Request No. AG-4-3 (Electric)

Please provide all workpapers generated by Mr. Aikman in the preparation of this depreciation study.

Response:

Attached are two groups of workpapers.
Electric Plant - pages 1 to 19.
Common Plant - pages 1 to 18.
These are workpapers not provided in other AG Set 4 responses nor any previous responses to AG nor DTE requests.

Person Responsible: James H. Aikman

FITCHBURG GAS & ELECTRIC

DEPRECIATION STUDY INFORMATION REQUEST

Management Applications Consulting, Inc. (MAC)

ELECTRIC PROPERTIES

OUTLINE

1. TRANSMISSION PLANT

A. Substations

1. The purpose of this discussion is to try to identify any circumstances that might cause lives of Transmission substation equipment in the near term future to be different than those of the past 10 to 20 years.

   There are many reasons for the retirement of substation equipment other than the equipment being worn out; the last page of this request is a listing of some of the causes of the retirement of utility plant. Please look it over and keep it in mind when you give us your opinion as to whether you think there will be more or less of your Company's utility plant retired in the next ten years than in the past ten years.

2. If a specific substation is expected to be retired or substantially rebuilt, please identify it and the years of contemplated retirement or rebuild.

Response: The following projects are planned:
Y2002 - Summer Street S/S 69 kV insulator replacements
Y2002 - Summer Street S/S transformer will be rebuilt to add LTC
Y2002 – Flagg Pond S/S preparations for new control house
Y2003 – Flagg Pond S/S control house replacement
Y2003 - Summer Street S/S 15 kV insulator replacements
Y2003 - Summer Street S/S 15 kV insulator replacements

3. When you move a substation transformer, circuit breaker or other large piece of equipment, do you retire the original installation labor and transfer the equipment costs?

Response: Yes.

4. Based upon your experience, are equipment foundations likely be the absolute oldest substation property in service or are they typically retired when the equipment they supported is retired? That is, do

foundations ever or often get reused?

Response: It is agreed that one of the oldest items in a substation would be the foundations. Other items may be the below-grade ground grid, the fence, and the structural steel.
We try to utilize existing foundations for replaced equipment if the foundations are in good condition.

B. Transmission Lines

Often the historic retirement experience does not provide a reliable guide to the future for transmission lines; therefore, we expect engineering judgment may be a predominant factor in the estimation of average lives. For this reason we need knowledgeable input to help us.

1. If any transmission lines portions thereof are scheduled for retirement, rebuild, or voltage upgrade, will you please identify them in such manner that we may approximately quantify the dollars, and please advise when the activity may occur?

Response: There are no immediate plans in our five year budget to do any major transmission line work.

2. Please advise us of any occurrences, development, and factors projected which might be relevant and which could assist us in estimating the average lives, salvage and removal costs.

Response: The general practice in establishing loading limitations for transmission lines does not allow for planned events that cause loss of life. We do not expect that a transmission line will be rebuilt because of loss of physical or electrical integrity (excluding damage as a result of external causes such as weather). Transmission lines are typically rebuilt and retired as a result of system requirements.

Translation: we generally assume that transmission lines "could" last forever. In some cases, they last many years longer than our depreciation schedules would suggest. Replacements are actually driven by load requirements and other factors. Hence, average lives would tend to not be influenced by new technologies or other factors. However, load growth in recent years has been at a fairly rapid pace, and this is likely to continue. This would support continued investment and replacement on a forward going basis to meet system demands.

C. Other

Do you expect Distributed Generation to impact your transmission system within the next 10 to 20 years? If so, what might the impact be upon the Transmission Plant now in service?

Response: We do not have any studies and long range strategies to support an answer one way or the other. However, my opinion would be that DG will not significantly impact our transmission system. Impacts, if any, are expected to be more pronounced on the distribution system.

11. DISTRIBUTION PLANT

A. Overhead Distribution

1. Are 4 kV or lower primary distribution voltages expected to become extinct as higher voltages take over, or will they be contained? How?

Response: 4kV or lower primary distribution voltages are not expected to become extinct. They are, however, likely to be contained, and may shrink in extent over time. The evaluation of whether to increase to a higher voltage or expand the existing lower voltage is performed on a case by case basis; no specific program exists to upgrade system voltages. However, expansion of 4 kV circuitry is generally avoided, new substations at this voltage are not contemplated, and the amount of circuitry is generally shrinking as voltage conversions are completed. All new construction, including 4kV circuitry, is constructed to 15kV.

2. Are there any plans to convert 13 kV to higher distribution voltages? When and over what period of time?

Response: No

3. Are any distribution substations scheduled for retirement or significant rebuild? Identify them and advise when this might occur.

Response: The following projects are planned:
Y2002 – Canton St S/S 4kV transformer retrofill. RETROFIT?
Y2002 – River St S/S transformer replacement
Y2002 – Electric Station equipment removal and retirement
Y2002 – Nockege S/S fence replacement and retired equipment removal
Y2002 – Princeton Rd S/S transformer differential scheme upgrade
Y2003 – West Townsend S/S overvoltage protection modifications
Y2003 – West Fitchburg S/S – Retire and dispose
Y2003 – Nockege S/S 4kV equipment replacements

Y2003 – Canton St S/S 69kV insulator replacements
Y2003 - Wallace Rd S/S15kV insulator replacements
Y2003 - Princeton Rd S/S Distribution circuit reconfiguration
Y2003 – Flagg Pond S/S metering replacements
Y2004 – Nockege S/S 15kV insulator replacements
Y2005 - Canton St S/S 4kV & 15kV structure & equipment replacements
Y2005 – Nockege S/S 15kV breaker replacements
Y2005 – Pleasant St S/S 15kV insulator replacements
Y2005 – Rindge Rd S/S 15kV insulator replacements
Y2005 – Canton St S/S 15kV insulator replacements
Y2005 – Flagg Pond S/S 15kV insulator replacements
Y2006 – Pleasant St S/S 4kV insulator replacements
Y2006 – Canton St S/S 4kV insulator replacements

4. When you move a substation transformer, circuit breaker or other large piece of equipment, do you retire the original installation labor and transfer the equipment costs?

Response: Yes.

5. Based upon your experience, are equipment foundations likely be the absolute oldest substation property in service or are they typically retired when the equipment they supported is retired? That is, do foundations ever or often get reused?

Response: It is agreed that one of the oldest items in a substation would be the foundations. Other items may be the below-grade ground grid, the fence, and the structural steel.
We try to utilize existing foundations for replaced equipment if the foundations are in good condition.

B. Underground Distribution

Is direct burial primary cable still experiencing the same problems (concentric neurtral corrosion and/or treeing) that it was in the 1970's? That is, should we still expect a significantly shorter life from direct buried cable than for cable in conduit?

Response: It is not clear what specific 1970's direct burial primary cable problem is being referenced. We are aware of industry-wide problems with early types of polyethylene cable during the 1960's and 1970's. We have in fact experienced problems with this vintage of cable, but have not necessarily attributed the problems to direct burial. Regardless; all our cable systems have been installed in conduit for many years.

Going forward, we have found that many of the earliest URD systems are approaching the end of their useful life. We expect to see an increase in the number of systems (and cable miles) replaced over the next 10 years. We are in the preliminary stages of studies to quantify the in-service cable of various vintages, and to develop replacement schedules and strategies.

New cross-linked polyethylene (XLP) cable compounds have proven to be more reliable, with better longevity. We have also moved to jacketed cable, which is expected to significantly enhance reliability and longevity. We expect better lifetime performance than earlier cables. However, even these cables are not expected to last longer than 30-40 years. Many of our earliest systems are already approaching this timeframe.

We have been experimenting with silicone injection technologies as a means to address the aging cable issue. We have had moderate success. This may represent the most cost-effective alternative for restoring reliability and longevity to aging cable systems.

C. Technical Developments

1. Do you expect development of fuel cells, solar energy, or other technologies (Distributed Generation) to have an impact on your distribution system? In your opinion, when and how will it impact?

Response: Yes, we expect the development of distributed generation to impact our distribution system in the future. It is unclear when, and how. Photovoltaics and microturbines are just now beginning to show up for interconnections. New Hampshire recently implemented legislation to allow net metering of renewable resources, which improved the economics of these projects. It is expected that these types of interconnections will accelerate over the next 5 years, but will still have a minimal impact on our distribution system.

Beyond 5 years, other technologies, including fuel cells, may become economically and commercially viable. If we see a significant increase in such generation, the distribution system will definitely be impacted, but it is not clear how. There may be a decrease in plant investment needed to serve new load. On the other hand, protection and control systems may become more complicated and it may become necessary to upgrade such systems to accommodate substantial interconnections of DG at the distribution level.

2. Do you know about or have any information concerning new or improved distribution equipment that you have or may yet incorporate into your system, which may affect the service life of similar kinds of equipment you are presently using?

Response: No.

3. Are most street lights already converted to sodium vapor? If not, how far along are you? When will you complete?

Response: Yes.

D. Other Considerations

1. Is any kind of new treatment or maintenance or inspection program in place or scheduled that you expect will prolong the life of wood poles? Explain.

Response: At this time there is no established program. However there is a committee analyzing treatment options to prolong the life of wood poles.

2. Do you have any line transformers repair or rehabilitation program involving substantial numbers of transformers or certain kVA ratings? Details?

Response: No.

3. Are any particular sizes, types or makes of transformers being retired? Details?

Response: No.

4. Are any particular meter makes, models or meters of certain vintage years being retired as a general program? Details?

Response: Yes. Each year we remove 500 meters from the field for testing. Of those 500, any meter that meets the criteria listed below is retired:

a. All 4 dial Westinghouse
b. All Westinghouse D4-S
c. All Westinghouse CA3
d. All Westinghouse CA5
e. All P meters with a mechanical demand register
f. All class 200 meter with a constant
g. All Sangamo meters with E1 demand registers
h. All damaged meters
i. All T meters numbered below 150
j. All PN meters numbered below 2000
k. All W meters numbered below 459

5. Do you have anything like an "automatic retirement" program for meters or transformers? For example, some companies retire any meter and/or transformer of vintage 19xx or older which comes into "the shop" for any reason.

Response: Transformers - No.

Response: Meters – Each year we remove 500 meters from the field for testing. Of those 500, any meter that meets the criteria listed below is retired:

a. All 4 dial Westinghouse
b. All Westinghouse D4-S
c. All Westinghouse CA3
d. All Westinghouse CA5
e. All P meters with a mechanical demand register
f. All class 200 meter with a constant
g. All Sangamo meters with E1 demand registers
h. All damaged meters
i. All T meters numbered below 150
j. All PN meters numbered below 2000
k. All W meters numbered below 459

III. GENERAL PLANT

A. Office and Service Center Buildings

Please identify any that are scheduled for retirement within the next five to ten years. Upon retirement, are any likely to be demolished or are all more likely to be sold? Of those to be sold, is the buyer likely to be really after the building or the site?

B. Office Furniture and Equipment (FERC Account 391) and Communication Equipment (FERC Account 397).

Both these accounts contain a great deal of electronic equipment which is subject to technological obsolescence.

Our primary concern is whether the property accounting mortality history or the past five to fifteen years is likely to representative of the equipment which currently exists.

If you are replacing or are about to replace the SCADA (central or RTU's) equipment, mobile radios and/or base station, we should be advised.

C. All Other General Plant

Please advise us of any recent inventories, any relatively significant equipment retirements and acquisitions, and any changed practices/policies, etc. which might impact upon the life of such equipment, including retirement unit size.

Partial List of Retirement Causes

Civil Works

Urban Renewal
Highway/Street Projects
Sewer/Water Projects
Airport Projects
Lake/River/Canal/Harbor Projects

Technological Improvements

Transformer Load Management

Pole Inspection/Rehabilitation Programs

Increased Incidence of Storm Damage

Lack of Maintenance/Repair Expertise and/or Parts

System Upgrades/Improvements

Voltage Increases

Reconductoring of Lines

Inventory

Change in Retirement Unit Size

Change in Definition (of dollar limit) of Capital vs. Expense

FG&E - Elect. SPR BAL Analysis Summary / Eval

Acct/Band	Rank								
352	2000 BAL $35,529	1997 Sorty 35 S6.0	Prior 40 S4.0	oldest surv. 1965					
	1	2	3	4	5	Avg	Hi	Lo	Distrib.
SPR BAL unwarranted - too little ret. experience No change warranted use 35 S6.0									
353	2000 BAL	$4,557,990	Prior	35 S3.0					
10	55 L2.0	57 L1.5	60 L1.0	58 S0.0	56 S0.5	54.5	70.4	45.8	8 ≤ 49 yr.
C.I.	41.05				40.94				21 ≤ 59
20	52 L3.0	50 S3.0	49 L4.0	48 S4.0	52 S2.0	56.7	77.0	46.0	7 ≤ 49
C.I.	35.3				34.4				18 ≤ 59
30	47 L5.0	47 S5.0	57 R1.5	61 R1.0	60 S0.0	56.0	76.6	45.9	8 ≤ 49
C.I.	32.2	Ret. Ind. are good - excellent			31.0				19 ≤ 59

Rets. of 1991-2000 avg. $61.4K/year vs prior decades avg. of <$10K
Annual adds not so much different, decade vs. decade, Per CPR, oldest surv. equip. is VIN 1965 $185,544 Change in recent ret volume much greater in Acct 362 than 353
∴ BAL shows lower ASL's in 10 yr. band. Equip. in 353 ≈ 362 physically/functionally.
Adjust toward current BAL indications use 42 S5.0 OLDEST SURV. 1965 NOTE

355	2000 Bal = $783,549		Prior	35 S5.0					
10	102 SC	83 R0.5	67 R1.0	78 S-.5	88 L0.0	52.6	101.9	32.3	8 ≤ 39 yr
C.I.	230	R.I. 15 -	17 (Rank 1	-5)	150				15 ≤ 49
20	93 SC	76 R0.5	61 R1.0	72 S-.5	81 L0.0	49.8	93.1	32.3	9 ≤ 39
C.I.	43	R.I. -	16 to 18		31				16 ≤ 49
30	87 SC	72 R0.5	59 R1.0	69 S-.5	51 R1.5	48.9	87.1	32.3	9 ≤ 39
C.I.	21	R.I.	~16 to 20		18				16 ≤ 49

Very spotty & ltd. rets. Total 1969-2000 = $101,279, which is ± 12.9% of 2000 Bal and 1971-2000 ε = $51,150, which is only 6.5% of 2000 Bal.
∴ Questionable reliability. Adjust moderately - very poor RI -
use 40 yr R3.0

356	2000 Bal = $337,905		Prior	40 R2.0					
10	49 SC	43 R0.5	49 L0.0	43 S-.5	38 R1.0	35.8	49.5	29.1	3 ≤ 29
C.I.	37	R.I.	32 to 35		25				21 ≤ 39
20	44 SC	39 R0.5	39 S-.5	44.5 L0.0	35 R1.0	33.7	44.5	29.0	4 ≤ 29
C.I.	16	R.I. 36 to 40			12				24 ≤ 39
30	42 SC	37 R0.5	38 S-.5	34 R1.0	43 L0.0	33.2	42.7	29.0	4 ≤ 29
C.I.	8.7	R.I. 38 to 42			7.5				24 ≤ 39

Similar comments as to 355 RETS. Total 1969-2000 RET. = $74,090 > 20% of Balance
No strong basis to revise
use 40 R2.0

351 Clearing $8,036 Balance Prior 50 yr S5.0
$ date from 1973 $6.6K 1992 $1.4K
$ s/b amortized/recovered over some reasonable period to get them zeroed out - as to net plant
No basis to revise authorized 50
use 50 yr. SQ

Acct/Band	Rank 1	2	3	4	5	AVG.	Hi	Lo	Distr.
361	2000 Balance = $1,281,906 Prior 25 L 1.0								
10	84 L 4.0	80 S 4.0	82 R 4.0	79 L 5.0	85 S 3.0	129	308	77	4 ≤ 79 yr
C.I.	749	R.I.	54 to 81		673				
20	215 L 0.0	206 S -.5	174 L 0.5	296 SC	234 R 0.5	126	296	75	5 ≤ 79
C.I.	297	R.I.	15 to 23		282				
30	283 SC	208 L 0.0	224 R 0.5	198 S -.5	172 R 1.0	123	283	74	6 ≤ 79
C.I.	154	R.I.	16 to 21		149				

Σ Rets. = $22,857 This is <2% of 2000 Balance Only 7 years w/ret.
Bal. Analyses meaningless UNLESS ACCOUNT 361 all goes onto National Register of Historic Places. UNLIKELY.
Per CPR, oldest surviving is VIN 1923, which is age 77.5 @ EOY 2000
If we presume these 1923 $ survive another ± 3 years, to age 80 and assume a "long-tail", low order 'L' curve to fit these parameters, then - low "L"
A 35 yr. L 1.0 has max.* P.L. of about 81 yrs. & is close to our normal max. 20% change in est.

Use 35 yr. L 1.0 * ± 1% surv. @ 233% ASL

Acct/Band	Rank 1	2	3	4	5	AVG.	Hi	Lo	Distr.
362	2000 Balance $9,815,980 Prior study 40 R 4.0 Auth ASL = 35 yr								
10	48 S 5.0	51 L 4.0	48 R 5.0	49 L 5.0	51 S 3.0	64.0	107	47	5 < 49 yr.
C.I.	229	R.I.	~ 100 all		223				13
20	107 SC	89 R 0.5	74 R 1.0	85 S -.5	66 R 1.5	63.3	108	47	5 < 49
C.I.	141	R.I.	37 to 66		128				15 ≤ 59
30	106 SC	88 R 0.5	84 S -.5	73 R 1.0	93 L 0.0	62.4	106	46	7 ≤ 49
C.I.	107	R.I.	38 to 47		90				16 ≤ 59

Note cap. activity: Avg. ret./yr 71-80 = $9K 81-90 = $8K 91-00 = $29K
Avg add/yr. similar: Avg add/yr. = $116K = $30K = $713K
OLDEST SURV. Per CPR = 1923
Per BAL, ASL s/b higher
use 46 S 5.0

Acct/Band	Rank 1	2	3	4	5	AVG.	Hi	Lo	Distr.
364	2000 Balance $9,216,993 prior 40 R 1.5 Auth. 40 yr ASL								
10	70 L 0.0	77 SC	63 S -.5	66 R 0.5	54 S 0.0	48.5	77	36	7 ≤ 39 yr.
C.I.	307	R.I.	59-91		283				16 ≤ 49
20	73 SC	62 R 0.5	35 S 6.0	60 S -.5	67 L 0.0	46.6	73	35	8 ≤ 39
C.I.	62	R.I.	62-100		57				19 ≤ 49
30	35 S 6.0	35 S 5.0	35 R 5.0	36 L 5.0	36 S 4.0	45.3	70	35	9 ≤ 39
C.I.	35	R.I. all = 100 (rank 1-5)			32				19 ≤ 49

Average lives of ≥ 50 years for poles does NOT make sense. Note that one of top 5 ranks in the 20 band looks like all 5 in the 30 band. Note also that growth in rets. ≈ growth in adds., i.e., more "stability." Change in ASL est. unwarranted.

use 40 S 2.0

Acct/ Band	1	2	Rank 3	4	5	AVG	Hi	Lo	D-Trib.
365	2000 Balance $11,231,069			Prior study	40 R4.0	Auth rate		per 35 yr ASL	
10	76 L0.0	84 SC	69 S-.5	71 R0.5	67 L0.5	52.2	84	39	2 ≤ 39 yr.
C.I.	433	R.I.	47 to 66		411				13 ≤ 49 yr.
20	81 SC	68 R0.5	66 S-.5	73 L0.0	59 R1.0	50.7	81	38	4 ≤ 39
C.I.	90	R.I.	49 to 74		79				16 ≤ 49
30	77 SC	66 R0.5	37 S6.0	64 S-.5	38 S5.0	49.2	77	37	5 ≤ 39
C.I.	37	R.I.	52 to 100		35				16 ≤ 49

Similar to Account 364, O.H. wire average lives of 60 to 80 years are NOT reasonable/realistic. Latest EEI stats we have show almost no ASL > 50 for Acct 365; Avg. ASL is 36 yr./Max. is 65 yr./Min. is 3 yr.
40 R4.0 is not a bad choice, based on SPR BAL 41.6 R4.0 is rank 18 in 10 band
40.6 R4.0 is rank 16 in 20 band and 39.5 R4.0 is rank 13 in 30 band
use 40 R4.0

366 2000 Balance $1,022,329 Prior 60 S6.0
Bal. analyses yield ASL of 63 to 369 yr., w/avg. of all 30 band = 129 yr.; 20 band = 134; 30 band = 129 yr. BEST (of rank 1-5) R.I. in 30 band is 14.6; 20 band = 13.6 and in 10 band = 33. Safe to say one should ignore ranks 1-5 in all bands.
Lowest ASL indicated by BAL: 30 band = 63.5 yr.; 20 band = 63.8 yr. & 10 band = 65.5 yr.
BAL results not too surprising as ret. volume has been minimal. Avg. annual ret., 1969-2000 = $596; 1991-2000 = $1,517. Total rets. 1969-2000 = $19,081, which is about 1.9% of 2000 balance. BAL Analyses are NOT reliable.
Stay w/prior 60 S6.0

367	2000 Balance $3,749,141			Prior 40 S5.0					
10	114 L0.0	83 S0.0	97 L0.5	83 L1.0	105 S-.5	73.9	138	53	9 ≤ 59 yr.
C.I.	226	R.I.	36 to 51		220				16 ≤ 69 yr.
20	133 SC	111 L0.0	108 R0.5	101 S-.5	94 L0.5	71.8	133	51	11 ≤ 59
C.I.	134	R.I.	30 to 45		127				16 ≤ 69
30	127 SC	104 R0.5	107 L0.0	97 S-.5	85 R1.0	69.7	127	50	11 ≤ 59
C.I.	64	R.I.	31 to 43		60				16 ≤ 69

Total rets. ≈ 3.6% of 2000 balance, i.e., minimal. Top ranked ASL's are all unreasonable, no question. Lowest of them, the 85 R1.0 means the last bit of the year 2000 capital addition will retire in the year 2170. Not realistic.
EEI stats show average ASL is 35 years.
Makes most sense to leave as is.
use 40 S5.0

Acct/ Band	RANK 1	2	3	4	5	AVG	Hi	Lo	
368	2000 Balance		$7,966,212	Prior	35 S5.0	36.7	51	30	19≤34yr
10	51 SC	49 L0.0	44 L0.5	44 S-.5	45 R0.5	36.7	51	30	26≤49yr
C.I.	56	R.I.	78 to 93		55				15≤35yr.
20	50 SC	48 L0.0	43 S-.5	44 R0.5	43 L0.5	35.9	50	30	20≤39
C.I.	51	R.I.	80 to 94		50				16≤35
30	50 SC	48 L0.0	43 S-.5	44 R0.5	43 L0.5	35.8	50	30	20≤39
C.I.	50.23	R.I.			50.17				16≤35

Add'l ret. volumes/frequency/relationships provide no basis to doubt BAL indications — Adjust est. moderately toward. As % of acct. bal. 1971-2000 = 17.3% 1991-2000 = 9.9%

use 42 R1.0

369	2000 Balance	$3,775,255	Studies 1997	45 R4.0	Authorized	35 S4.0			
10	71 L0.0	56 L1.0	63 L0.5	55 S0.0	64 S-.5	50.5	78	40	16≤49
C.I.	135	R.I.	61-79		127				22≤59 *
20	66 L0.0	71 SC	59 S-.5	61 R0.5	58 L0.5	47.3	71	38	5≤39
C.I.	37	R.I.	56-74		35				19≤49
30	66 SC	62 L0.0	57 R0.5	56 S-.5	56 L0.5	45.4	66	37	8≤39
C.I.	21	R.I.	60-77		19				20≤49

Total rets. in DB only 4.8% of 2000 balance (182,773/3,775,255). Adds on average have been ≈ 20 times the rets., except 1971-1980 where the ratio is 10.9:1.0
Note that the ranks 1-5 are the high end — the minority, per Distr. *
EEI stats show average ASL = 34yr. Our experience is similar AND Given that so few curves have ASL ≥ 50yr., yet history does not support 35yr.
Adjust moderately upward, ala SPRBAL

use 40 S3.0

370	2000 Balance		$3,063,649	Authorized ~~Prior~~ 35 R4.0					
10	51 L2.0	46 S2.0	54 L1.5	58 L1.0	47 L3.0	52.7	80	43	13≤49yr.
C.I.	80	R.I.	76 to 96		79				22≤59
20	56 L1.0	49 L2.0	52 L1.5	48 S1.0	62 L0.5	50.7	75	41	16≤49
C.I.	55	R.I.	70 to 96		53				22≤59
30	55 L1.0	68 L0.0	61 L0.5	53 S0.0	73 SC	49.6	73	41	16≤49
C.I.	38.8	R.I.	55 to 82		37.9				22≤59

ASL of meters should not be increasing — s/b decreasing w/all the attention/activity FGE's avg. annual meter ret. has gone from $8K (1971-1980) to about $21K (1991-2000) and adds have increased even more, $32K to $125K. Oldest meters, per CPR, are VIN 1925, $185 survives. 1936 is first year where continuous surv. begin, i.e., there are survivors in every VIN from 1936 to 2000. Pre 1936 surv. sum to $708.54 [1923 $185 1928 $421 1932 $102]
51 L2.0 Iowa curve says 1923 survivors are 13.1% of 1923 add. and they have ARL @ 2000 of 13.5 years; 1936 survivors are 25.2% of 1936 add. and their ARL is 16.6 years
If we were to accept a 51 year L2.0 Iowa curve as our projection, one can see it is NOT a realistic projection — especially for meters. The 47 to 68 years of the "top 5" are NOT reasonable
AND — NOTE — EEI stats show average ASL Acct 370 = 31yr., so prior est. is conservative by comparison

use 35 R4.0

Acct/ Band	RANK 1	2	3	4	5	AVG	Hi	Lo	
371	2000 Balance $916,692			Prior Study	15 R2.Ø	Oldest surv.		VIN 1965	
10	15 S6.0	15 S5.0	15 R5.0	15 L5.0	15 S4.0	15.9	18.1	14.9	see Hi vs Lo
C.I.	105	83	80	71	63				
20	17 R0.5	17 S-.5	16 R1.0	17 L0.5	16 S0.0	15.8	18.3	14.6	"
C.I.	39	R.I. = 97 to 100			37				
30	18 SC	17 R0.5	17 S-.5	18 L0.0	17 L0.5	15.7	18.2	14.5	"
C.I.	28	R.I. = 95 to 100			26				

Authorized on 10 R3.0

Ret. volumes of 1991-2000 avg $35K/yr. vs 1981-1990 $11K/yr & 1971-1980 $7K/yr., i.e., 66% of the rets. of 1969-2000 occurred in 1991-2000 (adds 43%)

use 15 L5.0

372	2000 Bal. $141,524			Prior study 7 L4.Ø	Oldest surv. 1965				
10	6.7 S6.0	6.7 S5.0	6.7 R5.0	6.7 L5.0	6.7 S4.0	6.5	6.7	6.3	see Hi vs Lo
C.I.	11.9	RI all = 100			11.4				
20	6.7 L4.0	6.7 L5.0	6.7 S3.0	6.7 S4.0	6.6 L3.0	6.6	6.7	6.5	"
C.I.	11.4	R.I. all 100			11.2				
30	6.6 L3.0	6.6 S2.0	6.6 S1.5	6.6 L4.0	6.6 S3.0	6.6	6.6	6.5	"
C.I.	11.9	R.I. all 100			11.2				

372 = Water Heaters

Non-regulated; rental wtr heaters
- wtr heaters -

373	2000 Bal. $1,051,695			Prior study	10 S2.0				
10	22 R3.0	22 R2.5	23 L1.0	22 R2.0	22 S1.0	22.3	24.1	21.1	see Hi vs Lo
C.I.	18.5	R.I. all = 100			18.4				
20	23 S1.0	23 S1.5	23 R2.0	23 R2.5	23 R3.0	23.4	25.6	22.5	"
C.I.	15.2	R.I. = 100 all			15.0				
30	24.0 S0.0	24 L1.0	23.2 S0.5	23 R1.0	25 L0.5	23.1	25.5	21.8	"
C.I.	14.6	R.I. = 100 all			14.3				

SPR Bal does not support prior study estimate; revise a la analyses. And EEI stats show average ASL to be 22 yr. Adjust upward - BUT NOT BY FACTOR of TWO or more. 50% increase is far beyond our normal limits

use 15 L1.0

390 2000 Bal $224 Prior study None

These $ to be transferred to Acct. 391, where they belong.

use same as 391,

Acct/ Band — RANK — FGE-E — SPR BAL... Co. 1495 — P.6 of 6

Band	1	2	3	4	5	AVG	Hi	Lo	Distr.
391	2000 Bal. $17,530		Prior study - None						
10	24 S6.0	24 S5.0	24 R5.0	24 L5.0	24 L4.0	24.6	25.7	23.5	See Hi vs Lo
C.L.	7.3	R.I. =	100 all		6.2				
20	22 S6.0	22 R5.0	22 S5.0	21 R4.0	22 L5.0	21.6	22.3	21.2	"
C.L.	5.2	R.I. =	100 all		4.8				
30	23 S6.0	22 R5.0	22 S5.0	22 L5.0	22 R4.0	22.3	23.1	21.9	"
C.L.	6.1	R.I. =	all 100		5.6				

EEI average ASL estimate = 14 yr. Oldest surv. 1961

use 20 yr. ASL

Band	1	2	3	4	5	AVG	Hi	Lo	Distr.
394	2000 Bal. $145,932		Prior - None		Oldest surv. 1961				
10	96 SC	81 R0.5	69 R1.0	79 S-.5	62 R1.5	61.0	96	47	6 ≤ 49 yr.
C.L.	41	R.I. =	41 to 72		40				15 ≤ 59
20	87 SC	74 R0.5	72 S-.5	81 L0.0	64 R1.0	56.8	87	44	9 ≤ 49
C.L.	31	R.I. =	45 to 65		27				18 ≤ 59
30	85 SC	72 R0.5	71 S-.5	79 L0.0	62 R1.0	55.7	85	44	11 ≤ 49
C.L.	30				26				8 ≤ 59

EEI average ASL estimate = 24 yr. ERets. = 10.7% of balance BUT $8,599 ret. of 2000 is only ret. in 1984-2000 period and it equals 65% of total rets. ∴ BAL results are questionable, to say the least. Given oldest surv., ASL should likely be about (2000-1961) = 39 39/2 = 19.5

Use 25 yr. ASL, conservative alt.

Band	1	2	3	4	5	AVG	Hi	Lo	Distr.
395	2000 Bal. $109,258		Prior None		Oldest surv. 1963				
	So few rets.*, only analysis worth considering is 30 band								
30	31 S6.0	31 R4.0	35 R1.0	34 R1.5	38 R0.5	33.7	41.5	30.4	25 ≤ 39 yr.
C.L.	11.3	R.I. =	100 all		11.0				

* 5 rets. in 1969-2000 period

use 30 yr ASL

EEI average ASL estimate = 28 yr.

396 2000 Bal. $19,763 Prior None

No rets. in our DB (1969-2000) EEI average ASL estimate = 13 yr.

Look @ unit analysis "Component wtd ASL Estimates", following

use

Band	1	2	3	4	5	AVG	Hi	Lo	Distr.
397	2000 Bal. $30,787		Prior None		Oldest surv. 1990				
	Only rets. 1969-2000 are $3,566 in 1990 & $23,915 in 1976.								
	Causes SPRBAL C.L. to range from 6.4 to 1,525.2 in 10 band!!								
10	9 S6.0	8 S5.0	8 R5.0	8 L5.0	8 S4.0	9.6	11.7	8.3	13 ≤ 94 yr.
C.L.	1525.	R.I. all	= 100		271				27 ≤ 19
20	11 R5.0	12 S6.0	11 S5.0	11 R4.0	11 S4.0	10.0	11.7	9.2	7 ≤ 9
C.L.	6.4	R.I. all	= 100		6.2				27 ≤ 19
30									
C.L.	all	≤ 1.75	Very poor				10.9	9.9	See Hi vs Lo

No adds since 1998. AND 2001 add. of $260 K is for SCADA hardware & software

Per CPR, surv. are 1990 $68; 1995 $2,061 & 1997 $28,657

use 15 year ASL

398 Only 3 rets. - 2000 & 1981 ∴ SPR BAL meaningless (1974) oldest surv. 1961

use ASL

FGE - Elect COR/SALV Summary 7F602
NS = net salvage P. 1 of 4

Acct 352/361 Prior study est. (50)% NS *No ret., per DB Auth.
352 - only ret. is $1,500* in 1993; GS = $157 = COR = $1,182 NS = (68.3)% 352 (10)%
No question NS s/b neg. (net COR). 361 (5)%
361 - 1981-2000, $822,601 ret. (2.6)% N.S. 1991-2000 $10.6K ret. NS = (202.3)%
1981 ret. of $808,631 w/Ø GS & Ø COR
Combined 352/361, excluding:
1983-2000 Σ Ret. = $15,470 GS = $2,459 COR = $24,711 N.S. = (143.8)%
use (50)% for 352 and 361

See P. 4 for Acct 351

Acct. 353 prior study (20)% NS Auth. 5%
History 1981-2000 Ret. $622,747 GS $23,275 COR $331,525 NS = (49.5)%
" 1991-2000 Ret. $563,467 GS $23,240 COR $324,444 NS = (53.5)%
Acct 362 prior (20)% Auth. 10%
History similar to Acct 353, but more negative: NS 1981-2000 = (71.7)% 91-00 = (89.3)%
Combined: 353 + 362 History:
1981-2000 Ret. $983,756 GS $57,655 COR $624,667 NS = (57.6)%
1991-2000 Ret. $852,032 GS $57,566 COR $616,531 NS = (65.6)%

Given environmental restrictions/requirements, increased net COR no surprise - oil/SF6 concerns, for one; Conc. foundations cost lots (relatively) to remove, for another.
Adjust estimates accordingly
use (40)% for Account 353 & 362

Acct. 355 prior (75)%/Ret. G.S. COR N.S. Auth (5)%
History 1981-2000 $39,714 $6,111 $65,696 (150.0)%
" 1991-2000 $37,769 $5,501 $63,750 (154.2)%
See also similar property, Acct 364; similar results.
In one way, COR could be lower for Acct 355 than 364, but in another way it could be higher.
Tr. line locations can make it easier - less urban infrastructure interference could lead to lower COR BUT larger poles of 355 could cost more to remove.
Both accounts have the disposal problem assoc. w/treated poles.
Combined history: Ret. G.S. COR NS
1981-2000 $543,943 $90,995 $800,985 (130.5)%
1991-2000 411,809 61,586 672,448 (148.3)
No question, net COR is increasing.
use (100)% for Acct 364 & 355

Acct 356 prior (70)% Auth Ø
History Ret. G.S. COR NS
1981-2000 $12,526 $558 $16,589 (128.0)%
1991-2000 9,801 390 14,073 (139.6)%
Similar property of Acct 365 yields similar results ∴ combine Acct 356 and 365 histories:
Prior (75)% NS
81-00 (123.7)%
91-00 (154.1)%

Acct. 356 + 365 – Auth. (5)%

History	Ret.	G S	COR	NS
1981-2000	$617,112	$67,882	$831,667	(123.8)%
1991-2000	444,635	60,786	744,495	(153.8)%

There is more AL in typical foot of Acct 356 conductor than Acct 365 ∴ s/b a little more salvage & likely higher net salvage. Adjust moderately

Acct 356 use (80)%
Acct 365 use (85)%

Acct 366 Prior (70)% Auth. (5)%
History is far more negative, adjust moderately
use (80)%

Acct 367 Prior study (50)% (5)%

Period	Ret. $K	Net Salv $K	% NS
1981-2000	108.8	(126.7)	(116.5)
1991-2000	78.0	(90.9)	(116.4)

Difficult to accept such high net COR – hold @ prior study est. Existing rate reflects (5)%, we think.
use (50)% certainly a conservative estimate in view of experience

Acct 368 Prior (30)% Auth 5%
1991-2000 History shows (5.5)% NS; 1996-2000 Ø
Likely the heavy COR related to transformers w/ heavy PCB contamination – in the 1980's thru ± 1992
Result is that used transformers no longer saleable. Even tho history shows no COR 1993-2000, company does pay to dispose of them
use nominal est. (10)%

Acct. 369 Prior (100)% Auth (15)%
2000 Balance in account $3,775,253
No. customers = 26,022 Form 1, Page 304
No. meters = 26,300 Form 1, Page 429
(excl. stock)
O.C.$/service = $3,775,253/26,022 = $145.1 } say $144/service O.C. average
or $3,775,253/26,300 = $143.5 }
BUT ret. $/svc is FIFO ∴ O.C. & ref. svc likely far below $144

History	1981-2000	1991-2000	1996-2000
$R	143.7K	106.9K	
$NS	(194.4)K	(154.1)K	
%NS	(135.2)	(144.1)	(154.0)

Net COR is increasing & logically so
use (125)%

Acct. 370 – prior (30)% Auth. Ø
FGE History essentially Ø, which is typical for Acct 370
use Ø

Acct 371 – prior (50)% Auth. 20%

FGE History	1981-2000	1991-2000	1996-2000
Ret.	455.3K	347.6K	
$NS	(399.8)K	(401.2)K	
%NS	(87.8)	(115.4)	(164.3)

No question, trend is to higher net COR
use (75)%

Acct 372 – prior +30% Auth 25% NON-REGULATED

FGE History	1981-2000	1991-2000	1996-2000
Ret.	594.2K	203.6K	
$ NS	135.1K	37.1K	
% NS	+22.7	+18.2	+17.1

Trend is to lower + N.S.

Acct 373 – prior (50)% Auth (10)%

FGE History	1981-2000	1991-2000	1996-2000
Ret.	638.0K	467.5K	
$NS	(457.9)K	(409.1)K	
%NS	(71.8)	(87.5)	(159.0)

Trend is obviously to higher net COR
use (75)%

General Plant –
Ref. experience so minimal and salvage (No COR) so very little the history is of little to no help in estimating future

Study	Prior (E+G+C combined) %	Auth. %
390	(10)	(5)%
1	+10	10
3	+5	5
4	+5	5
5	+5	5
6	+5	10
7	+5	10
398	+5	5

Given what is in Acct 390, (10)% not bad est.
Based on FGE Common Plant history + Judgment

	Use
390	(10)% **
1	+5
3	+5 (f) forklift
4	+5
5	Ø
6	Ø
7	+5
398	Ø

** Electric 390 $ s/b in 391 – to be transferred
∴ use same as 391 for electric only, +5%

Acct 351 - Clearing $8K Balance Prior Ø
Can be no salvage nor labor for COR. $ represent labor
& machine time to clear brush, etc from ROW

use Ø

o/o NS

Yr./Acct 1981-2000	Retirements E	G	C	Total FGE
391	12780	3671	655342	671793
393	NA	NA	6988	6988
394	9314	3105	19598	32017
395	26959	3412	0	30371
396	0	0	9380	9380
397	3566	NA	63579	67145
398	8251	22501	2359	33111
				850805

Yr./Acct 1981-2000	Net Salvage E	G	C	Total FGE	Percent Net Salvage	E	G	C
391	0	0	38859	38859	5.8	Ø	Ø	5.9
393	NA	NA	0	0	0.0	NA	NA	Ø
394	255	0	891	1146	3.6	2.7	Ø	4.5
395	0	0	0	0	0.0	Ø	Ø	Ø
396	0	0	0	0	0.0	Ø	Ø	Ø
397	800	NA	2800	3600	5.4	22.4	NA	4.4
398	175	50	0	225	0.7	2.1	0.2	Ø
				43830	5.2			

Yr./Acct 1991-2000	Retirements E	G	C	Total FGE
391	2162	1557	527135	530854
393	NA	NA	2913	2913
394	8599	3105	856	12560
395	26959	2760	0	29719
396	0	0	1914	1914
397	0	NA	50637	50637
398	8251	14459	2359	25069
				653666

Yr./Acct 1991-2000	Net Salvage E	G	C	Total FGE	Percent Net Salvage			
391	0	0	21135	21135	4.0	Ø	Ø	4.0
393	NA	NA	0	0	0.0	NA	NA	Ø
394	0	0	0	0	0.0	Ø	Ø	Ø
395	0	0	0	0	0.0	Ø	Ø	Ø
396	0	0	0	0	0.0	Ø	Ø	Ø
397		NA	0	0	0.0	Ø	NA	Ø
398	0	0	0	0	0.0	Ø	Ø	Ø
				21135	3.2			

General Plant
EGCcombo FGE.xls
(no spaces)

FGE - Common **COMMON**

Account/Band
390

See component $ wtd estimate, attached as page 3 Use 35 R3.0

	Rank 1	2	3	4	5	ASL Hi	Lo	Avg	Distr.
391 2000 Bal. $418,490			Prior est. 15 yr. R3.0						
391300	12.1 R3.0	12.1 R4.0	12.2 R2.5	12.3 R2.0	12.1 S2.0	13.8	12.0	12.5	see Hi-Lo
all C.I. 5.1-5.4 poor; RI all 100									
391200	11.8 R3.0	11.9 R2.5	11.9 R4.0	11.8 S2.0	12.0 R2.0	13.4	11.8	12.2	same
C.I. all 5.4 to 5.9 Poor; RI all 100									
391100	11.6 R3.0	11.6 R2.5	11.6 R2.0	11.7 S1.0	11.6 S1.5	12.4	11.5	11.9	same
all C.I. 5.2-5.5 poor; RI all 100									
391050	10.3 L2.0	10.4 S1.0	10.5 L1.5	10.8 L1.0	10.5 S0.5	11.2	9.2	10.3	same

5 yr. band run as $463K of rets. occurred in 1996-2000, compared to total 1971-2000 of $ $1,073K.

All C.I. are poor, but all R.I. are 100 = "excellent"; Further, the 10 to 14 year ASL makes sense for O F&E. ***

use 13 yr R3.0

393 Bal. $36,676			Prior 35 S5.0						
393200	50 S0	51 L0.0	47 S-.5	46 R0.5	48 L0.5	51.4	37.3	42.0	9 ≤ 39 yr.
C.I. = 21.3		R.I. = 74	-83		C.I. = 19.6				25 ≤ 49
393300	49 L0.5	53 L0.0	47 L1.0	45 S0.0	48 S-.5	53.0	37.3	42.5	same
C.I. = 19.7		R.I. ~74-90			19.1				

EEI/AGA Common stats. show avg ASL ≈ 28 yrs.

Gas about same Elect. about 33 yr.

use 38 R4.0

Because ret. history is so sparse - only 3 yr. w/rets, 1981, 1987 & 2000 - analytically derived ASL likely somewhat questionable. 39 R4 gives some minimal recognition to analyses.

394 Bal $55,788			Prior 35 R2.0						
394300	26 S0	25 R0.5	27 L0.0	25 S-.5	24 R1.0	26.6	19.9	22.6	see Hi-Lo
C.I. = 6.9 Poor R.I. all 100					6.7				

History includes only 6 yrs. w/rets. - hard to fit w/Iowa (orany) curves, but indicated ASL's not unreasonable. Adjust est. moderately toward current ind.

use 30 yr. 50.0

396 Bal.
See component $ WTD est. attached as page 4

** NOTE:
In 2001, FGE retired $87,124 of "old P.C.'s & related equipment from the early 1990's" AND $7,455 of "copier, fax machine & other smaller items"
∴ 13 yr. looks even more conservative.

Account/Band	1	2	3	4	5	Hi	Lo	Avg	
397 Bal. $562,314			Prior 12 S4.0						
39725C	8.9 R1.5	10.1 R1.0	7.8 R2.0	11.8 R0.5	11.3 S-.5	13.4	5.0	8.0	21 ≤ 94yr.
C.I. = 10.0		R.I. all 100			9.1				
39730C	10.3 R1.0	9.1 R1.5	12.0 R0.5	11.5 S-.5	8.1 R2.0	13.6	5.0	8.1	19 ≤ 94yr.
C.I. = 8.5		R.I. all 100			8.0				

Only 3 rets.: 1997, 1990 and 1976. Makes analyses somewhat suspect
Hold @ prior 12 S4.0 – reasonable for this equip.

398 Bal. $151,859			Prior 35 R4.0						
39830C	30 S6.0	31 S5.0	31 R5.0	32 L5.0	32 S4.0	77.7	30.5	44.7	11 ≤ 39yr
C.I.	65/100	R.I. = 100	100	100	51/100				19 ≤ 49

Only two years have rets., 1981 & 2000 ∴ analyses not be taken too seriously, although results similar to prior study result.
No basis to revise, use 35 R4.0

Doubtful that 35yr. is realistic for what is typically in Acct 398, s/b much lower, like 15-20 years

FGE Common Acct 390 EOY 2000 balance $578,559

	O.C.$K	Property	Estimated ASL, yrs.	weight factor
>1990	253	Bridge rebuild at Sawyer Passway(SP)	40	10120
	6	Lighting at SP	15	90
	20	Fire protection equip. & water mains at SP	30	600
	12	Fencing	15	180
	3	Sewers	40	120
	2	walks & roadways at SP non-paved	20	40
>1980	86	Garage boiler	15	1290
>1980	194	Improv. to garage at JF Hwy	40	7760
>1990	2	A/C Computer room	10	20
	578			20220
		Weighted composite ASL, years	35.0 R3.0	

390.2 is actually leasehold improvements - not "PERMANENT" structures - partitions, A/C, etc.
use same as 390.0, above

35 year R3.0

FGE Acct 396 E + G + C
Component wtd ASL Estimates

GAS 396

DATE	ADD QTY	RET QTY	ORG.YR	DESCRIPTION	AMT ADDED	ASL Est. Years	Weight Factor
Apr-64	1			Pump, model 520A CH&E 2" diaphram Bri	$431.00	20	$8,620.00
Sep-64	1			GE Sump Pump model #5KH33GG365A	$35.00		
Nov-69	1			Davis Trencher Backhoe	$8,406.00	20	$168,120.00
Nov-79		1	1964	Retire Sump Pump	($35.00)		
Aug-93	1			Welding generator Miller Trailblazer 250 am	$3,463.32	25	$86,583.00
Dec-93	1			Hi pressure tapping power operator for CI-3	$4,501.76	25	$112,544.00
Oct-94	1			D-5 Drilling and stopping machine	$1,109.33	25	$27,733.25
Oct-94	1			Power Operator	$3,659.61	25	$91,490.25
Oct-94	1			Kit #129 for 2" line stopper fitting	$1,045.32	25	$26,133.00
Oct-94	1			Kit #105 for 2" service tee	$512.00	25	$12,800.00
Oct-94	2			2" Bypass stopper	$172.29	25	$4,307.25
Oct-94	1			2" Gate Valve	$85.34	25	$2,133.50
Sep-97	1			Sand Blaster 50#	$1,338.11	15	$20,071.65
Jul-99	1			Upright trench Compactor	$3,415.96	15	$51,239.40
Aug-00	3			Trench Compactors	$6,906.90	15	$103,603.50
				sum of surviving balances(gas)	$35,046.94		$715,378.80
				Acct 396 GAS wtd composite ASL		20.41202	

ELECTRIC 396

DATE	ADD QTY	RET QTY	DESCRIPTION	AMT ADDED		
1961	1		2" pump model LM23-52-1-550 Volt 3 phas	$432.00	20	$8,640.00
1962	1		Elec. motor inc. 3 HP 1200 RPM 3 phase G	$270.00	20	$5,400.00
1962	1		Digger Post hole Model A Sterling hydraulic	$7,580.00	20	$151,600.00
1963	1		1951 F6 2 ton 158" WB ford truck w. vacuu	$5,856.10	15	$87,841.50
1963	1		Pump model 35S2-IR gasoline operated Ho	$294.00	20	$5,880.00
1964	1		Pump model 35S2-IR Homelite	$292.00	20	$5,840.00
1979	1		Kenco Sump Pump 83A	$558.95	20	$11,179.00
Oct-97	1		Huskie Battery Powered 12 Ton Crimper	$4,479.75	15	$67,196.25
			sum of surviving balances(electric)	$19,762.80		$343,576.75
			Acct 396 ELECTRIC wtd composite ASL		17.38502	

COMMON 396

DATE	ADD QTY	RET QTY	ORG.YR	DESCRIPTION	AMT ADDED		
Feb-1970	1			Yale Propane powered fork lift	$7,466.00		
1973	1			Homelite Model #270 Pump	$492.34	20	$9,846.80
1975	1			Used automatic sander	$1,204.96	20	$24,099.20
1945	1		Jun-00	Black & Decker 5/16" electric Drill (1945)	$47.04		
1947	1		Jun-00	Peerless 6" metal saw (1947)	$566.01		
1947	1		Jun-00	Machine type 2B Edlund drilling (1947)	$323.18		
1947	1		Jun-00	Grinder, Hammond bearing (1947)	$134.24		
1947			Jun-00	Express & Trucking for above in 1947	$40.65		
1954	1		Jun-00	Model A Beaver portable pipe threader (1954)	$560.95		
1957	1		Jun-00	Snap On Corp air operated impact wrench (19	$242.00		
1979	1			Pavement Breaker	$787.50	20	$15,750.00
1979	1			Impact Wrench	$450.97	20	$9,019.40
1979	1			Impact Wrench	$450.96	20	$9,019.20
1982	1			Recon Black & Decker Rotary Hammer	$320.26	20	$6,405.20
1982	1			Black & Decker Rotary Hammer	$384.81	20	$7,696.20
Nov-1989		1	1970	Yale Fork Lift			
Jul-1993	1			Toro Powerlite Snow Thrower #38170	$409.50	10	$4,095.00
Jul-1993	1			Toro Powerlite Snow Thrower #38190	$409.50	10	$4,095.00
Mar-1997	1			Installed New Sump Pump Sawyer Passwa	$877.81	20	$17,556.20
Jun-2000		1	1945	Black & Decker 5/16" electric Drill (1945)			
		1	1947	Peerless 6" metal saw (1947)			
		1	1947	Machine type 2B Edlund drilling (1947)			
		1	1947	Grinder, Hammond bearing (1947)			
			1947	Express & Trucking for above in 1947			
		1	1954	Model A Beaver portable pipe threader (1954)			
		1	1954	Snap On Corp air operated impact wrench (1957)			
				sum of surviving balances(common)	$5,788.61		$107,582.20
				Acct 396 COMMON wtd composite ASL		18.58515	
				TOTAL Account 396	$60,598.35	19.25032	$1,166,537.75

Use 20 R 4.0 for E/G/C 396

FGE – Common
N.S. Review
et alvage

8 Feb 02
P. 1 of 2

Acc't. 390 Prior
$578K 390.0 (10)% NS
$253K is bridge rebuild @ Saw. Pass.
280K Garage Improv. & boiler
12K Fencing
33K Misc
578

There is essentially nothing with salvage potential and s/b little or no COR
∴ use Ø net salvage

$752 390.2 Leasehold Improv. @ J.F. Hwy Svc Center
s/b amortized over lease term NOT DEPRECIATED

Acc't 391 Prior +10%
Common only history 1981-2000 +5.9% 1991-2000 + 4.0%
Total G+E+C history 1981-2000 + 5.8% 1991-2000 + 4.0%
FGE history is typical & logical for Acct 391
use +5%

Acc't 393 prior +5% Account balance = $36,675
History incl. little ret. experience, $2,913 in 91-00 and $6,988 in 1981-2000 – both have zero salv & zero COR
EEI stats show avg. est for 393 is 7.3%, in common data & elect. data, both
Account does contain a fork-lift, new 1967 $4K w/new battery $2.4K in 1998;
Stores people hope to replace it soon. Could be some trade-in "salvage"
If salvage were $1,000 – $1,500, this would be 3% to 4% of account balance
Keep prior est. use +5%

Acc't. 394 prior +5% Balance $55,788
FGE history 1981-2000 +3.6% 1991-2000 Ø, reflective of ret's:
$32,017 $12,560
EEI stats – avg. est. + 7.3% in common data
Account contains one fork-lift purchased off-lease in 1997 for $241.
Similar discussion applies here as in Acct 393
No change in order use +5%

Acc't. 395 prior +5% Balance $Ø

Acc't. 396 prior +5% Balance $5,789
History minimal, $9,380 retired 1981-2000 and $1,914, 1991-2000 and all zero net salvage.
Given the equipment in Common 396, Ø net salvage most logical.
use Ø (see 396EGC as IEST.XLS)

FGE - Common
Net Salvage Review

Acct 397 prior +5% Balance $562,314
History $63,579 ret. 1981-2000 w/ $2,800 N.S., +4.4%
$50,637 ret 1991-2000 w/ Ø N.S. Ø %
EEI stats: Common +5.7% NS Electric NS +1.8% Gas +3.2%
The $2,800 salvage was in 1990 with a ret. of $12,942, but Ø salvage w/the larger - $50,637 - ret. of 1997.
It is our opinion the electronic equipment of Account 397 usually generates little or no salvage

use +5% very conservative

Account 398 prior +5% Balance $151,859
FGE Common experience is only $2,359 retired & that was in 2000.
Total FGE E+G+C experience:
Ret. 1981-2000 = $33,111 N.S. = $225 +0.7%
" 1991-2000 = $25,069 N.S. = Ø
EEI stats: Common avg. +8.1% Electric avg. +5.3% Gas avg +5.9%
Account 398 typically contains a potpourri of property that it is hard to predict.

use Ø

o/o NS

Yr./Acct 1981-2000	Retirements E	G	C	Total FGE
391	12780	3671	655342	671793
393	NA	NA	6988	6988
394	9314	3105	19598	32017
395	26959	3412	0	30371
396	0	0	9380	9380
397	3566	NA	63579	67145
398	8251	22501	2359	33111
				850805

Yr./Acct 1981-2000	Net Salvage E	G	C	Total FGE	Percent Net Salvage	E	G	C
391	0	0	38859	38859	5.8	Ø	Ø	5.9
393	NA	NA	0	0	0.0	NA	NA	Ø
394	255	0	891	1146	3.6	2.7	Ø	4.5
395	0	0	0	0	0.0	Ø	Ø	Ø
396	0	0	0	0	0.0	Ø	Ø	Ø
397	800	NA	2800	3600	5.4	22.4	NA	4.4
398	175	50	0	225	0.7	2.1	0.2	Ø
				43830	5.2			

Yr./Acct 1991-2000	Retirements E	G	C	Total FGE
391	2162	1557	527135	530854
393	NA	NA	2913	2913
394	8599	3105	856	12560
395	26959	2760	0	29719
396	0	0	1914	1914
397	0	NA	50637	50637
398	8251	14459	2359	25069
				653666

Yr./Acct 1991-2000	Net Salvage E	G	C	Total FGE	Percent Net Salvage	E	G	C
391	0	0	21135	21135	4.0	Ø	Ø	4.0
393	NA	NA	0	0	0.0	NA	NA	Ø
394	0	0	0	0	0.0	Ø	Ø	Ø
395	0	0	0	0	0.0	Ø	Ø	Ø
396	0	0	0	0	0.0	Ø	Ø	Ø
397		NA	0	0	0.0	Ø	NA	Ø
398	0	0	0	0	0.0	Ø	Ø	Ø
				21135	3.2			

C/Fitchburg G&E/EGC combo FGE.xLS
(no spaces)

TABLE V-1
Sheet 1 of 6

FITCHBURG GAS AND ELECTRIC LIGHT COMPANY

DEPRECIATION OF PROPERTY
ORIGINAL COST AS OF DECEMBER 31, 1983

Summary of Survivor Curve, Average Life
and Net Salvage Percentage Estimates

ELECTRIC PROPERTY

1997 study Results

Account No.	Description	Survivor Curve Type		Average Life		Net Salvage Percentage	
	STEAM PRODUCTION PLANT						
311	Structures and Improvements	SQ		30		(10)	
312	Boiler Plant Equipment	SQ		30		(5)	
314	Turbogenerator Units	SQ		30		(5)	
315	Accessory Electric Equipment	SQ		30		0	
316	Miscellaneous Power Plant Equipment	SQ		30		0	
	OTHER PRODUCTION PLANT						
342	Fuel Holders, Producers and Accessories	LE		15		0	
	TRANSMISSION PLANT						
351	Rights of Way	$S_{5.0}$		50		0	
352	Structures and Improvements	$S_{4.0}$	S6.0	40	35	(10)	(50)
353	Station Equipment	$R_{4.0}$	S3.0	40	35	5	(20)
354	Towers and Fixtures	$S_{5.0}$	S5.0	50	50	(10)	(50)

FITCHBURG GAS AND ELECTRIC LIGHT COMPANY

DEPRECIATION OF PROPERTY
ORIGINAL COST AS OF DECEMBER 31, 1983

Summary of Survivor Curve, Average Life
and Net Salvage Percentage Estimates

ELECTRIC PROPERTY
(Continued)

1997 study Results

Account No.	Description	Survivor Curve Type		Average Life		Net Salvage Percentage	
	TRANSMISSION PLANT (CONTINUED)						
355	Poles and Fixtures	$S_{5.0}$	S 5.0	35	35	(5)	(75)
356	Overhead Conductors and Devices	$R_{1.0}$	R 2.0	35	40	0	(70)
357	Underground Conduit	$S_{5.0}$		55		(5)	
358	Underground Conductors and Devices	$R_{5.0}$		50		10	
359	Roads and Trails	SQ		50		0	
	DISTRIBUTION PLANT						
361	Structures and Improvements	$S_{4.0}$	L 1.0	50	25	(5)	(50)
362	Station Equipment	$R_{4.0}$	R 4.0	35	40	10	(20)
364	Poles, Towers and Fixtures	$R_{2.0}$	R 1.5	40	40	(10)	(75)
365	Overhead Conductors and Devices	$R_{5.0}$	R 4.0	35	40	(5)	(75)
366	Underground Conduit	$S_{6.0}$	S 6.0	60	60	(5)	(70)

TABLE V-1
Sheet 6 of 8

FITCHBURG GAS AND ELECTRIC LIGHT COMPANY

DEPRECIATION OF PROPERTY
ORIGINAL COST AS OF DECEMBER 31, 1983

Summary of Survivor Curve, Average Life
and Net Salvage Percentage Estimates

ELECTRIC PROPERTY
(Continued)

1997 study Results

Account No.	Description	Survivor Curve Type		Average Life		Net Salvage Percentage	
	DISTRIBUTION PLANT (CONTINUED)						
367	Underground Conductors and Devices	$S_{5.0}$	S5.0	40	40	(5)	(50)
368	Line Transformers	$R_{0.5}$	S5.0	35	35	5	(30)
369	Services	$S_{4.0}$	R4.0	35	45	(15)	(100)
370	Meters	$R_{4.0}$	R4.0	35	45	0	(30)
371	Installations on Customers' Premises	$R_{3.0}$	R2.0	10	15	20	(50)
372	Leased Property on Customers' Premises	$L_{2.0}$	L4.0	10	7	25	+30
373	Street Lighting and Signal Systems	$R_{2.0}$	S2.0	25	10	(10)	(50)
	COMMON GENERAL PLANT						
390	Structures and Improvements	$R_{1.5}$	R1.5	40	40	(5)	(10)
391	Office Furniture and Equipment	$S_{3.0}$	R3.0	15	15	10	+10
392	Transportation Equipment	$R_{1.0}$	NA	10	NA	25	NA

1997 Study had Gnl Plt. only in Common

FITCHBURG GAS AND ELECTRIC LIGHT COMPANY

DEPRECIATION OF PROPERTY
ORIGINAL COST AS OF DECEMBER 31, 1983

Summary of Survivor Curve, Average Life
and Net Salvage Percentage Estimates
Common
~~ELECTRIC~~ PROPERTY
(Continued)

1997 study Results

Account No.	Description	Survivor Curve Type		Average Life		Net Salvage Percentage	
	GENERAL PLANT (Continued)						
393	Stores Equipment	$S_{3.0}$	S5.0	25	35	5	+5
394	Tools, Shop and Garage Equipment	$R_{2.0}$	R2.0	35	35	5	5
395	Laboratory Equipment	$R_{3.0}$	S2.0	35	35	5	5
396	Power Operated Equipment	$R_{1.0}$	R0.5	20	20	10	5
397	Communication Equipment	$S_{4.0}$	S4.0	15	12	10	5
398	Miscellaneous Equipment	$R_{4.0}$	R4.0	35	35	5	5

1997 study had E+G+ Common Gal. Plt. only in

FG&E

Phone conv. w/ Tressa 15 JAN 02

Common - Acct 390

1981 $841K retirement

Sold (retired) major bldg @ Sawyer Passway (SP) SP was the major FG&E Svc Center

Moved Svc Center to John Fitch Hwy - bought what had been a leased bldg/site.

Note: Sawyer Passway site still "valid" New substa being built

other facilities still there/in use

$ surviving 1980 & prior - @ Sawyer Passway

Big $ surv. 1992 $135K

Repl. loading dock wall	$57.7K
New roof	$50.xK
2 New HVAC units	$25.xK
Σ	132.x

Big surv. 1995 $192K

Rehab bridge to Sawyer Passway

Acct. 390.01/.02 Non-depreciable - amortized

Acct. 393 - Tressa will advise about forklifts New 1967 ?

GAS Acct. 305

$633K surv. 1998 is purchase of LNG plant (leased until then)

Plant built 1970's

GAS Acct. 311

LPG plant built 1961 Lunenburg

LNG built Westminster

GAS

Subj: **RE: Fitchburg adjustments, transfers and other matters**
Date: 1/7/02 11:59:36 AM Eastern Standard Time
From: northrup@unitil.com (Northrup, Tressa)
To: AIKMANR4@aol.com ('AIKMANR4@aol.com')
CC: curran@unitil.com (Curran, Steve)
File: **FG&EVintageYears.zip** (62882 bytes) DL Time (32000 bps): < 1 minute

C:\FITCHBURGGE

Jim

Attached please find the Vintage Years by Account. The file is in a text format, but can be brought into excel if needed.
<<FG&E Vintage Years.txt>>

Also, the only item I could find to tell me when the company became both Gas and Electric is attached. It would appear that we would have no plant items remaining on the books from when the company was just gas.
<<Incorporation Info.PDF>>

Concerning the small balances, the $224 should really be in account 391 electric. It was transferred in our CPR, but never changed on the depreciation or FERC schedules. This will be done for 2002. I could not find the $114 in any 393 account. We only have a balance in common 393 $36,675.64.

I'm still working on the other items, should send soon.

Thanks
Tressa

> -----Original Message-----
> From: AIKMANR4@aol.com [SMTP:AIKMANR4@aol.com]
> Sent: Sunday, January 06, 2002 10:14 PM
> To: northrup@unitil.com
> Cc: curran@unitil.com
> Subject: Fitchburg adjustments, transfers and other matters
>
> Tressa:
> Happy New Year. Now on to business - BAM!
>
> There are several relatively large subject values (relative to the given
> account balances) with which we must deal.
>
> For example, electric Acct 361 has a $853k debit transfer in 1978; Acct
> 353 has a $675k credit adj. in 1999, a $157k credit adj. in 1992, a $366k
> credit transfer in 1992
> and a $1,669k debit transfer in 1977. Can you provide us the amounts by
> vintage year which make up the large(GTE $100k) electric, gas and common
> plant adj. and transfers? Perhaps there is an activity year beyond which
> such detail is essentially not available, like maybe any adj. or transfer
> of 1990 and prior. Given that date, we could proceed immediately on part
> of the data base creation. We can handle any or all adj. and transfers in
> such a manner as to have no effect upon the analyses we will be making,
> but we would rather know specifics, if at all possible.
>
> Was there a 1977acquisition or merger which lead to the big 1977 debit
> adj/transfers in Acct 353 and 362?
>
> There are a few accounts which have small balances and/or their balance
> consists of only one vintage. We need to know what property/equipment
> these dollars represent.For example, common Acct 393 has a $114 balance
> and electric Acct 390 has a $224 balance.
>
> We need to know the vintage of the oldest surviving dollars in each
> account, like you gave us in the New Hampshire studies.

>
> I assumed that what is now common plant came from the electric and gas
> operations, but I see no obvious pattern of credit transfers(nor adj.) out
> of electric and gas. When and how was common plant "born"?
>
> In 1999 all of Acct 357 and 358 were transferred to Acct 366 and 367,
> respectively. Did these facilities consist of one or two lines for which
> you or Skip could give us approximate or actual vintages?
>
> Lastly, in gas Acct 383 there is only one year in the 1982 to 2000 period
> in which there is an add and a ret., 1993, other than the 1992 adj. and
> the 1995 transfer(both credits). What is going on?
>
> Sorry to dump on you at your crunch time. To help you prioritize, the most
> urgent of these requests are those about vintages of adj. and transfers
> which we need to build the depreciation study data bases.
>
> Thanks and I owe you one or more lunches for your assistance.
> Jim

---------- Headers ----------
Return-Path: <northrup@unitil.com>
Received: from rly-yc04.mx.aol.com (rly-yc04.mail.aol.com [172.18.149.36]) by air-yc04.mail.aol.com (v82.22) with ESMTP id MAILINYC49-0107115936; Mon, 07 Jan 2002 11:59:36 -0500
Received: from mailuni.unitil.com (mail.unitil.com [205.247.23.13]) by rly-yc04.mx.aol.com (v83.18) with ESMTP id MAILRELAYINYC410-0107115833; Mon, 07 Jan 2002 11:58:33 -0500
Received: by MAILUNI with Internet Mail Service (5.5.2653.19)
id <ZVV8TN4V>; Mon, 7 Jan 2002 11:51:01 -0500
Message-ID: <2F7E774C18F8D211B6850090276D607701B71C2E@MAILUNI>
From: "Northrup, Tressa" <northrup@unitil.com>
To: '"AIKMANR4@aol.com"' <AIKMANR4@aol.com>
Cc: "Curran, Steve" <curran@unitil.com>
Subject: RE: Fitchburg adjustments, transfers and other matters
Date: Mon, 7 Jan 2002 11:51:00 -0500
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2653.19)
Content-Type: multipart/mixed;
boundary="----_=_NextPart_000_01C1979B.7C28FAB0"

Jim Aikman

From: Northrup, Tressa [northrup@unitil.com]
Sent: Friday, February 01, 2002 8:58 AM
To: 'Jim Aikman'
Subject: RE: 1981 Retirement

Jim

Sorry for the delay. The 392 accounts are straight line depreciation based on life expectancy. The 396 account should be analyzed for a rate to be used. I'm not sure about the Land Rights. I'll check with Steve on that one.

The 390.2 is split by Gas and Electric then the rates that are calculated (gas and elec) are used to depreciate. Example:

Total 390.2 Balance 756,718

Gas 269,234 x .02970 (Gas rate for 390) = 7,996
Elec 487,484 x .02750 (Elec rate for 390) = 13,394

The Common 390 account totaling $578,559 is as follows:

252,741 Bridge at Sawyer Passway
6,390 Lighting at Sawyer Passway
20,356 Fire Protection & Water Mains
11,648 Fencing
3,245 Sewers Sawyer Passway Likely >1980 See c/Fitchburg G&E/COMMFGE390estASL.xls
2,315 Walks & Roadways Sawyer Passway
85,877 Garage Boiler
193,664 Improvements to Garage John Fitch - 7/1980
2,323 A/C Computer Room Likely >1980

Thanks
Tressa

> -----Original Message-----
> From: Jim Aikman [SMTP:jaikman@manapp.com]
> Sent: Thursday, January 31, 2002 8:59 AM
> To: Northrup, Tressa
> Subject: RE: 1981 Retirement
>
> Sorry, after I left the msg about the Acct 390 ret. I found my notes about
> the sale! We do have other questions, like do we deal with Acct 392 and
> 396
> or do you depr. them on a usage basis(per mile, per hour, etc)? Do we deal
> with Land Rights accounts? My experience in Mass. is that they have never
> approved the depr. of them, yet your existing FG&E depr rate schedule
> includes rates for them. A mystery to me!
>
> You did say that Acct 390.2 is the leasehold improvements at the John
> Fitch
> Hwy service center, ergo, these dollars are recovered over the lease term,
> correct? What is the $578,558.71 reported as Acct 390 in the Common
> section
> of the Form 1(page 356)?
>
> from the office of:
> James H. Aikman
Management Applications Consulting, Inc.
2921 Windmill Road
> Sinking, Spring, PA 19608
> eMail: jaikman@manapp.com

Subj: **RE: Account 396 data**
Date: 2/4/02 6:54:48 AM Eastern Standard Time
From: northrup@unitil.com (Northrup, Tressa)
To: AIKMANR4@aol.com ('AIKMANR4@aol.com')

Good Morning

In 2000, an analysis was done and a clean-up (so to speak) on any items that were still on the books (general equipment only) more than 40 years old and the retirements were made. As you stated below these pieces of equipment were not used and useful for more than 50 years (my feeling was 40 years). Since that point, retirements are being made on a more regular basis. When a new piece of equipment is purchased the questions are asked if it is a replace item or a new purchase. Also, the stock area is in charge of collecting old office furniture and equipment. When they have a lot, they have a yard sale and the items are retired and any money is applied to salvage. These amounts are usually very small. In 2001, the amount of salvage from Office Furniture and equipment was $1,552.57, mainly for old furniture.

I'm not sure if this helps or hurts. Please let me know if you need any further information.

Thanks
Tressa

> -----Original Message-----
> From: AIKMANR4@aol.com [SMTP:AIKMANR4@aol.com]
> Sent: Sunday, February 03, 2002 6:29 PM
> To: northrup@unitil.com
> Subject: Account 396 data
>
> Have analyzed the subject, which you sent on Friday. The problem is, the
> more you give me, the more questions I have.
>
> The Common 396 seems to be the only group with rets.(except the one ret.
> in gas) and all the Common rets. except the forklift ret. look
> suspiciously like an inventory cleanup (by Tressa). I say this because of
> the age at which the property retired and what the retired units were. I
> find it hard to believe an electric drill, a metal saw, etc. were really
> used and useful for over 50 years.
>
> Anyway, this makes me wonder how many more accounts I should I should ask
> about. On the other hand, the General Plant accounts have so few dollars
> in them they really are not where I should concentrate my efforts. Are
> there some more signicant accounts in gas and/or electric where there are
> few recorded retirements of what s/b relatively short-lived stuff wherein
> the 396 type info is available? By short-lived, I mean any 5 to 20 year
> stuff where the lack of rets. might force us to a 30 to 40 year life
> estimate for the given account. Depending on how the life analyses of
> General Plant history come out, I may yet ask for more detail on some of
> the accounts.
>
> Lots of thinking out loud, so to speak.Please let me know your thoughts.
>

---------- Headers ----------
Return-Path: <northrup@unitil.com>

From: Northrup, Tressa [northrup@unitil.com]
Sent: Friday, March 01, 2002 10:46 AM
To: 'Jim Aikman'
Subject: Retirements for 391

Jim

In 2001 we retired old PC's ~~& related~~ equipment that was still on the books from the early 90's ($87,124.09). The ~~remaining~~ retirements were for a copier, fax machine and ~~other smaller items~~ ($7,455.40).

Thanks
Tressa
Unitil Service Corp.
603 773 6522
e-mail: northrup@unitil.com

This is wrong, per Tressa

391

2001 activity			per Tressa's INPUT EOY Bal	EOY Bal. per our sked
	ADD	RET		
E	∅	$13,869	∅	3,661
G	∅	∅	NA	
C	1,538.95	94,579.49	325,449.50	325,450

Correct, per Tressa later. MES caught the input error

Subj: **Answers**
Date: 1/16/02 9:13:41 AM Eastern Standard Time
From: northrup@unitil.com (Northrup, Tressa)
To: AIKMANR4@aol.com ('AIKMANR4@aol.com')

Jim

In 1992 a transfer of $350,270.48 was made from Acct 390 - Common Structures & Improvements to Acct 390.2 - Common Leasehold Improvements. This transfer was made to move all of the Improvements of the Leased Service Center Building into it's own account.

The Fork Lifts are in 2 accounts. The first was purchased in 1967 for $4,075.00 with a battery replacement in 1998 for $2,384.77. This is in Acct 393 - Common. The other one is in Acct 394 - Common. This fork lift was on an Operating Lease and was purchased off the lease in 1997 for the amount of $241.00.

If you have any questions, please let me know.

Thanks
Tressa
Unitil Service Corp.
603 773 6522
e-mail: northrup@unitil.com

---------- Headers ----------
Return-Path: <northrup@unitil.com>
Received: from rly-ye04.mx.aol.com (rly-ye04.mail.aol.com [172.18.151.201]) by air-ye04.mail.aol.com (v83.30) with ESMTP id MAILINYE42-0116091341; Wed, 16 Jan 2002 09:13:41 1900
Received: from mailuni.unitil.com (mail.unitil.com [205.247.23.13]) by rly-ye04.mx.aol.com (v83.26) with ESMTP id MAILRELAYINYE48-0116091331; Wed, 16 Jan 2002 09:13:31 1900
Received: by MAILUNI with Internet Mail Service (5.5.2653.19)
id <CP90PD6J>; Wed, 16 Jan 2002 09:05:30 -0500
Message-ID: <2F7E774C18F8D211B6850090276D607701B71C72@MAILUNI>
From: "Northrup, Tressa" <northrup@unitil.com>
To: '"AIKMANR4@aol.com"' <AIKMANR4@aol.com>
Subject: Answers
Date: Wed, 16 Jan 2002 09:05:29 -0500
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2653.19)
Content-Type: text/plain

If retire in 2002, for example, # life is:

			$ yr
$4075	@	35 yr	142,625
2385	@	4 yr	9,540
$6,460			152,165

AVG — 23.55 yr.