

THE ECONOMIC IMPACTS OF A  
UNIFORM DEEP-DRAFT USER CHARGE  
ON GREAT LAKES SHIPPING

FINAL PRESENTATION

PREPARED FOR  
THE GREAT LAKES COMMISSION

BY  
THE TRANSPORTATION SERVICE  
DATA RESOURCES, INC.

OCTOBER 6, 1983

## OBJECTIVES

- ESTIMATE THE "EXTRA" COST OF TRANSPORTATION RESULTING FROM A DEEP-DRAFT USER CHARGE.
- ESTIMATE THE IMPACT OF A USER CHARGE ON MODAL AND SOURCE COMPETITION.
- DETERMINE THE INDUSTRY AND REGIONAL IMPACTS RESULTING FROM A DEEP-DRAFT USER CHARGE.

## METHODOLOGY

### TWO TAXING ALTERNATIVES

- 16¢ PER TON UNIFORM CHARGE
  - COLLECT AN ESTIMATED \$215 MILLION OR 60% OF O&M COSTS.
  - A CHARGE OF 26.8¢/TON WOULD BE NECESSARY TO COLLECT \$360 MILLION OR 100%.
  
- AN AD VALOREM CHARGE OF \$.0005/\$1 VALUE
  - DRI ESTIMATES THAT THIS WOULD COLLECT BACK \$150 MILLION OR 42% OF O&M COSTS.
  - A CHARGE OF \$.0012/\$1 VALUE WOULD BE NECESSARY TO COLLECT \$360 MILLION OR 100%.
  
- SEAWAY TOLLS -- ELIMINATION OF U.S. TOLLS
  - U.S. GOVERNMENT RECEIVES 29% OF ALL TOLLS COLLECTED ON THE MONTREAL TO LAKE ONTARIO SECTION.

## METHODOLOGY

● STUDY YEAR -- 1980

### U.S. GREAT LAKES TRAFFIC

<u>YEAR</u>	<u>MILLIONS OF SHORT TONS</u>
1975	193.8
1976	205.8
1977	185.9
1978	221.3
1979	224.9
1980	183.5
1981	185.1
AVERAGE (1975-1981) =	201.0

● SEVEN KEY STUDY COMMODITIES

### U.S. GREAT LAKES -- 1980

<u>COMMODITY</u>	<u>TONNAGE (MILLIONS OF TONS)</u>	<u>% OF TOTAL</u>
IRON ORE	75.9	41.4
COAL	38.7	21.1
LIMESTONE	22.2	12.1
CEMENT	3.7	2.0
GRAIN	16.4	8.9
PETROLEUM PRODUCTS	6.9	3.8
NONMETALLIC MINERALS	8.0	4.4
TOTAL (SEVEN GROUPS)	171.8	93.7%
TOTAL TONNAGE	183.5	

## METHODOLOGY

- GREAT LAKES NETWORK MODEL
  - 800 O-D COMMODITY FLOWS
  - MILEAGE MODEL
  
- TRANSPORTATION COSTS -- THE COST TO THE CARRIER
  - MARITIME ADMINISTRATION DATA
  - COMPARED TO H.P. DREWRY
  - 3 MAJOR COST COMPONENTS
  - 1981 DATA PROJECTED TO 1982 LEVELS
  - RESULT: COST PER TON ESTIMATE
  - USER CHARGE

## CARRIER COSTING

Physical and Operating Characteristics  
For Great Lakes Vessels (1981 data)

<u>Straight Deck Bulk Carrier</u>	
LOA	647'
BEAM	70'
DEPTH	36'
DRAFT	27'
DWT	21,400
GROSS BUILT	11,473
CREW	1953
SHP	7000
SPEED	14 MPH
ENGINES	STM. TURB.
FUEL CONSUMPTION PER DAY	
- AT SEA	275 bbls.
- AT PORT	50 bbls.
ESTIMATED DOMESTIC MARKET VALUE	\$855,000
<u>Daily Vessel Operating Expenses</u>	
WAGES	\$5,200
SUBSISTENCE	243
STORES, SUPPLIES & EQUIPMENT	257
MAINTENANCE AND REPAIR	1,027
INSURANCE	280
OTHER	75
	<u>\$7,082</u>

## COSTS/DAY

	<u>AT SEA</u>	<u>IN PORT</u>
VOE	\$ 7,082	\$7,082
FUEL	\$ 7,975    (\$29 x 275)	\$1,450
CAPITAL	\$    412    (16% - 20 YEARS)	\$    412
	<hr/>	
	\$15,469	\$8,944
CAPACITY	19,300 TONS	19,300 TONS
COST PER TON/DAY	\$ .80	\$ .46

## METHODOLOGY

### ● MODAL DIVERSION

- ALTERNATIVE TRANSPORTATION FEASIBLE?
- VERTICAL INTEGRATION
- CARRIER COST -- GREAT LAKES
- CARRIER COST -- ALTERNATIVE MODE

### ● SOURCE DIVERSION

- PRICE OF THE COMMODITY AT SOURCES
- VERTICAL INTEGRATION?
- PRESENT CARRIER COSTS
- ALTERNATIVE TRANSPORTATION COSTS

### ● INDUSTRY AND REGIONAL IMPACTS

- PRICE IMPACTS
- EMPLOYMENT IMPACTS

## FINDINGS -- IRON ORE

- 76 MILLION TONS OF IRON ORE WERE TRANSPORTED ON U.S. GREAT LAKES IN 1980.
- SEVEN KEY PORTS WERE RESPONSIBLE FOR VIRTUALLY ALL U.S. GREAT LAKE ORIGINATIONS.
- CARRIER COSTS WILL INCREASE BY 3.9% UNDER A 16¢/TON CHARGE AND .5¢ UNDER AN AD VALOREM CHARGE.
- DRI WAS UNABLE TO IDENTIFY ANY MODAL DIVERSION. NOT ONLY ARE TRANSPORTATION COSTS SIGNIFICANTLY LESS FOR LAKE CARRIAGE, BUT THERE IS VERTICAL INTEGRATION BACK THROUGH THE LOW MATERIAL EXTRACTION AND TRANSPORTATION PROCESS.



## FINDINGS -- COAL

- IN 1980 39 MILLION TONS OF COAL ORIGINATED IN U.S. GREAT LAKE PORTS FOR USE BY UTILITIES (UNITED STATES AND CANADIAN) AND STEEL COMPANIES.
- CARRIER COSTS WILL INCREASE BY 6.5% UNDER A UNIFORM TONNAGE CHARGE AND BY .8% UNDER AN AD VALOREM CHARGE.
- DRI CONTENDS THAT AT THIS LEVEL OF USER CHARGE, MODAL OR SOURCE DIVERSION WILL NOT OCCUR.
- THE COST OF ELECTRICITY TO THE REGION COULD INCREASE BY .02% AS A RESULT OF A 16¢ PER TON USER CHARGE.

## FINDINGS -- LIMESTONE

- IN 1980 FROM MICHIGAN PORTS ORIGINATED 22 MILLION TONS OF LIMESTONE FOR THE STEEL AND CEMENT INDUSTRY.
- MANY OF THESE QUARRIES ARE OWNED BY U.S. STEEL COMPANY, REDUCING THE POTENTIAL FOR SOURCE DIVERSION.
- CARRIER COSTS WILL INCREASE BY 6.2% UNDER A 16¢ USER CHARGE AND BY .1% UNDER AN AD VALOREM CHARGE.
- BECAUSE OF VERTICAL INTEGRATION AND CHEAPER WATER CARRIAGE COSTS, DRI FAILED TO IDENTIFY ANY MODAL DIVERSION.

## FINDINGS -- GRAIN

- IN 1980 U.S. GREAT LAKES PORTS ORIGINATED 16.4 MILLION TONS OF GRAIN, OF WHICH 1.6 MILLION TONS WERE DOMESTIC SHIPMENTS.
- TOLEDO AND DULUTH-SUPERIOR REPRESENTED 82% OF U.S. GREAT LAKES ORIGINATIONS IN 1980.
- CARRIER COSTS INCREASE BY 2% DUE TO A 16¢/TON UNIFORM CHARGE AND BY .7% DUE TO AN AD VALOREM CHARGE.
- THE COMPETITIVE MODAL SITUATION WILL NOT BE ALTERED FOR U.S. GRAIN EXPORTS, AS ALL U.S. PORTS WILL REALIZE THE INCREASED FEE. DOMESTIC FLOWS TO BUFFALO MILLS WILL NOT BE DIVERTED.
- U.S. GREAT LAKES EXPORTS OF GRAIN WILL BENEFIT FROM A TOLL REDUCTION ON THE SEAWAY. DRI ESTIMATES THAT A 50% REDUCTION OF U.S. TOLLS WILL REDUCE THE TOLLS PAID BY GRAIN BY 8¢-9¢ PER TON, WHILE AN ELIMINATION WOULD REDUCE TOLLS BY 16¢-18¢ PER TON.
- DRI CONTENDS THAT AN INCREASE OF .5¢ PER BUSHEL WILL NOT INFLUENCE U.S. EXPORTS OF GRAIN.
- NET RETURN TO THE FARMER COULD DECLINE BY 0.6% ON A BUSHEL OF CORN AND BY 2.1% ON WHEAT.

## FINDINGS -- CEMENT

- IN 1980 3.7 MILLION TONS OF CEMENT WERE TRANSPORTED ON THE U.S. GREAT LAKES AND .7 MILLION TONS WERE IMPORTED FROM CANADA.
- CARRIER COSTS WILL INCREASE BY 5.3% UNDER A 16¢/TON CHARGE AND 1.0% UNDER AN AD VALOREM CHARGE.
- MODAL DIVERSION POTENTIAL RESULTING FROM THE USER CHARGE APPEARS TO BE THE LARGEST FOR CEMENT. DRI IDENTIFIED A HALF MILLION TONS WHICH COULD BE DIVERTED TO RAIL AS A RESULT OF A 16¢ PER TON USER CHARGE. NO SOURCE DIVERSION IDENTIFIED.
- PRICE IMPACT WILL BE HIGHER BECAUSE OF COMBINATION OF CEMENT USER CHARGE AND LIMESTONE USER CHARGE. TOTAL PRICE IMPACT COULD BE AS HIGH AS .7%.

## FINDINGS -- PETROLEUM PRODUCTS

- IN 1980 6.9 MILLION TONS OF PETROLEUM PRODUCTS WERE TRANSPORTED ON THE U.S. GREAT LAKES. NEARLY ALL COMMERCE WAS DOMESTIC.
- CARRIER COSTS INCREASE BY 3.9% UNDER A 16¢/TON USER CHARGE AND 3.0% UNDER AN AD VALOREM CHARGE.
- MODAL AND SOURCE DIVERSION WERE NOT IDENTIFIED. SUBSTANTIALLY HIGHER TRANSPORTATION COSTS WERE THE MAIN REASON.

### THE USER CHARGE'S EFFECT OF PETROLEUM PRODUCT PRICES

	<u>JET FUEL</u>	<u>GASOLINE</u>	<u>DISTILLATE</u>	<u>RESIDUAL</u>
GALLONS PER TON	297.3	322.1	285.8	255.4
WHOLESALE PRICE PER TON (\$)	\$254.5	\$269.3	\$232.9	\$165.5
USER CHARGE 16¢/TON	\$0.16	\$0.16	\$0.16	\$0.16
WHOLESALE PRICE PER GALLON \$	\$.856	\$.835	\$.815	\$.648
ADDITIONAL CHARGE PER GALLON	\$.0005	\$.0005	\$.0006	\$.0006
ADDITIONAL CHARGE PER KWH OF ELECTRICITY	--	--	\$.00004	\$.00004

## FINDINGS -- NONMETALLIC MINERALS

- IN 1980 8 MILLION TONS OF NONMETALLIC MINERALS WERE TRANSPORTED ON THE U.S. GREAT LAKES.
- SAND AND GRAVEL AND SALT WERE THE MAJOR NONMETALLIC MINERALS MOVING ON THE GREAT LAKES.
- CARRIER COSTS WILL INCREASE BY 5.2% UNDER A 16¢ CHARGE AND .1% CHARGE UNDER AN AD VALOREM CHARGE.
- DRI WAS UNABLE TO IDENTIFY ANY MODAL OR SOURCE DIVERSION.

## CONCLUSIONS

- CARRIER COSTS WILL INCREASE BY 4.3% UNDER A 16¢/TON USER CHARGE AND 0.8% UNDER AN AD VALOREM CHARGE.
- WITH THE POSSIBLE EXCEPTION OF A HALF MILLION TONS OF CEMENT, DRI CONCLUDED AN INCREASE IN TRANSPORTATION CHARGES DUE TO THE PROPOSED USER CHARGE WOULD HAVE LITTLE IMPACT ON MODAL COMPETITION.
- DUE TO THE HIGH LEVEL OF FIXED INVESTMENTS AND HIGH TRANSPORTATION RATES OF ALTERNATIVE MODES, THE POTENTIAL FOR SOURCE DIVERSION ALSO APPEARS TO BE MINIMAL.
- THE TWO INDUSTRIES MOST AFFECTED BY THESE USER CHARGES WILL BE THE STEEL INDUSTRY (IRON ORE, LIMESTONE, AND COAL) AND THE ELECTRIC UTILITIES (COAL). CURRENT ESTIMATES ARE THAT A 16¢/TON INCREASE IN TRANSPORTATION CHARGES COULD TRANSLATE INTO A \$15 MILLION IN EXTRA EXPENSES FOR THE STEEL INDUSTRY IN THE REGION. HOWEVER, THIS WOULD IMPACT THE FINAL PRICE OF STEEL BY ONLY 0.04%. WHILE TENDING TO FURTHER DISADVANTAGE THIS REGION WITH RESPECT TO BOTH FOREIGN AND OTHER DOMESTIC COMPETITION FOR STEEL, THIS PRICE IMPACT AND CONCOMITANT IMPACT ON EMPLOYMENT (A RESULTING LOSS OF ROUGHLY 200 JOBS) IS MINIMAL.
- SIMILARLY, THERE WOULD BE A SLIGHT IMPACT ON THE ELECTRIC UTILITY INDUSTRY WITH THE PRICE OF FUEL (COAL) INCREASING BY ROUGHLY .5% DUE TO THESE USER CHARGES. THIS RESULTS IN A OVERALL INCREASE IN THE PRICE OF ELECTRICAL ENERGY BY 0.02%. BASED ON THIS ANALYSIS, THE IMPACT ON ELECTRIC UTILITIES -- AS WELL AS THE STEEL INDUSTRY AND THE ENTIRE REGION -- IS VERY SMALL.

## CONCLUSIONS (CONTINUED)

A USER CHARGE OF 16¢ PER TON WOULD INCREASE GRAIN TRANSPORTATION COSTS BY NEARLY ½ CENT PER BUSHEL. DRI CONTENDS THAT SUCH AN INCREASE WILL NOT ALTER THE GREAT LAKES EXPORT GRAIN TRADE, ALTHOUGH MANY GRAIN INDUSTRY SOURCES BELIEVE THAT AN IMPACT OF THIS MAGNITUDE COULD HAVE A CONSIDERABLE EFFECT ON U.S. EXPORTS.

Great Lakes Payments of User Charges  
(Tonnage charge)

<u>Commodity</u>	<u>16¢/Ton Tonnage Charge (Millions of \$)</u>	<u>\$.0005/\$1 Cargo Value Ad Valorem Charge (Millions of \$)</u>	<u>100% Recovery 26.8¢/Ton Tonnage Charge (Millions of \$)</u>	<u>100% Recovery \$.0012/\$1 Cargo Value Ad Valorem Charge (Millions of \$)</u>
Iron Ore	12.14	1.82	20.34	4.39
Coal	6.19	0.81	10.37	1.49
Limestone	3.55	0.04	5.95	0.09
Cement	0.60	0.11	1.01	0.26
Grain	2.62	0.92	4.39	2.21
Petroleum Products	1.10	0.77	1.84	1.85
Nonmetallic Minerals	1.25	0.03	2.14	0.07
Total	27.49	4.51	46.05	10.82

AN AD VALOREM USER CHARGE OF EQUAL RECOVERY LEVELS COULD BE FOUR TIMES LESS COSTLY THAN A UNIFORM TONNAGE CHARGE TO THE GREAT LAKES REGION.



**Executive Offices and  
Main Computer Operations**

24 Hartwell Avenue  
Lexington, Massachusetts 02173  
(617) 863-5100

**Regional Offices**

235 Peachtree Street, N.E.  
Suite 610 - Gas Light Tower  
Atlanta, Georgia 30303  
(404) 521-3282

10 Post Office Square  
Boston, Massachusetts 02109  
(617) 482-2022

625 N. Michigan Avenue  
Suite 1111  
Chicago, Illinois 60611  
(312) 440-2400

200 Renaissance Center  
Suite 2080  
Detroit, Michigan 48243  
(313) 568-0220

Capital Bank Plaza  
Suite 3350  
Houston, Texas 77002  
(713) 658-9261

888 West Sixth Street  
10th Floor  
Los Angeles, California 90017  
(213) 689-9520

1114 Avenue of the Americas  
30th Floor  
New York, New York 10036  
(212) 840-2882

25 Broadway - 17th Floor  
New York, New York 10004  
(212) 248-4450

1760 Market Street  
Philadelphia, Pennsylvania 19103  
(215) 568-9580

1 Oliver Plaza  
Suite 3158  
Pittsburgh, Pennsylvania 15222  
(412) 288-4520

44 Montgomery Street  
Room 2485  
San Francisco, California 94104  
(415) 956-4050

2777 Summer Street  
Fifth Floor  
Stamford, Connecticut 06905  
(203) 327-9812

1750 K Street, N.W.  
Ninth Floor  
Washington, D.C. 20006  
(202) 862-3700

**International Offices**

Data Resources of Canada  
80 Bloor Street, West  
Suite 505, NU West Centre  
Toronto M5S 2V1, Canada  
(416) 961-9323

DRI Europe, Inc.  
Avenue Louise 221, Boite 5  
B1050 Brussels, Belgium  
(322) 648-5445

DRI Europe, Ltd.  
30 Old Queen Street  
St. James's Park  
London SW1H 9HP England  
(441) 222-9571

DRI Europe, Inc.  
No. 7 Rue Gounod  
75017 Paris, France  
(331) 267-3641