COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

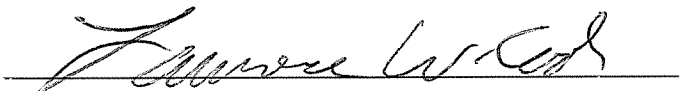
APPLICATION OF ATMOS ENERGY CORPORATION FOR AN ADJUSTMENT OF GAS RATES	) CASE NO. 2006-00464

ATTORNEY GENERAL'S RESPONSES TO
DISCOVERY REQUESTS OF ATMOS ENERGY CORPORATION

Comes now the Attorney General of the Commonwealth of Kentucky, by and through his Office of Rate Intervention, and states as follows for his responses to the discovery requests of Atmos Energy Corporation.

Respectfully submitted,

GREGORY D. STUMBO
ATTORNEY GENERAL



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Certificate of Service and Filing

Counsel certifies that an original and ten photocopies of the foregoing were served and filed by hand delivery to Beth O'Donnell, Executive Director, Public Service Commission, 211 Sower Boulevard, Frankfort, Kentucky 40601; furthermore, it was served by hand-delivering a true and correct copy of the same to:

Hon. John N. Hughes
124 West Todd Street
Frankfort, KY 40601

all on this 1 day of June, 2007.

Assistant Attorney General

In Regard to the Testimony of Robert J. Henkes

Witness Responsible:
ROBERT J. HENKES

QUESTION 1: Please provide copies of all workpapers used in preparation of testimony by Mr. Henkes.

RESPONSE:

Mr. Henkes did not use any workpapers in the preparation of his testimony. In preparing his testimony and testimony exhibits, Mr. Henkes relied on Atmos' filing material, responses to initial and follow-up data requests issued by the PSC and the AG, and recommendations made by other AG witnesses (Dr. Woolridge and Mr. Majoros). Any source material used and calculations made by Mr. Henkes in the preparation of his testimony are included in the footnotes in his testimony and on all of the RJH schedules.

Witness Responsible:
ROBERT J. HENKES

QUESTION 2: Please provide copies of all testimonies filed by Mr. Henkes for the past three years.

RESPONSE:

All testimonies filed by Mr. Henkes before any regulatory authority in the last three years are listed with an asterisk (*) in Appendix I attached to Mr. Henkes' testimony. These testimonies are a matter of public record and can be obtained from the appropriate public agencies.

Note: all cases listed in Appendix I without an asterisk (*) are cases in which Mr. Henkes was involved as an expert witness, but no testimonies were filed.

Witness Responsible:
ROBERT J. HENKES

QUESTION 3: On page 8, line 16 of Mr. Henkes' testimony, he states that Atmos Energy "does not propose to recognize the incremental Late Payment Fees that would be generated by the requested increase in this case". How does Mr. Henkes reconcile this statement with the Company's recommendation, in its response to AG DR 2-22(c), "that the 0.87% factor be included in the proof of revenues in the process of rate design, applicable only to the firm sales classes of Residential, Commercial and Public Authority"?

RESPONSE:

Mr. Henkes acknowledges that Atmos, in response to data request AG-2-22, did come up with its own proposed approach regarding the incremental Late Payment Fees. For a more detailed response addressing this issue, please refer to Mr. Henkes' response to PSC data request to the AG, Item no. 1.

Witness Responsible:
ROBERT J. HENKES

QUESTION 4: On page 9, line 7 of Mr. Henkes' testimony, he states "the recommended Gross Revenue Conversion Factor of 1.633302 was also calculated by the Company in its response to AG-2-22". Did the Company qualify the application of the requested calculation? If so, what reservations did Atmos Energy state in its response?

RESPONSE:

Yes. The Company's reservations were as follows:

"However, including the Late Payment Fee revenues in the GRFC would not be appropriate since the 0.87% budgeting factor applies only to the gross firm sales revenues of Residential, Commercial and Public Authority classes. The GRFC typically applies to total gross revenues, so the above calculation would overstate the impact of Late Payment Fees. Thus, the Company would recommend that the 0.87% factor be included in the proof of revenues in the process of rate design, applicable only to the firm sales classes of Residential, Commercial and Public Authority."

Also, please refer to Mr. Henkes' response to PSC data request to the AG, Item no. 1 where this issue is discussed in more detail. In that response, Mr. Henkes also points out that, under the rationale expressed by the Company in the above-referenced reservations, the Company's proposal to include the 0.50% uncollectible ratio in the GRFC would result in overstated uncollectible expenses in this case.

Witness Responsible:
ROBERT J. HENKES

QUESTION 5: Mr. Majoros reduced plant in service in rate base by $1,016,900 to reflect the transfer of the recoverable portion of cushion gas from account 352.03 to account 117. Neither Mr. Henkes nor Mr. Majoros have included this recoverable cushion gas in rate base. Would Mr. Henkes agree that the investment in recoverable cushion gas is an investment used to provide service to utility customers? If not, why not?

RESPONSE:

In this case, Mr. Henkes has adopted the forecasted test period plant in service and accumulated depreciation reserve balances recommended by Mr. Majoros. Mr. Henkes did not review and is not familiar with the reasons underlying the adjustments made by Mr. Majoros to arrive at his recommended plant and reserve balances. Mr. Henkes is therefore not able to render an opinion on the question referenced above.

QUESTION 6: Please reference the Company's response to AG DR 1-51 and AG DR 2-32. Two of the Company's sub accounts are listed and they subtotal $53,614 for sub account 4040 "Community Relations and Trade Shows" and $125,356 for sub account 4046 "Customer Relations and Assistance". The Company's response to AG DR 2-32 explains the general nature of these expenses and lists examples from both sub accounts. Expenses in sub account 4046 include items such as internet related tools for customers (Enercom, Inc. and Enhanced Systems), billing inserts addressing energy conservation tips and budget billing options (Rad Graphx), and Federally-mandated customer communications under RP 1162 (RBMM).

A. Please explain why the Company should not be allowed to recover the type of expenses included in sub account 4046 "Customer Relations and Assistance".

B. Are there any types of customer relations expenses that the witness believes are recoverable in rates? If yes, explain and give specific examples.

RESPONSE:

a/b. In AG-1-51, Mr. Henkes made the following request: " Please provide a listing, description (including account number) and dollar amount of all *public relations* and *community relations* expenses in the above-the-line forecasted test year O&M expenses. This expense analysis should also include the public relations and community relations expenses included in the allocations to Kentucky from the SSU and General Office." (emphasis supplied)

In its response to AG-1-51, the Company identified $178,970 worth of the requested public relations and community relations expenses, but without a specific detailed listing Witness Responsible:
ROBERT J. HENKES
Question: 6

and description. The only details and description the Company chose to provide was two sub accounts, 4040 and 4046, entitled Community Relations & Trade Shows and Customer Relations & Assistance.

Mr. Henkes excluded the entire $178,970 for ratemaking purposes in this case because this is the expense amount that the Company identified to represent *public relations* and *community relations* expenses in its response to AG-1-51. In this regard, Mr. Henkes also noted that the $100,000 expense disallowance that the Company itself proposed in this case included the exclusion of Community Relations & Trade Shows and Customer Relations & Assistance expenses (see response to AG-1-59).

The Company's response to AG-2-32(b) states that the $178,970 community relations expenses include, among other things, community ads and activities, builder relations and promotional items for various community activities. Mr. Henkes does not believe that these activities are required for the provision of safe, adequate and reliable gas service and should therefore not be charged to the ratepayers. In its response to AG-2-32(b), the Company has listed some examples that may be included for rate-making purposes based on the description of these items (all examples except the Bob Lilly promotions). If the Company can quantify these examples, Mr. Henkes would certainly be willing to remove them from his recommended expense adjustment of $178,970.

Mr. Henkes' recommendation to exclude public relations and community relations expenses for ratemaking purposes is consistent with Commission precedent. For example, as shown in Appendix D of the Commission's Order in ULH&P's base rate case, Docket No. 2001-00092, the Commission approved the rate exclusion of "Community Relations" and "Marketing/Customer Relations" expenses.

Witness Responsible:
ROBERT J. HENKES

QUESTION 7: On page 46 of Mr. Henkes' testimony, he states "Rate recovery through an automatic rate adjustment mechanism should continue to be allowed only when management has little or no control over the item at issue and specific requirements of volatility and unpredictability have been met". Please explain in detail why this statement would not apply to the Company's proposal to recover the uncollectible portion of gas costs through the GCA.

RESPONSE:

The reasons for the recommended continuation of the recovery of the uncollectible portion of gas costs through base rates are clearly stated on pages 36 and 37 of Mr. Henkes' testimony. I also mention there that materiality should be considered a factor and, as Mr. Henkes quantified on page 36, the uncollectible portion of gas costs represents only .4% of the Company's total forecasted test year O&M expenses. Furthermore, the Company can exert some control over uncollectibles through the implementation of collection policies that, by choice of management, could range from very stringent and aggressive to relaxed.

Witness Responsible:
ROBERT J. HENKES

QUESTION 8: Under traditional ratemaking, what 'reasonable opportunity' does Atmos Energy have to actually recover all of its fixed costs, and therefore actually earn its authorized return, with declining customer usage?

RESPONSE:

There are a myriad of factors that influence Atmos' reasonable opportunity to recover its fixed costs and earn its authorized return. Therefore, the fact that the Company has declining customer usage does not automatically mean that Atmos does not have a reasonable opportunity to earn its authorized return. This is particularly evident from the results shown in the Company's response to PSC-3-1. This response shows that during the 6-year period 2000 through 2005, when Atmos experienced declining average customer usage according to the testimony of Company witness Gary Smith, Atmos - Kentucky earned the following returns on equity:

2000 - 12.91%
2001 - 14.20%
2002 - 14.04%
2003 - 14.65%
2004 - 15.89%
2005 - 12.12%

Witness Responsible:
ROBERT J. HENKES

QUESTION 9: With reference to Mr. Henkes testimony, page 43, lines 2-10, please cite each authoritative source supporting the following statements:

A. "Regulation is intended to be a substitute for competition".

B. "This principle of regulation was designed to stimulate a utility to act as if it were in a competitive industry".

RESPONSE: The above-referenced statements describe truisms that anybody who is involved in the regulation of the utility industry is familiar with and should know. Mr. Henkes initially learned about these truisms in utility regulation classes he took at the Michigan State University graduate school and eventually became very familiar with in his 32 years of utility regulatory experience. There have been numerous articles by authoritative sources in Public Utilities Fortnightly, as an example, addressing and confirming the above-referenced statements. Another authoritative source is the well-known publication "Accounting for Public Utilities" by Robert L. Hahne and Gregory E. Aliff in which they confirm the above-referenced statements. For example, in the introduction of their book (paragraph 2.01) Messrs. Hahne and Aliff state:

> "Public utility regulation can be defined in general terms as control over the obligations and rights contracted between a public utility and the various governmental bodies allowing the utility to operate as a monopolistic enterprise in an otherwise competitive business environment. This control is for the purpose of providing the consuming public both the benefits that would be achieved by competition and the efficiencies of allowing a monopolistic company to operate."

Witness Responsible:
ROBERT J. HENKES

QUESTION 10: In Atmos Energy's response to KPSC DR 2-60(b), a recent report from the American Gas Association cites five states (Louisiana, Mississippi, Oklahoma, Alabama and South Carolina) having Rate Stabilization Mechanisms in place. Is it the witness' position that these five state commissions which have authorized mechanisms similar to the Atmos Energy's proposed CRS mechanism have "lost sight of the foundation upon which the regulatory process was developed" (reference page 43 of the Henkes testimony)?

RESPONSE:

As is evident from the response to KPSC DR 2-60(a) and (b), none of the Rate Stabilization Mechanisms in place in these five states are similar to the Company's proposed CRS mechanism. Since Mr. Henkes has never been involved as a regulatory consultant in the above-referenced 5 states, he cannot express an opinion regarding the above-referenced position.

Witness Responsible:
ROBERT J. HENKES

QUESTION 11: How does the witness reconcile Atmos Energy's low cost of service with his conclusion that Atmos Energy has "lost sight of the foundation upon which the regulatory process was developed" (reference page 43 of the Henkes testimony)?

RESPONSE:

Mr. Henkes made the above referenced statement on page 43 of his testimony in connection with the Company's proposal to receive a guaranteed rate of return combined with the fact that regulation is supposed to act as a substitute for competition. Mr. Henkes did not make the above referenced statement on page 43 of his testimony in connection with the level of the Company's cost of service. Mr. Henkes fails to see what reconciliation Atmos is looking for.

Witness Responsible:
ROBERT J. HENKES

QUESTION 12: Given the witness' support of "traditional ratemaking", when, if ever, should the Commission permit experiments with alternative mechanisms?

RESPONSE:

The Commission could consider experiments with alternative mechanisms if reasonable alternative rate mechanisms are proposed that are not skewed in favor of the utility, provide true benefits to the ratepayers, maintain an equitable distribution of risk between the ratepayers and stockholders, and continue to provide true incentives for the utility to operate efficiently and provide safe, reliable and adequate utility service at the lowest possible cost while having an opportunity to earn a reasonable rate of return.

Witness Responsible:
ROBERT J. HENKES

QUESTION 13: With reference to page 44 of Mr. Henkes' testimony, what evidence does the witness have that there is always another cost to cut if one cost increases?

A. Is the witness saying that Atmos Energy's cost of services is immune to inflation?

B. Is there ever a limit to which expenses can be reduced? Please explain.

RESPONSE:

a. No.
b. Expenses should not be reduced if this would result in a deterioration of the quality of service and/or would put at risk the utility's ability to provide safe, adequate and reliable gas service.

Witness Responsible:
ROBERT J. HENKES

QUESTION 14: With reference to page 44 of Mr. Henkes' testimony, what evidence does the witness have that the CRS will result in "bloated budgets with little prospect for management attention to cost containment"?

A. Define "bloated".

B. Provide a list of all expense items proposed by Atmos that the witness believes are "bloated".

RESPONSE:

Mr. Henkes has no evidence that adoption of the proposed CRS will definitely result in "bloated budgets with little prospect for management attention to cost containment." What Mr. Henkes meant to convey with this statement is that adoption of the CRS will remove or reduce the incentives for the Company to operate in the most efficient manner and at the lowest possible cost, with potential side effects of more relaxed management attention to cost containment and expense budgets being larger than warranted for operating efficiently and at the lowest possible cost.

a. Being larger than warranted for operating efficiently and at the lowest possible cost.
b. Mr. Henkes' above-quoted statement referred to future expense budgets under a CRS mechanism as proposed by the Company. Other than the expense items for which Mr. Henkes has recommended adjustments in this case, it is not Mr. Henkes' position that Atmos' proposed expense budget underlying the forecasted test period in this case is "bloated."

Witness Responsible:
ROBERT J. HENKES

QUESTION 15: What ability does Atmos Energy have to control declining customer usage?

a. What factors does Mr. Henkes believe cause the decline in customer usage?

b. Of those factors, which are directly affected by gas cost?

c. Of these factors, which does the witness believe are within Atmos Energy's control?

d. How can Atmos Energy recover fixed costs with declining usage without a rate increase?

e. Is there a limit to the reduction in expenses that can be made to offset affects of declining customer usage?

RESPONSE:

An analysis of the reasons for Atmos Energy's claimed declining customer usage and the potential remedies for this claimed trend was not within the scope of Mr. Henkes' engagement in this case. Mr. Henkes is therefore not in a position to answer this question.

a. See above.
b. See above.
c. See above.
d. Please refer to Mr. Henkes' response to Atmos' data request to Mr. Henkes, Item No. 8.
e. Please refer to Mr. Henkes' response to Atmos' data request to Mr. Henkes, Item No. 13b.

Witness Responsible:
ROBERT J. HENKES

QUESTION 16: Would the witness support a rider mechanism to offset the impact of declining customer usage on Atmos Energy's return? If no, please provide an explanation.

A. If no, how can any utility recover operating costs in a declining usage market?

B. Does the witness believe that customer usage will continue to decline? Please explain.

RESPONSE:

As Mr. Henkes has testified, he does not believe a rider such as the proposed CRS mechanism should be implemented. It is Mr. Henkes' understanding that the impact of declining customer usage is already substantially mitigated by implementation of the sharply increased fixed monthly customer charges proposed by Atmos and recommended by AG witness King in this case.

a. Please refer to Mr. Henkes' response to Atmos' data request to Mr. Henkes, Item No. 8.
b. Mr. Henkes has not conducted a study regarding that subject and, therefore, is not in a position to render an opinion on this matter.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

In regard to the Testimony of Michael J. Majoros, Jr.

Witness Responsible:
MICHAEL J. MAJOROS, JR.

QUESTION 17: Please provide copies of all workpapers used in preparation of testimony by Mr. Majoros.

RESPONSE: See attached.

ATMOS ENERGY CORPORATION - SHARED SERVICES
Book Depreciation Study as of September 30, 2006
Snavely King Recommended Rates and Accruals

Account	Description	9/30/2006 Balance	Company Proposed ASL	Iowa Curve	Remaining Life	Study Rate	COR Rate	Plant Only Rate	Plant Only Depreciation Expense	SK COR Rate	SK COR Allowance	Snavely King Total Rate	Snavely King Total Depreciation and COR
		(a)	(b)	(c)	(d)	(e)	(f)	(g)=(e)-(f)	(h)=(a)*(g)	(i)	(j)=(a)*(i)	(k)=(g)+(i)	(l)=(h)+(j)
	GENERAL PLANT												
390.09	Improvements to Leased Premises	9,949,143	10.0	SQ	4	9.10	0.00	9.10	905,372	-	0.00	9.10	905,372
391.00	Office Furniture and Equipment	9,074,352	30.0	R2	16	2.13	0.00	2.13	193,284	-	0.00	2.13	193,284
397.00	Communication Equipment	25,311,861	10.0	L3	8.4	8.45	0.00	8.45	2,138,852	0.0025	621.40	8.45	2,139,474
398.00	Miscellaneous Equipment	633,466	10.0	S6	4.3	8.15	0.00	8.15	51,627	-	0.00	8.15	51,627
399.00	Other Tangible Property	224,866	5.0	SQ	1	4.66	0.00	4.66	10,479	-	0.00	4.66	10,479
399.01	Servers Hardware	14,567,322	5.0	SQ	5.7	6.95	0.00	6.95	1,012,429	-	0.00	6.95	1,012,429
399.02	Servers Software	8,647,580	5.0	SQ	6.3	4.00	0.00	4.00	345,903	-	0.00	4.00	345,903
399.03	Network Hardware	2,377,029	5.0	SQ	8.4	9.30	0.00	9.30	221,064	-	0.00	9.30	221,064
399.06	PC Hardware	6,691,156	4.0	SQ	3.9	14.86	0.00	14.86	994,306	-	0.00	14.86	994,306
399.07	PC Software	3,928,199	4.0	SQ	5.3	9.02	0.00	9.02	354,324	-	0.00	9.02	354,324
399.08	Application Software	111,323,312	8.0	S1.5	5	11.11	0.00	11.11	12,368,020	-	0.00	11.11	12,368,020
399.24	General Startup Cost	23,172,326	10.0	SQ	2.5	15.89	0.00	15.89	3,682,083	-	0.00	15.89	3,682,083
	Total Depreciable General Plant	215,900,612						10.32	22,277,742				22,278,363
	Fully Depreciated	5,331,910											
	Late Retirements	4,363,383											
	Total Shared Services Facilities	225,595,905											

Sources:
Cols. (a) - (c) and (e) from Exhibit DSR-4.
Col. (d) from response to AG 1-87.
Col. (i) from Exhibit___(MJM-3).

ATMOS ENERGY CORPORATION - KENTUCKY
Book Depreciation Study as of September 30, 2005
Snavely King Recommended Rates and Accruals

Account	Description	9/30/2005 Balance	Company Proposed ASL	Iowa Curve	Remaining Life	ELG Rate	COR Rate	Plant Only Rate	Plant Only Depreciation Expense	SK COR Rate	SK COR Allowance	Snavely King Total Rate	Snavely King Total Depreciation and COR
		(a)	(b)	(c)	(d)	(e)	(f)	(g)=(e)-(f)	(h)=(a)*(g)	(i)	(j)=(a)*(i)	(k)=(g)+(i)	(l)=(h)+(j)
	PRODUCTION PLANT												
325.20	Producing Leaseholds	2,353	50	R5	17.0	5.89	0.00	5.89	139	-	0	5.89	139
325.40	Rights-of-Way	83,422	50	R5	43.7	2.29	0.00	2.29	1,910	-	0	2.29	1,910
336.00	Purification Equipment	44,369	50	R5	20.0	5.26	0.10	5.16	2,289	-	0	5.16	2,289
	Total Production Plant	130,144						3.33	4,338	-	0		4,338
	STORAGE PLANT												
351.00	Structures and Improvements	309,065	50	R2	27.4	0.60	0.00	0.60	1,854	-	0	0.60	1,854
352.00	Well Construction and Equipment	2,176,341	50	R3	28.9	2.11	0.80	1.31	28,510	-	0	1.31	28,510
352.03	Cushion Gas	677,933 1/	50	SQ	41.5	2.38	0.00	2.38	16,135	-	0	2.38	16,135
352.11	Storage Rights	54,614	50	R5	18.4	0.44	0.00	0.44	240	-	0	0.44	240
354.00	Compressor Station Equipment	546,780	50	R1.5	24.7	0.60	0.00	0.60	3,281	-	0	0.60	3,281
355.00	M&R Station Equipment	288,851	50	R2	25.8	0.12	0.00	0.12	347	-	0	0.12	347
	Total Storage Plant	4,053,584						1.24	50,367	-	0		50,367
	TRANSMISSION PLANT												
365.20	Rights-of-Way	812,196	55	R5	36.5	1.65	0.00	1.65	13,401	-	0	1.65	13,401
366.00	Structures and Improvements	283,237	50	R3	36.7	2.05	0.00	2.05	5,806	-	0	2.05	5,806
367.00	Mains	22,044,698	55	R1	30.1	1.85	0.45	1.40	307,624	0.0259	5,700	1.42	313,324
369.00	M&R Station Equipment	2,952,222	45	R0.5	25.9	1.48	0.04	1.44	42,381	-	0	1.44	42,381
	Total Transmission Plant	26,092,353						1.42	369,212	0.0218	5,700		374,912
	DISTRIBUTION PLANT												
374.02	Land Rights	145,459	55	R5	46.8	1.86	0.00	1.86	2,706	-	0	1.86	2,706
375.00	Structures and Improvements	468,328	50	L0	25.6	3.18	0.20	2.98	13,956	-	0	2.98	13,956
376.00	Mains	95,924,845	55	R0.5	31.7	2.43	0.45	1.98	1,894,952	0.0512	49,138	2.03	1,944,090
378.00	M&R Station Equipment	2,617,970	50	R1	28.1	1.92	0.10	1.82	47,647	-	0	1.82	47,647
379.00	City Gate Equipment	2,804,310	50	R1	29.0	2.43	0.30	2.13	59,732	-	0	2.13	59,732
380.00	Services	69,190,312	40	R1.5	24.3	5.23	1.88	3.36	2,321,335	0.5985	414,083	3.95	2,735,418
381.00	Meters	13,775,723	25	R0.5	14.7	8.06	1.00	7.06	972,566	-	0	7.06	972,566
382.00	Meter Installations	33,358,910	40	R1	23.4	4.60	0.63	3.98	1,326,017	1.5082	503,122	5.48	1,829,139
383.00	House Regulators	4,816,804	30	S6	17.2	2.90	0.00	2.90	139,687	-	0	2.90	139,687
384.00	House Regulator Installations	154,276	35	R2	20.1	2.02	0.00	2.02	3,116	-	0	2.02	3,116
385.00	Industrial M&R Equipment	4,433,322	40	L5	27.6	2.61	0.43	2.19	96,868	0.0356	1,579	2.22	98,447
	Total Distribution Plant	227,690,259						3.02	6,878,582	0.4251	967,922		7,846,504
	GENERAL PLANT												
390.00	Structures and Improvements	966,202	15	L2	8.4	9.91	0.00	9.91	95,751	-	0	9.91	95,751
390.09	Improvements to Leased Premises	1,382,343	25	R4	10.8	2.36	0.00	2.36	32,623	-	0	2.36	32,623
391.00	Office Furniture and Equipment	2,305,350	18	L0	9.4	6.22	0.00	6.22	143,393	0.0002	6	6.22	143,398
392.00	Transportation Equipment	761,620	8	S5	2.6	59.79	0.00	59.79	455,373	0.1220	929	59.91	456,302
394.00	Tools, Shop and Garage Equipment	2,118,023	20	S6	10.5	6.63	0.00	6.63	140,425	-	0	6.63	140,425
396.00	Power Operated Equipment	663,629	15	L5	4.8	20.76	0.00	20.76	137,769	-	0	20.76	137,769
397.00	Communication Equipment	1,498,100	20	S2	10.8	5.43	0.00	5.43	81,347	-	0	5.43	81,347
398.00	Miscellaneous Equipment	2,160,051	20	R5	17.0	4.26	0.00	4.26	92,018	-	0	4.26	92,018
399.01	OTP - Servers Hardware	175,990	10	SQ	3.5	2.71	0.00	2.71	4,769	-	0	2.71	4,769
399.03	OTP - Network Hardware	511,781	10	SQ	4.0	5.22	0.00	5.22	26,715	-	0	5.22	26,715
399.06	OTP - PC Hardware	2,702,795	10	L1	5.1	0.61	0.00	0.61	16,487	-	0	0.61	16,487
399.07	OTP - PC Software	242,979	5	S1.5	1.8	19.16	0.00	19.16	46,555	-	0	19.16	46,555
399.08	OTP - Application Software	522,254	8	R5	2.4	17.49	0.00	17.49	91,342	-	0	17.49	91,342
	Total General Plant	16,011,117						8.52	1,364,567	0.0058	935		1,365,502
	Total Depreciable Plant	273,977,457						3.16	8,667,066	0.3557	974,557		9,641,623
	Intangible Plant	128,183											
	Non-Depreciable Plant	486,462											
	Fully Depreciated Plant	2,303,510											
	Total Plant in Service	276,895,612											

1/ Plant balance updated per response to AG DR 2-52.

Sources:
Cols. (a) - (c) and (e) from Exhibit DSR-3.
Col. (d) from response to AG 1-87.
Col. (i) from Exhibit___(MJM-3)

ATMOS ENERGY CORPORATION - KENTUCKY
Comparison of Atmos and Snavely King COR Rates and Accruals

Account	Description	9/30/2005 Balance (a)	Company Proposed COR Rate (b)	Company Proposed COR Expense (c)=(a)*(b)	SK Recommended SK COR Rate (d)	SK Recommended COR Allowance (e)=(a)*(d)	Difference (f)=(e)-(c)
	PRODUCTION PLANT						
325.20	Producing Leaseholds	2,353	0.00	-	0.000	-	-
325.40	Rights-of-Way	83,422	0.00	-	0.000	-	-
336.00	Purification Equipment	44,369	0.10	44	0.000	-	(44)
	Total Production Plant	130,144		44	0.000	-	(44)
	STORAGE PLANT						
351.00	Structures and Improvements	309,065	0.00	-	0.000	-	-
352.00	Well Construction and Equipment	2,176,341	0.80	17,411	0.000	-	(17,411)
352.03	Cushion Gas	1,694,833	0.00	-	0.000	-	-
352.11	Storage Rights	54,614	0.00	-	0.000	-	-
354.00	Compressor Station Equipment	546,780	0.00	-	0.000	-	-
355.00	M&R Station Equipment	288,851	0.00	-	0.000	-	-
	Total Storage Plant	5,070,484		17,411	0.000	-	(17,411)
	TRANSMISSION PLANT						
365.20	Rights-of-Way	812,196	0.00	-	0.000	-	-
366.00	Structures and Improvements	283,237	0.00	-	0.000	-	-
367.00	Mains	22,044,698	0.45	100,203	0.026	5,700	(94,503)
369.00	M&R Station Equipment	2,952,222	0.04	1,312	0.000	-	(1,312)
	Total Transmission Plant	26,092,353		101,515	0.022	5,700	(95,815)
	DISTRIBUTION PLANT						
374.02	Land Rights	145,459	0.00	-	0.000	-	-
375.00	Structures and Improvements	468,328	0.20	937	0.000	-	(937)
376.00	Mains	95,924,845	0.45	436,022	0.051	49,138	(386,884)
378.00	M&R Station Equipment	2,617,970	0.10	2,618	0.000	-	(2,618)
379.00	City Gate Equipment	2,804,310	0.30	8,413	0.000	-	(8,413)
380.00	Services	69,190,312	1.88	1,297,318	0.598	414,083	(883,236)
381.00	Meters	13,775,723	1.00	137,757	0.000	-	(137,757)
382.00	Meter Installations	33,358,910	0.63	208,493	1.508	503,122	294,629
383.00	House Regulators	4,816,804	0.00	-	0.000	-	-
384.00	House Regulator Installations	154,276	0.00	-	0.000	-	-
385.00	Industrial M&R Equipment	4,433,322	0.43	18,842	0.036	1,579	(17,262)
	Total Distribution Plant	227,690,259		2,110,400	0.425	967,922	(1,142,478)
	GENERAL PLANT						
390.00	Structures and Improvements	966,202	0.00	-	0.000	-	-
390.09	Improvements to Leased Premises	1,382,343	0.00	-	0.000	-	-
391.00	Office Furniture and Equipment	2,305,350	0.00	-	0.000	6	6
392.00	Transportation Equipment	761,620	0.00	-	0.122	929	929
394.00	Tools, Shop and Garage Equipment	2,118,023	0.00	-	0.000	-	-
396.00	Power Operated Equipment	663,629	0.00	-	0.000	-	-
397.00	Communication Equipment	1,498,100	0.00	-	0.000	-	-
398.00	Miscellaneous Equipment	2,160,051	0.00	-	0.000	-	-
399.01	OTP - Servers Hardware	175,990	0.00	-	0.000	-	-
399.03	OTP - Network Hardware	511,781	0.00	-	0.000	-	-
399.06	OTP - PC Hardware	2,702,795	0.00	-	0.000	-	-
399.07	OTP - PC Software	242,979	0.00	-	0.000	-	-
399.08	OTP - Application Software	522,254	0.00	-	0.000	-	-
	Total General Plant	16,011,117		0	0.0058	935	935
	Total Depreciable Plant	274,994,357		2,229,370	0.3544	974,557	(1,254,813)
	Intangible Plant	128,183					
	Non-Depreciable Plant	486,462					
	Fully Depreciated Plant	2,303,510					
	Total Plant in Service	277,912,512					

Sources:
Cols (a) and (b) from Exhibit DSR-3.
Col. (d) from Exhibit___(MJM-3).

ATMOS ENERGY CORPORATION - SHARED SERVICES
Comparison of Atmos and Snavely King COR Rates and Accruals

Account	Description	9/30/2006 Balance (a)	COR Rate (b)	Plant Only Depreciation Expense (c)=(a)*(b)	SK COR Rate (d)	SK COR Allowance (e)=(a)*(d)	Difference (f)=(e)-(c)
	GENERAL PLANT						
390.09	Improvements to Leased Premises	9,949,143	0.00	-	0.0000	-	-
391.00	Office Furniture and Equipment	9,074,352	0.00	-	0.0000	-	-
397.00	Communication Equipment	25,311,861	0.00	-	0.0025	621	621
398.00	Miscellaneous Equipment	633,466	0.00	-	0.0000	-	-
399.00	Other Tangible Property	224,866	0.00	-	0.0000	-	-
399.01	Servers Hardware	14,567,322	0.00	-	0.0000	-	-
399.02	Servers Software	8,647,580	0.00	-	0.0000	-	-
399.03	Network Hardware	2,377,029	0.00	-	0.0000	-	-
399.06	PC Hardware	6,691,156	0.00	-	0.0000	-	-
399.07	PC Software	3,928,199	0.00	-	0.0000	-	-
399.08	Application Software	111,323,312	0.00	-	0.0000	-	-
399.24	General Startup Cost	23,172,326	0.00	-	0.0000	-	-
	Total Depreciable General Plant	215,900,612		0		621	621
	Fully Depreciated	5,331,910					
	Late Retirements	4,363,383					
	Total Shared Services Facilities	225,595,905					

Sources:
Cols (a) and (b) from Exhibit DSR-4.
Col. (d) from Exhibit___(MJM-3).

Atmos Energy Corporation, KY
Case No. 2006-00464
Jurisdictional Depreciation Expense, Accum. Reserve & Accrual Rates by Account
Forecasted Period ended June 30, 2008 - Reflecting Snavely King Rates

Line No	Acct. No	Account Titles	Total Company Adjusted Jurisdiction 13 Month Avg. Investment	Reserve 1/	SK Recommended 12 Month Expense	SK Recommended Annual Accrual Rate	Current 12 Month Expense	Current Annual Accrual Rate
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
						See Note		See Note
1		Intangible Plant						
2	301.00	Organization	76,480	8,330	0		0	
3	302.00	Franchises & Consents	119,853	119,853	0		0	
4	303.00	Misc. Intangible Plant	408,053	0	0		0	
5								
6		Total Intangible Plant	604,386	128,182	0		0	
7								
8		Natural Gas Production Plant						
9	325.20	Producing Leaseholds	2,353	69	137		0	
10	325.40	Rights of Ways	83,422	955	1,888		0	
11	331.00	Production Gas Wells Equipment	3,492	3,492	0		0	
12	332.01	Field Lines	47,163	47,163	0		0	
13	332.02	Tributary Lines	528,218	529,956	0		0	
14	334.00	Field Meas. & Reg. Sta. Equip	198,469	198,469	0		0	
15	336.00	Purification Equipment	44,369	1,145	2,263		0	
16								
17		Total Natural Gas Production Plant	907,486	781,249	4,288		0	
18								
19		Storage Plant						
20	350.10	Land	261,127	0	0		0	
21	350.20	Rights of Way	4,682	4,757	0		0	
22	351.00	Structures & Improvements	4,700	2,503	28		90	
23	351.02	Compression Station Equipment	159,811	118,199	948		3,049	
24	351.03	Meas. & Reg. Sta. Structues	23,138	24,976	0		0	
25	351.04	Other Structures	144,554	132,962	857		2,758	
26	352.00	Wells \ Rights of Way	62,814	51,214	813		1,683	
27	352.01	Well Construction	2,113,527	1,786,598	27,368		56,616	
28	352.02	Well Equipment	531,954	579,757	0		0	
29	352.03	Cushion Gas 2/	677,933	17,389	15,949		0	
30	352.10	Leaseholds	178,530	179,464	0		0	
31	352.11	Storage Rights	54,614	52,586	238		988	
32	353.01	Field Lines	178,501	186,188	0		0	
33	353.02	Tributary Lines	209,458	219,495	0		0	
34	354.00	Compressor Station Equipment	546,780	481,599	3,243		8,161	
35	355.00	Meas & Reg. Equipment	288,851	290,474	0		0	
36	356.00	Purification Equipment	243,119	248,386	0		0	
37								
38		Total Storage Plant	5,684,093	4,376,545	49,444		73,344	
39								
40		Transmission Plant						
41	365.10	Land	26,970	16	0		0	
42	365.20	Rights of Way	838,245	342,444	13,672		7,374	
43	366.02	Structures & Improvements	214,065	17,431	4,338		2,941	
44	366.03	Other Structues	69,172	63,126	1,402		950	
45	367.00	Mains - Cathodic Protection	406,111	337,167	5,700		5,098	
46	367.01	Mains - Steel	23,217,765	15,580,995	325,892		291,467	
47	369.00	Meas. & Reg. Equipment	185,854	60,644	2,645		4,189	
48	369.01	Meas. & Reg. Equipment	2,968,370	1,961,127	42,252		66,899	
49								
50		Total Transmission Plant	27,926,553	18,362,950	395,901		378,918	
51								
52		Distribution Plant						
53	374.00	Land & Land Rights	98,315	57,145	0		0	
54	374.01	Land	51,571	0	0		0	
55	374.02	Land Rights	244,565	26,362	4,496		4,061	
56	374.03	Land Other	2,784	0	0		0	
57	375.00	Structures & Improvements	312,033	33,961	9,191		6,015	
58	375.01	Structures & Improvements T.B.	105,699	81,973	3,114		2,037	
59	375.02	Land Rights	46,591	38,779	1,372		898	
60	375.03	Improvements	4,005	51,327	0		0	
61	376.00	Mains Cathodic Protection	10,874,159	2,470,479	218,201		256,897	
62	376.01	Mains - Steel	68,360,296	39,694,946	1,371,718		1,614,978	
63	376.02	Mains - Plastic	27,804,905	8,562,599	557,933		656,877	
64	378.00	Meas. & Reg. Sta. Equip - General	3,132,686	1,440,773	56,358		77,105	
65	379.00	Meas. & Reg. Sta. Equipment - City Gate	1,277,515	166,911	26,897		32,454	
66	379.05	Meas & Reg. Sta. Equipment T.B.	1,636,212	1,727,745	0		0	
67	380.00	Services	79,748,813	39,058,865	3,113,767		5,407,707	
68	381.00	Meters	14,802,451	2,453,491	1,033,007		490,166	
69	382.00	Meter Installations	36,781,828	7,005,807	1,992,410		1,112,550	
70	383.00	House Regulators	5,400,323	2,713,334	154,804		152,135	
71	384.00	House Reg. Installations	154,276	140,951	3,080		5,139	

Atmos Energy Corporation, KY
Case No. 2006-00464
Jurisdictional Depreciation Expense, Accum. Reserve & Accrual Rates by Account
Forecasted Period ended June 30, 2008 - Reflecting Snavely King Rates

Line No.	Acct. No.	Account Titles	Total Company Adjusted Jurisdiction 13 Month Avg. Investment	Reserve 1/	SK Recommended 12 Month Expense	Annual Accrual Rate	Current 12 Month Expense	Annual Accrual Rate
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
						See Note		See Note
72	385.00	Ind. Meas. & Reg. Sta. Equipment	4,926,403	2,139,293	108,105		132,941	
73	386.00	Other Property on Cust Prem	0	2,511	0		0	
74								
75		Total Distribution Plant	255,765,430	107,867,253	8,654,454		9,951,959	
76								

Atmos Energy Corporation, KY
Case No. 2006-00464
Jurisdictional Depreciation Expense, Accum. Reserve & Accrual Rates by Account
Forecasted Period ended June 30, 2008 - Reflecting Snavely King Rates

Line No.	Acct. No.	Account Titles	Total Company Adjusted Jurisdiction 13 Month Avg. Investment	Reserve 1/	SK Recommended 12 Month Expense	SK Recommended Annual Accrual Rate	Current 12 Month Expense	Current Annual Accrual Rate
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
						See Note		See Note
77		General Plant *						
78	389.00	Land & Land Rights	71,393	28,459	0		0	
79	390.01	Structures Frame	65,954	8,423	1,645		1,645	
80	390.02	Structures & Improvements	193,598	109,629	18,964		4,057	
81	390.03	Improvements	774,269	134,945	75,846		16,225	
82	390.04	Air Conditioning Equipment	14,251	8,084	1,188		254	
83	390.09	Improvement to Leased Premises	1,939,014	1,571,253	81,576		108,597	
84	391.00	Office Furniture & Equipment	2,496,243	1,425,957	105,852		131,478	
85	391.02	Remittance Processing Equip	956	1,551	0		0	
86	391.03	Office Machines	119,984	4,045	6,500		7,279	
87	392.00	Transportation Equipment	509,135	(509,535)	304,887		45,395	
88	392.01	Trucks	16,597	25,470	0		0	
89	392.02	Trailers	111,671	154,739	0		0	
90	393.00	Stores Equipment	3,856	3,119	278		278	
91	394.00	Tools, Shop & Garage Equip	1,449,163	72,973	93,816		47,312	
92	396.00	Power Operated Equipment	3,125	3,704	0		0	
93	396.03	Ditchers	223,756	(133,021)	45,916		6,171	
94	396.04	Backhoes	267,602	38,654	54,914		7,380	
95	396.05	Welders	33,959	(1,713)	6,969		937	
96	397.00	Communication Equipment	2,653,181	1,297,724	187,921		166,732	
97	397.01	Communication Equip. - Mobile Radios	3,338	(18,709)	179		172	
98	397.02	Communication Equip. - Fixed Radios	41,432	8,828	2,224		2,134	
99	397.05	Communication Equip. - Telemetering	312,236	106,882	16,759		16,080	
100	398.00	Miscellaneous Equipment	2,850,542	1,192,768	121,768		286,710	
101	399.00	Other Tangible Property	40,867	39,927	5,319		5,319	
102	399.01	Other Tangible Property - Servers - H/W	1,255,886	852,243	73,192		150,492	
103	399.02	Other Tangible Property - Servers - S/W	603,296	573,183	19,468		69,549	
104	399.03	Other Tangible Property - Network - H/W	724,910	680,115	24,059		30,315	
105	399.04	Other Tangible Property - CPU	56,964	83,539	0		0	
106	399.05	Other Tangible Property - MF Hardware	60,318	77,441	0		0	
107	399.06	Other Tangible Property - PC Hardware	4,538,528	3,909,152	177,992		827,720	
108	399.07	Other Tang. Property - PC Software	515,241	447,639	21,295		41,858	
109	399.08	Other Tang. Property - Application Software	7,610,511	4,689,742	845,902		623,587	
110	399.09	Other Tang. Property - Mainframe S/W	133,816	191,807	0		0	
111	399.24	Other Tang. Property - General Startup Costs	1,297,650	964,881	206,197		108,094	
112								
113		Total General Plant	30,993,244	18,043,895	2,500,626		2,705,767	
114								
115		Total Plant	321,881,192	149,560,075	11,604,713		13,109,989	

*** Note: Includes allocations from Shared Services and Mid States General office. Snavely King has proposed no change in Shared Services rates.**
Column G and I Note: Depreciation rates are specific to Kentucky, Shared Services amd Mid States General office and can be found on schedules AG DR15 series of schedules. Snavely King rates shown on pages 3-4 of this exhibit.

1/ Company workpaper "wpB.3 1 F09" (forecasted reserves) updated for Snavely King rates.
2/ Cushion gas (acct. 352.3) plant balance updated to reflect Atmos response to AG DR 2-52
Reserves adjusted to reflect 60% of plant transferred to acct. 117.

Source: Original document provided in response to AG DR15 and also AG DR 2-46.

Atmos Energy Corporation, KY
Case No 2006-00464
Workpaper Computation of Depreciation Expense - Div. 09 KY Only
Forecast Period Ending 6-30-2008 - Reflecting Snavely King Rates

Line No	Acct. No.	Account Titles	DIVISION 09 13 Month Avg. Investment	13 Month Avg. Reserve 1/	Annual Accrual Rate SK 2/	Reserve Computation	12 Month Expense 98.85%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 98.85%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1		Intangible Plant								
2	301.00	Organization	8,330	8,330	0.00%	0	0	0.00%	0	0
3	302.00	Franchises & Consents	119,853	119,853	0.00%	0	0	0.00%	0	0
4	303.00	Misc. Intangible Plant	0	0	0.00%	0	0	0.00%	0	0
5										
6		Total Intangible Plant	128,182	128,182		0	0		0	0
7										
8		Natural Gas Production Plant								
9	325.20	Producing Leaseholds	2,353	69	5.89%	139	137	0.00%	0	0
10	325.40	Rights of Ways	83,422	955	2.29%	1,910	1,888	0.00%	0	0
11	331.00	Production Gas Wells Equipment	3,492	3,492	0.00%	0	0	0.00%	0	0
12	332.01	Field Lines	47,163	47,163	0.00%	0	0	0.00%	0	0
13	332.02	Tributary Lines	528,218	529,956	0.00%	0	0	0.00%	0	0
14	334.00	Field Meas. & Reg. Sta. Equip	198,469	198,469	0.00%	0	0	0.00%	0	0
15	336.00	Purification Equipment	44,369	1,145	5.16%	2,289	2,263	0.00%	0	0
16										
17		Total Natural Gas Production Plant	907,486	781,249		4,338	4,288		0	0
18										
19		Storage Plant								
20	350.10	Land	261,127	0	0.00%	0	0	0.00%	0	0
21	350.20	Rights of Way	4,682	4,757	0.92%	0	0	0.92%	0	0
22	351.00	Structures & Improvements	4,700	2,503	0.60%	28	28	1.93%	91	90
23	351.02	Compression Station Equipment	159,811	118,199	0.60%	959	948	1.93%	3,084	3,049
24	351.03	Meas. & Reg. Sta. Structues	23,138	24,976	0.60%	0	0	1.93%	0	0
25	351.04	Other Structures	144,554	132,962	0.60%	867	857	1.93%	2,790	2,758
26	352.00	Wells \ Rights of Way	62,814	51,214	1.31%	823	813	2.71%	1,702	1,683
27	352.01	Well Construction	2,113,527	1,786,598	1.31%	27,687	27,368	2.71%	57,277	56,616
28	352.02	Well Equipment	531,954	579,757	1.31%	0	0	2.71%	0	0
	352.03	Cushion Gas 3/	677,933	17,389	2.38%	16,135	15,949	0.00%	0	0
30	352.10	Leaseholds	178,530	179,464	0.30%	0	0	0.30%	0	0
31	352.11	Storage Rights	54,614	52,586	0.44%	240	238	1.83%	999	988
32	353.01	Field Lines	178,501	186,188	1.35%	0	0	1.35%	0	0
33	353.02	Tributary Lines	209,458	219,495	1.35%	0	0	1.35%	0	0
34	354.00	Compressor Station Equipment	546,780	481,599	0.60%	3,281	3,243	1.51%	8,256	8,161
35	355.00	Meas & Reg. Equipment	288,851	290,474	0.12%	0	0	2.06%	0	0
36	356.00	Purification Equipment	243,119	248,386	1.30%	0	0	1.30%	0	0
37										
38		Total Storage Plant	5,684,093	4,376,545		50,020	49,444		74,200	73,344
39										
40		Transmission Plant								
41	365.10	Land	26,970	16	0.00%	0	0	0.00%	0	0
42	365.20	Rights of Way	838,245	342,444	1.65%	13,831	13,672	0.89%	7,460	7,374
43	366.02	Structures & Improvements	214,065	17,431	2.05%	4,388	4,338	1.39%	2,976	2,941
44	366.03	Other Structues	69,172	63,126	2.05%	1,418	1,402	1.39%	961	950
45	367.00	Mains - Cathodic Protection	406,111	337,167	1.42%	5,767	5,700	1.27%	5,158	5,098
46	367.01	Mains - Steel	23,217,765	15,580,995	1.42%	329,692	325,892	1.27%	294,866	291,467
47	369.00	Meas. & Reg. Equipment	185,854	60,644	1.44%	2,676	2,645	2.28%	4,237	4,189
48	369.01	Meas. & Reg. Equipment	2,968,370	1,961,127	1.44%	42,745	42,252	2.28%	67,679	66,899
49										
50		Total Transmission Plant	27,926,553	18,362,950		400,517	395,901		383,337	378,918
51										

Atmos Energy Corporation, KY
Case No. 2006-00464
Workpaper Computation of Depreciation Expense - Div. 09 KY Only
Forecast Period Ending 6-30-2008 - Reflecting Snavely King Rates

Line No	Acct No	Account Titles	DIVISION 09 13 Month Avg. Investment	DIVISION 09 13 Month Avg. Reserve 1/	Annual Accrual Rate SK 2/	Reserve Computation	12 Month Expense 98.85%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 98.85%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
52		Distribution Plant								
53	374.00	Land & Land Rights	98,315	57,145	0.00%	0	0	0.00%	0	0
54	374.01	Land	51,571	0	0.00%	0	0	0.00%	0	0
55	374.02	Land Rights	244,565	26,362	1.86%	4,549	4,496	1.68%	4,109	4,061
56	374.03	Land Other	2,784	0	0.00%	0	0	0.00%	0	0
57	375.00	Structures & Improvements	312,033	33,961	2.98%	9,299	9,191	1.95%	6,085	6,015
58	375.01	Structures & Improvements T.B.	105,699	81,973	2.98%	3,150	3,114	1.95%	2,061	2,037
59	375.02	Land Rights	46,591	38,779	2.98%	1,388	1,372	1.95%	909	898
60	375.03	Improvements	4,005	51,327	2.98%	0	0	1.95%	0	0
61	376.00	Mains Cathodic Protection	10,874,159	2,470,479	2.03%	220,745	218,201	2.39%	259,892	256,897
62	376.01	Mains - Steel	68,360,296	39,694,946	2.03%	1,387,714	1,371,718	2.39%	1,633,811	1,614,978
63	376.02	Mains - Plastic	27,804,905	8,562,599	2.03%	564,440	557,933	2.39%	664,537	656,877
64	378.00	Meas. & Reg. Sta. Equipment General	3,132,686	1,440,773	1.82%	57,015	56,358	2.49%	78,004	77,105
65	379.00	Meas. & Reg. Sta. Equipment - City Gate	1,277,515	166,911	2.13%	27,211	26,897	2.57%	32,832	32,454
66	379.05	Meas & Reg. Sta. Equipment T.B.	1,636,212	1,727,745	2.13%	0	0	2.57%	0	0
67	380.00	Services	79,748,813	39,058,865	3.95%	3,150,078	3,113,767	6.86%	5,470,769	5,407,707
68	381.00	Meters	14,802,451	2,453,491	7.06%	1,045,053	1,033,007	3.35%	495,882	490,166
69	382.00	Meter Installations	36,781,828	7,005,807	5.48%	2,015,644	1,992,410	3.06%	1,125,524	1,112,550
70	383.00	House Regulators	5,400,323	2,713,334	2.90%	156,609	154,804	2.85%	153,909	152,135
71	384.00	House Reg. Installations	154,276	140,951	2.02%	3,116	3,080	3.37%	5,199	5,139
72	385.00	Ind. Meas. & Reg. Sta. Equipment	4,926,403	2,139,293	2.22%	109,366	108,105	2.73%	134,491	132,941
73	386.00	Other Property on Cust Prem	0	2,511	3.00%	0	0	3.00%	0	0
74										
75		Total Plant Distribution	255,765,430	107,867,253		8,755,378	8,654,454		10,068,013	9,951,959
76										
77		General Plant								
78	389.00	Land & Land Rights	71,393	28,459	0.00%	0	0	0.00%	0	0
79	390.01	Structures Frame	0	0		0	0	0.00%	0	0
	390.02	Structures & Improvements	193,598	109,629	9.91%	19,186	18,964	2.12%	4,104	4,057
81	390.03	Improvements	774,269	134,945	9.91%	76,730	75,846	2.12%	16,414	16,225
82	390.04	Air Conditioning Equipment	12,129	5,868	9.91%	1,202	1,188	2.12%	257	254
83	390.09	Improvement to Leased Premises	1,382,343	1,166,083	2.36%	32,623	32,247	5.00%	69,117	68,320
84	391.00	Office Furniture & Equipment	1,560,722	603,410	6.22%	97,077	95,958	7.05%	110,031	108,763
85	391.02	Remittance Processing Equip	0	0		0	0	0.00%	0	0
86	391.03	Office Machines	94,911	(20,448)	6.22%	5,903	5,835	7.05%	6,691	6,614
87	392.00	Transportation Equipment	514,843	(507,279)	59.91%	308,442	304,887	8.92%	45,924	45,395
88	392.01	Trucks	16,597	25,470	8.92%	0	0	8.92%	0	0
89	392.02	Trailers	111,671	154,739	59.91%	0	0	8.92%	0	0
90	393.00	Stores Equipment	0	0		0	0	0.00%	0	0
91	394.00	Tools, Shop & Garage Equip	1,404,373	63,134	6.63%	93,110	92,037	3.28%	46,063	45,532
92	396.00	Power Operated Equipment	0	0		0	0	0.00%	0	0
93	396.03	Ditchers	223,756	(133,021)	20.76%	46,452	45,916	2.79%	6,243	6,171
94	396.04	Backhoes	267,602	38,654	20.76%	55,554	54,914	2.79%	7,466	7,380
95	396.05	Welders	33,959	(1,713)	20.76%	7,050	6,969	2.79%	947	937
96	397.00	Communication Equipment	1,141,094	703,626	5.43%	61,961	61,247	5.21%	59,451	58,766
97	397.01	Communication Equip. - Mobile Radios	3,338	(18,709)	5.43%	181	179	5.21%	174	172
98	397.02	Communication Equip. - Fixed Radios	41,432	8,828	5.43%	2,250	2,224	5.21%	2,159	2,134
99	397.05	Communication Equip. - Telemetering	312,236	106,882	5.43%	16,954	16,759	5.21%	16,267	16,080
100	398.00	Miscellaneous Equipment	2,511,890	1,107,139	4.26%	107,006	105,773	10.94%	274,801	271,633
101	399.00	Other Tangible Property	0	0		0	0	0.00%	0	0
102	399.01	Other Tangible Property - Servers - H/W	175,990	205,672	2.71%	0	0	14.29%	0	0
103	399.02	Other Tangible Property - Servers - S/W	113,473	146,838	14.29%	0	0	14.29%	0	0
104	399.03	Other Tangible Property - Network - H/W	511,781	545,999	5.22%	0	0	14.29%	0	0
105	399.04	Other Tangible Property - CPU	0	0		0	0	0.00%	0	0
106	399.05	Other Tangible Property - MF Hardware	0	0		0	0	0.00%	0	0
107	399.06	Other Tangible Property - PC Hardware	3,631,797	3,410,816	0.61%	22,154	21,899	18.51%	672,246	664,497
108	399.07	Other Tang. Property - PC Software	242,979	249,794	19.16%	0	0	15.85%	0	0
109	399.08	Other Tang. Property - Application Software	522,254	459,904	17.49%	91,342	90,289	12.50%	65,282	64,529
110	399.09	Other Tangible Property - Mainframe - S/W	0	0	0.00%	0	0	0.00%	0	0
111	399.24	Other Tang. Property - General Startup Costs	0	0	0.00%	0	0	0.00%	0	0
112										
113		Total General Plant	15,870,429	8,594,718		1,045,179	1,033,131		1,403,638	1,387,458
114										
		Total Plant	306,282,174	140,110,898		10,255,433	10,137,218		11,929,188	11,791,680

1/ Company workpaper "wpB.3.1 F09" (forecasted reserves) updated for SK rates.
2/ See Exhibit___(MJM-4).

Atmos Energy Corporation, KY
Case No. 2006-00464
Workpaper Computation of Depreciation Expense - Div. 09 KY Only
Forecast Period Ending 6-30-2008 - Reflecting Snavely King Rates

Line No.	Acct No.	Account Titles	DIVISION 09 13 Month Avg. Investment	DIVISION 09 13 Month Avg. Reserve 1/	Annual Accrual Rate SK 2/	Reserve Computation	12 Month Expense 98.85%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 98.85%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)

3/ *Cushion gas (acct 352.3) balance updated to reflect Atmos response to AG DR 2-52. Reserves adjusted to reflect the 60% of plant transferred to acct 117.*

Atmos Energy Corporation, KY
Case No. 2006-00464
Workpaper Computation of Depreciation Expense - Div 02 General Office only
Forecast Period Ending 6-30-2008

Line No.	Acct No.	Account Titles	DIVISION 02 13 Month Avg. Investment	13 Month Avg. Reserve	Annual Accrual Rate Proposed	Reserve Computation	12 Month Expense 99.92%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 99.92%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
		General Plant								
1	389.00	Land & Land Rights	0	0	0.00%	0	0	0.00%	0	0
2	390.01	Structures Frame	0	0	0.00%	0	0	0.00%	0	0
3	390.02	Structures & Improvements	0	0	0.00%	0	0	0.00%	0	0
4	390.03	Improvements	0	0	0.00%	0	0	0.00%	0	0
5	390.04	Air Conditioning Equipment	0	0	0.00%	0	0	0.00%	0	0
6	390.09	Improvement to Leased Premises	7,180,234	5,759,267	9.10%	653,401	652,853	7.43%	533,491	533,044
7	391.00	Office Furniture & Equipment	8,880,324	6,072,967	2.13%	189,151	188,992	4.89%	434,248	433,883
8	391.02	Remittance Processing Equip	18,384	29,821	11.37%	0	0	11.37%	0	0
9	391.03	Office Machines	255,134	292,550	2.22%	0	0	2.22%	0	0
10	392.00	Transportation Equipment	18,885	36,133	28.96%	0	0	28.96%	0	0
11	392.01	Trucks	0	0	0.00%	0	0	0.00%	0	0
12	392.02	Trailers	0	0	0.00%	0	0	0.00%	0	0
13	393.00	Stores Equipment	(1,516)	(188)	10.00%	0	0	10.00%	0	0
14	394.00	Tools, Shop & Garage Equip	1,343	5,198	10.00%	0	0	10.00%	0	0
15	396.00	Power Operated Equipment	0	0	0.00%	0	0	0.00%	0	0
16	396.03	Ditchers	0	0	0.00%	0	0	0.00%	0	0
17	396.04	Backhoes	0	0	0.00%	0	0	0.00%	0	0
18	396.05	Welders	0	0	0.00%	0	0	0.00%	0	0
19	397.00	Communication Equipment	990,598	308,482	8.45%	83,705	83,635	7.12%	70,531	70,471
20	397.01	Communication Equip. - Mobile Radios	0	0	0.00%	0	0	0.00%	0	0
21	397.02	Communication Equip. - Fixed Radios	0	0	0.00%	0	0	0.00%	0	0
22	397.05	Communication Equip. - Telemetering	0	0	0.00%	0	0	0.00%	0	0
23	398.00	Miscellaneous Equipment	631,550	429,080	8.15%	51,471	51,428	5.36%	33,851	33,823
24	399.00	Other Tangible Property	10,196	11,200	4.66%	0	0	15.75%	0	0
25	399.01	Other Tangible Property - Servers - H/W	9,436,183	2,501,386	6.95%	655,815	655,264	14.29%	1,348,430	1,347,299
26	399.02	Other Tangible Property - Servers - S/W	1,971,595	807,464	4.00%	78,864	78,798	14.29%	281,741	281,504
27	399.03	Other Tangible Property - Network - H/W	1,917,244	628,553	9.30%	178,304	178,154	14.29%	273,974	273,744
28	399.04	Other Tangible Property - CPU	1,095,465	1,606,519	26.26%	0	0	26.26%	0	0
29	399.05	Other Tangible Property - MF Hardware	1,159,964	1,489,243	15.76%	0	0	15.76%	0	0
30	399.06	Other Tangible Property - PC Hardware	3,086,387	2,272,695	14.86%	458,637	458,252	16.83%	519,439	519,003
31	399.07	Other Tang. Property - PC Software	1,467,647	1,170,832	9.02%	132,382	132,271	17.73%	260,214	259,995
32	399.08	Other Tang. Property - Application Software	50,421,532	22,467,881	11.11%	5,601,832	5,597,130	8.22%	4,144,650	4,141,171
33	399.09	Other Tangible Property - Mainframe - S/W	2,573,389	3,688,598	22.16%	0	0	22.16%	0	0
34	399.24	Other Tang. Property - General Startup Costs	0	0	15.89%	0	0	8.33%	0	0
35										
36		Total General Plant	91,114,538	49,577,681		8,083,562	8,076,776		7,900,569	7,893,937
37										
38		Total Plant	91,114,538	49,577,681		8,083,562	8,076,776		7,900,569	7,893,937

Atmos Energy Corporation, KY
Case No. 2006-00464
Workpaper Computation of Depreciation Expense - Div 12 Customer Service only
Forecast Period Ending 6-30-2008

Line No.	Acct. No.	Account Titles	DIVISION 12 13 Month Avg. Investment	Reserve	Annual Accrual Rate Proposed	Reserve Computation	12 Month Expense 100.00%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 100.00%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
		General Plant								
1	389.00	Land & Land Rights	0	0	0.00%	0	0	0.00%	0	0
2	390.01	Structures Frame	0	0	0.00%	0	0	0.00%	0	0
3	390.02	Structures & Improvements	0	0	0.00%	0	0	0.00%	0	0
4	390.03	Improvements	0	0	0.00%	0	0	0.00%	0	0
5	390.04	Air Conditioning Equipment	0	0	0.00%	0	0	0.00%	0	0
6	390.09	Improvement to Leased Premises	3,018,160	1,553,690	9.10%	274,653	274,653	7.43%	224,249	224,249
7	391.00	Office Furniture & Equipment	56,077	11,875	2.13%	1,194	1,194	4.89%	2,742	2,742
8	391.02	Remittance Processing Equip	0	0	11.37%	0	0	11.37%	0	0
9	391.03	Office Machines	0	0	2.22%	0	0	2.22%	0	0
10	392.00	Transportation Equipment	0	0	28.96%	0	0	28.96%	0	0
11	392.01	Trucks	0	0	0.00%	0	0	0.00%	0	0
12	392.02	Trailers	0	0	0.00%	0	0	0.00%	0	0
13	393.00	Stores Equipment	0	0	10.00%	0	0	10.00%	0	0
14	394.00	Tools, Shop & Garage Equip	0	0	10.00%	0	0	10.00%	0	0
15	396.00	Power Operated Equipment	0	0	0.00%	0	0	0.00%	0	0
16	396.03	Ditchers	0	0	0.00%	0	0	0.00%	0	0
17	396.04	Backhoes	0	0	0.00%	0	0	0.00%	0	0
18	396.05	Welders	0	0	0.00%	0	0	0.00%	0	0
19	397.00	Communication Equipment	24,199,330	9,432,840	8.45%	2,044,843	2,044,843	7.12%	1,722,992	1,722,992
0	397.01	Communication Equip. - Mobile Radios	0	0	0.00%	0	0	0.00%	0	0
21	397.02	Communication Equip. - Fixed Radios	0	0	0.00%	0	0	0.00%	0	0
22	397.05	Communication Equip. - Telemetering	0	0	0.00%	0	0	0.00%	0	0
23	398.00	Miscellaneous Equipment	1,916	428	8.15%	156	156	5.36%	103	103
24	399.00	Other Tangible Property	214,670	235,803	4.66%	0	0	15.75%	0	0
25	399.01	Other Tangible Property - Servers - H/W	10,051,060	8,746,527	6.95%	698,549	698,549	14.29%	1,436,296	1,436,296
26	399.02	Other Tangible Property - Servers - S/W	6,861,747	6,774,304	4.00%	274,470	274,470	14.29%	980,544	980,544
27	399.03	Other Tangible Property - Network - H/W	459,784	264,431	9.30%	42,760	42,760	14.29%	65,703	65,703
28	399.04	Other Tangible Property - CPU	0	0	26.26%	0	0	26.26%	0	0
29	399.05	Other Tangible Property - MF Hardware	0	0	15.76%	0	0	15.76%	0	0
30	399.06	Other Tangible Property - PC Hardware	3,599,489	1,545,069	14.86%	534,884	534,884	16.83%	605,794	605,794
31	399.07	Other Tang. Property - PC Software	2,854,096	1,586,604	9.02%	257,439	257,439	17.73%	506,031	506,031
32	399.08	Other Tang. Property - Application Software	74,669,220	41,318,325	11.11%	8,295,750	8,295,750	8.22%	6,137,810	6,137,810
33	399.09	Other Tangible Property - Mainframe - S/W	0	0	22.16%	0	0	22.16%	0	0
34	399.24	Other Tang. Property - General Startup Costs	23,172,326	17,230,016	15.89%	3,682,083	3,682,083	8.33%	1,930,255	1,930,255
35										
36		Total General Plant	149,157,876	88,699,913		16,106,782	16,106,782		13,612,520	13,612,520
37										
38		Total Plant	149,157,876	88,699,913		16,106,782	16,106,782		13,612,520	13,612,520

Atmos Energy Corporation, KY
Case No. 2006-00464
Workpaper Computation of Depreciation Expense - Div. 91 Admin. Office only
Forecast Period Ending 6-30-2008

Line No.	Acct. No.	Account Titles	DIVISION 91 13 Month Avg. Investment	Reserve	Annual Accrual Rate Proposed	Reserve Computation	12 Month Expense 98.97%	Annual Accrual Rate Current	Reserve Computation	12 Month Expense 98.97%
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
1		Intangible Plant								
2	301.00	Organization	185,309	0	0.00%	0	0	0.00%	0	0
3	302.00	Franchises & Consents	0	0	0.00%	0	0	0.00%	0	0
4	303.00	Misc. Intangible Plant	1,109,552	0	0.00%	0	0	0.00%	0	0
5										
6		Total Intangible Plant	1,294,861	0		0	0		0	0
7										
8										
9		Distribution Plant								
10	376.01	Mains - Steel	0	0	3.61%	0	0	3.61%	0	0
11										
12		Total Plant Distribution	0	0		0	0		0	0
13										
14		General Plant								
15	389.00	Land & Land Rights	0	0	0.00%	0	0	0.00%	0	0
16	390.01	Structures Frame	179,339	22,902	2.52%	4,519	4,473	2.52%	4,519	4,473
17	390.02	Structures & Improvements	0	0	0.00%	0	0	0.00%	0	0
18	390.03	Improvements	0	0	0.00%	0	0	0.00%	0	0
19	390.04	Air Conditioning Equipment	5,771	6,026	2.52%	0	0	2.52%	0	0
20	390.09	Improvement to Leased Premises	38,834	50,798	2.52%	0	0	2.52%	0	0
21	391.00	Office Furniture & Equipment	1,279,638	1,376,122	5.69%	0	0	5.69%	0	0
22	391.02	Remittance Processing Equip	0	0	0.00%	0	0	0.00%	0	0
23	391.03	Office Machines	32,103	25,234	5.69%	1,827	1,808	5.69%	1,827	1,808
24	392.00	Transportation Equipment	(18,191)	(11,244)	0.00%	0	0	0.00%	0	0
25	392.01	Trucks	0	0	0.00%	0	0	0.00%	0	0
26	392.02	Trailers	0	0	0.00%	0	0	0.00%	0	0
27	393.00	Stores Equipment	10,698	8,508	7.15%	765	757	7.15%	765	757
28	394.00	Tools, Shop & Garage Equip	121,600	26,017	4.02%	4,888	4,838	4.02%	4,888	4,838
29	396.00	Power Operated Equipment	8,497	10,070	11.11%	0	0	11.11%	0	0
30	396.03	Ditchers	0	0	0.00%	0	0	0.00%	0	0
31	396.04	Backhoes	0	0	0.00%	0	0	0.00%	0	0
32	396.05	Welders	0	0	0.00%	0	0	0.00%	0	0
33	397.00	Communication Equipment	286,634	135,459	7.49%	21,469	21,247	7.49%	21,469	21,247
34	397.01	Communication Equip. - Mobile Radios	0	0	0.00%	0	0	0.00%	0	0
35	397.02	Communication Equip. - Fixed Radios	0	0	0.00%	0	0	0.00%	0	0
36	397.05	Communication Equip. - Telemetering	0	0	0.00%	0	0	0.00%	0	0
37	398.00	Miscellaneous Equipment	831,253	172,103	4.40%	36,575	36,197	4.40%	36,575	36,197
38	399.00	Other Tangible Property	76,993	71,076	18.98%	14,613	14,462	18.98%	14,613	14,462
39	399.01	Other Tangible Property - Servers - H/W	71,663	72,581	14.29%	0	0	14.29%	0	0
40	399.02	Other Tangible Property - Servers - S/W	8,273	13,586	14.29%	0	0	14.29%	0	0
41	399.03	Other Tangible Property - Network - H/W	238,424	235,540	14.29%	34,071	33,719	14.29%	34,071	33,719
42	399.04	Other Tangible Property - CPU	0	0	0.00%	0	0	0.00%	0	0
43	399.05	Other Tangible Property - MF Hardware	0	0	0.00%	0	0	0.00%	0	0
44	399.06	Other Tangible Property - PC Hardware	1,481,024	798,427	18.98%	281,098	278,196	18.98%	281,098	278,196
45	399.07	Other Tang. Property - PC Software	98,204	130,822	18.98%	0	0	18.98%	0	0
46	399.08	Other Tang. Property - Application Software	774,577	2,033,050	18.98%	0	0	18.98%	0	0
47	399.09	Other Tangible Property - Mainframe - S/W	0	0	0.00%	0	0	0.00%	0	0
48	399.24	Other Tang. Property - General Startup Costs	0	0	0.00%	0	0	0.00%	0	0
49										
50		Total General Plant	5,525,332	5,177,079		399,826	395,697		399,826	395,697
51										
52		Total Plant	6,820,193	5,177,079		399,826	395,697		399,826	395,697

ATMOS ENERGY CORPORATION - SHARED SERVICES
Five-Year Average Net Salvage Experience
2001-2005

Account (a)	Year (b)	Retirements (c)	Salvage (d)	Cost of Removal (e)	Net Salvage (f)=(d)-(e)
39009000	2002	-	-	-	-
39009000	2003	-	-	-	-
39009000	2004	-	-	-	-
39009000	2005	-	-	-	-
39009000	2006	178,757	-	-	-
Five Year Total		**178,757**	**-**	**-**	**-**
Five Year Average		**35,751**	**-**	**-**	**-**
39100000	2002	-	-	-	-
39100000	2003	-	-	-	-
39100000	2004	-	-	-	-
39100000	2005	-	-	-	-
39100000	2006	1,420,965	-	-	-
Five Year Total		**1,420,965**	**-**	**-**	**-**
Five Year Average		**284,193**	**-**	**-**	**-**
39700000	2002	-	-	-	-
39700000	2003	-	-	-	-
39700000	2004	34,015	26,609	3,107	23,502
39700000	2005	-	-	-	-
39700000	2006	792,568	-	-	-
Five Year Total		**826,583**	**26,609**	**3,107**	**23,502**
Five Year Average		**165,317**	**5,322**	**621**	**4,700**
39800000	2002	-	-	-	-
39800000	2003	56,637	-	-	-
39800000	2004	-	-	-	-
39800000	2005	-	-	-	-
39800000	2006	-	-	-	-
Five Year Total		**56,637**	**-**	**-**	**-**
Five Year Average		**11,327**	**-**	**-**	**-**
39900000	2002	8,143	-	-	-
39900000	2003	-	-	-	-
39900000	2004	-	-	-	-
39900000	2005	-	-	-	-
39900000	2006	-	-	-	-
Five Year Total		**8,143**	**-**	**-**	**-**
Five Year Average		**1,629**	**-**	**-**	**-**
39903000	2002	-	-	-	-
39903000	2003	-	-	-	-
39903000	2004	-	-	-	-
39903000	2005	-	-	-	-
39903000	2006	11,472	-	-	-
Five Year Total		**11,472**	**-**	**-**	**-**
Five Year Average		**2,294**	**-**	**-**	**-**
39906000	2002	6,189,732	-	-	-
39906000	2003	-	-	-	-
39906000	2004	-	-	-	-
39906000	2005	-	-	-	-
39906000	2006	2,632,955	-	-	-
Five Year Total		**8,822,687**	**-**	**-**	**-**
Five Year Average		**1,764,537**	**-**	**-**	**-**
39907000	2002	861,539	-	-	-
39907000	2003	-	-	-	-
39907000	2004	-	-	-	-
39907000	2005	-	-	-	-
39907000	2006	16,495	-	-	-
Five Year Total		**878,034**	**-**	**-**	**-**
Five Year Average		**175,607**	**-**	**-**	**-**
39908000	2002	9,573,067	-	-	-
39908000	2003	-	-	-	-
39908000	2004	-	-	-	-
39908000	2005	-	-	-	-
39908000	2006	731,136	-	-	-
Five Year Total		**10,304,203**	**-**	**-**	**-**
Five Year Average		**2,060,841**	**-**	**-**	**-**

Source: Response to AG 1-087

ATMOS ENERGY CORPORATION - KENTUCKY
Five-Year Average Net Salvage Experience
2001-2005

Account (a)	Year (b)	Retirements (c)	Salvage (d)	Cost of Removal (e)	Net Salvage (f)=(d)-(e)
36700000	2001	6,910	-	-	-
36700000	2002	2,750	-	-	-
36700000	2003	-	-	-	-
36700000	2004	-	-	-	-
36700000	2005	22,519	-	28,499	(28,499)
Five Year Total		**32,179**	**-**	**28,499**	**(28,499)**
Five Year Average		**6,436**	**-**	**5,700**	**(5,700)**
36900000	2001	2,183	-	-	-
36900000	2002	-	-	-	-
36900000	2003	-	-	-	-
36900000	2004	-	-	-	-
36900000	2005	-	-	-	-
Five Year Total		**2,183**	**-**	**-**	**-**
Five Year Average		**437**	**-**	**-**	**-**
37600000	2001	180,309	-	100,246	(100,246)
37600000	2002	112,370	-	20,416	(20,416)
37600000	2003	112,104	-	42,202	(42,202)
37600000	2004	63,595	-	50,731	(50,731)
37600000	2005	305,582	-	32,095	(32,095)
Five Year Total		**773,960**	**-**	**245,690**	**(245,690)**
Five Year Average		**154,792**	**-**	**49,138**	**(49,138)**
37900000	2001	-	-	-	-
37900000	2002	-	-	-	-
37900000	2003	-	-	-	-
37900000	2004	302	-	-	-
37900000	2005	-	-	-	-
Five Year Total		**302**	**-**	**-**	**-**
Five Year Average		**60**	**-**	**-**	**-**
38000000	2001	1,081,065	-	450,538	(450,538)
38000000	2002	353,920	-	282,498	(282,498)
38000000	2003	573,781	-	600,977	(600,977)
38000000	2004	127,032	-	479,035	(479,035)
38000000	2005	540,726	-	257,366	(257,366)
Five Year Total		**2,676,524**	**-**	**2,070,414**	**(2,070,414)**
Five Year Average		**535,305**	**-**	**414,083**	**(414,083)**
38100000	2001	-	-	-	-
38100000	2002	-	-	-	-
38100000	2003	9,244,466	-	-	-
38100000	2004	-	-	-	-
38100000	2005	-	-	-	-
Five Year Total		**9,244,466**	**-**	**-**	**-**
Five Year Average		**1,848,893**	**-**	**-**	**-**
38200000	2001	57,297	-	161,169	(161,169)
38200000	2002	250,858	-	1,139,462	(1,139,462)
38200000	2003	312,393	-	536,125	(536,125)
38200000	2004	203,956	-	521,798	(521,798)
38200000	2005	110,560	-	157,057	(157,057)
Five Year Total		**935,064**	**-**	**2,515,611**	**(2,515,611)**
Five Year Average		**187,013**	**-**	**503,122**	**(503,122)**
38300000	2001	-	-	-	-
38300000	2002	-	-	-	-
38300000	2003	68	-	-	-
38300000	2002	-	-	-	-
38300000	2005	4,054	-	-	-
Five Year Total		**4,122**	**-**	**-**	**-**
Five Year Average		**824**	**-**	**-**	**-**
38500000	2001	16,167	-	7,896	(7,896)
38500000	2002	-	-	-	-
38500000	2003	-	-	-	-
38500000	2004	-	-	-	-
38500000	2005	-	-	-	-
Five Year Total		**16,167**	**-**	**7,896**	**(7,896)**
Five Year Average		**3,233**	**-**	**1,579**	**(1,579)**
39100000	2001	72,169	-	28	(28)
39100000	2002	94,992	-	-	-
39100000	2003	15,380	-	-	-

ATMOS ENERGY CORPORATION - KENTUCKY
Five-Year Average Net Salvage Experience
2001-2005

Account (a)	Year (b)	Retirements (c)	Salvage (d)	Cost of Removal (e)	Net Salvage (f)=(d)-(e)
39100000	2004	38,289	-	-	-
39100000	2005	-	-	-	-
Five Year Total		**220,830**	**-**	**28**	**(28)**
Five Year Average		**44,166**	**-**	**6**	**(6)**
39200000	2001	549,771	7,561	-	7,561
39200000	2002	216,646	35,292	-	35,292
39200000	2003	2,732,280	79,320	-	79,320
39200000	2004	559,510	-	-	-
39200000	2005	394,260	67,019	4,646	62,373
Five Year Total		**4,452,467**	**189,192**	**4,646**	**184,546**
Five Year Average		**890,493**	**37,838**	**929**	**36,909**
39400000	2001	18,601	-	-	-
39400000	2002	764,651	-	-	-
39400000	2003	61,408	-	-	-
39400000	2004	517,271	-	-	-
39400000	2005	43,563	200	6	194
Five Year Total		**1,405,494**	**200**	**6**	**194**
Five Year Average		**281,099**	**40**	**1**	**39**
39600000	2001	1,617	-	-	-
39600000	2002	278,879	22,479	-	22,479
39600000	2003	357,777	-	-	-
39600000	2004	204,050	-	-	-
39600000	2005	42,281	12,486	-	12,486
Five Year Total		**884,604**	**34,965**	**-**	**34,965**
Five Year Average		**176,921**	**6,993**	**-**	**6,993**
39700000	2001	-	-	-	-
39700000	2002	38,139	-	-	-
39700000	2003	4,941	-	-	-
39700000	2004	-	-	-	-
39700000	2005	32,436	-	-	-
Five Year Total		**75,516**	**-**	**-**	**-**
Five Year Average		**15,103**	**-**	**-**	**-**
39906000	2001	-	-	-	-
39906000	2002	190,623	-	-	-
39906000	2003	158,354	2,788	-	2,788
39906000	2004	176,848	-	-	-
39906000	2005	-	-	-	-
Five Year Total		**525,825**	**2,788**	**-**	**2,788**
Five Year Average		**105,165**	**558**	**-**	**558**
39907000	2001	-	-	-	-
39907000	2002	-	-	-	-
39907000	2003	54,807	-	-	-
39907000	2004	-	-	-	-
39907000	2005	-	-	-	-
Five Year Total		**54,807**	**-**	**-**	**-**
Five Year Average		**10,961**	**-**	**-**	**-**
Total All Accounts					
	2001	1,986,089	7,561	719,877	(712,316)
	2002	2,303,828	57,771	1,442,376	(1,384,605)
	2003	13,627,759	82,108	1,179,304	(1,097,196)
	2004	1,890,551	-	1,051,564	(1,051,564)
	2005	1,495,981	79,705	479,669	(399,964)
Five Year Total		**21,304,208**	**227,145**	**4,872,790**	**(4,645,645)**
Five Year Average		**4,260,842**	**45,429**	**974,558**	**(929,129)**

Source: Response to AG 1-087.

ATMOS ENERGY CORPORATION - SHARED SERVICES
Book Depreciation Study as of September 30, 2006
Snavely King Recommended COR Rates and Allowances

Account	Description	9/30/2006 Balance (a)	2002-2006 5-Year Avg. COR (b)	SK COR Rate (c)=(b)/(a)	SK COR Allowance (d)=(a)*(c)
	GENERAL PLANT				
390.09	Improvements to Leased Premises	9,949,143	-	-	-
391.00	Office Furniture and Equipment	9,074,352	-	-	-
397.00	Communication Equipment	25,311,861	621	0.002	621
398.00	Miscellaneous Equipment	633,466	-	-	-
399.00	Other Tangible Property	224,866	-	-	-
399.01	Servers Hardware	14,567,322	-	-	-
399.02	Servers Software	8,647,580	-	-	-
399.03	Network Hardware	2,377,029	-	-	-
399.06	PC Hardware	6,691,156	-	-	-
399.07	PC Software	3,928,199	-	-	-
399.08	Application Software	111,323,312	-	-	-
399.24	General Startup Cost	23,172,326	-	-	-
	Total Depreciable General Plant	215,900,612	621	0.000	621
	Fully Depreciated	5,331,910			
	Late Retirements	4,363,383			
	Total Shared Services Facilities	225,595,905			

Sources:
Col. (a) from Exhibit DSR-4, Schedule 1.
Col. (b) from page 5..

ATMOS ENERGY CORPORATION - KENTUCKY
Book Depreciation Study as of September 30, 2005
Snavely King Recommended COR Rates and Allowances

Account	Description	9/30/2005 Balance (a)	2001-2005 5-Year Avg. COR (b)	SK COR Rate (c)=(b)/(a)	SK COR Allowance (d)=(a)*(c)
	PRODUCTION PLANT				
325.20	Producing Leaseholds	2,353	0	-	0
325.40	Rights-of-Way	83,422	0	-	0
336.00	Purification Equipment	44,369	0	-	0
	Total Production Plant	130,144	0	-	0
	STORAGE PLANT				
351.00	Structures and Improvements	309,065	0	-	0
352.00	Well Construction and Equipment	2,176,341	0	-	0
352.03	Cushion Gas	1,694,833	0	-	0
352.11	Storage Rights	54,614	0	-	0
354.00	Compressor Station Equipment	546,780	0	-	0
355.00	M&R Station Equipment	288,851	0	-	0
	Total Storage Plant	5,070,484	0	-	0
	TRANSMISSION PLANT				
365.20	Rights-of-Way	812,196	0	-	0
366.00	Structures and Improvements	283,237	0	-	0
367.00	Mains	22,044,698	5,700	0.03	5,700
369.00	M&R Station Equipment	2,952,222	0	-	0
	Total Transmission Plant	26,092,353	5,700	0.02	5,700
	DISTRIBUTION PLANT				
374.02	Land Rights	145,459	0	-	0
375.00	Structures and Improvements	468,328	0	-	0
376.00	Mains	95,924,845	49,138	0.05	49,138
378.00	M&R Station Equipment	2,617,970	0	-	0
379.00	City Gate Equipment	2,804,310	0	-	0
380.00	Services	69,190,312	414,083	0.60	414,083
381.00	Meters	13,775,723	0	-	0
382.00	Meter Installations	33,358,910	503,122	1.51	503,122
383.00	House Regulators	4,816,804	0	-	0
384.00	House Regulator Installations	154,276	0	-	0
385.00	Industrial M&R Equipment	4,433,322	1,579	0.04	1,579
	Total Distribution Plant	227,690,259	967,922	0.43	967,922
	GENERAL PLANT				
390.00	Structures and Improvements	966,202	0	-	0
390.09	Improvements to Leased Premises	1,382,343	0	-	0
391.00	Office Furniture and Equipment	2,305,350	6	0.00	6
392.00	Transportation Equipment	761,620	929	0.12	929
394.00	Tools, Shop and Garage Equipment	2,118,023	1	-	0
396.00	Power Operated Equipment	663,629	0	-	0
397.00	Communication Equipment	1,498,100	0	-	0
398.00	Miscellaneous Equipment	2,160,051	0	-	0
399.01	OTP - Servers Hardware	175,990	0	-	0
399.03	OTP - Network Hardware	511,781	0	-	0
399.06	OTP - PC Hardware	2,702,795	0	-	0
399.07	OTP - PC Software	242,979	0	-	0
399.08	OTP - Application Software	522,254	0	-	0
	Total General Plant	16,011,117	936	0.01	935
	Total Depreciable Plant	274,994,357	974,558	0.35	974,557
	Intangible Plant	128,183			
	Non-Depreciable Plant	486,462			
	Fully Depreciated Plant	2,303,510			
	Total Plant in Service	277,912,512			

Sources:
Col. (a) from Exhibit DSR-3, Schedule 1.
Col. (b) from pages 3-4.

Atmos Energy Corporation

Forecasted Test Period Depreciation Expense
Company Proposed vs. Snavely King Recommended

Line	Division	Company Proposed Amount (a)	Company Proposed Allocation (b)	Company Proposed Allocated Amount (c)=(a)*(b)	SK Recommended Amount (d)	SK Recommended Allocation (e)	SK Recommended Allocated Amount (f)=(d)*(e)	Difference (g)=(f)-(c)
1	KY- Only - Div. 09	11,564,847		11,564,847	10,137,218		10,137,218	(1,427,629)
2	Div. 02	8,076,776	5.20%	419,992	8,076,776	5.20%	419,992	-
3	Div. 12	16,106,782	5.60%	901,980	16,106,782	5.60%	901,980	-
4	Div. 91	395,697	36.78%	145,523	395,697	36.78%	145,523	-
5	Total			13,032,342			11,604,713	(1,427,629)

Sources:
Company Proposed from AG-DR-1-15.

SK Recommended from Exhibit___(MJM-5). (Calculated by changing proposed rates in AG-DR-1-15 to SK recommended rates, and updating Acct. 352.03 plant balance per response to AG-DR-2-52.

Atmos Energy Corporation, KY
Computation of 13 Month Average Plant Balances
workpaper B-2 Forecasted 91

Data: ___ Base Period _X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

WP Sched B.2
Page 2 of 2
Witness:

Line No.	Acct. No.	Account Title	Mar-07	Apr-07	May-07	Beg Test Yr. Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Test Yr End Jun-08	13 Mo. Avg Jun-08	Div 91 Sep-07	Div 91 Additions 03/07 - 09/07	Div 91 Retirements 03/07 - 09/07
			$	$	$	$	$	$	$	$	$	$	$	$	$	$		$	Projected	Projected	Budgeted	Projected
		Intangible Plant																				
1	301.00	Organization	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	185,309	0	0
2	302.00	Franchises & Consents	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	303.00	Misc Intangible Plant	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	1,109,552	0	0
		Total Intangible Plant	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	1,294,861	0	0
		Distribution Plant																				
	376.01	Mains - Steel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total Natural Gas Production Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		General Plant																	0	0		
2	389.00	Land & Land Rights	0																179,339	179,339	0	0
3	390.01	Structures - Frame	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	179,339	0	0		
4	390.02	Structures & Improvements	0																0	0		
5	390.03	Improvements	0																5,771	5,771	0	0
7	390.04	Air Conditioning Equipment	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,771	38,834	38,834	0	0
8	390.09	Improvement to leased Premises	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	38,834	1,279,638	1,280,655	0	(2,034)
9	391.00	Office Furniture & Equipment	1,282,688	1,282,349	1,282,010	1,281,671	1,281,332	1,280,993	1,280,655	1,280,316	1,279,977	1,279,638	1,279,299	1,278,960	1,278,621	1,278,282	1,277,943	1,277,604	0	0		
10	391.02	Remittance Processing Equip	0																32,103	33,304	0	(2,402)
11	391.03	Office Machines	35,706	35,306	34,906	34,505	34,105	33,704	33,304	32,904	32,503	32,103	31,702	31,302	30,901	30,501	30,101	29,700	(18,191)	(14,553)	0	(7,276)
12	392.00	Transportation Equipment	(7,276)	(8,489)	(9,702)	(10,915)	(12,127)	(13,340)	(14,553)	(15,765)	(16,978)	(18,191)	(19,404)	(20,616)	(21,829)	(23,042)	(24,254)	(25,467)	0	0		
	392.01	Trucks	0																0	0		
13	392.02	Trailers	0																10,698	10,698	0	0
14	393.00	Stores Equipment	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	10,698	121,600	122,362	0	(1,524)
15	394.00	Tools, Shop & Garage Equipment	123,886	123,632	123,378	123,124	122,870	122,616	122,362	122,108	121,854	121,600	121,345	121,091	120,837	120,583	120,329	120,075	8,497	8,497	0	0
16	396.00	Power Operated Equipment	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	8,497	0	0		
17	396.03	Ditchers	0																0	0		
18	396.04	Backhoes	0																0	0		
19	396.05	Welders	0																0	0		
20	397.00	Communication Equipment	279,270	279,270	279,270	279,270	279,270	279,270	279,270	281,397	283,525	285,652	287,779	289,907	292,034	294,161	296,288	298,416	286,634	279,270	0	0
21	397.01	Communication Equipment - Mobile Radios	0																0	0		
22	397.02	Communication Equipment - Fixed Radios	0																0	0		
23	397.05	Communication Equip. - Telemetering	0																0	0		
	398.00	Miscellaneous Equipment	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	831,253	0	0
	399.00	Other Tangible Property	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	76,993	0	0
	399.01	Other Tangible Property - Servers H/W	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	71,663	0	0
24	399.02	Other Tangible Property - Servers S/W	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	8,273	0	0
25	399.03	Other Tangible Property - Network H/W	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	238,424	0	0
26	399.04	Other Tangible Property - CPU	0																0	0		
27	399.05	Other Tang. Property - MF Hardware	0																0	0		
28	399.06	Other Tang. Property - P.C. Hardware	1,454,326	1,454,326	1,454,326	1,454,326	1,454,326	1,454,326	1,454,326	1,462,039	1,469,752	1,477,464	1,485,177	1,492,890	1,500,603	1,508,316	1,516,029	1,523,742	1,481,024	1,454,326	0	0
	399.07	Other Tang. Property - P.C. Software	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	98,204	0	0
29	399.08	Other Tang. Property - Application Software	766,349	766,349	766,349	766,349	766,349	766,349	766,349	768,726	771,103	773,480	775,857	778,233	780,610	782,987	785,364	787,741	774,577	766,349	0	0
30	399.09	Other Tang. Property - Mainframe S/W	0																0	0		
31	399.24	Other Tang. Property - Gen. Startup Costs	0																0	0		
		Total General Plant	5,502,898	5,500,692	5,498,486	5,496,280	5,494,074	5,491,867	5,489,661	5,499,672	5,509,683	5,519,694	5,529,705	5,539,715	5,549,726	5,559,737	5,569,748	5,579,759	5,525,332	5,489,661	0	(13,237)

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Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Base Div. 09 Western Only

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Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07
				$	$	$	$	$	$	$	$	$	$	$	$	$
1		Account 101-1000 Gas Plant in Service -														
2		Intangible Plant														
3	301.00	Organization		8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330	8,330
	302.00	Franchises & Consents		119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853	119,853
4	303.00	Misc. Intangible Plant		0	0	0	0	0	0	0	0	0	0	0	0	0
5																
6		Total Intangible Plant		128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182	128,182
7																
8		Natural Gas Production Plant														
9	325.20	Producing Leaseholds		0	0	0	0	0	0	0	0	0	0	0	0	0
10	325.40	Rights of Ways		0	0	0	0	0	0	0	0	0	0	0	0	0
11	331.00	Production Gas Wells Equipment		3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492	3,492
12	332.01	Field Lines		47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163	47,163
13	332.02	Tributary Lines		529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956	529,956
14	334.00	Field Meas. & Reg. Sta. Equip		198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469	198,469
15	336.00	Purification Equipment		0	0	0	0	0	0	0	0	0	0	0	0	0
16																
17		Total Natural Gas Production Plant		779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080	779,080
18																
19		Storage Plant														
20	350.10	Land		0	0	0	0	0	0	0	0	0	0	0	0	0
21	350.20	Rights of Way	0.92%	4,682	4,682	4,682	4,682	4,682	4,682	4,682	4,689	4,696	4,703	4,710	4,717	4,725
22	351.00	Structures & Improvements	1.93%	1,627	1,634	1,642	1,649	1,657	1,665	1,672	1,680	1,687	1,695	1,702	1,710	1,718
23	351.02	Compression Station Equipment	1.93%	114,523	114,780	115,037	115,294	115,551	115,808	116,065	116,322	116,580	116,837	117,094	117,351	117,608
24	351.03	Meas. & Reg. Sta. Structures	1.93%	23,762	23,799	23,837	23,874	23,911	23,948	23,985	24,023	24,060	24,097	24,134	24,171	24,209
25	351.04	Other Structures	1.93%	129,435	129,668	129,900	130,133	130,365	130,598	130,830	131,063	131,295	131,528	131,760	131,993	132,225
26	352.00	Wells	2.71%	34,782	34,923	35,065	35,207	35,349	35,491	35,633	35,775	35,916	36,058	36,200	36,342	36,484
27	352.01	Well Construction	2.71%	1,711,874	1,716,647	1,721,420	1,726,193	1,730,966	1,735,739	1,740,512	1,745,285	1,750,058	1,754,831	1,759,604	1,764,377	1,769,150
28	352.02	Well Equipment	2.71%	550,374	551,576	552,777	553,978	555,180	556,381	557,582	558,784	559,985	561,186	562,388	563,589	564,790
29	352.03	Cushion Gas	0.00%	23,304	23,304	23,304	23,304	23,304	0	0	3,884	7,768	11,652	15,536	19,420	23,304
30	352.10	Leaseholds	0.30%	178,619	178,619	178,619	178,619	178,619	178,619	178,619	178,709	178,798	178,887	178,976	179,066	179,155
31	352.11	Storage Rights	1.83%	50,650	50,733	50,817	50,900	50,983	51,066	51,150	51,233	51,316	51,400	51,483	51,566	51,649
32	353.01	Field Lines	1.35%	181,866	182,067	182,268	182,469	182,670	182,871	183,071	183,272	183,473	183,674	183,875	184,075	184,276
33	353.02	Tributary Lines	1.35%	213,408	213,644	213,879	214,115	214,351	214,586	214,822	215,057	215,293	215,529	215,764	216,000	216,236
34	354.00	Compressor Station Equipment	1.51%	470,611	471,299	471,987	472,676	473,364	474,052	474,740	475,428	476,116	476,804	477,492	478,180	478,868
35	355.00	Meas & Reg. Sta. Equipment	2.06%	283,098	283,594	284,090	284,586	285,082	285,578	286,074	286,569	287,065	287,561	288,057	288,553	289,049
36	356.00	Purification Equipment	1.30%	243,645	243,645	243,645	243,645	243,645	243,645	243,645	244,172	244,699	245,226	245,752	246,279	246,806
37																
38		Total Storage Plant		4,216,261	4,224,615	4,232,969	4,241,323	4,249,678	4,234,728	4,243,082	4,255,944	4,268,805	4,281,666	4,294,527	4,307,389	4,320,250
39																
40		Transmission Plant														
41	365.10	Land	0.00%	16	16	16	16	16	16	16	16	16	16	16	16	16
42	365.20	Rights of Way	0.89%	327,698	328,301	328,903	329,506	330,108	330,710	331,429	332,032	332,636	333,240	333,844	334,448	335,052
43	366.02	Structures & Improvements	1.39%	12,021	12,269	12,517	12,765	13,013	13,261	13,509	13,757	14,004	14,252	14,500	14,748	14,996
44	366.03	Other Structues	1.39%	60,044	60,124	60,204	60,284	60,365	60,445	60,525	60,605	60,685	60,765	60,845	60,925	61,006
45	367.00	Mains Cathodic Protection	1.27%	258,140	258,568	258,998	259,428	259,859	260,289	260,719	261,148	261,577	262,006	262,435	262,864	263,294
46	367.01	Mains - Steel	1.27%	15,140,349	15,163,251	15,186,153	15,207,717	15,230,619	15,253,520	15,271,466	15,295,510	15,319,553	15,343,597	15,367,640	15,391,684	15,415,727

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
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WP Sched. B-3.1

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07
47	369.00	Meas. & Reg. Sta. Equipment	2.28%	38,774	39,127	39,480	39,834	40,187	40,540	40,893	41,246	41,599	41,952	42,305	42,659	43,012
48	369.01	Meas. & Reg. Sta. Equipment	2.28%	1,876,212	1,881,468	1,886,724	1,891,980	1,897,236	1,902,493	1,907,749	1,913,083	1,918,417	1,923,752	1,929,086	1,934,420	1,939,755
49																
50		Total Transmission Plant		17,713,254	17,743,124	17,772,996	17,801,530	17,831,401	17,861,273	17,886,305	17,917,397	17,948,489	17,979,581	18,010,673	18,041,765	18,072,857
51																
52		Distribution Plant														
53	374.00	Land & Land Rights	0.00%	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145	57,145
54	374.01	Land	0.00%	0	0	0	0	0	0	0	0	0	0	0	0	0
55	374.02	Land Rights	1.68%	20,224	20,427	20,797	21,167	21,538	21,908	22,278	22,578	22,877	23,177	23,477	23,776	24,076
56	374.03	Land Other	0.00%	0	0	0	0	0	0	0	0	0	0	0	0	0
57	375.00	Structures & Improvements	1.95%	22,712	23,219	23,726	24,233	24,740	25,247	25,754	26,261	26,768	27,275	27,782	28,289	28,796
58	375.01	Structures & Improvements T.B.	1.95%	78,110	78,282	78,454	78,626	78,797	78,969	79,141	79,313	79,484	79,656	79,828	80,000	80,171
59	375.02	Land Rights	1.95%	37,157	37,233	37,308	37,384	37,460	37,535	37,611	37,687	37,763	37,838	37,914	37,990	38,065
60	375.03	Improvements	1.95%	137	144	150	157	163	170	176	183	189	196	202	209	215
61	376.00	Mains Cathodic Protection	2.39%	1,729,118	1,747,863	1,763,862	1,783,638	1,796,662	1,816,654	1,838,859	1,860,168	1,881,477	1,902,786	1,924,095	1,945,403	1,966,712
62	376.01	Mains - Steel	2.39%	37,454,204	37,567,896	37,676,251	37,697,007	37,787,839	37,908,263	38,325,631	38,420,802	38,515,974	38,611,146	38,706,317	38,801,489	38,896,661
63	376.02	Mains Plastic	2.39%	7,685,194	7,731,939	7,771,267	7,809,191	7,855,933	7,903,109	7,880,989	7,946,760	8,012,532	8,078,304	8,144,075	8,209,847	8,275,619
64	378.00	Meas. & Reg. Sta. Equipment General	2.49%	1,372,498	1,378,123	1,383,780	1,379,527	1,385,644	1,391,761	1,390,592	1,395,510	1,400,427	1,405,344	1,410,262	1,415,179	1,420,096
65	379.00	Meas & Reg. Sta. - City Gate	2.57%	110,664	113,233	115,805	118,377	120,982	123,589	126,860	129,516	132,171	134,827	137,482	140,137	142,793
66	379.05	Meas & Reg. Sta. - TB	2.57%	1,175,805	1,179,310	1,182,814	1,186,318	1,189,822	1,193,327	1,196,831	1,200,335	1,203,839	1,207,343	1,210,848	1,214,352	1,217,856
67	380.00	Services	6.86%	34,605,146	34,954,566	34,929,007	35,183,998	35,236,485	35,654,827	35,794,213	36,192,187	36,590,161	36,988,135	37,386,109	37,784,083	38,182,056
68	381.00	Meters	3.35%	1,166,792	1,205,249	1,243,706	1,282,163	1,320,620	1,359,077	1,038,127	1,137,117	1,236,107	1,335,097	1,434,088	1,533,078	1,632,068
69	382.00	Meter Installations	3.06%	5,705,312	5,614,501	5,586,332	5,560,568	5,209,521	5,296,962	5,282,019	5,446,625	5,611,231	5,775,837	5,940,443	6,105,049	6,269,655
70	383.00	House Regulators Service	2.85%	2,490,204	2,501,844	2,513,485	2,525,126	2,536,768	2,548,513	2,560,924	2,573,092	2,585,260	2,597,427	2,609,595	2,621,762	2,633,930
71	384.00	House Reg. Installations	3.37%	94,224	94,657	95,091	95,524	95,957	96,390	96,824	97,257	97,690	98,123	98,557	98,990	99,423
72	385.00	Ind. Meas. & Reg. Sta. Equipment	2.73%	1,959,293	1,969,508	1,979,793	1,990,078	2,000,363	2,010,647	2,021,758	2,032,233	2,042,708	2,053,184	2,063,659	2,074,134	2,084,610
73	386.00	Other Property on Cust. Prem.	3.00%	2,432	2,446	2,460	2,474	2,489	2,503	0	418	837	1,255	1,674	2,092	2,511
74																
75		Total Distribution Plant		95,766,370	96,277,583	96,461,232	96,832,702	96,758,928	97,526,596	97,775,731	98,655,186	99,534,640	100,414,095	101,293,550	102,173,004	103,052,459
76																
77		General Plant														
78	389.00	Land & Land Rights		28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459	28,459
	390.01	Structures Frame		0	0	0	0	0	0	0	0	0	0	0	0	0
79	390.02	Structrues & Improvements	2.12%	94,944	95,265	95,611	95,957	96,304	96,650	96,996	97,331	97,667	98,003	98,339	98,675	99,010
80	390.03	Improvements	2.12%	76,062	77,430	78,798	80,165	81,533	82,901	84,269	85,637	87,005	88,373	89,741	91,108	92,476
81	390.04	Air Conditioning Equipment	2.12%	4,953	4,970	4,992	5,015	5,037	5,059	5,081	5,102	5,122	5,142	5,162	5,182	5,202
82	390.09	Improv. to Leased Premises	5.00%	1,063,375	1,069,135	1,074,895	1,080,654	1,086,414	1,092,174	1,097,934	1,103,693	1,109,453	1,115,213	1,120,973	1,126,732	1,132,492
83	391.00	Office Furn & Equipment	7.05%	1,073,794	1,086,774	547,786	557,152	566,517	575,883	585,535	587,071	588,607	590,142	591,678	593,214	594,750
	391.02	Remittance Processing Equip		0	0	0	0	0	0	0	0	0	0	0	0	0
84	391.03	Office Machines	7.05%	(30,799)	(30,236)	(30,484)	(29,926)	(29,368)	(28,811)	(28,253)	(27,706)	(27,160)	(26,613)	(26,067)	(25,520)	(24,973)
85	392.00	Transportation Equipment	8.92%	(620,972)	(616,380)	(694,903)	(691,046)	(687,188)	(683,330)	(679,473)	(676,710)	(673,948)	(671,185)	(668,423)	(665,660)	(662,898)
86	392.01	Trucks	8.92%	48,285	48,285	26,913	26,913	26,913	26,913	26,913	26,924	26,934	26,944	26,954	26,965	26,975
87	392.02	Trailers	8.92%	141,935	143,023	116,022	116,862	117,703	118,543	118,632	119,227	119,823	120,419	121,014	121,610	122,206
	393.00	Stores Equipment		0	0	0	0	0	0	0	0	0	0	0	0	0
88	394.00	Tools, Shop & Garage Equip.	3.28%	660,555	666,347	91,300	95,223	99,149	103,074	106,999	101,979	96,959	91,938	86,918	81,898	76,878
	396.00	Power Operated Equipment		0	0	0	0	0	0	0	0	0	0	0	0	0
89	396.03	Ditchers	2.79%	(88,222)	(87,520)	(149,471)	(148,944)	(148,416)	(147,889)	(147,361)	(147,809)	(148,257)	(148,705)	(149,153)	(149,601)	(150,049)
90	396.04	Backhoes	2.79%	35,952	36,656	8,932	9,557	10,183	10,808	11,434	11,616	11,799	11,982	12,165	12,348	12,531

Atmos Energy Corporation, KY
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Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07
91	396.05	Welders	2.79%	24,486	24,637	(750)	(671)	(591)	(512)	(432)	(745)	(1,059)	(1,372)	(1,685)	(1,999)	(2,312)
92	397.00	Communication Equipment	5.21%	598,332	603,286	608,240	613,195	618,149	623,103	628,057	633,012	637,966	642,920	647,874	652,829	657,783
93	397.01	Communication Equip. - Mobile Radios	5.21%	(19,017)	(19,003)	(18,988)	(18,974)	(18,959)	(18,945)	(18,930)	(18,916)	(18,901)	(18,887)	(18,873)	(18,858)	(18,844)
94	397.02	Communication Equip. - Fixed Radios	5.21%	5,004	5,184	5,364	5,544	5,724	5,904	6,084	6,264	6,444	6,623	6,803	6,983	7,163
95	397.05	Communication Equip. - Telemetering	5.21%	78,070	79,426	80,781	82,137	83,493	84,848	86,204	87,559	88,915	90,271	91,626	92,982	94,338
96	398.00	Miscellaneous Equipment	10.94%	718,658	738,640	760,555	783,107	805,658	828,352	855,426	877,011	898,596	920,181	941,765	963,350	984,935
	399.00	Other Tangible Property		0	0	0	0	0	0	0	0	0	0	0	0	0
97	399.01	Other Tangible Property - Servers - H/W	14.29%	171,851	173,947	175,990	175,990	175,990	175,990	175,990	179,492	182,993	186,495	189,997	193,499	197,000
98	399.02	Other Tangible Property - Servers - S/W	14.29%	118,461	118,461	118,461	118,461	118,461	118,461	118,461	121,164	123,866	126,569	129,271	131,974	134,676
99	399.03	Other Tangible Property - Network - H/W	14.29%	441,225	447,319	453,413	459,508	465,602	471,697	477,791	483,886	489,980	496,075	502,169	508,264	514,358
	399.04	Other Tangible Property - CPU		0	0	0	0	0	0	0	0	0	0	0	0	0
	399.05	Other Tangible Property - MF - Hardware		0	0	0	0	0	0	0	0	0	0	0	0	0
100	399.06	Other Tangible Property - PC Hardware	18.51%	2,702,795	2,702,795	2,716,608	2,760,112	2,783,909	2,783,909	2,813,709	2,885,330	2,956,951	3,028,572	3,100,193	3,171,814	3,243,435
101	399.07	Other Tang. Property - P.C. Software	15.85%	178,376	181,586	184,795	188,004	191,214	194,423	197,633	200,842	204,051	207,261	210,470	213,679	216,889
102	399.08	Other Tang. Property - Application Softwar	12.50%	332,631	338,071	343,511	348,951	354,391	359,831	365,271	370,712	376,152	381,592	387,032	392,472	397,912
	399.09	Other Tang. Property - MF Software		0	0	0	0	0	0	0	0	0	0	0	0	0
	399.24	Other Tang. Property - Start Up Costs		0	0	0	0	0	0	0	0	0	0	0	0	0
103											0	0	0	0	0	0
104																
105		Total General Plant		7,839,192	7,916,559	6,626,831	6,741,407	6,836,280	6,907,497	7,012,428	7,140,423	7,268,417	7,396,411	7,524,405	7,652,400	7,780,394
106																
107		Total Plant		126,442,339	127,069,144	126,001,290	126,524,224	126,583,549	127,437,357	127,824,809	128,876,211	129,927,613	130,979,016	132,030,418	133,081,820	134,133,222

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Base Div. 09 Western Only

WP Sched. B-3.1

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07

Cc

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	13 Mo. Avg Mar-07	Projected Provision Base Period	Reserve Balance Mar-07	Retirements
				$		Projected	
1		Account 101-1000 Gas Plant in Service -					
2		Intangible Plant					
3	301.00	Organization		8,330	0	8,330	0
	302.00	Franchises & Consents		119,853	0	119,853	0
4	303.00	Misc. Intangible Plant		0	0	0	0
5							
6		Total Intangible Plant		128,182	0	128,182	0
7							
8		Natural Gas Production Plant					
9	325.20	Producing Leaseholds		0	0	0	0
10	325.40	Rights of Ways		0	0	0	0
11	331.00	Production Gas Wells Equipment		3,492	0	3,492	0
12	332.01	Field Lines		47,163	0	47,163	0
13	332.02	Tributary Lines		529,956	0	529,956	0
14	334.00	Field Meas. & Reg. Sta. Equip		198,469	0	198,469	0
15	336.00	Purification Equipment		0	0	0	0
16							
17		Total Natural Gas Production Plant		779,080	0	779,080	0
18							
19		Storage Plant					
20	350.10	Land		0	0	0	0
21	350.20	Rights of Way	0.92%	4,693	43	4,725	0
22	351.00	Structures & Improvements	1.93%	1,672	91	1,718	0
23	351.02	Compression Station Equipment	1.93%	116,065	3,084	117,608	0
24	351.03	Meas. & Reg. Sta. Structures	1.93%	23,985	447	24,209	0
25	351.04	Other Structures	1.93%	130,830	2,790	132,225	0
26	352.00	Wells	2.71%	35,633	1,702	36,484	0
27	352.01	Well Construction	2.71%	1,740,512	57,277	1,769,150	0
28	352.02	Well Equipment	2.71%	557,582	14,416	564,790	0
29	352.03	Cushion Gas	0.00%	15,237	0	23,304	0
30	352.10	Leaseholds	0.30%	178,764	536	179,155	0
31	352.11	Storage Rights	1.83%	51,150	999	51,649	0
32	353.01	Field Lines	1.35%	183,071	2,410	184,276	0
33	353.02	Tributary Lines	1.35%	214,822	2,828	216,236	0
34	354.00	Compressor Station Equipment	1.51%	474,740	8,256	478,868	0
35	355.00	Meas & Reg. Sta. Equipment	2.06%	286,074	5,950	289,049	0
36	356.00	Purification Equipment	1.30%	244,496	3,161	246,806	0
37							
38		Total Storage Plant		4,259,326	103,989	4,320,250	0
39							
40		Transmission Plant					
41	365.10	Land	0.00%	16	0	16	0
42	365.20	Rights of Way	0.89%	331,377	7,353	335,052	0
43	366.02	Structures & Improvements	1.39%	13,509	2,976	14,996	0
44	366.03	Other Structues	1.39%	60,525	961	61,006	0
45	367.00	Mains Cathodic Protection	1.27%	260,717	5,153	263,294	0
46	367.01	Mains - Steel	1.27%	15,275,907	276,856	15,415,727	(1,477)

Cc

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	13 Mo. Avg Mar-07	Projected Provision Base Period	Reserve Balance Mar-07	Retirements
47	369.00	Meas. & Reg. Sta. Equipment	2.28%	40,893	4,237	43,012	0
48	369.01	Meas. & Reg. Sta. Equipment	2.28%	1,907,875	63,543	1,939,755	0
49							
50		Total Transmission Plant		17,890,819	361,080	18,072,857	(1,477)
51							
52		Distribution Plant					
53	374.00	Land & Land Rights	0.00%	57,145	0	57,145	0
54	374.01	Land	0.00%	0	0	0	0
55	374.02	Land Rights	1.68%	22,177	3,853	24,076	0
56	374.03	Land Other	0.00%	0	0	0	0
57	375.00	Structures & Improvements	1.95%	25,754	6,085	28,796	0
58	375.01	Structures & Improvements T.B.	1.95%	79,141	2,061	80,171	0
59	375.02	Land Rights	1.95%	37,611	909	38,065	0
60	375.03	Improvements	1.95%	176	78	215	0
61	376.00	Mains Cathodic Protection	2.39%	1,842,869	239,698	1,966,712	(2,103)
62	376.01	Mains - Steel	2.39%	38,182,268	1,531,466	38,896,661	(89,009)
63	376.02	Mains Plastic	2.39%	7,946,520	611,780	8,275,619	(21,356)
64	378.00	Meas. & Reg. Sta. Equipment General	2.49%	1,394,519	72,851	1,420,096	(25,253)
65	379.00	Meas & Reg. Sta. - City Gate	2.57%	126,649	32,129	142,793	0
66	379.05	Meas & Reg. Sta. - TB	2.57%	1,196,831	42,051	1,217,856	0
67	380.00	Services	6.86%	36,113,921	5,085,237	38,182,056	(1,508,326)
68	381.00	Meters	3.35%	1,301,791	465,277	1,632,068	0
69	382.00	Meter Installations	3.06%	5,646,466	1,062,669	6,269,655	(498,327)
70	383.00	House Regulators Service	2.85%	2,561,379	143,726	2,633,930	0
71	384.00	House Reg. Installations	3.37%	96,824	5,199	99,423	0
72	385.00	Ind. Meas. & Reg. Sta. Equipment	2.73%	2,021,690	125,317	2,084,610	0
73	386.00	Other Property on Cust. Prem.	3.00%	1,815	79	2,511	0
74							
75		Total Distribution Plant		98,655,544	9,430,463	103,052,459	(2,144,373)
76							
77		General Plant					
78	389.00	Land & Land Rights		28,459	0	28,459	0
	390.01	Structures Frame		0	0	0	0
79	390.02	Structrues & Improvements	2.12%	96,981	4,067	99,010	0
80	390.03	Improvements	2.12%	84,269	16,414	92,476	0
81	390.04	Air Conditioning Equipment	2.12%	5,078	249	5,202	0
82	390.09	Improv. to Leased Premises	5.00%	1,097,934	69,117	1,132,492	0
83	391.00	Office Furn & Equipment	7.05%	656,839	123,871	594,750	(602,915)
	391.02	Remittance Processing Equip		0	0	0	0
84	391.03	Office Machines	7.05%	(28,147)	6,713	(24,973)	(887)
85	392.00	Transportation Equipment	8.92%	(668,624)	48,694	(662,898)	(90,619)
86	392.01	Trucks	8.92%	30,218	2,199	26,975	(23,509)
87	392.02	Trailers	8.92%	122,848	10,897	122,206	(30,626)
	393.00	Stores Equipment		0	0	0	0
88	394.00	Tools, Shop & Garage Equip.	3.28%	181,478	53,163	76,878	(636,840)
	396.00	Power Operated Equipment		0	0	0	0
89	396.03	Ditchers	2.79%	(139,338)	6,900	(150,049)	(68,727)
90	396.04	Backhoes	2.79%	15,074	7,764	12,531	(31,185)

Cc

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	13 Mo. Avg Mar-07	Projected Provision Base Period	Reserve Balance Mar-07	Retirements
91	396.05	Welders	2.79%	2,846	1,215	(2,312)	(28,013)
92	397.00	Communication Equipment	5.21%	628,057	59,451	657,783	0
93	397.01	Communication Equip. - Mobile Radios	5.21%	(18,930)	174	(18,844)	0
94	397.02	Communication Equip. - Fixed Radios	5.21%	6,084	2,159	7,163	0
95	397.05	Communication Equip. - Telemetering	5.21%	86,204	16,267	94,338	0
96	398.00	Miscellaneous Equipment	10.94%	852,018	266,278	984,935	0
	399.00	Other Tangible Property		0	0	0	0
97	399.01	Other Tangible Property - Servers - H/W	14.29%	181,171	25,149	197,000	0
98	399.02	Other Tangible Property - Servers - S/W	14.29%	122,827	16,215	134,676	0
99	399.03	Other Tangible Property - Network - H/W	14.29%	477,791	73,134	514,358	0
	399.04	Other Tangible Property - CPU		0	0	0	0
	399.05	Other Tangible Property - MF - Hardware		0	0	0	0
100	399.06	Other Tangible Property - PC Hardware	18.51%	2,896,164	540,639	3,243,435	0
101	399.07	Other Tang. Property - P.C. Software	15.85%	197,633	38,512	216,889	0
102	399.08	Other Tang. Property - Application Softwar	12.50%	365,271	65,282	397,912	0
	399.09	Other Tang. Property - MF Software		0	0	0	0
	399.24	Other Tang. Property - Start Up Costs		0	0	0	0
103					0	0	
104							
105		Total General Plant		7,280,203	1,454,524	7,780,394	(1,513,321)
106							
107		Total Plant		128,993,155	11,350,055	134,133,222	(3,659,172)

Cc

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	13 Mo. Avg Mar-07	Projected Provision Base Period	Reserve Balance Mar-07	Retirements

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Base Div. 02 General Office

WP Sched. B-3

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07	13 Mo. Avg Mar-07
				$	$	$	$	$	$	$	$	$	$	$	$	$	$
1		General Plant															0
2	389.10	Land															0
	390.01	Structures Frame															0
3	390.02	Structures & Improvements															0
4	390.03	Improvements															0
5	390.04	Air Conditioning Equipment															0
7	390.09	Improvement to leased Premises	7.43%	4,975,269	5,033,287	5,078,295	5,123,303	5,168,312	5,217,743	5,264,963	5,274,624	5,284,284	5,293,945	5,303,605	5,313,265	5,322,926	5,204,140
8	391.00	Office Furniture & Equipment	4.89%	7,157,964	7,203,474	5,820,648	5,858,786	5,896,924	5,933,237	5,970,463	5,983,120	5,995,777	6,008,434	6,021,090	6,033,747	6,046,404	6,148,467
9	391.02	Remittance Processing Equipmemt	11.37%	59,152	59,152	31,167	31,167	31,167	31,167	31,167	31,249	31,331	31,413	31,495	31,576	31,658	35,605
10	391.03	Office Machines	2.22%	1,163,840	1,163,841	439,159	439,159	439,159	439,159	439,159	429,035	418,912	408,788	398,665	388,542	378,418	534,295
11	392.00	Transportation Equipment	28.96%	26,562	26,562	26,562	26,562	26,562	26,562	26,562	27,474	28,385	29,297	30,208	31,120	32,031	28,035
	392.01	Trucks		-	-	-	-	-	-		0	0	0	0	0	0	0
	392.02	Trailers		-	-	-	-	-	-		0	0	0	0	0	0	0
13	393.00	Stores Equipment	10.00%	7,072	7,072	7,072	7,072	7,072	7,072	758	742	727	712	696	681	666	3,647
14	394.00	Tools, Shop, & Garage Equip.	10.00%	34,998	34,998	9,639	9,639	9,639	9,639	9,639	9,398	9,157	8,916	8,675	8,434	8,193	13,151
	396.00	Power Operated Equipment		-	-	-	-	-	-		0	0	0	0	0	0	0
15	396.03	Ditchers		-	-	-	-	-	-		0	0	0	0	0	0	0
16	396.04	Backhoes		-	-	-	-	-	-		0	0	0	0	0	0	0
17	396.05	Welders		-	-	-	-	-	-		0	0	0	0	0	0	0
18	397.00	Communication Equip.	7.12%	990,730	996,722	1,007,256	1,017,769	1,028,281	963,393	962,529	859,757	756,985	654,213	551,441	448,669	345,897	814,126
19	397.01	Communication Equipment - Mobile Radios		-	-	-	-	-	-		0	0	0	0	0	0	0
20	397.02	Communication Equip. - Fixed Radios		-	-	-	-	-	-		0	0	0	0	0	0	0
21	397.05	Communication Equip. - Telemetering		-	-	-	-	-	-		0	0	0	0	0	0	0
22	398.00	Miscellaneous Equipment	5.36%	361,031	364,239	367,441	370,644	373,847	378,330	382,173	384,291	386,409	388,527	390,645	392,763	394,882	379,632
	399.00	Other Tangible Property	15.75%	8,955	9,085	9,213	9,341	9,466	9,603	9,734	9,872	10,010	10,148	10,285	10,423	10,561	9,746
23	399.01	Other Tangible Property - Servers - H	14.29%	1,163,919	1,243,928	1,285,240	1,326,547	1,368,552	1,408,671	1,481,712	1,551,369	1,621,025	1,690,681	1,760,337	1,829,994	1,899,650	1,510,125
24	399.02	Other Tangible Property - Servers - S	14.29%	439,770	475,975	492,200	508,434	524,667	554,140	563,774	586,486	609,199	631,911	654,623	677,336	700,048	570,659
25	399.03	Other Tangible Property - Network - H	14.29%	215,028	231,977	246,567	265,872	286,238	309,937	331,930	355,093	378,255	401,418	424,581	447,744	470,907	335,811
	399.04	Other Tangible Property - CPU	26.26%	1,103,098	1,103,098	1,103,098	1,103,098	1,103,098	1,103,098	1,103,098	1,151,043	1,198,988	1,246,933	1,294,878	1,342,822	1,390,767	1,180,547
	399.05	Other Tangible Property - MF Hardwa	15.76%	1,169,325	1,169,325	1,169,324	1,169,324	1,169,324	1,169,324	1,169,324	1,199,793	1,230,261	1,260,730	1,291,198	1,321,667	1,352,135	1,218,543
26	399.06	Other Tangible Property - PC Hardwa	16.83%	3,644,395	3,698,355	3,793,127	3,887,877	3,983,794	4,002,068	4,112,249	3,789,770	3,467,290	3,144,811	2,822,332	2,499,853	2,177,373	3,463,330
27	399.07	Other Tang. Property - P.C. Software	17.73%	808,719	824,576	860,832	897,513	933,040	870,353	889,480	915,903	942,327	968,750	995,174	1,021,597	1,048,021	921,253
28	399.08	Other Tang. Property - Application Sc	8.22%	16,232,231	16,462,968	16,680,442	16,898,595	17,121,279	17,325,935	17,551,741	17,762,085	17,972,428	18,182,771	18,393,115	18,603,458	18,813,801	17,538,527
29	399.09	Other Tang. Property - MF Software	22.16%	2,702,805	2,702,805	2,702,805	2,702,805	2,702,805	2,702,805	2,702,805	2,796,070	2,889,336	2,982,602	3,075,868	3,169,133	3,262,399	2,853,465
	399.24	Other Tang. Property - Start Up Cost	8.33%	-	-	0	0	0	0		0	0	0	0	0	0	0
30																	
31		Total General Plant		42,264,863	42,811,438	41,130,088	41,653,506	42,183,225	42,462,236	43,003,259	43,117,173	43,231,086	43,344,999	43,458,912	43,572,825	43,686,738	42,763,104

Base Period 4/01/06 - 3/31/07 B.1

Line No.	Acct. No.	Account Title	Current Rates	Projected Provision Base Period $	Reserve Balance Mar-07 Projected	Retirements
1		General Plant				
2	389.10	Land		0	0	
	390.01	Structures Frame		0	0	
3	390.02	Structures & Improvements		0	0	
4	390.03	Improvements		0	0	
5	390.04	Air Conditioning Equipment		0	0	
7	390.09	Improvement to leased Premises	7.43%	526,414	5,322,926	(178,757)
8	391.00	Office Furniture & Equipment	4.89%	451,502	6,046,404	(1,563,061)
9	391.02	Remittance Processing Equipmemt	11.37%	3,290	31,658	(30,783)
10	391.03	Office Machines	2.22%	11,728	378,418	(797,150)
11	392.00	Transportation Equipment	28.96%	5,469	32,031	0
	392.01	Trucks		0	0	0
	392.02	Trailers		0	0	0
13	393.00	Stores Equipment	10.00%	263	666	(6,669)
14	394.00	Tools, Shop, & Garage Equip.	10.00%	1,090	8,193	(27,895)
	396.00	Power Operated Equipment		0	0	0
15	396.03	Ditchers		0	0	0
16	396.04	Backhoes		0	0	0
17	396.05	Welders		0	0	0
18	397.00	Communication Equip.	7.12%	147,735	345,897	(792,568)
19	397.01	Communication Equipment - Mobile Radios		0	0	0
20	397.02	Communication Equip. - Fixed Radios		0	0	0
21	397.05	Communication Equip. - Telemetering		0	0	0
22	398.00	Miscellaneous Equipment	5.36%	33,851	394,882	0
	399.00	Other Tangible Property	15.75%	1,606	10,561	0
23	399.01	Other Tangible Property - Servers - H	14.29%	735,731	1,899,650	0
24	399.02	Other Tangible Property - Servers - S	14.29%	260,278	700,048	0
25	399.03	Other Tangible Property - Network - H	14.29%	267,351	470,907	(11,472)
	399.04	Other Tangible Property - CPU	26.26%	287,669	1,390,767	0
	399.05	Other Tangible Property - MF Hardwa	15.76%	182,810	1,352,135	0
26	399.06	Other Tangible Property - PC Hardwa	16.83%	824,054	2,177,373	(2,291,076)
27	399.07	Other Tang. Property - P.C. Software	17.73%	255,797	1,048,021	(16,495)
28	399.08	Other Tang. Property - Application So	8.22%	3,244,353	18,813,801	(662,782)
29	399.09	Other Tang. Property - MF Software	22.16%	572,455	3,262,399	(12,861)
	399.24	Other Tang. Property - Start Up Costs	8.33%	0	0	0
30						
31		Total General Plant		7,813,445	43,686,738	(6,391,570)

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Base Div. 12 Customer Service

Base Period 4/01/06 - 3/31/07

WP Sched. B-3.1

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06	Actual Apr-06	Actual May-06	Actual Jun-06	Actual Jul-06	Actual Aug-06	Actual Sep-06	Budget Oct-06	Budget Nov-06	Budget Dec-06	Budget Jan-07	Budget Feb-07	Budget Mar-07	13 Mo. Avg Mar-07	Projected Provision Base Period	Reserve Balance Mar-07
				$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	Projected
1		General Plant															0	0	0
2	389.00	Land & Land Rights															0	0	0
	390.01	Structures - Frame															0	0	0
3	390.02	Structures & Improvements															0	0	0
4	390.03	Improvements															0	0	0
5	390.04	Air Conditioning Equipment															0	0	0
7	390.09	Improvement to leased Premises	7.43%	1,136,052	1,142,438	1,161,847	1,181,256	1,200,665	1,222,128	1,242,565	1,262,187	1,281,810	1,301,433	1,321,056	1,340,679	1,360,301	1,242,647	224,249	1,360,301
8	391.00	Office Furniture & Equipment	4.89%	7,850	8,180	8,423	8,666	8,909	9,139	9,376	9,579	9,781	9,984	10,187	10,389	10,592	9,312	2,742	10,592
9	391.02	Remittance Processing Equipmemt	11.37%								0	0	0	0	0	0	0	0	0
10	391.03	Office Machines	2.22%								0	0	0	0	0	0	0	0	0
11	392.00	Transportation Equipment	28.96%								0	0	0	0	0	0	0	0	0
	392.01	Trucks									0	0	0	0	0	0	0	0	0
	392.02	Trailers									0	0	0	0	0	0	0	0	0
13	393.00	Stores Equipment	10.00%								0	0	0	0	0	0	0	0	0
14	394.00	Tools, Shop, & Garage Equip.	10.00%								0	0	0	0	0	0	0	0	0
	396.00	Power Operated Equipment									0	0	0	0	0	0	0	0	0
15	396.03	Ditchers									0	0	0	0	0	0	0	0	0
16	396.04	Backhoes									0	0	0	0	0	0	0	0	0
17	396.05	Welders									0	0	0	0	0	0	0	0	0
18	397.00	Communication Equip.	7.12%	6,316,249	6,440,807	6,577,052	6,713,298	6,849,543	7,076,278	7,233,686	7,358,017	7,482,348	7,606,678	7,731,009	7,855,340	7,979,670	7,170,767	1,663,421	7,979,670
19	397.01	Communication Equipment - Mobile Radios									0	0	0	0	0	0	0	0	0
20	397.02	Communication Equip. - Fixed Radios									0	0	0	0	0	0	0	0	0
21	397.05	Communication Equip. - Telemetering									0	0	0	0	0	0	0	0	0
22	398.00	Miscellaneous Equipment	5.36%	222	226	236	245	255	269	281	288	295	303	310	317	324	275	103	324
	399.00	Other Tangible Property	15.75%	188,539	191,266	194,001	196,693	199,336	202,228	204,995	207,887	210,780	213,672	216,564	219,457	222,349	205,213	33,811	222,349
23	399.01	Other Tangible Property - Servers - H	14.29%	6,630,684	6,701,263	6,815,813	6,930,362	7,044,912	7,196,967	7,324,750	7,443,826	7,562,902	7,681,978	7,801,054	7,920,130	8,039,206	7,314,911	1,408,522	8,039,206
24	399.02	Other Tangible Property - Servers - S	14.29%	5,411,682	5,472,882	5,554,718	5,636,554	5,718,545	5,815,698	5,904,716	5,985,919	6,067,122	6,148,325	6,229,527	6,310,730	6,391,933	5,896,027	980,251	6,391,933
25	399.03	Other Tangible Property - Network - H	14.29%	160,922	165,983	171,462	176,942	182,421	188,860	194,819	200,120	205,421	210,722	216,023	221,324	226,625	193,973	65,703	226,625
	399.04	Other Tangible Property - CPU	26.26%								0	0	0	0	0	0	0	0	0
	399.05	Other Tangible Property - MF Hardwa	15.76%								0	0	0	0	0	0	0	0	0
26	399.06	Other Tangible Property - PC Hardwa	16.83%	959,957	1,008,221	1,042,483	1,078,020	1,113,556	1,262,807	1,326,527	1,300,057	1,273,587	1,247,118	1,220,648	1,194,178	1,167,709	1,168,836	549,631	1,167,709
27	399.07	Other Tang. Property - P.C. Software	17.73%	913,738	934,136	956,581	979,026	1,001,471	1,127,258	1,170,147	1,197,019	1,223,890	1,250,762	1,277,633	1,304,505	1,331,376	1,128,273	417,638	1,331,376
28	399.08	Other Tang. Property - Application Sc	8.22%	29,641,160	30,134,582	30,655,269	31,175,633	31,696,606	32,363,604	32,940,603	33,391,548	33,842,493	34,293,438	34,744,383	35,195,328	35,646,273	32,747,763	6,073,467	35,646,273
29	399.09	Other Tang. Property - MF Software	22.16%								0	0	0	0	0	0	0	0	0
	399.24	Other Tang. Property - Start Up Cost	8.33%	12,976,157	13,139,352	13,303,035	13,466,718	13,630,401	13,802,185	13,969,919	14,126,001	14,282,083	14,438,165	14,594,247	14,750,329	14,906,411	13,952,692	1,930,255	14,906,411
30																			
31		Total General Plant		64,343,210	65,339,335	66,440,919	67,543,413	68,646,619	70,267,421	71,522,383	72,482,448	73,442,512	74,402,577	75,362,641	76,322,706	77,282,771	71,030,689	13,349,793	77,282,771

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Retirements
1		General Plant		
2	389.00	Land & Land Rights		0
	390.01	Structures - Frame		0
3	390.02	Structures & Improvements		0
4	390.03	Improvements		0
5	390.04	Air Conditioning Equipment		0
7	390.09	Improvement to leased Premises	7.43%	0
8	391.00	Office Furniture & Equipment	4.89%	0
9	391.02	Remittance Processing Equipmemt	11.37%	0
10	391.03	Office Machines	2.22%	0
11	392.00	Transportation Equipment	28.96%	0
	392.01	Trucks		0
	392.02	Trailers		0
13	393.00	Stores Equipment	10.00%	0
14	394.00	Tools, Shop, & Garage Equip.	10.00%	0
	396.00	Power Operated Equipment		0
15	396.03	Ditchers		0
16	396.04	Backhoes		0
17	396.05	Welders		0
18	397.00	Communication Equip.	7.12%	0
19	397.01	Communication Equipment - Mobile Radios		0
20	397.02	Communication Equip. - Fixed Radios		0
21	397.05	Communication Equip. - Telemetering		0
22	398.00	Miscellaneous Equipment	5.36%	0
	399.00	Other Tangible Property	15.75%	0
23	399.01	Other Tangible Property - Servers - H	14.29%	0
24	399.02	Other Tangible Property - Servers - S	14.29%	0
25	399.03	Other Tangible Property - Network - H	14.29%	0
	399.04	Other Tangible Property - CPU	26.26%	0
	399.05	Other Tangible Property - MF Hardwa	15.76%	0
26	399.06	Other Tangible Property - PC Hardwa	16.83%	(341,879)
27	399.07	Other Tang. Property - P.C. Software	17.73%	0
28	399.08	Other Tang. Property - Application Sc	8.22%	(68,354)
29	399.09	Other Tang. Property - MF Software	22.16%	0
	399.24	Other Tang. Property - Start Up Costs	8.33%	0
30				
31		Total General Plant		(410,233)

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Base Div. 91 Admin. Office

WP Sched. B-3

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Actual Mar-06 $	Actual Apr-06 $	Actual May-06 $	Actual Jun-06 $	Actual Jul-06 $	Actual Aug-06 $	Actual Sep-06 $	Budget Oct-06 $	Budget Nov-06 $	Budget Dec-06 $	Budget Jan-07 $	Budget Feb-07 $	Budget Mar-07 $	13 Mo. Avg Mar-07 $
		Intangible Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	301.00	Organization		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	302.00	Franchises & Consents		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	303.00	Misc Intangible Plant															
		Total Intangible Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Distribution Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	376.01	Mains - Steel	3.61%														
		Total Distribution Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		General Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	389.00	Land & Land Rights	2.52%	14,994	15,370	15,747	16,123	16,500	16,877	17,253	17,630	18,007	18,383	18,760	19,136	19,513	17,253
	390.01	Structures - Frame		0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	390.02	Structures & Improvements		0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	390.03	Improvements	2.52%	5,771	5,771	5,771	5,771	5,771	5,771	5,771	5,795	5,819	5,844	5,868	5,892	5,916	5,810
5	390.04	Air Conditioning Equipment	2.52%	49,085	49,085	49,085	49,085	49,085	49,085	49,085	49,248	49,411	49,574	49,737	49,901	50,064	49,348
7	390.09	Improvements to Leased Premises	5.69%	1,273,950	1,273,950	1,253,611	1,254,717	1,254,717	1,254,717	1,261,504	1,271,923	1,282,343	1,292,763	1,303,183	1,313,602	1,324,022	1,278,077
8	391.00	Office Furniture & Equipment		0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	391.02	Remittance Processing Equipmemt	5.69%	50,913	51,207	27,341	27,498	27,656	27,814	27,972	27,781	27,591	27,400	27,209	27,018	26,827	31,094
10	391.03	Office Machines		77,892	77,892	4,934	4,740	4,546	4,352	4,158	3,107	2,056	1,005	(46)	(1,097)	(2,148)	13,953
11	392.00	Transportation Equipment		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	392.01	Trucks		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	392.02	Trailers		7,169	7,233	7,297	7,361	7,424	7,488	7,552	7,616	7,679	7,743	7,807	7,871	7,934	7,552
13	393.00	Stores Equipment	7.15%	35,887	36,358	21,525	21,935	22,345	22,754	23,164	23,343	23,522	23,701	23,881	24,060	24,239	25,132
14	394.00	Tools, Shop, & Garage Equip.	4.02%	8,418	8,497	8,497	8,497	8,497	8,497	8,497	8,641	8,786	8,930	9,074	9,218	9,362	8,724
	396.00	Power Op Equipment	11.11%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	396.03	Ditchers		0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	396.04	Backhoes		0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	396.05	Welders		100,633	102,053	103,483	104,913	106,342	107,772	110,181	111,734	113,286	114,838	116,391	117,943	119,496	109,928
18	397.00	Communication Equip.	7.49%	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	397.01	Communication Equipment - Mobile Radios		0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	397.02	Communication Equip. - Fixed Radios		0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	397.05	Communication Equip. - Telemetering		0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	398.00	Miscellaneous Equipment	4.40%	116,238	117,803	119,369	120,972	122,575	124,178	134,525	136,216	137,907	139,598	141,289	142,980	144,671	130,640
	399.00	Other Tangible Property	18.98%	45,503	46,721	47,938	49,156	50,374	51,592	52,810	54,027	55,245	56,463	57,681	58,898	60,116	52,810
23	399.01	Other Tangible Property - Servers - H	14.29%	54,660	55,514	56,367	57,220	58,074	58,927	59,781	60,634	61,487	62,341	63,194	64,047	64,901	59,781
24	399.02	Other Tangible Property - Servers - S	14.29%	11,517	11,517	11,517	11,517	11,517	11,517	11,517	11,714	11,911	12,108	12,305	12,502	12,699	11,836
25	399.03	Other Tangible Property - Network - I	14.29%	177,263	179,763	182,263	184,764	187,839	190,914	194,298	196,913	199,528	202,143	204,757	207,372	209,987	193,677
	399.04	Other Tangible Property - CPU		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	399.05	Other Tangible Property - MF Hardware		0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	399.06	Other Tangible Property - PC Hardwa	18.98%	354,434	370,618	386,802	403,222	419,757	436,292	484,085	501,549	519,013	536,477	553,942	571,406	588,870	471,267
27	399.07	Other Tang. Property - P.C. Software	18.98%	98,204	98,204	98,204	98,204	98,204	98,204	98,204	101,310	104,417	107,523	110,630	113,736	116,843	103,222
28	399.08	Other Tang. Property - Application So	18.98%	1,782,414	1,782,414	1,782,414	1,782,414	1,782,414	1,782,414	1,782,414	1,805,875	1,829,336	1,852,797	1,876,258	1,899,719	1,923,180	1,820,313
29	399.09	Other Tang. Property - MF Software		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	399.24	Other Tang. Property - Start Up Costs		0	0	0	0	0	0	0	0	0	0	0	0	0	0
30		Total General Plant		4,264,945	4,289,970	4,182,164	4,208,109	4,233,637	4,259,165	4,332,771	4,395,058	4,457,345	4,519,632	4,581,919	4,644,206	4,706,493	4,390,417
31																	

Base Period 4/01/06 - 3/31/07

Line No.	Acct. No.	Account Title	Current Rates	Projected Provision Base Period	Reserve Balance Mar-07 Projected	Retirements
		Intangible Plant				
	301.00	Organization		0	0	0
	302.00	Franchises & Consents		0	0	0
	303.00	Misc Intangible Plant		0	0	0
		Total Intangible Plant		0	0	0
		Distribution Plant				
	376.01	Mains - Steel	3.61%	0	0	0
		Total Distribution Plant		0	0	0
1		General Plant				
2	389.00	Land & Land Rights		0	0	0
	390.01	Structures - Frame	2.52%	4,519	19,513	0
3	390.02	Structures & Improvements		0	0	0
4	390.03	Improvements		0	0	0
5	390.04	Air Conditioning Equipment	2.52%	145	5,916	0
7	390.09	Improvements to Leased Premises	2.52%	979	50,064	0
8	391.00	Office Furniture & Equipment	5.69%	72,445	1,324,022	(22,373)
9	391.02	Remittance Processing Equipmemt		0	0	0
10	391.03	Office Machines	5.69%	2,342	26,827	(26,427)
11	392.00	Transportation Equipment		0	(2,148)	(80,040)
	392.01	Trucks		0	0	0
	392.02	Trailers		0	0	0
13	393.00	Stores Equipment	7.15%	765	7,934	0
14	394.00	Tools, Shop, & Garage Equip.	4.02%	5,119	24,239	(16,768)
	396.00	Power Op Equipment	11.11%	944	9,362	0
15	396.03	Ditchers		0	0	0
16	396.04	Backhoes		0	0	0
17	396.05	Welders		0	0	0
18	397.00	Communication Equip.	7.49%	18,862	119,496	0
19	397.01	Communication Equipment - Mobile Radios		0	0	0
20	397.02	Communication Equip. - Fixed Radios		0	0	0
21	397.05	Communication Equip. - Telemetering		0	0	0
22	398.00	Miscellaneous Equipment	4.40%	28,433	144,671	0
	399.00	Other Tangible Property	18.98%	14,613	60,116	0
23	399.01	Other Tangible Property - Servers - H	14.29%	10,241	64,901	0
24	399.02	Other Tangible Property - Servers - S	14.29%	1,182	12,699	0
25	399.03	Other Tangible Property - Network - I	14.29%	32,725	209,987	0
	399.04	Other Tangible Property - CPU		0	0	0
	399.05	Other Tangible Property - MF Hardware		0	0	0
26	399.06	Other Tangible Property - PC Hardwa	18.98%	234,436	588,870	0
27	399.07	Other Tang. Property - P.C. Software	18.98%	18,639	116,843	0
28	399.08	Other Tang. Property - Application Sc	18.98%	140,766	1,923,180	0
29	399.09	Other Tang. Property - MF Software		0	0	0
	399.24	Other Tang. Property - Start Up Costs		0	0	0
30						
31		Total General Plant		587,156	4,706,493	(145,608)

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
ıper B-3.1 Forecasted Div. 09 Kentucky Only - Updated to Reflect SK Rates
Data: ___ Base Period __X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(s).: _____

Line No.	Acct. No.	Account Title	Test Yr End Jun-08 $	13 Mo. Avg Jun-08 $	Projected Provision Test Period	Reserve Balance Jun-08 Projected	Current Deprec Rates	SK Deprec Rates SK	Retirements
1		Account 101-1000 Gas Plant in Service - General							
2		Intangible Plant							0
3	301.00	Organization	8,330	8,330	0	8,330	0.00%	0.00%	0
4	302.00	Franchises & Consents	119,853	119,853	0	119,853	0.00%	5.00%	0
5	303.00	Misc. Intangible Plant	0	0	0	0	0.00%		
6									0
7		Total Intangible Plant	128,182	128,182	0	128,182			
8									0
9		Natural Gas Production Plant							0
10	325.20	Producing Leaseholds	139	69	139	139	0.00%	5.89%	0
11	325.40	Rights of Ways	1,910	955	1,910	1,910	0.00%	2.29%	0
12	331.00	Production Gas Wells Equipment	3,492	3,492	0	3,492	0.00%	0.00%	0
13	332.01	Field Lines	47,163	47,163	0	47,163	0.00%	0.00%	0
14	332.02	Tributary Lines	529,956	529,956	0	529,956	0.00%	0.00%	0
15	334.00	Field Meas. & Reg. Sta. Equip	198,469	198,469	0	198,469	0.00%	0.00%	0
16	336.00	Purification Equipment	2,289	1,145	2,289	2,289	0.00%	5.16%	
17									0
18		Total Natural Gas Production Plant	783,418	781,249	4,338	783,418			
19									0
20		Storage Plant	0	0	0	0	0.00%	0.00%	0
21	350.10	Land	4,779	4,757	43	4,779	0.92%	0.92%	0
22	350.20	Rights of Way	2,517	2,503	28	2,517	1.93%	0.60%	0
23	351.00	Structures & Improvements	118,678	118,199	959	118,678	1.93%	0.60%	0
24	351.02	Compression Station Equipment	25,045	24,976	139	25,045	1.93%	0.60%	0
25	351.03	Meas. & Reg. Sta. Structues	133,395	132,962	867	133,395	2.71%	1.31%	0
26	351.04	Other Structures	51,626	51,214	823	51,626	2.71%	1.31%	0
27	352.00	Wells \ Right of Way	1,800,441	1,786,598	27,687	1,800,441	2.71%	1.31%	0
28	352.01	Well Construction	583,241	579,757	6,969	583,241	0.00%	2.38%	0
29	352.02	Well Equipment	63,641	43,472	40,337	63,641	0.30%	0.30%	0
30	352.03	Cushion Gas	179,731	179,464	536	179,731	1.83%	0.44%	0
31	352.10	Leaseholds	52,706	52,586	240	52,706	1.35%	1.35%	0
32	352.11	Storage Rights	187,393	186,188	2,410	187,393	1.35%	1.35%	0
33	353.01	Field Lines	220,909	219,495	2,828	220,909	1.51%	0.60%	0
34	353.02	Tributary Lines	483,239	481,599	3,281	483,239	2.06%	0.12%	0
35	354.00	Compressor Station Equipment	290,647	290,474	347	290,647	1.30%	1.30%	0
36	355.00	Meas & Reg. Equipment	249,967	248,386	3,161	249,967			
37	356.00	Purification Equipment							0
38			4,447,955	4,402,629	90,653	4,447,955			
39									
40									
41									0
42		Transmission Plant	16	16	0	16	0.00%	0.00%	0
43	365.10	Land	335,528	335,528	0	335,528	0.89%	0.00%	0
44	365.20	Rights of Way	15,237	15,237	0	15,237	1.39%	0.00%	0
45	366.02	Structures & Improvements	62,417	62,417	0	62,417	1.39%	0.00%	0
46	366.03	Other Structues	341,838	338,061	7,554	341,838	1.27%	1.86%	(336)
47	367.00	Mains Cathodic Protection	15,415,981	15,416,149	0	15,415,981	1.27%	0.00%	0
48	367.01	Mains - Steel	64,844	62,075	5,538	64,844	2.28%	2.98%	0
49	369.00	Meas. & Reg. Equipment	2,028,212	1,983,983	88,457	2,028,212	2.28%	2.98%	
50	369.01	Meas. & Reg. Equipment							(336)
51			18,264,073	18,213,466	101,550	18,264,073			
52		Total Production Plant - LPG							
53									
54		Distribution Plant							

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
ıper B-3.1 Forecasted Div. 09 Kentucky Only - Updated to Reflect SK Rates
Data: ___ Base Period __X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(s).: _____

Line No.	Acct. No.	Account Title	Test Yr End Jun-08	13 Mo. Avg Jun-08	Projected Provision Test Period	Reserve Balance Jun-08 Projected		Current Deprec Rates	SK Deprec Rates SK		Retirements
			$	$							
55	374.00	Land & Land Rights	59,140	58,142	1,996	59,140	374.00	0.00%	2.03%		0
56	374.01	Land	939	469	939	939	374.01	0.00%	1.82%		0
57	374.02	Land Rights	29,297	26,692	5,209	29,297	374.02	1.68%	2.13%		0
58	374.03	Land Other	59	30	59	59	374.03	0.00%	2.13%		0
59	375.00	Structures & Improvements	41,637	35,474	12,325	41,637	375.00	1.95%	3.95%		0
60	375.01	Structures & Improvements T.B.	87,861	84,130	7,462	87,861	375.01	1.95%	7.06%		0
61	375.02	Land Rights	40,638	39,361	2,553	40,638	375.02	1.95%	5.48%		0
62	375.03	Improvements	51,383	51,325	116	51,383	375.03	1.95%	2.90%		0
63	376.00	Mains Cathodic Protection	2,579,525	2,469,935	219,658	2,579,525	376.00	2.39%	2.02%		(478)
64	376.01	Mains - Steel	40,463,057	39,759,888	1,517,599	40,463,057	376.01	2.39%	2.22%		(111,261)
65	376.02	Mains - Plastic	9,101,179	8,697,453	834,147	9,101,179	376.02	2.39%	3.00%		(26,695)
66	378.00	Meas. & Reg. Sta. Equipment General	1,396,483	1,412,266	0	1,396,483	378.00	2.49%	0.00%		(31,566)
67	379.00	Meas. & Reg. Sta. Equipment - City Gate	153,306	153,306	0	153,306	379.00	2.57%	0.00%		0
68	379.05	Meas. & Reg. Sta. Equipment - T.B.	1,710,320	1,710,320	0	1,710,320	379.05	2.57%	0.00%		0
69	380.00	Services	36,541,122	37,483,826	0	36,541,122	380.00	6.86%	0.00%		(1,885,408)
70	381.00	Meters	1,930,965	1,930,965	0	1,930,965	381.00	3.35%	0.00%		0
71	382.00	Meter Installations	5,686,531	5,997,985	0	5,686,531	382.00	3.06%	0.00%		(622,908)
72	383.00	House Regulators	3,170,201	2,902,615	535,172	3,170,201	383.00	2.85%	9.91%		0
73	384.00	House Regulator Installations	154,682	147,038	15,289	154,682	384.00	3.37%	9.91%		0
74	385.00	Ind. Meas. & Reg. Sta. Equipment	2,572,816	2,328,713	488,207	2,572,816	385.00	2.73%	9.91%		0
75	386.00	Other Property on Cust Prem.	2,511	2,511	0	2,511	386.00	3.00%	2.36%		0
76			105,773,651	105,292,444	3,640,731	105,773,651					(2,678,316)
77											
78											
79		General Plant									0
80	389.00	Land & Land Rights	31,501	29,980	3,041	31,501		0.00%	4.26%		0
81	390.01	Structures Frame	0	0	0	0		0.00%		for Depr Rate See Div 091	0
82	390.02	Structures & Improvements	105,283	102,660	5,247	105,283		2.12%	2.71%		0
83	390.03	Improvements	207,223	151,901	110,643	207,223		2.12%	14.29%		0
84	390.04	Air Conditioning Equipment	5,900	5,583	633	5,900		2.12%	5.22%		0
85	390.09	Improvement to Leased Premises	1,149,771	1,149,771	0	1,149,771		5.00%	0.00%		0
86	391.00	Office Furn & Equipment	486,358	554,871	0	486,358		7.05%	0.00%		(137,026)
87	391.02	Remittance Processing Equip	0	0	0	0		0.00%		for Depr Rate See Div 002	0
88	391.03	Office Machines	(5,316)	(14,307)	18,185	(5,316)		7.05%	19.16%		(202)
89	392.00	Transportation Equipment	(581,752)	(616,477)	90,046	(581,752)		8.92%	17.49%		(20,595)
90	392.01	Trucks	22,058	24,729	0	22,058		8.92%	0.00%		(5,343)
91	392.02	Trailers	117,808	121,288	0	117,808		8.92%	0.00%		(6,960)
92	393.00	Stores Equipment	0	0	0	0		0.00%			0
93	394.00	Tools Shop & Garage Equipment	(55,789)	16,579	0	(55,789)		3.26%	0.00%		(144,736)
94	396.00	Power Operated Equipment	0	0	0	0		0.00%		for Depr Rate See Div 091	0
95	396.03	Ditchers	(164,057)	(156,247)	0	(164,057)		2.79%	0.00%		(15,620)
96	396.04	Backhoes	7,333	10,877	0	7,333		2.79%	0.00%		(7,088)
97	396.05	Welders	(8,421)	(5,238)	0	(8,421)		2.79%	0.00%		(6,367)
98	397.00	Communication Equipment	672,646	672,646	0	672,646		5.21%	0.00%		0
99	397.01	Communication Equipment - Mobile Radios	(18,800)	(18,800)	0	(18,800)		5.21%	0.00%		0
100	397.02	Communication Equip. - Fixed Radios	7,703	7,703	0	7,703		5.21%	0.00%		0
101	397.05	Communication Equip. - Telemetering	98,404	98,404	0	98,404		5.21%	0.00%		0
102	398.00	Miscellaneous Equipment	1,053,636	1,053,636	0	1,053,636		10.94%	0.00%		0
103	399.00	Other Tangible Property	0	0	0	0		0.00%		for Depr Rate See Div 002	0
104	399.01	Other Tangible Property - Servers H/W	203,288	203,288	0	203,288		14.29%	0.00%		0
105	399.02	Other Tangible Property - Servers S/W	138,730	138,730	0	138,730		14.29%	0.00%		0
106	399.03	Other Tangible Property - Network - H/W	532,642	532,642	0	532,642		14.29%	0.00%		0
107	399.04	Other Tang. Property - CPU	0	0	0	0		0.00%		for Depr Rate See Div 002	0
108	399.05	Other Tang. Property - MF Hardware	0	0	0	0		0.00%		for Depr Rate See Div 002	0

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
ıper B-3.1 Forecasted Div. 09 Kentucky Only - Updated to Reflect SK Rates
Data: ___ Base Period _X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(s).: _____

Line No.	Acct. No.	Account Title	Test Yr End Jun-08	13 Mo. Avg Jun-08	Projected Provision Test Period	Reserve Balance Jun-08	Current Deprec Rates	SK Deprec Rates		Retirements
			$	$		Projected		SK		
109	399.06	Other Tang. Property - PC Hardware	3,399,739	3,399,739	0	3,399,739	18.51%	0.00%		0
110	399.07	Other Tang. Property - PC Software	226,517	226,517	0	226,517	15.85%	0.00%		0
111	399.08	Other Tang. Property - Application Software	414,233	414,233	0	414,233	12.50%	0.00%		0
112	399.09	Other Tang. Property - Mainframe S/W	0	0	0	0	0.00%		for Depr Rate See Div 002	0
113	399.24	Other Tang. Property - Application Software	0	0	0	0	0.00%		for Depr Rate See Div 002	0
114										
115		Total General Plant	8,046,637	8,104,707	227,795	8,046,637				(343,937)
116										
117		Total Plant	137,443,917	136,922,678	4,065,067	137,443,917				(3,022,589)

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Forecasted Div. 02 General Office

Data: ___ Base Period _X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

WP Sched. B-3.1
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Witness:

Line No.	Acct. No.	Account Title	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Test Yr End Jun-08
			$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
1		General Plant																
2	389.00	Land & Land Rights	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	390.01	Structures - Frame	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	390.02	Structures & Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	390.03	Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	390.04	Air Conditioning Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	390.09	Improvement to leased Premises	5,322,926	5,366,815	5,410,844	5,454,911	5,505,637	5,556,363	5,607,089	5,657,815	5,708,541	5,759,267	5,809,993	5,860,719	5,911,445	5,962,171	6,012,897	6,063,623
8	391.00	Office Furniture & Equipment	6,046,404	6,082,982	6,119,535	6,156,012	6,142,171	6,128,330	6,114,489	6,100,648	6,086,807	6,072,967	6,059,126	6,045,285	6,031,444	6,017,603	6,003,762	5,989,921
9	391.02	Remittance Processing Equipmemt	31,658	31,868	32,073	32,274	31,865	31,456	31,047	30,638	30,229	29,821	29,412	29,003	28,594	28,185	27,776	27,368
10	391.03	Office Machines	378,418	379,069	379,697	380,303	365,678	351,052	336,427	321,801	307,176	292,550	277,925	263,299	248,673	234,048	219,422	204,797
11	392.00	Transportation Equipment	32,031	32,487	32,943	33,399	33,854	34,310	34,766	35,222	35,678	36,133	36,589	37,045	37,501	37,956	38,412	38,868
12	392.01	Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	392.02	Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	393.00	Stores Equipment	666	660	653	645	506	368	229	90	(49)	(188)	(327)	(466)	(605)	(744)	(883)	(1,022)
15	394.00	Tools, Shop, & Garage Equip.	8,193	8,232	8,268	8,300	7,783	7,266	6,749	6,232	5,715	5,198	4,681	4,163	3,646	3,129	2,612	2,095
16	396.00	Power Operated Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	396.03	Ditchers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	396.04	Backhoes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	396.05	Welders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	397.00	Communication Equip.	345,897	352,498	359,099	365,700	356,164	346,628	337,091	327,555	318,018	308,482	298,946	289,409	279,873	270,337	260,800	251,264
21	397.01	Communication Equipment - Mobile Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	397.02	Communication Equip. - Fixed Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	397.05	Communication Equip. - Telemetering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	398.00	Miscellaneous Equipment	394,882	397,703	400,523	403,344	407,634	411,923	416,212	420,501	424,791	429,080	433,369	437,659	441,948	446,237	450,526	454,816
25	399.00	Other Tangible Property	10,561	10,695	10,829	10,963	11,002	11,042	11,081	11,121	11,161	11,200	11,240	11,279	11,319	11,359	11,398	11,438
26	399.01	Other Tangible Property - Servers - H/W	1,899,650	1,987,407	2,079,805	2,173,479	2,228,130	2,282,781	2,337,432	2,392,083	2,446,735	2,501,386	2,556,037	2,610,688	2,665,340	2,719,991	2,774,642	2,829,293
27	399.02	Other Tangible Property - Servers - S/W	700,048	722,573	745,278	768,032	774,604	781,176	787,748	794,320	800,892	807,464	814,036	820,608	827,180	833,752	840,324	846,896
28	399.03	Other Tangible Property - Network - H/W	470,907	493,738	516,570	539,401	554,259	569,118	583,977	598,835	613,694	628,553	643,411	658,270	673,129	687,987	702,846	717,704
29	399.04	Other Tangible Property - CPU	1,390,767	1,414,740	1,438,712	1,462,684	1,486,657	1,510,629	1,534,602	1,558,574	1,582,547	1,606,519	1,630,491	1,654,464	1,678,436	1,702,409	1,726,381	1,750,354
30	399.05	Other Tangible Property - MF Hardware	1,352,135	1,367,369	1,382,603	1,397,837	1,413,072	1,428,306	1,443,540	1,458,774	1,474,008	1,489,243	1,504,477	1,519,711	1,534,945	1,550,179	1,565,414	1,580,648
31	399.06	Other Tangible Property - PC Hardware	2,177,373	2,228,083	2,279,740	2,329,761	2,320,250	2,310,739	2,301,228	2,291,717	2,282,206	2,272,695	2,263,184	2,253,673	2,244,162	2,234,651	2,225,140	2,215,629
32	399.07	Other Tang. Property - P.C. Software	1,048,021	1,067,221	1,086,897	1,106,703	1,117,391	1,128,079	1,138,768	1,149,456	1,160,144	1,170,832	1,181,520	1,192,208	1,202,897	1,213,585	1,224,273	1,234,961
33	399.08	Other Tang. Property - Application Software	18,813,801	19,120,118	19,433,935	19,749,813	20,202,824	20,655,836	21,108,847	21,561,859	22,014,870	22,467,881	22,920,893	23,373,904	23,826,916	24,279,927	24,732,938	25,185,950
34	399.09	Other Tang. Property - Mainframe S/W	3,262,399	3,309,958	3,357,516	3,405,074	3,452,328	3,499,582	3,546,836	3,594,090	3,641,344	3,688,598	3,735,852	3,783,106	3,830,360	3,877,614	3,924,868	3,972,122
35	399..24	Other Tang. Property - Gen Startup Costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36																		
37			43,686,738	44,374,215	45,075,520	45,778,637	46,411,811	47,044,985	47,678,159	48,311,333	48,944,507	49,577,681	50,210,855	50,844,029	51,477,203	52,110,376	52,743,550	53,376,724

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Data: ___ Base Period __X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

Line No.	Acct. No.	Account Title	13 Mo. Avg Jun-08 Projected	Projected Provision Test Period	Reserve Balance Jun-08 Projected	Retirements
1		General Plant				
2	389.00	Land & Land Rights	0	0	0	0
3	390.01	Structures - Frame	0	0	0	0
4	390.02	Structures & Improvements	0	0	0	0
5	390.03	Improvements	0	0	0	0
6	390.04	Air Conditioning Equipment	0	0	0	0
7	390.09	Improvement to leased Premises	5,759,267	653,401	6,063,623	(44,689)
8	391.00	Office Furniture & Equipment	6,072,967	189,151	5,989,921	(355,241)
9	391.02	Remittance Processing Equipmemt	29,821	2,090	27,368	(6,996)
10	391.03	Office Machines	292,550	5,664	204,797	(181,171)
11	392.00	Transportation Equipment	36,133	5,469	38,868	0
12	392.01	Trucks	0	0	0	0
13	392.02	Trailers	0	0	0	0
14	393.00	Stores Equipment	(188)	(152)	(1,022)	(1,516)
15	394.00	Tools, Shop, & Garage Equip.	5,198	134	2,095	(6,340)
16	396.00	Power Operated Equipment	0	0	0	0
17	396.03	Ditchers	0	0	0	0
18	396.04	Backhoes	0	0	0	0
19	396.05	Welders	0	0	0	0
20	397.00	Communication Equip.	308,482	83,705	251,264	(198,142)
21	397.01	Communication Equipment - Mobile Radios	0	0	0	0
22	397.02	Communication Equip. - Fixed Radios	0	0	0	0
23	397.05	Communication Equip. - Telemetering	0	0	0	0
24	398.00	Miscellaneous Equipment	429,080	51,471	454,816	0
25	399.00	Other Tangible Property	11,200	475	11,438	0
26	399.01	Other Tangible Property - Servers - H/W	2,501,386	655,815	2,829,293	0
27	399.02	Other Tangible Property - Servers - S/W	807,464	78,864	846,896	0
28	399.03	Other Tangible Property - Network - H/W	628,553	178,304	717,704	0
29	399.04	Other Tangible Property - CPU	1,606,519	287,669	1,750,354	0
30	399.05	Other Tangible Property - MF Hardware	1,489,243	182,810	1,580,648	0
31	399.06	Other Tangible Property - PC Hardware	2,272,695	458,637	2,215,629	(572,769)
32	399.07	Other Tang. Property - P.C. Software	1,170,832	132,382	1,234,961	(4,124)
33	399.08	Other Tang. Property - Application Software	22,467,881	5,601,832	25,185,950	(165,696)
34	399.09	Other Tang. Property - Mainframe S/W	3,688,598	570,263	3,972,122	(3,215)
35	399..24	Other Tang. Property - Gen Startup Costs	0	0	0	0
36			49,577,681	9,137,986	53,376,724	(1,539,898)
37						

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Forecasted Div. 12 Customer Service

Data: ___ Base Period _X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

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Witness:

Line No.	Acct. No.	Account Title	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Test Yr End Jun-08
			$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
1		General Plant																
2	389.00	Land & Land Rights	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	390.01	Structures - Frame	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	390.02	Structures & Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	390.03	Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	390.04	Air Conditioning Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	390.09	Improvement to leased Premises	1,360,301	1,378,989	1,397,676	1,416,364	1,439,251	1,462,139	1,485,027	1,507,915	1,530,802	1,553,690	1,576,578	1,599,465	1,622,353	1,645,241	1,668,129	1,691,016
7	391.00	Office Furniture & Equipment	10,592	10,820	11,049	11,277	11,377	11,477	11,576	11,676	11,775	11,875	11,974	12,074	12,173	12,273	12,372	12,472
8	391.02	Remittance Processing Equipmemt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	391.03	Office Machines	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	392.00	Transportation Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	392.01	Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	382.02	Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	393.00	Stores Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	394.00	Tools, Shop, & Garage Equip.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	396.00	Power Operated Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	396.03	Ditchers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	396.04	Backhoes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	396.05	Welders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	397.00	Communication Equip.	7,979,670	8,123,253	8,266,836	8,410,418	8,580,822	8,751,226	8,921,629	9,092,033	9,262,436	9,432,840	9,603,244	9,773,647	9,944,051	10,114,455	10,284,858	10,455,262
17	397.01	Communication Equipment - Mobile Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	397.02	Communication Equip. - Fixed Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	397.05	Communication Equip. - Telemetering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	398.00	Miscellaneous Equipment	324	333	341	350	363	376	389	402	415	428	441	454	467	480	493	506
21	399.00	Other Tangible Property	222,349	225,167	227,984	230,802	231,635	232,469	233,303	234,136	234,970	235,803	236,637	237,471	238,304	239,138	239,972	240,805
22	399.01	Other Tangible Property - Servers - H/W	8,039,206	8,158,555	8,277,903	8,397,252	8,455,465	8,513,677	8,571,889	8,630,102	8,688,314	8,746,527	8,804,739	8,862,951	8,921,164	8,979,376	9,037,588	9,095,801
23	399.02	Other Tangible Property - Servers - S/W	6,391,933	6,473,645	6,555,357	6,637,069	6,659,942	6,682,814	6,705,687	6,728,559	6,751,432	6,774,304	6,797,177	6,820,049	6,842,922	6,865,794	6,888,667	6,911,539
24	399.03	Other Tangible Property - Network - H/W	226,625	232,101	237,576	243,051	246,614	250,178	253,741	257,304	260,868	264,431	267,994	271,558	275,121	278,684	282,248	285,811
25	399.04	Other Tangible Property - CPU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	399.05	Other Tangible Property - MF Hardware	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	399.06	Other Tangible Property - PC Hardware	1,167,709	1,218,593	1,269,478	1,320,362	1,357,813	1,395,264	1,432,716	1,470,167	1,507,618	1,545,069	1,582,520	1,619,971	1,657,423	1,694,874	1,732,325	1,769,776
28	399.07	Other Tang. Property - PC Software	1,331,376	1,373,546	1,415,715	1,457,884	1,479,337	1,500,791	1,522,244	1,543,697	1,565,151	1,586,604	1,608,057	1,629,510	1,650,964	1,672,417	1,693,870	1,715,324
	399.08	Other Tang. Property - Application Software	35,646,273	36,157,180	36,668,087	37,178,994	37,868,883	38,558,771	39,248,660	39,938,548	40,628,437	41,318,325	42,008,214	42,698,102	43,387,991	44,077,879	44,767,768	45,457,656
	399.09	Other Tang. Property - Mainframe S/W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	399.24	Other Tang. Property - Gen Startup Costs	14,906,411	15,067,266	15,228,120	15,388,975	15,695,815	16,002,655	16,309,496	16,616,336	16,923,176	17,230,016	17,536,857	17,843,697	18,150,537	18,457,377	18,764,217	19,071,058
30																		
31			77,282,771	78,419,447	79,556,123	80,692,799	82,027,318	83,361,837	84,696,356	86,030,875	87,365,394	88,699,913	90,034,431	91,368,950	92,703,469	94,037,988	95,372,507	96,707,026

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workp

Data: ___ Base Period __X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

Line No.	Acct. No.	Account Title	13 Mo. Avg Jun-08 Projected	Projected Provision Test Period	Reserve Balance Jun-08 Projected	Retirement
1		General Plant				
2	389.00	Land & Land Rights	0	0	0	0
	390.01	Structures - Frame	0	0	0	0
3	390.02	Structures & Improvements	0	0	0	0
4	390.03	Improvements	0	0	0	0
5	390.04	Air Conditioning Equipment	0	0	0	0
6	390.09	Improvement to leased Premises	1,553,690	274,653	1,691,016	0
7	391.00	Office Furniture & Equipment	11,875	1,194	12,472	0
8	391.02	Remittance Processing Equipmemt	0	0	0	0
9	391.03	Office Machines	0	0	0	0
10	392.00	Transportation Equipment	0	0	0	0
	392.01	Trucks	0	0	0	0
	382.02	Trailers	0	0	0	0
11	393.00	Stores Equipment	0	0	0	0
12	394.00	Tools, Shop, & Garage Equip.	0	0	0	0
	396.00	Power Operated Equipment	0	0	0	0
13	396.03	Ditchers	0	0	0	0
14	396.04	Backhoes	0	0	0	0
15	396.05	Welders	0	0	0	0
16	397.00	Communication Equip.	9,432,840	2,044,843	10,455,262	0
17	397.01	Communication Equipment - Mobile Radios	0	0	0	0
18	397.02	Communication Equip. - Fixed Radios	0	0	0	0
19	397.05	Communication Equip. - Telemetering	0	0	0	0
20	398.00	Miscellaneous Equipment	428	156	506	0
21	399.00	Other Tangible Property	235,803	10,004	240,805	0
22	399.01	Other Tangible Property - Servers - H/W	8,746,527	698,549	9,095,801	0
23	399.02	Other Tangible Property - Servers - S/W	6,774,304	274,470	6,911,539	0
24	399.03	Other Tangible Property - Network - H/W	264,431	42,760	285,811	0
25	399.04	Other Tangible Property - CPU	0	0	0	0
26	399.05	Other Tangible Property - MF Hardware	0	0	0	0
27	399.06	Other Tangible Property - PC Hardware	1,545,069	534,884	1,769,776	(85,470)
28	399.07	Other Tang. Property - PC Software	1,586,604	257,439	1,715,324	0
	399.08	Other Tang. Property - Application Software	41,318,325	8,295,750	45,457,656	(17,088)
	399.09	Other Tang. Property - Mainframe S/W	0	0	0	0
29	399.24	Other Tang. Property - Gen Startup Costs	17,230,016	3,682,083	19,071,058	0
30						
31			88,699,913	16,116,785	96,707,026	(102,558)

Atmos Energy Corporation, KY
Computation of 13 Month Average Reserve Balances
workpaper B-3.1 Forecasted Div. 91 Admin. Office

Data: ___ Base Period _X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

WP Sched. B-3.1
Page 2 of 2
Witness:

Line No.	Acct. No.	Account Title	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07	Dec-07	Jan-08	Feb-08	Mar-08	Apr-08	May-08	Test Yr End Jun-08	13 Mo. Avg Jun-08
			$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	Projected
		Intangible Plant																	
	301.00	Organization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	302.00	Franchises & Consents	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	303.00	Misc Intangible Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total Intangible Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Distribution Plant																	
	376.01	Mains -Steel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Total Distribution Plant	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1		General Plant																	
2	389.10	Land	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	390.01	Struc - Frame Grp	19,513	19,890	20,266	20,643	21,019	21,396	21,773	22,149	22,526	22,902	23,279	23,656	24,032	24,409	24,786	25,162	22,902
	390.02	Structures & Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	390.03	Improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	390.04	Air Conditioning Equipment	5,916	5,929	5,941	5,953	5,965	5,977	5,989	6,001	6,013	6,026	6,038	6,050	6,062	6,074	6,086	6,098	6,026
6	390.09	Improvement to leased Premises	50,064	50,145	50,227	50,308	50,390	50,471	50,553	50,634	50,716	50,798	50,879	50,961	51,042	51,124	51,205	51,287	50,798
7	391.00	Office Furniture & Equipment	1,324,022	1,330,103	1,336,181	1,342,259	1,347,903	1,353,546	1,359,190	1,364,834	1,370,478	1,376,122	1,381,766	1,387,410	1,393,054	1,398,697	1,404,341	1,409,985	1,376,122
8	391.02	Remittance Processing Equipmemt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	391.03	Office Machines	26,827	26,995	27,160	27,324	26,976	26,627	26,279	25,931	25,582	25,234	24,886	24,538	24,189	23,841	23,493	23,144	25,234
10	392.00	Transportation Equipment	(2,148)	(2,148)	(2,148)	(2,148)	(3,664)	(5,180)	(6,696)	(8,212)	(9,728)	(11,244)	(12,759)	(14,275)	(15,791)	(17,307)	(18,823)	(20,339)	(11,244)
	392.01	Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	392.02	Trailers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	393.00	Stores Equipment	7,934	7,998	8,062	8,126	8,189	8,253	8,317	8,381	8,444	8,508	8,572	8,636	8,699	8,763	8,827	8,891	8,508
12	394.00	Tools, Shop, & Garage Equip.	24,239	24,653	25,066	25,479	25,568	25,658	25,748	25,838	25,927	26,017	26,107	26,197	26,287	26,376	26,466	26,556	26,017
	396.00	Power Operated Equipment	9,362	9,441	9,520	9,598	9,677	9,756	9,834	9,913	9,992	10,070	10,149	10,228	10,306	10,385	10,464	10,542	10,070
13	396.03	Ditchers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	396.04	Backhoes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	396.05	Welders	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	397.00	Communication Equip.	119,496	121,239	122,982	124,725	126,514	128,303	130,092	131,881	133,670	135,459	137,248	139,037	140,827	142,616	144,405	146,194	135,459
17	397.01	Communication Equipment - Mobile Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	397.02	Communication Equip. - Fixed Radios	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	397.05	Communication Equip. - Telemetering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	398.00	Miscellaneous Equipment	144,671	147,719	150,767	153,815	156,863	159,911	162,959	166,007	169,055	172,103	175,151	178,199	181,247	184,294	187,342	190,390	172,103
21	399.00	Other Tangible Property	60,116	61,334	62,552	63,770	64,987	66,205	67,423	68,641	69,858	71,076	72,294	73,512	74,729	75,947	77,165	78,383	71,076
22	399.01	Other Tangible Property - Servers - H/W	64,901	65,754	66,608	67,461	68,314	69,168	70,021	70,875	71,728	72,581	73,435	74,288	75,141	75,995	76,848	77,702	72,581
23	399.02	Other Tangible Property - Servers - S/W	12,699	12,798	12,896	12,995	13,094	13,192	13,291	13,389	13,488	13,586	13,685	13,783	13,882	13,980	14,079	14,177	13,586
24	399.03	Other Tangible Property - Network - H/W	209,987	212,826	215,666	218,505	221,344	224,183	227,022	229,862	232,701	235,540	238,379	241,219	244,058	246,897	249,736	252,576	235,540
25	399.04	Other Tangible Property - CPU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	399.05	Other Tangible Property - MF Hardware	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	399.06	Other Tangible Property - PC Hardware	588,870	611,873	634,876	657,878	681,303	704,728	728,153	751,578	775,003	798,427	821,852	845,277	868,702	892,127	915,552	938,977	798,427
28	399.07	Other Tang. Property - P.C. Software	116,843	118,396	119,949	121,502	123,056	124,609	126,162	127,715	129,269	130,822	132,375	133,928	135,482	137,035	138,588	140,141	130,822
	399.08	Other Tang. Property - Application Software	1,923,180	1,935,301	1,947,422	1,959,543	1,971,794	1,984,046	1,996,297	2,008,548	2,020,799	2,033,050	2,045,302	2,057,553	2,069,804	2,082,055	2,094,307	2,106,558	2,033,050
	399.09	Other Tang. Property - MF Software	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	399.24	Other Tang. Property - Start Up Costs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30			4,706,493	4,760,245	4,813,992	4,867,735	4,919,292	4,970,850	5,022,407	5,073,965	5,125,522	5,177,079	5,228,637	5,280,194	5,331,752	5,383,309	5,434,867	5,486,424	5,177,079
31																			

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Data: ___ Base Period __X_ Forecasted Period
Type of Filing: _X_ Original ___ Updated ___ Revised
Workpaper Reference No(S).: _____

Line No.	Acct. No.	Account Title	Projected Provision Test Period	Reserve Balance Jun-08 Projected	Retirement
		Intangible Plant			
	301.00	Organization	0	0	0
	302.00	Franchises & Consents	0	0	0
	303.00	Misc Intangible Plant	0	0	0
		Total Intangible Plant	0	0	0
		Distribution Plant			
	376.01	Mains -Steel	0	0	0
		Total Distribution Plant	0	0	0
1		General Plant			
2	389.10	Land	0	0	0
3	390.01	Struc - Frame Grp	4,519	25,162	0
	390.02	Structures & Improvements	0	0	0
4	390.03	Improvements	0	0	0
5	390.04	Air Conditioning Equipment	145	6,098	0
6	390.09	Improvement to leased Premises	979	51,287	0
7	391.00	Office Furniture & Equipment	72,811	1,409,985	(5,085)
8	391.02	Remittance Processing Equipmemt	0	0	0
9	391.03	Office Machines	1,827	23,144	(6,006)
10	392.00	Transportation Equipment	0	(20,339)	(18,191)
	392.01	Trucks	0	0	0
	392.02	Trailers	0	0	0
11	393.00	Stores Equipment	765	8,891	0
12	394.00	Tools, Shop, & Garage Equip.	4,888	26,556	(3,811)
	396.00	Power Operated Equipment	944	10,542	0
13	396.03	Ditchers	0	0	0
14	396.04	Backhoes	0	0	0
15	396.05	Welders	0	0	0
16	397.00	Communication Equip.	21,469	146,194	0
17	397.01	Communication Equipment - Mobile Radios	0	0	0
18	397.02	Communication Equip. - Fixed Radios	0	0	0
19	397.05	Communication Equip. - Telemetering	0	0	0
20	398.00	Miscellaneous Equipment	36,575	190,390	0
21	399.00	Other Tangible Property	14,613	78,383	0
22	399.01	Other Tangible Property - Servers - H/W	10,241	77,702	0
23	399.02	Other Tangible Property - Servers - S/W	1,182	14,177	0
24	399.03	Other Tangible Property - Network - H/W	34,071	252,576	0
25	399.04	Other Tangible Property - CPU	0	0	0
26	399.05	Other Tangible Property - MF Hardware	0	0	0
27	399.06	Other Tangible Property - PC Hardware	281,098	938,977	0
28	399.07	Other Tang. Property - P.C. Software	18,639	140,141	0
	399.08	Other Tang. Property - Application Software	147,015	2,106,558	0
	399.09	Other Tang. Property - MF Software	0	0	0
29	399.24	Other Tang. Property - Start Up Costs	0	0	0
30					
31			651,782	5,486,424	(33,093)

Rev. Rul. 97-54, 1997-52 I.R.B. 9

INTERNAL REVENUE SERVICE
Revenue Ruling

LINE PACK GAS; CUSHION GAS

Published: December 29, 1997

26 CFR 1.263(a)-1: Capital expenditures: in general.
Line pack gas; cushion gas. The cost of recoverable line pack gas or cushion gas is a capital expenditure and is not depreciable. The cost of nonrecoverable line pack gas or cushion gas is a capital expenditure and is depreciable.

Section 167. - Depreciation, 26 CFR 1.167(a)-1: Depreciation in general.
The cost of recoverable line pack gas or cushion gas is not depreciable, and the cost of nonrecoverable line pack gas or cushion gas is depreciable.

Section 263. - Capital Expenditures, 26 CFR 1.263(a)-1: Capital expenditures: in general.
The cost of recoverable and nonrecoverable line pack gas or cushion gas is a capital expenditure.

Section 471 - General Rule for Inventories, 26 CFR 1.471-1: Need for inventories.
The cost of recoverable and nonrecoverable line pack gas or cushion gas is a capital expenditure. Line pack gas or cushion gas in not inventory.

(Also section 168.)

Line pack gas; cushion gas. The cost of recoverable line pack gas or cushion gas is a capital expenditure and is not depreciable. The cost of nonrecoverable line pack gas or cushion gas is a capital expenditure and is depreciable.

ISSUES

(1) Is the cost of "line pack gas" or "cushion gas" a capital expenditure under § 263 of the Internal Revenue Code or an amount that is included in inventory under § 471?

(2) If the cost of "line pack gas" or "cushion gas" is a capital expenditure under § 263, is that cost depreciable under ss 167 and 168?

FACTS

"Line pack gas" is the minimum volume of natural gas necessary to provide the pressure to facilitate the flow of gas through a pipeline. "Cushion gas" is the minimum volume of natural gas necessary to provide the pressure to facilitate the flow of gas from a storage reservoir to a pipeline. Recoverable line pack gas and recoverable cushion gas will be available for sale or other use upon the abandonment of the pipeline or storage reservoir, respectively. Unrecoverable line pack gas and unrecoverable cushion gas will not be available for sale or other use upon the abandonment of the pipeline or storage reservoir, but will become obsolete with that abandonment.

LAW AND ANALYSIS

Section 263(a) provides that no deduction shall be allowed for amounts paid out for permanent improvements or betterments made to increase the value of any property or estate.

Section 1.263(a)-2 of the Income Tax Regulations provides that a "capital expenditure" includes the cost of acquisition, construction, or erection of buildings, machinery and equipment, furniture and fixtures, and similar property having a useful life substantially beyond the tax year.

Section 167(a) provides that there shall be allowed as a depreciation deduction a reasonable allowance for the exhaustion, wear and tear (including a reasonable allowance for obsolescence) of property used in a trade or business or held for the production of income.

Generally, for tangible property, the depreciation deduction under § 167(a) is determined under § 168 by using the applicable depreciation method, the applicable recovery period, and the applicable convention.

Section 471 provides that whenever, in the opinion of the Secretary, the use of inventories is necessary in order clearly to determine the income of any taxpayer, inventories shall be taken by that taxpayer, on the basis the Secretary may prescribe as conforming as nearly as may be to the best accounting practice in the trade or business and as most clearly reflecting income.

Section 1.471-1 provides that in order to reflect income correctly, inventories at the beginning and end of each tax year are necessary in every case in which the production, purchase, or sale of merchandise is an income- producing factor. Inventories should include all finished and partly finished goods and, in the case of raw materials and supplies, only those that have been acquired for sale or that will physically become a part of merchandise intended for sale.

Rev. Rul. 68-620, 1968-2 C.B. 199, amplified by Rev. Rul. 78-352, 1978-2 C.B. 168, holds that line pack gas is merchandise in transit that is intended to be sold to customers and therefore must be included in the inventory of the taxpayer.

Rev. Rul. 75-233, 1975-1 C.B. 95, holds that the cost of unrecoverable cushion gas is a capital expenditure under § 263, which is recoverable through an annual depreciation deduction under § 167.

With respect to both line pack gas and cushion gas, several court decisions have considered the capital expenditure-versus-inventory issue, as well as the depreciation issue. In Pacific Enterprises v. Commissioner, 101 T.C. 1 (1993), the United States Tax Court held that the costs of line pack gas and cushion gas are capital expenditures. Accord Transwestern Pipeline Co. v. United States, 639 F.2d 679 (Ct.Cl.1980), regarding line pack gas; Arkla, Inc. v. United States, 765 F.2d 487 (5th Cir.1985), regarding cushion gas. The United States Court of Appeals for the Fifth Circuit in Arkla further held that recoverable cushion gas was not subject to depreciation because it was not subject to exhaustion, wear, tear, or obsolescence. Accord Washington Energy Co. v. United States, 94 F.3d 1557 (Fed.Cir.1996). The Fifth Circuit in Arkla distinguished unrecoverable cushion gas as being subject to depreciation because that gas will become obsolete along with the storage facility. Accord Rev. Rul. 75-233. Finally, in Arkla, Inc. v. United States, 37 F.3d 621 (Fed.Cir.1994), the United States Court of Appeals for the Federal Circuit held that line pack gas and cushion gas are treated the same for purposes of depreciation. Accord Washington Energy Co. v. United States, 94 F.3d 1557.

Line pack gas or cushion gas is recoverable if it will be available for sale or

other use upon abandonment of a pipeline or storage reservoir. See Arkla, Inc. v. United States, 765 F.2d at 490. The Service will treat line pack gas or cushion gas as being available for sale or other use to the extent that such gas will be recovered from an abandoned pipeline or storage reservoir pursuant to a plan, a requirement of law, or economic feasibility, whichever method projects the greatest actual recovery of such gas.

The Service will follow the court decisions cited in this revenue ruling to the extent they hold that the cost of line pack gas or cushion gas is a capital expenditure, the cost of recoverable line pack gas or recoverable cushion gas is not depreciable, and the cost of unrecoverable line pack gas or unrecoverable cushion gas is depreciable.

HOLDINGS

(1) The cost of line pack gas or cushion gas is a capital expenditure under § 263.

(2) The cost of recoverable line pack gas or recoverable cushion gas is not depreciable, but the cost of unrecoverable line pack gas or unrecoverable cushion gas is depreciable under ss 167 and 168. The Service will treat line pack gas or cushion gas as recoverable to the extent that such gas will be recovered from an abandoned pipeline or storage reservoir pursuant to a plan, a requirement of law, or economic feasibility, whichever method projects the greatest actual recovery of such gas.

APPLICATION

Any change in a taxpayer's treatment of the costs of line pack gas or cushion gas to conform with this revenue ruling is a change in method of accounting to which the provisions of ss 446 and 481 and the regulations thereunder apply. A taxpayer wanting to change its method of accounting for the cost of line pack gas or cushion gas to conform with this revenue ruling must follow the automatic change in accounting method provisions of Rev. Proc. 97-37, 1997-33 I.R.B. 18.

EFFECT ON OTHER DOCUMENTS

Rev. Rul. 68-620 and Rev. Rul. 78-352 are revoked. Rev. Rul. 75-233 is superseded. Rev. Proc. 97-37 is amplified to include this change in the Appendix.

PROSPECTIVE APPLICATION

The Service will not require a taxpayer to change its method of accounting to comply with the holding that the cost of line pack gas or recoverable cushion gas is a capital expenditure for any taxable year beginning before December 29, 1997. In addition, the Service will not require a taxpayer to change its method of accounting to comply with the holding for determining the amount of recoverable line pack gas or recoverable cushion gas for any taxable year beginning before December 29, 1997, provided the method used by the taxpayer projects recoverable line pack gas or recoverable cushion gas in an amount equal to or greater than an amount that would be projected using an economic feasibility of recovery standard.

DRAFTING INFORMATION

The principal author of this revenue ruling is Jennifer L. Nuding of the Office of Assistant Chief Counsel (Income Tax and Accounting). For further information concerning this revenue ruling, contact Ms. Nuding at (202) 622- 4970 (not a toll-free call).

Rev. Rul. 97-54, 1997-52 I.R.B. 9

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

QUESTION 18: Please provide copies of all testimonies filed by Mr. Majoros for the past three years.

RESPONSE: All testimonies filed by Mr. Majoros in the last three years are listed in Appendix B attached to Mr. Majoros's testimony. These testimonies are a matter of public record and can be obtained from the appropriate public agencies.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 19: Mr. Majoros reduced plant in service in rate base by $1,016,900 to reflect the transfer of the recoverable portion of cushion gas from account 352.03 to account 117. Neither Mr. Majoros nor Mr. Henkes have included this recoverable cushion gas in rate base. Would Mr. Majoros agree that the investment in recoverable cushion gas is an investment used to provide service to utility customers? If not, why not?

RESPONSE: Yes.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 20: At page 2 of your testimony, you mention negotiations with the Federal Communications Commission ("FCC"). When was the most recent "represcription" in which you were involved?

RESPONSE: 1992.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 21: At page 5, line 8 of your testimony, you recommend that future cost of removal factors be based on Atmos' most recent experience. Are you asserting that the Company's cost of removal factors are not based on recent experience?

RESPONSE: No, we both use recent experience, just in different ways.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 22: Referencing page 6, line 13, of your testimony; please provide all support and justification clearly showing where Mr. Roff has specifically inflated cost of removal in his depreciation rate calculations.

RESPONSE: Mr. Roff's approach extrapolates past inflation into the future, and then compounds that effect as plant balances increase. I do not think Mr. Roff will deny these facts.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 23: At page 6, line 16, of your testimony, please provide specific references to recent accounting pronouncements that demonstrate that regulated utilities are charging ratepayers far more cost of removal that they will ever spend.

RESPONSE: The accounting references are SFAS No. 143, FIN 47 and FERC Order No.631. Mr. Majoros agrees that the utilities will spend the money, just not for cost of removal.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 24: At page 6, line 19, of your testimony; please provide specific information or calculations that demonstrate how Atmos has estimated "future inflation out for thirty to forty years".

RESPONSE: This is a generalization based on Mr. Roff's proposed lives, which Mr. Majoros has accepted.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 25: At page 7, line 5, of your testimony; please provide all information that shows that Atmos will collect $2.2 million in annual cost of removal.

RESPONSE: See the Company's response to AG-DR-1-168.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 26: At page 7, line 7, of your testimony; please provide all information that clearly demonstrates how Atmos has "already collected $23.9 million over and above what it has actually spent for gas and gas common plant cost of removal". This information should specifically demonstrate revenues related to cost of removal.

RESPONSE: Mr. Majoros has not conducted any studies comparing the Company's charges to depreciation expense to any specific recoveries for depreciation expense.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 27: With respect to your testimony at page 11, lines 19 and 20, please provide specific references to Mr. Roff's testimony where the claim you make regarding convincing the Commission of the wisdom of overcharging ratepayers is addressed.

RESPONSE: See Roff study, page 10.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 28: At page 12, line 3, of your testimony, please define the term "super-inflated estimates" and demonstrate how Mr. Roff's proposals reflect that level of "super inflation".

RESPONSE: Super-inflation refers to the effect of applying inflated cost of removal factors to ever growing plant balances.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 29: With respect to SFAS No. 143 and FERC Order No. 631, please provide all specific references to the terms "excess collections" as referred to at page 12, line 10 of your testimony. Further, please provide the specific sections of Order No. 631 that defines excess collections as non-legal asset retirement obligations. Finally, please provide the specific language from Order No. 631 wherein non-legal asset retirement obligations are defined.

RESPONSE: See paragraphs B22 and B73 of SFAS No. 143. Non-legal asset retirement obligations are not defined specifically in FERC Order No. 631, however the definition can be implied by reading paragraphs 33 and 36.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 30: With respect to FERC Order No. 631, please provide all specific references to the terms "excess collections" as referred to at page 12, line 10 of your testimony.

RESPONSE: None.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
MICHAEL J. MAJOROS, JR.

Question 31: With reference to page 22, line 6 through page 23, line 7 of Mr. Majoros' testimony, please provide all analyses performed by Mr. Majoros or Snavely King regarding the long-term impact on ratepayers of utilizing the cost of removal percentage estimation technique.

RESPONSE: None.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

In Regard to the Testimony of J. Randall Woolridge

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 32: Please provide copies of all workpapers used in preparation of testimony by Dr. Woolridge.

RESPONSE: Dr. Woolridge's work papers are provided on the attached CD.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 33: Please provide copies of all testimonies filed by Dr. Woolridge for the past three years.

RESPONSE: Dr. Woolridge's testimonies are provided on the CD.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 34: On page 7, line 3 of his testimony, Dr. Woolridge claims that the change in the spread between BBB corporate securities and 10-year treasury securities indicates "...the market price of risk has declined and therefore the risk premium has declined in recent years." Please provide all justification that the spread between BBB corporate securities and 10-year treasury securities is a determinant of the risk premium for equity over debt for utilities.

RESPONSE: The yield spreads between different bond rating categories and Treasury securities reflect the expected return differentials required by investors for alternative risk categories. As such, like the equity risk premium, it reflects the risk-return requirements in the market. As such, a decline in these yield spread reflects a reduction in the return required by investors for taking on additional risk.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE
PAGE 1 of 2

Question 35: On page 10, line 15 of his testimony regarding the impact of the recent temporary change in the tax law, Dr. Woolridge claims "...my assessment indicates it could be as large as 100 basis points." Please provide specific sources and citations in support of this claim.

RESPONSE:

See my discussion below, prepared in response to this question.

The Impact of the 2003 Tax Legislation
On the Cost of Equity Capital

On May 28, 2003, President Bush signed the *Jobs and Growth Tax Relief Reconciliation Act of 2003*. The primary purpose of this legislation was to reduce taxes to enhance economic growth. A primary component of the new tax law was a significant reduction in the taxation of corporate dividends for individuals. Dividends have been described as "double-taxed." First, corporations pay taxes on the income they earn before they pay dividends to investors, then investors pay taxes on the dividends that they receive from corporations. One of the implications of the double taxation of dividends is that, all else equal, it results in a high cost of raising capital for corporations.

The new tax legislation reduces the double taxation of dividends by lowering the tax rate on dividends from the 30 percent range (the average tax bracket for individuals) to 15 percent. This reduction in the taxation of dividends for individuals enhances their after-tax returns and thereby reduces their pre-tax required returns. This reduction in pre-tax required returns (due to the lower tax on dividends) effectively reduces the cost of equity capital for companies. The new tax law also reduced the tax rate on long-term capital gains from 20% to 15%.

To demonstrate the effect of the new legislation, assume that a utility has a 10% expected return – 5.0% in dividends and 5.0% in capital gains. The new tax law reduces the double-taxation by reducing the tax rate on dividends from the 30 percent range (the marginal tax bracket for the average individual taxpayer) to 15 percent. The table below illustrates the effect of the new tax law. Panel A shows

that under the old tax law a 10.0% pre-tax return provided for a 7.5% after tax return. Panel B shows that under the new tax law, with tax rates of 15% on both dividends and capital gains, the 10% pre-tax return is worth 8.5% on an after-tax basis. In Panel C, I have held the after-tax return constant (at 7.5%) to illustrate the effect of the new tax law on required pre-tax returns. Assuming that the entire after-tax 1% return difference (7.5% to 8.5%) is attributed to the lower taxation of dividends, the 10.0% pre-tax return under the new law is now only 8.82%. In other words, to generate an after-tax return of 7.5%, the new tax law reduced the required pre-tax return from 10.0% to 8.82%.

The Impact of the New Tax Law on Pre- and After- Tax Returns

Panel A
Old Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 30% & Capital Gains 20%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	30.00%	3.50%
Capital Gain	5.00%	20.00%	4.00%
Total	10.00%		7.50%

Panel B
New Tax Law
10% Pre-Tax Return - 5% Dividend Yield & 5% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	5.00%	15.00%	4.25%
Capital Gain	5.00%	15.00%	4.25%
Total	10.00%		8.50%

Panel C
The Effect of the New Tax Law on Pre-Tax Returns
7.50% After-Tax Return - 3.25% Dividend Yield & 4.25% Capital Gain
Tax Rates - Dividends 15% & Capital Gains 15%

	Pre-Tax Return	Tax Rate	After-Tax Return
Dividends	3.82%	15.00%	3.25%
Capital Gain	5.00%	15.00%	4.25%
Total	8.82%		7.50%

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 36: On page 20, line 2 of his testimony regarding market-to-book ratios, Dr. Woolridge states, "This demonstrates the strong positive relationship between ROE's and market-to-book ratios for public utilities." Please provide specific sources and citations in support of the stated relationship between regulated returns and utilities' market-to-book ratios.

RESPONSE: See the following:

Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997. This was provided in Dr. Woolridge's work papers under the title "HBS – Value Drivers.pdf."

In addition, see the attached article:

William Fruhan, "Hall of Fame Firms."

1

Hall of Fame firms

Managers create economic value for their firm's shareholders whenever they undertake investments that produce returns that exceed capital costs. This chapter will focus first on developing a mathematical model that places a specific economic value on the opportunity to invest capital in a particular business at returns that vary from (and, more specifically, exceed) capital costs.

A simple but powerful link exists between a firm's decisions on capital investments and a rational investor's valuation of that firm's equity securities. Early explorations into this link partitioned the value of a firm's equity securities into two different components.[1] The first component of value arose from the future cash flows streaming from the assets the firm *already* had in place. The second component of value arose from the cash flows investors anticipated from investments that the firm would have the opportunity to make some time in the *future*. For firms facing a large volume of future investment opportunities promising returns substantially in excess of capital costs for a long time period, this second component of value is quite important.

ASSUMPTIONS FOR A SAMPLE CALCULATION

A security valuation model (that takes into account the cash flows streaming from a firm's existing as well as future capital investments) can be made explicit in an operationally useful way as follows:

[1] The most prominent of the earliest works explicitly dealing with this issue is Merton H. Miller and Franco Modigliani, "Dividend Policy, Growth, and the Valuation of Shares," *The Journal of Business*, October 1961.

1. Assume that Firm A has a net worth of $100, and that it earns an annual after-tax profit of $30 on that equity base. The firm has either a fixed proportion of debt in its capital structure, or, as in the following example, an all-equity capital structure. Assume further that a business facing similar risk in a perfectly competitive market[2] could be expected to earn only a 10 percent profit on its equity, and that the appropriate cost of equity capital for Firm A is therefore 10 percent.
2. Assume that Firm A's ability to earn the abnormally high 30 percent return on equity will last (for example, until the expiration of a patent) only for the next ten years, and that at the end of ten years its rate of return will immediately fall to the level of 10 percent.
3. Finally, assume that the portfolio of abnormally high return investment opportunities (averaging 30 percent[3]) facing Firm A is growing sufficiently fast so as to exhaust only 50 percent of the firm's earnings each year, and that the remainder of the earnings are returned to the shareholders as dividends.

Given these assumptions the question of interest to us is, "What is the economic value, today, of Firm A's equity to a rational investor?" By discounting the expected cash flows produced according to the specified assumptions, we arrive at an answer of $324.08 (Table 1–1). Since the original investment by Firm A's shareholders was only $100.00, Firm A's management has succeeded in creating value equal to $324.08 — $100.00 = $224.08. What is the source of this value creation?

THE SOURCE OF VALUE CREATION: THE PROFILE OF INVESTMENT OPPORTUNITY

Absent new[4] capital-investment opportunities offering rates of return exceeding 10 percent, the cash flows produced by Firm A's existing equity would be worth $222.92 (Table 1–2). Had Firm A earned only 10 percent on its equity base at the outset, and had it enjoyed future investment

TABLE 1–1
Calculation of the economic value of a firm's equity (versus its book value)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Start of year	Book value of shareholder's investment	ROE achieved	Profit after tax	Retained earnings	Cash return to shareholders from dividends and/or sale of stock at book value	Present value factor at 10% discount rate	Present value of (5)
1	$100.00	30%	$ 30.00	$15.00	$ 15.00	0.909	$ 13.64
2	115.00	30	34.50	17.25	17.25	0.826	14.25
3	132.25	30	39.68	19.84	19.84	0.751	14.90
4	152.09	30	45.62	22.81	22.81	0.683	15.58
5	174.90	30	52.46	26.23	26.23	0.621	16.29
6	201.13	30	60.34	30.17	30.17	0.564	17.02
7	231.30	30	69.38	34.69	34.69	0.513	17.80
8	265.99	30	79.78	39.89	39.89	0.467	18.63
9	305.88	30	91.76	45.88	45.88	0.424	19.45
10	351.76	30	105.54	52.77	52.77	0.386	20.37
11	404.53	10			404.53*	0.386	156.15
							$324.08
				Economic value	3.24		
				Book value			

Where the firm faces (a) investment opportunities with 30% returns to equity in (b) amounts sufficient to exhaust 50% of each year's earnings for (c) 10 years, and (d) where the firm has a 10% cost of equity.

*It is assumed here that the stock will be sold at book value at the end of year 10, once it is clear that future ROEs will equal only the firm's assumed cost of equity of 10%. The model also assumes that there is no *uncertainty* about the price of the stock at the end of year 10. The stock at that point (and at all points during the ten intervening years) is assumed to be rationally valued such that a sale at any *intervening* point in time would also produce a 10% return to the shareholder. This 10% return would be made up of dividends plus capital gains as indicated below.

Year	Economic value of stock		Capital gain in year	Dividend in year	Total return in year	Rate of return in year
	Start of year	End of year				
1	$324.08	$341.36	$17.28	$15.00	$32.28	10.0%
2	341.36	358.15	16.79	17.25	34.04	10.0
3	358.15	374.12	15.97	19.84	35.81	10.0
4	374.12	388.72	14.60	22.81	37.41	10.0
5	388.72	401.36	12.64	26.23	38.87	10.0
6	401.36	411.32	9.96	30.17	40.13	10.0
7	411.32	417.76	6.44	34.69	41.13	10.0
8	417.76	419.64	1.88	39.89	41.77	10.0
9	419.64	415.72	(3.92)	45.88	41.96	10.0
10	415.72	404.53	(11.19)	52.77	41.58	10.0

[2] This refers to perfectly competitive financial markets (that is, the markets for securities).

[3] This *average* rate could imply some investment opportunities promising returns on equity substantially in excess of 30 percent, and others at returns all the way down to 10 percent. In addition, these investment opportunities would not necessarily earn average returns on equity of 30 percent over their *entire* projected lives. Indeed, average returns on equity of 30 percent would be earned only during the time period (ten years in the example above) during which returns in excess of capital costs were anticipated.

[4] "New" investments relate only to those investments that would actually expand the firm's investment base. It is assumed, implicitly, that cash flow resulting from depreciation is reinvested annually to maintain both the capital investment base and the 30 percent ROE figure.

opportunities offering only 10 percent returns, the discounted value of its future cash flows would, of course, equal only $100.

The $324.08 value for Firm A's equity securities calculated in Table 1–1 can thus be allocated as follows:

1. $100.00 can be attributed to the original investment (assuming it had been able to produce only the competitively demanded 10 percent rate of return).
2. $122.92[5] can be attributed to the fact that the original $100.00 investment was expected to produce returns on equity for a ten-year period that exceeded equity costs by some 20 percentage points.
3. $101.16[6] can be attributed to the fact that investors in Firm A anticipated that the firm would have, annually over the next ten years, investment opportunities sufficient to utilize 50 percent of the firm's profits. Those investment opportunities promised, on average, to return 30 percent on equity until the end of the tenth year. Profits not reinvested would be returned to shareholders as dividends, but cash flow resulting from depreciation charges would be reinvested.

The sample calculations carried out above are entirely hypothetical. The specific assumptions describing Firm A's existing and future investment opportunities are probably realistic for only a handful of U.S. nonfinancial corporations (NFCs). The example clearly needs to be extended to cover a wider spectrum of investment opportunity profiles characteristic of U.S. firms. Happily this is a rather straightforward task. Table 1–3 accomplishes this goal. Table 1–3 represents the link between investment opportunity and security valuations.

THE ECONOMIC VALUE/BOOK VALUE MATRICES

Table 1–3 displays the *multiple of book value* at which a firm's equity security should be economically valued as a function of three factors. The three factors were introduced in Table 1–1. They are:

1. The *size of the percentage point spread* projected to be earned on common equity over the cost of the firm's common equity.
2. The *volume* of future capital investment opportunities promising average rates of return equal to the level indicated in (1) above. This is expressed in terms of the common equity increase each year in relation to net profits available for common stock.[7]

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[5] This equals $222.92 − $100.00 (i.e., the Table 1–2 result minus the original equity investment valued at book value).

[6] This equals $324.08 − $222.92 (i.e., the Table 1–1 result minus the Table 1–2 result).

[7] This is equal to net profits after taxes (less preferred stock dividends, if any).

TABLE 1–2
Calculation of the economic value of a firm's equity (versus its book value)

no Retained Earnings

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Start of year	Book value of shareholder's investment	ROE achieved	Profit after tax	Retained earnings	Cash return to shareholders from dividends and/or sale of stock at book value	Present value factor at 10% discount rate	Present value of (5)
1	$100.00	30%	$30.00	0	$ 30.00	0.909	$ 27.27
2	100.00	30	30.00	0	30.00	0.826	24.78
3	100.00	30	30.00	0	30.00	0.751	22.53
4	100.00	30	30.00	0	30.00	0.683	20.49
5	100.00	30	30.00	0	30.00	0.621	18.63
6	100.00	30	30.00	0	30.00	0.564	16.92
7	100.00	30	30.00	0	30.00	0.513	15.39
8	100.00	30	30.00	0	30.00	0.467	14.01
9	100.00	30	30.00	0	30.00	0.424	12.72
10	100.00	30	30.00	0	30.00	0.386	11.58
11	100.00	30	30.00	0	100.00*	0.386	38.60
							$222.92

$$\frac{\text{Economic value}}{\text{Book value}} \quad 2.22$$

Where the firm faces *(a)* no new capital investment opportunities with returns exceeding 10%, although the firm earns 30% on equity at the outset; *(b)* returns on equity will collapse from 30% to 10% at the end of 10 years; *(c)* the cost of equity to the firm is 10%.

*It is assumed that the stock will be sold at book value at the end of year 10, once it is clear that future ROEs will equal only the firm's assumed cost of equity of 10%. The model also assumes that there is no *uncertainty* about the price of the stock at the end of year 10, or at any point during the ten intervening years. The stock is assumed to be rationally valued such that a sale at any point in time would produce a 10% return to shareholders.

TABLE 1-3
Matrices of projected economic value/book value ratios*

Percentage point spread projected to be earned on common stock equity over and above the *firm's cost of equity capital*†

Projected number of years during which the extraordinary returns on common stock equity noted at the top of each matrix will be earned in the future

	-5	0	+5	+10	+20
5	0.8	1.0	1.2	1.4	1.9
10	0.7	1.0	1.3	1.8	2.7
15	0.6	1.0	1.5	2.1	3.6
30	0.5	1.0	1.7	2.7	5.8

0.3

	-5	0	+5	+10	+20
5	0.8	1.0	1.2	1.5	2.0
10	0.7	1.0	1.4	1.9	3.2
15	0.6	1.0	1.6	2.4	4.8
30	0.4	1.0	2.0	3.7	12.2

0.5

	-5	0	+5	+10	+20
5	0.8	1.0	1.2	1.5	2.1
10	0.6	1.0	1.5	2.1	3.9
15	0.5	1.0	1.7	2.8	6.8
30	0.4	1.0	2.5	5.8	30.8

0.7

	-5	0	+5	+10	+20
5	0.8	1.0	1.2	1.5	2.3
10	0.6	1.0	1.6	2.4	5.3
15	0.5	1.0	1.9	3.7	12.2
30	0.2	1.0	3.8	13.5	149.3

1.0

	-5	0	+5	+10	+20
5	0.8	1.0	1.3	1.8	3.2
10	0.5	1.0	2.1	4.4	22.3
15	0.3	1.0	3.8	13.0	161.6

2.0‡

Projected level of extraordinary return reinvestment opportunity anticipated in the future expressed as (\$ annual growth in common stock equity)/(\$ annual profit after tax)

*For use in valuing the common stocks of firms facing different portfolios of real (i.e., nonfinancial) investment opportunities. The economic value/book value ratios produced in this table can be calculated from the following equation:

$$\frac{\text{Economic value}}{\text{Book value}} = \left(\frac{1 + (\text{ROE})(\text{RET})}{1+K_e}\right)^n + \frac{\text{ROE}(1-\text{RET})}{K_e - (\text{ROE})(\text{RET})}\left[1 - \left(\frac{1 + (\text{ROE})(\text{RET})}{1+K_e}\right)^n\right]$$

where ROE = the anticipated rate of return on common stock equity;
K_e = the cost of common stock equity;
RET = the projected level of extraordinary return reinvestment opportunities anticipated each year in the future, expressed as a fraction of the anticipated profit after taxes for that year;
n = The projected number of years during which extraordinary returns on common stock equity are expected to be earned.

†The firm's cost of equity capital in each case is assumed to be 10% for purposes of this example.
‡A firm can grow its equity base by more than 100% annually by either selling stock for cash or issuing stock in acquisitions.

plowback

if earning = cost of equity
EV/BV = 1

3. The *number of years* during which the exceptional returns noted in (1) and (2) above will continue to be available before these returns are forced to the level of the firm's cost of common equity by, for example, competitive pressures.[8]

The single calculation of Table 1–1 can be easily traced to Table 1–3. The circled value in Table 1–1 is the circled value in the more fully described universe of corporate investment opportunity profiles captured in Table 1–3. The calculations of Table 1–3 span, for firms, the range of possible rates of return on common equity from 5 percent to 30 percent. Assuming a 10 percent cost of common equity, this is equivalent to a percentage point spread earned above the cost of equity equal to −5 percentage points to +20 percentage points as shown across the top of the matrices in Table 1–3.

The matrices of Table 1–3 also span annual reinvestment rates ranging from 30 percent of profits to 200 percent of profits.[9] Variations in this variable are expressed along the right-hand side of Table 1–3.

Finally, Table 1–3 assumes that competitive forces will force a firm's return on equity back to a rate that is consistent with its capital costs at a specific point in time ranging from 5 to 30 years in the future. Variations in this variable are captured along the left-hand side of the exhibit.

Within the parameters outlined above, the matrices of Table 1–3 indicate the economic value (measured in relation to book value) for any firm's common equity security.[10] That value is, of course, a function of the attractiveness of the investment opportunity posture of the firm.

THE HISTORIC INVESTMENT OPPORTUNITY PROFILE OF U.S. NFCs

Table 1–4 confirms that the Table 1–3 categorization in fact captures the broad range of actual performance historically achieved by U.S. NFCs

[8] Table 1–3 assumes that ROEs in excess of equity capital costs will end abruptly at the conclusion of the time frame chosen. If these returns are assumed to decay linearly over the last five years of the time frame chosen, the effect of this change in assumptions on the present value of the cash flows is not usually very significant. The greatest effect occurs when the point spread between ROEs and equity capital costs is high, and the time period over which this differential is sustained is short.

[9] The definition of "reinvestment" here encompasses both net worth increases generated as a result of the sale of new shares for cash, as well as net worth increases generated by the issuance of new shares for corporate acquisitions. Thus, reinvestment can (and for some firms does) exceed 100 percent of profits earned.

[10] Implicit in Table 1–3 is the assumption that each firm's cost of equity capital is 10 percent. This is obviously a highly simplified assumption, which is used only for illustrative purposes. The limitations of this assumption can be easily overcome by simply recalculating Table 1–3 for equity capital costs in 1 percent increments ranging, for example, from 5 percent to 25 percent. This is a computationally trivial but physically bulky undertaking.

TABLE 1–4
Percentage of 1,448 firms with average rates of return on common equity as indicated across the top of the matrix, and average increase in common equity (measured as a fraction of net profits) as indicated along the left side of the matrix

Level of reinvestment of firms expressed as average annual increase in common equity/average annual profit after tax†	Average rate of return on common equity, 1966–1975*						Raw totals
	1.9% or less	2.0% to 7.9%	8.0% to 11.9%	12.0% to 17.9%	18.0% to 24.9%	25.0% and over	
0.19 or less	2.7%	2.4%	0.6%	0.5%	0.3%	0.1%	6.6%
0.20 to 0.39	0.4	1.9	1.9	1.3	0.2	0.3	6.0
0.40 to 0.59	0.3	2.8	6.4	5.2	1.2	0.5	16.4
0.60 to 0.79	0.3	3.0	8.2	9.2	2.4	0.2	23.3
0.80 to 1.19	0.4	4.3	9.9	10.6	2.0	0.1	27.3
1.20 to 1.59	0.6	3.8	4.8	2.8	0.5	0.0	12.5
1.60 and over	1.7	4.8	0.9	0.4	0.0	0.0	7.8
Column totals	6.4%	23.0%	32.7%	30.0%	6.5%	1.2%	100.0%

*Average rate of return on common equity is measured for an individual firm as:

$$\left[\sum_{1966}^{1975} (\text{Profit to common equity})_n \div \sum_{1966}^{1975} (\text{Common equity})_n\right]$$

The ratio of sums is used in this definition rather than the average of yearly ratios in order to reduce distortions caused by some extreme values produced in individual years. A one-year loss that was substantial in relation to net worth could, for example, produce a significant distortion of the data if the average of yearly ratios were utilized.

†(Average annual growth of common equity)/(Average annual profit after tax) is measured for an individual firm as:

$$\left[\frac{(\text{Common equity})_{1975} - (\text{Common equity})_{1966}}{\sum_{1967}^{1975} (\text{Profit to common equity})_n}\right].$$

Note: The characteristics of the 1,448 firms included in this table are described in Footnote 11.

regarding rates of return and reinvestment rates. This exhibit shows that a large sample of U.S. NFCs exhibited the following characteristics.[11]

1. For 92.4 percent of the sample firms, the average rate of return on common equity ranged between 2 percent and 24.9 percent. This would correspond to a −8 percentage point to +15 percentage point spread over the assumed equity cost of 10 percent noted in Table 1–3. Just 6.4 percent of the sample firms achieved an average ROE below 2.0 percent during the ten-year period, while 7.8 percent of the firms achieved an average ROE of 18.0 percent or higher.
2. For 67 percent of the sample firms, the average annual increase in common equity ranged from 40 percent to 119 percent of average annual profits. For 12.6 percent of the sample firms, the average annual increase in common equity was below 39 percent of annual profits. For 20.3 percent of the sample firms, the average increase in common equity exceeded 119 percent of average annual profits. This latter result was somewhat surprising. It is explained largely by major acquisitions that were accomplished via exchanges of stock.
3. Another somewhat surprising empirical observation relates to the fraction of firms that expanded their equity bases quite rapidly in relation to their earnings, while averaging rather low ROEs. About 9.6 percent of the sample firms expanded their equity bases over the ten-year period at the rate of 120 percent or more of average annual earnings, while producing average ROEs of only 2.0 percent to 7.9 percent over the period.[12] The rapid expansion and low ROEs of many of these firms can be explained as follows. The firms made major acquisitions[13] via exchanges of stock during the conglomerate merger movement of 1967–69, and later suffered major profit problems. Obviously not all of the firms in this category followed the pattern noted above, but it was a clearly observable general characteristic for this group of firms.
4. At the other end of the spectrum we find very few firms that are both earning very high ROEs and expanding their equity bases significantly faster than their annual profits. Only 0.5 percent of the sample firms earned an ROE exceeding 18.0 percent while simultaneously expanding their equity bases by more than 120 percent of annual earnings. This empirical observation is not surprising since a firm increasing its equity base at 50 percent per year for ten years would experience a 58-fold increase in net worth over this time period.[14]
5. Finally, it should be noted that a surprisingly large number of firms seem able to survive and continue as independent entities for quite long time periods while earning abysmal rates of return on equity. Some 29.4 percent of the sample firms earned an average ROE of less than 8 percent over the ten-year time period.

[11] The 1,448 firms in this sample include all of the firms that satisfied the following constraints:

a. They were included in the Compustat "Primary, Supplementary, and Tertiary Industrial Files." (These include, among others, all of the NYSE and AMEX industrials, the Fortune 500, and the S&P 425 industrials.) A few non-U.S. firms are included in the above totals, where the firms' equity securities are actively traded in U.S. markets.

b. They were firms for which data on profit to common equity, common equity, common stock price, and number of common shares outstanding were available for every year from 1966 to 1975.

c. They were firms that never had a negative value for common equity between 1966 and 1975.

[12] About 2.3 percent of the sample firms altered their equity bases over the ten-year period at the rate of 120 percent or more of average annual earnings, while producing average ROEs of *less than 2.0 percent*. Most of the firms in this category actually suffered an *erosion* in their equity bases because of cumulative losses over the period. The combined effects of dividend payments, cumulative losses, and reduced net worth produces an anomalous result according to the definition of the reinvestment rate utilized in Table 1–4. Such firms appear to have high reinvestment rates when, in fact, they are contracting.

THE RESULTS OF THE ECONOMIC VALUE/BOOK VALUE MODEL

Table 1–3 presents some quite interesting observations on the value-creation potential inherent in a firm's profile of investment opportunity. A move from left to right along the horizontally circled line of data in the exhibit shows the valuation impact associated with business investment opportunities promising *successively increasing* rates of return. A move from the top down along the vertically circled column of data in the exhibit shows the equity-valuation impact associated with success in *extending the time frame* of any competitive advantage a firm might enjoy before competitive pressures force the rate of return back to purely competitive levels. Finally, the dotted arrow demonstrates the enormous valuation associated with the equity securities of *rapidly growing* high-return businesses. Broadly speaking, the upper left-hand corner of Table 1–3 represents the investment opportunity profile of U.S. firms in mature industries that are noncompetitive in world markets.[15] As we

[13] Of the 124 firms in this category (9.6 percent of the 1,448-firm sample), 83 firms experienced a growth in book value of total common equity exceeding 50 percent in at least one year of the period 1966–75. In almost all cases this growth came as a result of one or more acquisitions for stock.

[14] A firm earning a 25 percent ROE and expanding its equity base by 200 percent of earnings each year would expand its net worth by a factor of 58 over ten years.

[15] Also included in this category are firms that occupy uneconomic market positions in otherwise healthy industries, and firms with other debilitating characteristics such as poor management.

move to the bottom right-hand corner of Table 1–3, we find the firms that investors perceive to be the embryonic IBMs, Xeroxes, and Avons of the future. Obviously, economic value soars as we move along this diagonal in the exhibit.

REAL INVESTMENT VERSUS FINANCIAL INVESTMENT DECISIONS

All of the analysis developed to this point has related to the viewpoint of an investor making a rational economic valuation of an equity security. Exactly the same analysis can be used by a firm in its capital budgeting decisions regarding real asset acquisitions. In such situations the multiples of economic value in relation to book value drawn from Table 1–3 can be viewed as the present value of the maximum cash losses that a firm ought to be willing to sustain in order to achieve the investment opportunity posture corresponding to the appropriate matrix element in Table 1–3. Thus, in order to buy into a market area with future investment opportunities similar to Firm A (Table 1–1), a firm ought to be willing to invest[16] (in present value entry-costs or start-up losses) up to a maximum of $224.08 for every $100 of earning assets established in this business.[17]

The above approach to strategic capital budgeting explains to some degree why firms such as GE and RCA were willing to invest very large sums of money at a substantial loss year after year in the 1960s in an effort to gain a share of the highly profitable (to IBM) computer manufacturing business.[18] It similarly helps to explain why drug firms "invest" in research, and why consumer products firms "invest" in heavy advertising in order to build a market franchise for their products.

The preceding discussion has produced a simplified model for valuing a firm's equity securities (or its real asset investment choices) that is

[16] While funds would be invested in establishing a market position, this "investment" would not be reflected in any balance-sheet asset account. Instead, both cash and net worth would decline by the amount of the after-tax loss sustained in establishing the market position.

[17] In this example investors would receive their required 10 percent return on equity (thus making the investment entirely rational) if the firm were to:

a. invest $224.08 that was to be absorbed in after-tax start-up losses, and
b. invest $100 that was to produce a 30 percent ROE for ten years, and 10 percent ROE thereafter as shown in Table 1–1, and
c. invest 50 percent of its earnings each year in investment opportunities that promised to produce, on average, 30 percent ROEs until the end of the ten-year period.

This calculation again assumes that the new business being entered has risk characteristics consistent with a 10 percent cost of equity capital.

[18] We shall explore this concept at greater length in Chapter 10.

based upon the attractiveness of the firm's investment opportunities.[19] Our focus has been on the determination of *economic*[20] value. In Table 1–3 this economic value is related to book values as determined through the application of historical cost accounting principles (GAAP).[21]

The creation of *economic* value ought to be important to managers and shareholders only to the extent that economic value ultimately translates into *market* value. I thus need to demonstrate that the economic model developed in Table 1–3 represents a useful concept that can assist managers in measuring the long-run success of their stewardship. This can be done by showing a long-run correspondence between the observed market-value/book-value ratio for firms and the economic-value/book-value ratio data generated by the economic model.

AGGREGATE MARKET-VALUE/BOOK-VALUE DATA—UNADJUSTED

Table 1–5 presents a historical overview of market-value/book-value ratios of the common stocks of specific groups of U.S. nonfinancial corporations (NFCs). There are two facts about Table 1–5 that deserve close attention. In the first three columns of Table 1–5, the market-value/book-value ratios substantially exceed 1.0 in almost every year.[22] If "market" value were an accurate reflection of "economic" value over the long run, this phenomenon could not occur unless:

1. Book values as calculated according to historical cost accounting substantially understate the economic definition of book value,[23] and/or
2. At least some U.S. NFCs in each of the subgroupings of Table 1–5 were consistently earning profits well above the levels possible in a perfectly competitive environment. A perfectly competitive product

[19] At this point the model (*a*) ignores the effects of inflation and general product price level changes; (*b*) assumes a synchronized age distribution of capital equipment, and that the depreciation policies of firms reflect true economic depreciation; and (*c*) ignores the income tax effects created by any deviations from the assumptions stated in (*b*). Later in the chapter we will improve the model by incorporating some adjustments for the effects of inflation. Finally, Table 1–3 assumes that the firm's risk (as reflected in its cost of equity capital) does not change over time as new investments are undertaken, nor as the horizon during which monopoly rents may be earned is shortened.

[20] By the term *economic* value we mean value as defined by a rational investor who values an asset by discounting the cash flows received as a result of the ownership of that asset at the appropriate cost for the capital at risk.

[21] GAAP: "generally accepted accounting principles."

[22] As suggested by the second column of data in Table 1–3, if all firms earned returns on equity equal to their respective costs of equity capital, the market-value/book-value ratio for each and every firm would equal exactly 1.0.

[23] This problem is explored in considerable detail in the appendix to this chapter.

TABLE 1-5
Historic cost market-value/book-value ratios for selected U.S. firms, and estimated replacement cost market-value/book-value ratios for all U.S. nonfinancial corporations, 1951–1975

	(1) Dow Jones 30 Industrials*	(2) Standard & Poor's 425 Industrials*	(3) 1,448 Compustat Companies*	(4) All U.S. Nonfinancial Corporations†
1951	1.3	1.3	–	–
1952	1.4	1.3	–	–
1953	1.3	1.2	–	–
1954	1.6	1.7	–	–
1955	1.8	1.9	–	–
1956	1.8	1.9	–	–
1957	1.5	1.5	–	–
1958	1.9	1.9	–	–
1959	2.4	2.0	–	–
1960	1.7	1.8	–	0.9
1961	1.9	2.2	–	1.2
1962	1.6	1.8	–	1.0
1963	1.8	2.1	–	1.2
1964	2.1	2.2	–	1.3
1965	2.1	2.3	–	1.5
1966	1.7	1.9	1.8	1.1
1967	1.9	2.2	2.2	1.2
1968	1.8	2.3	2.3	1.4
1969	1.5	2.0	1.9	1.1
1970	1.5	1.9	1.8	0.8
1971	1.5	2.0	1.9	0.9
1972	1.6	2.3	2.1	1.1
1973	1.2	1.7	1.6	0.9
1974	0.8	1.1	1.0	0.6
1975	1.1	1.4	1.3	0.6

*Ratios calculated using book values at historic cost.
†Ratios calculated using book values at replacement cost.
Sources: Column 1 – *Barron's*, April 23, 1973, and October 25, 1976, for market values, and March 14, 1977, for book values.
Column 2 – Standard & Poor's *Trade and Securities Statistics, Security Price Index Record*, 1976 ed.; p. 5 for market value, and p. 32 for book value.
Column 3 – Compustat data from firms selected according to criteria specified in footnote 11.
Column 4 – D. M. Holland and S. C. Myers, "Trends in Corporate Profitability and Capital Costs" (Mimeo), August 1977, Table A-1 for market values; book values were calculated from data found in *Statistics of Income, Corporation Income Tax Returns*, U.S. Government Printing Office, adjusted with replacement-cost data for inventories and net capital stock found in Table A-2a of the Holland and Myers paper noted above.

market environment would be one in which each firm earned a return on equity equal to its cost of equity.

As I hope to demonstrate, *both* of these possible explanations contribute to the unexpectedly high values observed in the first three columns of Table 1–5.

AGGREGATE MARKET-VALUE/BOOK-VALUE DATA—ADJUSTED

The fourth column of Table 1–5 partially adjusts the market-value/book-value results of Columns 1–3 for the problem noted in (1) above. If the GAAP-defined common equity of all U.S. NFCs is adjusted to take into account the replacement cost of *inventory* and *net fixed assets* (excluding land), the historical market-value/book-value relationship for U.S. NFCs declines quite sharply.[24] If the appropriate computational adjustments are made at the aggregate level to capitalize and then amortize (over an appropriate period) expenditures for both advertising and research and development, the market-value/book-value data of Column 4, Table 1–5, would decline even further.[25] Such adjustments are appropriate since expensing advertising and research and development charges immediately (as required by GAAP) can seriously distort both profits and book value as noted in the appendix. Indeed, it would appear that the market-value/book-value ratios for U.S. NFCs (corrected for replacement cost accounting and the capitalization and amortization of advertis-

[24] Much of the data utilized in calculating Column 4 of Table 1–5 was taken from D. M. Holland and S. C. Myers, "Trends in Corporate Profitability and Capital Costs" (mimeographed), August 1977. In the Holland and Myers paper a ratio is derived that links the market value of NFC debt and equity to the replacement cost of NFC net assets. Net assets are defined by Holland and Myers as total assets valued at replacement cost (except for land, which is valued at historical cost, and "investments," which are omitted entirely) less all non-interest-bearing liabilities. This ratio, called "augmented q" by Holland and Myers, differs conceptually in definition from the data in Column 4 of Table 1–5 in the following ways. First, the "augmented q" concept relates to NFC total capital, not just equity capital. Second, in "augmented q," NFC debt is valued at current market prices (i.e., replacement cost). Column 4 of Table 1–5 implicitly values NFC debt at historical (i.e., book) value. The logic for valuing NFC debt at book rather than market value in the Table 1–5 calculations is as follows. In linking the assumed *future* profitability of real (i.e., product-market) investments to the *historical* profitability of real investments, it is unreasonable either to enhance or burden the assumed future profitability of real investments with market gains or losses associated with past debt-financing decisions. This approach to measuring the future profitability of investment based on historical profitability also assumes a constant level of future interest rates (and implicitly assumes an expectation of a constant level of future inflation rates). The above facts notwithstanding, the data of column 4 of Table 1–5 differ very modestly from "augmented q" as defined by Holland and Myers.

[25] Adjustments will be made at the individual firm level later in this chapter in order to demonstrate this effect.

ing and research and development expenditures) would not stray significantly above 1.0 during most of the years 1960–73. This suggests that at the *aggregate* level of analysis, market-value/book-value ratios for the common stocks of U.S. NFCs seem to be reasonably consistent with both a broadly competitive product-market economy, and a rational economic model of security valuation. Both of these conclusions flow from the following fact. To the extent that the *market* value of a firm's equity exceeds the *book* value of that equity (adjusted for replacement cost accounting and the capitalization and amortization of advertising and research and development expenditures), the difference between these two values can be attributed to the capitalized value of monopoly rents and/or imperfections in the securities markets that reflect investor valuation errors.

Considerable care must be exercised in drawing further conclusions from the evidence suggesting that market-value/book-value ratios at the *aggregate* level appear to be reasonably consistent with a broadly competitive product-market economy and a rational economic model of security valuation. In particular, the evidence does not suggest that monopoly rents and securities valuation errors are either nonexistent or unimportant at the level of *individual* firms. Indeed, demonstrating that monopoly rents and securities valuation errors can be extremely significant to individual firms represents an important objective of this book.

RECENT DECLINE IN CAPITAL PRODUCTIVITY

Table 1–5 portrays one other fact that is clearly worth noting. Market-value/book-value ratios for the common stocks of U.S. NFCs have eroded sharply in the mid-1970s. As Holland and Myers[26] and others[27] have pointed out, following an extraordinary crest in the 1963–68 period there has been a very significant decline in "real" (inflation-adjusted) profitability for U.S. NFCs in recent years. The valuation implications of this phenomenon are clear from Table 1–3. If new investments by U.S. NFCs cannot produce real (inflation-adjusted) returns to equity that are at least equivalent to real (inflation-adjusted) equity costs, managers choosing to make these marginal investments destroy economic value (and, by implication, market value). The potential impact of eroded profit opportunity upon the level of future capital investment for U.S. NFCs is obvious if this profitability trend turns out to be more than just a transitory phenomenon.[28]

[26] Holland and Myers, "Trends in Corporate Profitability and Capital Costs."

[27] *Economic Report of the President*, January 1977. U.S. Government Printing Office, pp. 27–31.

[28] In a paper entitled, "Is the Rate of Profit Falling?", which was presented at the Brookings Panel on Economic Activity, April 1977, Martin Feldstein and Lawrence Summers argue that the recent decline in rates of return can be explained largely in terms of (*a*) unusually low utilization of productive capacity and (*b*) random year-to-year fluctuations in profitability of a type often observed previously. They argue that the factors contributing to the fall in return during the early 1970s were transitory, so that the decline in returns is also a short-run phenomenon. Holland and Myers reach a similar conclusion in their paper noted previously. They conclude (p. 47) "that the after tax [return on capital] shows neither a downward nor upward trend. Variations around its central tendency can be explained, in large part, by changes in the level of economic activity and in the rate of inflation. In particular, the poor profitability record of the last half dozen years can be explained by the combination of a slack economy and a brisk inflation."

THE GENERAL CONGRUENCE OF "ECONOMIC" VALUE AND "MARKET" VALUE DATA

Table 1–5 shows aggregate market-value/book-value data for U.S. NFCs for time periods extending up to 25 years. These data provide an opportunity to validate, at the *aggregate* level, the comparability between actual market valuations and the value ranges predicted by the rational economic model. Table 1–5 offers no insight into this fit at a much lower level of firm aggregation, however, and this task is reserved for Table 1–6. Table 1–6 stratifies the U.S. NFCs according to performance measures originally detailed in Table 1–3. The data on market-value/book-value ratios are presented for a single point in time (December 31, 1975). The data of Table 1–6 (when overlaid on the expected ranges of market-value/book-value ratios calculated in Table 1–3) corroborate, at a greatly reduced level of aggregation, the general congruence between economic value and market value. Market-value/book-value ratio results (for categories of firms with similar historic investment opportunity profiles as reflected in their ROEs and equity expansion rates) seem to be consistent with the ranges shown in the Table 1–3 economic model.[29] It is worth recalling that this corroboration comes in *spite* of the quite rigid and extremely simplistic assumption of Table 1–3 that the cost of equity capital for each and every firm is 10 percent. In comparing Table 1–3 and Table 1–6, one needs to keep in mind the results of Column 4, Table 1–5. *Real* profitability was quite depressed in 1975, in contrast to *nominal* profitability for the year, which was only slightly below the average for the prior decade. In 1975 a firm earning a *nominal* ROE of 8 percent to 11.9 percent (Table 1–6) was almost certainly earning a *real* ROE several points below its real cost of equity. Thus, in Column 4 of Table 1–5, we

[29] The one column of data in Table 1–6 that seems to be least consistent with the Table 1–3 data is the "1.9 percent or less" return-on-equity column. The absolute *level* of the market-value/book-value ratios in this column appear to be higher than one would expect given the level of the data in adjoining columns. A number of high-technology firms (with significant research and development expenses) and natural resource–based firms (with valuable assets not reflected on their balance sheets) may account, at least in part, for this apparent aberration.

high investment opportunity
high plowback

TABLE 1-6
Median market-value/book-value ratios as of December 31, 1975, for the common stocks of 1,448 firms with average rates of return on common equity as indicated across the top of the matrix, and average annual increase in common equity (measured as a fraction of net profits) as indicated along the right side of the matrix.

Average rate of return* on common equity, 1966-1975						
1.9% or less	*2.0% to 7.9%*	*8.0% to 11.9%*	*12.0% to 17.9%*	*18.0% to 24.9%*	*25.0% and over*	
0.6	0.4	0.4	1.2	1.4	NMF	0.19% or less
0.7	0.3	0.7	1.0	NMF‡	3.7	0.20 to 0.39
0.9	0.4	0.7	1.1	2.2	4.6	0.40 to 0.59
0.6	0.4	0.7	1.0	1.9	NMF	0.60 to 0.79
0.4	0.4	0.7	1.0	2.1	NMF	0.80 to 1.19
0.7	0.4	0.7	1.5	3.0	NMF	1.20 to 1.59
0.4	0.4	0.6	1.9	NMF	NMF	1.60 and over

Level of reinvestment of firms expressed as average annual increase in common equity† /average annual profit after tax

Median rather than *mean* values are used in order to avoid distortions in the data that might occur if some extreme values were used in calculating mean data.
*As defined in Table 1-4
†As defined in Table 1-4
‡NMF indicates "not a meaningful figure" since the value would be based on three or fewer observations out of 1,448.

so how much more meaningful is 4 firms

find the common stock of the average U.S. NFC in 1975 sold for only about 60 percent of book value (calculated at replacement cost).

In view of this depressed situation for the *average* company, the relatively high ratios shown in the final two columns of Table 1–6 for the companies that best satisfy the assumptions of Table 1–3 are particularly noteworthy and impressive.

At an admittedly broad level of generality, there appears to be a reasonably good fit between the rational economic model of security valuation presented in Table 1–3 and the actual "market defined" level of security prices observed at December 31, 1975. For our present purposes the evidence relating to this fit is sufficient since our primary objective is to present a rather detailed analysis of some individual firms later in the chapter. In particular, the objectives for the remaining parts of this chapter are:

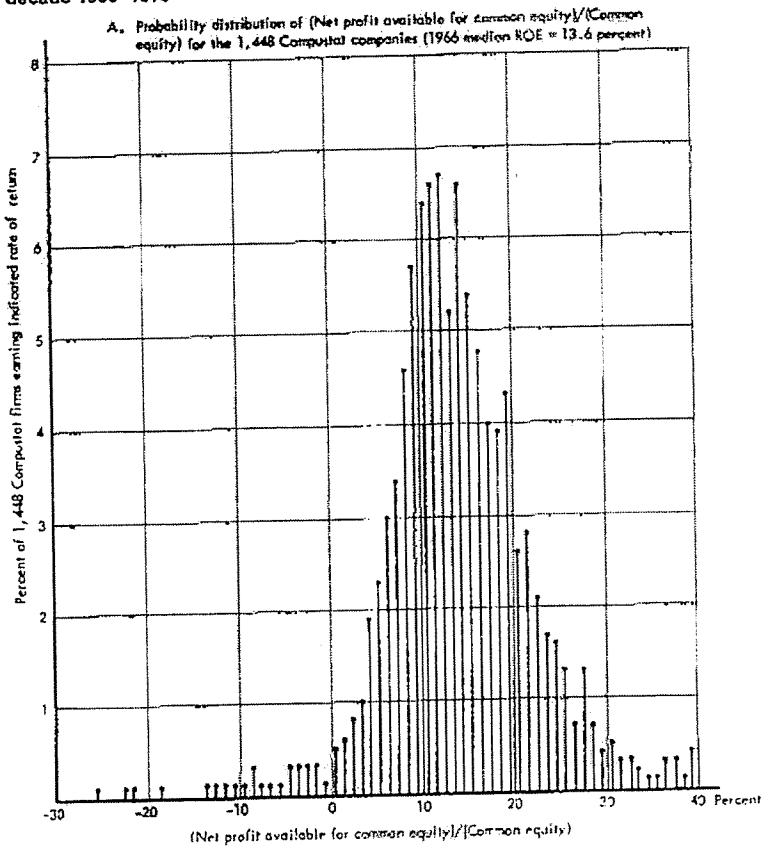
1. The identification of specific firms that have historically occupied very attractive real-investment-opportunity profiles;
2. The presentation of evidence suggesting that a small but significant number of U.S. NFCs (the Hall of Fame firms) have in fact consistently managed to earn rates of return that exceed the cost of equity capital for these firms;
3. An estimation of the very substantial value created for shareholders (where this value creation is measured by the spread between market and book values) by the managements of the firms identified in (2) above; and
4. An examination of some of the salient characteristics of the firms noted in (2) and (3) above.

IDENTIFICATION OF FIRMS HISTORICALLY ENJOYING ATTRACTIVE INVESTMENT OPPORTUNITIES

In any given year a relatively small number of U.S. NFCs earn rates of return on common equity (ROEs) that are five or more percentage points above the median[30] ROE for all firms. This is not surprising, since on visual inspection the distribution of corporate ROEs appears to be roughly normal. Figure 1–1 presents the distribution of corporate ROEs for the 1,448 firms characterized previously. The data shown are for the

[30] I use *median* rather than *mean* values for this comparison since the mean value can be significantly influenced by a few firms with very high positive or negative values for this variable. For example, in 1968 one firm in the sample had a return on common equity equal to −1,403 percent. This single observation significantly distorts the mean ROE calculation of all 1,448 firms for 1968, but has no extraordinary effect on the median value.

FIGURE 1–1
Probability distribution of corporate profitability for 1448 U.S. non-financial corporations in the best year (1966), worst year (1971), and last year (1975) of the decade 1966–1975

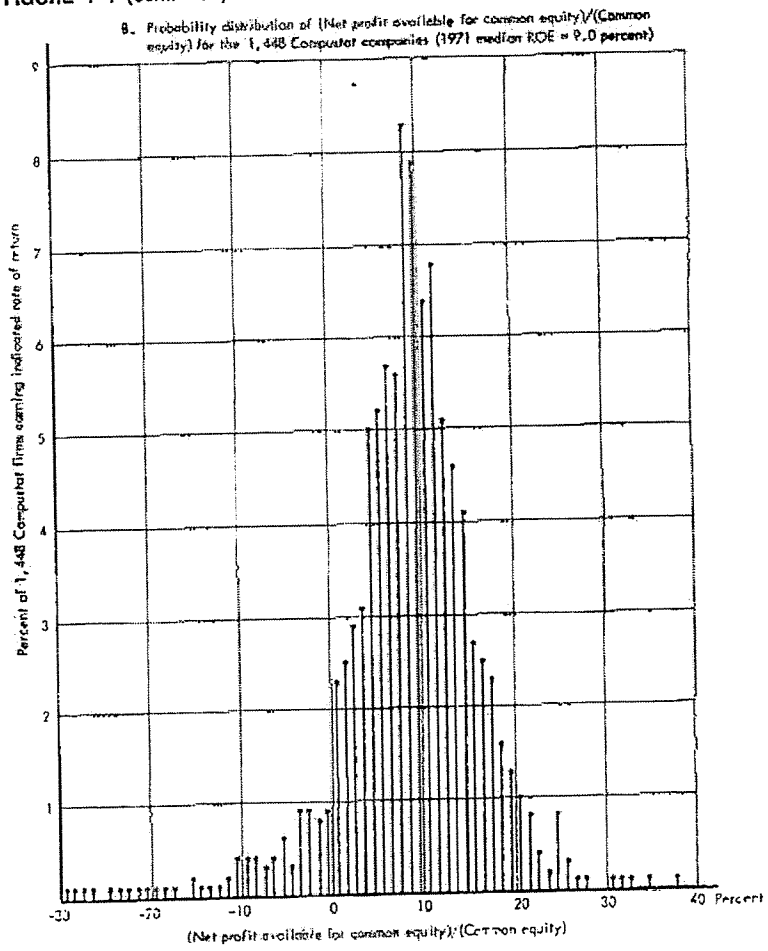


best (1966), worst[31] (1971), and last year (1975) of the decade 1966–75.

One could predict with a fair degree of accuracy the number of firms that would earn, in any given year, an ROE exceeding the median value by five percentage points. This is neither terribly interesting nor remarkable. What is interesting is that many of the same firms, year after year, turn up with the superior ROE performance. The number of firms in our 1,448-firm sample that earned rates of return on common equity exceed-

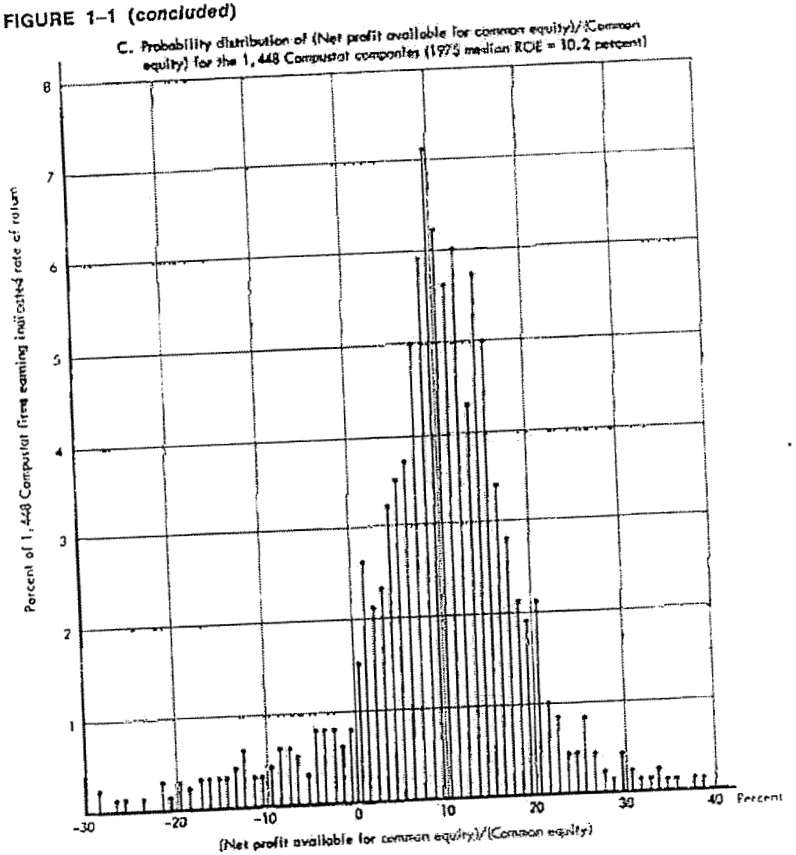
[31] 1971 was the worst year of the decade not in terms of median ROE, but rather in terms of the number of firms with ROEs exceeding 15 percent, as shown in Table 1–7.

FIGURE 1–1 (*continued*)



ing 15.0 percent in each of the ten years 1966–75 is shown in Table 1–7. The number of firms that earned rates of return on common equity in excess of 15 percent in *all ten years* is 72. If a company with an ROE of 15 percent in one year was no more likely to earn a 15 percent ROE in the following year than any other firm, then from the Table 1–7 data one would expect, statistically, 0.0008 firms out of 1,448 to have earned a 15 percent ROE for all ten years in succession. In fact, more than one third of the 214 firms that achieved an ROE in excess of 15 percent in the worst year of the decade (1971) earned such a return in *every* year of the

FIGURE 1–1 (*concluded*)



decade. The persistence of high-return performance is remarkably strong. Of the 150 firms with five straight years of ROE performance exceeding 15 percent in the years 1966–70, almost half succeeded in keeping the string going during the next five years, as indicated in Table 1–8.[32]

[32] At first glance the data of Table 1–8 may appear to conflict with the conclusions of I.M.D. Little, A. C. Rayner, J. Lintner, and R. Glauber in their respective researches on the stability of growth in reported earnings per share (EPS) over successive time periods. In fact, the conclusions do not conflict for two reasons. First, success in exceeding an ROE benchmark of 15 percent over a significant time period does not necessarily lead to growth in EPS at all, let alone consistent growth. For example, a firm whose ROE declined from 30 percent to 15 percent over a five-year time period would probably find its EPS declining, but the firm would still pass the 15 percent ROE test. Second, the authors cited above did not segment their data on the EPS growth-consistency of firms by ROE performance. As noted in Chapter 2 (page 86) rapid growth in EPS can be achieved in a number of ways, only one of which is sustainable over a significant time frame. Since a requirement for sustainable rapid growth in EPS is a high level of ROE performance, high-ROE companies could conceivably achieve somewhat greater predictability of growth in EPS across five-year time periods than that achieved by firms categorized more broadly.

TABLE 1-7
Number and fraction of sample NFCs earning ROEs in excess of 15% (1966–1975)

Year	Median ROE in year	Firms out of 1,448 earning ROEs in excess of 15% (number)	(percentage)
1966	13.6%	599	41
1967	12.3	485	33
1968	11.7	392	27
1969	10.8	323	22
1970	8.9	227	16
1971	9.0	214	15
1972	9.9	240	17
1973	11.5	342	24
1974	11.5	439	30
1975	10.2	338	23

TABLE 1-8
Persistence of high-ROE performance among sample firms (1966–1975)

Number of years of ROE performance exceeding 15% (1966–1970)	Number of additional years of ROE performance exceeding 15% (1971–1975)	Number of firms with indicated ROE performance (1966–1975)
5	0	17
5	1	5
5	2	14
5	3	12
5	4	30
5	5	72
Total		150

The group of firms with ten successive years of ROE performance in excess of 15 percent is presented in Table 1–9. In this exhibit the data are arranged (*a*) by industry group and (*b*) in descending order of observed market-value/book-value ratio as of December 31, 1975. Listing these firms accomplishes the first of the four objectives outlined on page 25, and allows us to move on to determine which of these firms, if any, have actually achieved returns on equity in excess of their equity capital costs.

TABLE 1-9

Profit after tax/common equity and market-value/book-value ratios for 72 U.S. NFCs with ten successive years of ROEs in excess of 15%

Line No.	Industry	Company	ROE 1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	10-year average ROE	1975 Market-value/ Book-value ratio
1	Drugs—Ethical	American Home Products	.241	.239	.243	.255	.253	.250	.257	.280	.281	.278	.262	5.83
2		Merck & Co.	.278	.259	.245	.241	.243	.246	.244	.258	.257	.241	.250	5.52
3		Schering-Plough	.200	.200	.211	.221	.209	.211	.231	.255	.248	.233	.221	4.76
4		Eli Lilly	.206	.192	.211	.211	.207	.187	.204	.213	.211	.189	.203	3.73
5		Smithkline Corp.	.287	.269	.249	.231	.227	.215	.206	.206	.204	.201	.223	2.78
6		Marion Labs	.501	.442	.409	.377	.334	.314	.308	.276	.253	.261	.294	2.32
7		Searle, G. D.	.258	.276	.271	.272	.267	.249	.242	.221	.213	.202	.232	1.96
8		Roxer-Amchem	.180	.161	.183	.233	.158	.114	.103	.157	.294	.227	.225	1.93
9		Robins, A. H.	.257	.249	.208	.220	.198	.211	.201	.193	.171	.150	.195	1.66
10	Drugs—Proprietary	Tampax	.369	.367	.354	.346	.368	.377	.364	.339	.311	.295	.340	3.88
11		Bristol-Myers Co.	.250	.199	.187	.195	.191	.172	.169	.185	.194	.200	.190	3.11
12		Sterling Drug	.224	.216	.208	.201	.197	.191	.183	.181	.172	.162	.187	2.18
13	Cosmetics	Avon Products	.371	.373	.353	.358	.361	.344	.330	.304	.237	.265	.314	3.86
14		Chesebrough-Ponds	.200	.208	.209	.213	.188	.184	.174	.172	.174	.189	.182	3.38
15		Revlon, Inc.	.160	.169	.154	.160	.156	.168	.160	.169	.161	.105	.161	2.83
16		Gillette Co.	.326	.303	.284	.264	.241	.210	.220	.222	.202	.169	.230	2.13
17	Tobacco	R. J. Reynolds	.174	.175	.163	.155	.170	.178	.169	.172	.182	.177	.172	1.51
18	Beverages—Soft drinks	Dr. Pepper	.243	.244	.248	.246	.258	.268	.260	.255	.227	.240	.248	4.34
19		Coca-Cola Co.	.221	.225	.222	.221	.224	.228	.228	.227	.192	.195	.218	4.01
20		PepsiCo Inc.	.198	.181	.176	.174	.169	.164	.163	.160	.157	.167	.167	2.65
21	—Bottler	PepCom Industries	.355	.336	.337	.323	.305	.256	.232	.220	.232	.353	.245	1.10
22	—Distillers	Heublein, Inc.	.741	.523	.429	.410	.320	.277	.171	.192	.192	.191	.221	3.07
23	Foods—Packaged	Kellogg Co.	.222	.214	.205	.201	.202	.207	.209	.205	.205	.257	.215	3.95
24	—Confectionery	Russell Stover Candies	.270	.259	.234	.194	.202	.206	.207	.201	.172	.207	.209	2.10
25	Soaps	Procter & Gamble	.157	.172	.164	.160	.166	.169	.176	.171	.163	.158	.166	3.46
26	Retail—Food chains	Dillon Cos.	.183	.167	.178	.155	.160	.176	.192	.193	.210	.220	.193	3.28
27		Lucky Stores, Inc.	.253	.299	.287	.258	.248	.239	.205	.194	.209	.215	.225	2.74
28		Winn-Dixie	.222	.202	.202	.200	.187	.202	.196	.190	.202	.190	.198	2.77
29		Weis Markets	.217	.211	.201	.184	.190	.184	.166	.158	.174	.176	.181	1.39
30	—Drug stores	Longs Drug Stores	.246	.241	.233	.227	.215	.225	.208	.199	.199	.201	.211	4.94
31		Eckerd (Jack)	.299	.321	.308	.382	.318	.163	.177	.194	.164	.158	.188	2.98
32	—Apparel	Loehmann's	.282	.317	.256	.245	.177	.212	.156	.154	.172	.198	.190	1.78
33		Rockower Bros.	.182	.201	.160	.214	.156	.177	.185	.202	.176	.187	.185	0.74
34	—Shoes	Melville Corp.	.269	.291	.275	.259	.239	.236	.217	.201	.160	.222	.222	2.23
35	—Mail order	New Process Co.	.315	.298	.300	.487	.512	.514	.292	.253	.201	.318	.334	3.86
36	—Misc. dept.	Caldor, Inc.	.171	.200	.216	.217	.208	.207	.176	.172	.151	.163	.180	1.21
	Specialized services													
37	Freight forwarding	Emery Air Freight	.444	.415	.435	.319	.376	.328	.338	.336	.328	.289	.340	8.40
38	Eating places	McDonald's Corp.	.209	.225	.250	.264	.167	.192	.181	.199	.204	.212	.202	5.64
39	Insurance brokers	Marsh & McLennan	.252	.245	.259	.284	.276	.250	.233	.260	.269	.259	.257	5.30
40	Business management	Dun & Bradstreet	.225	.209	.197	.237	.209	.199	.204	.209	.197	.193	.203	3.50
41	Pest control	Rollins, Inc.	.246	.243	.230	.210	.201	.223	.223	.224	.211	.210	.225	3.06
42	Accounting	H&R Block	.507	.480	.483	.553	.420	.244	.292	.299	.294	.272	.312	2.48
43	Engineering	Stone & Webster	.178	.183	.184	.174	.243	.190	.188	.176	.242	.219	.200	1.41
44	Protective	Wackenhut	.170	.182	.192	.267	.249	.210	.196	.212	.192	.189	.202	1.30
45	Publishing—Broadcasting	Dow Jones & Co.	.327	.297	.313	.317	.241	.204	.252	.271	.221	.237	.261	0.89
46	—Books	Prentice-Hall, Inc.	.301	.302	.277	.270	.237	.223	.218	.226	.209	.192	.204	2.04
47	Trucking	Roadway Express	.193	.187	.167	.150	.157	.240	.246	.222	.230	.203	.209	4.76
48		Yellow Freight Systems	.223	.166	.215	.189	.170	.248	.245	.221	.241	.204	.218	4.19
49		Merchants, Inc.	.192	.166	.158	.163	.164	.189	.192	.194	.215	.169	.182	0.79
50	Office and Business	IBM	.158	.170	.191	.177	.171	.162	.169	.179	.182	.174	.174	2.94
51	machines	Xerox	.280	.240	.224	.212	.210	.202	.199	.201	.189	.179	.201	2.12
52	Chemicals and	National Chemsearch	.295	.264	.226	.212	.205	.204	.211	.226	.233	.209	.221	4.43
53	preparations	Nalco Chemical	.201	.189	.205	.202	.160	.182	.188	.205	.196	.203	.194	3.82
54		Lubrizol	.196	.184	.207	.192	.201	.187	.185	.216	.249	.203	.206	3.47
55	Photographic	Eastman Kodak	.266	.214	.204	.197	.181	.173	.196	.210	.184	.165	.193	4.62
56	Auto Parts—Wholesale	Genuine Parts	.156	.163	.161	.154	.156	.173	.163	.167	.175	.184	.168	3.60
57	—Mfg.	Purolator, Inc.	.262	.245	.221	.197	.189	.176	.176	.174	.171	.160	.186	1.72
58		Champion Spark Plug	.213	.211	.203	.193	.163	.190	.191	.200	.176	.159	.188	1.52
59	Electrical equipment	Emerson Electric	.183	.187	.180	.172	.168	.161	.160	.166	.171	.181	.168	3.17
60		Thomas & Betts Corp.	.258	.226	.207	.199	.183	.169	.196	.215	.209	.162	.195	3.13
61		Square D	.247	.210	.203	.215	.196	.207	.209	.188	.159	.173	.200	2.41
	Energy related													
62	Oil—Crude producer	Louisiana Land & Exp.	.399	.392	.383	.340	.316	.318	.284	.275	.334	.255	.313	2.36
63	Petroleum refining	Quaker State Oil Refining	.181	.170	.181	.201	.209	.178	.170	.187	.201	.185	.187	1.83
64	Nat. gas transmission	Kaneb Services	.190	.185	.179	.183	.150	.193	.202	.205	.209	.305	.235	1.66
65		Panhandle Eastern Pipe Line	.216	.209	.193	.184	.181	.150	.166	.164	.160	.154	.172	0.92
66	Mining—Gold	Campbell Red Lake Mines	.334	.311	.343	.283	.187	.241	.340	.454	.509	.332	.362	4.58
67	Smelting and refining	Atlas Consol. Mining	.459	.365	.494	.590	.538	.432	.306	.577	.304	.191	.464	1.49
	Miscellaneous													
68	Plumbing supplies	MASCO	.245	.209	.218	.195	.168	.174	.155	.183	.186	.192	.185	3.42
69	Business forms	Moore Corp.	.171	.168	.160	.165	.159	.152	.159	.169	.203	.175	.170	3.30
70	Wholesale foods	Malone & Hyde	.180	.174	.167	.172	.168	.171	.166	.167	.173	.186	.172	2.13
71	Machinery—Specialty	Dover Corp.	.218	.178	.165	.175	.175	.171	.165	.182	.195	.183	.180	1.51
72	Jewelry, yearbooks	Josten's Inc.	.196	.194	.182	.183	.175	.172	.184	.176	.171	.176	.179	1.42

IDENTIFYING FIRMS WHOSE ROEs EXCEED THEIR EQUITY CAPITAL COSTS

Persistently high ROE performance is generally praised as evidence of superior management skill by business partisans, and damned as prima facie evidence of monopoly by advocates of expanded antitrust enforcement. In 1972, for example, the late Senator Philip A. Hart[33] filed a bill entitled "The Industrial Reorganization Act S.1167." Title I, Section 101.(b) of the bill stated:[34]

> There shall be a rebuttable presumption that monopoly power is possessed
> (1) by any corporation if the average rate of return on net worth after taxes is in excess of 15 percentum over a period of five consecutive years out of the most recent seven years preceding the filing of the complaint . . .

The bill went on to state that:

> A corporation shall not be required to divest monopoly power if it can show—
> (1) Such power is due solely to the ownership of valid patents, lawfully acquired and lawfully used, or
> (2) such a divestiture would result in a loss of substantial economies.
> The burden shall be upon the corporation to prove that monopoly power should not be divested pursuant to paragraphs (1) and (2) of the above subsection . . .

Clearly there are some dangers associated with arbitrarily selecting a single ROE number and (*a*) declaring that any firm that consistently surpasses that level of performance must be earning returns in excess of equity capital costs, or (*b*) concluding that earning a high ROE *alone* is evidence that a firm is extracting monopoly rents. Happily, the Hart bill never gained much support.

Some of the firms listed in Table 1–9, for example, subject shareholders to more than average levels of systematic *risk*, as will be explained later in this chapter. For other firms, particularly those in the drug and heavily-advertised consumer products fields, the book value of common equity (the denominator upon which the ROE is calculated) is systematically understated. This phenomenon results from a divergence between the economic logic associated with *capitalizing* and *amortizing* advertising

[33] Senator Hart was Chairman of the Subcommittee on Antitrust and Monopoly, a subcommittee of the Committee on the Judiciary.

[34] The text of this bill can be found in the *Congressional Record*, vol. 119, no. 38, March 12, 1973.

and research and development expenditures, and the immediate *expensing*[35] of these expenditures required by GAAP.

Finally, for those firms with heavy fixed asset commitments, or heavy commitments to inventory, the historical cost orientation of GAAP tends to overstate the *real* rate of return on common equity earned by the firm. Each of the potential problem areas noted above must be examined in turn in order to determine whether the ROE reported by a firm truly exceeds its capital costs.

CALCULATING THE COST OF EQUITY CAPITAL: *NOMINAL VERSUS REAL COST*

Modern portfolio theory[36] suggests that the cost of equity capital for a firm can be calculated according to the following equation.[37]

$$K_e = R_f + \beta(K_m - R_f),$$

where

K_e = the cost of equity capital for a specific firm;
R_f = the rate of return required by investors on a risk-free asset (the rate on short-term [90-day] U.S. Treasury bills is generally considered a good approximation of the risk-free rate);
K_m = the investor's required rate of return on investment in a stock of average market risk. This is the rate that would be required on a portfolio consisting of all stocks, weighted in accordance with their respective market values;

[35] Financial Accounting Standards Board, "Statement of Financial Accounting Standards No. 2—Accounting for Research and Development Costs," October 1974. While all firms were not required to immediately expense research and development expenditures in financial statements prior to the year beginning January 1, 1975, as a practical matter most firms did follow this practice prior to that date.

[36] The definition of risk in modern portfolio theory encompasses only that portion of *total* risk that is market related (i.e., systematic risk). All other risk (i.e., unsystematic risk) is ignored on the assumption that its impact is effectively cancelled out by the diversification in each individual shareholder's total equity portfolio. As Gordon Donaldson has pointed out in a paper entitled "The Management of Risk and Return in the Individual Business Firm" (Mimeo, May 1977), unsystematic risk (that risk peculiar to an industry or a firm) is precisely the type of risk for which a management group is often held most clearly accountable. Thus, it would not be at all surprising to find managers sometimes assessing risk differently (and quite justifiably so from their perspective) from the way prescribed by the shareholder-wealth maximization objective assumed in modern portfolio theory.

[37] A quite readable summary of modern portfolio theory (popularly called the Capital Asset Pricing Model) can be found in F. Modigliani and G. A. Pogue, "An Introduction to Risk and Return," *Financial Analysts Journal*, March–April 1974 and May–June 1974. A more rigorous discussion of the theory can be found in Michael C. Jensen, "Capital Markets: Theory and Evidence," *Bell Journal of Economics and Management Science*, Autumn 1972.

β = the measure of market risk associated with the common stock of a particular firm. For a firm of average market risk, $\beta = 1.0$ by definition.

At December 31, 1975, the 90-day Treasury bill rate (which represents a close approximation of R_f, the risk-free rate) was 5.2 percent. Since the *real* (inflation-adjusted) rate of return on Treasury bills over the period 1929–74 was about 0.1 percent[38] we can make the somewhat heroic assumption[39] that investors at December 31, 1975, were probably anticipating a near-term future inflation rate of about 5.1 percent.[40] Since investors realized a *real* (inflation-adjusted) rate of return of 8.8 percent on common equities over the 1929–74 period,[41] using logic similar to that outlined above we can assume that the required nominal rate of return on a security of average market risk (K_m) was probably about 8.8 percent + 5.1 percent = 13.9 percent at December 31, 1975.

Using these values and the market risk factors (β's) appropriate for each firm,[42] it is possible to approximate the *nominal* cost of equity capital for each NFC at December 31, 1975. By removing the inflation factor, it is also possible to estimate a *real* cost of equity capital for each firm at that date.

The relevant calculation for each of the 72 U.S. NFCs reporting a nominal ROE in excess of 15 percent for each of the ten years 1966–75 is presented in Columns 2 and 3 of Table 1–10. The complete calculation for one firm, Avon Products, is carried out below.

Nominal cost of equity capital for Avon:

$$\begin{aligned} K_e &= R_f + \beta(K_m - R_f) \\ &= 5.2 + 1.25(13.9 - 5.2) \\ &= 16.1\%. \end{aligned}$$

Real cost of equity capital for Avon:

$$\begin{aligned} K_e &= R_f + \beta(K_m - R_f) \\ &= 0.1 + 1.25(8.8 - 0.1) \\ &= 11.0\%. \end{aligned}$$

After the adjustment for market risk (but before any adjustment for capitalizing and then amortizing advertising and research and development expenditures, and before any adjustment for inflation), Column 8 of Table 1–10 suggests that 64 of the 72 high-return companies enjoyed ROEs in excess of their equity capital costs in 1976. Since the ROEs earned by most of these firms in 1976 approximated the average returns earned over the period 1966–75 (Column 4, Table 1–10), by implication most of these firms had earned nominal unadjusted rates of return in excess of their equity capital costs for over a decade.[43]

Once a firm's equity capital cost is defined, the next step is to define the actual rate of return on equity capital achieved by the firm adjusted for:

a. aberrations caused by generally accepted accounting principles related to expenditures for advertising and research and development, and

b. aberrations caused by generally accepted accounting principles relating to the use of *historical cost* rather than *replacement cost* for the major nonmonetary asset items.

ADJUSTING THE GAAP-REPORTED *ROE* FOR ADVERTISING AND *R&D* EXPENDITURES

Advertising and research and development expenditures both generate economic benefits extending substantially beyond the point in time at which the expenditure occurs. Because these expenditures are written off immediately under GAAP, an economic asset (which might be labeled "capitalized advertising" or "capitalized research and development")

[38] R. G. Ibbotson and R. A. Sinquefeld, "Stocks, Bonds, Bills, and Inflation: Year-by-Year Historical Returns (1929–1974)" *Journal of Business*, January 1976.

[39] During the period 1929–74 the average rate of inflation (annual rate of change in the Consumer Price Index) was 2.1 percent. During the period 1966–74 the rate was 5.5 percent. The 5.1 percent rate was thus fairly close to the experience of the decade prior to 1975.

[40] This was equal to the 90-day Treasury bill rate of 5.2 percent as of December 31, 1975, less the historical (1929–74) real rate of return on Treasury bills, which was 0.1 percent.

[41] R. G. Ibbotson and R. A. Sinquefeld, "Stocks, Bonds, Bills, and Inflation."

[42] A number of commercial services supply market risk factors (β values) calculated on a regular basis. Among these are "Security Risk Evaluation," Merrill Lynch, Pierce, Fenner & Smith, Inc., and "Capital Market Equilibrium Statistics," Wilshire Associates, Incorporated.

[43] In fact, every one of the eight firms whose nominal ROE in 1976 did not equal or exceed their nominal equity capital costs as of December 31, 1975 failed to meet this test because their ROE performance in 1976 was below their ten-year average ROE. Conversely, however, 3 of the 72 firms passed this particular test in 1976 that would not have passed it on the basis of their ten-year average ROEs.

The average annual inflation rate during the period 1966–74 was 5.5 percent. This was not markedly different from the 5.1 percent inflation rate that we assumed was incorporated into investor expectations in the mid-1970s. Thus, to the extent that (*a*) nominal ROEs achieved in the 1966–75 decade were similar to the nominal ROEs achieved in 1976 (as the comparison between Columns 4 and 5 of Table 1–10 would suggest), and (*b*) real costs of equity capital are relatively stable over time, it is reasonable to assume that real ROEs have, on average, exceeded real equity costs over the full decade 1966–75 for most of those firms that produced this result in 1976.

TABLE 1-10

Calculation of the size of the spread separating returns to equity from equity capital costs for the 37 high-ROE firms for which replacement cost data *are* available

Line No	Firm	(1) Market risk factor (β)	(2) Estimated cost of common equity: Nominal	(2) Estimated cost of common equity: Real	(3) Profit/common equity (1966-1975 average)	(4) Profit/common equity (1976)	(5) 1976 Profit/common equity adjusted for: Advertising and R&D	(6) 1976 Profit/common equity adjusted for: Advertising and R&D and replacement cost	(7) Nominal returns earned in excess of capital costs: Unadjusted (5) − (2)	(8) Nominal returns earned in excess of capital costs: Adjusted for advertising and R&D (6) − (2)	(9) Real returns earned in excess of capital costs adjusted for advertising and R&D and replacement cost (7) − (3)
1	Marsh & McLennan	0.87	.128	.077	.267	.274	.274	.274	.146	.146	.197*
2	Louisiana Land & Exploration	1.02	.141	.090	.313	.243	.243	.241	.102	.102	.151*
3	Kellogg	0.93	.124	.073	.215	.267	.244	.185	.143	.120	.112*
4	Dow Jones	1.13	.150	.099	.261	.240	.234	.197	.090	.084	.098*
5	Dun & Bradstreet	1.02	.141	.090	.203	.204	.200	.094	.063	.062	.094*
6	Schering-Plough	1.02	.141	.090	.231	.222	.197	.176	.081	.056	.086*
7	Melville Corp.	1.05	.169	.118	.222	.249	.251	.200	.080	.082	.082*
8	American Home Products	1.03	.142	.091	.252	.286	.232	.172	.144	.090	.081*
9	Avon Products	1.25	.161	.110	.314	.286	.273	.189	.125	.112	.079*
10	Merck	0.97	.136	.085	.250	.234	.205	.158	.098	.069	.071*
11	IBM	0.96	.136	.085	.174	.188	.177	.152	.052	.041	.067*
12	Dover Corp	1.17	.154	.103	.180	.198	.198	.161	.044	.044	.060*
13	Revlon	1.04	.142	.091	.181	.179	.176	.148	.037	.034	.057*
14	Eli Lilly	0.89	.138	.087	.203	.186	.188	.140	.048	.050	.056*
15	Lubrizol	0.96	.136	.085	.206	.185	.183	.140	.050	.047	.055*
16	Bristol-Myers	1.16	.153	.102	.190	.208	.176	.147	.055	.023	.045*
17	Smithkline	1.04	.142	.091	.223	.199	.160	.128	.057	.018	.037*
18	MASCO Corp	1.61	.192	.141	.185	.215	.224	.172	.020	.032	.031*
19	Natco Chemical	1.46	.179	.128	.184	.238	.222	.156	.059	.043	.028*
20	Coca-Cola	1.33	.168	.117	.215	.210	.187	.128	.042	.029	.021*
21	McDonald's	1.71	.201	.150	.202	.210	.216	.171	.009	.015	.021*
22	Reynolds, R. J.	0.86	.127	.076	.172	.166	.169	.094	.039	.042	.018*
23	Genuine Parts	1.48	.181	.130	.168	.183	.183	.145	.002	.002	.015*
24	Sterling Drug	0.95	.135	.084	.187	.147	.117	.088	.012	(.018)	.014
25	Chesebrough-Ponds	1.45	.178	.127	.182	.171	.162	.141	(.007)	(.016)	.014*
26	Square D	1.14	.151	.100	.200	.198	.167	.111	.045	.016	.011
27	Gillette	1.01	.140	.089	.230	.154	.134	.099	.014	(.006)	.010
28	Lucky Stores	1.16	.153	.102	.225	.189	.189	.111	.036	.036	.009
29	Xerox	1.18	.155	.104	.201	.165	.158	.113	.010	.003	.009
30	Rogers, A. H.	1.42	.178	.125	.195	.156	.150	.132	(.020)	(.028)	.007
31	Champion Spark Plug	0.93	.133	.082	.188	.142	.138	.087	.009	.005	.005
32	PepsiCo	1.46	.179	.128	.187	.181	.182	.127	.002	.003	(.001)
33	Eastman Kodak	1.03	.142	.091	.193	.162	.151	.083	.020	.009	(.008)
34	G. D. Searle	1.17	.154	.103	.232	.141	.132	.092	(.013)	(.022)	(.011)
35	Purolator	1.47	.180	.129	.186	.128	.129	.089	(.052)	(.051)	(.040)
36	Quaker State Oil Refining	1.47	.180	.129	.187	.139	.136	.065	(.041)	(.044)	(.064)
37	Panhandle Eastern	1.02	.141	.090	.172	.146	.146	.005	.005	.005	(.085)

*See footnote 14 for the significance of this designation

TABLE 1-10 (*continued*)

Calculation of the size of the spread separating returns to equity from equity capital costs for the 35 high-ROE firms for which replacement cost data are *not* available

Line No	Firm	(1) Market risk factor (β)	(2) Estimated cost of common equity: Nominal	(2) Estimated cost of common equity: Real	(3) Profit/common equity (1966-1975 average)	(4) Profit/common equity (1976)	(5) 1976 Profit/common equity adjusted for: Advertising and R&D	(6) 1976 Profit/common equity adjusted for: Advertising and R&D and replacement cost	(7) Nominal returns earned in excess of capital costs: Unadjusted (5) − (2)	(8) Nominal returns earned in excess of capital costs: Adjusted for advertising and R&D (6) − (2)	(9) Real returns earned in excess of capital costs adjusted for advertising and R&D and replacement cost (7) − (3)
38	PepCom Industries	1.27	.162	.111	.245	.328	.328	—	.166	.166	–
39	Emery Air Freight	1.22	.158	.107	.340	.305	.304	—	.147	.146	–
40	Cornwall Red Lake Mines	0.80	.109	.058	.362	.219	.219	—	.110	.110	–
41	Dillon Cos.	0.97	.126	.077	.193	.235	.235	—	.107	.107	–
42	Tampax	1.24	.160	.109	.340	.278	.263	—	.118	.103	–
43	Dr. Pepper	1.53	.185	.134	.248	.313	.278	—	.128	.093	–
44	H&R Block	1.43	.176	.125	.312	.272	.255	—	.096	.079	–
45	Yellow Freight	1.20	.156	.105	.218	.230	.230	—	.074	.074	–
46	Kaneb Services	1.28	.163	.112	.235	.233	.233	—	.070	.070	–
47	New Process Co.	1.10	.148	.097	.334	.267	.214	—	.119	.066	–
48	Roadway Express	1.12	.149	.098	.209	.205	.205	—	.056	.056	–
49	Atlas Consolidated Mining	1.03	.142	.091	.404	.194	.194	—	.052	.052	–
50	Russell Stover Candies	1.24	.160	.109	.209	.212	.212	—	.052	.052	–
51	Longs Drug	1.07	.145	.094	.211	.196	.196	—	.051	.051	–
52	Winn-Dixie	0.99	.138	.087	.198	.187	.184	—	.049	.046	–
53	Rorer-Amchem	1.08	.146	.095	.226	.202	.190	—	.056	.044	–
54	Merchants	0.96	.136	.085	.182	.178	.178	—	.042	.042	–
55	Prentice-Hall	0.90	.130	.079	.234	.174	.167	—	.044	.037	–
56	Stone & Webster	1.42	.176	.125	.200	.213	.213	—	.037	.037	–
57	National Chemsearch	1.08	.146	.095	.221	.182	.182	—	.036	.036	–
58	Rollins	1.34	.169	.118	.225	.205	.203	—	.036	.034	–
59	Caldor	1.13	.150	.099	.180	.183	.182	—	.033	.032	–
60	Lowenstein's	1.07	.145	.094	.199	.176	.176	—	.031	.031	–
61	Rockower Brothers	1.41	.176	.125	.185	.204	.205	—	.028	.029	–
62	Malone & Hyde	1.20	.156	.105	.172	.182	.182	—	.026	.026	–
63	Weis Markets	1.10	.153	.102	.181	.178	.178	—	.025	.025	–
64	Procter and Gamble	0.84	.134	.083	.166	.170	.153	—	.036	.019	–
65	Thomas & Betts	1.20	.156	.105	.195	.182	.174	—	.026	.018	–
66	Jostens	1.29	.164	.113	.179	.180	.180	—	.016	.016	–
67	Heublein	1.48	.181	.130	.221	.197	.194	—	.016	.013	–
68	Marion Laboratories	1.21	.157	.106	.294	.145	.168	—	(.012)	.011	–
69	Moore Corp.	0.94	.134	.083	.170	.142	.142†	—	.008	.008†	
70	Emerson Electric	1.24	.157	.106	.168	.170	.164	—	.013	.007	–
71	Eckerd (Jack)	1.37	.171	.120	.188	.168	.167	—	(.003)	(.004)	–
72	Wackenhut	1.43	.176	.125	.202	.144	.144	—	(.032)	(.032)	–

†No data on advertising or R&D expenditures are publicly available

disappears from the balance sheet. So do the offsetting entries for deferred taxes and net worth, which, by definition, would combine to equal the value of the capitalized asset. The effect of capitalizing and then amortizing advertising and research and development expenditures would be to increase net worth, and (so long as advertising and research and development expenditures were growing annually[44]) to increase reported profits. For most firms the percentage increase in net worth would be larger than the percentage increase in net profits, thus leading to a reduction in the firm's adjusted ROE (Table 1–10). The specific calculations that are appropriate for one firm, Avon Products, Inc., are presented in the appendix.

At the conceptual level the adjustments noted above are quite straightforward. Operationally, the adjustments are more difficult. The difficulty arises in defining a reasonable economic *life* for the advertising and research and development expenditures of a firm, and also specifying a reasonable amortization *schedule* for the advertising and research and development assets. Clearly these variables ought to differ for different firms, and indeed perhaps should even be different for different product types within a single firm.

Fortunately the likely range of error one could make by adopting uniform assumptions on economic life and amortization rates for advertising and R&D expenditures across firms are not critical in verifying the points I wish to establish.[45] For that reason I will simply follow, without lengthy discussion, some precedents established by others in the exploration of these issues. Thus, advertising expenditures will be assumed to have a six-year economic life. The assumed amortization rate for advertising assets will follow the double declining balance method. Readers wishing to examine more carefully the economic rationale for these particular choices should consult the first of the articles on the accounting for advertising expenditures, and the impact of accounting policy on reported profitability as noted in Footuote 46.

Arguments similar to those raised above can be applied to research and development expenditures. Given the normally long lead times be-

[44] If expenditures on advertising and research and development for a given firm were constant over time, the GAAP definition of expense and the economic definition of expense for advertising and research and development in any year would, of course, be equal.

[45] The magnitude of the ROE change that can be attributed to the capitalization and amortization of advertising and R&D expenditures (Column 5 versus Column 6 of Table 1–10) is usually rather small in relation to the spread between real ROEs and real equity capital costs for the firms appearing in Table 1–10.

[46] Leonard W. Weiss, "Advertising, Profits, and Corporate Taxes," *The Review of Economics and Statistics*, November 1969, pp. 421–30; or Harry Bloch, "Advertising and Profitability: A Reappraisal," *Journal of Political Economy*, March/April 1974, pp. 267–86; or Yoram Peles, "Amortization of Advertising Expenditures in the Financial Statements," *Journal of Accounting Research*, Spring 1970.

fore R&D expenditures produce the opportunity for revenue generation, and the length of the product life cycle generally associated with proprietary products (particularly in the drug industry) a *ten-year* life was applied to R&D expenditures. Straight line amortization at the rate of 10 percent per year was applied to the R&D asset. Readers wishing to examine more carefully the economic rationale for these particular choices should consult the first of the articles on the accounting for R&D expenditures, and the impact of accounting policy on reported profitability as noted in Footnote 47.

In the appendix, sample calculations for Avon Products, Inc., are carried out that convert GAAP-determined profit and book value data into the more economically meaningful figures resulting from capitalizing and then amortizing expenditures on advertising and R&D. "Adjusted ROE" calculations (taking into account the capitalization and amortization of advertising and R&D expenditures) are then presented in Column 6 of Table 1–10 for each of the 72 high-ROE firms first described in Table 1–9. Table 1–10 (Column 9) suggests that prior to any adjustment for inflation (but after adjustments for risk, and the capitalization and amortization of advertising and R&D expenditures), 63 of the 72 high-return companies enjoyed equity returns in 1976 that were in excess of their equity capital costs.

ADJUSTING *ROE* FOR THE EFFECT OF INFLATION: REPLACEMENT COST ACCOUNTING

One final adjustment can be made to reported ROEs to adjust, at least partially, for inflation.[48] During periods of rapid inflation, ROE calculations based on GAAP can greatly overstate true profitability.[49] True profitability is necessarily based on *current*, not *historic*, cost levels. In an effort to capture a significant part of the impact of inflation on a firm's operations and profitability, the U.S. Securities and Exchange Commission (as

[47] Rosalind Schulman in Joseph Cooper, ed., *The Economics of Drug Innovation* (Washington: American University, 1969), pp. 213–21; or Vernon A. Mund in Joseph Cooper, pp. 125–38; or Harold A. Clymer in Joseph Cooper, pp. 109–24.

[48] A further refinement of the ROE data might include an adjustment to interest expense to reflect current rates rather than the rates that a firm might enjoy on debt issued previously when rates were significantly different. As we will show momentarily (footnote 56) the firms noted in Lines 1–37 of Table 1–11 had a negligible amount of fixed-rate long-term debt at below-market rates on December 31, 1976. Such an adjustment would thus simply further complicate our analysis without adding any significant benefit.

[49] Readers interested in pursuing this line of argument can explore it in greater detail in the following articles: S. Davidson and R. L. Weil, "Inflation Accounting: The SEC Proposal for Replacement Cost Disclosures," *Financial Analysts Journal*, March/April 1976; or Richard F. Vancil, "Inflation Accounting—The Great Controversy," *Harvard Business Review*, March–April 1976.

of December 25, 1976) required large[50] firms to report domestic inventories and net plant and equipment[51] at replacement as well as historic cost. The reporting of this information makes it possible (again in a rather crude[52] fashion) to adjust a firm's income statement and balance sheet to isolate a portion of the effect of inflation on profitability.

The calculation of the profit, book value, and ROE impact of utilizing replacement cost accounting is presented for Avon Products in the appendix. While the requisite replacement cost data are available for only the first 37 of the 72 firms listed in Table 1–10, it is interesting to note (from Column 10 of Table 1–10) that for 31 of these firms, real rates of return on adjusted equity exceed real equity costs.[53] This was true in 1976, and

[50] S.E.C. Accounting Series Release No. 190 (dated March 23, 1976, and effective December 25, 1976) "requires registrants who have inventories and gross property, plant and equipment which aggregate more than $100 million and which comprise more than 10 percent of total assets to disclose the estimated current replacement cost of inventories and productive capacity at the end of each fiscal year for which a balance sheet is required and the approximate amount of cost of sales and depreciation based on replacement cost."

[51] Cash and accounts receivable represent assets whose replacement cost is equal to historic cost. This is not generally true for inventories, or net plant and equipment, however. To the extent the SEC's requirements ignore land, foreign inventory, and foreign net plant and equipment, and other nonmonetary asset items, it does not capture the *full* economic impact of inflation accounting. In addition, replacement cost accounting generally ignores the impact of inflation on monetary assets and liabilities. In analyzing the potential profitability of *future* business operations, however, this latter omission is entirely reasonable.

[52] Replacement cost data as reported to the SEC do not, for example, reflect operating cost savings that would result from the replacement of existing assets with new assets utilizing current technology.

[53] For another three of these 37 firms, a poorer ROE performance in 1976 than that which characterized the prior decade caused them to fail to achieve a *real* ROE that exceeded their *real* equity capital cost as of December 31, 1976. Conversely, one firm passed this particular test in 1976 that would not have passed it on the basis of its ROE average for the prior decade.

When equity capital costs are compared with actual return-on-equity performance data, the ROE performance data should be calculated using *beginning-of-year* common equity values unless new equity is issued during the year. In situations where a significant amount of new equity is issued by a firm during the year, the average of beginning-of-year and end-of-year common equity values might be the most appropriate figure to use in the ROE calculation. At the time this book was written, replacement cost data (which are utilized in the calculation of adjusted book values in Table 1–11) were not available for points in time prior to December, 1976. Profit data were not yet available for 1977. All of the *adjusted* ROE data of Table 1–10 thus had to be based upon end-of-year common equity rather than beginning-of-year or average common equity. In order to maintain consistency throughout the text, all ROE data (whether adjusted or unadjusted) have been calculated using end-of-year common equity. The use of end-of-year common equity produces a modest downward bias in the reported spreads between rates of return on equity, as reported in this book, and the cost of common equity. For the firms listed in Lines 1–37 of Table 1–10, for example, 1976 unadjusted ROEs would have been, on average, 2.8 percentage points and 1.4 percentage points higher, respectively, if beginning-of-year or average common equity values had been utilized. For firms with lower levels of profitability and average dividend payout ratios, the downward bias brought about by utilizing end-of-year common equity would, in general, be smaller.

in most cases was probably equally true for the prior decade as well for reasons noted in the second paragraph of Footnote 43.

It can be fairly safely stated that most of the firms that show a positive figure in Column 10 of Table 1–10 do, in fact, earn rates of return on equity that exceed their equity capital costs.[54] These are bona fide Hall of Fame firms. One further caveat, however, should be offered at this point. Our list of firms that have consistently earned rates of return in excess of equity capital costs was drawn from a sample of 72 firms that had achieved ROEs in excess of 15 percent in *every year* of the decade 1966–75. This sample in no sense purports to be exhaustive with regard to firms that qualify as having consistently earned ROEs in excess of equity capital costs. Indeed, if a firm's cost of equity capital were relatively low (as a result of limited systematic risk), it might consistently achieve ROEs in excess of equity capital costs and not appear in the 72-firm sample. Similarly, there is no magic in defining "consistently" as ten years out of ten with ROEs in excess of 15 percent. Numerous companies might have earned ROEs in excess of their equity capital costs in *many*, but not *all*, of the years 1966–75. Such firms would not necessarily appear on the 72-firm list. In short, the 72-firm list in Table 1–10 simply picks up the most likely candidates.

Having identified a list (admittedly not exhaustive) of firms that have consistently earned ROEs in excess of equity capital cost, we have achieved the second objective outlined on page 25. This allows us to move on to the third objective, which is to estimate the very substantial value created for shareholders by the managements of those firms whose returns on equity exceed their equity capital costs.

VALUE CREATION: MARKET VALUE VERSUS ADJUSTED BOOK VALUE FOR HIGH-*ROE* FIRMS

As noted in Table 1–10, the data needed to adjust GAAP-determined book values for the effects of advertising, R&D, and inflation are available

[54] Errors in calculating the value of Column 10, Table 1–10, can arise from a number of sources, several of which have already been noted. For this reason, small positive values in this column (in the range of 0.01 or 0.02) should not be taken as compelling evidence that a particular firm is actually achieving a real ROE that exceeds its equity capital cost. For example, the β utilized in calculating a firm's cost of equity capital in Table 1–10 is determined via regression techniques. The value so determined is simply an estimate of the true β of the firm's common stock. If uncertainties surrounding the true value of β were the only uncertainty associated with defining the size of the spread indicated in Column 10, Table 1–10, then we could say (with a minimum of 90 percent confidence in each case) that the 24 firms with starred data in Column 10 of Table 1–10 were actually earning rates of return on equity that exceeded their equity capital costs. The use of standard error data relating to the β calculation (combined with the use of the t-distribution) permits us to determine, statistically, this confidence interval.

for only 37 of the 72 previously described high-ROE firms.[55] The market value of the common equity securities of these 37 firms exceeds the adjusted book value of their equity by some $57.6 billion at December 31, 1976 (Column 7, Table 1–11).[56] This created value, as the model developed earlier in the chapter suggests, arises from investor perceptions (often buttressed by a favorable historical record) regarding the volume, duration, and degree of extraordinary profitability anticipated from the firm's *existing* investments and *future* investment opportunities.

A substantial part of the message conveyed by Chapter 1 is captured in Column 7 of Table 1–11. The message is simply this. *Managers who are successful in either shaping or simply taking advantage of the competitive environment so as to earn returns in excess of their capital costs create enormous wealth for their shareholders.* The game is clearly worth the candle. How some of the firms in Table 1–11 have played the game is the subject of Chapters 3 to 9.

We have now examined, empirically, the degree of wealth creation achieved by firms listed in Table 1–10 that have succeeded in producing returns on equity that exceed their equity capital costs. This fulfills the third objective noted on page 25. The fourth objective noted on page 25 remains. We shall now examine, briefly, some of the important characteristics of the 72 high-ROE firms.[57]

SALIENT CHARACTERISTICS OF HIGH-*ROE* FIRMS—ENTRY BARRIERS

Firms that consistently earn rates of return on equity that exceed their equity capital costs can invariably attribute their success to the existence of some entry barrier(s) in the competitive environment. This is true as

[55] Replacement cost data are available only for domestic U.S. firms whose fiscal years end after December 24, 1976, and whose gross assets plus inventories exceed $100 million. Thirteen of 35 high-ROE firms for which replacement cost data are not available had their 1976 fiscal year end prior to December 25, 1976.

[56] One could argue that if the long-term debt of these firms were valued at *market* rather than *book* values, the spread between the market value of the equity of these firms and the adjusted book value of the equity of these firms would be reduced. In fact, the impact would be insignificant. At December 31, 1976, the firms listed in Lines 1–37 of Table 1–11 had a book value total of $5.5 billion of long-term debt outstanding. Of this total, $0.4 billion was floating-rate debt, $1.3 billion was not identified as to rate, and $3.8 billion was fixed-rate debt. Of the fixed-rate, non-convertible debt, less than $0.5 billion carried an interest rate of less than 7.5 percent. These facts make it quite clear that adjusting the long-term debt of these firms to *market* rather than *book* values would have no significant impact on the calculation of the adjusted book value of the equity securities of these firms.

[57] While some of the characteristics are causally related to the ability of these firms to earn ROEs in excess of their capital costs, others are not. Some characteristics simply result from the fact that these firms achieve high ROEs, and have no causal link to that success.

a general proposition, extending beyond just those high-ROE firms listed in Table 1–10. If competitive entry barriers did not exist, the action of competition would simply drive equity returns down to the level of equity costs. Entry barriers exist in a number of forms that have been well catalogued and described, primarily by specialists in the field of industrial organization economics.[58]

There are four broad catagories of entry barriers.[59] *Unique products*[60] (often called differentiated products) can be created and protected from competition by patents, trademarks, and persuasive advertising. Because of their real or perceived uniqueness, such products face limited competition and can sometimes be priced at levels that produce returns in excess of capital costs.

Scale economies in the production, marketing, or maintenance of products sometimes exist that allow the most efficiently organized competitor(s) to enjoy costs that are below those of less efficiently positioned competitors. To the extent that the benefits of these cost advantages are captured for shareholders, the efficient producer can achieve returns in excess of capital costs, while still pricing his product no higher than that of the less efficient competitor.

Absolute cost advantages often occur in the extractive industries, where some competitors control scarce resources that can be developed and marketed at costs that are far below that enjoyed by less fortunately positioned competitors. The firms that control the scarce low-cost resource can often earn returns that substantially exceed their capital costs, while pricing their product at competitive levels. Finally, the *capital requirements* associated with participation in a market can be so high in some businesses that most potential competitors are, as a practical matter, precluded from either entering or effectively exploiting the market. This fact allows the financially well positioned firms already participating in the market to price their products so as to produce returns in excess of capital costs.

Once a catalog of entry barriers has been described, one could go through the list of firms presented in Table 1–10 in an effort to pinpoint

[58] See, for example, Joe S. Bain, *Barriers to New Competition* (Cambridge, Mass.: Harvard University Press, 1956); or John M. Vernon, *Market Structure and Industrial Performance—A Review of Statistical Findings* (Boston: Allyn and Bacon, Inc., 1972); or F. M. Scherer, *Industrial Market Structure and Economic Performance* (Chicago: Rand McNally & Co., 1970).

[59] The catalog of identifiable entry barriers and the understanding of the relationships between these barriers and enhanced profitability have been enriched substantially since Bain's seminal research, which described these four categories. For a sample of some new directions in research in the field of industrial organization see, for example, Michael E. Porter, *Interbrand Choice, Strategy, and Bilateral Market Power* (Cambridge, Mass.: Harvard University Press, 1976).

[60] The use of the word product here is meant to refer to services as well as products in the usual sense.

TABLE 1-11

Calculation of the values created for shareholders by firms that earn returns on equity that exceed their equity capital costs (data for 37 firms for which replacement cost data *are* available)

Line	Firm	(1) Market value of firm's common equity @ 12/31/76 ($ millions)	(2) Book value of firm's common equity: Unadjusted ($ millions)	(3) Book value of firm's common equity: Adjusted for advertising and R&D ($ millions)	(4) Book value of firm's common equity: Adjusted for advertising and R&D and replacement cost ($ millions)	(5) = (1) − (2) Value created: Unadjusted ($ millions)	(6) = (1) − (3) Value created: Adjusted for advertising and R&D ($ millions)	(7) = (1) − (4) Value created: Adjusted for advertising and R&D and replacement cost ($ millions)	(8) Market value/book-value ratio: Unadjusted	(9) Market value/book-value ratio: Adjusted for advertising and R&D	(10) Market value/book-value ratio: Adjusted for advertising and R&D and replacement cost
1	Marsh & McLennan	777	170	170	170	606	606	606	4.6	4.6	4.6
2	Louisiana Land & Exploration	1,078	398	398	480	681	681	598	2.7	2.7	2.2
3	Kellogg	2,106	487	566	694	1,618	1,539	1,411	4.3	3.7	3.0
4	Dow Jones	535	126	130	152	409	405	383	4.2	4.1	3.5
5	Dun & Bradstreet	807	234	240	259	573	565	547	3.5	3.4	3.1
6	Schering-Plough	2,420	707	804	919	1,713	1,616	1,501	3.4	3.0	2.6
7	Melville Corp.	681	244	265	279	417	406	382	2.7	2.6	2.4
8	American Home Products	5,019	968	1,267	1,592	4,050	3,751	3,427	6.2	4.0	3.2
9	Avon Products	2,845	599	638	841	2,256	2,207	2,004	4.8	4.5	3.4
10	Merck	5,145	1,090	1,429	1,751	4,055	3,716	3,394	4.7	3.6	2.9
11	IBM	42,063	12,749	14,639	17,029	29,313	27,423	25,033	3.2	2.9	2.5
12	Dover Corp.	338	168	168	187	180	169	150	2.1	2.1	1.8
13	Revlon	1,038	456	545	613	582	792	725	2.9	2.5	2.2
14	Eli Lilly	3,292	1,079	1,332	1,516	2,214	1,960	1,776	3.1	2.5	2.2
15	Lubrizol	737	262	295	376	475	441	360	2.8	2.5	2.0
16	Bristol-Myers	2,155	740	1,022	1,161	1,415	1,133	1,064	2.9	2.1	1.9
17	Smithkline	1,190	361	549	627	829	641	563	3.3	2.2	1.9
18	MASCO Corp.	672	219	235	274	454	437	399	3.1	2.9	2.5
19	Nalco Chemical	682	183	208	273	499	474	409	3.7	3.3	2.5
20	Coca-Cola	4,734	1,357	1,514	1,901	3,378	3,220	2,833	3.5	3.1	2.5
21	McDonald's	2,163	525	566	682	1,637	1,597	1,481	4.1	3.8	3.2
22	Reynolds, R. J.	3,137	2,068	2,198	3,608	1,069	939	(472)	1.5	1.4	0.9
23	Genuine Parts	857	207	207	329	650	650	528	3.2	3.2	2.6
24	Sterling Drug	995	664	779	868	330	216	127	1.5	1.3	1.2
25	Chesebrough-Ponds	805	317	374	426	488	431	379	2.5	2.2	1.9
26	Square D	654	226	246	397	439	418	268	2.9	2.7	1.7
27	Gillette	839	505	672	789	334	167	50	1.7	1.2	1.1
28	Lucky Stores	576	343	243	309	333	333	266	2.4	2.4	1.9
29	Xerox	4,650	2,139	2,611	3,278	2,474	2,043	1,375	2.1	1.8	1.4
30	Robins, A. H.	314	201	244	276	113	69	37	1.6	1.3	1.1
31	Champion Spark Plug	480	318	345	435	172	145	55	1.5	1.4	1.2
32	PepsiCo	1,953	753	870	1,052	1,200	1,083	901	2.6	2.2	1.9
33	Eastman Kodak	13,896	4,028	4,806	7,782	9,870	9,090	6,114	3.5	2.9	1.8
34	G. D. Searle	667	406	621	708	261	66	(191)	1.6	1.1	1.0
35	Purolator	131	96	98	122	36	33	9	1.4	1.3	1.1
36	Quaker State Oil Refining	348	185	192	300	163	155	48	1.9	1.8	1.2
37	Panhandle Eastern	802	587	587	1,782	219	219	(980)	1.4	1.4	0.5
37(a)	Total*	111,704	36,811	42,052	54,047	75,894	69,650	57,657			

TABLE 1-11 (*continued*)

(data for 35 firms for which replacement cost data are *not* available)

Line	Firm	(1) Market value of firm's common equity @ 12/31/76 ($ millions)	(2) Book value of firm's common equity: Unadjusted ($ millions)	(3) Book value of firm's common equity: Adjusted for advertising and R&D ($ millions)	(4) Book value of firm's common equity: Adjusted for advertising and R&D and replacement cost ($ millions)	(5) Value created: Unadjusted ($ millions)	(6) Value created: Adjusted for advertising and R&D ($ millions)	(7) Value created: Adjusted for advertising and R&D and replacement cost ($ millions)	(8) Market value/book-value ratio: Unadjusted	(9) Market value/book-value ratio: Adjusted for advertising and R&D	(10) Market value/book-value ratio: Adjusted for advertising and R&D and replacement cost
38	PepCom Industries	18	14	14	--	4	4	--	1.3	1.3	--
39	Emery Air Freight	294	52	54	--	242	240	--	5.7	5.5	--
40	Campbell Red Lake Mines	198	35	35	--	163	163	--	5.7	5.7	--
41	Dillon Cos.	261	96	96	--	165	165	--	2.7	2.7	--
42	Tampax	412	118	125	--	293	288	--	3.5	3.3	--
43	Dr. Pepper	272	50	62	--	223	211	--	5.5	4.4	--
44	H&R Block	257	73	79	--	185	178	--	3.5	3.3	--
45	Yellow Freight	611	147	147	--	463	463	--	4.2	4.2	--
46	Kaneb Services	106	53	53	--	53	53	--	2.0	2.0	--
47	New Process Co.	102	39	39	--	63	63	--	2.6	2.6	--
48	Roadway Express	920	209	209	--	711	711	--	4.4	4.4	--
49	Atlas Consolidated Mining	225	132	133	--	102	102	--	1.8	1.8	--
50	Russell Stover Candies	105	54	54	--	51	51	--	1.9	1.9	--
51	Longs Drugs	358	87	92	--	271	266	--	4.1	3.9	--
52	Winn-Dixie	973	336	363	--	637	610	--	2.9	2.7	--
53	Rorer-Amchem	268	144	170	--	144	118	--	2.0	1.7	--
54	Merchants	34	39	39	--	(6)	(6)	--	.9	.9	--
55	Prentice Hall	232	110	130	--	122	102	--	2.1	1.8	--
56	Stone & Webster	252	148	148	--	104	104	--	1.7	1.7	--
57	National Chemsearch	268	90	90	--	178	178	--	3.0	3.0	--
58	Rollins	325	109	116	--	216	209	--	3.0	2.8	--
59	Calgon	72	46	52	--	24	20	--	1.5	1.4	--
60	Lowenstein's	23	14	14	--	9	9	--	1.6	1.6	--
61	Rockower Bros.	29	28	29	--	1	0	--	1.0	1.0	--
62	Malone & Hyde	169	77	77	--	92	92	--	2.2	2.2	--
63	Weis Markets	154	101	101	--	53	53	--	1.5	1.5	--
64	Procter & Gamble	7,729	2,357	2,971	--	5,372	4,758	--	3.3	2.6	--
65	Thomas & Betts	310	93	105	--	216	205	--	3.3	3.0	--
66	Jostens	93	53	53	--	40	40	--	1.7	1.7	--
67	Heublein	883	371	473	--	512	410	--	2.4	1.9	--
68	Marion Laboratories	125	58	70	--	67	55	--	2.2	1.8	--
69	Moore Corp.	1,009	424	424	--	585	585	--	2.4	2.4	--
70	Emerson Electric	1,972	699	753	--	1,283	1,219	--	2.9	2.6	--
71	Eckerd (Jack)	548	196	196	--	360	382	--	2.8	2.8	--
72	Wackenhut	15	16	16	--	0	0	--	1.0	1.0	--
73	Subtotal	19,650	6,650	7,550		13,000	12,070	9,900*			
74	Total	131,354	42,861	49,602		88,894	81,720	67,552			

*Assumes the same ratio relationship between Columns 2 and 5 in Line 73 as that indicated in Line 37(a)

the specific entry barrier(s) that permit each firm to earn premium rates of return. To accomplish this task with rigor could easily be the work of a lifetime. Instead, in Chapters 3 to 9 we shall look, in some depth, at a few of the firms listed in Table 1–10 (as well as some others) in an effort to understand how the managers of some firms have acted to create value for their equity shareholders through the effective utilization of entry barriers.[61]

SALIENT CHARACTERISTICS OF MANY HIGH-*ROE* FIRMS—FOCUSED PRODUCT LINES

Most of the firms listed in Table 1–10 are highly focused in their business activities. Indeed, a high fraction of their sales is in a single line of business, according to the way these firms define their lines of business in 10K reports to the SEC.[62] Table 1–12 summarizes this information. It indicates that 61 percent of these high-ROE firms have more than 70 percent of their total sales in a single line of business.

In addition to being highly focused, many of the high-ROE firms in Table 1–10 have achieved the largest *national* market share in the industries in which they compete. Indeed, the 72 high-ROE firms of Table 1–10 enjoy the dominant national market position in at least 22 lines of

TABLE 1-12
Degree of focus in the lines of business of 72 high-ROE firms—1976

Fraction of firm's sales in its principal line of business	*Firms with this fraction of total sales in their principal line of business*	
	(number)	*(percentage)*
0.91–1.00	30	41
0.81–0.90	4	6
0.71–0.80	10	14
0.61–0.70	7	10
0.51–0.60	8	11
0.41–0.50	7	10
0.31–0.40	4	6
0.21–0.30	1	1
0.11–0.20	1	1
0–0.10	0	0
	72	100%

[61] The firms selected for analysis in greater depth in Chapters 3–9 in no sense represent a random sample of the 72 firms. The firms were selected instead for the clarity with which value-creation, value-transfer, and value-destruction phenomena could be highlighted.

[62] Since firms do not report their line-of-business data to the SEC according to SIC categories, this measure of diversification in their business activities is quite imprecise. It does at least give an indication, however, of the degree to which many of these firms have rather sharply focused their area of business operations.

business.[63] To the extent opportunities for achieving scale economies at the national level exist in the businesses represented, the firms shown in Table 1–10 are certainly advantageously positioned to reap these scale economies.

SALIENT CHARACTERISTICS OF MANY HIGH-*ROE* FIRMS—REDUNDANT CASH

The *very* rich, I am told, are cursed by an inability to spend wealth faster than it accumulates. Their wealth simply grows and grows. So it is with corporations. Annually a surprisingly large number of U.S. NFCs report levels of cash and marketable securities that are more than sufficient to (*a*) meet normal transactions requirements and (*b*) repay all of their outstanding short- and long-term borrowings. In 1975, for example, 151 firms in the sample of 1,448 firms enjoyed this luxury (Line 10, Table 1–13). Some 60 of these firms had basked in such splendor for at least a decade (Line 11, Table 1–13). In effect, these firms enjoy the equivalent of a debt-free capital structure and a large pool of redundant cash.[64] Indeed, it would be accurate to characterize these firms as having *negative* leverage, or what economists would call a net-creditor position.

Who are the firms that enjoy the benefits of a capital structure that is free from financial risk? Are they only firms facing great operating risk whose managers seek to reduce total corporate risk by adopting an all-equity or even negatively leveraged capital structure? The answer appears to be no! The firms most likely to have redundant cash are firms with very high ROEs whose equity capital retentions outpace the investment requirements of their product-markets. As shown in Line 1 of Table 1–14, 38.3 percent of the 72 firms with ROEs exceeding 15 percent for the years 1966–75 also had redundant cash in *every* year of this decade. A significant fraction of those high-return firms simply do not face a supply of attractive investment opportunities in their existing markets that is commensurate with their ability to generate equity capital through earn-

[63] It should be noted that "markets" are defined here so broadly as to limit the economic significance of the information. As will be shown in Chapter 4, for example, competition in the retail grocery trade has economic relevance primarily at the *city* level, not the *national* level. Thus, while the Dillon Companies, Lucky Stores, Winn-Dixie, and Weis Markets (Lines 26–29, Table 1–9) might all be dominant in many of the local areas in which they operate, none of these firms ranks higher than fifth in terms of its share of national retail grocery trade.

[64] Redundant cash, as defined here, equals all cash and marketable securities less an amount equal to the sum of (1) borrowed money, and (2) 6 percent of all noncash assets. The 6 percent figure noted above is assumed to be the amount of cash and marketable securities needed to meet normal operating needs. FTC data for the 1974–75 period show firms in the category "all manufacturing" holding cash and marketable securities equal to about 6 percent of noncash assets.

TABLE 1-13

A. Number of firms out of Compustat 1,448 stockpiling redundant cash in each of the years 1966–1975

Line	Year	Number	Percentage
1	1966	270	18.7
2	1967	237	16.4
3	1968	229	15.9
4	1969	179	12.4
5	1970	162	11.2
6	1971	169	11.7
7	1972	164	11.3
8	1973	151	10.4
9	1974	123	8.5
10	1975	151	10.4

B. Number of years in the ten-year period 1966–1975 during which redundant cash was stockpiled by each of the 151 Compustat firms holding redundant cash as of December 31, 1975

Line	Number of years in the period 1966–1975 during which redundant cash was held	Number	Percentage
11	10	60	39.7
12	9	13	8.6
13	8	11	7.3
14	7	11	7.3
15	6	9	6.0
16	5	11	7.3
17	4	6	4.0
18	3	1	0.6
19	2	11	7.3
20	1	18	11.9
21		151	100.0%

ings retentions. Why these firms do not return this redundant cash to their shareholders in the form of higher dividends or share repurchases (or use it to acquire other businesses) is an open research question that might well be answered differently for each firm. It is interesting to note, however, that the existence of redundant cash (and, by definition,[65] redundant equity capital) substantially reduces a firm's reported ROE. For example, absent its $3.7 *billion* pool of redundant cash (and equity capital) at December 31, 1975, IBM's ROE would have risen from 17.4 percent to 23.7 percent (Lines 1, 2, Table 1–15). If IBM had chosen to both (*a*) eliminate its redundant cash and (*b*) leverage itself to the same point as its *least* leveraged competitor in 1975, the firm's ROE would have

[65] Redundant cash and redundant equity capital are equal, by definition, since redundant cash is calculated on the assumption that all debt is repaid before cash can be deemed "redundant."

TABLE 1-14

Historical data indicating the propensity of firms with very high rates of return on common equity to stockpile redundant cash over extended time periods

Return on common equity	1,448 Compustat firms		151 Compustat firms with redundant cash at 12/31/75		60 Compustat firms with ten successive years of redundant cash at 12/31/75	
	Number	Percentage	Number	Percentage	Number	Percentage
1. Exceeding 15% in each of the years 1966–75	72	(5.0)	23	15.2	23	(38.3)
2. Exceeding 15% in at least 5 out of 7 of the years 1969–75 (but not including the firms in (1) above)	80	(6.5)	29	19.2	12	(20.0)
3. Less than 6% in at least 6 of the years 1966–75	178	(12.3)	12	8.0	1	(1.7)
4. Other than that characterized by (1) to (3) above	1,118	(77.2)	87	57.6	24	(40.0)
	1,448	100.0	151	100.0	60	100.0

Note: All cash and marketable securities over an amount equal to the sum of (1) borrowed money, (2) customer deposits, and (3) 6 percent of all noncash assets is considered to be redundant cash.

risen to about 32.4 percent (Line 3, Table 1–15).[66] IBM's unleveraged capital structure and its enormous pool of redundant capital have clearly reduced the obviousness of IBM's enormous profitability.

The profitability of Avon Products, when cast in a framework similar to that suggested in the IBM example above, is even more staggering (Lines 4–5, Table 1–15). No other firm in a similar size class comes even close to the level of profitability of this truly remarkable firm.

SALIENT CHARACTERISTICS OF MANY HIGH-*ROE* FIRMS—OVERVALUATION

One final note should be added to complete Chapter 1. That note relates to the great degree of optimism shown by investors in valuing high-ROE firms. The circled values in Columns 5–7 of Table 1–16 depict an interesting phenomenon. The market-value/adjusted-book-value ratios of 16 of the 37 inflation-adjusted high-ROE firms fall *above* the ratios that would be expected for these firms based upon a *30-year* extrapolation of their historical performance measured along the three critical value-creating dimensions originally outlined in Table 1–3. This overvaluation is demonstrated as follows.[67] Column 6 of Table 1–16 contains the calculated market-value/adjusted book-value ratio for each firm assuming that its *real* ROE at December 31, 1975, was exactly equal to its *real* cost of equity capital, and that its *real* equity returns and costs would remain equal in the future. Under these circumstances the market-value/adjusted-book-value ratio for the firm should obviously be 1.0, as is shown in Column 6 of Table 1–16. Now let's change these assumptions, however, and assume that *real* equity returns for the 30 years following December 31, 1975, would exceed *real* equity costs by the amount indicated in Column 3 of Table 1–16. Then assume further that each firm would, for the next 30 years, expand its equity base at the rate achieved during the prior decade as indicated in Column 4 of Table 1–16. Given this set of investor expectations, the calculated (and economically rational) market-value/adjusted-book-value ratio for each firm would be as indicated in Column 7 of Table 1–16.

Clearly, as of December 31, 1975, a large number of high-ROE firms faced some quite impressive (and, in at least a few cases, essentially

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[66] It should be noted that the elimination of redundant cash and/or leveraging a firm's capital structure would, of course, increase the firm's β and its cost of capital. This effect is examined in the appendix to Chapter 3.

[67] "Overvaluation" here refers to the notion (Table 1–3) that the economic value of a firm's equity securities is a function of the firm's real investment opportunity profile and the discounted value of the cash flows streaming from these investment opportunities.

TABLE 1-15
Calculation of the effect of a change in financial structure (via the removal of redundant cash and/or utilizing debt capital) on the reported profit/common equity ratios of the IBM Corp. and Avon Products, Inc. (1966–1975)

Line	Profit/common equity ratio	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
	IBM Corp.										
1	As reported to shareholders	0.158	0.170	0.191	0.177	0.171	0.162	0.169	0.179	0.182	(0.174)
2	Adjusted to remove redundant* cash	0.158	0.170	0.229	0.188	0.173	0.172	0.193	0.217	0.231	(0.237)
3	Adjusted to remove redundant cash and to achieve the debt/equity ratio of the least leveraged competitor† in the industry	–	–	–	–	–	–	–	–	–	(0.324)
	Avon Products, Inc.										
4	As reported to shareholders	0.371	0.373	0.353	0.358	0.361	0.344	0.330	0.304	0.237	(0.266)
5	Adjusted to remove redundant* cash	0.546	0.542	0.511	0.413	0.422	0.453	0.470	0.395	0.291	(0.454)

*All cash and marketable securities less an amount equal to the sum of: (1) borrowed money, (2) 6 percent of all noncash assets is considered to be redundant cash. In removing this redundant cash (via dividends or share repurchases) for the calculation in Line 2, this redundant cash is assumed to have yielded 4 percent after taxes. The derivation of Line 5 can be found in Table 3A–1.

†At December 31, 1975, IBM's principal competitors had borrowed-money/net-worth ratios as follows: Burroughs 0.47, Honeywell 0.70, Control Data 0.76, Sperry Rand 0.82, and NCR 0.99. In the Line 3 calculation, IBM is assumed to have borrowed $2,495 million at an after-tax cost of 5 percent, and to have paid out this amount via dividends or share repurchases, thereby achieving a debt/equity ratio of 0.47.

TABLE 1-16

Actual market-value/book-value ratio data versus the *range* of market-value/book-value ratio data projected (based on an extrapolation of historical performance) for 37 high-ROE firms for which replacement cost data are available

Line	Firm	(1) 1975 Redundant cash/ Common equity	(2) Estimated real cost of equity capital (K_e)†	(3) Real returns on equity earned above real equity† cost	(4) 10-Year average annual reinvestment rate‡	(5) Market value/ adjusted book value §	(6) (7) Projected market-value/ adjusted-book-value ratio range
1	Marsh & McLennan	.35	.077	.197	0.50	4.6	1.0 to 14.4
2	Louisiana Land & Exploration	–	.090	.151	0.42	2.7	1.0 to 5.8
3	Kellogg	.06	.073	.112	0.43	3.0	1.0 to 4.4
4	Dow Jones	.31#	.099	.098	0.40	(3.5)	1.0 to (3.1)
5	Dun & Bradstreet	.14	.090	.094	0.53	3.1	1.0 to 3.9
6	Schering-Plough	.19	.090	.086	0.83	2.6	1.0 to 6.4
7	Melville Corp.	.21	.118	.082	0.71	2.4	1.0 to 4.0
8	American Home Products	.26	.091	.081	0.38	(3.2)	1.0 to (2.6)*
9	Avon Products	.44	.110	.079	0.40	(3.4)	1.0 to (2.4)*
10	Merck	–	.085	.071	0.52	2.9	1.0 to 2.9
11	IBM	.32	.085	.067	0.72	2.5	1.0 to 3.6
12	Dover Corp.	–	.103	.060	0.76	1.8	1.0 to 3.2
13	Revlon	–	.091	.057	0.82	2.2	1.0 to 3.4
14	Eli Lilly	.05	.087	.056	0.69	2.2	1.0 to 2.8
15	Lubrizol	.12	.085	.055	0.68	2.0	1.0 to 2.7
16	Bristol-Myers	–	.102	.045	0.72	1.9	1.0 to 2.3
17	Smithkline	–	.091	.037	0.39	(1.9)	1.0 to (1.6)
18	MASCO Corp	–	.141	.031	1.24	2.5	1.0 to 3.3
19	Nalco Chemical	.06	.128	.028	0.63	(2.5)	1.0 to (1.5)**
20	Coca-Cola	.22	.117	.021	0.56	(2.5)	1.0 to (1.4)**
21	McDonald's	–	.150	.021	1.26	(3.2)	1.0 to (2.4)
22	Reynolds, R. J.	–	.076	.018	0.55	0.9	1.0 to 1.4
23	Genuine Parts	.04	.130	.015	0.85	(2.9)	1.0 to (1.4)**
24	Sterling Drug	–	.084	.014	0.59	1.2	1.0 to 1.3
25	Chesebrough-Ponds	–	.127	.014	0.88	(1.9)	1.0 to (1.4)*
26	Square D	–	.100	.011	0.39	(1.7)	1.0 to (1.2)**
27	Gillette	–	.089	.010	0.50	1.1	1.0 to 1.2
28	Lucky Stores	–	.102	.009	0.77	(1.9)	1.0 to (1.2)*
29	Xerox	–	.104	.009	0.81	(1.4)	1.0 to (1.2)
30	Robins, A. H.	.13	.125	.007	0.76	1.1	1.0 to 1.1
31	Champion Spark Plug	–	.082	.005	0.60	(1.2)	1.0 to (1.1)
32	PepsiCo.	–	.128	(.001)	0.73	1.9	1.0 to 1.0
33	Eastman Kodak	.10	.091	(.004)	0.57	(1.8)	(1.0) to 0.9
34	G. D. Searle	–	.103	(.011)	0.79	1.0	1.0 to 0.8
35	Purolator	–	.129	(.040)	0.67	(1.1)	(1.0) to 0.5**
36	Quaker State Oil Refining	–	.129	(.064)	0.73	(1.2)	(1.0) to 0.3**
37	Panhandle Eastern	–	.090	(.085)	0.62	0.5	1.0 to 0.1

*See Footnote 71.

**See Footnote 71.

†Data drawn from Table 1-10. It should be noted that the data in Columns (2) through (7) do not reflect the removal of the redundant cash noted in Column (1). The Column (1) data are presented solely to indicate the extent of redundant capital in individual high-ROE firms.

‡Reinvestment rate is defined as the average annual increase in the firm's common equity divided by its average annual profit after taxes.

§Data drawn from Table 1-11.

||The *left* side of this range assumes that the firm's *real* ROE changes immediately to the level of its *real* cost of equity capital and remains there in the future. The *right* side of this range assumes that the firm's real ROE remains at variance from its real cost of equity capital as indicated in Column (3) for the next 30 years, and that the firm's reinvestment rate remains at the level indicated in Column (4) for the next 30 years.

#A deduction for unfulfilled subscription liabilities would reduce this redundant cash significantly

unachievable[68]) investor expectations. A number of factors may be contributing to this phenomenon. These include:

1. The depressing effect of redundant cash[69] upon reported returns on equity as noted in the cases of IBM and Avon Products (Table 1–15). The relative importance of redundant cash (in relation to reported net worth) is indicated for each firm in Column 1 of Table 1–16;
2. The anticipation that the spread separating real returns from equity capital costs will, for some of these firms, improve in the future over what they had been in 1976;[70]
3. The anticipation that reinvestment opportunities in relation to net profits beyond 1976 will accelerate above the levels experienced during the decade 1966–75; and
4. The possibility that market valuations for some of these high-ROE firms have simply become detached, at least temporarily, from economic reality.[71]

This last point is a particularly important one. It suggests that significant imperfections[72] in the U.S. equity markets may well exist in the valuation of individual securities such as those listed in Table 1–16. These

[68] An example of essentially unachievable implied investor expectations is described in the Avon Products, Inc., example in Chapter 3.

[69] The impact of this phenomenon would be to *decrease* the projected market-value/adjusted-book-value ratio. Partially offsetting this effect, however, is the fact that reinvestment rates (Column 4 of Table 1–16) are *overstated* somewhat in comparison to what they would have been absent the accumulation of redundant cash. An overstated reinvestment rate for a high-return firm tends to overstate the projected market-value/adjusted-book-value ratio.

[70] Twelve of the sixteen firms whose adjusted-market-value/book-value ratios fell above the projected upper boundary value in Columns 6 and 7 of Table 1–16, for example, earned a lower nominal ROE in 1976 than their average nominal ROE in the prior decade (Column 5 versus Column 4, Table 1–10). If the average nominal ROE achieved by these firms during the prior decade were substituted for the nominal ROE achieved in 1976, the adjusted-market-value/book-value ratio for six of these firms would then fall below the projected upper boundary value in Columns 6 and 7 of Table 1–16.

[71] As noted in Footnote 54, errors in estimating the β for each firm can introduce significant error in the calculation of a firm's cost of equity capital, and thus in the value appearing in Column 7, Table 1–16. If uncertainty surrounding the *true* value of β were the only uncertainty in determining the Column 7 value, then we could say (with a minimum of 90 percent confidence in each case) that the firms with starred data in Column 7, Table 1–16 were "overvalued." For the six firms with double stars, we could make this statement with a minimum of 95 percent confidence in each case.

[72] In a 1963 article on share valuation, Burton Malkiel reached the equivalent conclusion. Malkiel's valuation model was similar in concept to the model presented in Chapter 1, but the Malkiel model focused on the rationality of a firm's price/earnings ratio based on a maximum five-year extrapolation of growth performance. See Burton G. Malkiel, "Equity Yields, Growth, and the Structure of Share Prices," *The American Economic Review*, December 1963.

are securities that are traded broadly and deeply by seemingly sophisticated investors. The possibility that such market imperfections may exist presents significant opportunities for *value transfers*, a subject that will be explored in greater detail in Chapters 2, 3, 7, and 9.

APPENDIX

CAPITALIZING AND AMORTIZING ADVERTISING EXPENDITURES

The accounting requirement that advertising and research and development expenditures be immediately expensed can lead to an understatement of a firm's total profits, while at the same time producing an overstatement of a firm's overall profitability (ROE). Avon Products, for example, increased its media advertising expenditures very significantly in 1976 (Lines 8–13, Column 1, Table 1A–1). If the economic benefits of Avon's advertising outlays were assumed to decay over six years at the rates indicated in Lines 1–6, Column 1, Table 1A–1, then in 1976 the firm experienced an economic amortization of its advertising assets equal to $20.1 million (Line 14, Column 3, Table 1A–1). This $20.1 million figure represents the *economic* cost of advertising for the firm in 1976. The GAAP *accounting* cost of advertising for the firm in 1976 was, however, $29.3 million.

Given our assumptions, Avon's 1976 pretax profit, according to the *economic* definition of profit, should have been $9.2 million higher than the firm's pretax profit calculated according to the *GAAP* definition of profit. The firm's after-tax profit (applying Avon's 1976 tax rate of 50.4 percent per Line 3, Table 1A–3) should have been $9.2 \times (1.0 - 0.504)$ = $4.6 million higher according to the *economic* definition of profit.

This profit increase is only part of the story, however. Had Avon capitalized its media advertising expenditures each year, the unamortized balance of the firm's advertising asset at December 31, 1976, would have been $36.2 million (Line 14, Column 2, Table 1A–1). This figure is determined by multiplying the numbers in Lines 1–6, Column 2, by the numbers in Lines 8–13, Column 1, and summing the results (Lines 8–13, Column 2) to arrive at the $36.2 million total. Were this advertising asset to appear on Avon's balance sheet, there would obviously have to be some offsetting liabilities. Since reported pretax profits would have been increased by $36.2 million over the period 1971–76 as a result of capitalizing advertising expenditures, after-tax profits would also have been increased. If we again apply Avon's 1976 tax rate of 50.4 percent, Avon's retained earnings at December 31, 1976, would have risen by $36.2 (1.0 — 0.504), or $18.0 million. Avon's tax liability would have risen by the bal-

TABLE 1A-1

Adjustments to Avon Products' costs and assets at December 31, 1976 (caused by capitalizing advertising expenditures and amortizing these expenditures over six years using the double declining balance method of amortization)

Line	Year	(1) Amortization rate for advertising expenditures (6-year DDB)	(2) Outstanding balance of advertising expenditures made in year 1 that remains unamortized at the end of each year
1	1	0.333	0.667
2	2	0.222	0.445
3	3	0.148	0.297
4	4	0.099	0.198
5	5	0.066	0.132
6	6	0.132	0
7	Total	1.000	

	Year	Actual advertising expenditures in year ($ millions)	Unamortized advertising asset at 12/31/76 remaining from advertising expenditures in year ($ millions)	Amortization of advertising asset in year 1976 from advertising program in year ($ millions)
8	1976	29.3	19.5	9.8
9	1975	16.8	7.5	3.7
10	1974	12.7	3.8	1.9
11	1973	15.6	3.1	1.5
12	1972	17.1	2.3	1.1
13	1971	16.2	0.0	2.1
14	Total		(36.2)	20.1
15	Actual advertising expenditures in 1976	29.3		
16	Calculated advertising expense in 1976	20.1		
17	Cost improvement impact in 1976	(9.2)		

Note: Accountants will recognize that this amortization schedule does not follow the double declining balance method during the last half of the six year period. The impact of this difference is negligible. The method used here is that proposed in Wolfe, H. W., "Advertising, Profits, and Corporate Taxes," *Review of Economics and Statistics*, November 1969.

TABLE 1A-2

Adjustments to Avon Products' costs and assets at December 31, 1976 (caused by capitalizing R&D expenditures and amortizing these expenditures over ten years using the straight-line method of amortization)

Line	Year	(1) Amortization rate for R&D expenditures (10 year SLD)	(2) Outstanding balance of R&D expenditures made in year 1 that remains unamortized at the end of each year
1	1	0.100	0.90
2	2	0.100	0.80
3	3	0.100	0.70
4	4	0.100	0.60
5	5	0.100	0.50
6	6	0.100	0.40
7	7	0.100	0.30
8	8	0.100	0.20
9	9	0.100	0.10
10	10	0.100	0
11		1.000	

	Year	Actual R&D expenditure in year ($ millions)	Unamortized R&D asset at 12/31/76 remaining from R&D expenditure in year ($ millions)	Amortization of R&D asset in year 1976 from R&D program in year ($ millions)
12	1976	13.5	12.2	1.4
13	1975	12.8	10.2	1.3
14	1974	14.6	10.2	1.5
15	1973	18.3	11.0	1.8
16	1972	14.4	7.2	1.4
17	1971	11.7	4.7	1.2
18	1970	9.6	2.9	1.0
19	1969	8.5e	1.7	0.9
20	1968	7.3e	0.7	0.7
21	1967	6.3e	0	0.6
22	Total		(60.8)	11.8
23	Actual R&D expenditure in 1976	13.5		
24	Calculated R&D expense in 1976	11.8		
25	Cost improvement impact in 1976	(1.7)		

ance of $36.2 — $18.0, or $18.2 million. Since these taxes would be reported only to shareholders, and not actually paid to the Internal Revenue Service[73] for the years 1971–76, this $18.2 million figure would appear as a liability entitled "deferred taxes."

The bookkeeping adjustments needed to capitalize and then amortize Avon's advertising expenditures have the net result of boosting Avon's 1976 profits by $4.6 million and increasing the firm's net worth at December 31, 1976, by $18.0 million. When these adjustments are made to profits and net worth as calculated according to GAAP, Avon's 1976 ROE declines from 28.6 percent to 28.5 percent as shown in Table 1A–3 (Lines 14–15, 18–19, and 24–25). While this decline is not particularly noteworthy in the Avon Products example, the effect can be quite substantial for a firm with high (in relation to net worth) and rapidly growing advertising expenditures. Firms marketing branded consumer products often fall into this category. In the case of Dr. Pepper, for example, this adjustment would reduce the firm's 1976 reported ROE from 31.3 percent to 27.8 percent.

CAPITALIZING AND AMORTIZING R&D EXPENDITURES

Research and development expenditures are quite analogous to advertising expenditures. The economic benefits of R&D expenditures almost certainly appear more slowly however, and the benefits may last somewhat longer. This is reflected in Lines 1–10, Column 1, of Table 1A–2. Here we assume that the economic benefits of R&D expenditures extend over ten years and that the R&D asset is amortized according to a straight-line pattern. Given Avon's past pattern of R&D expenditures, this set of assumptions produces:

a. a cost reduction for 1976 equal to $1.7 million when an *economic* definition of R&D cost is used in place of the *GAAP* definition (Line 25, Column 1, Table 1A–2)

b. a capitalized R&D asset at December 31, 1976, equal to $60.8 million when an *economic* definition of R&D cost is used in place of the *GAAP* definition (Line 22, Column 2, Table 1A–2).

When these cost and asset items are tax-effected and work their way into Avon's financial statements, the firm's ROE in 1976 declines from 28.5 percent to 27.3 percent as shown in Table 1A–3 (Lines 15–16, 19–20, and 25–26).

Again (as was the case in the advertising example) the impact of capitalizing and then amortizing R&D expenditures is not particularly profound in the Avon situation. The impact is far greater for firms with

[73] It is assumed that Avon would continue to expense advertising expenditures for tax purposes as permitted by IRS regulation.

TABLE 1A-3

Calculation of the adjustments to Avon Products' profit/common-equity ratio (caused by (1) capitalizing and amortizing advertising, (2) capitalizing and amortizing R&D, (3) replacement cost accounting for inventory and plant and equipment)

Line		1976 ($ million)
1	Profit before taxes	339.4
2	Income taxes	171.0
3	Income tax rate	0.504
4	Profit after taxes	168.4
5	Preferred dividends	0.0
6	Profit after taxes available for common stock	168.4
7	Change in costs—Advertising adjustment (Line 17, Column 1, Table 1A-1)	(9.2)
8	Change in costs—R&D adjustment (Line 25, Column 1, Table 1A-2)	(1.7)
9	Change in costs—Replacement cost of goods sold (from Avon's 10K Report to the SEC dated 12/31/76)	21.6
10	Change in costs—Replacement cost depreciation* (from Avon's 10K Report to the SEC dated 12/31/76)	8.2
11	Tax-effected change in profits after tax from:—Advertising	4.6
12	Tax-effected change in profits after tax from:—R&D	0.8
13	Tax-effected change in profits after tax from:—Replacement cost of goods sold and replacement cost depreciation†	(14.8)
14	Profit after taxes available for common stock (historical reporting)	168.4
15	PAT to common—Adjusted for advertising (Line 14 + Line 11)	173.0
16	PAT to common—Adjusted for advertising, R&D (Line 15 + Line 12)	173.8
17	PAT to common—Adjusted for advertising, R&D, replacement cost of goods and depreciation (Line 16 + Line 13)	159.0
18	Common equity (historical reporting)	589.4
19	Common equity (adjusted for advertising: equal to line 18 + (1 – tax rate) (Line 14, Column 2, Table 1A-1)	607.4
20	Common equity (adjusted for advertising, R&D: equal to Line 19 + (1 – tax rate) (Line 22, Column 2, Table 1A-2)	637.6
21	Increase in net plant (replacement cost)	172.8
22	Increase in inventory (replacement cost)	30.7
23	Common equity (adjusted for advertising, R&D, net plant and inventory: Equal to Line 20 + Line 21 + Line 22)	841.1
24	Profit after tax/common equity (historical reporting)	0.286
25	Profit after tax/common equity (adjusted for advertising)	0.285
26	Profit after tax/common equity (adjusted for advertising, R&D)	0.273
27	Profit after tax/common equity (adjusted for advertising, R&D, net plant and inventory)	0.189

*Depreciation other than that included in cost of goods sold.

†Under standard accounting conventions, no tax benefits would be associated with the increased level of costs resulting from the application of replacement cost accounting to existing assets since such benefits would not, in fact, be received from the IRS. On new investments, however, tax benefits would be realized. Since new investment is often more critical to the valuation of the equity of high-ROE firms than old investments (Table 1-3), for our purposes it is reasonable to impute a tax impact into the calculation.

large (in relation to net worth) and rapidly growing R&D expenditures. Pharmaceutical firms generally fall into this category. In the case of Merck & Co., for example, this adjustment would reduce the firm's 1976 ROE from 22.6 percent to 20.5 percent.

ROE VERSUS TRUE (*DCF*) RETURNS

It is possible to make adjustments such as those indicated above to GAAP profitability calculations in order to bring them more closely into line with an economic notion of profitability. Nevertheless, some problems inherent in the measurement system still remain. An ROE calculation, no matter how carefully adjusted, does not *necessarily* equal the true yield (measured on a DFC basis) produced by the cash flows properly allocable to a firm's equity capital. Solomon has demonstrated this phenomenon with a series of relatively simple examples.[74] Stauffer has developed the issues in considerably more analytic detail.[75] In comparing GAAP-calculated ROEs with his own true discounted-cash-flow (DCF) rates of return, Stauffer notes that ". . . the magnitude of these discrepancies is small for most industries other than pharmaceuticals, oil producing companies, and a few other 'discovery intensive' industries."[76] In the pharmaceutical industry (the industry with the widest discrepancies) Stauffer finds a divergence between GAAP and true discounted cash flow returns to the firm's equity investment as indicated in the table below.[77]

	GAAP ROE	True DCF ROE	Difference (percentage points)
Firm A	17.5%	15.0%	2.5
Firm B	20.1%	16.4%	3.7
Firm C	9.8%	12.1%	(2.3)
Firm D	29.4%	21.2%	8.2
Firm E	20.4%	16.3%	4.1
Firm F	13.3%	13.1%	0.2

In Table 1–10 we are comparing a true discounted-cash-flow concept (the cost of equity capital in Column 2) against an accounting measure of returns on a firm's equity capital (Columns 4, 5, 6, and 7). Happily in most of our Table 1–10 examples the spread between equity capital costs (both unadjusted and adjusted) is sufficiently large so that the measurement error is not critical.

[74] Ezra Solomon, "Return on Investment: The Relation of Book Yield to True Yield," in *Research in Accounting Measurement*, American Accounting Association, 1966.

[75] Thomas R. Stauffer, "The Measurement of Corporate Rates of Return: A Generalized Formulation," *Bell Journal of Economics and Management Science*, Autumn 1971; and Thomas R. Stauffer, "Profitability Measures in the Pharmaceutical Industry," in Robert B. Helms, *Drug Development and Marketing*, The American Enterprise Institute for Public Policy Research, 1975.

[76] Ibid., pp. 112–13.

[77] Ibid., p. 110.

ADJUSTING FOR INFLATION—*REAL* VERSUS *NOMINAL* EQUITY COSTS AND *ROE*s

Column 6 of Table 1–10 adjusts historically reported ROEs to reflect the effects of capitalizing and then amortizing advertising and research and development expenditures. One final adjustment remains. That is to incorporate into the data the impact of inflation. Numerous articles have appeared in recent years that describe the adjustments that must be made to a firm's income statement and balance sheet in order to account correctly for the impact of inflation. Three broad approaches have been described. These are (1) current-replacement-value accounting (CRVA), (2) general-price-level accounting (GPLA), and (3) specific-and-general-price-level accounting (SPLA).[78]

The critical issue in choosing a specific method for capturing the impact of inflation relates to the use to which the adjusted data will be put. Our concern here is largely with the value-creation potential of a firm's *future* investment opportunities. Thus we need to look forward to estimate future profitability. Accordingly, in our definition of net profits we will ignore holding gains or losses (realized and unrealized) from both tangible[79] and net monetary assets. Our definition of profit is quite close to that described by Davidson as "sustainable income."[80] There is one difference between Davidson's definition of "sustainable income" and our own definition of inflation-adjusted income as outlined in Table 1A–3. On *new* investment we would gain the tax benefits associated with the higher level of costs usually reflected in current-replacement-value accounting. For the investments already in place, however, we would not receive any tax benefits from the utilization of CRVA, as Davidson's definition of "sustainable income" properly reflects. Given the future orientation of our data need, Table 1A–3 reflects a definition of profit that incorporates in the calculations tax benefits from CRVA.

As with advertising and R&D expenditures, we also need to examine the impact of inflation accounting (of the CRVA variety described above)

[78] Richard F. Vancil, "Inflation Accounting," p. 59.

[79] In this context "tangible" refers to inventory and property, plant and equipment.

[80] Sidney Davidson and Roman L. Weil, "Inflation Accounting," p. 59. According to Davidson (pages 58–60 of the article noted), "changes in this number over time probably measure the growth capability of the firm better than the growth in any other income figure. This is the income number that financial analysts probably should pay most attention to in assessing growth prospects for the company, hence in assessing potential for appreciation of the firm's shares in stock markets."

on the reported profitability of Avon Products. As shown in Line 9, Table 1A–3, the December 31, 1976, replacement cost of products sold by Avon in 1976 was $21.6 million higher than that reported under GAAP accounting. Depreciation based on CRVA was $8.2 million higher than that reported under GAAP accounting (Line 10, Table 1A–3). The value of net plant was increased by $172.8 million through the use of CRVA (Line 21, Table 1A–3) and inventories were revalued upward by $30.7 million through the use of CRVA (Line 22, Table 1A–3).

As Avon looks forward to future investments, the net effect of CRVA on the firm is to reduce the *real* (inflation-adjusted) ROE to 18.9 percent (Line 27, Table 1A–3). When this figure is compared to Avon's 11.0 percent *real* cost of equity capital, it is clear that Avon enjoys about a 7.9 percentage point spread between its equity cost and the returns on equity (projected forward) of its past investments (Line 9, Column 10, Table 1–10).

PART TWO

Processes by which shareholder values are created, transferred, and destroyed

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 37: On page 31, line 13 of his testimony, Dr. Woolridge provides his DCF model as K=D/P + G. Please provide the derivation for this model as it is opposed to the traditional model of K= D1/Po + g.

RESPONSE: See discussion below, prepared in response to this question.

DCF Dividend Yield Requirement

The following demonstrates the impact of applying an equity cost rate derived from the Discounted Cash Flow (DCF) model to a forecasted, adjusted, or end-of-test-year rate base. This is demonstrated using a simple numerical example.

Consider a firm with no debt and a market-to-book ratio of 1.0. This hypothetical firm has a book value and market price equal to $20 per share. The firm's most recent quarterly dividend was $.50 which results in a spot dividend yield of 10%. The shareholders anticipate that book value, market value, earnings per share, and dividends per share are to grow at 5% per year. Thus, over the next year investors anticipate receiving:

$$E(R) = D_1+D_2+D_3+D_4 + 5\% * (\$20)$$

where:

E(R) = shareholders' expected return

D_N = quarterly dividends which are expected to grow quarterly and at an annual rate of 5%.

Therefore,

D_t=

$\$.50(1+G)'/4$

where:

Do=$.50, D_1=$.506, D_2=$.512, D_3=$.519, and D_4=$.525.

Thus, shareholders expect to receive four quarterly dividends (all of which are greater than the recent $.50 dividend) and an increase in market value from $20 to $21 (which reflects 5% annual growth). If the firm is able to increase book value by $1 and meet all four dividend payments, then the shareholders will earn the expected rate of return. The key question is what rate of return, k, must the firm earn on year-end book value to meet the shareholders' expectations. This value of k, detailed below, is the correct cost of common equity to be employed in the case.

Firm's earnings = shareholders' expectations

k (year-end book value) = dividends + growth

k ($21.00) = $.506 + $.512 + $.519 + $.525 +5% * ($20.00)

k = (($.506 + $.512 + $.519 + $.525)/$21.00) + ($1.00/$21.00)

k = $2.062/$21 + $1.00/$21.00 k = 9.82% + 4.76% = 14.58%

The dividend yield on the left, 9.82%, is less than 10% which is the spot dividend yield. In addition, the growth rate of 4.76% works out to be less than the 5% expected growth rate which is employed in the DCF model.

To summarize, this example demonstrates that both the spot dividend yield and the expected growth rate in the DCF model are overstated, with a resulting overstated cost of equity capital estimate, when the cost rate of equity capital is applied to a forecasted, adjusted, or end-of-test-year rate base of a utility. Therefore, when the overall fair rate of return is applied to rate base that includes future adjustments, the dividend yield and the expected growth rate are overstated.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 38: On page 31, line 10 of Dr. Woolridge's testimony, Dr. Woolridge states he adjusts the expected growth rate by ½. Please provide the derivation and any citations that support this adjustment as it is opposed to the traditional model of K = D1/Po + g.

RESPONSE: See response to Atmos DR No. 37.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 39: It appears Dr. Woolridge has employed both historical and forecasted growth rates in determining his expected growth rate in his DCF analyses; is that correct? If so, please provide all citations of generally accepted academic texts that indicate historical growth is an appropriate measure of expected growth for use in DCF analyses.

RESPONSE: Dr. Woolridge knows of no theoretical or empirical studies that have been performed on the determinants of investors expected growth rates.

Dr. Woolridge has used both historical and forecasted growth rates in determining an expected DCF growth rate for two reasons:

1. Historical data on earnings and dividends and other financial variables are provided to investors by virtually all investment information sources.
2. As discussed in Dr. Woolridge's testimony, there is a well-known upward bias in the forecasted EPS growth rates of Wall Street analysts. Hence, simply relying on these forecasts would tend to overstate expected growth rate expectations.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 40: Does Dr. Woolridge agree that analysts consider historical performance when determining their forecasts of expected growth? Please provide any studies Dr. Woolridge has and any citation explaining why it is not redundant to further explicitly rely on historical performance to determine expected growth.

RESPONSE: Dr. Woolridge agrees that analysts know of historic performance when they make their EPS growth rate projections. However, in the DCF model, we are concerned with investors' growth rate expectations. As noted in response to Atmos 39, historical data on earnings and dividends and other financial variables are provided to investors by virtually all investment information sources. In addition, there is the well-known upward bias in analysts' forecasted EPS growth rates. For these reasons, it is Dr. Woolridge's opinion the historical growth rate performance must be explicitly considered, and there is no issue with redundancy because analysts know of historical performance when making their EPS growth rate projections.

Response of the Attorney General to
Atmos Energy's Requests for Information to the Attorney General
Case No. 2006-00464

Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 41: On page 55, line 1 of his testimony, Dr. Woolridge states, "Hence it is unlikely that investors are going to experience high stock market returns due to higher P/E ratios and lower interest rates."

(A) When did Dr. Woolridge first include this statement in his cost of capital testimony before a regulatory agency? Please provide the case citation, including the regulatory agency and case number.

(B) Since Dr. Woolridge first presented that statement in testimony, have investors experienced high stock market returns?

(C) Please provide all studies and citations that support the statement that "investors expect stock market returns of only 7.50%" given recent and historical returns.

(D) Please provide all studies and citations that support the statement that "investors expect stock market returns of only 7.50%" is valid today.

RESPONSE:

a. To the best of Dr. Woolridge's knowledge, the first time such a statement was made in his testimony was in the Kentucky-American Water Company case (Case No. 2004-00103).

b. The context of the statement is long-term stock returns. According to Ibbotson Associates, the stock market returns in 2005 and 2006 were 4.89% and 15.79% which, in Dr. Woolridge's opinion, reflect one year with a relatively low return and one year with a relatively high return.

c. The statement reflects Dr. Woolridge's opinion and is supported by the CFO and Financial Forecaster surveys cited in Dr. Woolridge's testimony. In addition, it is reflected in a recent Wall Street Journal op-ed article by well-known economist Burton Malkiel. This article is attached.

d. See response to Atmos 41 (c).

Irrational Complacency?

By BURTON G. MALKIEL
April 30, 2007; Page A15

Despite news that the estimated first quarter GDP growth rate fell to 1.3%, the Dow Jones Industrial Average closed last Friday at 13,121, a record high. The broader capitalization-weighted S&P 500 stock index, covering 80% of the market, traded just below its historical high. Only the Nasdaq index is well below its Internet bubble high. Is the stock market correctly pricing strong growth in corporate profits and present economic stability? Or are we being irrationally complacent in the face of substantial risks to the market and the world economy?

Despairing of economists who offered "on the one hand, on the other hand" advice, President Harry S. Truman yearned for a one-handed economist who could offer clear predictions about the future. I fail Truman's test; neither I nor anyone else knows the proper level of securities prices, and we can never be sure if today's stock prices are reasonable measures of uncertain future events. We can, however, evenhandedly assess current valuations in financial markets and the prospects for likely future long-run returns.

Ken Fallin

The facts are that stock prices are high not only in the U.S. but also in the world's developed and emerging markets. We can estimate long-run annual equity returns by adding today's dividend yield (just under 2%) to the likely future growth rate of earnings and dividends (perhaps 5.5%). This calculation suggests that stocks are priced to produce about 7.5% future returns, well below the 10.5% annual returns achieved from 1926 through 2006. Treasury bond yields (at just under 4.75%) are historically low, as is core inflation, running close to 2%. The prospective equity risk premium (the amount by which stock returns are likely to exceed bond returns) of about two and three-quarter percentage points appears to be well below the five percentage point equity risk premium earned since 1926. We are not being paid as much to take on the risk of holding stocks.

Not only are equity premiums low; so are bond risk premiums. The spread between high-yield bonds (more pejoratively called junk bonds) and safe U.S. Treasuries is just about at an all-time low. Sovereign

emerging-market debt yields are not much more than two percentage points over U.S. government debt. The VIX index, measuring expected U.S. stock market volatility, is extraordinarily low. These measures imply that financial markets are very relaxed about risk and that the world is a very stable place.

There are reasons to argue that world economic stability has in fact increased. We have not endured a world war in over 60 years. The Cold War ended peacefully, and increased trade has made the world's economies increasingly interdependent. Free market economies have blossomed throughout the world. As money manager Rex Sinquefield reminds us, the only people today who don't believe that markets work are the Cubans and the North Koreans (and some "active" portfolio managers). Economic activity in the U.S. has become increasingly stable. Depressions have been avoided, recessions have been mild, earnings variability has moderated and inflation has been contained. Moreover, despite the rise in the stock market, and unlike the situation at the 2000 peak, price-earnings multiples in the mid to high teens are not far from their long-run average values.

But could the stock market be underestimating geopolitical risks today? We are all painfully aware of the extraordinarily difficult situation in the Middle East. The conflicts between Sunnis and Shiites as well as the violence of Hezbollah and Hamas threaten to destabilize the entire region. Iran poses a grave threat to Israel and seems determined to become a nuclear power. Unrest in the region has a direct impact on oil prices.

Potential problems in energy-vulnerable Europe seem more remote to most observers. But Europe has a large Muslim population that is experiencing limited social integration, high unemployment and radical Islamist influence. Beyond that, with slow-growing economic activity and rapidly aging populations, European governments will be hard put to fulfill their generous social welfare promises. Could it be, paraphrasing President Franklin D. Roosevelt, that the only thing we have to fear is lack of fear itself?

Moreover, economic imbalances in the U.S. could trip us up. According to Yale University economist Robert Shiller, inflation- and quality-adjusted home prices are still more than 50% higher than their averages throughout most of the 20th century. These data suggest that the real-estate correction could have much further to go. Measured savings rates in the U.S. are essentially zero, and the trade deficit is running at 7% of GDP.

The late economist Herbert Stein used to say, If something can't go on forever, it won't. Many observers would also argue that the U.S. income distribution may be unsustainable. The share of after-tax corporate profits (increasingly influenced by the foreign profits of multinational corporations) relative to GDP is almost 9%, compared with an

average of about 5% during the 1970s and 1980s. Wages and salaries as a percent of GDP have fallen from 53% to under 46% since 1970.

Corporate profits have shown strong tendencies to revert to the mean in the past and could do so in the future. Inflation-adjusted earnings of the S&P 500 stocks showed zero growth from 1900 through 1947 and again from 1967 through 1987. If we enter such a period in the future, today's moderate price-earnings multiples may look far less attractive.

As a believer in efficient markets, I hesitate to conclude that our markets are being irrationally complacent. I believe that markets are high and risk spreads compressed because of massive increases in world liquidity. A world awash in dollar-based purchasing power has helped to keep our interest rates low and the spreads on risk assets tight. It has encouraged large flows of money into private equity funds that are privatizing (and leveraging) some of the "undervalued" companies in the market, leaving less attractive firms available for public investors. Flows of money have also continued into hedge funds where leverage is high and where "accidents" such as the Amaranth collapse are always possible. In our highly leveraged, narrow-spread markets, shocks to the system -- be they economic or geopolitical -- can have large destabilizing effects.

So what should investors do as the Dow rises to new highs? Should they "sell in May and go away," as one stock-market bromide suggests? As a student of markets for over 50 years, I am convinced that attempting to time the market is a fool's game. But new highs in the market should induce investors to review their asset allocations. If the rising stock market has pushed your allocation of equities well above the level consistent with your risk tolerances, it makes sense to consider rebalancing. Rebalancing is an excellent strategy to constrain your investment risk in a very uncertain world.

Despite the risks and potential problems I have outlined, I remain a cautious optimist. I don't think anyone will make money in the long run betting against the inherent strength of the U.S. economy. I expect that the economy will adjust eventually to whatever imbalances exist and that the nations of the world will ultimately find peaceful solutions to the seemingly intractable problems that continue to bedevil us.

Having disclosed my optimistic bias, however, I can't help remembering the story of two rabbis at the time of the creation. One rabbi asked the other whether he was optimistic or pessimistic. "I'm optimistic," the second rabbi replied. "Then why are you frowning?" the first rabbi asked. The answer: "Because I'm not sure my optimism is

justified."

Mr. Malkiel is a professor of economics at Princeton University and the author of "A Random Walk Down Wall Street," 9th ed. (W.W. Norton, 2007).

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Witness Responsible:
DR. J. RANDALL WOOLRIDGE

QUESTION 42: On page 63, line 1 of his testimony, Dr. Woolridge evaluates the reasonableness of his recommendation using market-to-book ratios. Has Dr. Woolridge performed any analysis to determine the impact that non-regulated assets or non-regulated earnings have on a utilities' market-to-book ratios? If yes, please provide details of that analysis.

RESPONSE: Dr. Woolridge has not evaluated the impact of non-regulated earnings on utility's market-to-book ratios. However, the utilities in question are predominantly regulated public utilities providing gas service and are not predominantly in some other business.

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Witness Responsible:
DR. J. RANDALL WOOLRIDGE

Question 43: Please provide the coverage ratios for Atmos Energy using Dr. Woolridge's recommendation and the coverage ratios of his comparable companies.

RESPONSE: Dr. Woolridge has not used coverage ratios in supporting his recommendation and has not made the calculation.

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In regard to the Testimony of Charles W. King

Witness Responsible:
CHARLES W. KING

Question 44. Please provide copies of all workpapers used in preparation of testimony by Mr. King.

RESPONSE: There are no workpapers beyond Exhibit CWK-1.

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Witness Responsible:
CHARLES W. KING

Question 45: Please provide copies of all testimonies filed by Mr. King for the past three years.

RESPONSE: Mr. King's appearances are listed in Attachment B to his testimony and are all in the public record. Most of his recent testimonies can be found on the web sites of the respective commissions.

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Witness Responsible:
CHARLES W. KING

Question 46: Given the objections stated by the witness to the 45 day review period, how does the witness reconcile the fact that new rates may go into effect in Mississippi under a similar mechanism after 55 days?

RESPONSE: Mr. King has no experience with the Mississippi program. However, he does note that the Mississippi plan has a 100 basis point "deadband" around a benchmark return. This feature may reduce the complexity of the rate review process.

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Witness Responsible:
CHARLES W. KING

Question 47: Is there time period (60 days, 75 days, 90 days etc.) over which the witness would believe a CRS mechanism is feasible?

RESPONSE: Since the witness does not concede that the CRS mechanism is feasible at all, its time period is immaterial.

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Witness Responsible:
CHARLES W. KING

Question 48: Is it Mr. King's position that extensive adversarial proceedings are a necessity in all or almost all rate filings?

RESPONSE: Adversarial proceedings are necessary in all rate filings because the interests of the utility and its ratepayers are adverse. These proceedings do not have to be "extensive" if the parties can find common ground for settlement.

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Witness Responsible:
CHARLES W. KING

Question 49: Does the witness agree that extensive adversarial proceedings result in longer and more expensive regulatory proceedings?

RESPONSE: The term "longer and more expensive" implies a comparison with something else. The witness agrees that extensive adversarial proceedings are longer and more expensive than less extensive adversarial proceedings.

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Witness Responsible:
CHARLES W. KING

Question 50: With reference to page 8, line 14 of Mr. King's testimony, if a retrospective examination of the past year's results does not have to happen in a rate case, what is the purpose of an historical test period (or base period) in a rate case?

RESPONSE: In a conventional rate case, the historical test year is evaluated only to the extent that it conveys information as to the utility's prospective earnings. Typically, the actual return earned during the historical period is not a determinant of the ultimate rate adjustment.

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Witness Responsible:
CHARLES W. KING

Question 51: Would the witness support the proposed CRS if a "dead band" was included in the proposed CRS?

A) Is there any alternative rate recovery mechanism that the witness could support? Please explain.

B) Is there any aspect of Atmos' proposed CRS that the witness believes is feasible?

C) Are there any changes to the proposed CRS that the witness could make that would allow him to support it?

RESPONSE: The witness opposes on principle any rate recovery mechanism that seeks to guarantee the utility its rate of return. The witness concurs with Mr. Henkes' criteria for rate recovery mechanisms:

". . . if reasonable alternative rate mechanisms are proposed that are not skewed in favor of the utility, provide true benefits to the ratepayers, maintain an equitable distribution of risk between the ratepayers and stockholders, and continue to provide true incentives for the utility to operate efficiently and provide safe, reliable and adequate utility service at the lowest possible cost while having an opportunity to earn a reasonable rate of return."

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Witness Responsible:
CHARLES W. KING

Question 52: Is the objection to the CRS based on the variance from "traditional ratemaking" referred to by Mr. Henkes?

A. If yes, what are the assumptions on which "traditional ratemaking" is based?

B. Is it the witness's position that those assumptions have not changed in recent years?

C. Is it the witness's position that the market conditions in the natural gas industry have not changed in recent years?

D. Is it the witness's position that the natural gas market is operating under the same economic conditions that existed 20 years ago?

E. Does the witness recognize any changes in the natural gas industry over the last 20 years? Please explain the answer.

RESPONSE: Yes.

a. The assumptions are those outlined by Mr. Henkes, namely that regulation should function as a substitute for competition, and that regulation should provide the utility with the opportunity, but not a guarantee, to earn its authorized rate of return. Regulation should also convey an incentive for the utility to maximize the efficiency of its operations and to provide the highest quality service.

b. Yes.

c. No.

d. No.

e. Yes. Among the changes are the following:

- Pipelines may no longer own and sell gas;
- End-use customers may purchase gas directly from suppliers rather than from the distribution companies;
- There has been considerable consolidation in the industry;
- Weather normalization adjustments are becoming the norm;
- Interest rates and equity costs are much lower;
- The cost of gas has become highly volatile;
- Gas costs have increased;
- Meters and meter-reading have increased in efficiency;
- Cast iron and bare steel pipes are being replaced.

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Witness Responsible:
CHARLES W. KING

Question 53: Is there a level of reduced customer usage that would warrant an increase in rates to recover that loss of revenue associated with declining usage? Please explain.

RESPONSE: A reduction in customer usage that cannot be offset by productivity improvement and results in the utility not being able to earn its authorized rate of return would justify its filing for rate relief.

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Witness Responsible:
CHARLES W. KING

Question 54: What ability does Atmos Energy have to control declining customer usage?

A. What factors does Mr. King believe cause the decline in customer usage?
B. Of those factors, which are directly affected by gas cost?
C. Of these factors, which does the witness believe are within Atmos Energy's control?
D. How can Atmos Energy recover fixed costs with declining usage without a rate increase?

RESPONSE:

a. Mr. King has not made any formal study of this issue, but it appears that the high cost of gas and the availability of more efficient appliances and better insulation are the principal causes of reduced use per customer.

b. The availability of more efficient appliances and better insulation would probably cause some reduction in per customer usage regardless of the price of gas. The high price of gas may accelerate the adoption of these gas-saving mechanisms.

c. None are within Atmos's control.

d. By improving the efficiency of its operations, as it has done over the past six years, see Henkes response to question 8.

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Witness Responsible:
CHARLES W. KING

Question 55: Is there a limit to any utility's ability to reduce expenses to offset reduced customer usage? Please explain.

RESPONSE: So far, there is no evidence that productivity improvement has run its course. So the answer is no.

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Witness Responsible:
CHARLES W. KING

Question 56: Should the risk of decreased customer usage be entirely on the shareholders? Please explain.

A) If the answer is yes, should the return on equity be adjusted upward to reflect this increased risk? Please explain.

RESPONSE: Yes.

a. The answer depends upon the basis of the rate of return. If the rate of return reflects the risk of other gas distribution companies that also bear the risk of decreasing customer usage, then the return should not be adjusted upward.

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Witness Responsible:
CHARLES W. KING

Question 57: How does the 37.833 percent increase in rates in Mississippi since the Stable Rate Evaluation was implemented in 1992 compare to the rate of inflation from 1992 to the present? Please include a specific reference to changes in the Consumer Price Index during this period.

RESPONSE: The Consumer Price Index has increased from 140.3 to 206.7 since 1992, an increase of 47.3 percent.

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Witness Responsible:
CHARLES W. KING

Question 58: Which of the "risk-reducing" rate mechanisms that Atmos Energy currently has in Kentucky address affects of declining customer usage?

RESPONSE: The Margin Loss Recovery Rider addresses some of the effects of reduced usage.

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Witness Responsible:
CHARLES W. KING

Question 59: Would the witness support a rider mechanism to offset the impact of declining customer usage on Atmos Energy's return? If no, please provide an explanation.

A) If no, how can any utility recover operating costs in a declining usage market?

B) Does the witness believe that customer usage will continue to decline? Please explain.

RESPONSE: The answer is probably no, but the witness would need to know more about the program. There are two objections. First, from the customer's standpoint, such a program makes savings from improved appliance efficiency and insulation self-defeating. For every reduction, there is an offsetting increase in the price of gas. Second, it is desirable to maintain pressure on the utility to continue to search for further improvements in productivity. Too much protection leaves the utility in a cost-plus situation where it loses all incentive to enhance its operational performance.

a. By continuing to pursue cost savings and improved productivity, as it has done for the past six years.

b. Probably.