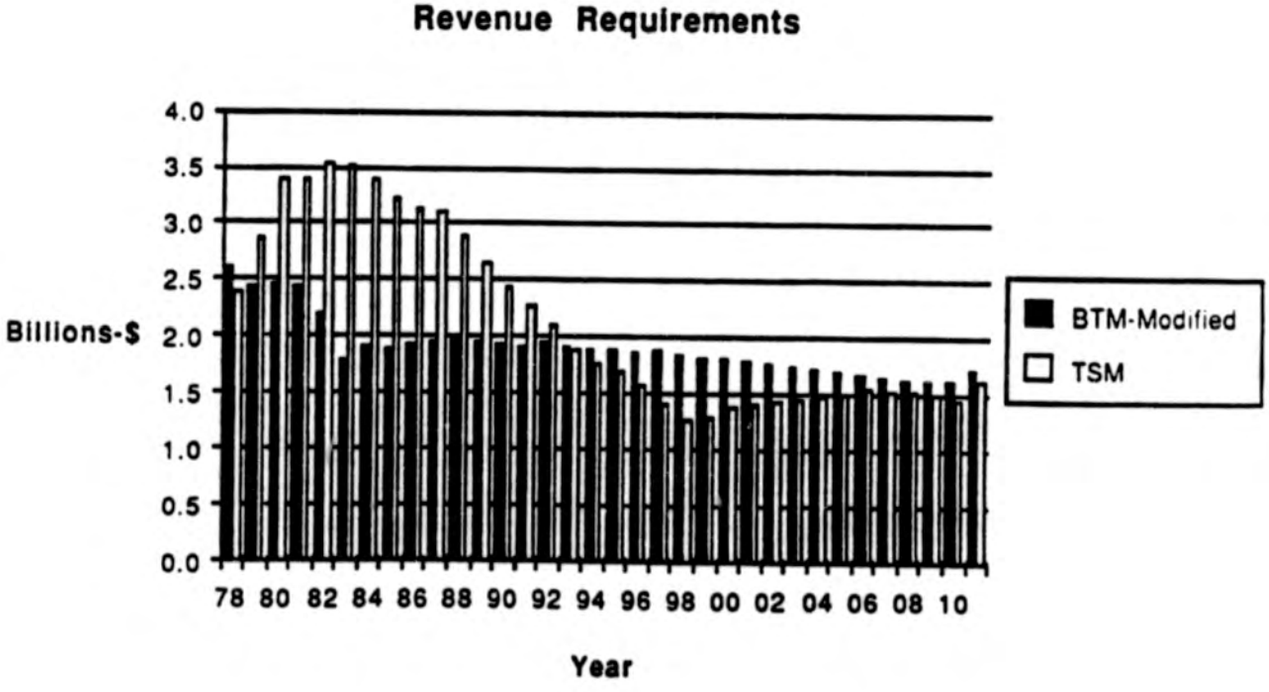


EXHIBIT APUC STAFF ___ (RLB-9), Schedule 3

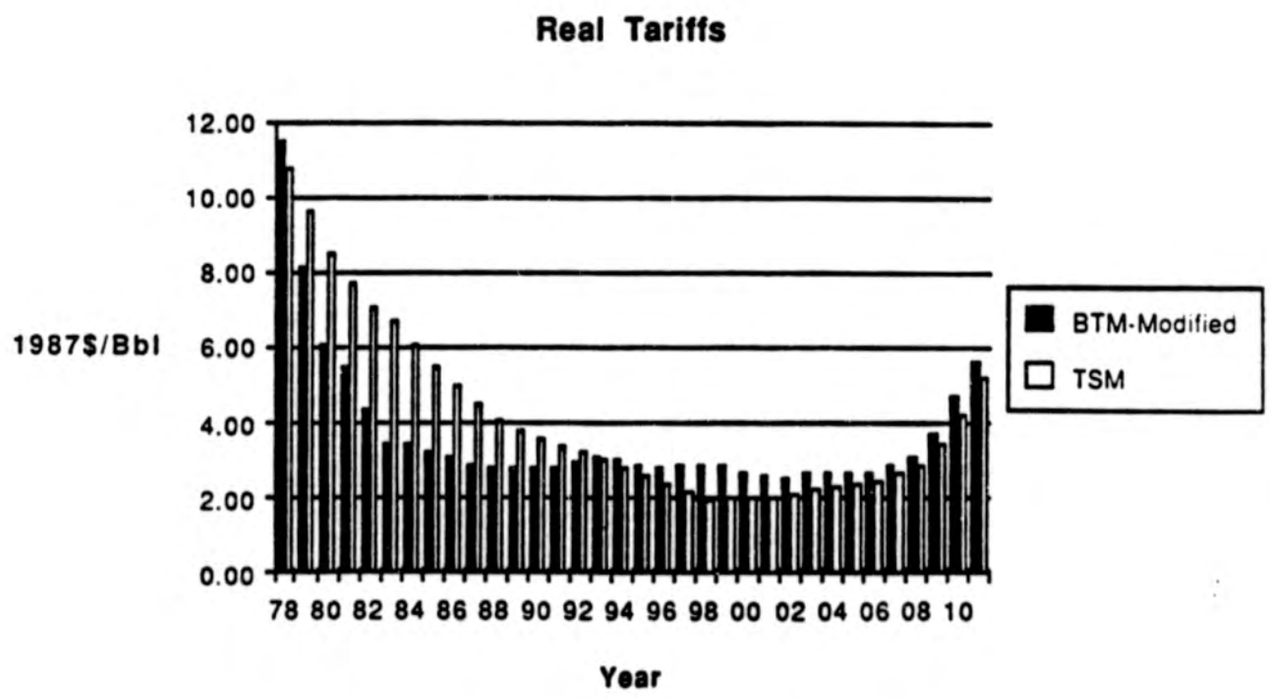


EXHIBIT APUC STAFF ___ (RLB-10)
Schedule 1, Page 1 of 2
Summary of Results: BTM vs. TSM-Modified*

Year	Revenue Requirements ($1,000's) BTM (a)	TSM-Modified (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM-Modified (d)
1978	2,554,162	2,400,643	11.21	10.77
1979	2,331,280	2,886,401	7.80	9.68
1980	2,319,749	3,413,363	5.78	8.53
1981	2,270,310	3,403,646	5.13	7.72
1982	2,002,664	3,229,457	4.00	6.45
1983	1,624,126	3,233,198	3.09	6.16
1984	1,680,438	3,151,066	3.02	5.65
1985	1,641,017	3,021,347	2.80	5.15
1986	1,638,568	2,943,262	2.64	4.74
1987	1,633,642	2,952,448	2.39	4.32
1988	1,643,464	2,780,539	2.32	3.93
1989	1,586,264	2,562,081	2.25	3.64
1990	1,537,595	2,356,772	2.25	3.44
1991	1,508,271	2,197,136	2.24	3.27
1992	1,523,785	2,025,062	2.33	3.09
1993	1,498,484	1,834,163	2.39	2.92
1994	1,485,934	1,708,652	2.38	2.73
1995	1,481,041	1,640,891	2.26	2.50
1996	1,478,640	1,523,118	2.22	2.29
1997	1,498,720	1,366,796	2.31	2.11
1998	1,490,769	1,223,034	2.32	1.91
1999	1,490,177	1,255,321	2.33	1.97
2000	1,493,018	1,342,148	2.17	1.96
2001	1,493,877	1,388,440	2.16	2.00
2002	1,496,951	1,430,799	2.16	2.07
2003	1,497,231	1,431,797	2.29	2.19
2004	1,500,836	1,461,356	2.35	2.29
2005	1,502,007	1,496,450	2.38	2.38
2006	1,505,675	1,537,239	2.41	2.47
2007	1,510,971	1,534,345	2.63	2.67
2008	1,519,451	1,540,021	2.88	2.92
2009	1,547,041	1,514,128	3.55	3.47
2010	1,563,661	1,478,101	4.53	4.28
2011	1,703,849	1,629,823	5.52	5.28

PVRR Difference, 1978-1986	12,800,784 (e)
PVRR Difference, 1987-2011	4,673,046 (f)
PVRR Difference, 1978-2011	17,473,830 (g)

* BTM Capital Structure

Notes
(a) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 77
(b) Workpaper (RLB-10)
(c) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 91
(d) Workpaper (RLB-10)
(e) Workpaper (RLB-10)
(f) Workpaper (RLB-10)
(g) Workpaper (RLB-10)

EXHIBIT APUC STAFF ___ (RLB-10), Schedule 2

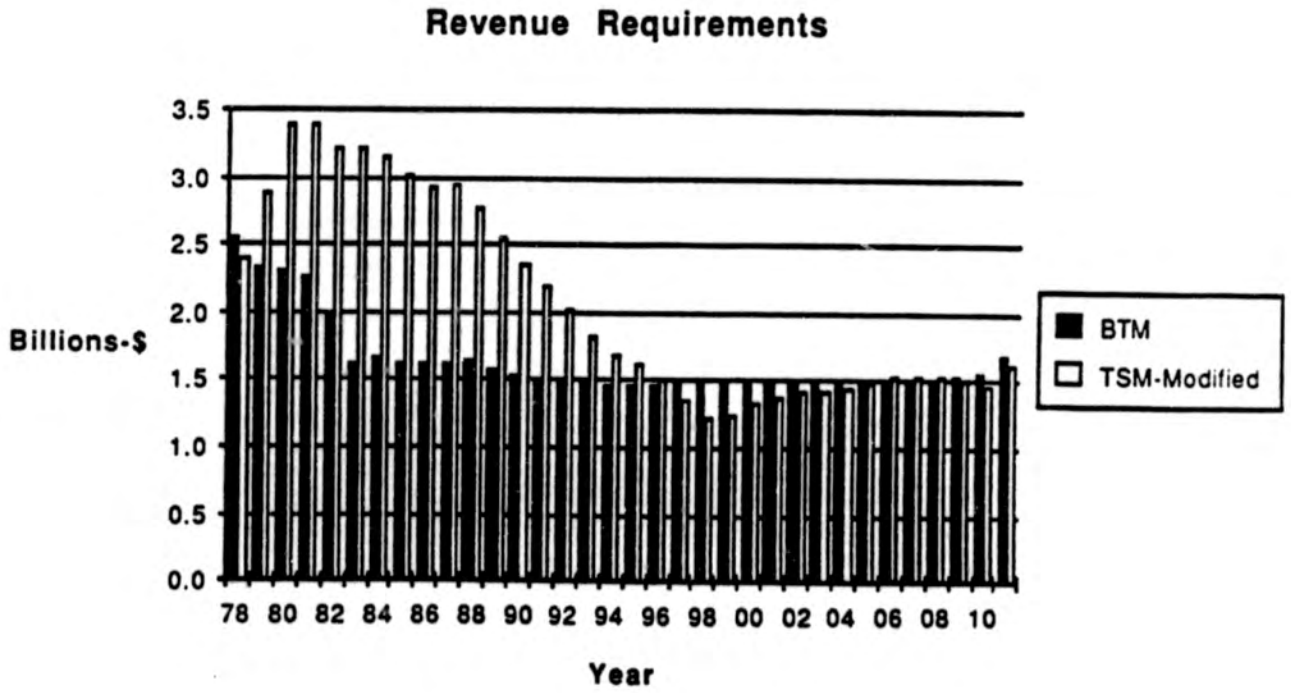


EXHIBIT APUC STAFF ___ (RLB-10), Schedule 3

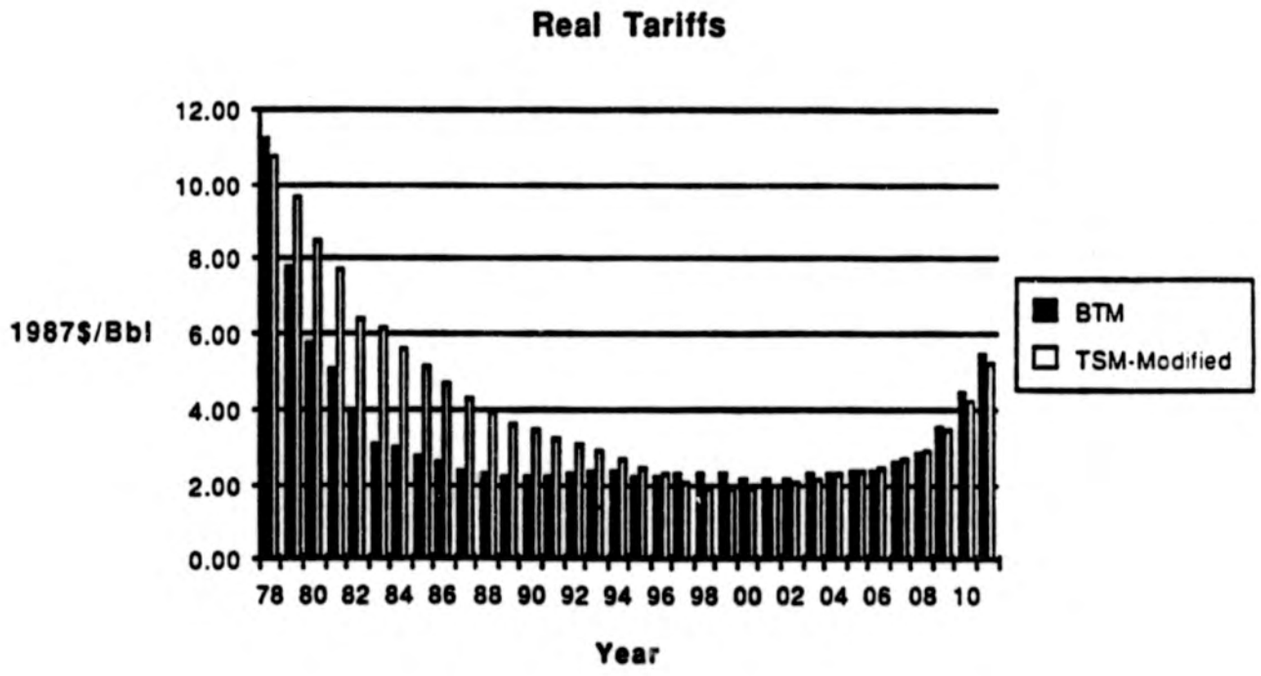


EXHIBIT APUC STAFF ___ (RLB-11)
Double Return on New Rate Base

Assume $100,000,000 addition to New Rate Base in 1995,
associated with increased throughput of 25,000,000 bbls/yr.

Then; in 1996

Incremental New Rate Base	100,000,000	
Rate of Return	6.4%	
Return		6,400,000
CPI (1996)	594.7	
CPI (1983)	298.4	
Inflation Adjustment	1.993	
Inflated $/Bbl Margin	0.70	
Incremental Throughput	25,000,000	
Return		17,438,422
Total Return		23,838,422
Return on Rate Base		23.84%

EXHIBIT APUC STAFF ___ (RLB-12)
Schedule 1, Page 1 of 2
Summary of Results: BTM vs. TSM-Modified*

Year	Revenue Requirements ($1,000's) BTM (a)	TSM-Modified (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM-Modified (d)
1978	2,554,162	2,400,643	11.21	10.77
1979	2,331,280	2,886,401	7.80	9.68
1980	2,319,749	3,413,363	5.78	8.53
1981	2,270,310	3,403,646	5.13	7.72
1982	2,002,664	3,547,635	4.00	7.08
1983	1,624,126	3,523,988	3.09	6.72
1984	1,680,438	3,406,227	3.02	6.11
1985	1,641,017	3,243,473	2.80	5.53
1986	1,638,568	3,133,991	2.64	5.05
1987	1,633,642	3,113,267	2.39	4.55
1988	1,643,464	2,912,608	2.32	4.12
1989	1,586,264	2,652,060	2.25	3.77
1990	1,537,595	2,364,263	2.25	3.46
1991	1,508,271	2,124,529	2.24	3.16
1992	1,523,785	1,887,680	2.33	2.88
1993	1,498,484	1,650,575	2.39	2.63
1994	1,485,934	1,473,038	2.38	2.36
1995	1,481,041	1,339,385	2.26	2.04
1996	1,478,640	1,179,088	2.22	1.77
1997	1,498,720	1,005,949	2.31	1.55
1998	1,490,769	849,153	2.32	1.32
1999	1,490,177	875,595	2.33	1.37
2000	1,493,018	918,910	2.17	1.34
2001	1,493,877	950,068	2.16	1.37
2002	1,496,951	981,695	2.16	1.42
2003	1,497,231	1,000,608	2.29	1.53
2004	1,500,836	1,030,329	2.35	1.61
2005	1,502,007	1,060,399	2.38	1.68
2006	1,505,675	1,094,068	2.41	1.75
2007	1,510,971	1,117,487	2.63	1.95
2008	1,519,451	1,146,795	2.88	2.17
2009	1,547,041	1,182,329	3.55	2.71
2010	1,563,661	1,209,091	4.53	3.50
2011	1,703,849	1,381,758	5.52	4.47

PVRR Difference, 1978-1986	14,403,687 (e)
PVRR Difference, 1987-2011	2,140,296 (f)
PVRR Difference, 1978-2011	16,543,983 (g)

* 6.4 Percent Return, 1989-2011

Notes
(a) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 77
(b) Workpaper (RLB-12)
(c) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 91
(d) Workpaper (RLB-12)
(e) Workpaper (RLB-12)
(f) Workpaper (RLB-12)
(g) Workpaper (RLB-12)

EXHIBIT APUC STAFF ___ (RLB-12), Schedule 2

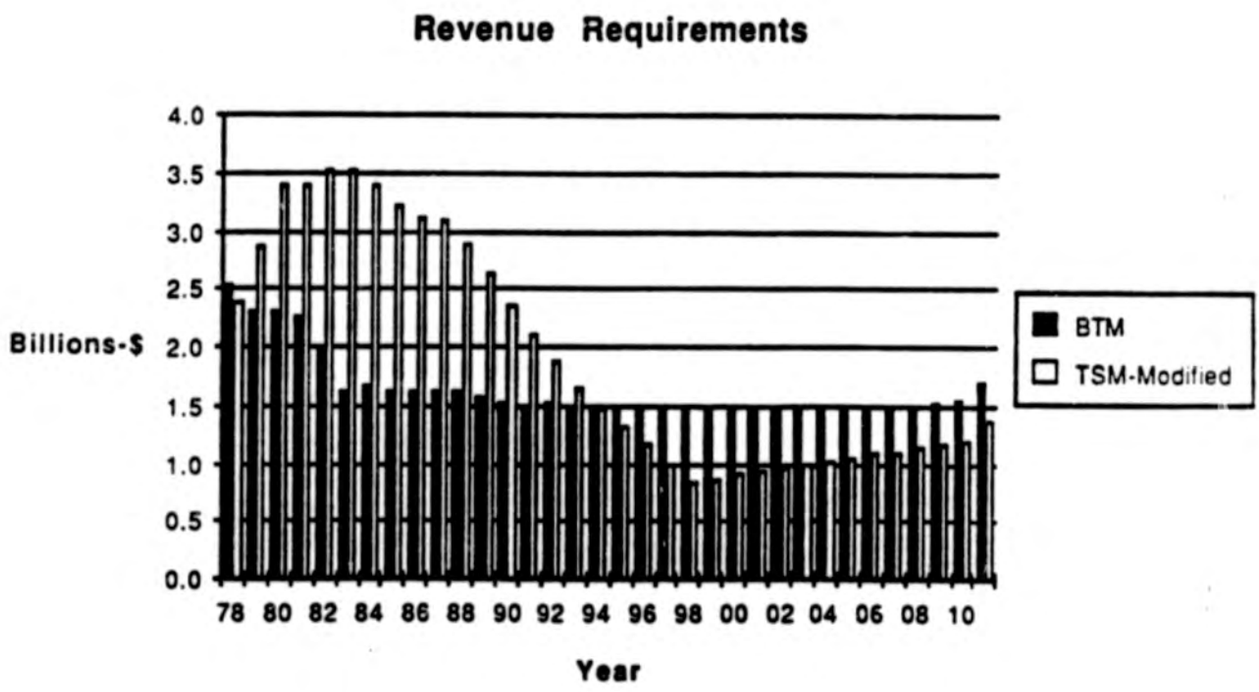


EXHIBIT APUC STAFF ___ (RLB-12), Schedule 3

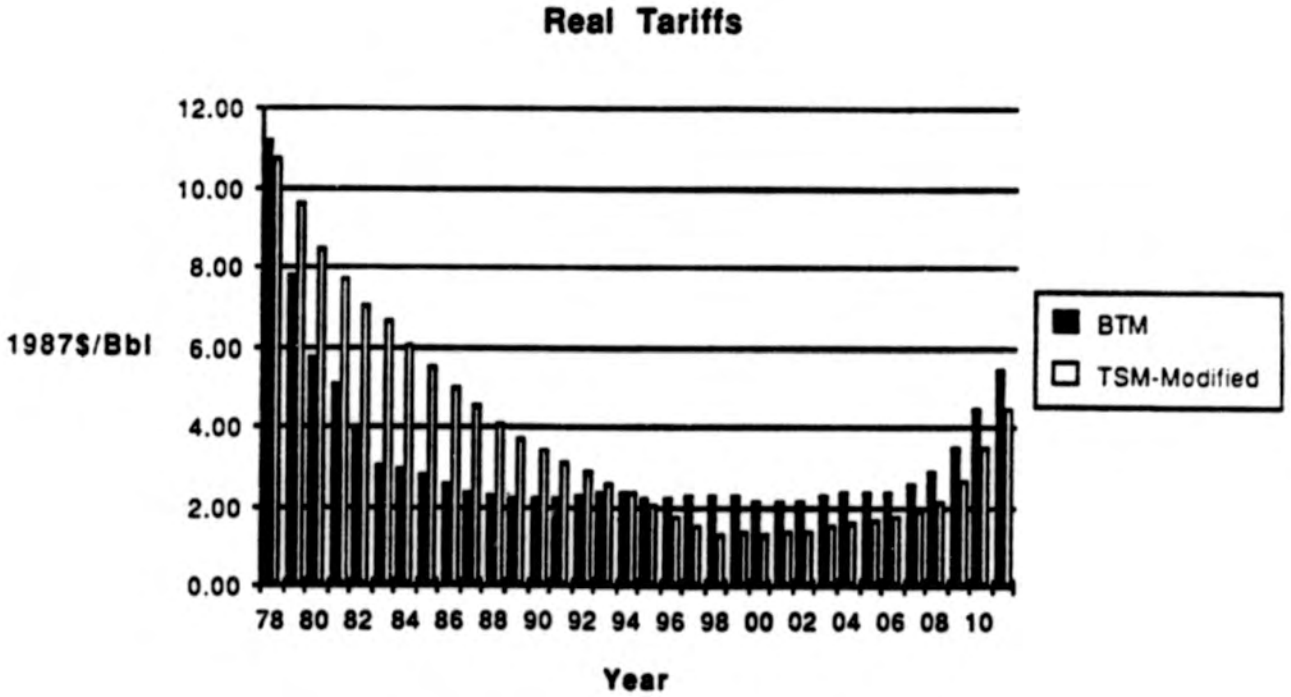


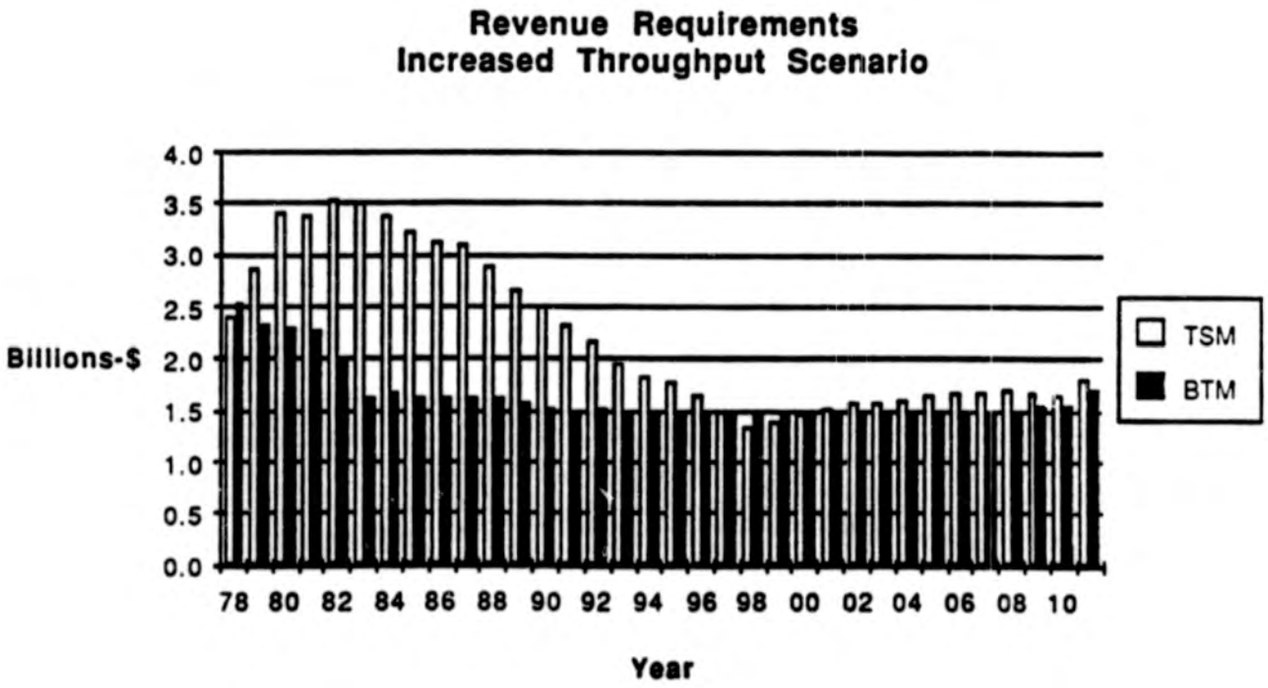
EXHIBIT APUC STAFF ___ (RLB-13)
Schedule 1, Page 1 of 1
Summary of Results: BTM vs. TSM (Increased Throughput Scenario)

Year	Revenue Requirements ($1,000's) BTM (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM (d)
1978	2,554,162	2,400,643	11.21	10.77
1979	2,331,280	2,886,401	7.80	9.68
1980	2,319,749	3,413,363	5.78	8.53
1981	2,270,310	3,403,646	5.13	7.72
1982	2,002,664	3,547,635	4.00	7.08
1983	1,624,126	3,523,988	3.09	6.72
1984	1,680,438	3,406,227	3.02	6.11
1985	1,641,017	3,243,473	2.80	5.53
1986	1,638,568	3,133,991	2.64	5.05
1987	1,633,642	3,113,267	2.39	4.55
1988	1,643,464	2,912,608	2.32	4.12
1989	1,586,264	2,673,157	2.25	3.80
1990	1,537,595	2,511,814	2.06	3.37
1991	1,508,271	2,346,512	2.05	3.18
1992	1,523,785	2,170,565	2.11	3.00
1993	1,498,484	1,974,834	2.14	2.82
1994	1,485,934	1,848,188	2.11	2.63
1995	1,481,041	1,783,367	2.00	2.41
1996	1,478,640	1,665,978	1.96	2.21
1997	1,498,720	1,508,081	2.02	2.03
1998	1,490,769	1,364,191	2.01	1.84
1999	1,490,177	1,397,131	2.00	1.87
2000	1,493,018	1,489,040	1.87	1.86
2001	1,493,877	1,537,190	1.83	1.89
2002	1,496,951	1,581,294	1.82	1.92
2003	1,497,231	1,582,275	1.89	2.00
2004	1,500,836	1,614,073	1.91	2.05
2005	1,502,007	1,652,414	1.91	2.10
2006	1,505,675	1,697,212	1.90	2.14
2007	1,510,971	1,697,779	2.00	2.25
2008	1,519,451	1,708,362	2.11	2.37
2009	1,547,041	1,688,033	2.41	2.63
2010	1,563,661	1,659,628	2.77	2.94
2011	1,703,849	1,821,055	3.13	3.35

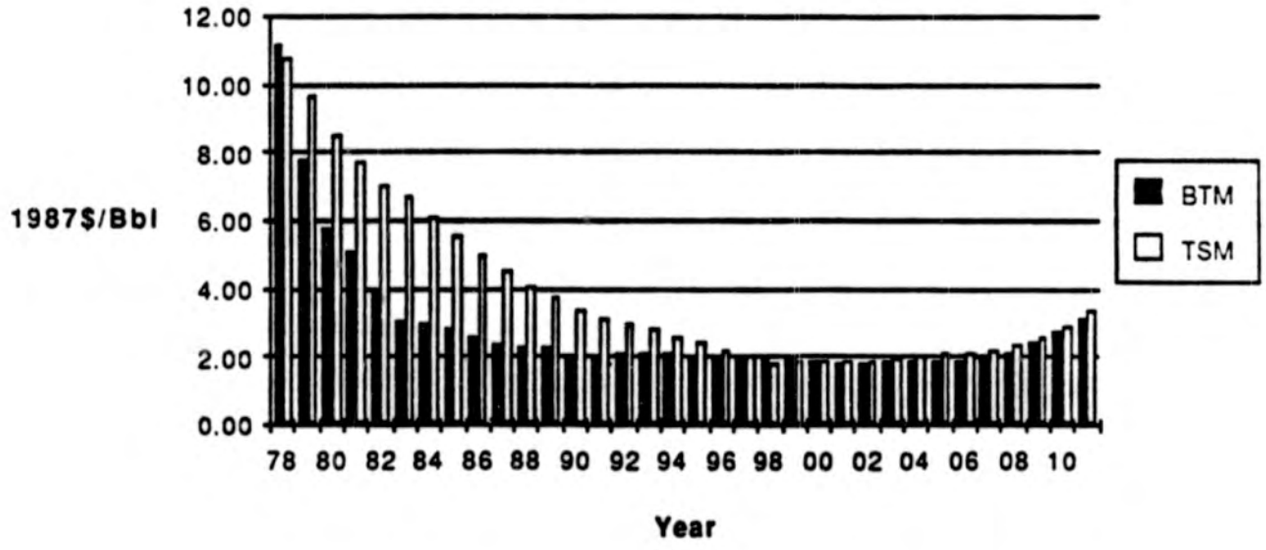
PVRR Difference, 1978-1986	14,403,697 (e)
PVRR Difference, 1987-2011	6,553,558 (f)
PVRR Difference, 1978-2011	20,957,255 (g)

Notes
(a) Workpapers (RLB-13), Line 77
(b) Workpapers (RLB-13), Line 79
(c) Workpapers (RLB-13), Line 91
(d) Workpapers (RLB-13), Line 94
(e) Workpapers (RLB-13), Cell Y86
(f) Workpapers (RLB-13), Cell AX87
(g) Workpapers (RLB-13), Cell AX88

EXHIBIT APUC STAFF ___ (RLB-13), Schedule 2



Real Tariffs
Increased Throughput Scenario



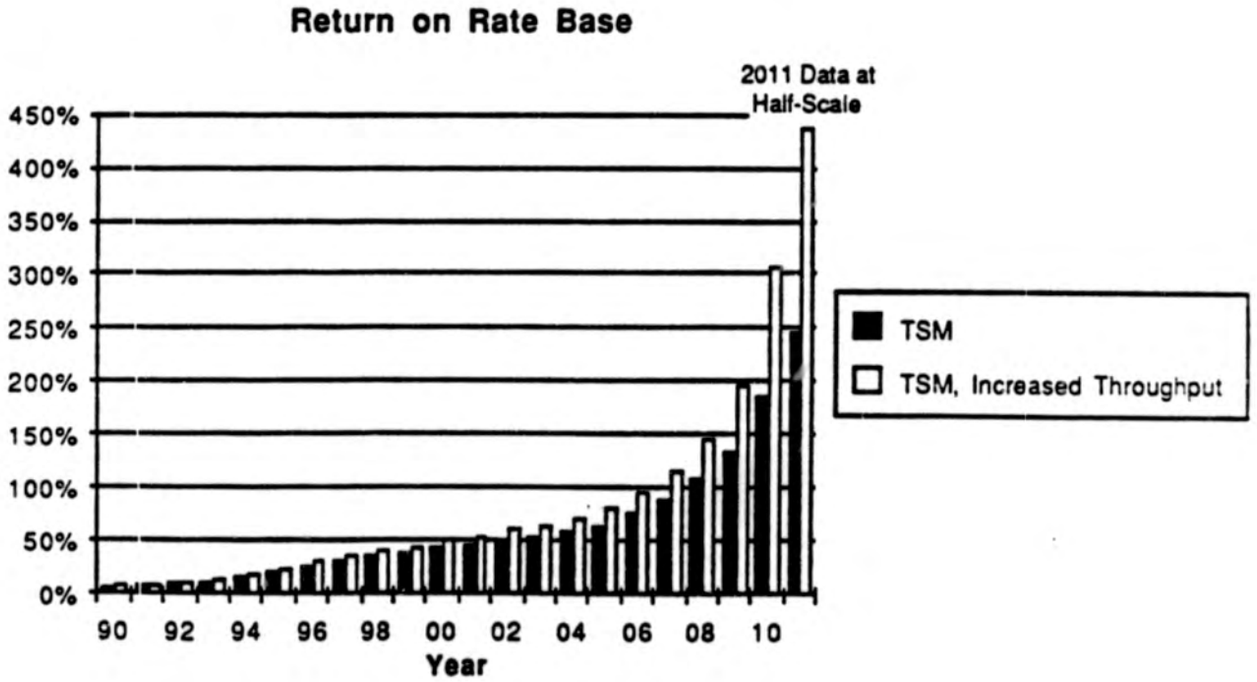

Return on Rate Base
2011 Data at Half-Scale
450%
400%
350%
300%
250%
200%
150%
100%
50%
0%
90
92
94
96
98
00
02
04
06
08
10
Year
TSM
TSM, Increased Throughput

EXHIBIT APUC STAFF ___ (RLB-14)
Schedule 1, Page 1 of 1
Summary of Results: BTM vs. TSM-Modified*

Year	Revenue Requirements ($1,000's) BTM (a)	TSM-Modified (b)	Real Tariffs (1987$/Bbl) BTM (c)	TSM-Modified (d)
1978	2,554,162	2,400,643	11.21	10.77
1979	2,331,280	2,886,401	7.80	9.68
1980	2,319,749	3,413,363	5.78	8.53
1981	2,270,310	3,403,646	5.13	7.72
1982	2,002,664	3,229,457	4.00	6.45
1983	1,624,126	3,233,198	3.09	6.16
1984	1,680,438	3,151,066	3.02	5.65
1985	1,641,017	3,021,347	2.80	5.15
1986	1,638,568	2,943,262	2.64	4.74
1987	1,633,642	2,952,448	2.39	4.32
1988	1,643,464	2,780,539	2.32	3.93
1989	1,586,264	2,545,072	2.25	3.62
1990	1,537,595	2,279,270	2.25	3.33
1991	1,508,271	2,057,724	2.24	3.06
1992	1,523,785	1,836,173	2.33	2.80
1993	1,498,484	1,611,385	2.39	2.57
1994	1,485,934	1,433,410	2.38	2.29
1995	1,481,041	1,317,125	2.26	2.01
1996	1,478,640	1,162,414	2.22	1.75
1997	1,498,720	993,315	2 31	1.53
1998	1,490,769	838,958	2.32	1.31
1999	1,490,177	866,557	2.33	1.36
2000	1,493,018	911,007	2.17	1.33
2001	1,493,877	943,348	2.16	1.36
2002	1,496,951	976,125	2.16	1.41
2003	1,497,231	996,128	2.29	1.52
2004	1,500,836	1,026,821	2.35	1.61
2005	1,502,007	1,057,769	2.38	1.68
2006	1,505,675	1,092,217	2.41	1.75
2007	1,510,971	1,116,302	2.63	1.95
2008	1,519,451	1,146,127	2.88	2.17
2009	1,547,041	1,182,030	3.55	2.71
2010	1,563,661	1,209,006	4.53	3.50
2011	1,703,849	1,381,758	5.52	4.47

PVRR Difference, 1978-1986	12,800,784 (e)
PVRR Difference, 1987-2011	1,512,725 (f)
PVRR Difference, 1978-2011	14,313,509 (g)

* BTM Capital Structure
6.4 Percent Return, 1989-2011

Notes
(a) EXHIBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 77
(b) Workpaper (RLB-14)
(c) EXHiBIT APUC STAFF ___ (RLB-3), Schedule 2, Line 91
(d) Workpaper (RLB-14)
(e) Workpaper (RLB-14)
(f) Workpaper (RLB-14)
(g) Workpaper (RLB-14)

EXHIBIT APUC STAFF ___ (RLB-14), Schedule 2

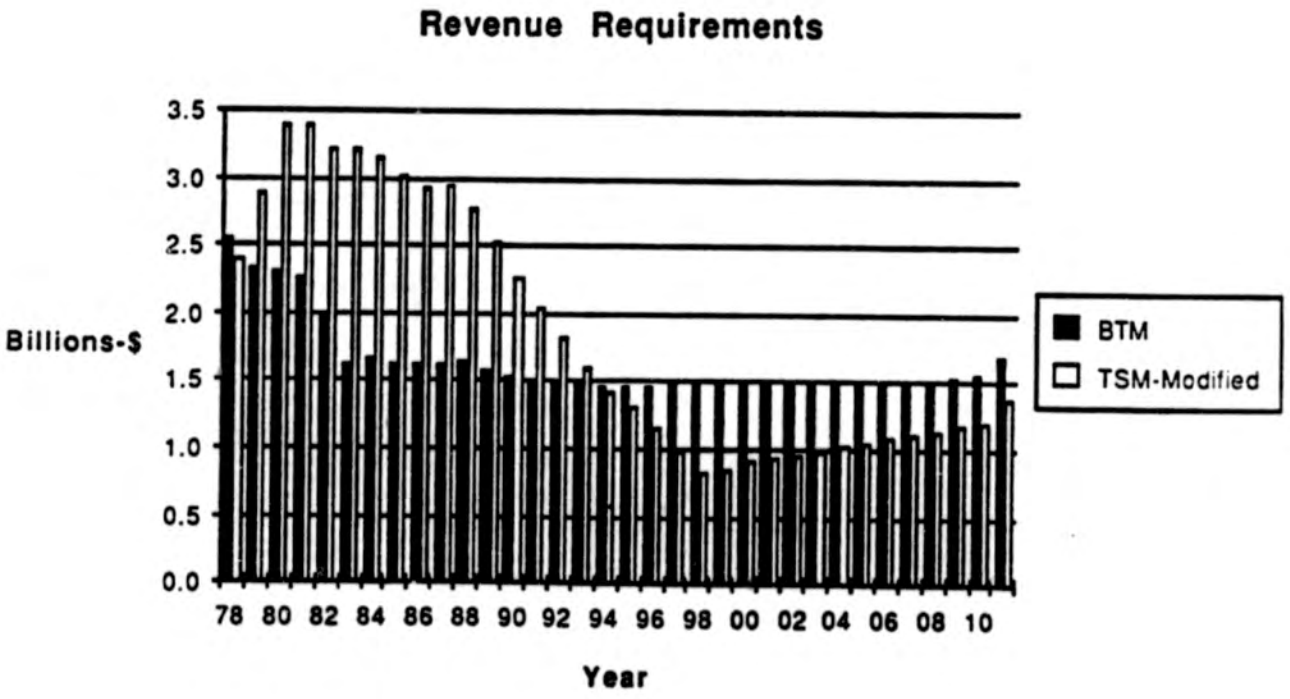


EXHIBIT APUC STAFF ___ (RLB-14), Schedule 3

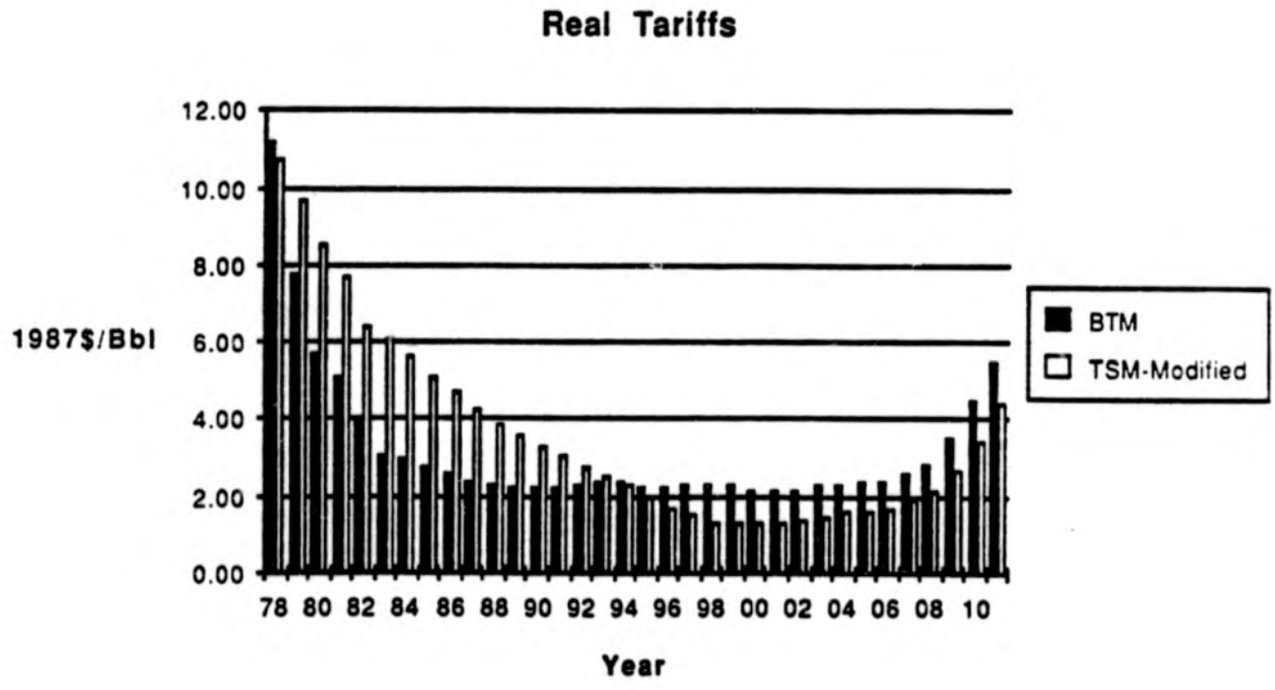


EXHIBIT APUC STAFF ___ (RLB-1S)
Schedule 1, Page 1 of 1
Excess Earnings on DR&R Due to Tax Code Revision

1,795 350

Year	Federal Tax Rate (Percent) (a)	State Tax Rate (Percent) (b)	Inflation Factor (Decimal)	GNP Deflator (Index)	Expenditure Fraction (Percent)	Actual Expenditures (Millions $)	DR&R Allowance (Millions $)	Moody's Aa Bond Yield (Percent)	Imputed Interest (Millions $)	State Taxable Income (Millions $)	State Tax (Millions $)	Federal Taxable Income (Millions $)	Federal Tax (Millions $)	After-Tax Accumulated Balance (Millions $)
1977	48.0%	9.4%		140.1		872.100	23.536		0.000	23.536	2.212	21.323	10.235	11.088
1978	48.0%	9.4%					95.968	8.90%	0.987	0.987	0.093	86.862	46.494	61.456
1979	46.0%	9.4%					113.143	9.94%	6.109	6.109	0.574	118.677	54.592	125.542
1980	46.0%	9.4%					127.183	12.50%	15.693	15.693	1.475	141.400	65.044	201.898
1981	46.0%	11.0%					120.225	14.75%	29.780	29.780	3.276	148.729	87.495	281.132
1982	46.0%	9.4%					121.149	14.42%	40.548	161.697	15.199	146.497	87.389	360.241
1983	46.0%	9.4%					115.745	12.43%	44.774	160.519	15.089	145.430	86.898	438.773
1984	46.0%	9.4%		232.4			110.377	13.51%	59.269	169.646	15.947	153.700	70.702	521.771
1985	46.0%	9.4%	1.05	244.0			104.048	12.0%	62.612	166.660	15.666	150.994	69.457	803.308
1986	46.0%	9.4%	1.06	258.7			97.766	12.0%	72.397	170.163	15.995	154.168	70.917	686.558
1987	40.0%	9.4%	1.06	274.2			95.023	12.0%	82.387	177.410	16.677	160.734	64.294	782.999
1988	34.0%	9.4%	1.06	290.6			85.402	12.0%	93.960	179.361	16.860	162.501	55.251	890.250
1989	34.0%	9.4%	1.06	308.1			73.214	12.0%	106.830	180.044	16.924	163.120	55.481	997.909
1990	34.0%	9.4%	1.06	326.6			60.717	12.0%	119.749	180.466	16.964	163.502	55.591	1,105.820
1991	34.0%	9.4%	1.06	346.1			50.254	12.0%	132.698	182.953	17.198	165.755	56.357	1,215.219
1992	34.0%	9.4%	1.06	366.9			40.334	12.0%	145.828	186.160	17.499	168.661	57.345	1,326.535
1993	34.0%	9.4%	1.06	388.9			31.188	12.0%	159.184	190.372	17.895	172.477	58.642	1,440.370
1994	34.0%	9.4%	1.06	412.3			24.388	12.0%	172.844	197.231	18.540	178.691	60.755	1,558.308
1995	34.0%	9.4%	1.06	437.0			19.288	12.0%	186.997	206.285	19.391	186.894	63.544	1,681.856
1996	34.0%	9.4%	1.06	463.2			13.802	12.0%	201.799	215.601	20.266	195.334	66.414	1,810.578
1997	34.0%	9.4%	1.06	491.0			8.405	12.0%	217.269	225.674	21.213	204.461	69.517	1,945.521
1998	34.0%	9.4%	1.06	520.5			3.893	12.0%	233.462	237.355	22.311	215.044	73.115	2,087.450
1999	34.0%	9.4%	1.06	551.7			3.628	12.0%	250.494	254.121	23.887	230.234	78.280	2,239.404
2000	34.0%	9.4%	1.06	584.8			3.650	12.0%	268.729	272.378	25.604	246.775	83.903	2,402.275
2001	34.0%	9.4%	1.06	619.9			3.451	12.0%	288.273	291.724	27.422	264.302	89.863	2,576.715
2002	34.0%	9.4%	1.06	657.1			3.229	12.0%	309.208	312.435	29.369	283.066	96.243	2,763.538
2003	34.0%	9.4%	1.06	696.5			2.853	12.0%	331.625	334.478	31.441	303.037	103.033	2,963.543
2004	34.0%	9.4%	1.06	738.3			2.610	12.0%	355.625	358.235	33.674	324.561	110.351	3,177.753
2005	34.0%	9.4%	1.06	782.6			2.411	12.0%	381.330	383.741	36.072	347.670	118.208	3,407.215
2006	34.0%	9.4%	1.06	829.6			2.234	12.0%	408.868	411.100	38.643	372.456	126.635	3,653.036
2007	34.0%	9.4%	1.06	879.3			1.924	12.0%	438.364	440.288	41.387	398.902	135.627	3,916.311
2008	34.0%	9.4%	1.06	932.1			1.659	12.0%	469.957	471.616	44.332	427.284	145.277	4,198.319
2009	34.0%	9.4%	1.06	988.0			1.283	12.0%	503.798	505.081	47.478	457.604	155.585	4,500.337
2010	34.0%	9.4%	1.06	1047.3	2.50%	162.982	0.951	12.0%	540.040	540.992	50.853	327.156	111.233	4,716.260
2011	34.0%	9.4%	1.06	1110.1	5.00%	345.522	0.798	12.0%	565.951	566.748	53.274	187.951	57.103	4,627.108
2012	34.0%		1.06	1176.7	50.00%	3,662.536		12.0%	579.253	579.253	0.000	-3,083.283	-1,048.316	2,792.141
2013	34.0%		1.06	1247.4	30.00%	2,329.373		12.0%	335.057	335.057	0.000	-1,994.316	-678.068	1,475.692
2014	34.0%		1.06	1322.2	10.00%	823.045		12.0%	177.107	177.107	0.000	-645.938	-219.619	1,049.573
2015	34.0%		1.06	1401.5	2.50%	218.107		12.0%	125.949	125.949	0.000	-92.158	-31.334	888.749

NOTES
(a) EXHIBIT ALASKA ___ (TOH-2), Column 1, Adjusted for 1986 Tax Code Revisions
(b) EXHIBIT ALASKA ___ (TOH-2), Column 2, (1981 Corrected)

EXHIBIT APUC STAFF ___ (RLB-15)
Schedule 2, Page 1 of 1
Excess Earnings on DR&R under TSM

Year	Federal Tax Rate (Percent) (a)	State Tax Rate (Percent) (b)	Composite Tax Rate (Percent)	Expenditure Fraction (Percent) (c)	Actual Expenditures (Millions $) (d)	DR&R Allowance (Millions $) (e)	Carriers' Parents' Returns (Percent) (f)	Pre-Tax Returns (Percent)	Imputed Pre-Tax Earnings (Millions $)	State Taxable Income (Millions $)	State Tax (Millions $)	Federal Taxable Income (Millions $)	Federal Tax (Millions $)	After-Tax Accumulated Balance (Millions $)
1977	46.0%	9.4%	52.888%		872.100	23.536	13.04%	27.68%	0.000	23.536	2.212	21.323	10.235	11.088
1978	46.0%	9.4%	52.888%			95.968	17.14%	36.38%	4.034	95.968	9.021	90.981	43.671	58.398
1979	46.0%	9.4%	51.076%			113.143	32.13%	65.67%	38.352	113.143	10.635	140.859	64.795	134.462
1980	46.0%	9.4%	51.076%			127.183	35.86%	73.30%	98.557	127.183	11.955	213.784	98.341	249.906
1981	46.0%	11.0%	51.940%			120.225	24.50%	50.98%	127.397	120.225	13.225	234.397	107.823	376.480
1982	46.0%	9.4%	51.076%			121.149	18.64%	38.10%	143.439	264.587	24.871	239.716	110.269	605.927
1983	46.0%	9.4%	51.076%			115.745	15.72%	32.13%	162.562	278.307	26.161	252.146	115.987	842.085
1984	46.0%	9.4%	51.076%			110.377	15.39%	31.46%	201.981	312.358	29.362	282.996	130.178	794.903
1985	46.0%	9.4%	51.076%			104.048	9.47%	19.36%	153.866	257.914	24.244	233.670	107.488	821.085
1986	46.0%	9.4%	51.076%			97.768	13.53%	27.65%	254.665	352.431	33.128	319.302	146.879	1,093.508
1987	40.0%	9.4%	45.640%			95.023	13.53%	24.88%	272.103	367.127	34.510	332.617	133.047	1,293.078
1988	34.0%	9.4%	40.204%			85.402	13.53%	22.62%	292.512	377.914	35.524	342.390	116.412	1,519.056
1989	34.0%	9.4%	40.204%			73.214	13.53%	22.62%	343.631	416.845	39.183	377.662	128.405	1,768.312
1990	34.0%	9.4%	40.204%			60.717	13.53%	22.62%	400.016	460.733	43.309	417.424	141.924	2,043.812
1991	34.0%	9.4%	40.204%			50.254	13.53%	22.62%	462.338	512.593	48.184	464.409	157.899	2,350.322
1992	34.0%	9.4%	40.204%			40.334	13.53%	22.62%	531.675	572.009	53.769	518.240	176.202	2,692.360
1993	34.0%	9.4%	40.204%			31.188	13.53%	22.62%	609.048	640.236	60.182	580.054	197.218	3,075.196
1994	34.0%	9.4%	40.204%			24.386	13.53%	22.62%	695.651	720.037	67.684	652.354	221.800	3,505.750
1995	34.0%	9.4%	40.204%			19.288	13.53%	22.62%	793.048	812.336	76.360	735.976	250.232	3,991.494
1996	34.0%	9.4%	40.204%			13.802	13.53%	22.62%	902.930	916.732	86.173	830.560	282.390	4,539.883
1997	34.0%	9.4%	40.204%			8.405	13.53%	22.62%	1,026.933	1,035.339	97.322	938.017	318.926	5,158.754
1998	34.0%	9.4%	40.204%			3.893	13.53%	22.62%	1,168.980	1,170.873	110.062	1,060.811	360.676	5,858.890
1999	34.0%	9.4%	40.204%			3.628	13.53%	22.62%	1,325.360	1,328.988	124.925	1,204.063	409.381	6,653.571
2000	34.0%	9.4%	40.204%			3.650	13.53%	22.62%	1,505.128	1,508.778	141.826	1,366.953	464.764	7,555.760
2001	34.0%	9.4%	40.204%			3.451	13.53%	22.62%	1,709.215	1,712.666	160.991	1,551.675	527.570	8,579.866
2002	34.0%	9.4%	40.204%			3.229	13.53%	22.62%	1,940.882	1,944.111	182.748	1,761.365	598.864	9,742.367
2003	34.0%	9.4%	40.204%			2.853	13.53%	22.62%	2,203.858	2,206.709	207.431	1,999.278	679.755	11,061.891
2004	34.0%	9.4%	40.204%			2.610	13.53%	22.62%	2,502.350	2,504.960	235.466	2,269.494	771.628	12,559.758
2005	34.0%	9.4%	40.204%			2.411	13.53%	22.62%	2,841.187	2,843.598	267.298	2,576.300	875.942	14,260.114
2006	34.0%	9.4%	40.204%			2.234	13.53%	22.62%	3,225.831	3,228.065	303.438	2,924.627	994.373	16,190.368
2007	34.0%	9.4%	40.204%			1.924	13.53%	22.62%	3,662.481	3,664.405	344.454	3,319.951	1,128.783	18,381.538
2008	34.0%	9.4%	40.204%			1.659	13.53%	22.62%	4,158.153	4,159.812	391.022	3,768.790	1,281.388	20,868.937
2009	34.0%	9.4%	40.204%			1.283	13.53%	22.62%	4,720.837	4,722.120	443.879	4,278.240	1,454.602	23,692.576
2010	34.0%	9.4%	40.204%	2.50%	162.982	0.951	13.53%	22.62%	5,359.582	5,360.533	503.890	4,693.661	1,595.845	26,790.392
2011	34.0%	9.4%	40.204%	5.00%	345.522	0.796	13.53%	22.62%	6,060.350	6,061.147	569.748	5,145.876	1,749.598	30,186.671
2012	34.0%	9.4%	40.204%	50.00%	3,662.536		13.53%	22.62%	6,828.635			3,166.098	1,076.473	32,276.295
2013	34.0%	9.4%	40.204%	30.00%	2,329.373		13.53%	22.62%	7,301.336			4,971.963	1,690.467	35,557.791
2014	34.0%	9.4%	40.204%	10.00%	823.045		13.53%	22.62%	8,043.655			7,220.610	2,455.007	40,323.393
2015	34.0%	9.4%	40.204%	2.50%	218.107		13.53%	22.62%	9,121.699			8,903.592	3,027.221	46,199.764
						1.79535								x0.164
													PV (:3878)	7,576.781

NOTES
(a) EXHIBIT ALASKA ___ (TOH-2), Column 1, Adjusted for 1986 Tax Code Revisions
(b) EXHIBIT ALASKA ___ (TOH-2), Column 2, (1981 Corrected)
(c) EXHIBIT ALASKA ___ (TOH-2), Column 5
(d) EXHIBIT ALASKA ___ (TOH-2), Column 6
(e) EXHIBIT ALASKA ___ (TOH-2), Column 7
(f) Workpaper (RLB-15)

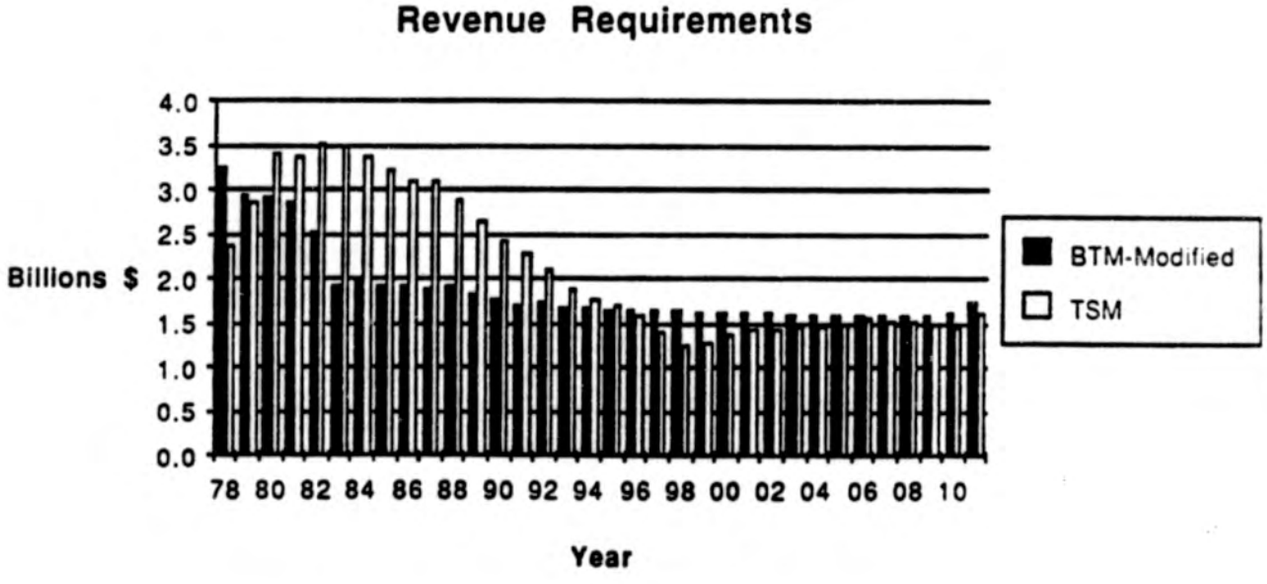
EXHIBIT APUC STAFF ___ (RLB-16)
Schedule 1, Page 1 of 1
Summary of Results: BTM, Modified* vs. TSM

Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM-Modified (c)	TSM (d)
1978	3,282,162	2,400,643	14.40	10.77
1979	2,978,718	2,886,401	9.96	9.68
1980	2,931,828	3,413,363	7.30	8.53
1981	2,863,516	3,403,646	6.47	7.72
1982	2,547,716	3,547,635	5.09	7.08
1983	1,941,464	3,523,988	3.70	6.72
1984	2,022,277	3,406,227	3.63	6.11
1985	1,950,408	3,243,473	3.33	5.53
1986	1,938,658	3,133,991	3.12	5.05
1987	1,914,069	3,113,267	2.80	4.55
1988	1,925,009	2,912,608	2.72	4.12
1989	1,846,471	2,673,157	2.62	3.80
1990	1,779,063	2,461,803	2.60	3.60
1991	1,733,648	2,293,745	2.58	3.41
1992	1,746,339	2,114,525	2.67	3.23
1993	1,706,544	1,915,317	2.72	3.05
1994	1,681,199	1,784,980	2.69	2.86
1995	1,664,918	1,716,251	2.54	2.61
1996	1,652,233	1,594,690	2.48	2.40
1997	1,668,185	1,431,950	2.57	2.21
1998	1,649,699	1,282,882	2.57	2.00
1999	1,638,809	1,310,296	2.57	2.05
2000	1,631,856	1,396,295	2.38	2.03
2001	1,623,172	1,438,140	2.34	2.07
2002	1,617,153	1,457,507	2.33	2.10
2003	1,608,687	1,469,296	2.46	2.25
2004	1,603,949	1,493,410	2.51	2.34
2005	1,597,126	1,523,552	2.53	2.42
2006	1,593,218	1,559,587	2.56	2.50
2007	1,591,309	1,550,792	2.77	2.70
2008	1,592,956	1,551,378	3.02	2.94
2009	1,614,090	1,520,381	3.70	3.49
2010	1,624,647	1,480,576	4.70	4.29
2011	1,759,151	1,629,823	5.70	5.28

PVRR Difference, 1978-1986	7,759,366	(e)
PVRR Difference, 1987-2011	3,281,335	(f)
PVRR Difference, 1978-2011	11,040,701	(g)

* No Cost of Construction Deduction from Rate Base
100% Equity

Notes
(a) Workpaper (RLB-16), Line 77
(b) Workpaper (RLB-16), Line 79
(c) Workpaper (RLB-16), Line 91
(d) Workpaper (RLB-16), Line 94
(e) Workpaper (RLB-16), Cell Y86
(f) Workpaper (RLB-16), Cell AX87
(g) Workpaper (RLB-16), Cell AX88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Billions $
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3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10
Year
BTM-Modified
TSM

EXHIBIT APUC STAFF ___ (RLB-16), Schedule 3

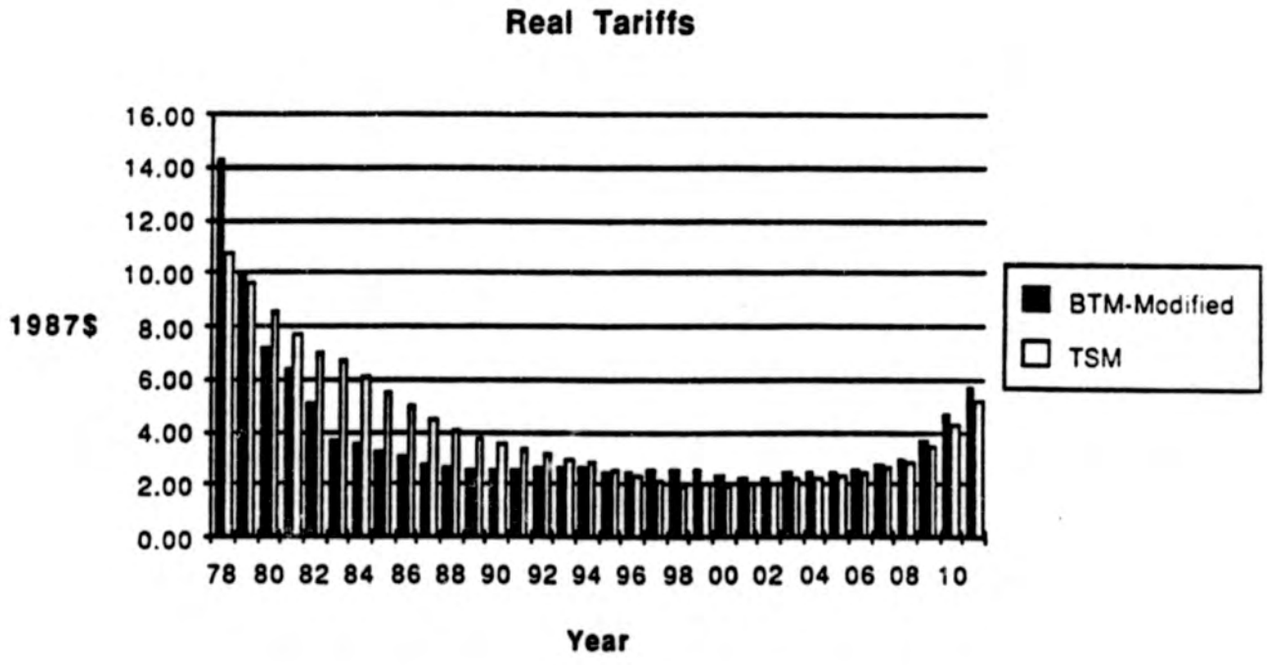


EXHIBIT APUC STAFF ___ (RLB-17)
Schedule 1, Page 1 of 1
Summary of Results: BTM, Modified* vs. TSM

Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM-Modified (c)	TSM (d)
1978	3,387,654	2,400,643	14.86	10.77
1979	3,132,619	2,886,401	10.48	9.68
1980	3,133,296	3,413,363	7.80	8.53
1981	3,112,528	3,403,646	7.04	7.72
1982	2,850,121	3,547,635	5.69	7.08
1983	2,187,910	3,523,988	4.17	6.72
1984	2,344,882	3,406,227	4.21	6.11
1985	2,302,637	3,243,473	3.93	5.53
1986	2,339,687	3,133,991	3.77	5.05
1987	2,346,772	3,113,267	3.43	4.55
1988	2,416,097	2,912,608	3.41	4.12
1989	2,353,372	2,673,157	3.34	3.80
1990	2,296,620	2,461,803	3.36	3.60
1991	2,258,109	2,293,745	3.36	3.41
1992	2,299,566	2,114,525	3.51	3.23
1993	2,250,418	1,915,317	3.59	3.05
1994	2,208,902	1,784,980	3.53	2.86
1995	2,168,177	1,716,251	3.30	2.61
1996	2,132,033	1,594,690	3.21	2.40
1997	2,143,100	1,431,950	3.30	2.21
1998	2,097,465	1,282,882	3.27	2.00
1999	2,058,411	1,310,296	3.22	2.05
2000	2,023,220	1,396,295	2.95	2.03
2001	1,985,299	1,438,140	2.86	2.07
2002	1,949,799	1,457,507	2.81	2.10
2003	1,911,201	1,469,296	2.92	2.25
2004	1,875,917	1,493,410	2.94	2.34
2005	1,837,882	1,523,552	2.92	2.42
2006	1,802,428	1,559,587	2.89	2.50
2007	1,768,401	1,550,792	3.08	2.70
2008	1,737,361	1,551,378	3.29	2.94
2009	1,725,260	1,520,381	3.96	3.49
2010	1,702,138	1,480,576	4.93	4.29
2011	1,802,422	1,629,823	5.84	5.28

PVRR Difference, 1978-1986	4,631,717 (e)
PVRR Difference, 1987-2011	-2,130,493 (f)
PVRR Difference, 1978-2011	2,501,224 (g)

* No Cost of Construction Deduction from Rate Base
100% Equity
No ADIT Deduction from Rate Base

Notes
(a) Workpaper (RLB-17), Line 77
(b) Workpaper (RLB-17), Line 79
(c) Workpaper (RLB-17), Line 91
(d) Workpaper (RLB-17), Line 94
(e) Workpaper (RLB-17), Cell Y86
(f) Workpaper (RLB-17), Cell AX87
(g) Workpaper (RLB-17), Cell AX88

EXHIBIT APUC STAFF ___(RLB-17), Schedule 2

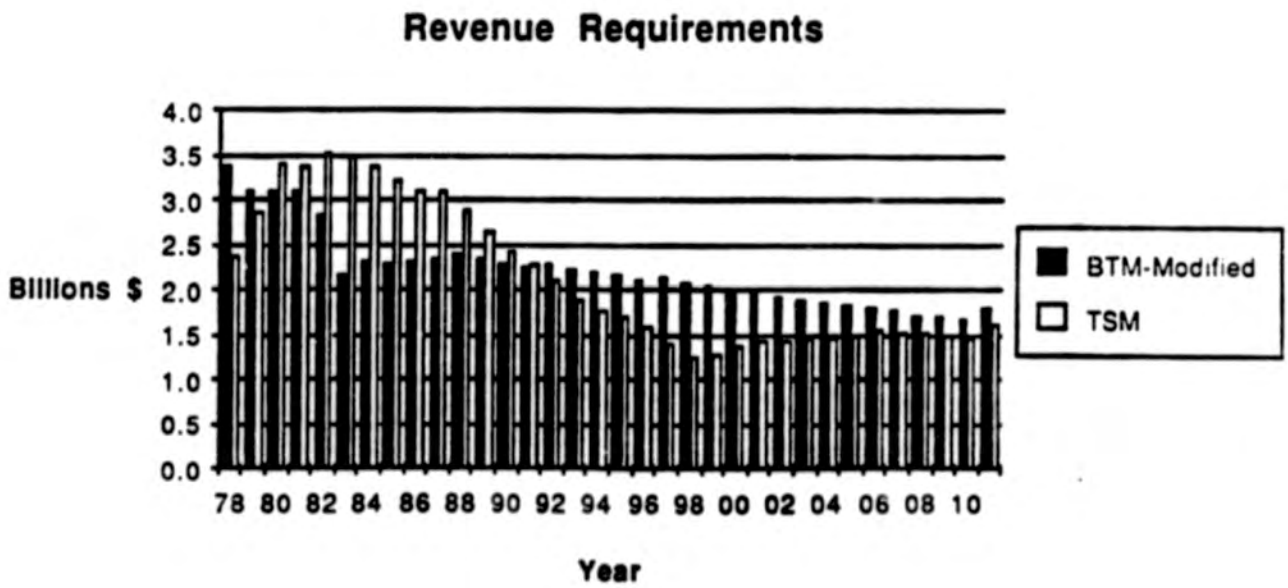


EXHIBIT APUC STAFF ___ (RLB-17), Schedule 3

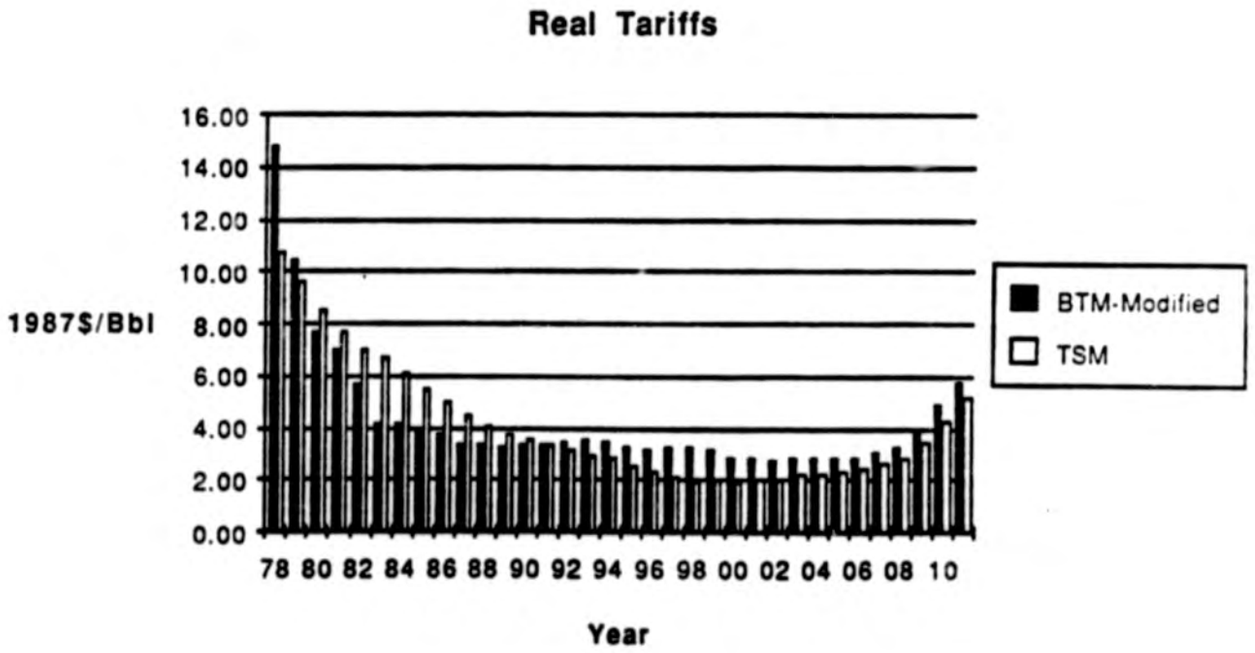


EXHIBIT APUC STAFF ___ (RLB-18)
Schedule 1, Page 1 of 1
Summary of Results: BTM, Modified* vs. TSM

Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM-Modified (c)	TSM (d)
1978	3,282,162	2,400,643	14.40	10.77
1979	2,978,718	2,886,401	9.96	9.68
1980	2,931,828	3,413,363	7.30	8.53
1981	2,863,516	3,403,646	6.47	7.72
1982	2,547,716	3,547,635	5.09	7.08
1983	3,393,011	3,523,988	6.47	6.72
1984	3,223,992	3,406,227	5.79	6.11
1985	3,082,685	3,243,473	5.26	5.53
1986	2,933,394	3,133,991	4.73	5.05
1987	2,815,914	3,113,267	4.12	4.55
1988	2,675,601	2,912,608	3.78	4.12
1989	2,536,013	2,673,157	3.60	3.80
1990	2,413,540	2,461,803	3.53	3.60
1991	2,316,772	2,293,745	3.45	3.41
1992	2,237,253	2,114,525	3.42	3.23
1993	2,159,366	1,915,317	3.44	3.05
1994	2,100,512	1,784,980	3.36	2.86
1995	2,056,544	1,716,251	3.13	2.61
1996	2,014,136	1,594,690	3.03	2.40
1997	1,973,556	1,431,950	3.04	2.21
1998	1,930,193	1,282,882	3.01	2.00
1999	1,895,792	1,310,296	2.97	2.05
2000	1,865,346	1,396,295	2.72	2.03
2001	1,834,518	1,438,140	2.65	2.07
2002	1,806,628	1,457,507	2.61	2.10
2003	1,777,144	1,469,296	2.72	2.25
2004	1,751,904	1,493,410	2.74	2.34
2005	1,725,461	1,523,552	2.74	2.42
2006	1,702,328	1,559,587	2.73	2.50
2007	1,681,935	1,550,792	2.93	2.70
2008	1,665,837	1,551,378	3.15	2.94
2009	1,669,940	1,520,381	3.83	3.49
2010	1,664,020	1,480,576	4.82	4.29
2011	1,782,746	1,629,823	5.77	5.28

PVRR Difference, 1978-1986	2,138,016	(e)
PVRR Difference, 1987-2011	-2,137,794	(f)
PVRR Difference, 1978-2011	222	(g)

* No Cost of Construction Deduction from Rate Base
100% Equity
19.337 Percent Return

Notes
(a) Workpaper (RLB-18), Line 77
(b) Workpaper (RLB-18), Line 79
(c) Workpaper (RLB-18), Line 91
(d) Workpaper (RLB-18), Line 94
(e) Workpaper (RLB-18), Cell Y86
(f) Workpaper (RLB-18), Cell AX87
(g) Workpaper (RLB-18), Cell AX88

EXHIBIT APUC STAFF ___(RLB-18), Schedule 2

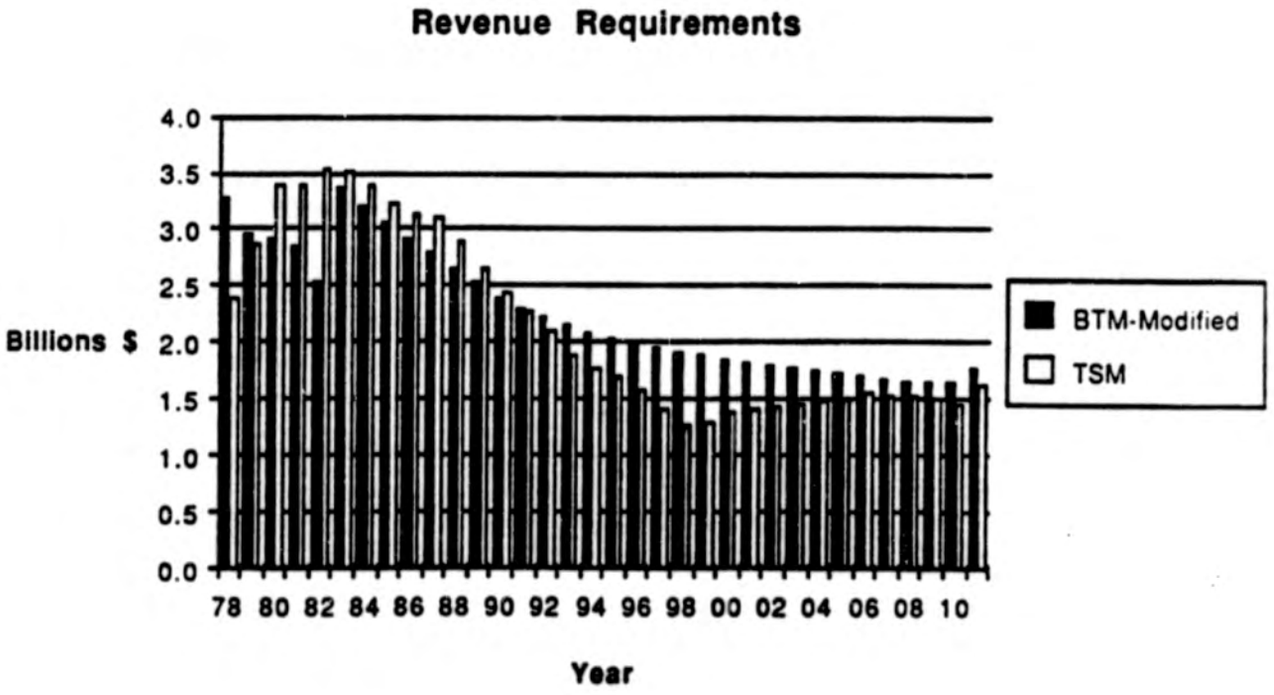


EXHIBIT APUC STAFF ___ (RLB-18), Schedule 3

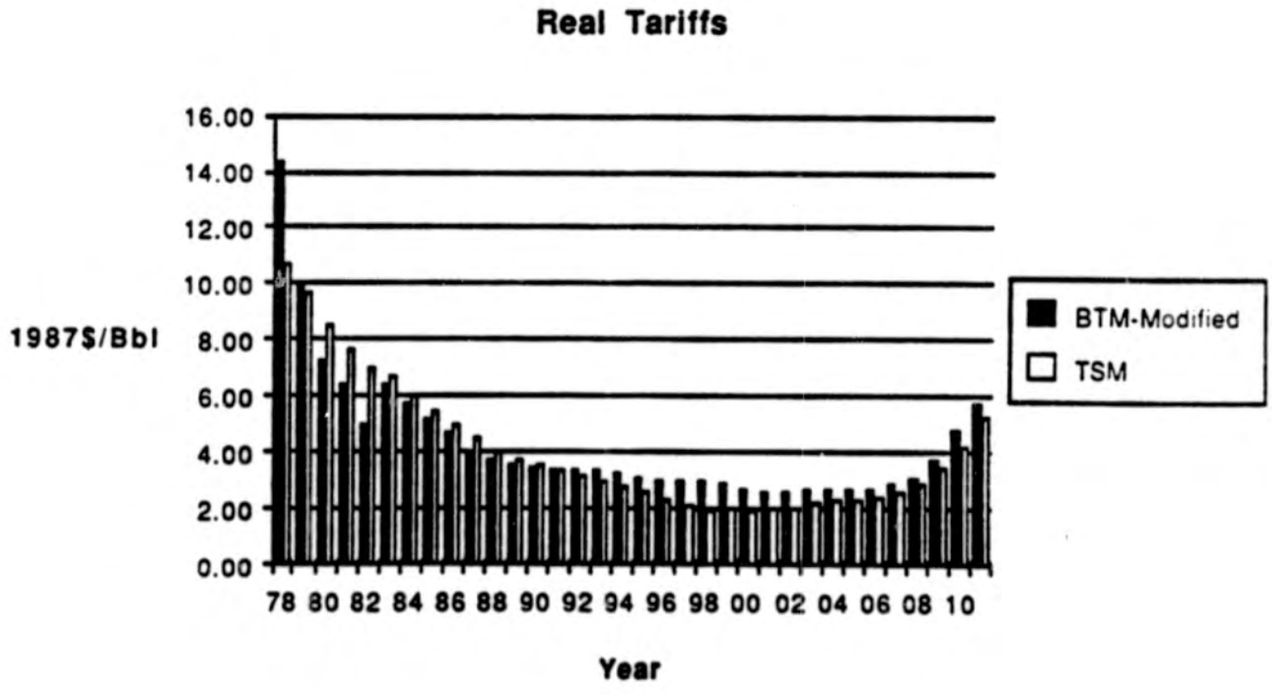


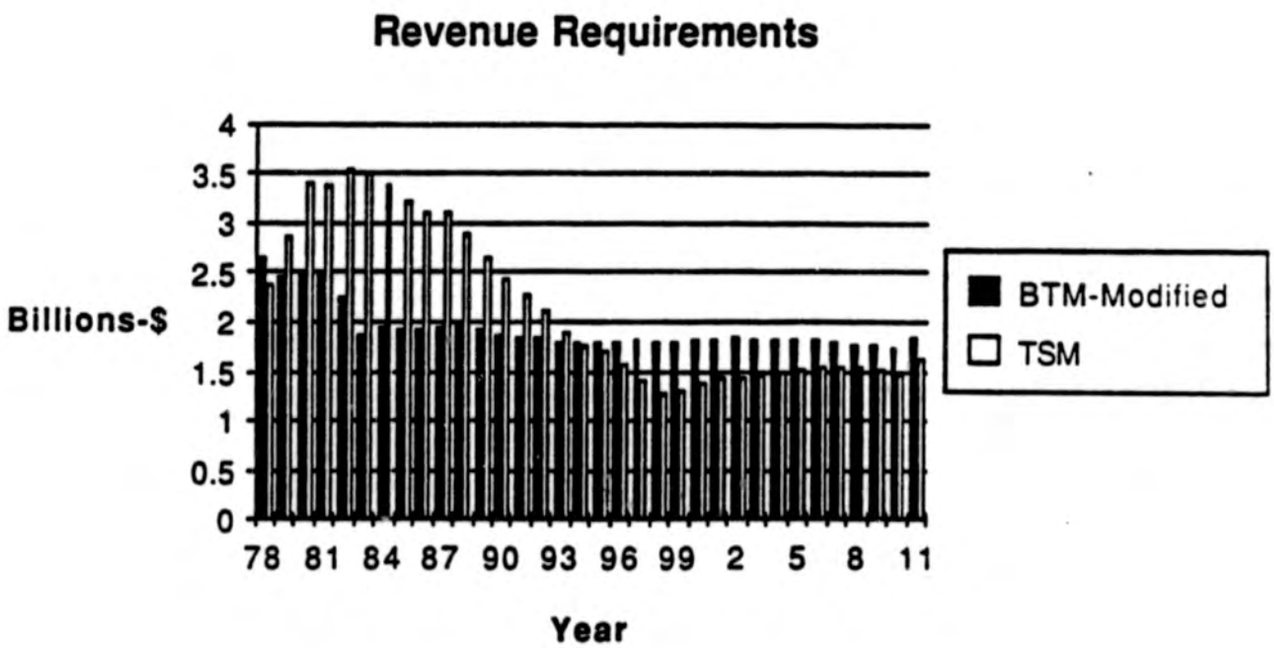
EXHIBIT APUC STAFF ___ (RLB-19)
Schedule 1, Page 1 of 1
Summary of Results: BTM-Modified* vs. TSM

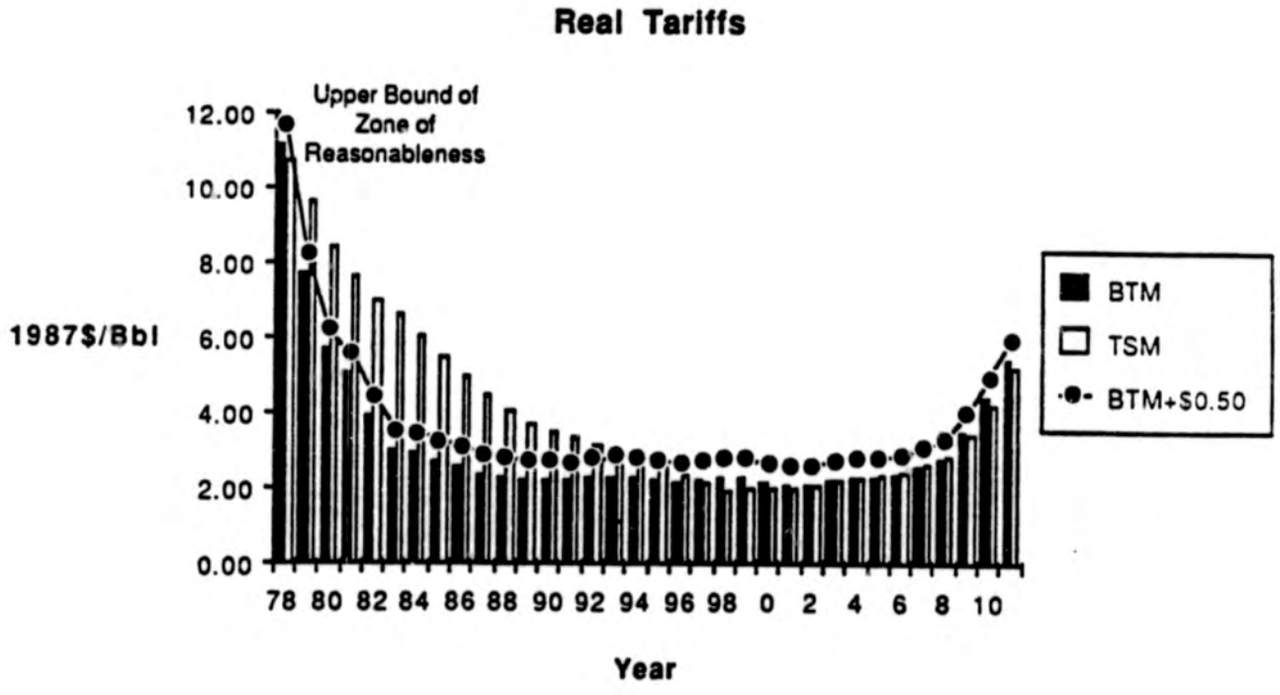
Year	Revenue Requirements ($1,000's) BTM-Modified (a)	TSM (b)	Real Tariffs (1987$/Bbl) BTM	BTM-Modified (c)	TSM (d)
1978	2,668,128	2,400,643	11.21	11.71	10.77
1979	2,480,770	2,886,401	7.80	8.30	9.68
1980	2,520,553	3,413,363	5.78	6.28	8.53
1981	2,491,459	3,403,646	5.13	5.63	7.72
1982	2,253,086	3,547,635	4.00	4.50	7.08
1983	1,886,509	3,523,968	3.09	3.59	6.72
1984	1,959,051	3,406,227	3.02	3.52	6.11
1985	1,934,157	3,243,473	2.80	3.30	5.53
1986	1,948,818	3,133,991	2.64	3.14	5.05
1987	1,975,621	3,113,267	2.39	2.89	4.55
1988	1,997,252	2,912,608	2.32	2.82	4.12
1989	1,938,225	2,673,157	2.25	2.75	3.80
1990	1,879,705	2,461,803	2.25	2.75	3.60
1991	1,844,387	2,293,745	2.24	2.74	3.41
1992	1,851,210	2,114,525	2.33	2.83	3.23
1993	1,812,179	1,915,317	2.39	2.89	3.05
1994	1,798,533	1,784,980	2.38	2.88	2.86
1995	1,809,203	1,716,251	2.26	2.76	2.61
1996	1,811,210	1,594,690	2.22	2.72	2.40
1997	1,823,147	1,431,950	2.31	2.81	2.21
1998	1,811,732	1,282,882	2.32	2.82	2.00
1999	1,809,583	1,310,296	2.33	2.83	2.05
2000	1,836,242	1,396,295	2.17	2.67	2.03
2001	1,840,441	1,438,140	2.16	2.66	2.07
2002	1,843,360	1,457,507	2.16	2.66	2.10
2003	1,824,114	1,469,296	2.29	2.79	2.25
2004	1,820,181	1,493,410	2.35	2.85	2.34
2005	1,817,040	1,523,552	2.38	2.88	2.42
2006	1,817,436	1,559,587	2.41	2.91	2.50
2007	1,797,786	1,550,792	2.63	3.13	2.70
2008	1,783,523	1,551,378	2.88	3.38	2.94
2009	1,765,135	1,520,381	3.55	4.05	3.49
2010	1,736,346	1,480,576	4.53	5.03	4.29
2011	1,858,255	1,629,823	5.52	6.02	5.28

PVRR Difference, 1978-1986	11,576,838 (e)
PVRR Difference, 1987-2011	1,523,426 (f)
PVRR Difference, 1978-2011	13,100,263 (g)

* BTM Tariff + $0.50

Notes
(a) Workpaper (RLB-19), Line 98
(b) Workpaper (RLB-19), Line 79
(c) Workpaper (RLB-19), Line 96
(d) Workpaper (RLB-19), Line 94
(e) Workpaper (RLB-19), Cell Y104
(f) Workpaper (RLB-19), Cell AX105
(g) Workpaper (RLB-19), Cell AX106


Revenue Requirements
Billions-$
4
3.5
3
2.5
2
1.5
1
0.5
0
78 81 84 87 90 93 96 99 2 5 8 11
Year
BTM-Modified
TSM


Real Tariffs
Upper Bound of Zone of Reasonableness
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1987$/Bbl
78 80 82 84 86 88 90 92 94 96 98 0 2 4 6 8 10
Year
BTM
TSM
BTM+$0.50

VERIFICATION

STATE OF WASHINGTON)
) ss.
KING COUNTY)

I, Rudolph L. Bertschi, being duly sworn, state that I have read the foregoing document, and that the contents thereof are true and correct to the best of my knowledge and belief.

Rudolph L. Bertschi

Subscribed and sworn to
before me this 15th day
of December 1986.

Notary Public
King County
State of Washington

My commission expires
10/15/87

(seal)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served copies of the foregoing document upon all parties in Docket No. P-86-2.

Dated: December 17, 1986.

Jerry W. Bird

Jerry W. Bird