

ELECTRIFICATION VERSUS DIESELIZATION
COMPARISON OF CASH FLOWS UNDER VARIABLE ANNUAL TRAFFIC
AND INFLATION GROWTH RATES
(000)

Year	<u>Electrification</u>					
	<u>Revised 9/72 Study</u>		<u>Least Attractive</u>		<u>Most Attractive</u>	
	<u>Net C.F.</u>	<u>P.V. of Net C.F. at 8%</u>	<u>Net C.F.</u>	<u>P.V. of Net C.F. at 8%</u>	<u>Net C.F.</u>	<u>P.V. of Net C.F. at 8%</u>
	2.7% T, 1% E, 3½% F		2.7% T, 3½% E, 3½% F		5% T, 1% E, 5% F	
1974	\$ (1,333)	\$ (1,235)	\$ (558)	\$ (518)	\$ (545)	\$ (503)
1975	(578)	(496)	215	185	256	221
1976	(811)	(644)	- -	- -	58	48
1977	2	1	(23)	(17)	107	80
1978	121	84	1	1	248	170
1979	133	84	(14)	(9)	1,026	648
1980	435	254	218	128	1,431	836
1981	(185)	(100)	(479)	(260)	934	506
1982	(134)	(68)	(514)	(258)	1,120	562
1983	(70)	(33)	(543)	(252)	2,142	994
1984	(18)	(8)	(68)	(30)	2,407	1,034
1985	68	28	(66)	(27)	2,691	1,070
1986	(32)	(12)	(250)	(92)	2,907	1,070
1987	623	213	(213)	(73)	3,865	1,317
1988	816	258	(255)	(81)	4,403	1,390
Total	\$ (963)	\$ (1,674)	\$ (2,549)	\$ (1,299)	\$23,050	\$9,443

C.F. = Cash Flow
P.V. = Present Value
T. = Annual Traffic Growth
E. = Annual Electrical Energy Inflation
F. = Annual Fuel & Lube Oil Inflation

Corporate Planning
1-18-73 - TFP

ELECTRIFICATION VERSUS DIESELIZATION*
COMPARISON OF CASH FLOWS
SEPTEMBER 1972 STUDY VERSUS REVISED SEPTEMBER 1972 STUDY
(000)

	<u>9/72 Study</u>		<u>Revised 9/72 Study</u>	
	<u>Net C.F.</u>	<u>P.V. of Net C.F. at 8%</u>	<u>Net C.F.</u>	<u>P.V. of Net C.F. at 8%</u>
	2.7% T, 1% E, 3½% F		2.7% T, 1% E, 3½% F	
1974	\$ (915)	\$ (847)	\$ (1,333)	\$ (1,235)
1975	(160)	(137)	(578)	(496)
1976	(393)	(312)	(811)	(644)
1977	419	308	2	1
1978	538	366	121	84
1979	550	347	133	84
1980	339	198	435	254
1981	(280)	(151)	(185)	(100)
1982	(229)	(115)	(134)	(68)
1983	(165)	(76)	(70)	(33)
1984	(113)	(48)	(18)	(8)
1985	(28)	(11)	68	28
1986	(127)	(47)	(32)	(12)
1987	527	179	623	213
1988	720	227	816	258
TOTAL	\$ 683	\$ (119)	\$ (963)	\$ (1,674)

* 2nd 261-262 Begins in 1977.

C.F. = Cash Flow
P.V. = Present Value
T. = Annual Traffic Growth
E. = Annual Electrical Energy Inflation
F. = Annual Fuel & Lube Oil Inflation

Corporate Planning
1-22-73 - TFP

ELECTRIFICATION VS DIESELIZATION - PROBABILITY STUDY

TRIAL#	TRAFFIC	ELECT	FUEL	PROB	PRES VAL	ACC PROB	PRES VAL	PROB ADJ
5	2.7	3.5	3.5	.048	<3.512>	.048	<.169>	
3	2.7	2.0	3.5	.168	<2.228>	.216	<.374>	
1	2.7	1.0	3.5	.024	<1.883>	.240	<.045>	
6	2.7	3.5	5.0	.112	<1.135>	.352	<.127>	
4	2.7	2.0	6.0	.392	.149	.744	.058	
2	2.7	1.0	5.0	.056	.494	.800	.028	
11	5.0	3.5	3.5	.012	1.377	.812	.017	
9	5.0	2.0	3.5	.042	3.356	.864	.141	
7	5.0	1.0	3.5	.006	4.207	.860	.025	
12	5.0	3.5	5.0	.028	4.401	.888	.123	
10	5.0	2.0	5.0	.098	6.380	.986	.625	
8	5.0	1.0	5.0	.014	7.231	1.000	.101	
								.403

PROBABILITY MATRIX

TRAFFIC	80 / 2.7	20 / 5.0
ELECT	10 / 1.0	70 / 2.0
FUEL	30 / 3.5	70 / 5.0

ADDITIONAL CASH FLOW EFFECTS FOR
ELECTRIFICATION OF BN COORDINATED TRACKAGE

Miles of Track to be Electrified - 132

Capital Expenditures Necessary - 1974

Signals	\$1,540,000
Communications	264,000
Catenary	<u>4,733,000</u>
	<u>\$6,537,000</u>

Annual Lease Payment \$ 475,000 30 Years at 6% Interest

1974 to 1988

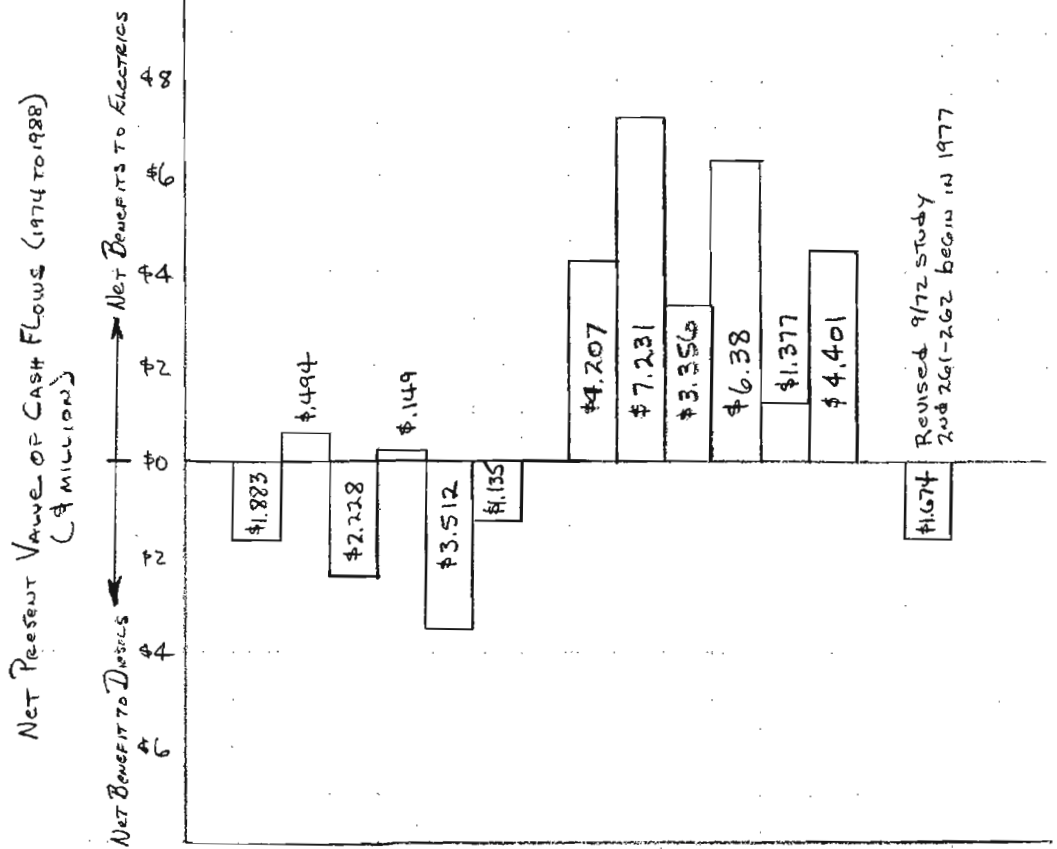
Cash Outflow	\$7,125,000	
P.V. Outflow	4,066,000	8% Discount Rate

Corporate Planning
1-18-73 - TFP

ELECTRIFICATION VS. DIESELIZATION
NET PRESENT VALUE CASH FLOW ANALYSIS *

Compound Annual Growth Rates

TRAFFIC VOLUME	← 2.7% →	← 5% →	2.7%	
ELECTRICAL ENERGY	← 1% →	← 2% →	← 3% →	1%
FUEL & LUBE OIL	3.5% 5% 3.5% 5% 3.5% 5%	3.5% 5% 3.5% 5% 3.5% 5%	3.5%	



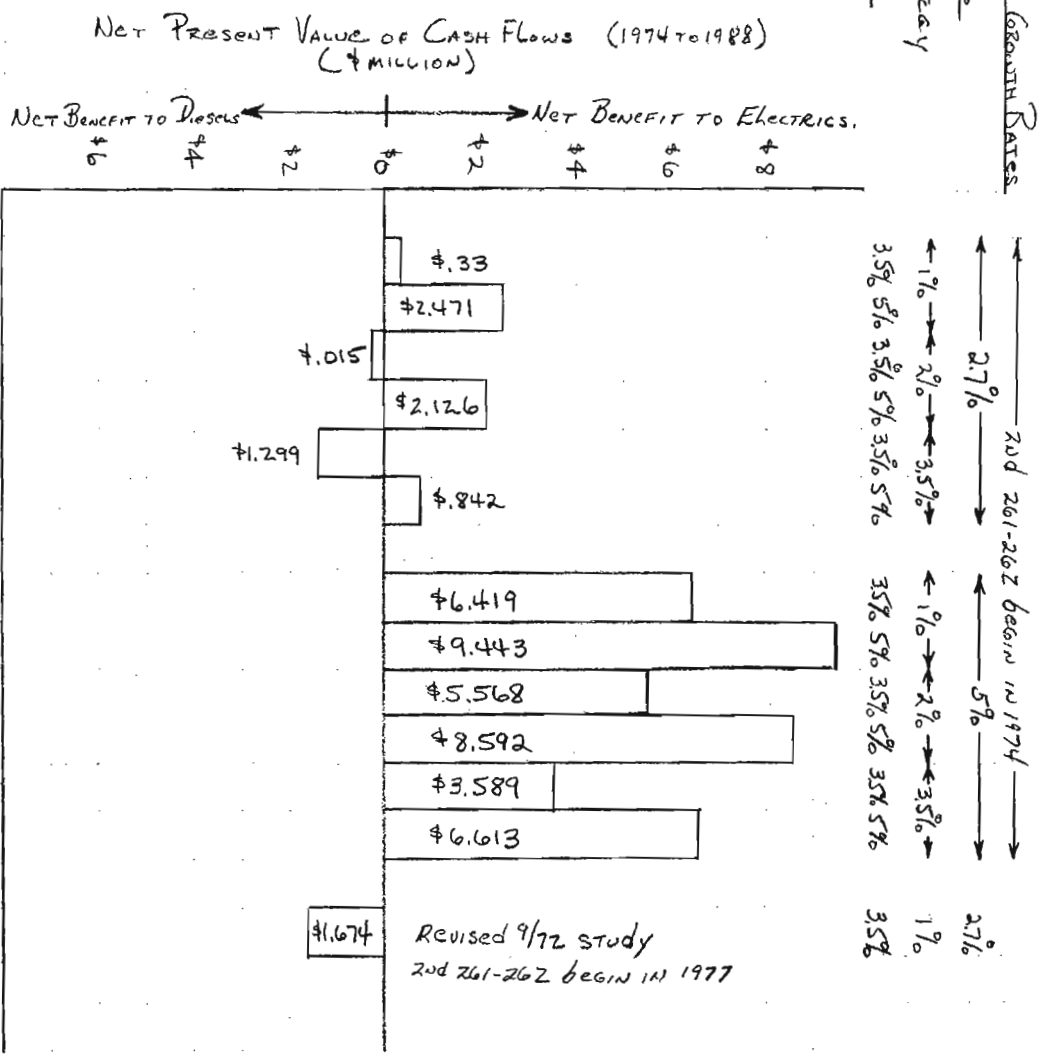
^{SALVAGE}
 IF AMORTIZED: INCREASE DIESEL COST BY PV OF \$374

* PRESENT ELECTRIFICATION SYSTEM TO BE SALVAGED IN 1974
 IF DIESELIZATION IS ACCEPTED. - LUMP SUM IN 1974

MILWAUKEE RAILROAD
 CORPORATE PLANNING DEPT.
 JAN, 18, 1973 TFP

ELECTRIFICATION VS. DIESELIZATION *
Net Present Value Cash Flow Analysis

Compound Annual Growth Rates
 Traffic Volume
 Electrical Energy
 Fuel & Lube Oil

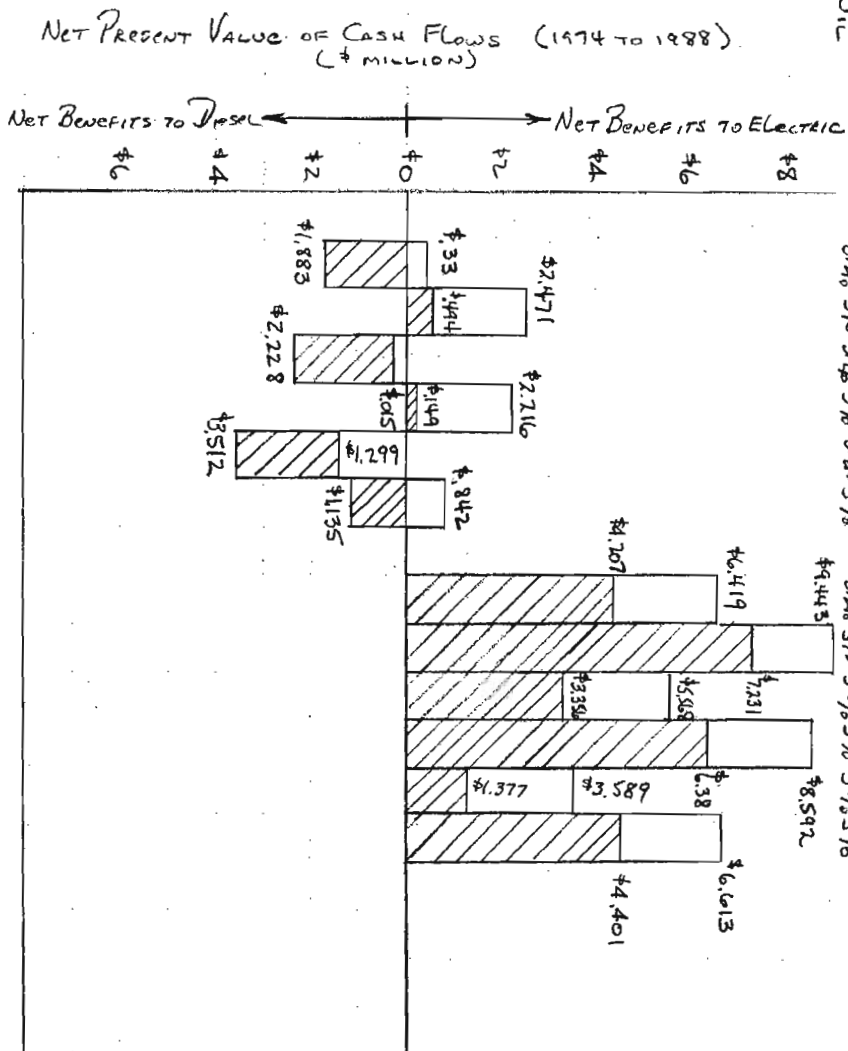


* Costs to utilize present electrification until 1980 included in dieselization portion.

Milwaukee Railroad
 Corporate Planning Dept.
 Jan. 18, 1973 TFP

ELECTRIFICATION VS. DIESELIZATION
NET PRESENT VALUE CASH FLOW ANALYSIS

Compound Annual Growth Rates
Traffic Volume
Electrical Energy
Fuel & Lube Oil



Continuous Elec. until 1980
Discouraged Elec. in 1974

Source as comp sum in 1974

Milwaukee Railroad
Corporate Planning Dept.
Jan. 22, 1973 TFP

NET PRESENT VALUE OF CASH FLOWS (1974 TO 1988) - 2% DISCOUNT RATE
(\$ MILLION)

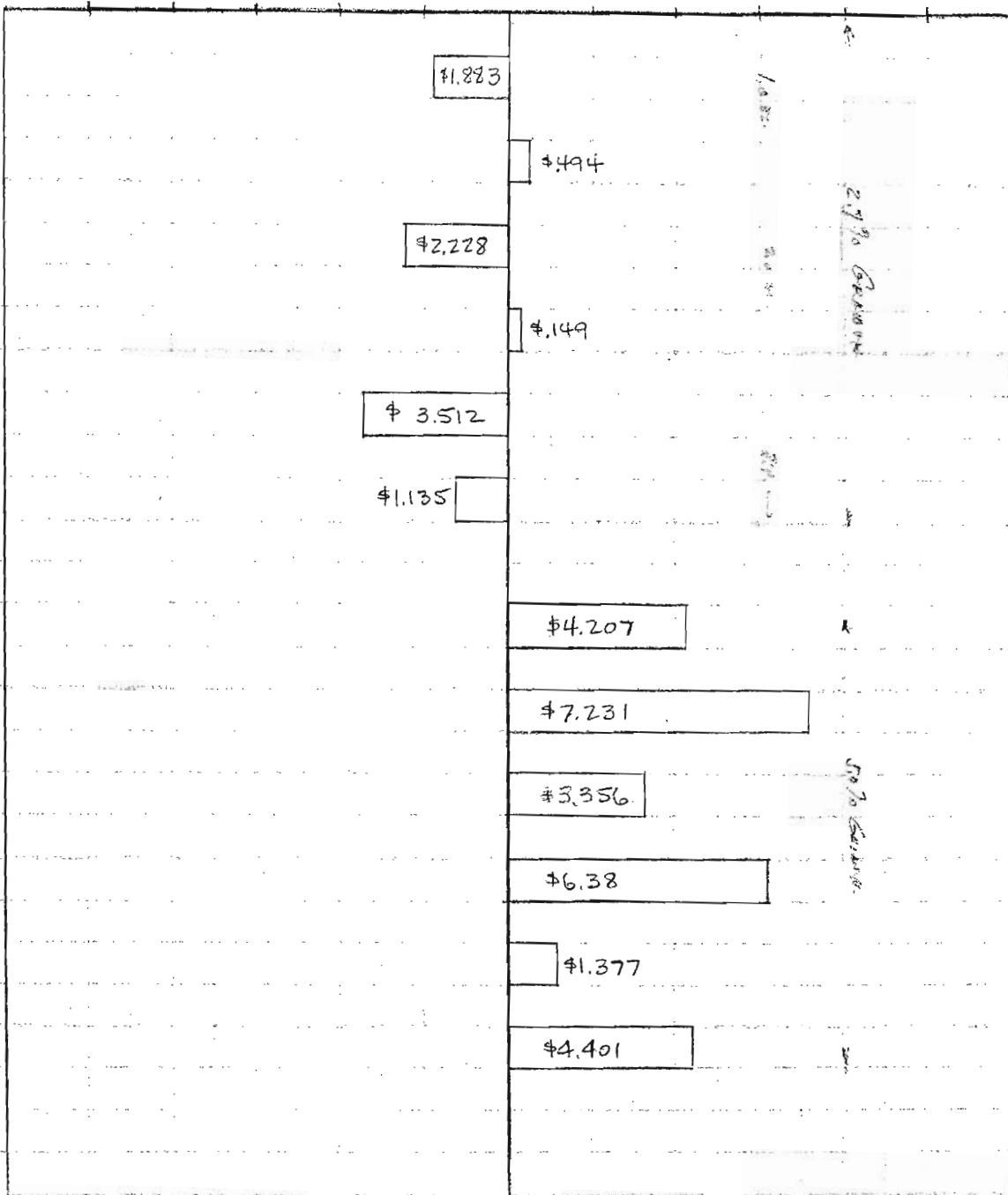
DIESEL BENEFITS ← → ELECTRIC BENEFITS

\$10 \$8 \$6 \$4 \$2 \$0 \$2 \$4 \$6 \$8 \$10

AVAILABLE GENERATOR RATES - %

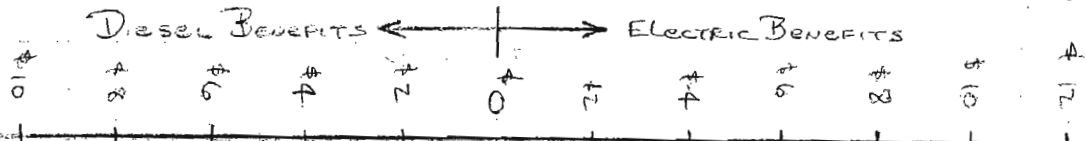
Traffic Volume
Electricity Energy
Fuel Cost Oil

2.7	1.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	5.0	5.0	5.0	5.0	5.0	5.0
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5
3.5	1.0	5.0	2.0	3.0	5.0	3.5	3.5	5.0	3.5	1.0	1.0	2.0	2.0	3.5



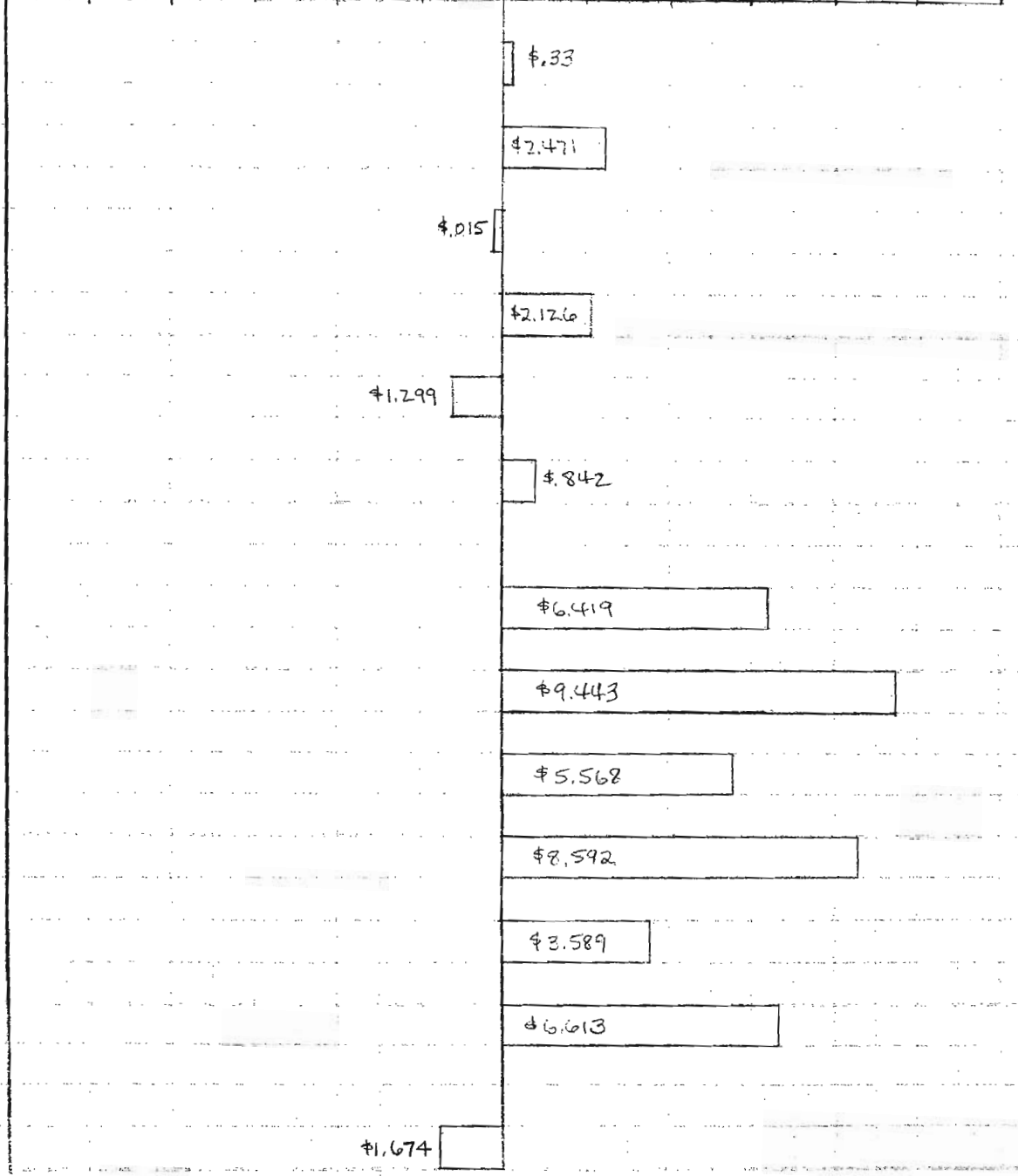
ESTIMATION OF RESERVATION OPERATIONS
 NET PRESENT VALUE - CASH FLOWS (1974 TO 1988)
 WITH VARIABLE TRAFFIC, FUEL ENERGY GENERATION COSTS - ANNUAL
 20% 201-21 based on 1974 - Discount Rate System - 1974-18 Discount Rate

NET PRESENT VALUE OF CASH FLOWS (1974 TO 1988) - 8% DISCOUNT RATE
(\$ MILLION)



Variable Growth Rates %

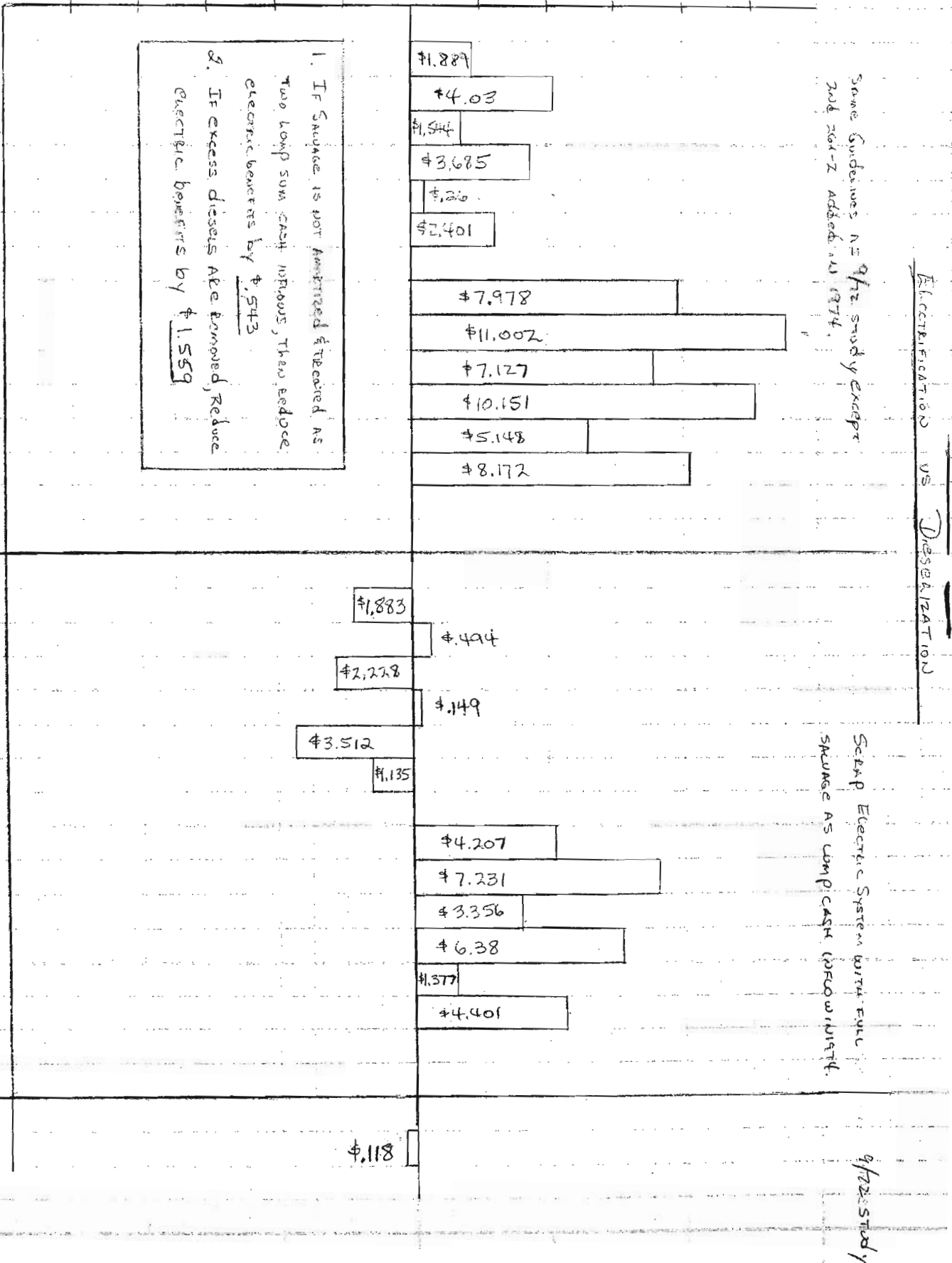
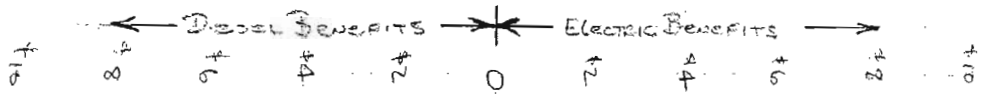
Traffic Volume	Electrical Energy	Fossil Fuel Oil
2.7	1.0	3.5
2.7	1.0	5.0
2.7	2.0	3.5
2.7	2.0	5.0
2.7	3.5	3.5
2.7	3.5	5.0
5.0	1.0	3.5
5.0	1.0	5.0
5.0	2.0	3.5
5.0	2.0	5.0
5.0	3.5	3.5
5.0	3.5	5.0
2.7	1.0	3.5



Electrification vs. Dieselization Operation
 Net Present Value - Cash Flows (1974 to 1988)
 WITH VARIABLE TRAFFIC, FUEL & ENERGY GROWTH RATES - Annual
 and 201-2 begins in 1974

9/72 Study Revis
 and 201-2 begins

NET PRESENT VALUES - 15 YRS (MILLIONS)



% RATES

Year	Electric Growth	Electric Energy	Fuel Oil
1	27	10	35
2	27	10	35
3	27	20	50
4	27	20	35
5	27	20	35
6	27	20	35
7	27	20	35
8	27	20	35
9	50	10	35
10	50	10	35
11	50	20	50
12	50	20	35
13	50	20	35
14	50	20	35
15	50	20	35
16	50	20	35
17	50	20	35
18	50	20	35
19	50	20	35
20	50	20	35
21	50	20	35
22	50	20	35
23	50	20	35
24	50	20	35
25	50	20	35
26	50	20	35
27	27	10	35
28	27	10	35