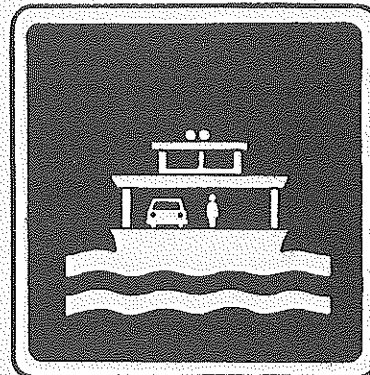
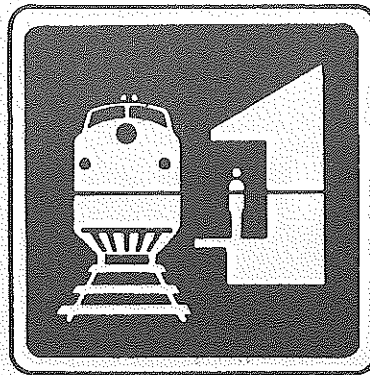
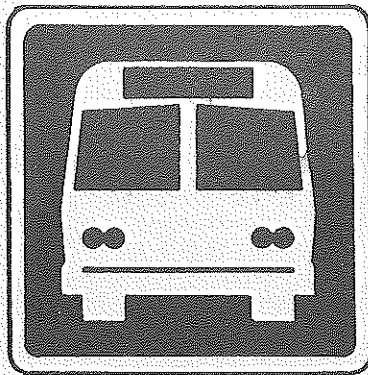


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**INTERCITY PASSENGER TRANSPORTATION  
IN MICHIGAN**

**ST. MARY'S RIVER  
FERRY SYSTEM ANALYSIS**

**FARE IMPACT AND DEMAND  
ESTIMATION**



**PASSENGER TRANSPORTATION PLANNING SECTION  
MICHIGAN DEPARTMENT OF TRANSPORTATION**

MICHIGAN DEPARTMENT  
OF  
TRANSPORTATION

Report 13

**ST. MARY'S RIVER FERRY SYSTEM ANALYSIS**  
**Fare Impact and Demand Estimation**

March 1987

Bureau of Transportation Planning  
Intercity Transportation Planning Division  
Passenger Transportation Planning Section

This report represents the findings and/or professional opinions of the Michigan Department of Transportation staff. Its publication does not represent an official opinion of the State Transportation Commission.

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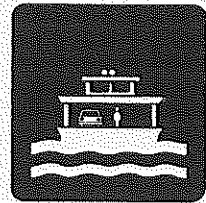
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# INTRODUCTION



## I. INTRODUCTION

The purpose of this analysis is to (1) assess the impact of the October 1985 fare increase, (2) estimate the revenue generated by various fare structure alternatives, and (3) generate demand estimates for the St. Mary's River Ferry System (see Exhibit 1). Historical information is also presented for the Drummond, Neebish and Sugar island ferry services (see exhibits 2, 3 and 4).

### A. IMPACT OF OCTOBER 16, 1985 FARE INCREASE

The fare structures of all three island ferry services were raised October 16, 1985 to pay back audit-identified operating costs incurred in the 1970's which did not qualify for State funds, and to raise the local share of needed capital improvements. Regular fares were increased 20 to 25 percent and book fares 15 percent. Since the fare increase, the level of service in terms of number of crossings decreased somewhat for the Drummond and Sugar island

<u>Ferry Service</u>	<u>1985-86 Crossings</u>	<u>1984-85 Crossings</u>	<u>Change</u>
Drummond	20,022	20,196	-174
Neebish	5,346	5,074	+272
Sugar	29,240	29,319	-79
Total	54,608	54,589	+19

services. Consequently, operating costs were somewhat lower in 1985-86 (\$915,772) compared to 1984-85 (\$939,698).

At the same time, passengers and vehicles increased. This was generally true for both basic and nonbasic trips, although significantly more so for nonbasic.

<u>Ferry Service</u>	<u>Passengers</u>			<u>Vehicles</u>		
	<u>1985-86</u>	<u>1984-85</u>	<u>Change</u>	<u>1985-86</u>	<u>1984-85</u>	<u>Change</u>
Drummond	222,974	220,705	+2,269	95,554	93,182	+2,372
Basic	109,458	109,338	+120	42,438	42,288	+150
Nonbasic	113,516	111,367	+2,149	53,116	50,894	+2,222
Neebish	18,047	15,578	+2,469	9,377	7,465	+1,912
Basic	3,640	3,946	-306	2,295	1,998	+297
Nonbasic	14,407	11,632	+2,775	7,082	5,467	+1,615
Sugar	235,915	234,053	+1,862	120,192	117,659	+2,533
Basic	159,792	155,946	+3,846	77,772	77,568	+204
Nonbasic	76,123	78,107	-1,984	42,420	40,091	+2,329

Therefore, the increase in fare structure had no apparent adverse impact on either basic or nonbasic tripmaking. Examination of the 1982 fare increase for Drummond Island and its impact led to an identical conclusion.

The estimated revenues generated from the October 1985 fare increase were some \$88,000. An increased volume of passengers and vehicles carried over the previous year coupled with lower operating costs generated an additional \$29,000 over expenses.

<u>Ferry Service</u>	<u>Estimated Revenues (FY 1985-86) Due to Fare Increase</u>
Drummond	\$ 60,000
Neebish	2,000
Sugar	26,000
Total	\$ 88,000

**B. SELECTED ALTERNATIVE FARE STRUCTURES AND THEIR IMPACT**

Several alternative fare structures have been examined. These vary from rolling back the October 16, 1985 fare increase within two years to increasing fares by 40 percent. As past fare increases have been 20 percent or more, the following fare increase scenarios are presented in 20 percent increments. A description of these alternatives and the additional revenues they generate in four years (1987-1990) are summarized below and detailed in Exhibit 3.

<u>Alternative</u>	<u>Estimated Revenues (1987-90) Due to Fare Changes (000)</u>	
	<u>Low</u>	<u>High</u>
A Scheduled Rollback	\$ 144	\$ 155
B Modified Rollback	253	280
C Existing Structure	370	412
D 20% Basic-20% Nonbasic	838	934
E 40% Basic-40% Nonbasic	1269	1416
F 0% Basic-20% Nonbasic	681	761
G 0% Basic-40% Nonbasic	\$ 983	\$1100

In order to raise the local share of the cost of a new Drummond Island vessel and related port improvements, the current fare structure would probably have to be continued through fiscal year 1990. Of course, any of the increased fare structure alternatives would also raise the needed local share.

A concern regarding increasing both the basic and nonbasic fares is the hardship placed on the basic tripmakers. The basic user is



a captive user as there is no alternative mode to make these essential trips. Therefore, their choices are to (1) eliminate the need to use the service by moving off the island, changing jobs, etc., (2) reduce the number of trips by clustering trip purposes, staying with friends, getting along without, etc., or (3) absorb the increased transportation cost.

It is assumed that any further fare increase will place undue hardship on basic users with the result being a decrease in basic ridership and vehicles carried. The basis for this assumption is that basic tripmakers have significantly less spendable income than their nonbasic tripmaker counterparts. This is tempered somewhat by a lower cost of living, but not enough to alter the undue hardship assumption.

A concern regarding increasing only the nonbasic tripmaker fare is the increased discount accruing to the basic user at the expense of the nonbasic. For instance, the Drummond Island service basic passenger would realize a 68 percent discount. A concern regarding the impact on tourism is raising fares beyond that considered reasonable to Michigan visitors. This could result in a loss of trade to tourist-related businesses.

### C. VEHICLES CARRIED DEMAND ESTIMATES

Use of the three St. Mary's River ferry services will increase between 25 and 50 percent by the year 2000 depending on the island ferry service. The Drummond Island ferry service will experience the greatest increase, nearly 50 percent. Neebish and Sugar island ferry services will have a 25 percent increase during the same period. Mid-range annual and design hour high direction estimates are shown below.

	<u>1986</u>	<u>1990</u>	<u>2000</u>	<u>2010</u>
<u>Drummond Island</u>				
Annual	95,554	110,000	140,000	160,000
Design Hour High Direction	30	37	50	60
<u>Neebish Island</u>				
Annual	9,377	10,400	11,800	13,500
Design Hour High Direction	11	12	16	20
<u>Sugar Island</u>				
Annual	120,192	134,000	153,000	173,000
Design Hour High Direction	26	29	37	43

Low and high forecasts for each service are detailed in Exhibit 4. The low case is the minimum volume which should be considered in vessel design. The high case represents a desirable volume and ideally any vessel or combination of vessels should provide the capacity to accommodate the high case demand.

EXHIBIT 1  
LOCATION OF ST. MARY'S RIVER FERRY SYSTEM

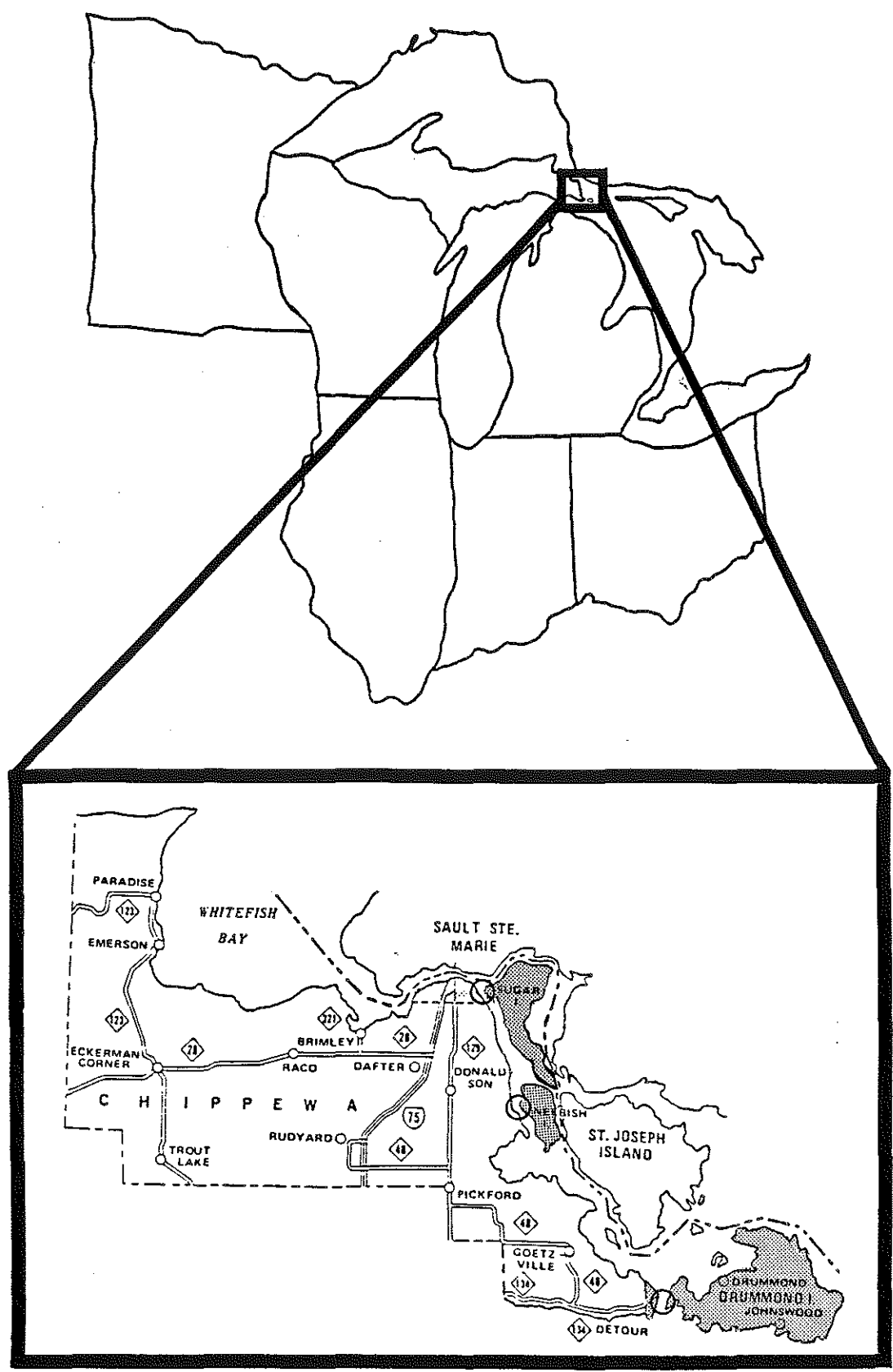


EXHIBIT 2

St. Mary's River Fare Impact Analysis

ANNUAL CROSSINGS, PASSENGERS AND VEHICLES FOR ST. MARY'S RIVER FERRY SERVICES, 1976-1986

Island Service	YEAR										
	1976	1977	1978	1979	1980	1981	1982	1983 2/	1984 2/	1985 2/	1986 2/
<b>Drummond</b>											
Crossings	17,087	17,580	18,395	18,497	18,726	18,968	17,581	18,432	19,513	20,196	20,022
Passengers	161,644	162,057	168,566	165,590	218,008	229,107	204,456	212,882	215,985	220,705	222,974
Vehicles	75,014	76,310	78,506	82,353	80,066	73,196	76,424	80,918	85,885	93,182	95,554
<b>Neebish</b>											
Crossings							3,776 1/	5,132	5,028	5,074	5,346
Passengers							12,354	17,368	16,442	15,578	18,047
Vehicles							6,258	8,334	7,983	7,465	9,377
<b>Sugar</b>											
Crossings					25,220	31,433	28,155	28,845	29,248	29,319	29,240
Passengers					191,046	214,077	202,929	218,633	231,490	234,053	235,915
Vehicles					125,820	114,394	118,873	110,118	114,601	117,659	120,192
<b>Total</b>											
Crossings					43,946	50,401	49,512	52,409	53,789	54,589	54,608
Passengers					409,054	443,184	419,379	448,883	463,917	470,336	476,936
Vehicles					205,886	187,590	201,555	199,370	208,469	218,306	225,123

Notes: 1/ Neebish Island Service 1982 figures are May-September.

2/ 1983, 1984 1985, and 1986 figures are for the State fiscal year (October through September), while figures for earlier years are for the calendar year.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 3

St. Mary's River Ferry System Fare Impact Analysis

ESTIMATED REVENUE GENERATED BY FARE STRUCTURE ALTERNATIVE (000), FY 1987-90

Alternative	Drummond		Neebish		Sugar		Total	
	Low	High	Low	High	Low	High	Low	High
A Scheduled rollback	\$93	\$102	\$7	\$7	\$44	\$46	\$144	\$155
B Modified Rollback	\$165	\$187	\$13	\$13	\$75	\$80	\$253	\$280
C Existing Structure	\$241	\$276	\$17	\$17	\$112	\$119	\$370	\$412
D 20% Basic/20% Nonbasic	\$533	\$609	\$42	\$44	\$263	\$281	\$838	\$934
E 40% Basic/40% Nonbasic	\$808	\$926	\$67	\$70	\$394	\$420	\$1,269	\$1,416
F 0% Basic/20% Nonbasic	\$453	\$519	\$37	\$38	\$191	\$204	\$681	\$761
G 0% Basic/40% Nonbasic	\$665	\$761	\$57	\$60	\$261	\$279	\$983	\$1,100

Note: All figures are in 1986 dollars.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 4

St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED DEMAND ESTIMATES, FY 1987-2010

Island Service & Data Item	1987	1988	1989	1990	1995	2000	2005	2010
<b>Drummond Island</b>								
Annual (low)	96,900	98,900	100,900	102,900	113,600	125,400	131,700	138,300
Annual (high)	104,700	111,000	117,600	124,700	151,700	167,500	184,300	202,700
Design Hour High Direction (low)	31	32	33	34	39	44	46	50
Design Hour High Direction (high)	33	36	39	42	53	60	69	78
<b>Neebish Island</b>								
Annual (low)	9,600	9,700	9,900	10,100	10,600	11,100	11,700	12,300
Annual (high)	9,800	10,100	10,500	10,900	12,000	13,200	14,500	16,000
Design Hour High Direction (low)	12	12	12	12	13	14	15	16
Design Hour High Direction (high)	12	12	13	13	16	18	21	24
<b>Sugar Island</b>								
Annual (low)	122,400	124,700	127,100	129,400	135,900	142,700	149,800	157,300
Annual (high)	127,100	131,800	136,500	141,200	155,300	170,900	187,900	206,700
Design Hour High Direction (low)	26	27	28	28	30	32	35	37
Design Hour High Direction (high)	27	29	30	31	36	43	49	55
<b>Total</b>								
Annual (low)	228,900	233,300	237,900	242,400	260,100	279,200	293,200	307,900
Annual (high)	241,600	252,900	264,600	276,800	319,000	351,600	386,700	425,400

Note: These forecasts are based on continuation of the existing fare structure (FY85-86).

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

#### D. TERMS AND ASSUMPTIONS

Basic/Nonbasic. Basic trips are those made to accommodate basic needs such as employment, school, essential supplies/foodstuffs procurement, medical-dental services, legal/financial matters, and social interaction with nearby communities. Most of these are made by island residents and mainlanders working on the island. Nonbasic are the remainder of trips made using the ferry service for a wide variety of trip purposes with the principal ones being vacation and recreation. These trips are generally made by those residing in other parts of Michigan, neighboring states, and Canada.

The percentage that basic trips comprise of the total varies from nearly 100 percent in the winter months to some 20 percent in the summer. On an annual basis, basic represents 25 to 65 percent of total system use depending on the island service. This assumes that virtually all trips made in the winter months are basic and continue at a somewhat increased level throughout the remainder of the year.

<u>Ferry Service</u>	<u>Basic Trips as % of Total</u>
Drummond	50%
Neebish	25%
Sugar	65%

Elasticities. Fares are elastic when dealing with the basic portion of the market; relatively inelastic pertaining to the remainder of the market. The basic market consists of frequent users and usually lower income users. For instance, the unemployment rate for the eastern Upper Peninsula is nearly twice that of the State of Michigan (1) and the percent elderly is 50 percent greater. Both of these factors make the basic user sensitive to changes in fare structure. It is assumed that basic users are at the fare sensitivity threshold. Consequently, any further fare increases will decrease use by the basic users. This will occur at the rate of one percent reduction in use for every three percent increase in fares.

The remainder of the market is generally using the ferry service as part of an infrequent, long distance trip. These users are not subjected to the higher fares as often and incur other trip costs in addition to the cost of the ferry service. These factors make the nonbasic user less sensitive to changes in fare structure.

Low Case. This assumes that the change in vehicles transported by the three island ferry services will be 10 percent between 1985 and 1990, and five percent each five years thereafter. This is similar to the forecasted change in vehicle miles of travel (VMT) for the state and average daily traffic (ADT) for the Mackinac and International bridges.

	State Trunkline VMT (billions)		Mackinac Bridge ADT		International Bridge ADT	
	No.	% Change	No.	% Change	No.	% Change
1970	53.1	--	--	--	--	--
1975	58.2	9.6%	--	--	--	--
1980	61.5	5.7%	6,400	--	3,346	--
1985	68.4	9.7%	7,126	11.3%	3,772	12.7%
1990	79.3	10.6%	7,822	9.8%	4,188	11.0%
1995	89.3	12.6%	8,408	7.5%	4,608	10.0%
2000	99.3	11.2%	8,868	5.5%	4,864	5.6%

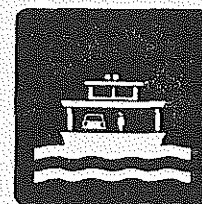
High Case. This assumes that the vehicles carried trend for the last five years for the Drummond Island Ferry service will continue throughout the next 15 years to the year 2000, a 33 percent increase between 1985 and 1990, 20 percent for each five years to 2000, and 10 percent thereafter. For Neebish and Sugar island ferry services it assumes that the rate will be 20 percent between 1985 and 1990, and 10 percent thereafter. Several conditions are necessary for this to occur including (1) relatively low gasoline prices, (2) high employment, and (3) a stable economy.

Design Day and Period. The design day is the average Friday in July and August. The highest volume months are July and August which comprise some 25-50 percent of the annual use depending on the island service. Fridays and Saturdays are the highest ridership days in July and August. Fridays experience higher peak hour volumes and directional splits than Saturdays, although some Saturdays have a higher daily ridership. Therefore, Friday has been selected as the design day.

The design period is 2:00 p.m. to 5:00 p.m. on the design day. Approximately 15-35 percent of the design day use occurs during this three hour block of time depending on the island service. Also, the directional split is greater during these hours.

Design Hour High Direction Vehicles Carried Forecasts. The design hour high direction vehicles occurs during the design period. In this analysis, the design hour is one-third of the design period. The high direction is from the mainland to the island and is considerably higher than the island to mainland flow during this hour. An 80/20 split was assumed.

# DRUMMOND ISLAND FERRY SERVICE





## II. DRUMMOND ISLAND FERRY SERVICE

### A. EXISTING SERVICE AND USE

The Drummond Island ferry service operates year-round between the village of De Tour at the eastern most tip of the Upper Peninsula and Drummond Island (see Exhibit 1). Between April 1 and January 1, the ferry is scheduled to make 22 round trips each day, including three trips between 12:30 a.m. and 6:10 a.m. The winter schedule (January 2 to March 31) consists of 13 daily round trips with no service provided between 11:30 p.m. and 6:10 a.m.

Three items affect the scheduling of service: quarry shift changes, school trips, and general demand. Quarry shift changes are accommodated by scheduling De Tour departures at 6:40 a.m., 2:40 p.m. and 10:40 p.m., and Drummond Island departures at 7:10 a.m., 3:10 p.m. and 11:10 p.m. School trips are accommodated between the months of September and June. The general demand for service is composed primarily of those making vacation and other social-recreation trips (approximately two-thirds of all trips are made for these purposes).

There are two vessels used for the Drummond Island ferry service. Both are capable of carrying 12 average size vehicles, as well as pedestrians. The larger of the two ferries is used primarily during peak periods and as a backup vessel because structural characteristics make it difficult to accommodate high vehicles. If only one vessel is in operation during peak periods, vehicle queues up to three hours or more occur.

The demand for ferry service is generally greatest between the hours of 10:00 a.m. and 6:00 p.m. with both ferries operating as needed during this period. Higher traffic volumes are usually experienced on the weekends and both vessels may be used at times on a continuous basis to accommodate the demand. Traffic volumes are highest during the summer months of July and August and, beginning in June, both vessels are in service from Thursday through Monday. A significant level of use is also experienced in the months preceding and following the months of July and August. May, June, September, and October generate about two-thirds of the July and August volumes with April and November showing some indications of increased use.

Annual passengers and vehicles carried have fluctuated over the last 10 years, ranging from 161,644 passengers in 1976 to 229,107 passengers in 1981; 73,196 vehicles in 1981 to 93,182 vehicles in 1985 (see Exhibit 2). Between October 1, 1985 and September 30, 1986 (FY 1985-86), the Drummond Island ferry carried 222,974 passengers, 95,554 vehicles, and made a total of 20,022 crossings (see exhibits 5, 6, and 7).

Fares for the Drummond Island ferry are based on the type of

vehicle and include the driver. Additional passengers are charged a separate fare (see Exhibit 8). Fares were increased on October 16, 1985. This increase is a surcharge which will be set aside for capital expenditures.

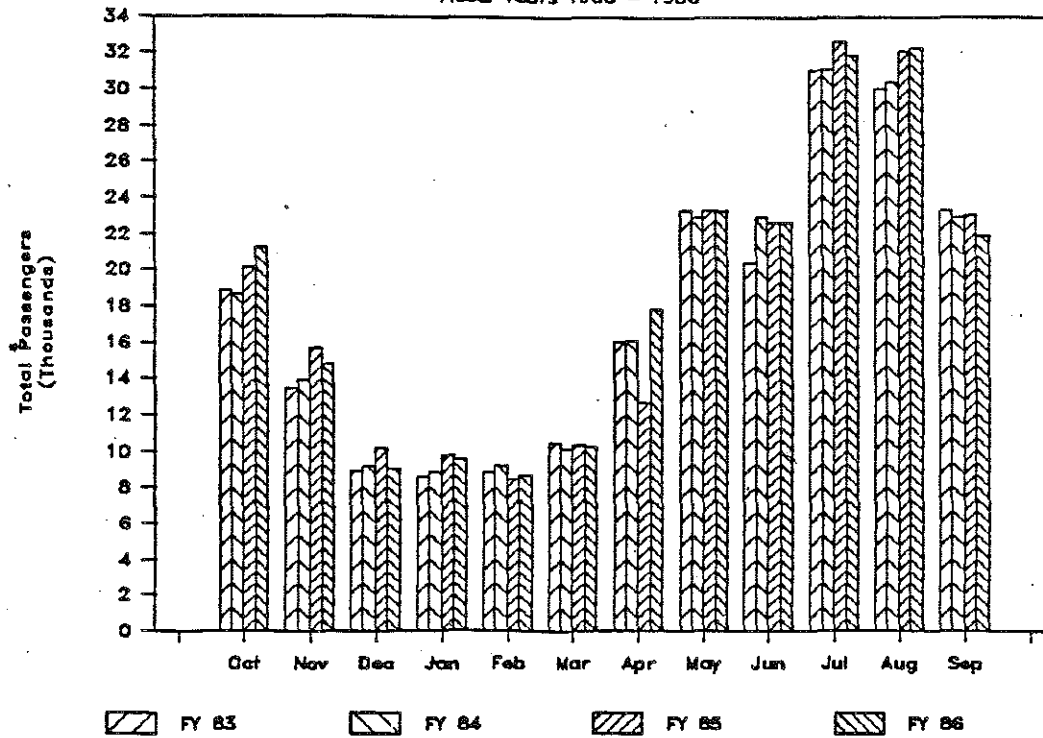
**B. REVENUES AND DEMAND ESTIMATES**

Additional information used in the analysis for the Drummond Island Ferry Service is presented below.

- Revenue and revenue per vehicle for fiscal years 1983-1986 (exhibits 9 and 10).
- Revenue from ticket books sold and the number of tickets used for fiscal year 1985-86 (Exhibit 11).
- Historical volumes and forecasts of vehicles carried for fiscal years 1983-2010. Vehicles carried in July and August are also presented, as well as Friday figures representing the design period for the ferry service (exhibits 12 and 13).
- Number of vehicles carried by various fare structure alternatives for basic and nonbasic user groups (Exhibit 14).
- Additional revenue per vehicle based on various fare structure alternatives (Exhibit 15).
- Additional revenue generated by various fare structure alternatives based on vehicles carried forecasts (Exhibit 16).

EXHIBIT 5  
**DRUMMOND ISLAND FERRY PASSENGERS**

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

PASSENGERS CARRIED BY FISCAL YEAR: DRUMMOND ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	18,836	18,689	20,096	21,229	20,997
Nov	13,426	13,893	15,674 2/	14,764	14,904
Dec	8,891	9,107	10,140	8,970	10,704
Jan	8,530	8,794	9,751	9,538	
Feb	8,782	9,207	8,472	8,705	
Mar	10,459	10,135	10,323	10,192	
Apr	16,016	16,055	12,645 2/	17,822	
May	23,275	22,879	23,307	23,244	
Jun	20,319	22,863	22,556	22,563	
Jul	31,032	31,078	32,600	31,816	
Aug	30,016	30,378	32,117	32,277	
Sep	23,300	22,907	23,024	21,854	
<b>Total</b>	<b>212,882</b>	<b>215,985</b>	<b>220,705</b>	<b>222,974</b>	<b>46,605</b>

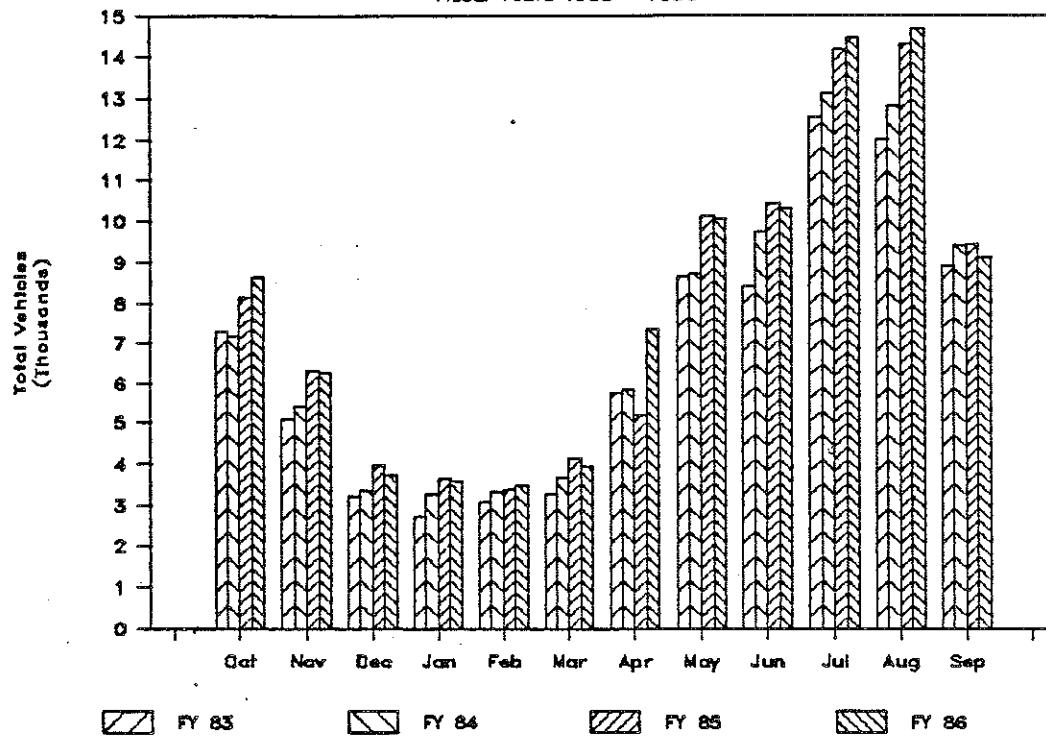
Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

2/ Larger increase in November 1984 may be partly attributed to an increase in the amount of deer hunting on the island. The large decrease in April 1985 may be partly attributed to ice problems which adversely affected the normal fishing season.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 6  
**DRUMMOND ISLAND FERRY VEHICLES CARRIED**

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED BY FISCAL YEAR: DRUMMOND ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	7,291	7,157	8,131	8,647	8,896
Nov	5,083	5,400	6,305 2/	6,233	6,856
Dec	3,216	3,364	3,983	3,739	4,907
Jan	2,727	3,292	3,659	3,604	
Feb	3,094	3,342	3,389	3,469	
Mar	3,270	3,689	4,137	3,942	
Apr	5,764	5,846	5,179 2/	7,335	
May	8,642	8,729	10,093	10,052	
Jun	8,408	9,736	10,421	10,301	
Jul	12,518	13,108	14,162	14,440	
Aug	11,999	12,807	14,297	14,664	
Sep	8,906	9,415	9,426	9,128	
<b>Total</b>	<b>80,918</b>	<b>85,885</b>	<b>93,182</b>	<b>95,554</b>	<b>20,659</b>

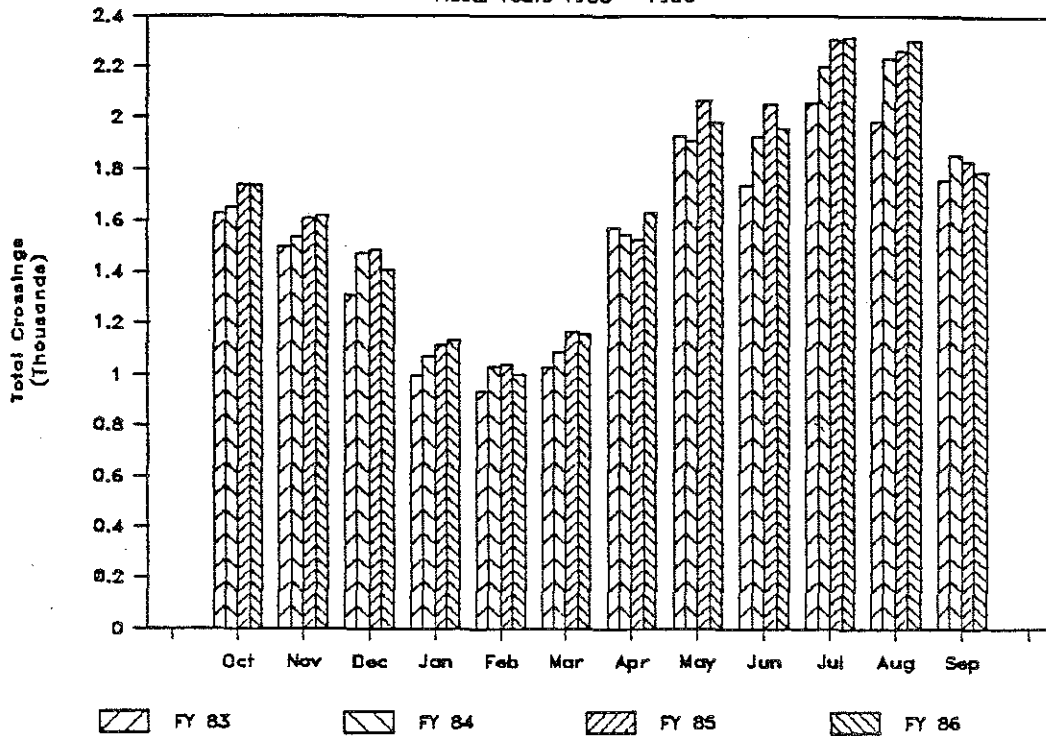
Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

2/ Larger increase in November 1984 may be partly attributed to an increase in the amount of deer hunting on the island. The large decrease in April 1985 may be partly attributed to ice problems which adversely affected the normal fishing season.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 7  
**DRUMMOND ISLAND FERRY CROSSINGS**

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

CROSSINGS BY FISCAL YEAR: DRUMMOND ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	1,628	1,652	1,741	1,734	1,788
Nov	1,496	1,534	1,605	1,616	1,630
Dec	1,307	1,470	1,482	1,404	1,520
Jan	996	1,068	1,116	1,133	
Feb	936	1,033	1,040	1,000	
Mar	1,028	1,086	1,165	1,155	
Apr	1,570	1,543	1,522	1,632	
May	1,926	1,907	2,062	1,981	
Jun	1,736	1,926	2,052	1,956	
Jul	2,057	2,200	2,308	2,315	
Aug	1,988	2,234	2,267	2,300	
Sep	1,764	1,860	1,836	1,796	
Total	18,432	19,513	20,196	20,022	4,938

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

## EXHIBIT 8

## St. Mary's River Ferry System Fare Impact Analysis

## FARE STRUCTURE: DRUMMOND ISLAND FERRY SERVICE

Category	Previous to January 1978	Effective January 1978	Effective March 15, 1982	Current Fare Structure
All Cars, Pickups and Driver	\$2.50	\$2.50	\$3.25	\$4.00
Sr. Citizen Car, Pickup and Driver	\$2.00	\$1.25	\$1.65	\$2.00
Pickup with Camper Unit	\$3.50	\$3.50	\$4.55	\$5.25
Bus Camper - Motor Home	\$6.00	\$6.00	\$7.80	\$9.00
Adults	\$0.60	\$0.60	\$0.80	\$1.00
Senior Citizens	\$0.50	\$0.30	\$0.40	\$0.50
Students	\$0.20	\$0.20	\$0.30	\$0.40
Trucks 130 inch WB or Over	\$4.75	\$4.75	\$6.20	\$7.50
Tandem Trucks	\$5.50	\$5.50	\$7.15	\$8.50
Regular Gasoline and Explosives	\$6.00	\$6.00	\$7.80	\$9.00
Semi Gasoline and Explosives	\$12.00	\$12.00	\$15.60	\$18.00
Trailer up to 15 ft.	\$2.50	\$2.50	\$3.25	\$3.80
Trailer 15 to 20 ft.	\$4.00	\$4.00	\$5.20	\$6.00
Trailer 20 ft or Over	\$5.00	\$5.00	\$6.50	\$7.50
House Trailer	\$20.00	\$20.00	\$26.00	\$30.00
Motorcycle, Snowmobile and Driver	\$1.00	\$1.00	\$1.30	\$1.50
Trip After Daily Schedule Ends, Plus Fare	\$7.50	\$7.50	\$9.75	\$11.25
Trip Between Regularly Scheduled Runs, Plus Fare	\$2.50	\$2.50	\$3.25	\$4.00
Adult Books 2/	\$6.00	\$6.00	\$7.80	\$9.00
Senior Citizen Books 2/	--	--	\$3.90	\$4.50
Student Books 2/	\$2.00	\$2.00	\$2.60	\$3.00
Car, Pickup and Driver Books 2/	\$20.00	\$20.00	\$26.00	\$30.00
S.C. Car, Pickup and Driver Books 2/	\$15.00	\$10.00	\$13.00	\$15.00
Trucks 130 inch WB or Over Books 2/	\$165.00	\$165.00	\$85.80	\$100.00
Tandem Trucks Books 2/	\$192.50	\$192.50	\$110.00	\$115.00
Trailer 20 inch WB or Over Books 2/	\$192.50	\$192.50	\$110.00	\$115.00

Note: 1/ Current fare structure became effective October 16, 1985.

2/ There are 20 trips in one book.

Source: Michigan Department of Transportation, Passenger Planning Section in cooperation  
the Eastern Upper Peninsula Transportation Authority, January 1987.

EXHIBIT 9

St. Mary's River Ferry System Fare Impact Analysis

REVENUE BY FISCAL YEAR: DRUMMOND ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	19,798.72	1,870.71	21,669.43	19,793.35	2,031.95	21,825.30	21,588.94	2,194.61	23,783.55	25,948.80	2,537.60	28,486.40	28,178.15	3,227.61	31,405.76
Nov	13,274.27	1,205.04	14,479.31	13,342.30	1,404.80	14,747.10	16,774.37	1,740.08	18,514.45	19,395.06	1,590.45	20,985.51	19,929.50	1,756.90	21,686.40
Dec	6,676.55	957.55	7,634.10	7,241.35	1,033.75	8,275.10	7,558.62	971.88	8,530.50	8,656.30	833.45	9,489.75	12,134.07	1,223.20	13,357.27
Jan	5,306.46	1,066.62	6,373.08	7,025.40	1,193.25	8,218.65	7,261.64	607.91	7,869.55	8,865.65	1,280.00	10,145.65			
Feb	6,634.20	987.73	7,621.93	6,996.85	1,047.95	8,044.80	7,428.65	892.38	8,321.03	9,422.60	906.50	10,329.10			
Mar	7,109.60	1,561.36	8,670.96	8,499.40	1,462.30	9,961.70	9,037.59	1,307.08	10,344.67	11,678.13	1,502.07	13,180.20			
Apr	18,080.10	2,085.71	20,165.81	17,208.56	2,391.70	19,600.26	13,562.25	1,235.65	14,797.90	28,261.49	2,980.56	31,242.05			
May	28,476.75	2,638.21	31,114.96	28,167.30	2,744.10	30,911.40	33,040.40	2,128.10	35,168.50	38,704.90	3,013.05	41,717.95			
Jun	26,943.64	1,763.92	28,707.56	30,891.55	2,079.40	32,970.95	33,684.42	1,809.28	35,493.70	38,154.15	2,538.35	40,692.50			
Jul	43,425.53	1,762.75	45,188.28	41,892.16	1,893.00	43,785.16	47,762.80	1,545.55	49,308.35	56,562.60	2,409.75	58,972.35			
Aug	38,953.20	1,957.60	40,910.80	41,339.23	2,056.30	43,395.53	45,660.87	1,698.68	47,359.55	56,331.75	2,486.55	58,818.30			
Sep	26,444.58	2,485.51	28,930.09	27,645.63	1,939.30	29,584.93	26,952.64	2,265.64	29,218.28	30,105.45	3,008.70	33,114.15			
Total	241,123.60	20,342.71	261,466.31	250,043.08	21,277.80	271,320.88	270,313.19	18,396.84	288,710.03	332,086.88	25,087.03	357,173.91	60,241.72	6,207.71	66,449.43

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 10

St. Mary's River Ferry System Fare Impact Analysis

REVENUE/VEHICLE BY FISCAL YEAR: DRUMMOND ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	2.72	0.26	2.97	2.77	0.28	3.05	2.66	0.27	2.93	3.00	0.29	3.29	3.17	0.36	3.53
Nov	2.61	0.24	2.85	2.47	0.26	2.73	2.66	0.28	2.94	3.11	0.26	3.37	2.91	0.26	3.16
Dec	2.08	0.30	2.37	2.15	0.31	2.46	1.90	0.24	2.14	2.32	0.22	2.54	2.47	0.25	2.72
Jan	1.95	0.39	2.34	2.13	0.36	2.50	1.98	0.17	2.15	2.46	0.36	2.82			
Feb	2.14	0.32	2.46	2.09	0.31	2.41	2.19	0.26	2.46	2.72	0.26	2.98			
Mar	2.17	0.48	2.65	2.30	0.40	2.70	2.18	0.32	2.50	2.96	0.38	3.34			
Apr	3.14	0.36	3.50	2.94	0.41	3.35	2.62	0.24	2.86	3.85	0.41	4.26			
May	3.30	0.31	3.60	3.23	0.31	3.54	3.27	0.21	3.48	3.85	0.30	4.15			
Jun	3.20	0.21	3.41	3.17	0.21	3.39	3.23	0.17	3.41	3.70	0.25	3.95			
Jul	3.47	0.14	3.61	3.20	0.14	3.34	3.37	0.11	3.48	3.92	0.17	4.08			
Aug	3.25	0.16	3.41	3.23	0.16	3.39	3.19	0.12	3.31	3.84	0.17	4.01			
Sep	2.97	0.28	3.25	2.94	0.21	3.14	2.86	0.24	3.10	3.30	0.33	3.63			
Average	2.98	0.25	3.23	2.91	0.25	3.16	2.90	0.20	3.10	3.48	0.26	3.74			

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 11

St. Mary's River Ferry System Fare Impact Analysis

REVENUE FROM BOOKS SOLD AND NUMBER OF TICKETS USED, FY 1985-86: DRUMMOND ISLAND FERRY SERVICE

Month	Revenue From Books Sold							Number of Tickets Used					
	Adult	Senior Cit	Student	Car	S.C. Car	Trucks	Trucks	Adult	Senior Cit	Students	Car	S.C. Car	Trucks
Oct	797.40	133.80	13.80	3,914.00	703.00	485.80	930.70	1,942	862	69	2,859	1,176	187
Nov	639.00	99.00	9.00	3,210.00	540.00	200.00	115.00	1,585	456	75	2,273	789	132
Dec	702.00	90.00	15.00	2,880.00	375.00	100.00	575.00	1,640	456	93	2,110	637	102
Jan	756.00	117.00	6.00	3,030.00	450.00	300.00	575.00	1,513	385	58	1,984	611	147
Feb	594.00	45.00	--	2,970.00	405.00	500.00	805.00	1,274	294	25	1,786	541	189
Mar	819.00	112.50	15.00	3,990.00	630.00	100.00	1,035.00	1,472	378	52	2,073	614	210
Apr	918.00	202.50	12.00	5,190.00	1,020.00	600.00	575.00	1,563	479	55	2,531	856	128
May	1,188.00	297.00	24.00	5,850.00	1,305.00	100.00	575.00	1,847	801	68	2,929	1,125	138
Jun	1,161.00	274.50	30.00	5,250.00	1,155.00	700.00	1,150.00	2,229	1,033	200	3,124	1,284	197
Jul	1,089.00	283.50	27.00	5,040.00	1,050.00	200.00	575.00	2,594	1,302	180	3,324	1,398	194
Aug	1,008.00	229.50	12.00	4,350.00	885.00	100.00	1,035.00	2,430	1,186	139	3,524	1,336	182
Sep	837.00	211.50	15.00	4,500.00	930.00	400.00	575.00	1,872	1,108	78	2,904	1,312	166
Total	\$10,508.40	\$2,095.80	\$178.80	\$50,174.00	\$9,448.00	\$3,785.80	\$8,520.70	21,961	8,740	1,092	31,421	11,679	1,972

Source: Eastern Upper Peninsula Transportation Authority.

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EXHIBIT 12  
St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST FOR SELECTED TIME FRAMES: DRUMMOND ISLAND FERRY SERVICE

Item	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1994-95	1999-2000	2004-05	2009-10
<b>Annual Vehicles Carried</b>												
Low	80,918	85,885	93,182	95,554	96,900	98,900	100,900	102,900	113,600	125,400	131,700	138,300
High					104,700	111,000	117,600	124,700	151,700	167,500	184,300	202,700
<b>July/August Vehicles Carried as % of Annual Vehicles Carried</b>												
Low	30.3	30.2	30.5	30.5	31.0	31.2	31.4	31.6	32.1	32.6	33.1	33.6
High					31.0	31.2	31.4	31.6	32.6	33.6	34.6	35.6
<b>July/August Vehicles Carried</b>												
Low	24,517	25,915	28,459	29,104	30,000	30,900	31,700	32,500	36,500	40,900	43,593	46,469
High					32,500	34,600	36,900	39,400	49,500	56,300	63,768	72,161
<b>Design Friday as % of July/August Vehicles Carried 1/</b>												
Low	--	--	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
High	--	--	--	--	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
<b>Design Friday Vehicles Carried</b>												
Low	--	--	450	471	480	494	507	520	584	654	697	744
High	--	--	--	--	520	554	590	630	792	901	1,020	1,155
<b>Design Period as % of Design Friday Vehicles Carried 2/</b>												
Low	--	--	23.3	23.6	23.9	24.2	24.5	24.8	25.0	25.0	25.0	25.0
High	--	--	--	--	23.9	24.2	24.5	24.8	25.1	25.4	25.4	25.4
<b>Design Period Vehicles Carried</b>												
Low	--	--	105	111	115	120	124	129	146	164	174	186
High	--	--	--	--	124	134	145	156	199	225	259	293
<b>Design Hour Vehicles Carried in High Direction 3/</b>												
Low	--	--	28	30	31	32	33	34	39	44	46	50
High	--	--	--	--	33	36	39	42	53	60	69	78

Notes: 1/ Design Friday is the average Friday in the months of July and August.

2/ Design Period is a three hour period (2:00 - 5:00 p.m.) on the Design Friday.

3/ Design Hour is one-third of the Design Period with an 80%/20% split favoring the De Tour to Drummond Island direction. This results in High Direction Design Hour figures of 34 (1990), 39 (1995), and 44 (2000) for the low case.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

# DRUMMOND ISLAND FERRY VEHICLES CARRIED

1976 - 2010

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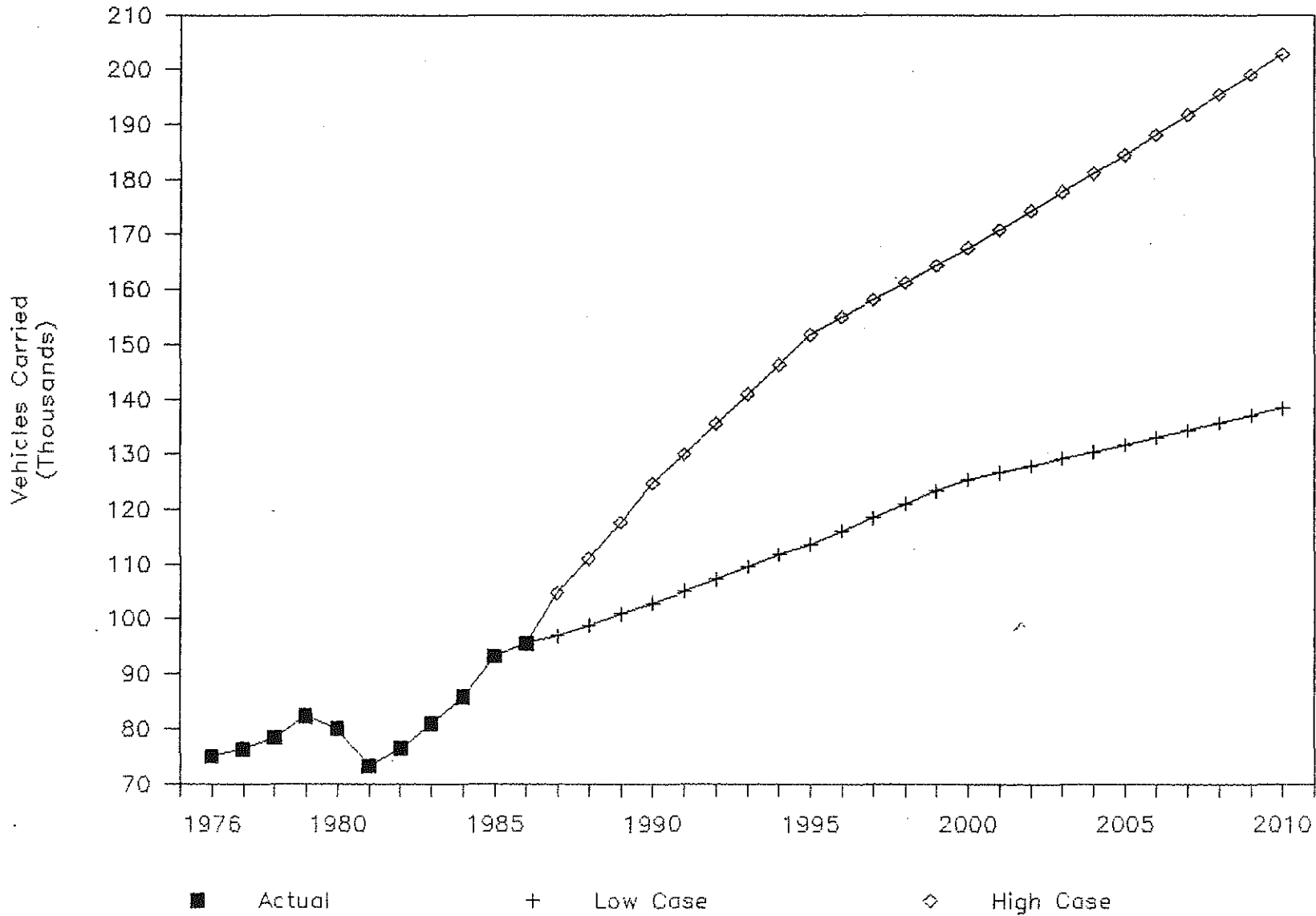


EXHIBIT 14

St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST BY FARE STRUCTURE ALTERNATIVE (000): DRUMMOND ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/		Modified Rollback b/		Existing Structure		Fare Increase B 20% / NB 20% c/		Fare Increase B 40% / NB 40%		Fare Increase B 0% / NB 20%		Fare Increase B 0% / NB 40%	
	A		B		C		D		E		F		G	
	LOW	HIGH d/	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Basic</b>														
1987	48	52	48	52	48	52	45	48	41	45	48	52	48	52
1988	49	55	49	55	49	55	46	51	42	47	49	55	49	55
1989	50	59	50	59	50	59	47	55	43	51	50	59	50	59
1990	51	62	51	62	51	62	48	58	44	53	51	62	51	62
1987-90	198	228	198	228	198	228	186	212	170	196	198	228	198	228
<b>Non Basic</b>														
1987	49	53	49	53	49	53	49	53	49	53	49	53	49	53
1988	50	56	50	56	50	56	50	56	50	56	50	56	50	56
1989	51	59	51	59	51	59	51	59	51	59	51	59	51	59
1990	52	63	52	63	52	63	52	63	52	63	52	63	52	63
1987-90	202	231	202	231	202	231	202	231	202	231	202	231	202	231
<b>Total</b>														
1987	97	105	97	105	97	105	94	101	90	98	97	105	97	105
1988	99	111	99	111	99	111	96	107	92	103	99	111	99	111
1989	101	118	101	118	101	118	98	114	94	110	101	118	101	118
1990	103	125	103	125	103	125	100	121	96	116	103	125	103	125
1987-90	400	459	400	459	400	459	388	443	372	427	400	459	400	459

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.  
 b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.  
 c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.  
 d/ "Low" and "high" refer to forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 15  
St. Mary's River Ferry System Fare Impact Analysis

ADDITIONAL REVENUE PER VEHICLE: DRUMMOND ISLAND FERRY SERVICE

User Type	Scheduled	Modified	Existing	Fare	Fare	Fare	Fare
	Rollback a/ A	Rollback b/ B	Structure C	Increase 20%/20% D	Increase 40%/40% 1/ E	Increase 0%/20% 1/ F	Increase 0%/40% 1/ G
<b>Basic</b>							
1987	\$0.35	\$0.35	\$0.35	\$0.80	\$1.25	\$0.35	\$0.35
1988	\$0.20	\$0.20	\$0.35	\$0.80	\$1.25	\$0.35	\$0.35
1989	\$0.00	\$0.20	\$0.35	\$0.80	\$1.25	\$0.35	\$0.35
1990	\$0.00	\$0.20	\$0.35	\$0.80	\$1.25	\$0.35	\$0.35
<b>Non Basic</b>							
1987	\$0.85	\$0.85	\$0.85	\$1.90	\$2.95	\$1.90	\$2.95
1988	\$0.50	\$0.50	\$0.85	\$1.90	\$2.95	\$1.90	\$2.95
1989	\$0.00	\$0.50	\$0.85	\$1.90	\$2.95	\$1.90	\$2.95
1990	\$0.00	\$0.50	\$0.85	\$1.90	\$2.95	\$1.90	\$2.95
<b>Weighted Avg.</b>							
1987	\$0.60	\$0.60	\$0.60	\$1.35	\$2.10	\$1.13	\$1.65
1988	\$0.35	\$0.35	\$0.60	\$1.35	\$2.10	\$1.13	\$1.65
1989	\$0.00	\$0.35	\$0.60	\$1.35	\$2.10	\$1.13	\$1.65
1990	\$0.00	\$0.35	\$0.60	\$1.35	\$2.10	\$1.13	\$1.65

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.

b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 16

St. Mary's River Ferry System Fare Impact Analysis

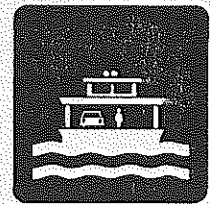
ADDITIONAL REVENUE GENERATED (000): DRUMMOND ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/		Modified Rollback b/		Existing Structure		Fare Increase B 20% / NB 20% c/		Fare Increase B 40% / NB 40%		Fare Increase B 0% / NB 20%		Fare Increase B 0% / NB 40%	
	A		B		C		D		E		F		G	
	LOW	HIGH d/	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Basic</b>														
1987	16.80	18.20	16.80	18.20	16.80	18.20	36.00	38.40	51.25	56.25	16.80	18.20	16.80	18.20
1988	9.80	11.00	9.80	11.00	17.15	19.25	36.80	40.80	52.50	58.75	17.15	19.25	17.15	19.25
1989	0.00	0.00	10.00	11.80	17.50	20.65	37.60	44.00	53.75	63.75	17.50	20.65	17.50	20.65
1990	0.00	0.00	10.20	12.40	17.85	21.70	38.40	46.40	55.00	66.25	17.85	21.70	17.85	21.70
1987-90	26.60	29.20	46.80	53.40	69.30	79.80	148.80	169.60	212.50	245.00	69.30	79.80	69.30	79.80
<b>Non Basic</b>														
1987	41.65	45.05	41.65	45.05	41.65	45.05	93.10	100.70	144.55	156.35	93.10	100.70	144.55	156.35
1988	25.00	28.00	25.00	28.00	42.50	47.60	95.00	106.40	147.50	165.20	95.00	106.40	147.50	165.20
1989	0.00	0.00	25.50	29.50	43.35	50.15	96.90	112.10	150.45	174.05	96.90	112.10	150.45	174.05
1990	0.00	0.00	26.00	31.50	44.20	53.55	98.80	119.70	153.40	185.85	98.80	119.70	153.40	185.85
1987-90	66.65	73.05	118.15	134.05	171.70	196.35	383.80	438.90	595.90	681.45	383.80	438.90	595.90	681.45
<b>Total</b>														
1987	58.45	63.25	58.45	63.25	58.45	63.25	129.10	139.10	195.80	212.60	109.90	118.90	161.35	174.55
1988	34.80	39.00	34.80	39.00	59.65	66.85	131.80	147.20	200.00	223.95	112.15	125.65	164.65	184.45
1989	0.00	0.00	35.50	41.30	60.85	70.80	134.50	156.10	204.20	237.80	114.40	132.75	167.95	194.70
1990	0.00	0.00	36.20	43.90	62.05	75.25	137.20	166.10	208.40	252.10	116.65	141.40	171.25	207.55
1987-90	93.25	102.25	164.95	187.45	241.00	276.15	532.60	608.50	808.40	926.45	453.10	518.70	665.20	761.25

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall, 1988.  
 b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.  
 c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.  
 d/ "Low" and "high" refer to the forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

# NEEBISH ISLAND FERRY SERVICE



### III. NEEBISH ISLAND FERRY SERVICE

#### A. EXISTING SERVICE AND USE

The Neebish Island ferry operates for approximately nine and one-half months every year between Barbeau on the mainland and Neebish Island (see Exhibit 1). Because of ice problems, the ferry usually discontinues service during the months of January, February and part of March. During the summer months, the ferry is scheduled to make between 10 and 12 round trips per day, except on Sunday when only five round trips are scheduled. Extra trips may be made if necessary. The single ferry used at Neebish Island carries approximately five average size vehicles, plus pedestrians.

Annual passengers and vehicles carried have fluctuated over the past five years ranging from a low of 12,354 passengers and 6,258 vehicles in 1982, to a high of 18,047 passengers and 9,377 vehicles in 1986 (see Exhibit 2). Between October 1, 1985 and September 30, 1986 (FY 1985-86), the Neebish Island ferry carried 18,047 passengers, 9,377 vehicles, and made a total of 5,346 crossings (see exhibits 17, 18, and 19).

Fares for the Neebish Island Ferry Service are based on the type of vehicle and include the driver. Additional passengers are charged a separate fare (see Exhibit 20).

#### B. REVENUES AND DEMAND ESTIMATES

Additional information used in the analysis for the Neebish Island Ferry Service is presented below.

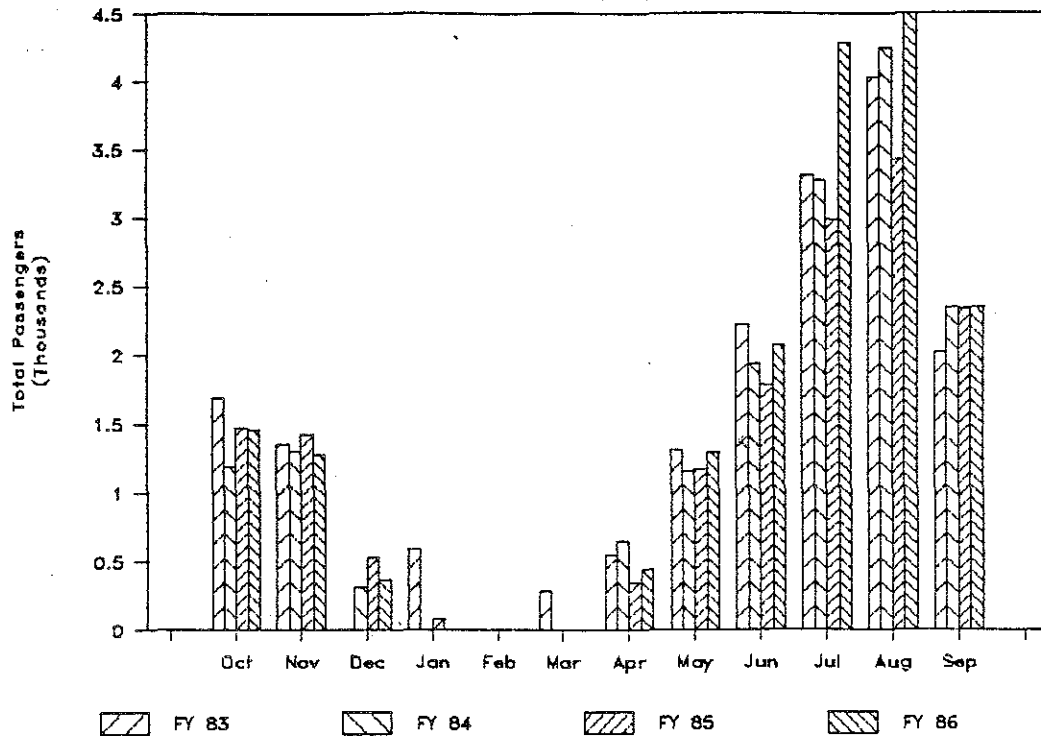
- Revenue and revenue per vehicle for fiscal years 1983-1986 (exhibits 21 and 22).
- Revenue from ticket books sold and the number of tickets used for fiscal year 1985-86 (Exhibit 23).
- Historical volumes and forecasts of vehicles carried for fiscal years 1983-2010. Vehicles carried in July and August are also presented, as well as Friday figures representing the design period for the ferry service (exhibits 24 and 25).
- Number of vehicles carried by various fare structure alternatives for basic and nonbasic user groups (Exhibit 26).

- Additional revenue per vehicle based on various fare structure alternatives (Exhibit 27).
- Additional revenue generated by various fare structure alternatives based on vehicles carried forecasts (Exhibit 28).



EXHIBIT 17  
NEEBISH ISLAND FERRY PASSENGERS

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

PASSENGERS CARRIED BY FISCAL YEAR: NEEBISH ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	1,696	1,197	1,479	1,455	1,503
Nov	1,352	1,307	1,426	1,278	1,643
Dec	-- 2/	310 4/	528	364	586
Jan	587	0	80	0	
Feb	0	0	0	0	
Mar	287 3/	--	0	0	
Apr	540	644 5/	349	445	
May	1,311	1,159	1,174	1,294	
Jun	2,230	1,947	1,784	2,079	
Jul	3,316	3,279	2,996	4,283	
Aug	4,028	4,250	3,427	4,499	
Sep	2,021	2,349	2,335	2,350	
<b>Total</b>	<b>17,368</b>	<b>16,442</b>	<b>15,578</b>	<b>18,047</b>	<b>3,732</b>

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

2/ Figure is for the period December 1-January 5.

3/ Figure is for the period March 15-31.

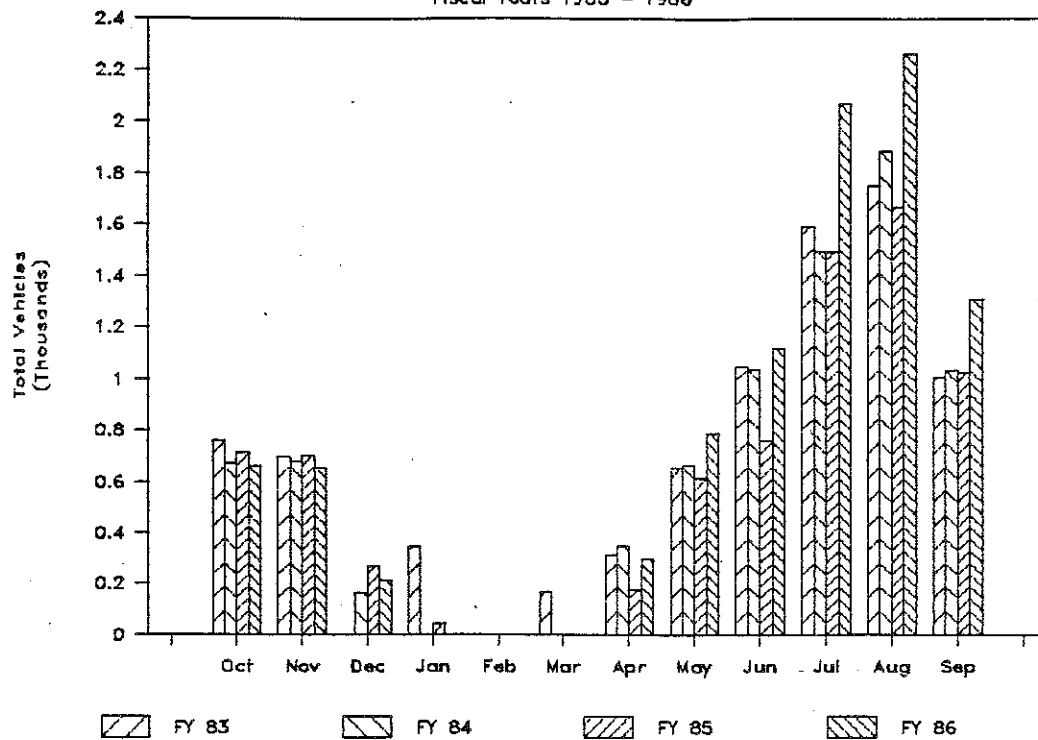
4/ Figure is for the period December 1-22.

5/ Figure is for the period March 23-April 30.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 18  
NEEBISH ISLAND FERRY VEHICLES

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED BY FISCAL YEAR: NEEBISH ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	761	672	712	660	849
Nov	696	675	701	653	900
Dec	--	161 4/	267	210	358
Jan	346 2/	0	40	0	
Feb	0	0	0	0	
Mar	167 3/	--	0	0	
Apr	313	351 5/	177	300	
May	652	664	615	787	
Jun	1,045	1,036	760	1,118	
Jul	1,592	1,497	1,497	2,073	
Aug	1,754	1,889	1,669	2,266	
Sep	1,008	1,038	1,027	1,310	
Total	8,334	7,983	7,465	9,377	2,107

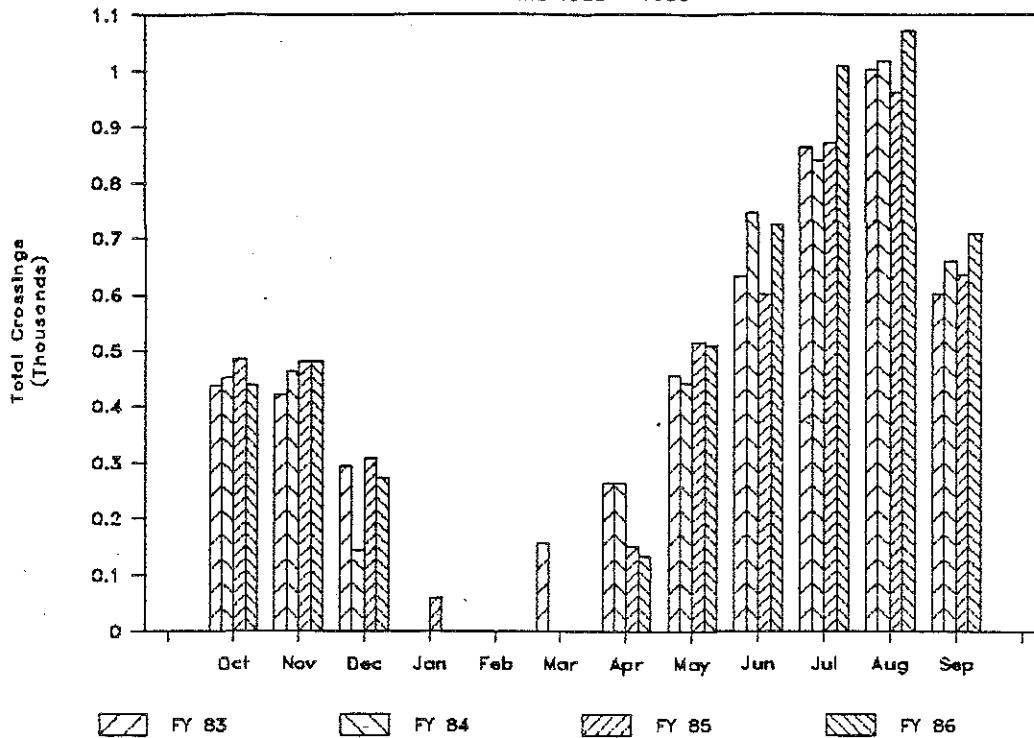
- Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.  
 2/ Figure is for the period December 1-January 5.  
 3/ Figure is for the period March 15-31.  
 4/ Figure is for the period December 1-22.  
 5/ Figure is for the period March 23-April 30.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 19

NEEBISH ISLAND FERRY CROSSINGS

Fiscal Years 1983 - 1986



St. Mary's River Ferry System Fare Impact Analysis

CROSSINGS BY FISCAL YEAR: NEEBISH ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	436	452	486	438	530
Nov	422	464	480	480	578
Dec	294 2/	144 4/	308	272	338
Jan	--	0	60	0	
Feb	0	0	0	0	
Mar	156 3/	--	0	0	
Apr	264	264 5/	152	134	
May	456	442	514	508	
Jun	634	746	602	726	
Jul	864	840	872	1,008	
Aug	1,002	1,016	962	1,072	
Sep	604	660	638	708	
Total	5,132	5,028	5,074	5,346	1,446

- Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.  
 2/ Figure is for the period December 1-January 5.  
 3/ Figure is for the period March 15-31.  
 4/ Figure is for the period December 1-22.  
 5/ Figure is for the period March 23-April 30.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

## EXHIBIT 20

## St. Mary's River Ferry System Fare Impact Analysis

## FARE STRUCTURE: NEEBISH ISLAND FERRY SERVICE

Category	Previous to October 1985	Current Fare Structure 1/
All Cars, Pickups and Driver	\$2.50	\$3.00
Sr. Citizen Car, Pickup and Driver	\$1.25	\$1.50
Pickup with Camper Unit	\$3.00	\$3.75
Club Cab Pickup	\$2.75	\$3.50
Bus Camper - Motor Home	\$4.00	\$4.75
Adults	\$0.60	\$0.75
Senior Citizens, Handicapped	\$0.30	\$0.35
Students	--	--
Trucks:5 yd. dump, drill rig, sm. flat rack lumber truck, tractor backhoe with large farm wagon	\$4.00	\$4.75
Trucks:6-7 yd dump truck, long wheel base flat lumber truck, large 3 axle farm wagon	\$5.00	\$6.00
Regular Fuel Truck, Cement Truck	\$6.00	\$7.00
Semi Truck	\$20.00	\$25.00
Boat Trailer 14 ft.	\$2.50	\$3.00
Boat Trailer 14 to 17 ft., Travel Trailer (according to size)	\$3.00	\$3.75
Boat Trailer 17 ft. to 22 ft., Travel Trailer (according to size)	\$4.00	\$4.75
Extra Large Boats, Travel Trailers (according to size)	\$5.00	\$6.00
Travel Trailer (according to size)	\$6.00	\$7.00
Regular Farm Tractor	\$2.00	\$2.30
Miscellaneous	\$20.00	\$25.00
Motorcycle, Snowmobile and Driver	\$1.50	\$2.00
Trip After Daily Schedule Ends, Plus Fare	\$20.00	\$25.00
Adult Books 2/	\$11.00	\$13.00
Senior Citizen Books 2/	\$5.50	\$6.50
Car, Pickup and Driver Books 2/	\$45.00	\$54.00
S.C. Car, Pickup and Driver Books 2/	\$22.50	\$27.00

Notes: 1/ Current fare structure became effective October 16, 1985.

2/ There are 20 trips in one book.

Source: Michigan Department of Transportation, Passenger Planning Section in cooperation the Eastern Upper Peninsula Transportation Authority, January 1987.

EXHIBIT 21

St. Mary's River Ferry System Fare Impact Analysis

REVENUE BY FISCAL YEAR: NEEBISH ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	1,439.50	1,054.31	2,493.81	1,430.95	556.80	1,987.75	1,400.15	1,398.15	2,798.30	1,325.20	883.45	2,208.65	2,042.55	569.75	2,612.30
Nov	1,868.30	183.33	2,051.63	1,669.05	296.00	1,965.05	1,703.95	393.50	2,097.45	1,829.30	574.25	2,403.55	2,556.10	453.25	3,009.35
Dec	--	--	--	285.70	15.00	300.70	568.65	68.40	637.05	481.00	241.00	722.00	976.55	182.75	1,159.30
Jan	.781.00	82.68	863.68	--	47.80	47.80	96.10	399.60	495.70	--	--	--	--	--	--
Feb	--	--	--	--	--	--	--	4.80	4.80	--	--	--	--	--	--
Mar	357.90	86.19	444.09	--	--	--	--	--	--	--	--	--	--	--	--
Apr	755.25	88.77	844.02	939.95	113.90	1,053.85	360.50	24.20	384.70	810.20	396.25	1,206.45	--	--	--
May	1,444.00	339.69	1,783.69	1,713.40	190.70	1,904.10	1,516.75	621.55	2,138.30	1,965.75	649.00	2,614.75	--	--	--
Jun	2,267.75	809.73	3,077.48	2,386.60	344.60	2,731.20	1,745.65	1,392.80	3,138.45	2,978.20	557.75	3,535.95	--	--	--
Jul	3,966.05	1,028.50	4,994.55	3,696.30	613.90	4,310.20	3,796.60	534.56	4,331.16	5,589.80	1,643.00	7,232.80	--	--	--
Aug	4,316.75	828.40	5,145.15	4,340.15	1,195.30	5,535.45	4,214.95	194.70	4,409.65	6,210.80	1,317.00	7,527.80	--	--	--
Sep	2,337.50	529.96	2,867.46	2,174.20	317.80	2,492.00	2,029.80	991.38	3,021.18	3,575.35	656.00	4,231.35	--	--	--
Total	19,534.00	5,031.56	24,565.56	18,636.30	3,691.80	22,328.10	17,433.10	6,023.64	23,456.74	24,765.60	6,917.70	31,683.30	5,575.20	1,205.75	6,780.95

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 22

St. Mary's River Ferry System Fare Impact Analysis

REVENUE/VEHICLE BY FISCAL YEAR: NEEBISH ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	1.89	1.39	3.28	2.13	0.83	2.96	1.97	1.96	3.93	2.01	1.34	3.35	2.41	0.67	3.08
Nov	2.68	0.26	2.95	2.47	0.44	2.91	2.43	0.56	2.99	2.80	0.88	3.68	2.84	0.50	3.34
Dec	--	--	--	1.77	0.09	1.87	2.13	0.26	2.39	2.29	1.15	3.44	2.73	0.51	3.24
Jan	2.26	0.24	2.50	--	--	--	2.40	9.99	12.39	--	--	--	--	--	--
Feb	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mar	2.14	0.52	2.66	--	--	--	--	--	--	--	--	--	--	--	--
Apr	2.41	0.28	2.70	2.68	0.32	3.00	2.04	0.14	2.17	2.70	1.32	4.02	--	--	--
May	2.21	0.52	2.74	2.58	0.29	2.87	2.47	1.01	3.48	2.50	0.82	3.32	--	--	--
Jun	2.17	0.77	2.94	2.30	0.33	2.64	2.30	1.83	4.13	2.66	0.50	3.16	--	--	--
Jul	2.49	0.65	3.14	2.47	0.41	2.88	2.54	0.36	2.89	2.70	0.79	3.49	--	--	--
Aug	2.46	0.47	2.93	2.30	0.63	2.93	2.53	0.12	2.64	2.74	0.58	3.32	--	--	--
Sep	2.32	0.53	2.84	2.09	0.31	2.40	1.98	0.97	2.94	2.73	0.50	3.23	--	--	--
Average	2.34	0.60	2.95	2.33	0.46	2.80	2.34	0.81	3.14	2.64	0.74	3.38	--	--	--

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 23  
 St. Mary's River Ferry System Fare Impact Analysis

REVENUE FROM BOOKS SOLD AND NUMBER OF TICKETS USED, FY 1985-86: NEEBISH ISLAND FERRY SERVICE

Month	Revenue From Books Sold				Tickets Used			
	Adult	Senior Cit	Car	S.C. Car	Adult	Senior Cit	Car	S.C. Car
Oct	--	--	--	--	--	--	2	--
Nov	--	--	--	--	--	--	--	--
Dec	--	--	--	--	--	--	--	--
Jan	--	--	--	--	--	--	--	--
Feb	--	--	--	--	--	--	--	--
Mar	--	--	--	--	--	--	--	--
Apr	--	--	108.00	--	--	--	--	--
May	--	6.50	108.00	27.00	--	7	24	5
Jun	--	6.50	54.00	27.00	--	12	20	12
Jul	--	--	108.00	--	--	14	47	16
Aug	--	--	54.00	--	--	9	50	16
Sep	--	--	54.00	--	--	--	9	15
Total	\$0.00	\$13.00	\$486.00	\$54.00	0	42	152	64

Source: Eastern Upper Peninsula Transportation Authority.

EXHIBIT 24

St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST FOR SELECTED TIME FRAMES: NEEBISH ISLAND FERRY SERVICE

Item	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1994-95	1999-2000	2004-05	2009-10
<b>Annual Vehicles Carried</b>												
Low	8,334	7,983	7,465	9,377	9,600	9,700	9,900	10,100	10,600	11,100	11,700	12,300
High					9,800	10,100	10,500	10,900	12,000	13,200	14,500	16,000
<b>July/August Vehicles Carried as % of Annual Vehicles Carried</b>												
Low	40.2	42.4	42.4	46.3	46.5	46.7	46.9	47.0	48.0	49.0	50.0	51.0
High					46.5	46.7	46.9	47.0	49.0	51.0	53.0	55.0
<b>July/August Vehicles Carried</b>												
Low	3,346	3,386	3,166	4,339	4,464	4,530	4,643	4,747	5,088	5,439	5,850	6,273
High					4,557	4,717	4,925	5,123	5,880	6,732	7,685	8,800
<b>Design Friday as % of July/August Vehicles Carried 1/</b>												
Low	--	--	--	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
High	--	--	--	--	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
<b>Design Friday Vehicles Carried</b>												
Low	--	--	--	121	125	127	130	133	142	152	164	176
High	--	--	--	--	128	132	138	143	165	188	215	246
<b>Design Period as % of Design Friday Vehicles Carried 2/</b>												
Low	--	--	--	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
High	--	--	--	--	35.0	35.0	35.0	35.0	35.5	36.0	36.0	36.0
<b>Design Period Vehicles Carried</b>												
Low	--	--	--	43	44	44	46	47	50	53	57	61
High	--	--	--	--	45	46	48	50	58	68	77	89
<b>Design Hour Vehicles Carried in High Direction 3/</b>												
Low	--	--	--	11	12	12	12	12	13	14	15	16
High	--	--	--	--	12	12	13	13	16	18	21	24

Notes: 1/ Design Friday is the average Friday in the months of July and August.

2/ Design Period is a three hour period (2:00 - 5:00 p.m.) on the Design Friday.

3/ Design Hour is one-third of the Design Period with an 80%/20% split favoring the Barbeau to Neebish Island direction.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 25

# NEEBISH ISLAND FERRY VEHICLES CARRIED

1976-2010

35

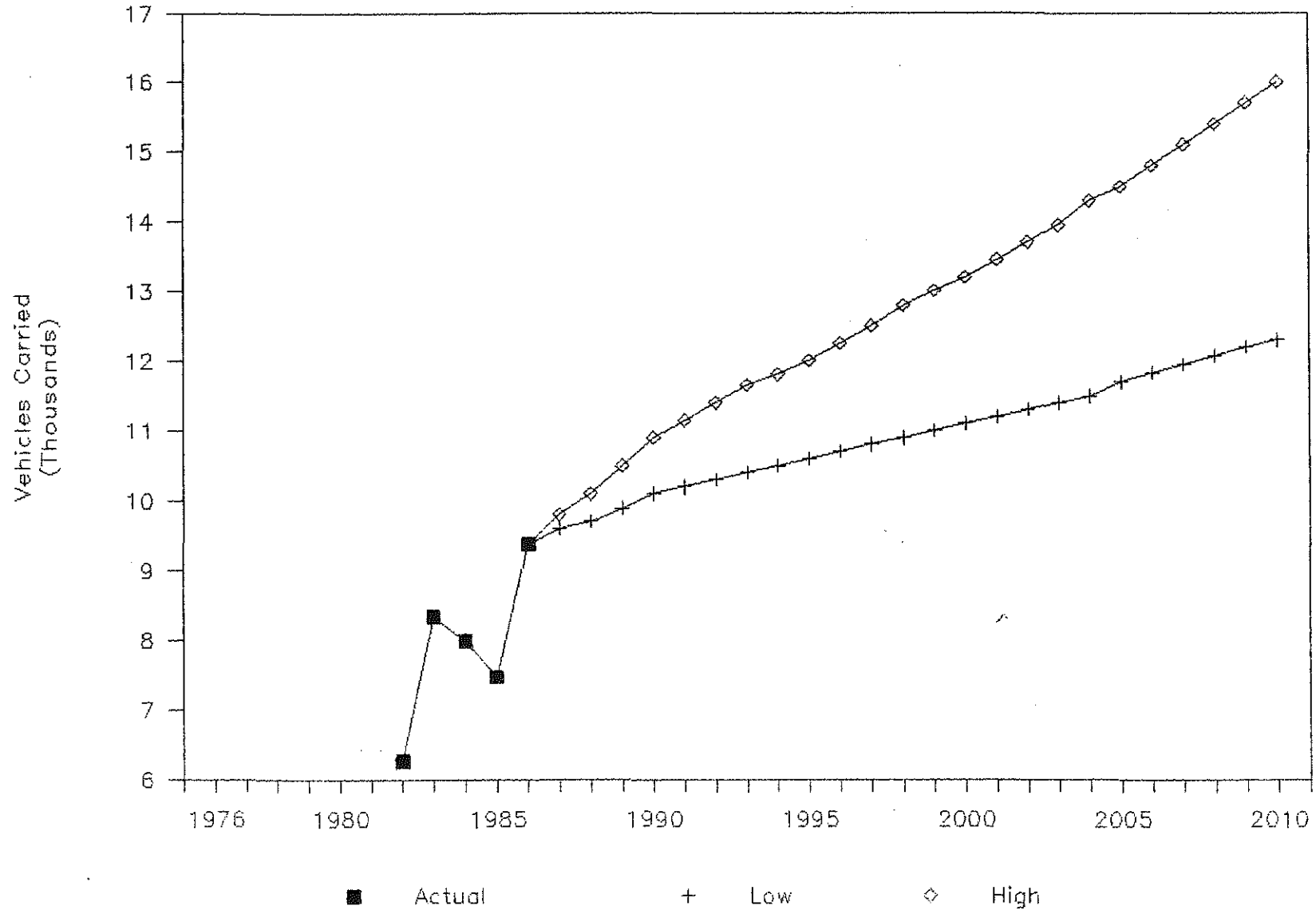




EXHIBIT 26

St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST BY FARE STRUCTURE ALTERNATIVE (000); NEEBISH ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/ A		Modified Rollback b/ B		Existing Structure C		Fare Increase B 20% / NB 20% D		Fare Increase B 40% / NB 40% E		Fare Increase B 0% / NB 20% F		Fare Increase B 0% / NB 40% G		
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	
	d/														
<b>Basic</b>															
1987	2.4	2.5	2.4	2.5	2.4	2.5	2.2	2.3	2.1	2.1	2.4	2.5	2.4	2.5	
1988	2.4	2.5	2.4	2.5	2.4	2.5	2.3	2.3	2.1	2.2	2.4	2.5	2.4	2.5	
1989	2.5	2.6	2.5	2.6	2.5	2.6	2.3	2.4	2.1	2.3	2.5	2.6	2.5	2.6	
1990	2.5	2.7	2.5	2.7	2.5	2.7	2.3	2.5	2.2	2.3	2.5	2.7	2.5	2.7	
1987-90	9.8	10.3	9.8	10.3	9.8	10.3	9.1	9.6	8.4	8.9	9.8	10.3	9.8	10.3	
<b>Non Basic</b>															
1987	7.2	7.4	7.2	7.4	7.2	7.4	7.2	7.4	7.2	7.4	7.2	7.4	7.2	7.4	
1988	7.3	7.6	7.3	7.6	7.3	7.6	7.3	7.6	7.3	7.6	7.3	7.6	7.3	7.6	
1989	7.4	7.9	7.4	7.9	7.4	7.9	7.4	7.9	7.4	7.9	7.4	7.9	7.4	7.9	
1990	7.6	8.2	7.6	8.2	7.6	8.2	7.6	8.2	7.6	8.2	7.6	8.2	7.6	8.2	
1987-90	29.5	31.0	29.5	31.0	29.5	31.0	29.5	31.0	29.5	31.0	29.5	31.0	29.5	31.0	
<b>Total</b>															
1987	9.6	9.8	9.6	9.8	9.6	9.8	9.4	9.6	9.3	9.5	9.6	9.8	9.6	9.8	
1988	9.7	10.1	9.7	10.1	9.7	10.1	9.5	9.9	9.4	9.7	9.7	10.1	9.7	10.1	
1989	9.9	10.5	9.9	10.5	9.9	10.5	9.7	10.3	9.6	10.1	9.9	10.5	9.9	10.5	
1990	10.1	10.9	10.1	10.9	10.1	10.9	9.9	10.7	9.7	10.5	10.1	10.9	10.1	10.9	
1987-90	39.3	41.3	39.3	41.3	39.3	41.3	38.6	40.6	37.9	39.9	39.3	41.3	39.3	41.3	

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.  
 b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.  
 c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.  
 d/ "Low" and "high" refer to forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 27  
 St. Mary's River Ferry System Fare Impact Analysis

ADDITIONAL REVENUE PER VEHICLE: NEEBISH ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/ A	Modified Rollback b/ B	Existing Structure C	Fare Increase 20%/20% D	Fare Increase 40%/40% 1/ E	Fare Increase 0%/20% 1/ F	Fare Increase 0%/40% 1/ G
<b>Basic</b>							
1987	\$0.39	\$0.39	\$0.39	\$1.02	\$1.62	\$0.39	\$0.39
1988	\$0.28	\$0.28	\$0.39	\$1.02	\$1.62	\$0.39	\$0.39
1989	\$0.00	\$0.28	\$0.39	\$1.02	\$1.62	\$0.39	\$0.39
1990	\$0.00	\$0.28	\$0.39	\$1.02	\$1.62	\$0.39	\$0.39
<b>Non Basic</b>							
1987	\$0.43	\$0.43	\$0.43	\$1.11	\$1.81	\$1.11	\$1.81
1988	\$0.30	\$0.30	\$0.43	\$1.11	\$1.81	\$1.11	\$1.81
1989	\$0.00	\$0.30	\$0.43	\$1.11	\$1.81	\$1.11	\$1.81
1990	\$0.00	\$0.30	\$0.43	\$1.11	\$1.81	\$1.11	\$1.81
<b>Weighted Avg.</b>							
1987	\$0.42	\$0.42	\$0.42	\$1.10	\$1.77	\$0.93	\$1.46
1988	\$0.24	\$0.24	\$0.42	\$1.10	\$1.77	\$0.93	\$1.46
1989	\$0.00	\$0.24	\$0.42	\$1.10	\$1.77	\$0.93	\$1.46
1990	\$0.00	\$0.24	\$0.42	\$1.10	\$1.77	\$0.93	\$1.46

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.

b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 28

St. Mary's River Ferry System Fare Impact Analysis

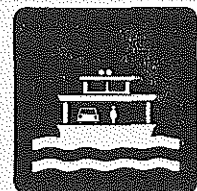
ADDITIONAL REVENUE GENERATED (000): NEEBISH ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/		Modified Rollback b/		Existing Structure		Fare Increase B 20% / NB 20% c/		Fare Increase B 40% / NB 40%		Fare Increase B 0% / NB 20%		Fare Increase B 0% / NB 40%	
	A		B		C		D		E		F		G	
	LOW	HIGH d/	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Basic</b>														
1987	0.94	0.96	0.94	0.96	0.94	0.96	2.28	2.32	3.34	3.41	0.94	0.96	0.94	0.96
1988	0.68	0.71	0.68	0.71	0.95	0.98	2.30	2.40	3.38	3.52	0.95	0.98	0.95	0.98
1989	0.00	0.00	0.69	0.74	0.97	1.02	2.35	2.49	3.45	3.66	0.97	1.02	0.97	1.02
1990	0.00	0.00	0.71	0.76	0.98	1.06	2.40	2.58	3.52	3.80	0.98	1.06	0.98	1.06
1987-90	1.62	1.66	3.02	3.16	3.83	4.03	9.32	9.79	13.69	14.38	3.83	4.03	3.83	4.03
<b>Non Basic</b>														
1987	3.10	3.16	3.10	3.16	3.10	3.16	7.99	8.16	13.03	13.30	7.99	8.16	13.03	13.30
1988	2.18	2.27	2.18	2.27	3.13	3.26	8.08	8.41	13.17	13.71	8.08	8.41	13.17	13.71
1989	0.00	0.00	2.23	2.36	3.19	3.39	8.24	8.74	13.44	14.25	8.24	8.74	13.44	14.25
1990	0.00	0.00	2.27	2.45	3.26	3.52	8.41	9.07	13.71	14.80	8.41	9.07	13.71	14.80
1987-90	5.28	5.43	9.78	10.25	12.67	13.32	32.72	34.38	53.35	56.06	32.72	34.38	53.35	56.06
<b>Total</b>														
1987	4.03	4.12	4.03	4.12	4.03	4.12	10.27	10.48	16.38	16.72	8.93	9.11	13.97	14.26
1988	2.86	2.98	2.86	2.98	4.07	4.24	10.38	10.80	16.55	17.23	9.02	9.39	14.11	14.70
1989	0.00	0.00	2.92	3.10	4.16	4.41	10.59	11.23	16.89	17.91	9.21	9.77	14.40	15.28
1990	0.00	0.00	2.98	3.22	4.24	4.58	10.80	11.66	17.23	18.59	9.39	10.14	14.70	15.86
1987-90	6.89	7.10	12.79	13.41	16.51	17.35	42.04	44.18	67.04	70.45	36.55	38.41	57.18	60.09

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.  
 b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.  
 c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.  
 d/ "Low" and "high" refer to the forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

# SUGAR ISLAND FERRY SERVICE



#### IV. SUGAR ISLAND FERRY SERVICE

##### A. EXISTING SERVICE AND USE

The Sugar Island ferry operates year-round between Sault Ste. Marie, Michigan and Sugar Island (see Exhibit 1). The ferry is scheduled to make 27 round trips per day between 6:00 a.m. and midnight, with late ferries provided on Friday and Saturday nights until 2:00 a.m. Extra trips may be made if necessary. There is one vessel used at Sugar Island with a capacity of 12 vehicles, plus pedestrians.

Annual passengers and vehicles carried have fluctuated over the past seven years ranging from a low of 191,046 passengers in 1980, to a high of 235,915 passengers in 1986. While 1980 was a low year for passengers, it had the highest number of vehicles carried, 125,820; the low year for vehicles was 1983 with 110,118 (see Exhibit 2). Between October 1, 1985 and September 30, 1986 (FY 1985-86), the Sugar Island ferry carried 235,915 passengers, 120,192 vehicles, and made a total of 29,240 crossings (see exhibits 29, 30, and 31).

Fares for the Sugar Island Ferry Service are based on the type of vehicle and include the driver. Additional passengers are charged a separate fare (see Exhibit 32).

##### B. REVENUES AND DEMAND ESTIMATES

Additional information used in the analysis for the Sugar Island Ferry Service is presented below.

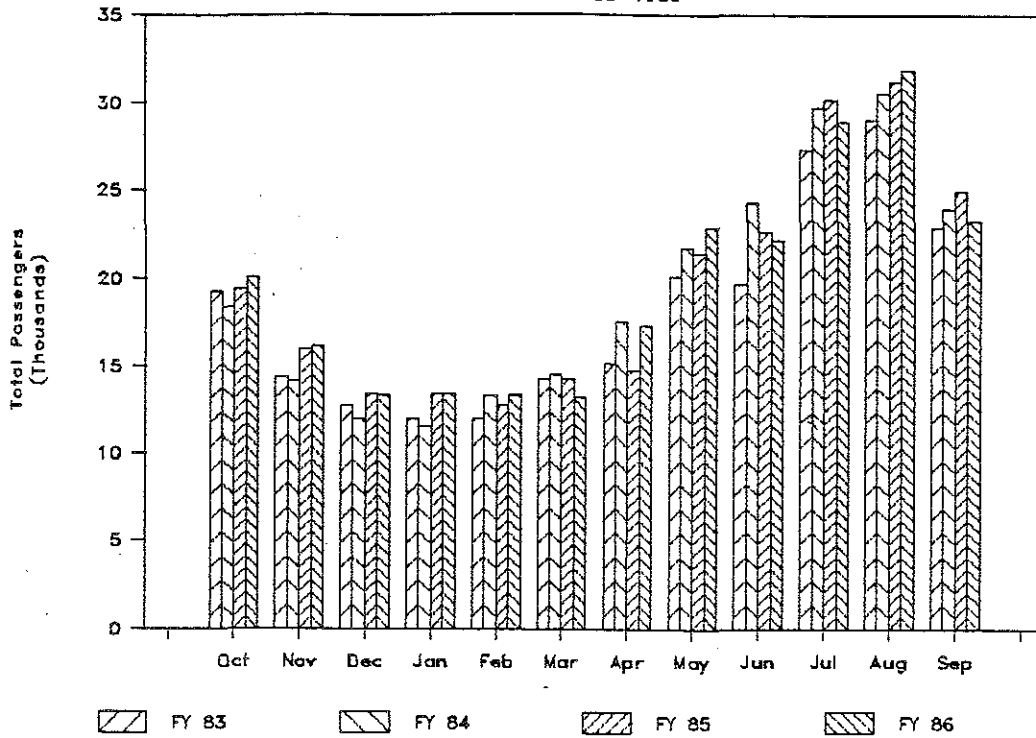
- Revenue and revenue per vehicle for fiscal years 1983-1986 (exhibits 33 and 34).
- Revenue from ticket books sold and the number of tickets used for fiscal year 1985-86 (Exhibit 35).
- Historical volumes and forecasts of vehicles carried for fiscal years 1983-2010. Vehicles carried in July and August are also presented, as well as Friday figures representing the design period for the ferry service (exhibits 36 and 37).
- Number of vehicles carried by various fare structure alternatives for basic and nonbasic user groups (Exhibit 38).

- Additional revenue per vehicle based on various fare structure alternatives (Exhibit 39).
- Additional revenue generated by various fare structure alternatives based on vehicles carried forecasts (Exhibit 40).

EXHIBIT 29

SUGAR ISLAND FERRY PASSENGERS

Fiscal Years 1983-1986



St. Mary's River Ferry System Fare Impact Analysis

PASSENGERS CARRIED BY FISCAL YEAR: SUGAR ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	19,267	18,362	19,409	20,074	19,634
Nov	14,290	14,118	15,932	16,145	15,593
Dec	12,713	11,963	13,385	13,305	14,182
Jan	11,937	11,538	13,323	13,344	
Feb	11,970	13,236	12,668	13,288	
Mar	14,190	14,420	14,128	13,169	
Apr	15,074	17,515	14,787	17,330	
May	20,141	21,738	21,392	22,912	
Jun	19,705	24,314	22,591	22,159	
Jul	27,283	29,729	30,201	28,929	
Aug	29,073	30,517	31,229	31,885	
Sep	22,990	24,040	25,008	23,375	
Total	218,633	231,490	234,053	235,915	49,409

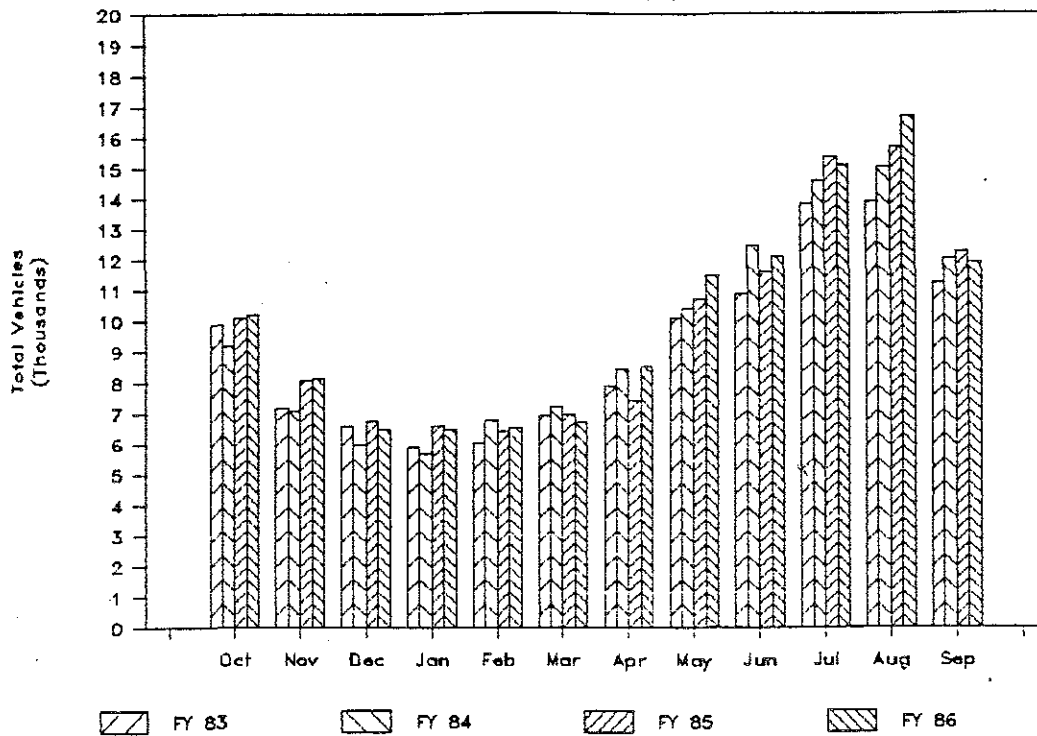
Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 30

SUGAR ISLAND FERRY VEHICLES

Fiscal Years 1983-1986



St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED BY FISCAL YEAR: SUGAR ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	9,910	9,166	10,080	10,201	10,397
Nov	7,132	7,082	8,056	8,095	7,816
Dec	6,578	5,931	6,694	6,436	7,141
Jan	5,891	5,633	6,562	6,466	
Feb	5,974	6,719	6,366	6,496	
Mar	6,856	7,156	6,899	6,681	
Apr	7,867	8,423	7,399	8,523	
May	10,091	10,380	10,681	11,533	
Jun	10,863	12,418	11,597	12,064	
Jul	13,813	14,594	15,361	15,081	
Aug	13,900	15,052	15,686	16,678	
Sep	11,243	12,047	12,278	11,938	
Total	110,118	114,601	117,659	120,192	25,354

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

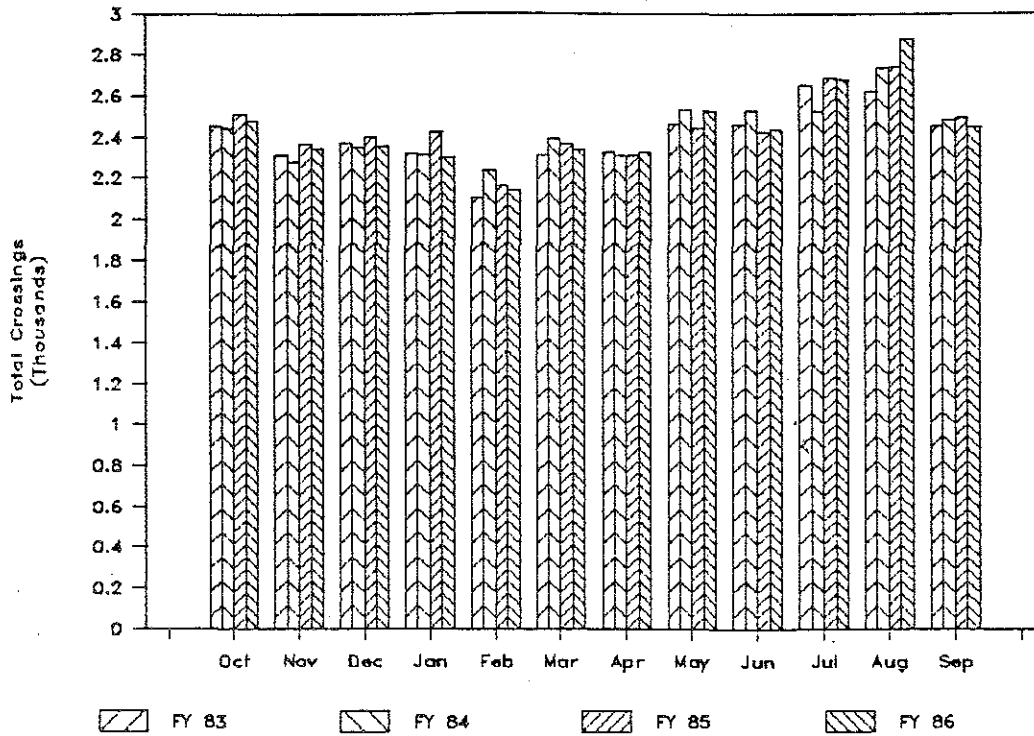
Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.



EXHIBIT 31

SUGAR ISLAND FERRY CROSSINGS

Fiscal Years 1983-1986



St. Mary's River Ferry System Fare Impact Analysis

CROSSINGS BY FISCAL YEAR: SUGAR ISLAND FERRY SERVICE 1/

Month	1982-83	1983-84	1984-85	1985-86	1986-87
Oct	2,456	2,446	2,516	2,482	2,444
Nov	2,311	2,278	2,363	2,342	2,308
Dec	2,372	2,346	2,402	2,357	2,356
Jan	2,318	2,311	2,423	2,297	
Feb	2,100	2,232	2,155	2,136	
Mar	2,306	2,390	2,366	2,338	
Apr	2,326	2,306	2,309	2,322	
May	2,464	2,531	2,437	2,526	
Jun	2,458	2,528	2,423	2,432	
Jul	2,653	2,526	2,684	2,680	
Aug	2,622	2,740	2,743	2,876	
Sep	2,459	2,484	2,498	2,452	
Total	28,845	29,118	29,319	29,240	7,108

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 32

St. Mary's River Ferry System Fare Impact Analysis

FARE STRUCTURE: SUGAR ISLAND FERRY SERVICE

Category	Previous to October 1985	Current Fare Structure 1/
All Cars, Pickups and Driver	\$1.25	\$1.75
Sr. Citizen Car, Pickup and Driver	\$0.65	\$0.85
Pickup with Camper Unit	\$2.50	\$3.00
Bus Camper - Motor Home	\$2.50	\$5.00
Adults	\$0.50	\$0.75
Senior Citizens	\$0.25	\$0.35
Child	\$0.15	\$0.15
Trucks 130 inch WB or Over	\$2.00	\$3.00
Tandem Trucks	\$3.50	\$5.00
Regular Gasoline and Explosives	\$4.00	\$5.00
Semi Gasoline and Explosives	\$7.50	\$8.50
Trailer up to 15 ft.	\$1.25	\$1.50
Trailer 15 to 20 ft.	\$1.50	\$2.00
Trailer 20 ft or Over	\$1.75	\$2.50
House Trailer	\$25.00	\$30.00
Motorcycle, Snowmobile and Driver	\$0.75	\$1.00
Trip After Daily Schedule Ends, Plus Fare	\$7.50	\$60.00
Trip Between Scheduled Runs, Plus Fare	\$15.00	\$15.00
Adult Books 2/	\$7.00	\$8.00
Senior Citizen Books 2/	\$3.50	\$4.00
Student Books 2/	--	--
Car, Pickup and Driver Books 2/	\$18.00	\$20.00
S.C. Car, Pickup and Driver Books 2/	\$9.00	\$10.00

Notes: 1/ Current fare structure became effective October 16, 1985.

2/ There are 20 trips in one book.

Source: Michigan Department of Transportation, Passenger Planning Section in cooperation the Eastern Upper Peninsula Transportation Authority, January 1987.

EXHIBIT 33

St. Mary's River Ferry System Fare Impact Analysis

REVENUE BY FISCAL YEAR: SUGAR ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	10,889.15	2,306.82	13,195.97	10,297.99	1,812.70	12,110.69	10,424.21	1,929.94	12,354.15	11,817.30	2,188.25	14,005.55	12,633.40	1,974.65	14,608.05
Nov	7,326.21	1,967.89	9,294.10	7,144.75	1,712.45	8,857.20	8,684.43	1,913.07	10,597.50	11,272.76	1,918.25	13,191.01	9,349.55	1,577.45	10,927.00
Dec	6,859.28	1,602.47	8,461.75	6,399.85	178.30	6,578.15	7,317.95	1,395.75	8,713.70	8,494.69	1,417.55	9,912.24	8,138.25	1,331.75	9,470.00
Jan	6,292.77	1,796.28	8,089.05	5,940.26	2,770.70	8,710.96	7,009.15	103.90	7,113.05	7,983.13	1,737.89	9,721.02			
Feb	6,378.75	1,709.93	8,088.68	7,244.50	1,628.20	8,872.70	6,923.99	2,954.21	9,878.20	7,492.79	1,676.55	9,169.34			
Mar	8,334.60	1,906.78	10,241.38	8,518.05	1,341.20	9,859.25	7,849.10	1,444.90	9,294.00	8,741.34	1,199.20	9,940.54			
Apr	9,927.65	1,477.90	11,405.55	10,299.45	1,667.40	11,966.85	8,944.20	1,467.55	10,411.75	11,514.70	1,988.60	13,503.30			
May	13,016.62	1,918.02	14,934.64	13,701.00	2,088.30	15,789.30	13,808.99	1,843.56	15,652.55	16,549.07	2,229.60	18,778.67			
Jun	13,649.32	1,108.25	14,757.57	15,820.52	908.50	16,729.02	14,861.78	627.02	15,488.80	17,440.90	776.05	18,216.95			
Jul	19,153.65	517.25	19,670.90	18,558.82	656.50	19,215.32	19,518.70	719.50	20,238.20	23,658.20	735.90	24,394.10			
Aug	18,531.80	560.25	19,092.05	18,689.44	551.10	19,240.54	20,262.38	732.17	20,994.55	25,519.55	2,978.60	28,498.15			
Sep	13,452.04	1,698.02	15,150.06	13,919.68	1,955.20	15,874.88	14,389.01	1,975.79	16,364.80	15,669.85	1,983.95	17,653.80			
Total	133,811.84	18,569.86	152,381.70	136,534.31	17,270.55	153,804.86	139,993.89	17,107.36	157,101.25	166,154.28	20,830.39	186,984.67	30,121.20	4,883.85	35,005.05

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

EXHIBIT 34

St. Mary's River Ferry System Fare Impact Analysis

REVENUE/VEHICLE BY FISCAL YEAR: SUGAR ISLAND FERRY SERVICE 1/

Month	1982-83			1983-84			1984-85			1985-86			1986-87		
	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total	Cash	Charge	Total
Oct	1.10	0.23	1.33	1.12	0.20	1.32	1.03	0.19	1.23	1.16	0.21	1.37	1.22	0.19	1.41
Nov	1.03	0.28	1.30	1.01	0.24	1.25	1.08	0.24	1.32	1.39	0.24	1.63	1.20	0.20	1.40
Dec	--	--	--	1.08	0.03	1.11	1.09	0.21	1.30	1.32	0.22	1.54	1.14	0.19	1.33
Jan	1.07	0.30	1.37	--	--	--	1.07	0.02	1.08	--	--	--			
Feb	--	--	--	--	--	--	--	--	--	--	--	--			
Mar	1.22	0.28	1.49	--	--	--	--	--	--	--	--	--			
Apr	1.26	0.19	1.45	1.22	0.20	1.42	1.21	0.20	1.41	1.35	0.23	1.58			
May	1.29	0.19	1.48	1.32	0.20	1.52	1.29	0.17	1.47	1.43	0.19	1.63			
Jun	1.26	0.10	1.36	1.27	0.07	1.35	1.28	0.05	1.34	1.45	0.06	1.51			
Jul	1.39	0.04	1.42	1.27	0.04	1.32	1.27	0.05	1.32	1.57	0.05	1.62			
Aug	1.33	0.04	1.37	1.24	0.04	1.28	1.29	0.05	1.34	1.53	0.18	1.71			
Sep	1.20	0.15	1.35	1.16	0.16	1.32	1.17	0.16	1.33	1.31	0.17	1.48			
Average	1.22	0.17	1.38	1.19	0.15	1.34	1.19	0.15	1.34	1.38	0.17	1.56			

Notes: 1/ Actual figures were obtained from the Eastern Upper Peninsula Transportation Authority.

Source: MDOT, Bureau of Transportation Planning, Passenger Transportation Planning Section, Surface Systems Unit.

## EXHIBIT 35

## St. Mary's River Ferry System Fare Impact Analysis

## REVENUE FROM BOOKS SOLD AND NUMBER OF TICKETS USED, FY 1985-86: SUGAR ISLAND FERRY SERVICE

Month	Revenue From Books Sold				Number of Tickets Used			
	Adult	Senior Cit	Car	S.C. Car	Adult	Senior Cit	Car	S.C. Car
Oct	637.00	124.50	4,302.00	55.00	1,839	695	4,794	1,990
Nov	1,008.00	192.00	5,300.00	900.00	1,710	477	4,559	1,354
Dec	752.00	72.00	3,980.00	590.00	1,824	490	3,965	1,100
Jan	608.00	100.00	4,160.00	540.00	1,503	430	3,888	1,104
Feb	672.00	96.00	3,900.00	570.00	1,536	415	3,932	1,105
Mar	688.00	80.00	4,200.00	590.00	1,614	400	4,013	1,050
Apr	736.00	192.00	4,720.00	960.00	1,690	553	4,476	1,579
May	1,016.00	232.00	5,900.00	1,230.00	2,218	898	5,510	2,062
Jun	1,048.00	232.00	6,220.00	1,270.00	2,472	1,077	5,852	2,341
Jul	1,264.00	304.00	6,400.00	1,520.00	2,913	1,593	6,292	2,890
Aug	1,160.00	316.00	6,420.00	1,420.00	3,103	1,541	6,695	2,940
Sep	928.00	204.00	532.00	1,010.00	2,368	1,286	5,520	2,414
Total	\$10,517.00	\$2,144.50	\$56,034.00	\$10,655.00	24,790	9,855	59,496	21,929

Source: Eastern Upper Peninsula Transportation Authority.

EXHIBIT 36  
St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST FOR SELECTED TIME FRAMES: SUGAR ISLAND FERRY SERVICE

Item	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1994-95	1999-2000	2004-05	2009-10
Annual Vehicles Carried												
Low	110,118	114,601	117,659	120,192	122,400	124,700	127,100	129,400	135,900	142,700	149,800	157,300
High					127,100	131,800	136,500	141,200	155,300	170,900	187,900	206,700
July/August Vehicles Carried as % of Annual Vehicles Carried												
Low	20.6	25.9	26.4	26.4	26.6	26.7	26.8	27.0	27.5	28.0	28.5	29.0
High					26.6	26.7	26.8	27.0	28.0	29.0	30.0	31.0
July/August Vehicles Carried												
Low	22,713	29,682	31,062	31,731	32,558	33,295	34,063	34,938	37,373	39,956	42,693	45,617
High					33,809	35,191	36,582	38,124	43,484	49,561	56,370	64,077
Design Friday as % of July/August Vehicles Carried 1/												
Low	--	--	--	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
High	--	--	--	--	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Design Friday Vehicles Carried												
Low	--	--	--	603	619	633	647	664	710	759	811	867
High	--	--	--	--	642	669	695	724	826	942	1071	1217
Design Period as % of Design Friday Vehicles Carried 2/												
Low	--	--	--	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
High	--	--	--	--	16.0	16.0	16.0	16.0	16.5	17.0	17.0	17.0
Design Period Vehicles Carried												
Low	--	--	--	96	99	101	104	106	114	121	130	139
High	--	--	--	--	103	107	111	116	136	160	182	207
Design Hour Vehicles Carried in High Direction 3/												
Low	--	--	--	26	26	27	28	28	30	32	35	37
High	--	--	--	--	27	29	30	31	36	43	49	55

Notes: 1/ Design Friday is the average Friday in the months of July and August.  
2/ Design Period is a three hour period (2:00 - 5:00 p.m.) on the Design Friday.  
3/ Design Hour is one-third of the Design Period with an 80%/20% split favoring the Sault Ste. Marie to Sugar Island direction.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 37

# SUGAR ISLAND FERRY VEHICLES CARRIED

1976-2010

49

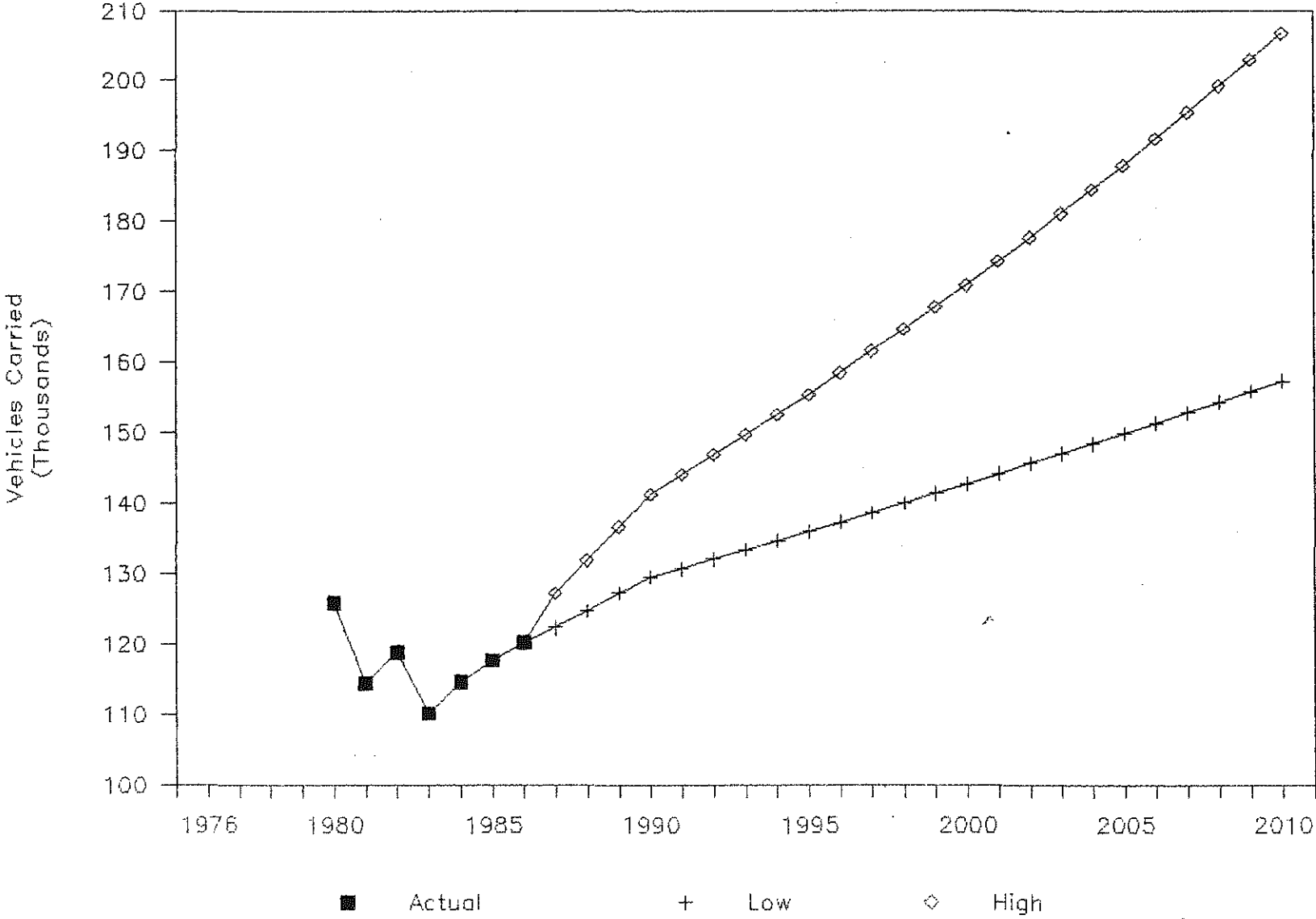


EXHIBIT 38

St. Mary's River Ferry System Fare Impact Analysis

VEHICLES CARRIED FORECAST BY FARE STRUCTURE ALTERNATIVE (000): SUGAR ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/			Modified Rollback b/		Existing Structure		Fare Increase B 20% / NB 20% c/		Fare Increase B 40% / NB 40%		Fare Increase B 0% / NB 20%		Fare Increase B 0% / NB 40%	
	A			B		C		D		E		F		G	
	LOW	HIGH	d/	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Basic</b>															
1987	79	83		79	83	79	83	74	77	68	71	79	83	79	83
1988	81	86		81	86	81	86	76	80	70	74	81	86	81	86
1989	83	89		83	89	83	89	77	83	71	77	83	89	83	89
1990	84	92		84	92	84	92	78	85	72	79	84	92	84	92
1987-90	327	349		327	349	327	349	304	325	281	300	327	349	327	349
<b>Non Basic</b>															
1987	43	44		43	44	43	44	43	44	43	44	43	44	43	44
1988	44	46		44	46	44	46	44	46	44	46	44	46	44	46
1989	44	48		44	48	44	48	44	48	44	48	44	48	44	48
1990	45	49		45	49	45	49	45	49	45	49	45	49	45	49
1987-90	176	188		176	188	176	188	176	188	176	188	176	188	176	188
<b>Total</b>															
1987	122	127		122	127	122	127	116	121	111	115	122	127	122	127
1988	125	132		125	132	125	132	119	126	114	120	125	132	125	132
1989	127	137		127	137	127	137	121	131	115	125	127	137	127	137
1990	129	141		129	141	129	141	123	135	117	128	129	141	129	141
1987-90	503	537		503	537	503	537	480	513	457	488	503	537	503	537

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.  
 b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.  
 c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.  
 d/ "Low" and "high" refer to forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

EXHIBIT 39

St. Mary's River Ferry System Fare Impact Analysis

ADDITIONAL REVENUE PER VEHICLE: SUGAR ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/ A	Modified Rollback b/ B	Existing Structure C	Fare Increase 20%/20% D	Fare Increase 40%/40% 1/ E	Fare Increase 0%/20% 1/ F	Fare Increase 0%/40% 1/ G
<b>Basic</b>							
1987	\$0.18	\$0.18	\$0.18	\$0.43	\$0.68	\$0.18	\$0.18
1988	\$0.10	\$0.10	\$0.18	\$0.43	\$0.68	\$0.18	\$0.18
1989	\$0.00	\$0.10	\$0.18	\$0.43	\$0.68	\$0.18	\$0.18
1990	\$0.00	\$0.08	\$0.18	\$0.43	\$0.68	\$0.18	\$0.18
<b>Non Basic</b>							
1987	\$0.30	\$0.30	\$0.30	\$0.75	\$1.15	\$0.75	\$1.15
1988	\$0.19	\$0.19	\$0.30	\$0.75	\$1.15	\$0.75	\$1.15
1989	\$0.00	\$0.19	\$0.30	\$0.75	\$1.15	\$0.75	\$1.15
1990	\$0.00	\$0.19	\$0.30	\$0.75	\$1.15	\$0.75	\$1.15
<b>Weighted Avg.</b>							
1987	\$0.21	\$0.21	\$0.21	\$0.52	\$0.88	\$0.38	\$0.52
1988	\$0.12	\$0.12	\$0.21	\$0.52	\$0.88	\$0.38	\$0.52
1989	\$0.00	\$0.12	\$0.21	\$0.52	\$0.88	\$0.38	\$0.52
1990	\$0.00	\$0.12	\$0.21	\$0.52	\$0.88	\$0.38	\$0.52

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.

b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.



EXHIBIT 40

St. Mary's River Ferry System Fare Impact Analysis

ADDITIONAL REVENUE GENERATED (000): SUGAR ISLAND FERRY SERVICE

User Type	Scheduled Rollback a/		Modified Rollback b/		Existing Structure		Fare Increase		Fare Increase		Fare Increase		Fare Increase	
	A		B		C		B 20% NB 20% c/		B 40% NB 40%		B 0% NB 20%		B 0% NB 40%	
	LOW	HIGH d/	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Basic</b>														
1987	14.27	14.86	14.27	14.86	14.27	14.86	31.71	33.01	46.37	48.28	14.27	14.86	14.27	14.86
1988	8.13	8.58	8.13	8.58	14.63	15.44	32.49	34.31	47.52	50.18	14.63	15.44	14.63	15.44
1989	0.00	0.00	8.26	8.91	14.86	16.03	33.01	35.61	48.28	52.08	14.86	16.03	14.86	16.03
1990	0.00	0.00	6.54	7.15	15.09	16.50	33.53	36.65	49.04	53.60	15.09	16.50	15.09	16.50
1987-90	22.40	23.44	37.19	39.49	58.85	62.83	130.75	139.59	191.20	204.12	58.85	62.83	58.85	62.83
<b>Non Basic</b>														
1987	12.81	13.34	12.81	13.34	12.81	13.34	32.03	33.34	49.10	51.12	32.03	33.34	49.10	51.12
1988	8.31	8.78	8.31	8.78	13.13	13.86	32.81	34.65	50.31	53.13	32.81	34.65	50.31	53.13
1989	0.00	0.00	8.45	9.11	13.34	14.39	33.34	35.96	51.12	55.14	33.34	35.96	51.12	55.14
1990	0.00	0.00	8.58	9.38	13.55	14.81	33.86	37.01	51.92	56.75	33.86	37.01	51.92	56.75
1987-90	21.12	22.11	38.15	40.60	52.82	56.39	132.04	140.96	202.46	216.14	132.04	140.96	202.46	216.14
<b>Total</b>														
1987	27.08	28.19	27.08	28.19	27.08	28.19	63.74	66.35	95.48	99.39	46.30	48.20	63.38	65.98
1988	16.44	17.36	16.44	17.36	27.75	29.30	65.30	68.96	97.83	103.31	47.44	50.09	64.94	68.57
1989	0.00	0.00	16.70	18.02	28.19	30.41	66.35	71.57	99.39	107.22	48.20	51.99	65.98	71.17
1990	0.00	0.00	15.12	16.53	28.64	31.30	67.39	73.66	100.96	110.35	48.96	53.51	67.02	73.25
1987-90	43.52	45.55	75.34	80.09	111.67	119.21	262.78	280.55	393.66	420.27	190.89	203.79	261.31	278.97

Notes: a/ Audit payback rollback scheduled for fall 1987; 10 percent surcharge rollback scheduled for fall 1988.

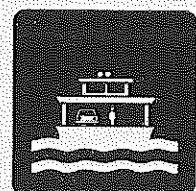
b/ Audit payback rollback scheduled for fall 1987; 10 percent capital improvements rollback scheduled for fall 1990.

c/ "B" refers to basic ridership; "NB" refers to nonbasic ridership.

d/ "Low" and "high" refer to the forecasts for number of vehicles carried.

Source: MDOT, Bureau of Transportation Planning, Intercity Transportation Planning Division, Surface Systems Unit.

## REFERENCES



## REFERENCES

1. Drummond Island Ferry Service Analysis, Michigan Department of Transportation, Bureau of Transportation Planning, Surface Systems Unit, Lansing, June 4, 1986.
2. St. Mary's River Ferry Study, Michigan Department of Transportation, Bureau of Transportation Planning, Surface systems Unit, Lansing, September 1984.