

THE MILWAUKEE ROAD STRATEGIC PLANNING STUDIES

PREPARED BY
BOOZ, ALLEN & HAMILTON
TRANSPORTATION CONSULTING DIVISION

MAY 2, 1979



Vol 1

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STUDY OBJECTIVES

PHASE I IS THERE A LONG TERM VIABLE RAILROAD NETWORK?

PHASE II IF SO, CAN THE MILWAUKEE RAILROAD GET FROM HERE
TO THERE?

KEY ASSUMPTIONS

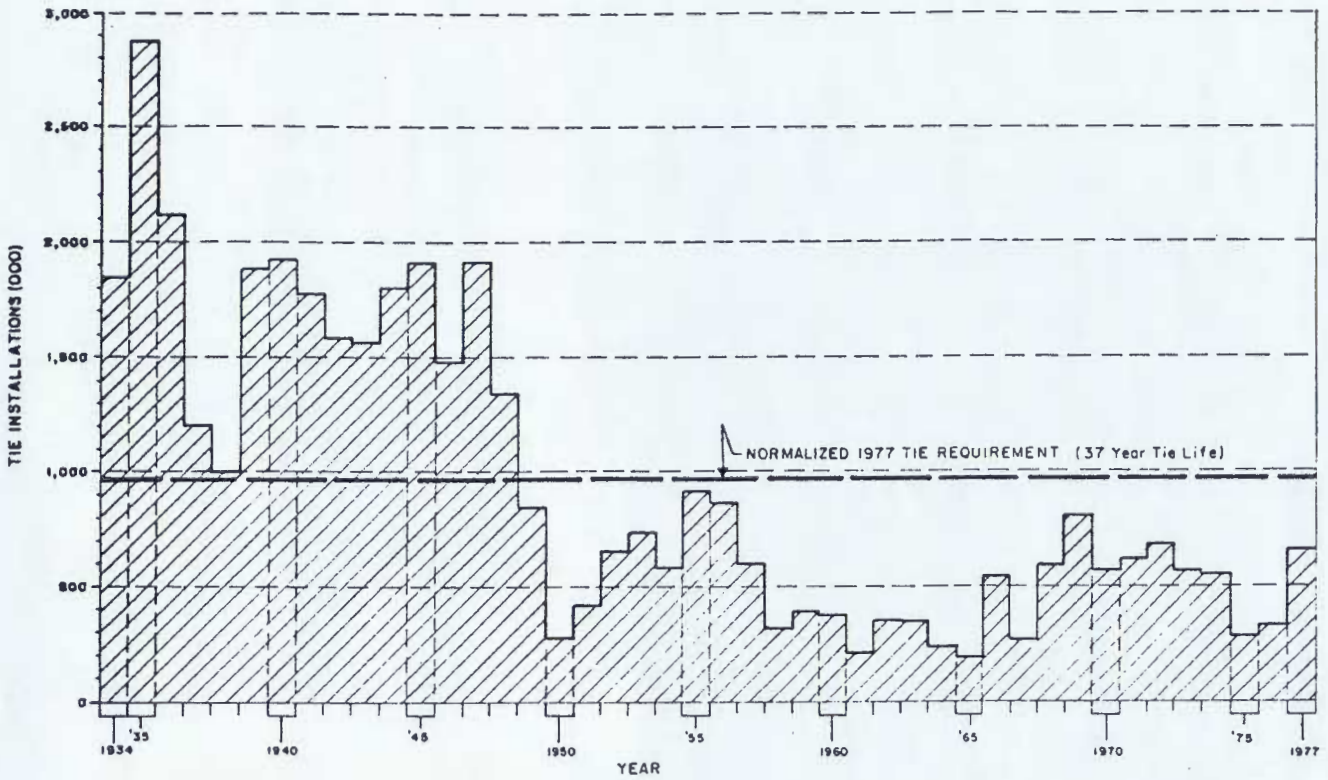
- PRELIMINARY STUDY BASED ON 1977 TRAFFIC LEVELS:
 - TRANSCONTINENTAL SYSTEMS WERE NOT PROFITABLE
 - MIDWEST STRUCTURE APPEARED TO HAVE GREATER POTENTIAL
- NETWORK CONFIGURATIONS BEING STUDIED IN DETAIL

	<u>ROUTE MILES</u>
- SYSTEM WITHOUT LIGHT DENSITY LINES:	7,965
- MIDWESTERN "CORE" LEVEL SYSTEM	3,894
- CORE EXTENDED TO MILES CITY	4,661
- "SUB CORE"	1,722
- SUB CORE EXTENDED TO MILES CITY	2,488
- SUB CORE WITH KANSAS CITY GATEWAY	2,393
- LOUISVILLE-PORTLAND TRANSCON	3,861
- TWIN CITIES-WEST TRANSCON	4,467

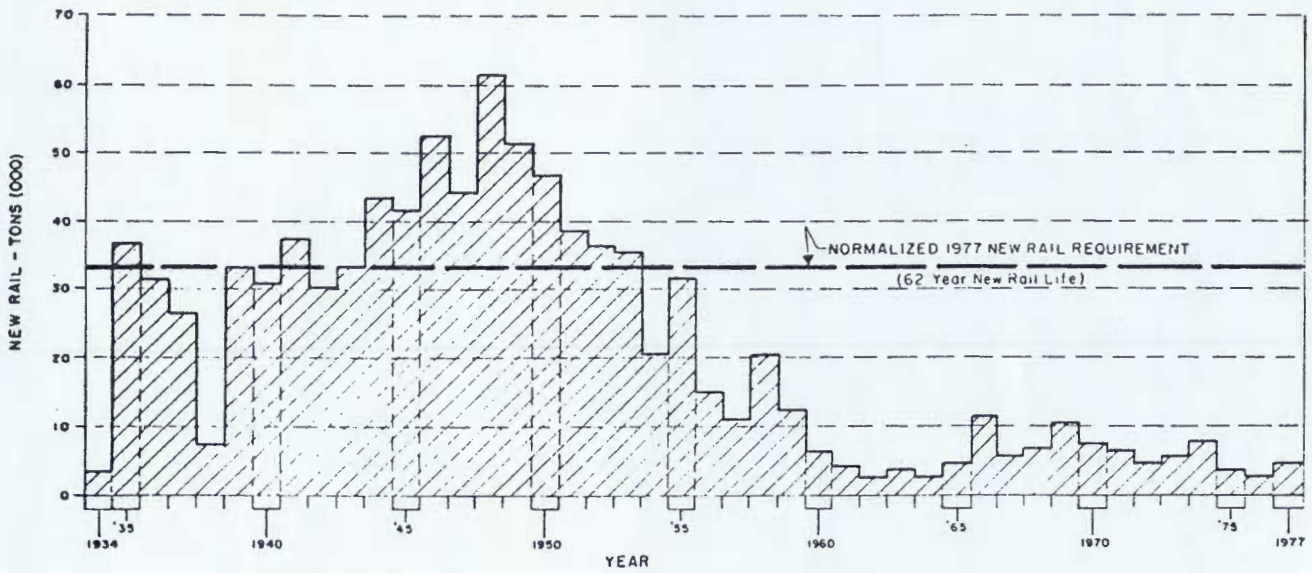
**KEY ASSUMPTIONS
(CONTINUED)**

- DETAILED STUDIES FOCUSED ON PROFORMA NET RAILWAY OPERATING INCOME:
 - STAND ALONE BASIS (RR ONLY - NO DEBT SERVICE)
 - ICC BASIS (1977 FORMAT)
 - "NORMALIZED" MAINTENANCE
 - MARKETING OPPORTUNITIES
 - OPERATING EFFICIENCIES
 - FLEET AVAILABILITY
 - ECONOMIC FORECASTS BY COMMODITY

MILWAUKEE ROAD RAIL AND TIE INSTALLATIONS



MILWAUKEE RAILROAD
TIE INSTALLATIONS
1934-1977

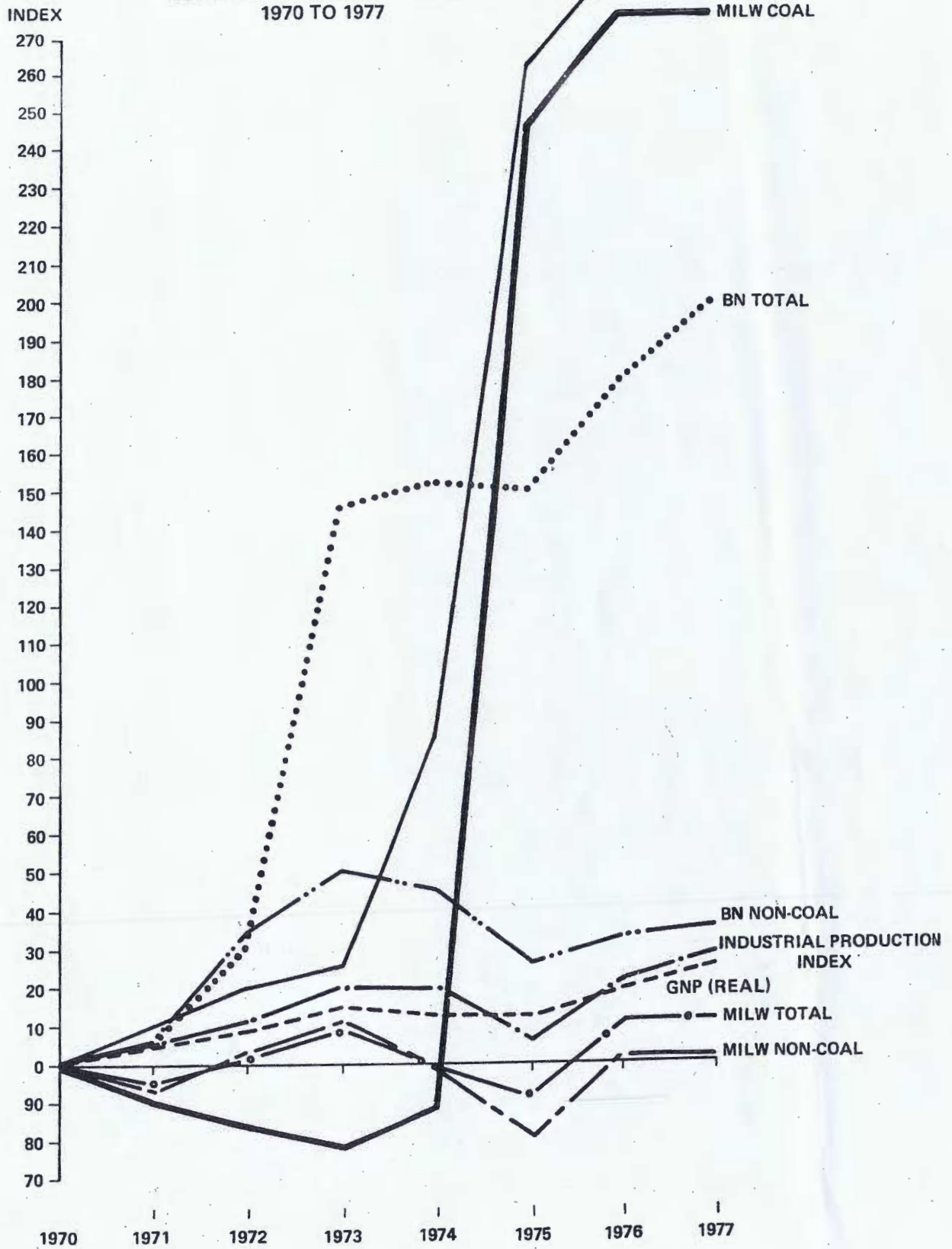


MILWAUKEE RAILROAD
NEW RAIL INSTALLED
1934-1977

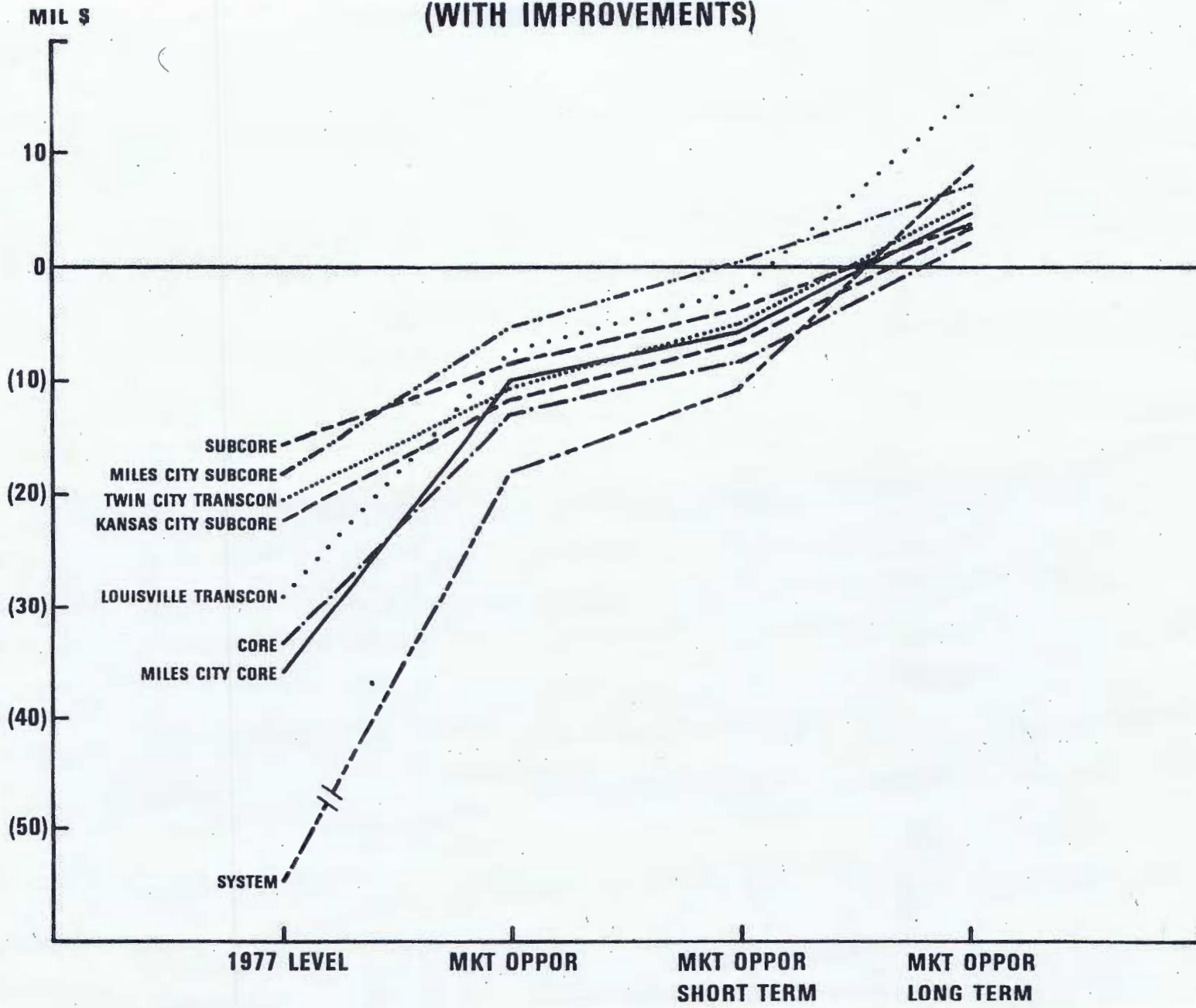
OTHER ASSUMPTIONS AND ISSUES

- 1977 COSTS AND RATES - NO INFLATION
- CURRENT REGULATORY CLIMATE
- CURRENT (1978) LABOR AGREEMENTS
- NO LABOR PROTECTION
- ASSET TRANSFERS LIMITED TO ROLLING STOCK REQUIREMENTS IN REDUCED SYSTEM CONFIGURATIONS (NO TRACK STRUCTURE)
- REHAB/EQUIPMENT REQUIREMENTS ESTIMATED

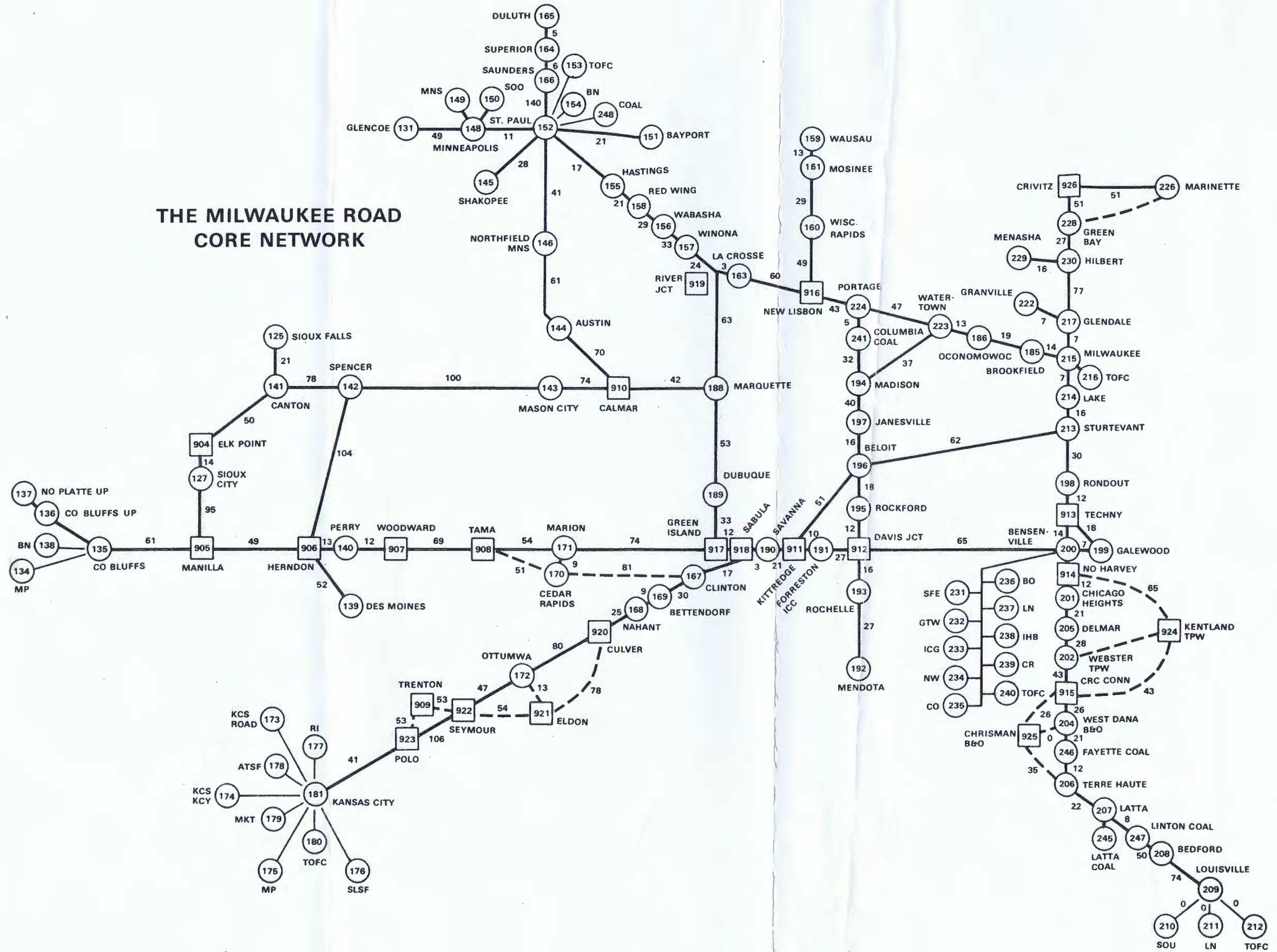
MILWAUKEE ROADS VS. BURLINGTON
NORTHERN TON-MILE TRENDS
1970 TO 1977



PROJECTED NROI COMPARISONS (WITH IMPROVEMENTS)



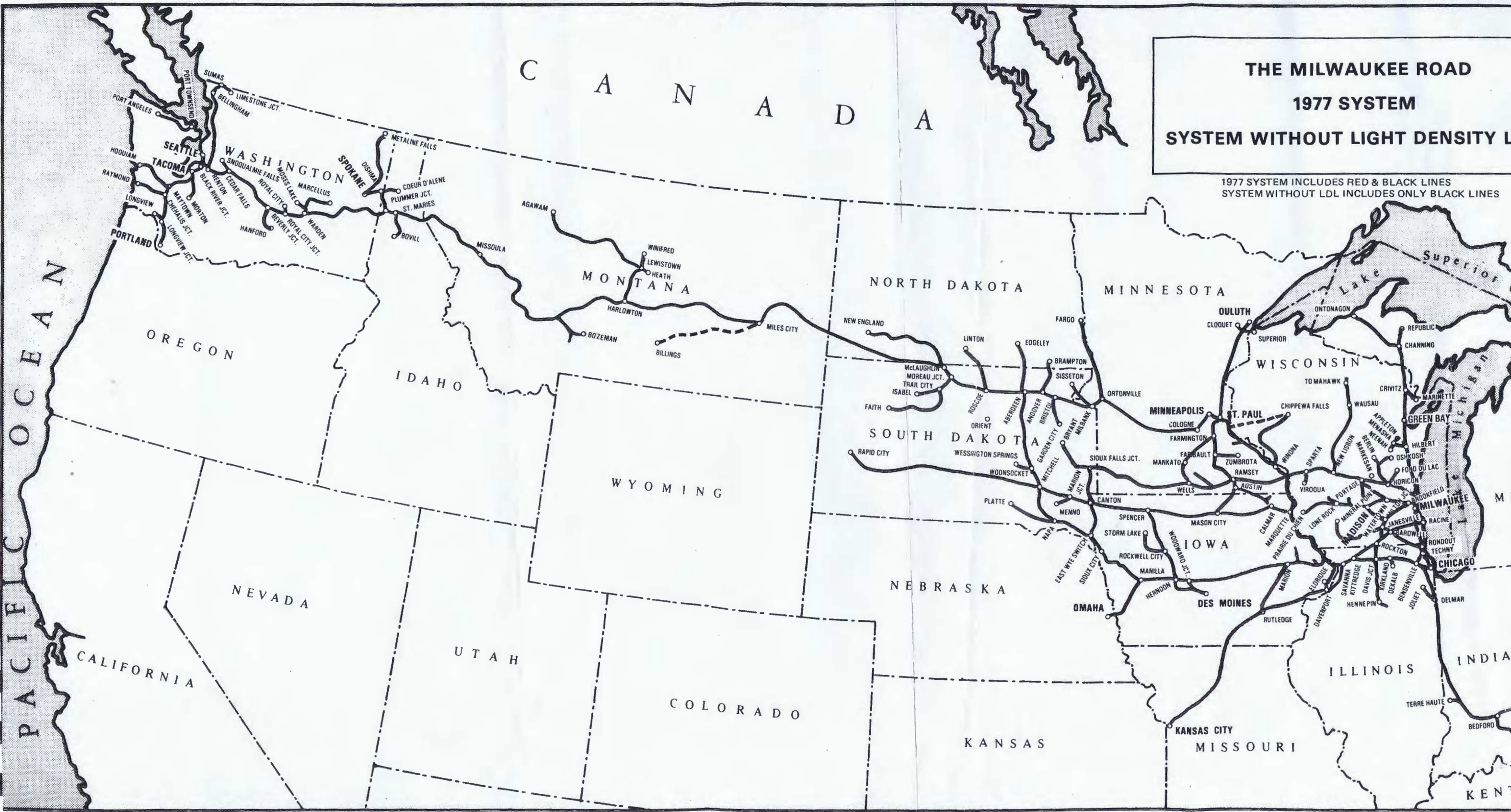
THE MILWAUKEE ROAD CORE NETWORK



C A N A D A

**THE MILWAUKEE ROAD
1977 SYSTEM
SYSTEM WITHOUT LIGHT DENSITY LI**

1977 SYSTEM INCLUDES RED & BLACK LINES
SYSTEM WITHOUT LDL INCLUDES ONLY BLACK LINES



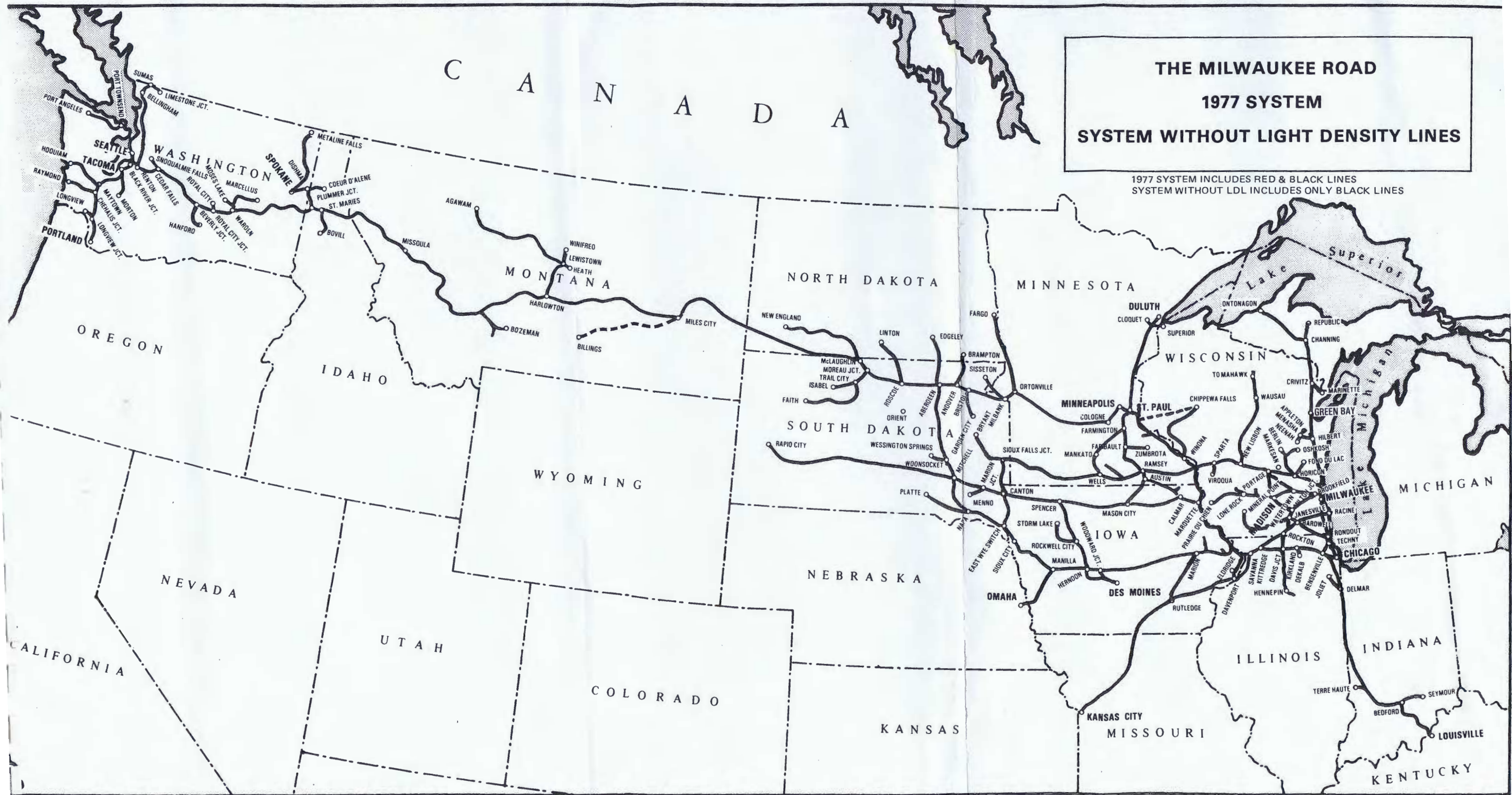
P A C I F I C O C E A N

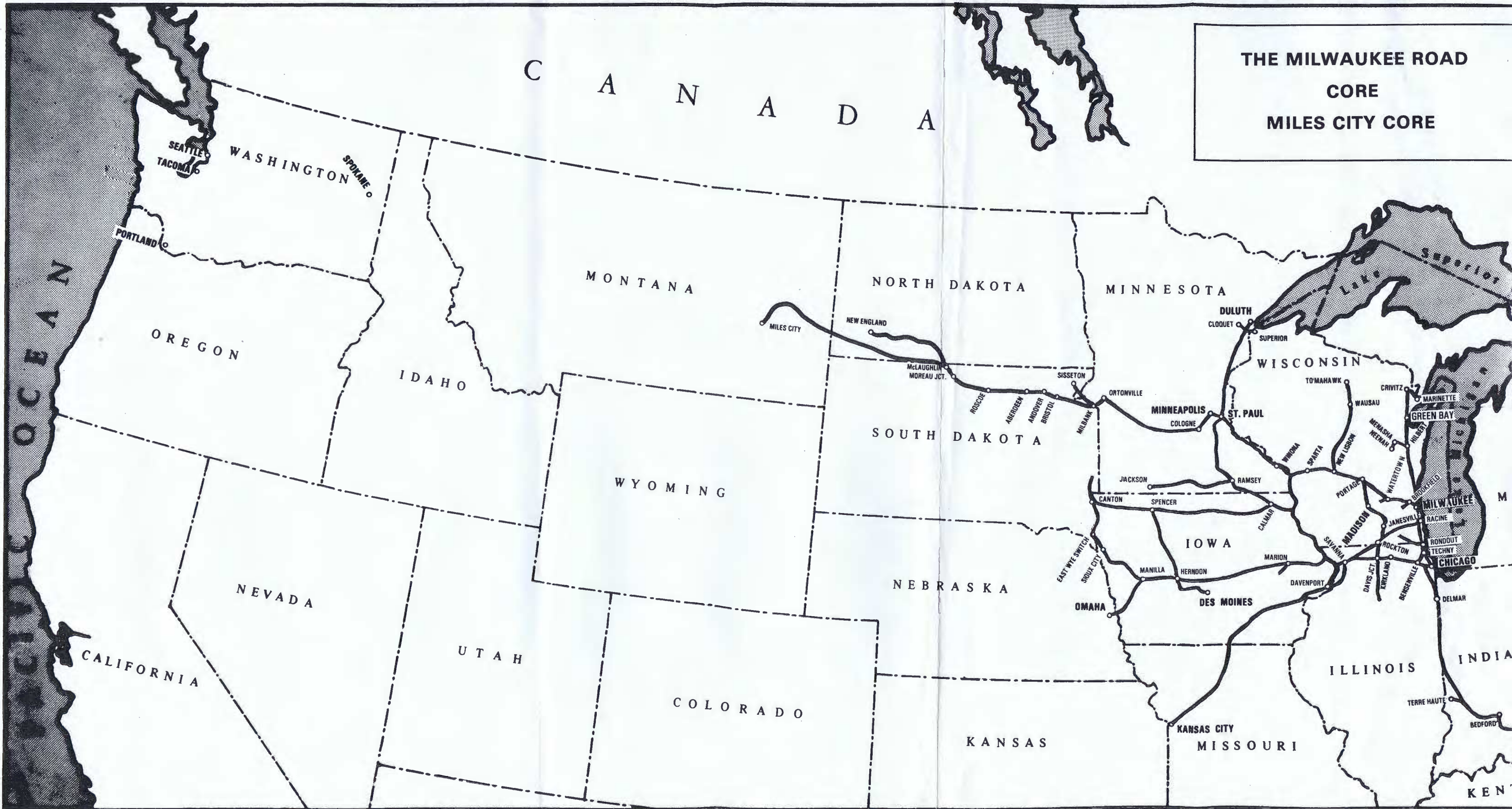
KENT

C A N A D A

**THE MILWAUKEE ROAD
1977 SYSTEM
SYSTEM WITHOUT LIGHT DENSITY LINES**

1977 SYSTEM INCLUDES RED & BLACK LINES
SYSTEM WITHOUT LDL INCLUDES ONLY BLACK LINES



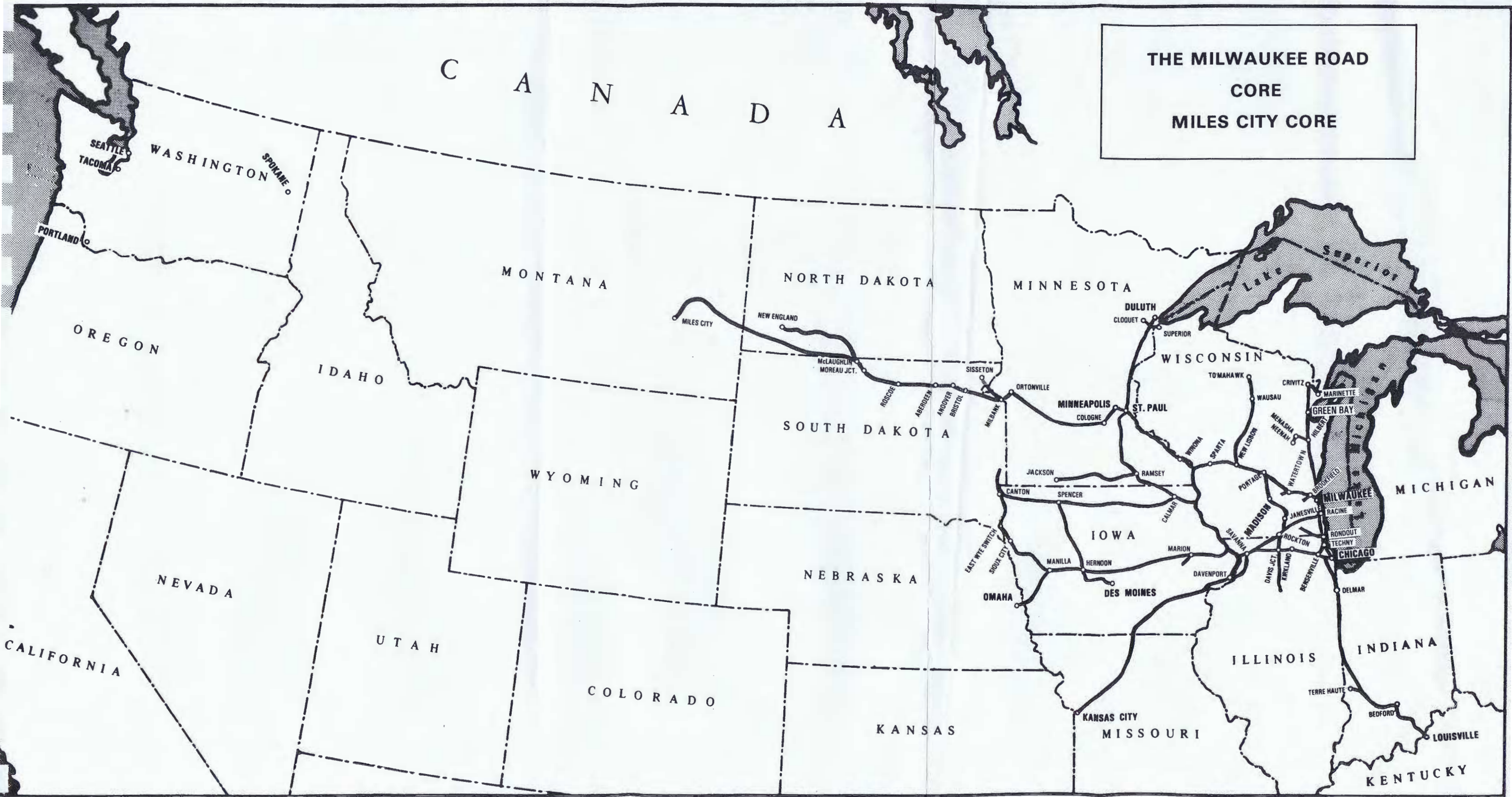


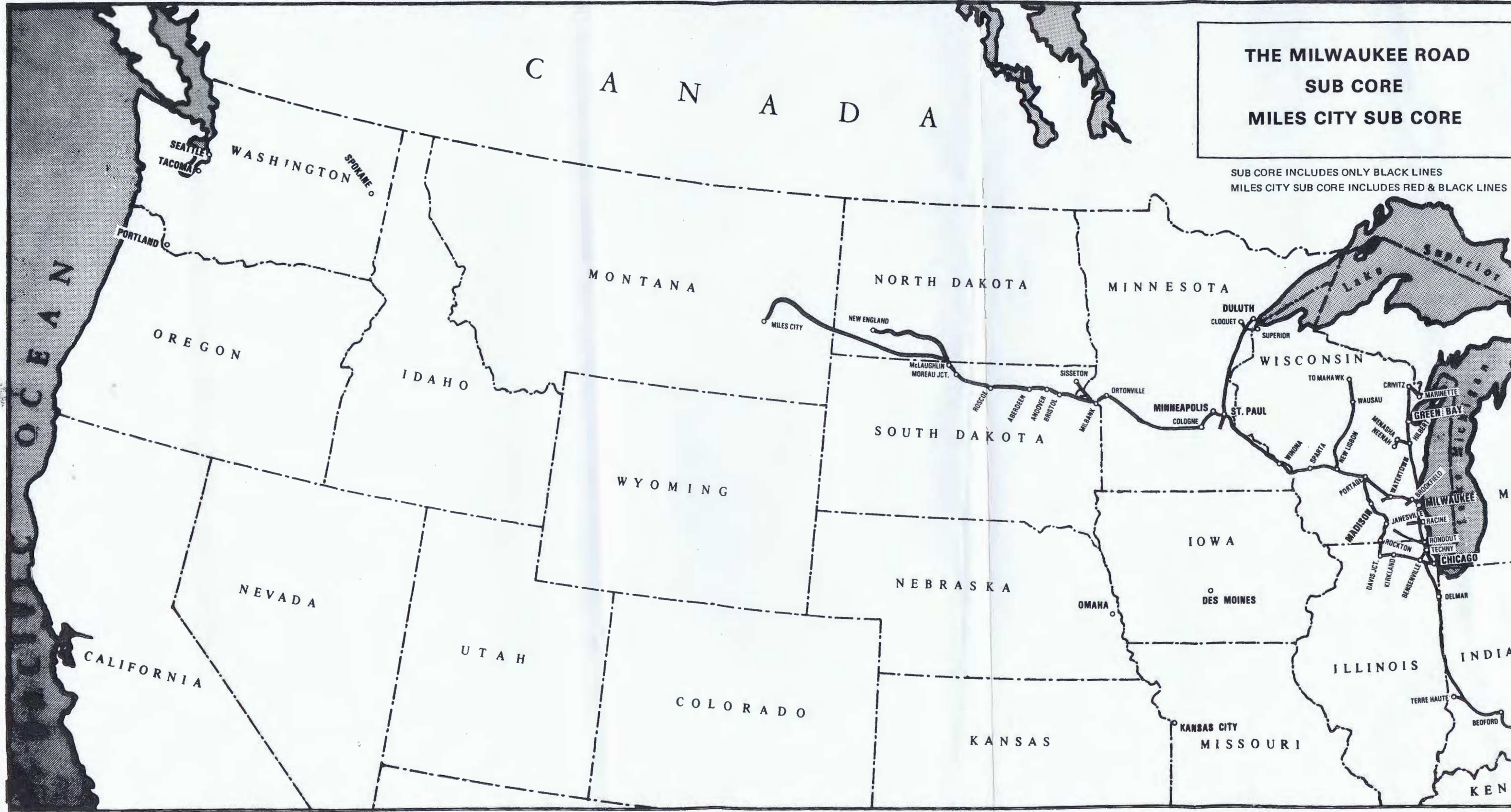
THE MILWAUKEE ROAD
CORE
MILES CITY CORE

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C A N A D A

THE MILWAUKEE ROAD
CORE
MILES CITY CORE





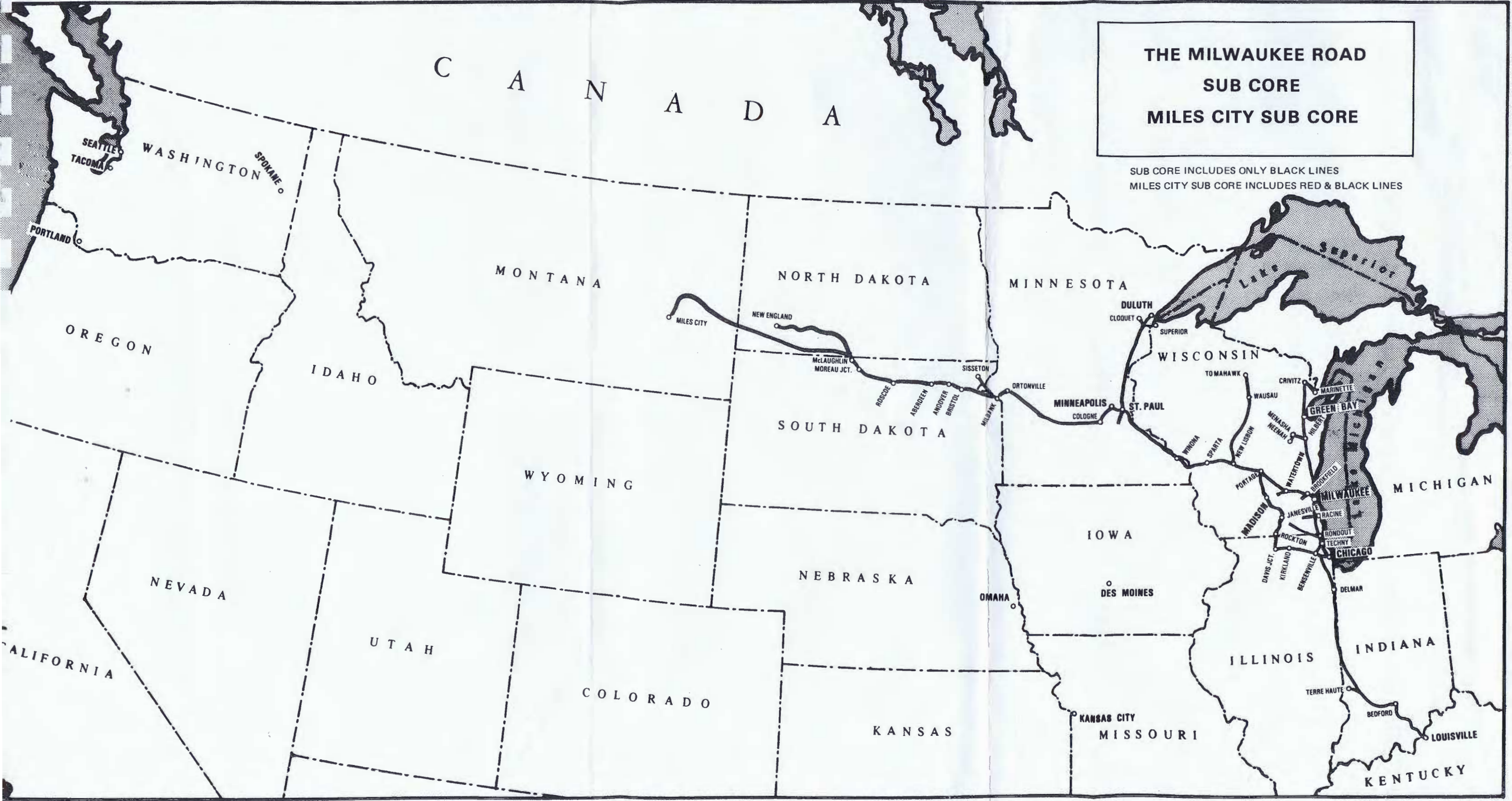
**THE MILWAUKEE ROAD
SUB CORE
MILES CITY SUB CORE**

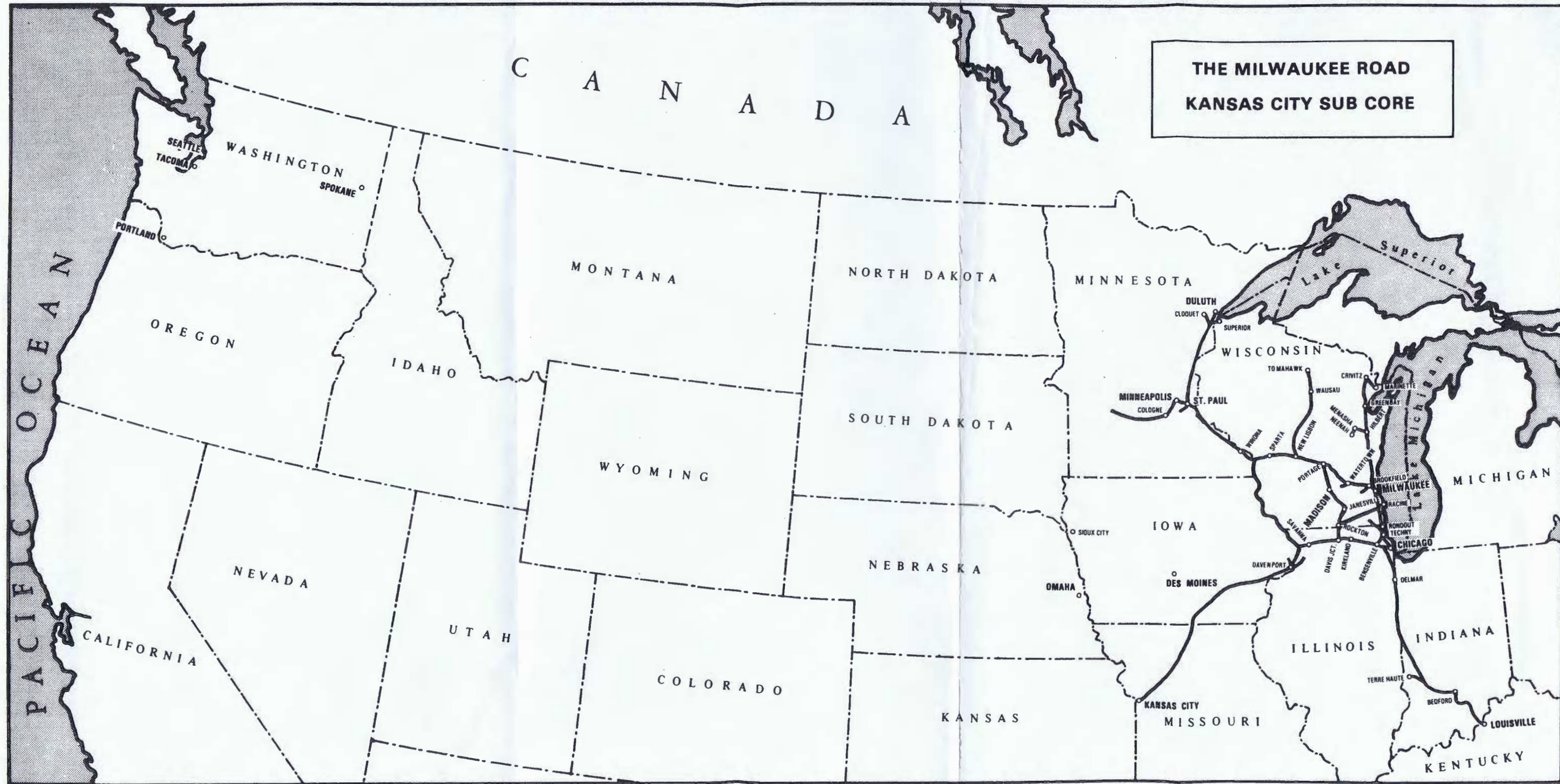
SUB CORE INCLUDES ONLY BLACK LINES
MILES CITY SUB CORE INCLUDES RED & BLACK LINES

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**THE MILWAUKEE ROAD
SUB CORE
MILES CITY SUB CORE**

SUB CORE INCLUDES ONLY BLACK LINES
MILES CITY SUB CORE INCLUDES RED & BLACK LINES





THE MILWAUKEE ROAD
KANSAS CITY SUB CORE

OPERATING ASSUMPTIONS

- MILEAGE OF MAIN AND YARD TRACKS WAS ADJUSTED TO REFLECT 1978 CHANGES AND POTENTIAL CHANGES APPROPRIATE TO THE SYSTEM STUDIED
- RUNNING TIMES WERE REDUCED TO REFLECT REHABILITATED MAIN TRACKS
 - ROAD CREW COSTS WERE REDUCED TO REFLECT ELIMINATION OF RELIEVING CREWS AFTER 12 HOURS OF SERVICE
 - ROAD CREW OVERTIME WAS REDUCED TO 1973 - 1976 AVERAGE LEVELS
- TRAINS WERE RESTRICTED TO 120 CARS AND ALL ROAD AND YARD CREWS REFLECT THE SAVINGS OF REDUCED CREW SIZE UNDER THE 1978 AGREEMENT
- BLOCKING PATTERNS WERE OPTIMIZED WHERE PRACTICAL WHEN FLOWS WARRANTED OR WHEN EXISTING YARD FACILITIES BECOME OVERBURDENED
 - NO CAPITAL FACILITY WORK FOR YARDS IS REQUIRED IN THE OPERATING PLAN EXCEPT FOR FIFE YARD AT TACOMA IN APPROPRIATE SCENARIO
- MILWAUKEE TERMINAL OPERATING COSTS WERE ADJUSTED TO REFLECT THE EXTENSIVE ECONOMIES ALREADY INSTITUTED
- ROAD THROUGH TRAINS AND YARD CREWS WERE ADDED OR DELETED DEPENDENT UPON TRAFFIC VOLUMES AND SERVICE REQUIREMENTS

OPERATING ASSUMPTIONS . . .

- ASSIGNMENT OF LOCOMOTIVE UNITS REFLECTS REPLACEMENT OF LOWER HP ROAD UNITS WITH FEWER HIGH HP UNITS WHEN POSSIBLE
- ORIGINATED AND TERMINATED TRAFFIC TO AND FROM STATIONS ON LIGHT DENSITY LINES IS TREATED AS IF 100 PERCENT IS LOST TO THE MILWAUKEE ROAD
- EXISTING ROUTES WERE RETAINED AND TRACKAGE RIGHTS OPERATION BETWEEN CLINTON-TAMA, BLUE ISLAND-TERRE HAUTE, AND CULVER-POLO WERE NOT INCLUDED IN NETWORK MODELS
- DERAILMENT RELATED COSTS WERE REDUCED TO REFLECT NORMALIZED TRACK CONDITIONS BASED ON THE REPORTED EXPERIENCE OF WESTERN RAILROADS
- JOINT FACILITIES AT POINTS NOT INCLUDED AND THEIR RELATED 1977 COSTS WERE ELIMINATED FROM THE STUDY OF REDUCED SYSTEMS

CARHIRE ASSUMPTIONS

- A NORMALIZED MILWAUKEE FLEET (MILW MARKS) WAS ASSUMED TO BE AVAILABLE
- FOREIGN CARS WERE DISPLACED BY MILWAUKEE CARS, TO THE EXTENT PERMISSABLE UNDER CAR SERVICE RULES, WHERE SUCH DISPLACEMENT WAS ECONOMICALLY BENEFICIAL OR NECESSARY TO PRESERVE MARKET SHARE
- FREIGHT CARS REQUIRED TO DISPLACE FOREIGN CARS AND SUPPORT THE GROWTH IN TRAFFIC WERE OBTAINED THROUGH ADDITIONAL LEASES
 - ADDITIONAL LEASE COSTS WERE BASED ON THE AVERAGE LEASE COST OF THE MILWAUKEE LEASED FLEET IN 1977
 - IN THE EVEN OF AN EXCESS OF CARS, LEASES WERE CANCELLED WITHOUT PENALTY
- THE 1977 PER DIEM AND MILEAGE RATES APPLICABLE TO MILWAUKEE CARS WERE ADJUSTED TO REFLECT THE NORMALIZED CONDITION OF THE FLEET, AND THE DIFFERENCES IN THE AGE AND OWNERSHIP PROFILES OF THE REQUIRED FLEETS AND THE 1977 FLEET
- NO IMPROVEMENTS IN YARD OPERATIONS WERE ASSUMED, HOWEVER, REDUCTIONS IN TRANSIT TIMES RESULTING FROM AN OPTIMIZED OPERATING STRATEGY AND REHABILITATED PLANT WERE INCORPORATED

LOCOMOTIVE ASSUMPTIONS

- LOCOMOTIVE REQUIREMENTS WERE BASED ON SPECIFIC TRAIN OPERATING AND YARD REQUIREMENTS
 - SELECTION OF DROP-OUTS WAS NOT AFFECTED BY OWNERSHIP STATUS
 - NO NEED WILL EXIST FOR SHORT TERM LEASE UNITS
- REQUIRED FLEET WAS ASSUMED TO BE REHABILITATED- REHAB COSTS WERE ESTIMATED
 - AVAILABILITY IMPROVED TO 90 PERCENT
 - MAINTENANCE EXPENSE AT NORMALIZED LEVEL REFLECTS TYPE OF SERVICE: THROUGH, LOCAL, UNIT, AND YARD SWITCHING
 - NORMALIZED OVERHAUL FREQUENCY WILL BE AT 4 YEARS (GE) OR 5 YEARS (EMD) INTERVALS, OR 450,000 MILES, WHICHEVER OCCURS FIRST
- FUEL CONSUMPTION WILL REMAIN CONSTANT AT 1.9 GALLONS PER MGTM BEFORE AND AFTER CONVERSION
- LEASE AND DEPRECIATION CHARGES WERE CALCULATED BY ACTUAL UNITS SELECTED TO REMAIN IN EACH INDIVIDUAL SCENARIO

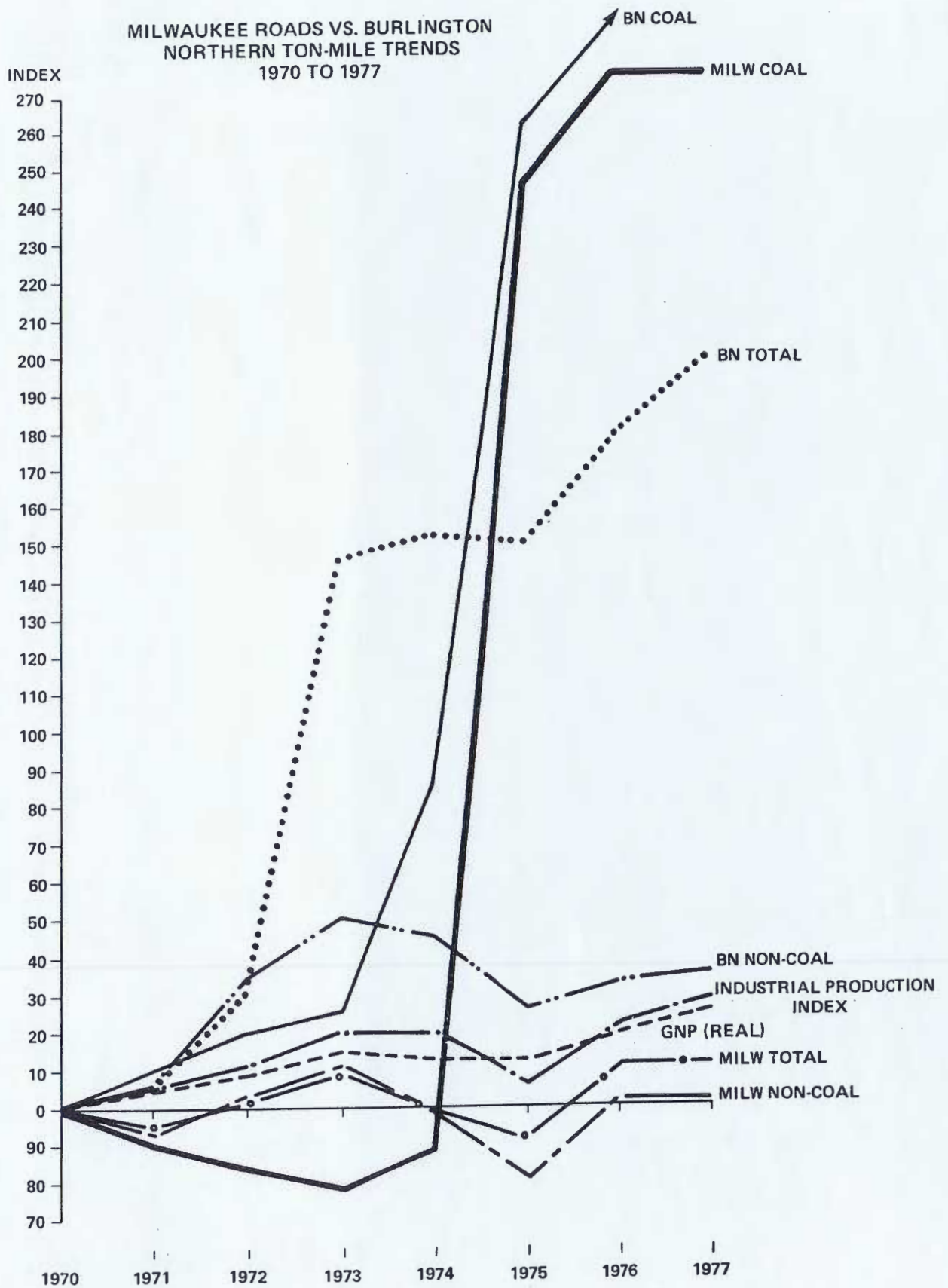
MARKETING ANALYSIS

- CUSTOMER SURVEY
- PROJECTION OF NEW TRAFFIC BY MILW. SALES/MARKETING DEPT.
- REVIEW OF SUCCESS PROBABILITIES
- ASSUMPTIONS GOVERNING SUCCESS PROBABILITY DETERMINATION
- ADJUSTED CARLOADS AND REVENUES FOR SEVERAL SCENARIOS
- DIVERSIONS/DIVISIONS ASSUMPTIONS
 - FOR REDUCED SYSTEM CONFIGURATIONS, 1977 TRAFFIC THAT HAD BOTH ORIGIN AND DESTINATION IN THE SYSTEM UNDER STUDY WAS RETAINED IN ITS ENTIRETY. IF BOTH WERE OUT, THE TRAFFIC WAS DELETED FROM CONSIDERATION. IF ONE END WAS IN AND ONE END OUT OF THE SYSTEM UNDER STUDY, TRAFFIC WAS CONSIDERED AS SUBJECT TO DIVERSION
 - TRAFFIC SUBJECT TO DIVERSION WAS REVIEWED AND EITHER DROPPED AS NOT RETAINABLE OR RETAINED WITH A NEW "IN" GATEWAY REPLACING THE "OUT" END OF THE ORIGINAL MOVEMENT WITH AN APPROPRIATE DIVISION OF REVENUE.

EFFECT OF MARKET OPPORTUNITIES AND ECONOMIC FORECAST

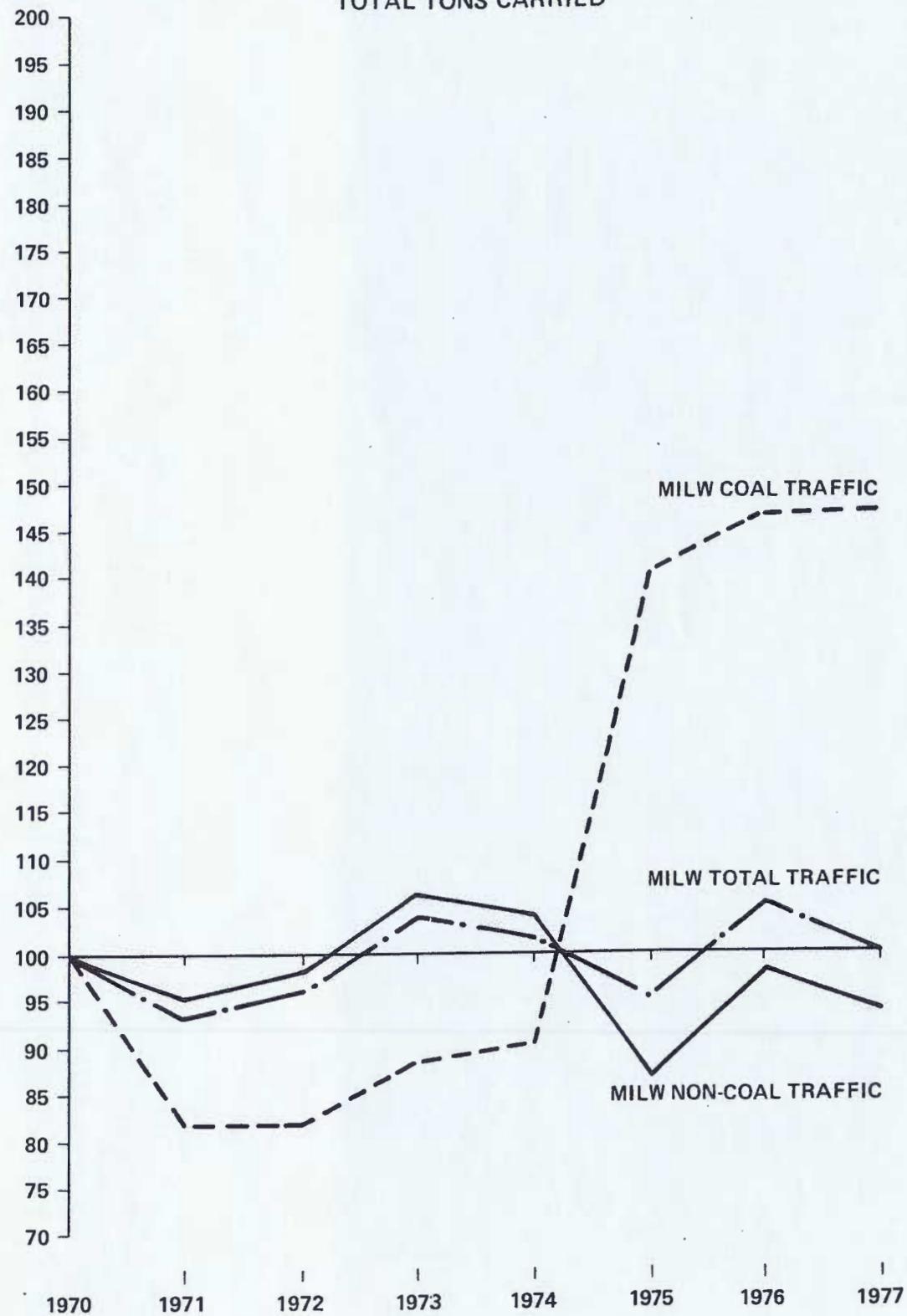
PERCENTAGE INCREASE IN:	SYSTEM	MCITY		MCITY		KC	LVILLE	TCITY
	<u>w/o LDL</u>	<u>CORE</u>	<u>CORE</u>	<u>SUBCORE</u>	<u>SUBCORE</u>	<u>SUBCORE</u>	<u>TRNSCN</u>	<u>TRNSCN</u>
	%	%	%	%	%	%	%	%
MARKET OPPORTUNITIES Vs 1977 LEVEL								
CARLOADS	25	26	25	23	22	23	22	13
REVENUE	34	32	31	26	26	27	30	26
1986 ECONOMIC FORECAST Vs MARKET OPPORTUNITIES LEVEL								
CARLOADS	8	9	9	11	10	10	9	4
REVENUE	9	11	10	13	12	13	11	8
LONG TERM COMPOUND EFFECT Vs 1977 LEVEL								
CARLOADS	35	37	36	36	35	36	33	18
REVENUE	47	46	45	42	41	44	44	35

MILWAUKEE ROADS VS. BURLINGTON
NORTHERN TON-MILE TRENDS
1970 TO 1977



MILWAUKEE ROAD TOTAL TONS CARRIED

INDEX

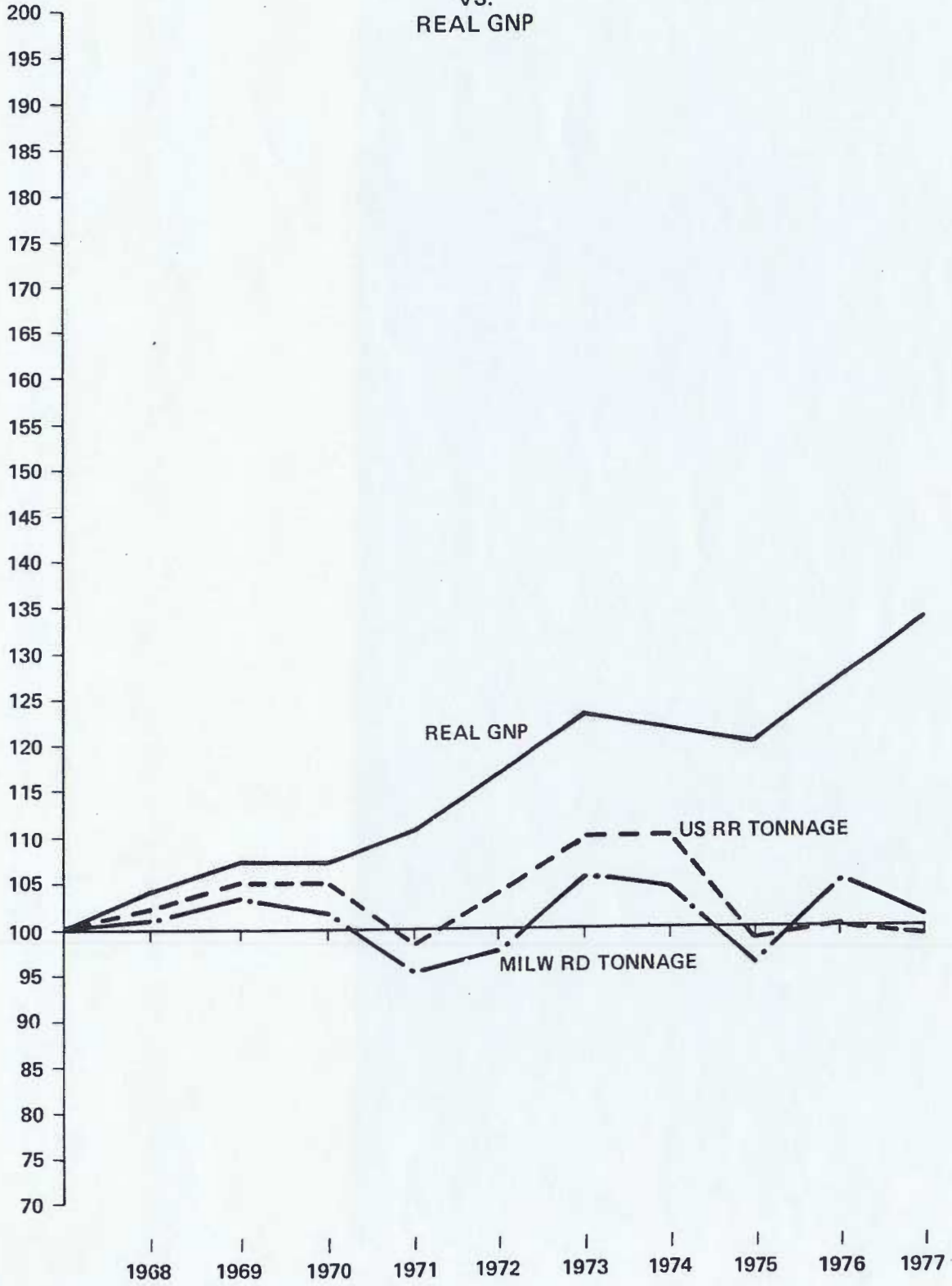


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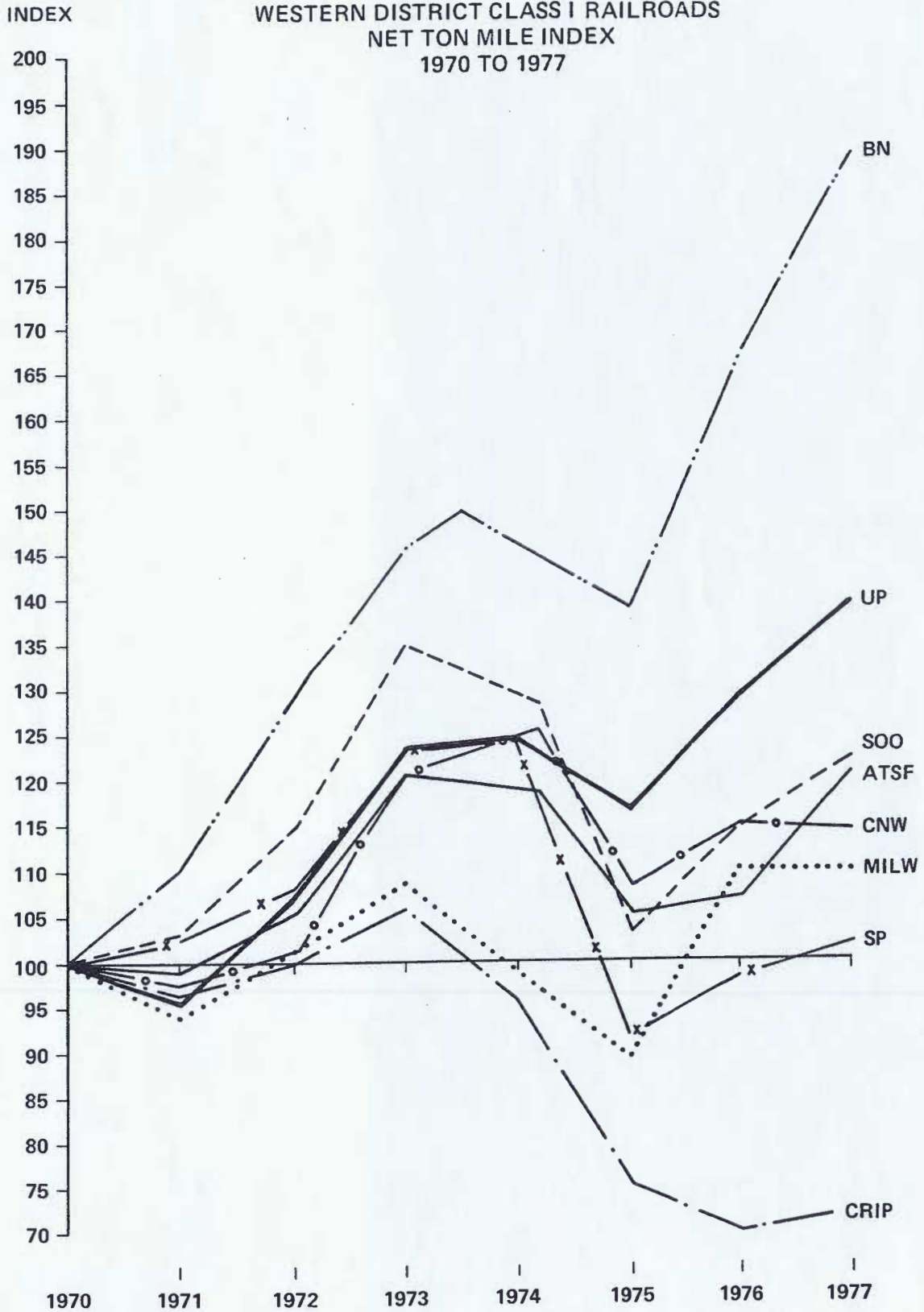
RAIL TONNAGE
VS.
REAL GNP

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1968 1969 1970 1971 1972 1973 1974 1975 1976 1977



WESTERN DISTRICT CLASS I RAILROADS
NET TON MILE INDEX
1970 TO 1977



1977 LEVEL STATISTICS

	<u>GROSS FREIGHT REVENUE (MIL)</u>	<u>REVENUE CARLOADS (000)</u>	<u>MILES OF ROAD OPERATED</u>	<u>ESTIMATED NUMBER OF EMPLOYEES (000)</u>
BASE	434.8	467	9,566	11.4
SYSTEM w/o LDL	423.6	845	7,965	10.7
CORE	248.2	645	3,894	6.6
MILES CITY CORE	269.4	683	4,661	7.1
SUBCORE	146.3	444	1,722	4.4
MILES CITY SUBCORE	168.1	480	2,488	4.9
KANSAS CITY SUBCORE	182.0	498	2,393	5.1
LOUISVILLE TRANSCON	271.1	572	3,861	7.0
TWIN CITY TRANSCON	168.8	270	4,467	4.3

LONG TERM LEVEL STATISTICS

	<u>GROSS FREIGHT REVENUE (MIL)</u>	<u>REVENUE CARLOADS (000)</u>	<u>ESTIMATED NUMBER OF EMPLOYEES (000)</u>
SYSTEM W/O LDL	621.6	1,138	12.6
CORE	361.8	885	7.8
MILES CITY CORE	390.2	930	8.3
SUBCORE	208.5	605	5.1
MILES CITY SUBCORE	237.4	648	5.6
KANSAS CITY SUBCORE	261.9	677	6.0
LOUISVILLE TRANSCON	390.7	763	8.2
TWIN CITY TRANSCON	228.6	318	5.0

FREIGHT CAR REQUIREMENTS

-----THOUSANDS OF CARS-----

SYSTEM	MC		MC		KC	LVLL	TWNCY	
<u>W/O LDL</u>	<u>CORE</u>	<u>CORE</u>	<u>SUBCORE</u>	<u>SUBCORE</u>	<u>SUBCORE</u>	<u>TRNSCN</u>	<u>TRNSCN</u>	
TRAFFIC RECOVERY TO 1977 LEVELS								
DIFFERENCE FROM 1977 NORMALIZED FLEET	5.8	(1.7)	(1.4)	(5.5)	(5.3)	(4.4)	(2.9)	(5.9)
TRAFFIC ADJUSTED FOR MARKET OPPORTUNITIES								
DIFFERENCE FROM 1977 NORMALIZED FLEET	12.8	4.1	4.5	(2.6)	(2.2)	(0.5)	2.1	(5.1)
MARKET OPPORTUNITIES AND GROWTH TO LONG TERM LEVELS								
DIFFERENCE FROM 1977 NORMALIZED FLEET	14.7	5.4	6.0	(1.1)	(0.6)	1.1	4.0	(4.7)
OVER 40 YEAR OLD DROPOUTS*	<u>3.1</u>	<u>1.8</u>	<u>2.5</u>	<u>1.1</u>	<u>1.4</u>	<u>1.4</u>	<u>2.3</u>	<u>1.8</u>
TOTAL ADDITIONAL CARS REQUIRED	17.8	7.2	8.5	-	0.8	2.5	6.3	(2.9)

*40 YEAR DROPOUTS HAVE NOT BEEN INCLUDED IN THE NROI PROFORMAS

LOCOMOTIVE SUMMARY—TOTAL UNITS REQUIRED

1977 ACTUAL - 705

1977 BASE NORMALIZED - 628

	<u>SYSTEM</u>	<u>CORE</u>	<u>MC CORE</u>	<u>SUBCORE</u>	<u>MC SUBCORE</u>	<u>KC SUBCORE</u>	<u>LVLLE TRANSCON</u>	<u>TWIN CITY TRANSCON</u>
TRAFFIC RECOVERY TO 1977 LEVELS	563	349	376	217	246	257	346	209
TRAFFIC LEVEL WITH MARKET OPPORTUNITY RECAPTURE	664	400	426	241	271	285	399	235
TRAFFIC RECAPTURE AND GROWTH TO LONG TERM LEVEL	703	422	451	255	284	303	416	240

PLANT REHABILITATION ESTIMATES

MILLIONS OF DOLLARS

	<u>TOTAL REHABILITATION</u>		<u>NET REHABILITATION</u>	
	REQUIREMENT TO BRING TRACK TO COMPETITIVE LEVELS AT THE END OF 1977		MINIMUM REQUIREMENT IN EXCESS OF TEN YEAR NORMALIZED MAINTENANCE	
	<u>WITHOUT COORDINATIONS</u>	<u>WITH COORDINATIONS</u>	<u>WITHOUT COORDINATIONS</u>	<u>WITH COORDINATIONS</u>
SYSTEM LESS LDL	482	447	231	215
CORE	248	213	103	87
MC CORE	286	251	131	115
SUB CORE	125	108	51	45
MC SUB CORE	163	146	74	68
KC SUB CORE	159	128	72	60
L'VILLE TRANSCON	249	232	134	128
TC TRANSCON	258	258	130	130

POTENTIAL IMPROVEMENT

COMPONENTS

- OPERATING IMPROVEMENTS IN MAJOR TERMINALS SIMILAR TO THOSE ACCOMPLISHED IN MILWAUKEE
- TRAFFIC DEPARTMENT EXPENSE REDUCED TO 1977 CNW-RI RATIO OF 2.1% OF TOTAL REVENUES
- GENERAL EXPENSES REDUCED TO 1977 CNW-RI RATIO OF 4.6%
- POTENTIAL CONTRIBUTION OF THE EXPERIMENTAL SPRINT OPERATION BEYOND TRAFFIC WHICH IS INCLUDED IN THE MODEL
- LONG TERM BENEFIT OF WELDED RAIL IN REDUCING NORMALIZED MAINTENANCE EXPENSES
- INCOME POTENTIAL FROM MARKETABLE MILWAUKEE OWNERSHIP CARS AND LOCOMOTIVES THAT PROJECTED TRAFFIC LEVELS DO NOT REQUIRE.

NET RAILWAY OPERATING INCOME ESTIMATES

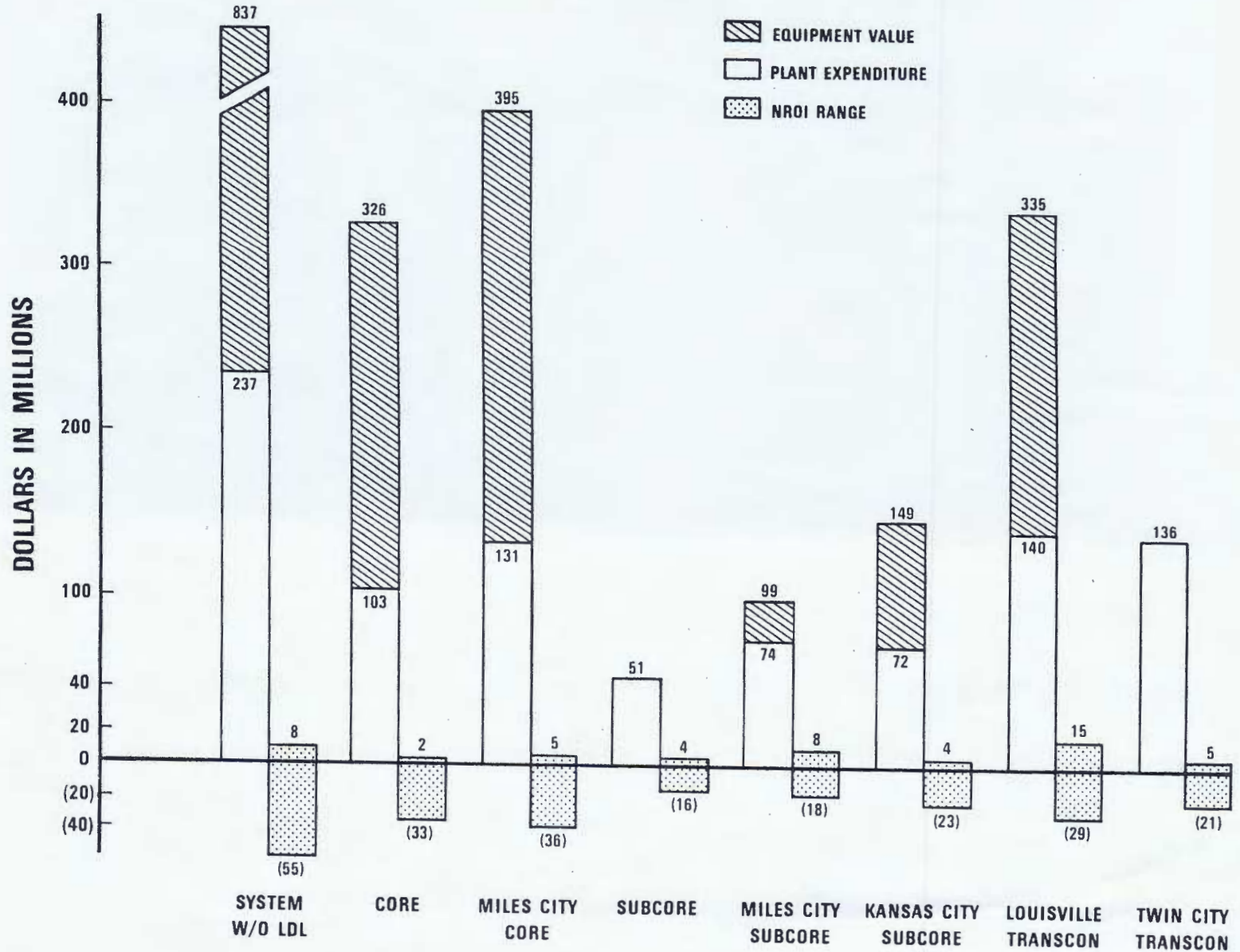
(\$ MILLIONS)

	<u>NROI</u>	<u>NROI IMPRD.</u>	<u>NROI ADJUSTED FOR DEPRN.</u>
<u>SYSTEM</u>			
<u>LESS LDL</u>			
1977 LEVEL	(60.9)	(55.3)	(42.0)
LONG TERM	(3.9)	+8.4	+22.5
<hr/>			
<u>CORE</u>			
1977 LEVEL	(40.2)	(33.2)	(23.3)
LONG TERM	(9.5)	+2.3	+12.8
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<u>MC CORE</u>			
1977 LEVEL	(42.5)	(36.0)	(25.7)
LONG TERM	(6.8)	+4.9	+15.8
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<u>SUB CORE</u>			
1977 LEVEL	(26.6)	(15.6)	(7.5)
LONG TERM	(11.4)	+3.8	+12.2
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<u>MC SUB CORE</u>			
1977 LEVEL	(28.3)	(18.4)	(10.0)
LONG TERM	(6.5)	+7.5	+16.2
<hr/>			
<u>KC SUB CORE</u>			
1977 LEVEL	(32.4)	(22.6)	(13.9)
LONG TERM	(10.6)	+3.5	+12.4
<hr/>			
<u>L'VILLE</u>			
<u>TRANSCON</u>			
1977 LEVEL	(36.1)	(29.0)	(18.7)
LONG TERM	+2.9	+15.0	+25.8
<hr/>			
<u>T.C.</u>			
<u>TRANSCON</u>			
1977 LEVEL	(31.2)	(21.4)	(14.5)
LONG TERM	(10.3)	+5.5	+13.5

● ITEMS OF POTENTIAL IMPACT OUTSIDE THE IMMEDIATE CONTROL OF TRUSTEE AND NOT INCLUDED IN DETAILED STUDIES

- PRICING FREEDOM AND ABILITY TO ESTABLISH RATES THAT WILL BE FULLY COMPENSATORY FOR ALL TRAFFIC BEING HANDLED
- MAJOR REVISIONS IN LABOR WORK RULES
- INFLATION AND ABILITY OF RATE ACTIONS AND PRODUCTIVITY IMPROVEMENTS TO OVERCOME THE HISTORICAL LAG
- POSITIVE OR NEGATIVE VALUE OF RECENT AND CONTEMPLATED CHANGES IN RULES AND RATES GOVERNING DEMURRAGE AND PER DIEM
- EFFECT OF RECENT FUEL PRICE CHANGES AND THE ENERGY SITUATION
- EFFECT OF ROCK ISLAND REORGANIZATION OR NEW PUBLIC OR PRIVATE SHORT LINE RAILROADS
- EFFECT OF INCREASES IN CAR CAPACITY

NET PLANT EXPENDITURE AND ADDITIONAL EQUIPMENT VALUES ASSUMED COMPARED TO NROI (1977 DOLLARS)



PROJECTED NROI COMPARISONS (WITH IMPROVEMENTS)

