REPORT OF THE COMMITTEE ON TRANSPORTATION ON ITS STUDY ON MASS TRANSIT

January 1, 1975

Senate

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I

INTRODUCTION AND FINDINGS

The Joint Standing Committee on Transportation was directed by the Legislative Council to study the various systems for mass transportation presently suitable to Maine and the feasibility of utilizing one or more systems to meet the future needs of the state. Since the order expressed the assumption that mass transit was an appropriate means for reducing energy consumption, environmental pollutants, traffic congestion and loss of life resulting from the use of cars, the Committee included in its study these issues to determine if in fact mass transit reduced these unfavorable impacts of automobile use.

In determining which type of mass transit might best suit Maine's needs the Committee examined the different systems in Maine, the kinds of service they offer and their means for meeting capital and operating expenses. Several different kinds of programs not presently offered which appeared to have applicability to Maine's geographic and socio-economic population distributions were reviewed. Also, the Committee wished to make known the Maine Department of Transportation's work in this area and the opportunities for organization and

funding to Maine cities and towns.

The Committee found that mass transit is an appropriate means for reducing energy consumption, motor vehicle emission pollution, traffic congestion and loss of life and injury resulting from the use of private cars. The development of an adequate system of transportation is considered essential for the welfare of the citizens of this State. Several systems of mass transportation are presently suitable and several systems are presently in use in Maine.

With the exception of rapid rail transit and express bus service, virtually all means of transportation are presently found in Maine to some degree. The three major urban areas in Maine -- Portland, Lewiston-Auburn and Bangor -- exercise three different means for providing service: Public Transit Authority, private bus company and city-owned system, respectively. Each of the systems operates at a deficit in that passenger revenues do not contribute sufficient funds to permit the system to continue without subsidies from the governing bodies of the cities served. In addition to these systems, a wide variety of transportation systems, including limousine, mini-bus, wagon, taxi and charter buses, sponsored by private or government entities or combinations of the two are currently offered.

Air service is adequate with service between Maine's larger urban and coastal areas and connections or direct service to Boston and New York. Intercity bus service is inadequate from the standpoints of convenience, schedules, terminal facilities and equipment. Both air and bus service are underutilized and uncoordinated with each other. Maine ferry services were not investigated by the Committee. However, service is considered adequate. The Committee did not attempt to inventory or do cost analyses of available transportation services since a study being undertaken by the Maine Department of Transportation will provide the State with that information when their study is completed in December, 1975. The Committee, rather, concentrated its efforts toward trying to assess the problems and needs of the present systems and the public as well as provide the legislature with some insight into some experimental programs currently being tested or implemented.

If the energy used to produce the mass transit system is not included in the equation, the evidence seems clear that available means of mass transit consume many times less energy than the privately-driven passenger automobile. The problem of air pollution is less clear. Federal controls on automobile emissions should reduce this problem so that even increased use of automobiles will not increase present levels of air pollution in Maine cities.

Rail service was not determined to be a feasible alternative to automobile travel at this time considering costs to upgrade track, purchase equipment and operate a rail system for an undetermined market with no ancillary services available at either end of the trip.

Carpools, express intercity bus service, improved urban and rural bus service appear to be the best means to serve population centers as scattered and as varied in size as those in Maine. Mass transit systems should not be considered as separate entities but rather only a part of a multi-modal transportation plan so that each can be considered on its merits to provide the best means always in coordination with long range land use plans for the State and communities. Such a plan should be formulated as a cooperative effort of state, regional and local government entities involved with land use planning, social welfare and transportation services. As mentioned earlier, the Maine Department of Transportation in cooperation with the Department of Health and Welfare is undertaking a comprehensive study to assess transportation needs in Maine. The department currently offers planning assistance to the Portland Region and Lewiston-Auburn in an on-going unified comprehensive plan for transportation.

Transportation systems are costly to capitalize and operate. Fares prove to be an inadequate means to raise sufficient

funds. Although greater amounts of federal funds are available for transit subsidies, a state and local commitment to providing transportation as a public service comparable to fire, police and health services is necessary for an integrated, efficient system to be viable. The size and location of Maine's communities suggests that buses of various sizes and types present the most reasonable means for mass transit in Maine.

Enabling legislation, 30 MRSA §4971, provides for the formation, management and financing of single or multiple-municipality transit districts by vote of the governing body of any municipality. The legislation is comprehensive and provides for appropriate public representation on its board of directors. A single municipality may by vote of its legislative body perform all the functions and have the powers that districts enjoy.

In addition to Federal Revenue Sharing funds, several major federal laws provide for mass transit funding. The Federal-aid Highway Act of 1973 (87 Stat 250) freed for mass transportation purposes money allocated to highway construction. At the request of local officials a state may allocate money, from its urban system apportionment, for a mass transit project other than highway -- e.g. parking, terminal buildings, tunnels, etc. The Emergency Highway Energy Conservation Act, 187 Stat 1046, provides up to 90% for demonstration grants for car pooling in

urban areas. The Department of Housing and Urban Development will make two thirds of the net project cost grants to urban areas for transit projects if there exists long range comprehensive planning for transit development and a unified system for the urban area. Grants are available for up to 50% of short range projects that will become part of an area-wide system.

The recently passed Urban Mass Transportation Act of 1974 provides operating subsidies estimated to be $3,800,000 over the next five years which the Portland and Lewiston-Auburn urban areas are eligible for. A common theme that runs through these acts is that there should be comprehensive land use/transportation planning. Federal funds are available to public transportation systems. Communities should proceed with comprehensive plans and consider what kind of local or area-wide transportation system would best suit their needs.

II

Motor Vehicle Emission Pollution

In achieving the present level of mobility by means of transit systems and the automobile, significant contributions to increased air pollution have resulted. Therefore air quality should be considered in transportation planning. The Clean Air Amendments of 1970 resulted in the Environmental Protection Agency's standards for vehicle emissions and air quality within a given geographic area.

The motor vehicle in 1969 accounted for 60% of the total carbon monoxide (C.O.) from all sources, 50% of the hydro carbons (HC), and about 35% of the notrogin oxides (XlO_x).[1]

Primary ambient air quality standards are intended to protect public health - secondary standards to protect general welfare. The responsibility for maintaining these standards rests with state and local air quality control agencies.[2]

The standards require a reduction of 90% of 1970 levels in hydro carbons and carbon monoxide from 1975 vehicle emissions and a 90% reduction in oxides of nitrogen by 1976.[3] The former two gas emissions decrease directly related to increased speed, whereas the latter increases with increased speed.[4] The following table gives comparisons of various modes of travel and the exhaust emission factors (grams per vehicle mile) of various pollutants.[5] Automobile engines generally consume 1000 cubic inches of air for each cubic

inch of displacement ability of its engine per mile. The amount of air necessary to sustain a human for 11 hours is used by a 290 ClD engine in 1 mile. Not only is the remaining air polluted but there is less of it.

Stop and go traffic contributes greatly to emission pollutants on city streets since the level of pollutant discharges is greatest during idle and acceleration process of driving.[6] Although federal emission standards will reduce automotive emissions, reduced traffic, and improved traffic flow can be achieved by regulation, pricing policy, land use control, and transit operations. Reducing speed on arterials and freeways does not reduce pollution levels.

More than 92 percent of the carbon monoxide emissions in 11 urban regions is caused by mobile sources and 67-90 percent of hydro-carbons and up to 88 percent of nitrogen oxide.

Even with enforcement of standards for emission control systems that are expected to result in 90% reduction in emission pollutants, careful monitoring and research will be necessary to determine the extent of deterioration of exhaust control devices and promulgate regulations for regulations for mandatory inspection.[7]

Title 29 §2127 MRSA provides for suspension of automobile registration by the Secretary of State for owners convicted of operating a motor vehicle, excepting stock cars, antique

cars and farm tractors, upon any highway in the state if any operational element of the air pollution control system has been removed, dismantled or otherwise rendered inoperative or is in other than good working order.

No ambient air quality data is available for carbon monoxide, hydro carbons, photo chemical oxidants and nitrogen dioxide in Maine. No region within the State had a 1970 urban place population that exceeds 200,000. Therefore, all regions within the State of Maine have been classified priority III for these pollutants. It is assumed that the federal motor vehicle emission standards will result in the emission reductions shown in appendix I to the August 14, 1971 Federal Register and that such emission reductions are sufficient to maintain the present levels which are assumed below national standards.[8]

MAINE

SUMMARY OF ANALYSIS OF MOTOR VEHICLE EMISSIONS *

	1972	1980	1990	1972-1990 Predicted Change (%)	
PORTLAND					
Total Miles of Highway	532.	583	653.	+121.	(+22.7)
Vehicle Miles Traveled	620.0	725.8	897.1	+277.1	(+44.7)
CO Emitted (lbs)	90.728	32.596	13.617	- 77.111	(-85.0)
NOx Emitted (lbs)	9.665	5.352	1.778	- 7.887	(-81.6)
HC Emitted (lbs)	15.489	8.730	1.749	- 13.740	(-88.7)
LEWISTON-AUBURN					
Total Miles of Highway	297.	315	339.	+ 42.	(+14.1)
Vehicle Miles Traveled	288	318.3	377.0	+ 89.0	(+30.9)
CO Emitted (lbs)	45.194	15.210	5.907	- 39.287	(-86.9)
NOx Emitted (lbs)	4.474	2.296	0.724	- 3.750	(-83.8)
HC Emitted (lbs)	7.679	2.148	0.683	- 6.996	(-91.1)
SMALL URBAN (25,000-49,999					
Total Miles of Highway	806.	848	902	+ 96.	(+11.9)
Vehicle Miles Traveled	770.0	864.7	1,051.9	+281.9	(+36.6)
CO Emitted (lbs)	113.135	38.611	15.943	- 97.192	(-85.9)
NOx Emitted (lbs)	11.999	6.359	2.066	- 9.933	(-82.8)
HC Emitted (lbs)	19.244	5.470	2.025	- 17.219	(-89.5)
SMALL URBAN (5,000-24,999)					
Total Miles of Highway	597.	651	717	+120.	(+20.1)
Vehicle Miles Traveled	440	504.4	618.7	+178.7	(+40.6)
CO Emitted (lbs)	70.051	24.471	18.291	- 51.760	(-73.9)
NOx Emitted (lbs)	6.842	3.702	2.109	- 4.733	(-69.2)
HC Emitted (lbs)	11.861	3.425	2.681	- 9.180	(-77.4)
TOTALS					
Total Miles of Highway	2232.		2611.	+379.	(+17.0)
Vehicle Miles Traveled	2118.0		2944.7	+826.7	(+39.0)
CO Emitted (lbs)	319.108		53.758	-265.350	(-83.2)
NOx Emitted (lbs)	32.980		6.677	- 26.303	(-79.8)
HC Emitted (lbs)	54.273		7.138	- 47.135	(-86.8)

*NOTE: Vehicle miles traveled are in millions per year.
Pounds of pollutants emitted are in millions per year.

RURAL

	1972	1980	1990
Total Miles of Highway	19115	19126	19136
Vehicle Miles Traveled	4305	5113.7	6368.3
CO Emitted (lbs)	387.897	149.809	50.776
NOX Emitted (lbs)	67.919	38.321	16.900
HC Emitted (lbs)	79.425	25.203	7.285

Grams per vehicle mile

Vehicle	Carbon Monoxide	Hydra carbons	HO_x	SO_x	Particulates
Automobile	85.00	9.50	6.17	.18	0.30
Diesel Bus	20.41	3.36	33.57	2.45	1.18
Diesel Locomotove	6.35	4.54	6.80	5.90	2.27
Electric Rail					
Coal	.91	.37	37.19	13.97	20.30
Gas	neg	neg	.05	.02	.73
Oil	.01	1.09	35.38	27.21	3.44

EMISSIONS BY MODE OF TRAVEL ON THE BASIS OF

PERSON - MILES OF TRAVEL GRAMS PER MILE

	Carbon Monoxide	Hydrocarbons	HO_2	SO_2	Particules
Automobile 1970	.24*	1.56	3.27	.18	.25
Automobile 1975	.02	.14	1.63	.18	.25
Bus (diesel)	.02	.10	3.50	.52	2.08
Gas Turbine	.003	.012	.97	.52	2.08
Commuter-Train (turbo)	.004	.08	.58	.10	.33
Rail Transit	.00	.002	.72	3.40	1.54

Pollutants Emitted on Freeways

SPEED (mph)	TYPE OF POLLUTANT[1] (1972) Carbon Monoxide	Hydrocarbons	Oxides of Nitrogen	TYPE OF POLLUTANT[1] (1990) Carbon Monoxide	Hydrocarbons	Oxides of Nitrogen
	-------(grams per mile)-------			-------(grams per mile)-------		
60.0	30.89	6.08	7.39	7.23	0.95	1.86
55.0	31.66	6.31	6.85	7.23	0.95	1.86
50.0	33.75	6.67	6.35	7.71	1.00	1.72
45.0	34.93	6.80	6.35	7.94	1.09	1.63
40.0	37.20	7.03	5.90	8.39	1.18	1.50
35.0	41.91	7.71	5.67	9.53	1.22	1.45
30.0	47.17	8.16	5.44	10.43	1.36	1.36
25.0	56.25	8.66	5.22	12.70	1.54	1.32

(1) Data based on vehicle mix of 83.04% passenger cars, 6.81% two-ton trucks, 3.26% six-ton trucks, 3.29% twenty-ton trucks, and 3.60% twenty-five ton trucks.

Note: Trucks are diesel powered.

Data for 1972 and 1990 are based on 12 model years preceding the calendar year of interest; the data reflects Environmental Protection Agency best estimates of air pollution emission factors for each model (see EPA, Ap. 42).

See Figures D-2 to D-7 for graphs of above data.

Source: Turner, Roy E., TRANS Technical Notes: Air Pollution Amounts, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., February, 1973

POLLUTANTS EMITTED ON ARTERIAL STREETS

SPEED (mph)	TYPE OF POLLUTANT[1] (1972) Carbon Monoxide	Hydrocarbons	Oxides of Nitrogen	TYPE OF POLLUTANT[1] (1990) Carbon Monoxide	Hydrocarbons	Oxides of Nitrogen
	-------(grams per mile)-------			-------(grams per mile)-------		
30.0	46.95	8.16	5.44	10.89	1.36	1.36
25.0	55.79	8.85	4.90	12.70	1.59	1.32
20.0	68.95	9.53	4.54	15.88	1.81	1.22
15.0	84.10	10.75	4.54	19.96	1.91	1.22

(1) Data based on vehicle mix of 83.04% passenger cars, 6.81% two-ton trucks, 3.26% six-ton trucks, 3.29% twenty-ton trucks, and 3.60% twenty-five ton trucks.

Notes: Trucks are diesel powered.

Data for 1972 and 1990 are based on 12 model years preceding the calendar year of interest; the data reflects Environmental Protection Agency best estimates of air pollution emission factors for each model (see EPA, AP-42).

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Energy Use by Different Transportation Modes

America's transportation system is a major factor in the world's depletion of energy reserves. Our system generally requires an individual to drive an automobile or fly to get from one city to another. In metropolitan areas people do have a choice. Mass transit can conserve energy resources. An interurban train can move 400 passengers one mile with one gallon of fuel. Buses can move 400 passengers one mile consuming 2 gallons of fuel. Eighty 1973 Chevrolet Impalas can move 400 passengers one mile using 5.8 gallons of fuel. The average commuter travels alone, by car, at the cost of 13.7 passenger miles per gallon contrasted with 400 for the train and 200 for the bus.

On long hauls a 747 moves people at the rate of 42 passenger miles per gallon, a fully loaded Chevrolet at 68.5 passenger miles per gallon and a bus 200.

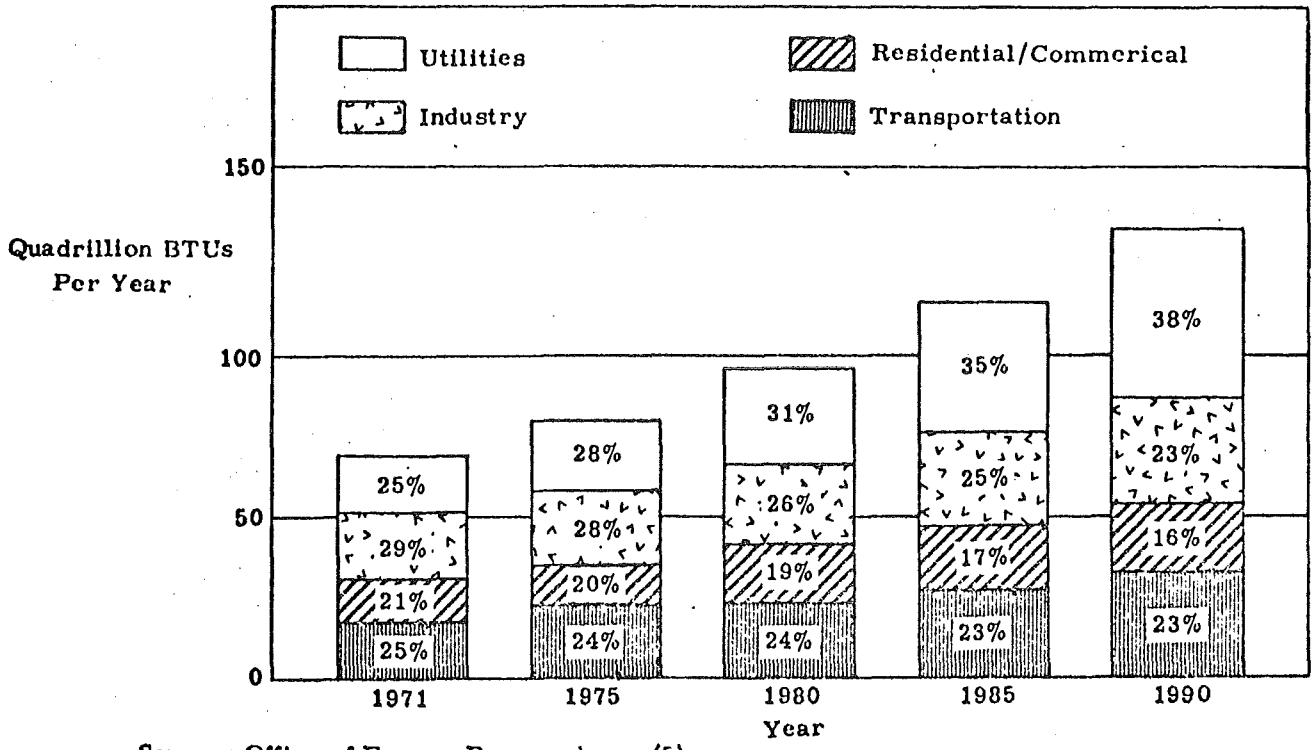
Passenger vehicle energy consumption may be determined by its relation to the total United States energy consumption. Transportation consumed about 24.4 percent of the 1973 U. S. energy consumption of 70 quadrillion BTU's. The private passenger car consumed about 55 percent of the amount consumed by the transportation sector for about 13 percent of the total U. S. consumption.

The opinions expressed in a rather technical analysis of increased mass transit as a means of reducing energy consumption, although not conclusive, point to the necessary consideration of the greatly increased energy demands to produce sufficient mass transit systems that would significantly decrease the energy demands of continued automobile use. A more significant decrease in demand

is possible, they conclude, if the average number of occupants per car is increased.

The advisability of massive introduction of mass-transit systems is not at all clear. In order to achieve a 14 percent decrease in private passenger car population mass transit systems would have to increase 17-fold over a 20 year period. Although such an increase may save energy eventually, the energy for construction would be during a time when fossil fuels are in short supply.[10]

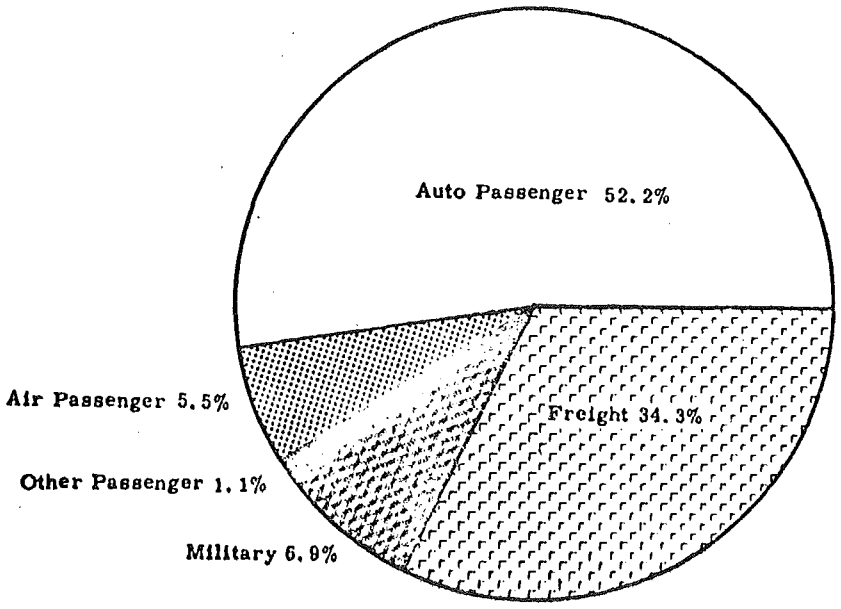
Travel on an expressway at 35-40 miles per hour with no stops provides the most fuel economy in automobiles and the least air pollution because fuel consumption is lowest under this condition. In contrast, congested city streets with signalized intersections can increase gas consumption and air pollution by 50%. A comparable amount of gas is consumed at 70 miles per hour in rural areas and 20 miles per hour in urban areas, but with added intersections in urban areas, gas consumption and air pollution can increase 25 to 35 percent. Speed and traffic control should be explored more fully as energy conservation measures.



Source: Office of Energy Preparedness (5)

FIGURE 6

U.S. ENERGY CONSUMPTION BY MARKET



Source: Mooz (4)

TRANSPORT ENEPGY CONSUMPTION

ENERGY EFFICIENCIES OF INTERCITY MODES

Mode	Vehicle Fuel Economy (mpg)	Occupancy (Passenger Miles/ Vehicle Mile) Average	Occupancy (Passenger Miles/ Vehicle Mile) Practical Maximum	Energy Efficiency (Passenger Miles/Gal) Average	Energy Efficiency (Passenger Miles/Gal) Practical Maximum
Automobile	15.7	2.9	5.0	45.5	78.5
Standard	12.9	2.9	5.0	37.4	64.5
Compact	25.2	2.9	5.0	73.1	126.0
Intercity Bus	5.40	20.0	30.0	108.0	162.0
Intercity Train				72.0[θ]	108.0

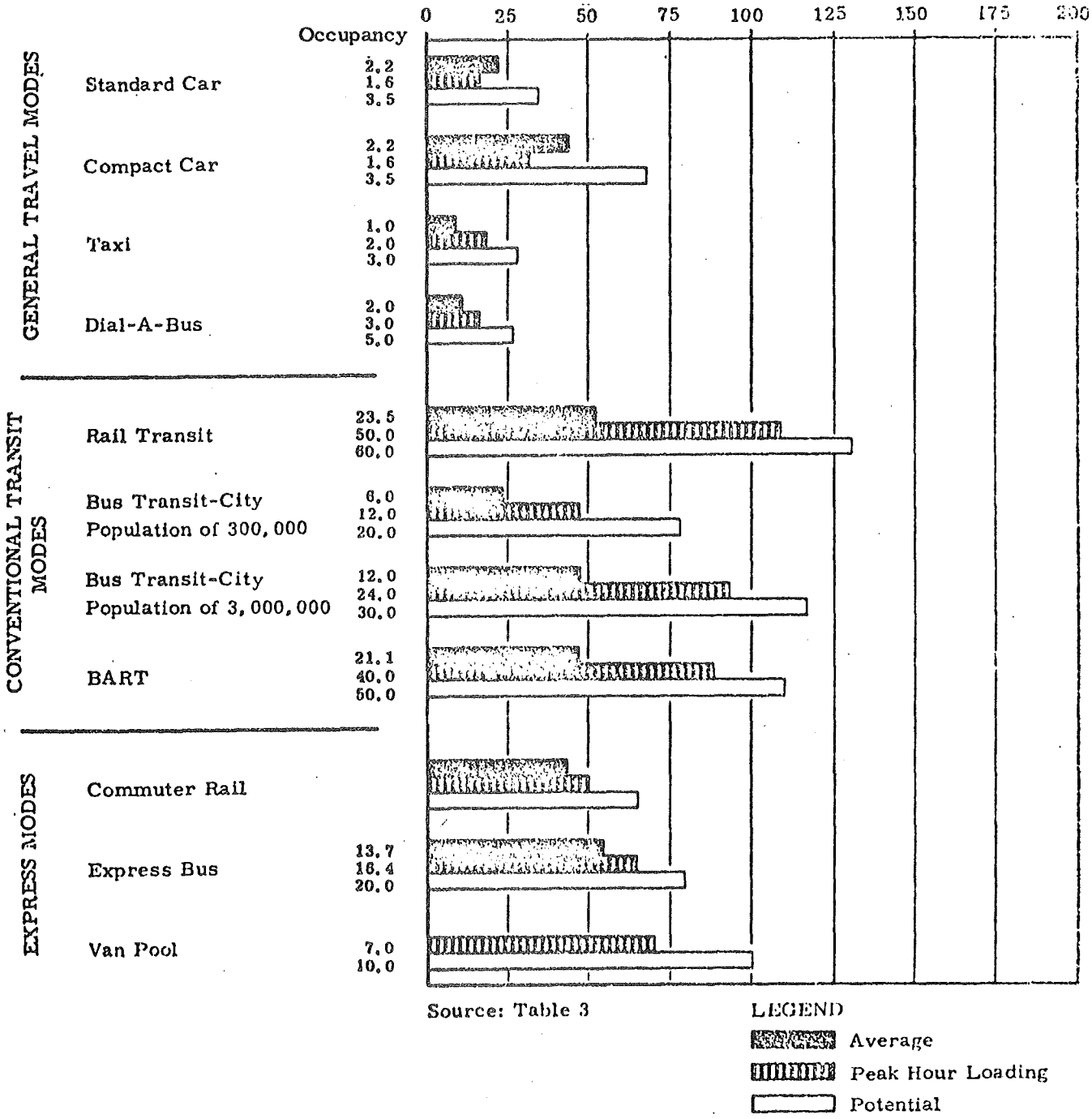
Source: Highway Users Federation, Safety and Mobility.

TABLE 3

ENERGY EFFICIENCIES OF URBAN MODES

	Vehicle Fuel Economy (mpg)	Occupancy Passenger Miles/Vehicle Mile			Energy Efficiency Passenger Miles/Gallon		
		Average	Peak Hour	Practical Maximum	Average	Peak	Practical Maximum
General Travel Modes							
Passenger Car	12.00	2.2	1.6	3.5	26.4	19.2	42.0
Standard	9.86	2.2	1.6	3.5	21.7	15.8	34.5
Compact	19.31	2.2	1.6	3.5	42.5	30.9	67.6
Taxi	9.00	1.0	2.0	3.0	9.0	18.0	27.0
Dial-a-Bus	5.20	2.0	3.0	5.0	10.4	15.6	26.0
Conventional Transit Modes							
Rail Transit (NYC)	2.18	23.5	50.0	60.0	51.2	109.0	130.8
Bus Transit	3.88	9.0	18.0	25.0	34.9	69.8	97.0
300,000 pop.	3.88	6.0	12.0	20.0	23.3	46.6	77.6
3,000,000 pop.	3.88	12.0	24.0	30.0	46.6	93.1	116.4
BART	2.20	21.1	40.0	50.0	46.4	88.0	110.0
Express Transit Modes							
Commuter Rail					43.6[8]	50.0	65.0
Express Bus	3.95	13.7	16.4	20.0	54.2	64.9	79.2
Van Pool	10.00	n.a.	7.0	10.0	n.a.	70.0	100.0

Source: Highway Users Federation, Safety and Mobility.



ENERGY EFFICIENCIES OF URBAN PASSENGER TRANSPORT MODES

ENERGY EFFICIENCIES OF TYPICAL WORK TRIPS
BY MODE AND MODE COMBINATION
(Passenger Miles/Gallon)

Trip Length		5	10	15	20	20	20
Access Distance		1	2	3	2	4	8
Standard Auto,	1 occupant	9.9	9.9	9.9	9.9	9.9	9.9
	2 occupants	18.8	19.3	19.4	19.5	19.5	19.5
	3 occupants	26.9	28.2	28.7	28.9	28.9	28.9
	4 occupants	34.3	36.7	37.6	38.0	38.0	38.0
	5 occupants	41.1	44.9	46.3	47.0	47.0	47.0
Small Auto,	1 occupant	19.3	19.3	19.3	19.3	19.3	19.3
	2 occupants	36.8	37.8	37.9	38.1	38.1	38.1
	3 occupants	52.6	55.1	56.1	56.5	56.5	56.5
	4 occupants	67.1	71.8	73.5	74.3	74.3	74.3
Van Pool		70.0	70.0	70.0	70.0	70.0	70.0
Local Bus (300,000 pop.)		46.6	46.6	46.6	46.6	46.6	46.6
Local Bus (3,000,000 pop.)		93.1	93.1	93.1	93.1	93.1	93.1
Park-Ride/Commuter Rail		30.6	30.6	30.6	38.0	30.6	22.1
Park-Ride/Express Bus		34.6	34.6	34.6	45.0	34.6	23.5
Kiss-Ride/Express Bus		21.9	21.9	21.9	32.8	21.9	13.2
Dial-a-Bus/Express Bus		39.8	39.8	39.8	49.4	39.8	28.7

NOTES:

1. Trip length refers to total distance between origin and destination of trip.
2. Access distance is distance from trip origin to express transit station (applicable mode combination trips only).
3. Composite (all sizes) passenger car and single occupancy assumed for mode combination trips--12.0 pm/g.
4. Effective occupancy for carpool trips assumes additional 0.25 mile of travel for each passenger pickup.
5. Vanpool efficiency assumed constant with respect to trip length.
6. Auto fuel economy for urban conditions assumed.
7. In calculating the efficiencies of combination mode trips, the efficiencies of the individual modes cannot simply be weighted. It is necessary to determine the fuel used for each component

Bus Fuel Consumption for Large Sized Bus
(gallons per vehicle-mile)

Vehicle Speed (mph)	Roadway Grade (Per Cent)			
	0	2	3	5
5	0.446	0.552	0.606	0.775
10	0.251	0.327	0.376	0.485
15	0.193	0.268	0.313	0.408
20	0.167	0.247	0.290	0.386
25	0.156	0.241	0.288	0.403
30	0.154	0.202	0.317	N/A
35	0.095	0.173	N/A	N/A
40	0.108	0.186	N/A	N/A
45	0.123	0.206	N/A	N/A

Note: Above data based on standard GMC 51-seat passenger bus equipped with standard diesel engine (6Y71N/C5I)

See Table C-3 for specific bus economic and performance characteristics.

Source: General Motors Corporation Truck and Coach Division, "Vehicle Dynamics Simulation Model," Pontiac, Michigan, 1974

Fuel Consumption for Mini and Mid-sized Buses
(gallons per vehicle-mile)

Vehicle Speed (mph)	Fuel Consumption On Level Roadway	
	Minibus (1)	Midsize (2)
5	0.437	0.222
10	0.474	0.128
15	0.266	0.105
20	0.134	0.091
25	0.139	0.078
30	0.149	0.072
35	0.158	0.079
40	0.168	0.082
45	0.119	0.089
50	0.132	0.093
55	0.143	0.102
60	0.155	0.107

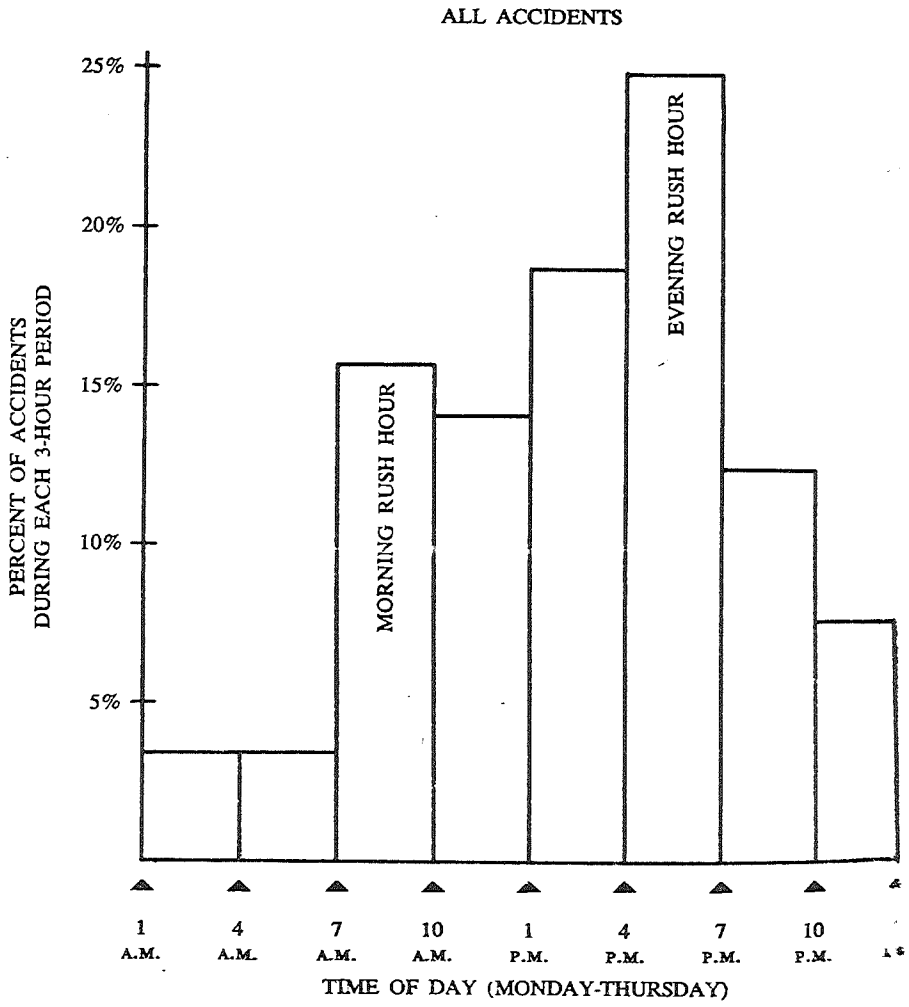
(1) Above data based on standard GMC Van equipped with 12 seats and a gasoline engine (Model 366).

(2) Above data based on midsize GMC 33-seat passenger bus equipped with a diesel engine (DH 478).

Source: General Motors Corporation Truck and Coach Division, "Vehicle Dynamics Simulation Model," Pontiac, Michigan, 1974.

Safety of Mass Transit

56,000 people are killed each year in automobile accidents that injure 3.5 million. 40.6% of all accidents take place during rush hour traffic. According to the National Safety Council buses are ten times safer than private automobiles. Most accidents occur during "commuter" hours. It can be assumed that increased use of transit systems would bring about a significant reduction in accidents and fatalities attributed to automobile use.


ALL ACCIDENTS
25%
20%
15%
10%
5%
PERCENT OF ACCIDENTS
DURING EACH 3-HOUR PERIOD
MORNING RUSH HOUR
EVENING RUSH HOUR
1
A.M.
4
A.M.
7
A.M.
10
A.M.
1
P.M.
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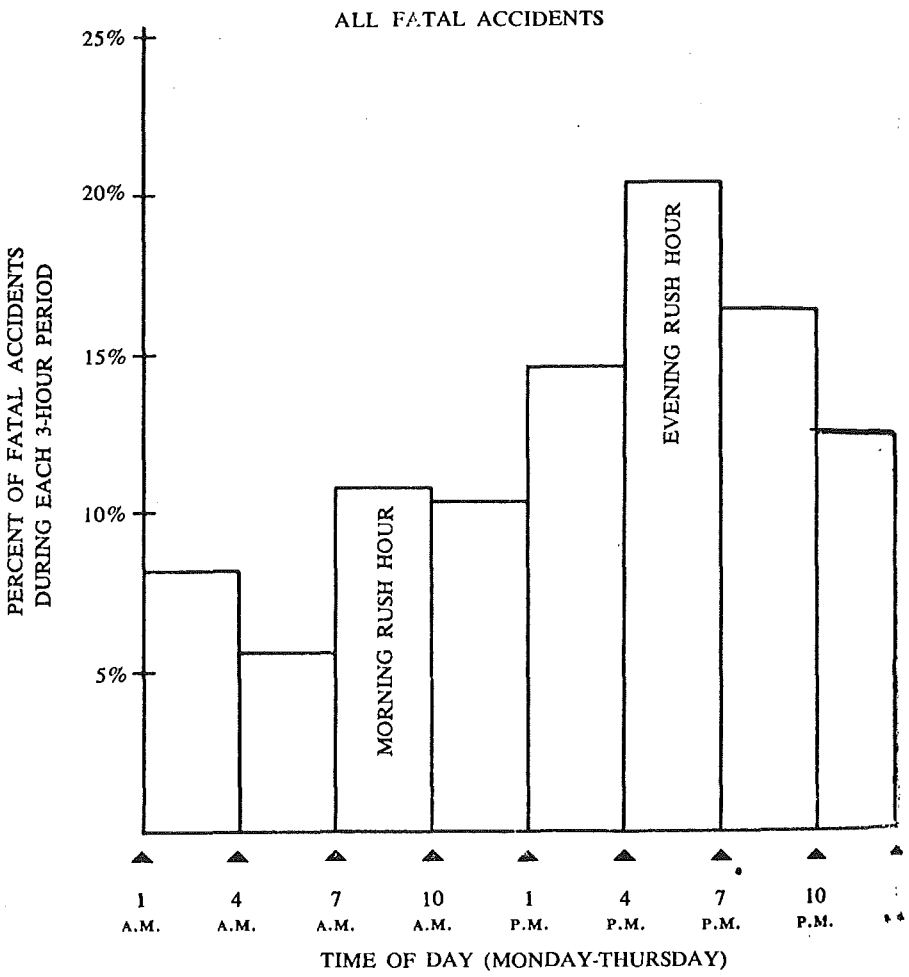
P.M.
TIME OF DAY (MONDAY-THURSDAY)


ALL FATAL ACCIDENTS
25%
20%
15%
10%
5%
PERCENT OF FATAL ACCIDENTS DURING EACH 3-HOUR PERIOD
MORNING RUSH HOUR
EVENING RUSH HOUR
1 A.M.
4 A.M.
7 A.M.
10 A.M.
1 P.M.
4 P.M.
7 P.M.
10 P.M.
TIME OF DAY (MONDAY-THURSDAY)

V

PRESENTLY AVAILABLE SYSTEMS AND PROGRAMS

Public Transit in Maine is generally available by bus and air for intercity travel but unavailable to persons located some distance from the service or who have no other means of transportation. As an alternative to increased use of the automobile, intercity service in Maine is inadequate. Intracity service in Maine is at the present time available on a regular scheduled basis in only three major urban communities: Portland, Lewiston-Auburn and Bangor. The Portland system is operated by the Portland Transit District with money for capital expenses and operating deficits contributed by member communities. Lewiston's Hudson Bus Lines continues to operate only by contracting with the city's school system to provide school bus service and by subsidies from the cities of Lewiston-Auburn. The manager of the line states that the company just barely "breaks even" and provides limited service during weekdays. Bangor has attempted to provide a city bus system using school buses as vehicles and trying innovative routes and schedules to increase ridership. They are not yet at the "break even" point but are hopeful. Providing needed service but in direct competition with these struggling transit systems are many mini-buses -- usually sponsored by senior citizens

groups or by community action programs that are not complementary to existing systems but substitute. The result is to reduce ridership and increase deficits for these remaining systems. In the loss of public transit, aside from the inconvenience to those who need it (social costs), economic costs must be considered, i.e. substitute service for school children, increased facilities for more automobile parking, police, roads, increased expense for shoppers and business clientel and in some cases loss of access to employment.

Statistics from the 1970 U.S. Census tables 35 and 36 show that of 370,776 people at work during the census week, the means of transportation to work was as follows:

private auto, driver	238,939
private auto, passenger	55,573
bus or streetcar	5,766
subway	123
railroad	20
taxicab	2,145
walked	42,856
other means	10,393
worked at home	14,961

During the period tested, .015% used "mass transit". Of that number, 84% were "at work" in Lewiston-Auburn (Androscoggin County), Portland (Cumberland County) and southern Maine (York County). Maine people get to work by private automobile or walking.

PORTLAND TRANSIT DISTRICT

Some of the problems experienced by the Portland Transit District are those shared by transit companies nationally. Additional financing problems have resulted from the rapid inflation experienced by providers and consumers alike. For example, thirty-five 35-foot, 45-passenger buses ordered increased in cost from $35,791 to $50,000 between the time of decision to apply for U.M.T.A. funds and acceptance of the application. Suggestions have been made that the company operate smaller buses to cut costs. Mr. Adamson, the District's manager, pointed out, however, that although there would be an initial purchase savings of approximately $10,000, this district would still need the larger buses for commuter and school service rush hours. Salaries of drivers, maintenance and garage costs are the same regardless of bus size. The only saving might be in fuel, in that the smaller coach would probably get 2 miles more per gallon of fuel. The Federal legislation recently enacted will permit transit districts such as the Portland District to apply for operational subsidies. The member communities of the Portland Transit District support the system in the following ratios:

Portland	67%
South Portland	23%
Westbrook	7%
Cape Elizabeth	3%

Although the operating deficits are made up by member communities and districts can borrow, Mr. Adamson feels taxing power by the district would make management more efficient and less subject to other local pressures for funds. Although the Transit District legislation provides for public members on the Board of Directors in practice 9 of 13 members are city councilmen or managers. More public members and in particular those with some expertise in transportation would be assets to decision making in the best interest of the district not balanced against other political considerations. The present equipment owned by the Transit District consists of 18 new buses, 5 seven or eight years old and the remainder 20 or more years old (to be partially replaced with delivery of 39 buses obtained under a U.M.T.A. grant). Fares vary from 30¢ to 35¢ in two zones to 60¢ for trip to Yarmouth, Maine. A twelve dollar pass permits unlimited rides. These passes might be purchased by welfare agencies for use by eligible individuals. School children, entitled to school bus service, ride regular routes with service directly to the school. This service is paid for by the city with state reimbursement. Mr. Adamson believes riders will be attracted to mass transit only when the service is good, comfortable, on time and reasonable financially so that the car will be left at home or the walker will ride.

A complete data summary and recommendations for public transit in Portland was made for the Greater Portland Council of Governments in August, 1972 by Edward Jordan Co., Inc. Consultants. Some of these recommendations have been carried out by the Portland Transit District and others are under consideration including new buses, rerouting, downtown terminal points, passenger shelters, bus stops, express service, dial-a-ride service and new fare concepts, utilization of school buses and public operation of ferry service (federal funds are now available for public ferry service). Attached is the Portland Transit District Budget for 1973 and 1974 which shows that in 1973 only 58% of income was raised by fare receipts and the 1974 proportion will be only 49%.

GREATER PORTLAND TRANSIT DISTRICT
GENERAL OPERATING BUDGET

-1974-

TITLE	1973 ACTUAL		1974 BUDGET REQUEST	
Cash On Hand, January 1st.		$117,408.72		($150,197.34)
Operating Receipts:				
Passengers Fare Box Receipts	$	$578,478.67	$	$580,000.00
Ticket Receipts:				
School Tickets	163,047.00		244,570.00	
Monthly Passes	46,356.00		48,000.00	
Ten Ride Tickets	774.00		750.00	
Script Tickets	660.90	210,837.90	650.00	293,970.00
Charter Receipts		41,405.65		50,000.00
Advertising Receipts		2,032.52		.00
TOTAL OPERATING RECEIPTS		$832,754.74		$923,970.00
			updated projection-	$1,027,505.00
Other Income:				
Trailways	$ 61,206.36		$ .00	
Greyhound	46,229.23		56,037.00	
Vermont Transit	628.29		700.00	
Interest Income	5,931.99		7,500.00	
Other Misc. Income	10,165.54		11,500.00	
TOTAL OTHER INCOME		$124,161.41		$ 75,737.00
Income From Municipalities:				
Garage Payment Subsidy:				
Portland	$ 46,676.67		$ .00	
South Portland	16,023.33		.00	
Westbrook	4,876.68		.00	
Cape Elizabeth	.00		.00	
Total Garage Payment Subsidy		$ 67,576.67		$ .00

Operating Subsidy:				
Portland	$219,367.23		$416,389.82	
South Portland	75,305.1"		142,939.79	
Westbrook	22,918.9"		43,503.41	
Cape Elizabeth	9,822.4".		18,644.32	
TOTAL OPERATING SUBSIDY		$327,413.78		$621,477.34
Income From Short Term Loans:				
Subsidy Loans:				
Casco Bank (5%)	$ .00		$300,000.00	
Casco Bank (5% EST)	.00		250,000.00	
TOTAL INCOME FROM SHORT TERM LOANS		$ .00		$550,000.00
TOTAL GENERAL OPERATING RECEIPTS		$1,469,315.32		$2,020,987.00

updated projection-$2,187,511.00

	1,066,450	
1975 estimate	1,012,755	operating receipts
	2,187,990	total general income
	2,428,990	

GENERAL OPERATING EXPENSES:	1973 ACTUAL		1974 BUDGET REQUEST	
Equipment, Maintenance & Garage Expense:				
Supv. Of Garage & Shops	$ 24,343.59		$ 27,370.00	
Repairs To Shop & Garage Equipment	217.55		520.00	
Operating & Maint. Of Service Equipment	4,423.19		4,000.00	
Lights, Heat & Water	25,535.89		38,849.00	
Other Shop & Garage Exp.	20,315.09		19,650.00	
Repairs To Revenue Equip.	195,665.93		149,950.00	
Repairs To Revenue Equip. - Accident	(2,459.69)		.00	
Servicing Revenue Equip.	48,951.60		53,000.00	
Tires & Tubes - Revenue Equipment	12,691.27		7,200.00	
Cost Of Vacations	7,252.80		7,833.00	
Cost Of Paid Holidays	4,735.36		5,114.00	
Labor Cost - Outside Companies	32,454.53		16,655.00	
TOTAL EQUIPMENT MAINT. & GARAGE EXPENSES		$374,127.11		$330,141.00
TRANSPORTATION EXPENSE:				
Supervision Of Transportation	$ 51,734.73		$ 55,116.00	
Driver's Wages	509,287.77		550,031.00 < (BEFORE CONTRACT SETTLEMENT)	
Fuel For Revenue Equipment	49,427.02		92,262.00	
Fuel Sales At Cost	23,685.20		21,050.00	
Oil For Revenue Equipment	6,331.45		8,394.00	
Oil Sales At Cost	756.39		510.00	
Bridge & Turnpike Tolls	135.95		150.00	
Cost Of Vacations	16,433.12		17,748.00	
Cost Of Paid Holidays	10,752.00		11,612.00	
Other Transportation Expense	34,777.78		38,961.00	
TOTAL TRANSPORTATION EXPENSE		$703,321.37		$795,834.00
TRAFFIC AND ADVERTISING EXPENSE:				
Tarriffs & Schedules	$ 1,770.64		$ 3,100.00	
Tickets & Transfers	864.95		1,250.00	
Advertising	648.96		.00	
TOTAL TRAFFIC AND ADVERTISING EXPENSE		$ 3,284.55		$ 4,350.00

	1973 ACTUAL		1974 BUDGET REQUEST	
INSURANCE AND SAFETY EXPENSE:				
Public Liability & Property Damage	$ 48,949.00		$ 48,949.00	
Workman's Compensation	10,754.00		14,534.00	
Fire And Theft	342.00		343.00	
Other Insurance	1,634.00		1,632.00	
TOTAL INSURANCE AND SAFETY EXPENSE		$ 61,679.00		$ 65,458.00
ADMINISTRATION AND GENERAL EXPENSE:				
Salaries Of General Officers	$ .00		$ 30,745.00	
Expense Of General Officers	.00		1,850.00	
Salaries Of General Office Emp.	42,188.29		16,601.00	
Expenses Of General Office Emp.	.00		40.00	
Law Expense	.00		3,000.00	
General Office Supplies Exp.	6,497.56		6,500.00	
Telephone Expense	3,384.16		3,400.00	
Outside Auditing Expense	1,164.75		3,000.00	
Hospitalization & Life Ins. Expense	39,745.22		44,400.00	
Purchasing & Stores Expense	3,347.50		3,618.00	
Other General Expense	8,068.33		1,970.00	
TOTAL ADMINISTRATION & GENERAL EXPENSES		$104,395.81		$115,124.00
OPERATING TAXES & LICENSES:				
Gasoline & Fuel Oil Tax	$ 220.67		$ 195.00	
Diesel Tax	20,459.53		9,850.00	
Federal Tax (FICA)	50,603.41		54,975.00	
Real & Personal Property Tax	141.51		150.00	
Other Taxes	(1,225.97)		60.00	
TOTAL OPERATING TAXES & LICENSES		$ 70,199.15		$ 65,230.00
OPERATING RENTS:				
Equipment Rentals		13,482.82		$ .00

	1973 ACTUAL		1974 BUDGET REQUEST	
DEBT PAYMENT EXPENSES:				
Mortgage Payment	$ 69,666.6"			$ .00
73 Short Term Loans:				
CANAL (75,000)	77,062.50			.00
CASCO (300,000)	101,193.68			.00
74 Subsidy Loans:				
CASCO (300,000)			$313,250.00	
Additional Subsidy Loan (250,000)			259,300.00	
TOTAL DEBT PAYMENT EXPENSE		$247,922.85		$572,550.00
OTHER EXPENSES:				
Purchase Of New Car	$ 3,000.00		$ 3,500.00	
Purchase Of 20 Used Buses	25,600.00		.00	
Subsidy Loss Payment	12,500.00		.00	
Planning Study Expense			12,500.00	
Services Of C. O. G.			4,800.00	
Services Of Maine Municipal Association			1,500.00	
Contingent Fund			50,000.00	
TOTAL OTHER EXPENSES		$ 41,100.00		$ 72,300.00
TOTAL GENERAL OPERATING EXPENSES		$1,619,512.66		$2,020,987.00

GREATER PORTLAND TRANSIT DISTRICT
SUBSIDY REQUIREMENTS FROM MEMBER MUNICIPALITIES
FOR FISCAL YEAR ENDING DECEMBER 31, 1974

MUNICIPALITIES	1973 SUBSIDY	1974 SUBSIDY
GENERAL OPERATING BUDGET		
Portland (67%)	$219,367.23	$416,389.82
South Portland (23%)	75,305.17	142,939.79
Westbrook (7%)	22,918.97	43,503.41
Cape Elizabeth (3%)	9,822.41	18,644.32
TOTAL	$327,413.78	$621,477.34
GARAGE PAYMENT SUBSIDY		
Portland (67%)	$ 46,676.67	$ .00
South Portland (23%)	16,023.32	.00
Westbrook (7%)	4,876.68	.00
Cape Elizabeth (3%)	.00	.00
TOTAL	$ 67,576.67	$ .00
CAPITAL & DEBT FUND SUBSIDY		
Portland (67%)	$ .00	$19,880.16*
South Portland (23%)	.00	6,824.53*
Westbrook (7%)	.00	2,077.03*
Cape Elizabeth (3%)	.00	890.16*
TOTAL	$ .00	$29,671.88*

MUNICIPALITIES	1973 SUBSIDY	1974 SUBSIDY
	TOTAL SUBSIDY ALL FUNDS	
Portland (67%)	$266,043.90	$436,269.98
South Portland (23%)	91,328.49	149,764.32
Westbrook (7%)	27,795.65	45,580.44
Cape Elizabeth (3%)	9,822.41	19,534.48
TOTALS	$394,990.45	$651,149.22

*NOTE:
The Capital Improvement Fund Subsidy represents debt payments for projects approved in 1973. All projects were federally assisted and therefore are not eligible to be paid for with Federal Revenue Sharing Funds.

GREATER PORTLAND TRANSIT DISTRICT
CAPITAL AND DEBT PAYMENT FUND
1974

	1973 ACTUAL		1974 BUDGET ESTIMATE	
CASH ON HAND January 1st		$ .00		$215,507.80
INCOME:				
Bond Payment Subsidy:				
Portland	$ .00		$ 19,880.16	
South Portland	.00		6,824.53	
Westbrook	.00		2,077.03	
Cape Elizabeth	.00		890.16	
TOTAL BOND PAYMENT SUBSIDY		$ .00		$ 29,671.88
PROCEED FROM LONG & SHORT TERM BORROWING				
SHORT TERM LOANS:				
In Anticipation Of 1973 G. O. Bonds	$425,000.00			
In Anticipation Of 1974 G. O. Bonds				$ .00
Federal Funds Anticipation Loan (1973)	155,000.00			
TOTAL SHORT TERM LOANS		$580,000.00		
LONG TERM BORROWING:				
1973 G. O. Bonds				$445,000.00
1974 G. O. Bonds				285,000.00
TOTAL PROCEEDS FROM LONG & SHORT TERM BORROWING		$580,000.00		$730,000.00
RECEIPTS FROM FEDERAL GOVERNMENT:				
Purchase Of Bus Co.	$154,747.00			
Purchase Of 18 New Buses			$418,236.00	
Purchase Of 17 New Fare Boxes			9,747.00	
Purchase Of 35 New Buses			1,120,000.00	
Purchase Of 35 New Fare Boxes			25,200.00	
TOTAL RECEIPTS FROM FEDERAL GOVERNMENT		$154,747.00		$1,573,183.00

	1973 ACTUAL		1974 BUDGET ESTIMATE	
TOTAL INCOME CAPITAL IMPROVEMENTS FUND		$734,747.00		$2,548,362.68
EXPENSES:				
Debt Payments, Long Term:				
Bonds			$ .00	
Interest			14,750.00	
Legal Fees			1,250.00	
TOTAL LONG TERM DEBT PAYMENTS				$ 16,000.00
DEBT PAYMENTS SHORT TERM:				
Loan In Anticipation Of Federal Funds	$203,356.32			
Loan In Anticipation Of G. O. Bonds	155,094.72			442,000.00
TOTAL LONG & SHORT TERM DEBT PAYMENTS				$458,000.00
PURCHASE OF BUS CO.	$160,788.16			
PURCHASE OF 18 NEW BUSES	.00			$644,242.68
PURCHASE OF 17 NEW FARE BOXES	.00			14,620.00
PURCHASE OF 35 NEW BUSES	.00			1,400,000.00
PURCHASE OF 35 NEW FARE BOXES	.00			31,500.00
TOTAL CAPITAL IMPROVEMENT FUND EXPENSES		$519,239.20		$2,548,362.68
		$215,507.80		$ .00

GREATER PORTLAND TRANSIT DISTRICT
ADVERTISING FUND

1974

	ACTUAL 1973	1974 BUDGET REQUEST
CASH ON HAND JANUARY 1, 1974		$ .00
ESTIMATED REVENUES		3,500.00
ESTIMATED EXPENSES		750.00
TOTAL		$ 2,750.00

GREATER PORTLAND TRANSIT DISTRICT
GARAGE INCOME FUND

1974

	ACTUAL 1973		1974 BUDGET REQUEST	
JANUARY 1, 1973-74		$ .00		$ 5,605.72
INCOME:				
Atlantic Bearings	$ 3,166.64		$ .00	
E & G Associates	1,440.00		1,440.00	
City Of Portland	360.00		360.00	
Greater Portland Transportation Co.	1,333.32		.00	
Inter-City Transportation Co.	240.00		.00	
Trailways	2,815.00		.00	
Greyhound	9,220.00		9,390.00	
Vermont Transit	727.50		720.00	
Other	132.50		75.00	$ 11,985.00
TOTAL GARAGE INCOME		$ 19,434.96		$ 17,590.72
EXPENSES:				
Repairs To Shops & Garage Buildings		$ 13,829.24		$ 11,800.00
CASH BALANCE OR (DEFICIT)		$ 5,605.72		$ 5,790.72

HUDSON BUS LINE

The Hudson Bus Line in Lewiston-Auburn operates 39 buses on 9 regular routes for 18 trips per day. The average daily number of passengers is 1800. The costs per mile for the first six months of 1974 were 70 cents including depreciation and 40 cents per mile not including depreciation. Hudson has not applied for any Federal grants because they are not available to a private company. The operating deficits are subsidized by Lewiston-Auburn city governments at approximately $45,000 per year. Hudson operates 34 of its buses as a city school bus system, the state reimbursing city expenditures for this service. Hudson has not purchased any new equipment because the outlook for the system is certainly unclear. The line is not a profitable business. The cities apparently are not interested in forming a district or public system and prefer the current service.

Hudson has attempted to accomodate workers and shoppers by planning routes at specific times of day for their convenience. In addition, free service on downtown streets is offered. Hudson feels that State level administration of Federal and State funds earmarked for transit would provide a more equitable distribution of funds on a need basis free from political overtones experienced at the local level. It supports state level transit planning and implementation.

Many of the operating funds approved in the 1974 Mass Transit Act require State administration and distribution. Since Lewiston-Auburn is currently within the LACTS comprehensive transportation plan they should be eligible for a variety of Federal programs if they were a public corporation or contracted by a city agency.

Project Independence although providing special service to Maine's Elderly competes with Hudson's service to some extent and eliminates much of the off-peak patronage that would help sustain the line. Coordination is indicated in the area so that these services can be complementary and make more efficient use of resources.

THE BUREAU OF MAINE'S ELDERLY

The Bureau of Maine's Elderly has attempted to provide transportation for a particular segment of Maine's population. Census figures indicate 118,000 persons in Maine are over 65 years of age with another 50,000 between the ages of 60 and 65. 57% of those over 65 are not licensed drivers. 43% have licenses but may not be able to afford automobile upkeep. A cooperative effort using local and State funds to match Federal Title III funds with local and regional organizational and operational support has proved to be successful in providing transportation. Whether it is the most economical and efficient means has not been proven. A major criticism of these systems has been that they do not complement existing public transit where it is available, i.e. Portland Transit District, Lewiston-Auburn and Bangor. These groups are not in a position to regulate or coordinate with these public systems and a State or regional approach after adequate planning could perhaps improve the efforts of all services so that they complement each other and are fully coordinated.

BUREAU OF MAINE'S ELDERLY

REGION	COUNTY	OPERATING AGENCY	NO. OF VEHICLES
I	Aroostook	Aroostook Task Force of Older Citizens	4
II	Piscataquis	Eastern Maine Task Force on Aging	140 private cars - 4 buses ordered
	Penobscot	"	
	Washington	"	
	Hancock	"	
III	Somerset	Central Senior Citizens Association	18
	Kennebec	(CAP) "	
"SEA-ME" --	(Waldo	(CAP) "	
	(Knox	(CAP) "	
	(Lincoln	(CAP) "	
	(Sagadahoc	(CED) "	
IV	(Androscoggin	Western Older Citizens Council	10
Project Indepen-dence	(		
	(Oxford	(CAP) "	
	(Franklin	(CAP) "	
V	Cumberland	Cumberland-York Senior Citizens Council	7
	York	(CAP) "	
TOTAL			39

BUREAU OF HUMAN SERVICES

The Bureau of Human Services within the Maine Department of Health and Welfare administers programs under Title IV-A and Title III of the Federal Code. These programs permit the Bureau to make available to interested operators funds to establish transportation services for present, past and potential recipients of AFDC and SSI state welfare assistance. Federal contributions are 75% of the total cost of the project. The matching state share of 25% is contributed by private organizations or matched with cash donations from public or non profit private recipient groups. The Department of Health and Welfare contracts with eligible groups and provides money for leasing buses or operation. The bureau does not purchase vehicles. Accounting of the funds is maintained within the department. Statistical information such as numbers to be served, units (miles) planned, unit costs (per mile) and total cost are required as part of the application procedure. Eligibility is determined as in the attached outline. At the present time approximately $145,000 of such contracts are outstanding with the possibility of greatly increased amounts available as the program develops.

SCOPE AND DESCRIPTION OF PURCHASED SERVICE

Title of Basic Service Purchased

I. Operating Agency Information (This section not necessarily required for renewal contracts.)

A. Background Information
1. Brief history to include affiliation with other agencies
2. Previous experience in providing this particular or similiar service

B. Agency Organization
1. What services are provided by the agency as a whole?
2. What part of the agency's operations is this particular purchased service?
3. The role of advisory boards and groups and the service consumer in the evaluation and planning of current services.

C. Has this project been conducted by this or another agency or submitted previously or concurrently to another agency for funding?

II. The Problem

A. Clearly define the problem(s) being addressed.

(The following section is not necessarily required for renewal contracts unless the conditions of the problem change from previous contracts.)

B. Document the extent of the problem(s).
1. Statistical
2. Geographic (specific: counties, towns, neighborhoods)
3. Present community services available related to the problem.
4. In relation to the problem need for additional services beyond what is available in the community.
5. Number of persons directly affected by the problem.

III. Objectives

A. List major objectives - what very realistic, identifiable and specific changes, effects, opportunities will occur.
1. How do the objective(s) relate to the problem.
2. Results that will have occurred by the end of contract period.

B. List any sub-objectives.

IV. Services

A. Program Operations
1. Geographic area to be served by this purchase of service.
2. Number of persons to be served by the program.
3. Number of persons to be served by this purchased service. (Multi-Funding under IV-A, VI, PSSP — number to be served under each must be stated.)
4. Briefly describe when the program will be operating. (i.e. agency hours, number of days per week, holidays, conference days or other days when the agency will be closed.)

5. List job descriptions for all positions (paid and volunteer) including activities of the position, accountability of duties and responsibilities of the position and qualifications. (Except for new positions, this section not required for renewal contracts.)

B. Clearly define the service(s) to be provided directly by this purchase of service. Take into consideration such factors as: intake policies and procedures, the usual methods of service delivery, the activities involved in provision of the service, a description of those activities, can the activities be grouped into specifically identifiable program components and elements. (In multi-funded programs, services may differ and in such instances, the service must be defined and identified as to funding source.)

V. Program Evaluation

A. The Agency will be required to provide the Department of Health and Welfare with information pertaining to clients served. The following statement must be included in the Program Description.

"The Agency agrees to provide the Department of Health and Welfare with information pertaining to individuals served including such as client's name, address, social security number, amount of services planned and rendered, and other information as may be required by the Department. Information will be given on forms provided by the Department and reported for time periods specified by the Department."

B. The Department may also conduct a Service Impact Analysis. The following must be stated in each Program Description.

"The Department may conduct a Service Impact Analysis in order to obtain direct client input as to the quality and effectiveness of the services rendered by the Provider."

C. Program Evaluations. Regional offices of the Department of Health and Welfare may request additional information for program evaluation. The Provider Agency and the regional office will develop jointly the type of data to be recorded and methods of measurement. This section will be used for specifying the type of reporting (i.e. narrative, form) to be utilized.

VI. Implementation Plan

A. Length of the planning period including a time table of major activities necessary to be completed prior to the program becoming fully operational (i.e. staff hiring, renovations).

VII. Unit Cost Documentation

This section will be developed jointly by the Provider Agency and Mobilization staff.

PERSONS WHO ARE ELIGIBLE TO RECEIVE SERVICES UNDER TITLES IV-A AND VI CONTRACTS

I. Those described by A, B, and C below are eligible to receive all services provided through IV-A and VI contracts.

A. All children and adults who are currently receiving AFDC (Aid to Families with Dependent Children) or SSI (Supplemental Security Income).

B. All children and adults who have applied to receive AFDC and/or SSI but have not yet received payment.

C. All aged, blind, and disabled persons whose gross income (sum of all salaries, alimony, support, interests, pensions, benefits, insurance compensations, and all income which can be expected on a regular and predictable basis including income in-kind, when third party pays rent, bills, etc. directly for the individual without that cash passing through his hands, on a regular basis. Does not include Food Stamps, gifts, or property tax relief for the elderly) falls below the following limits:

Family Size	Month	Annual Gross Income
1	$ 233	$ 2,676
2	446	5,352
3	540	6,480
4	650	7,800
5	757	9,084
6	865	10,380
7	972	11,664
8	1,080	12,960
9	1,188	14,256
10	1,295	15,540

Aged is defined as a person who is age 65 and over (for potential 60 years).

Blind is defined as a person whose vision is no better than 20/200 even with glasses or who has tunneled vision (limited vision field of 20^{o} or less).

Disabled is defined as a person who cannot now do any substantial work because of a physical or mental impairment which is expected to last at least 12 months or result in death.

II. Those described in A, B, and C below are eligible to receive only the services listed below:

1. Child Care Services
2. Family Planning Services
3. Mental Retardation Services
4. Alcoholism Services
5. Drug Abuse Services
6. Foster Care Services

A. Former Recipients: All children and adults who are not now receiving AFDC (Aid to Families with Dependent Children) or AABD (Aid to the Aged, Blind, and Disabled - now replaced by SSI) but who did receive within the past 2 years.

B. Former Recipients: All children and adults who are not now receiving SSI (Supplemental Security Income) but did receive within the past 2 years.

C. Potential Recipients: All children and adults who may apply within the next 5 years to receive AFDC or SSI. This determination must be based on evidence that the conditions of eligibility have been met and that a specific problem has been identified which, if not corrected or ameliorated, will lead to dependence on financial assistance.

Potential aged is defined as a person of age 60 years.

Potential blind is defined as a person who is experiencing progressive deterioration of sight which may lead to no better than 20/200 vision even with glasses or tunneled vision (limited vision field of 20^{o} or less) within 5 years.

Potential disabled is defined as a person who now has a physical or mental impairment and who now works but may have to discontinue his work within the next five years due to the impairment.

Providing that those described above in A, B, and C have gross imcome which fall below the following limits:

Family Size	Month	Annual Gross Income
1	$ 233	$ 2,676
2	446	5,352
3	540	6,480
4	650	7,800
5	757	9,084
6	865	10,380
7	972	11,664
8	1,080	12,960
9	1,188	14,256
10	1,295	15,540

COMMUNITY ACTION GROUPS

All of the Community Action Agencies in the State responding to the committee's request for information outlined the particular services provided by their transportation service. These services are provided to persons considering themselves senior citizens with these priorities determining the order of service response to requests: health care; nutrition; personal services; recreation. A few of these agencies are also providing service by contract with the Department of Welfare serving a different segment of the community. All are the demand-responsive type of service or a variation of that system.

The deputy director of one of these agencies describes the biggest single problem in rural Maine as well as throughout the State as inadequate transportation. Comments from other Community Action Councils or similar organizations emphasize the problems that rural people have in getting to available social services that are continuously centralized and regionalized as the result of other economic pressures.

Several recommendations made by providers of service or those actively working within these agencies suggest the following:

1. Merger of transportation components operating in one area.
2. A system that is scheduled to which people can adjust.

3. A system which will service an entire community rather than a few target groups.

4. Local government involvement in planning and operation of the system.

5. Dispatching systems.

6. No funding until a planned coordinated system is approved.

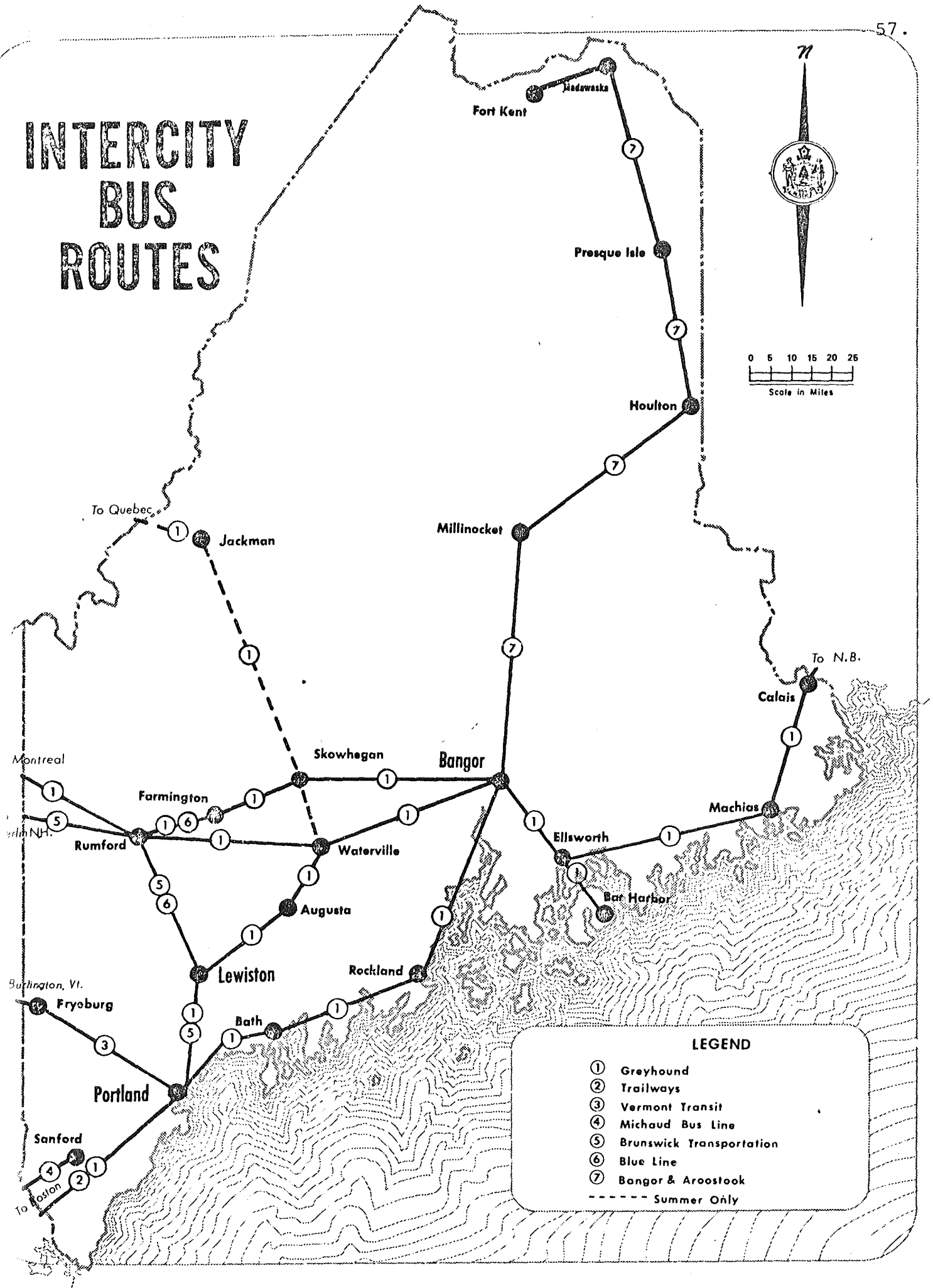
MAINE'S SCHOOL BUS SYSTEM

Bus service is provided to Maine's school children by municipally owned vehicles purchased with local funds. The municipality is reimbursed under State Law by funds appropriated by the Legislature. These vehicles are generally not available for use other than school activities. About one third of the buses used for transporting school children are privately owned. There are 1,163 municipally owned vehicles and 532 privately owned.

During 1973-74 school year 162,782 school children were transported on municipally owned buses and 4,101 on privately owned vehicles. Total school enrollment during the same time period was 246,797. The cost of the program for 1973-74 school year is approximately $14,000,000 based on 60 cents per mile. The cost per pupil per year is approximately $84.00. These buses are generally not used for any other purpose. Their structure and design is apparently not suitable for heavy daily use. However, these costs are perhaps the best indication of what it might cost, charging no fares, to provide a similar level of service to Maine's rural and suburban communities to a nearby center of services.

INTERCITY BUS ROUTES IN MAINE

The Greyhound line provides the majority of the intercity/interstate service. Their routes are in the southern portion of the state. The Bangor Aroostook line connects at Bangor and runs to Edmunston, N.B., where it connects with Canadian lines. See route map.


INTERCITY BUS ROUTES
N
0 5 10 15 20 25
Scale in Miles
Fort Kent
Presque Isle
Houlton
Millinocket
Jackman
To Quebec
Skowhegan
Bangor
Farmington
Rumford
Waterville
Augusta
Lewiston
Rockland
Ellsworth
Bar Harbor
Machias
Calais
To N.B.
Montreal
Burlington, Vt.
Fryeburg
Bath
Portland
Sanford
To Boston
LEGEND
1 Greyhound
2 Trailways
3 Vermont Transit
4 Michaud Bus Line
5 Brunswick Transportation
6 Blue Line
7 Bangor & Aroostook
Summer Only

BANGOR & AROOSTOOK RAILROAD COMPANY BUS SERVICE

One of the intercity bus lines operating in Maine is owned and operated by Bangor Aroostook Railroad. The buses are utilized between 30% and 35% of capacity. The operation is a marginal business at best. In ten years of operation revenues have produced declining profits ($40,000 in 1964) to the present levels of ($8,768) in 1972 and ($7,565) in 1973. The present book value of six buses is $170,000 and a new 46 passenger bus costs $71,000. Charter service supports the regular run of 2 trips between Bangor and Fort Kent per day. Suggestions by the Company for improvements that could be provided by the State include decent terminal facilities, and subsidizing fares for the poor.

PROFIT TOTAL	YEAR	LOSSES	YEAR
$40,562	1964	(8,768)	1972
38,926	1965	(7,565)	1973
27,617	1966		
26,286	1967		
40,896	1968		
31,859	1969		
30,849	1970		
22,981	1971		

From 1964 until the end of October, 1973 regular scheduled runs have shown a decline in the number of passengers carried. This can be attributed somewhat to more automobiles and more people using airplane service.

Listed below is the pasenger count in and out of Bangor in comparable months for 1964, 1972, 1973, and the first six months of 1974:

1964

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
2560	2363	2239	2382	2096	2750	3499	3544	2588	2504	2197	3066

TOTAL REVENUE = $187,715 PROFIT OF $40,562 TOTAL = 31,788

1972

1738	1852	1631	1867	1392	1926	2380	2232	1607	1526	1464	2127

TOTAL REVENUE = $169,956 LOSS ($8,768) TOTAL = 21,732

1973

1607	1595	1360	1611	1387	1865	2265	2353	1453	1468	1544	2101

TOTAL REVENUE = $167,614 LOSS ($7,565) TOTAL = 20,609

1974

1820	1936	1571	1773	1420	1936

TOTAL REVENUE = $90,641

Note the decline in the number of riders from 1964 to 1972. Also note an increase in passengers from October, 1973 through June, 1974. This, no doubt, was due to the fuel crisis but now that fuel has become more plentiful there is

the same trend of fewer passengers. In July, to date, the line carried ten more passengers than the previous year.

AIR TRANSPORTATION IN MAINE

There are three commuter airlines currently operating in the State and providing a limited scheduled service. These are: Air New England, Down East, Bar Harbor Airways. Air New England will become a certified line after January 1, 1975.

The charter and air taxi operators further expand the service provided by the commuter airlines and provide the public an additional source of air transportation. This is an "on-call" type service and is generally available at most of the smaller airports.

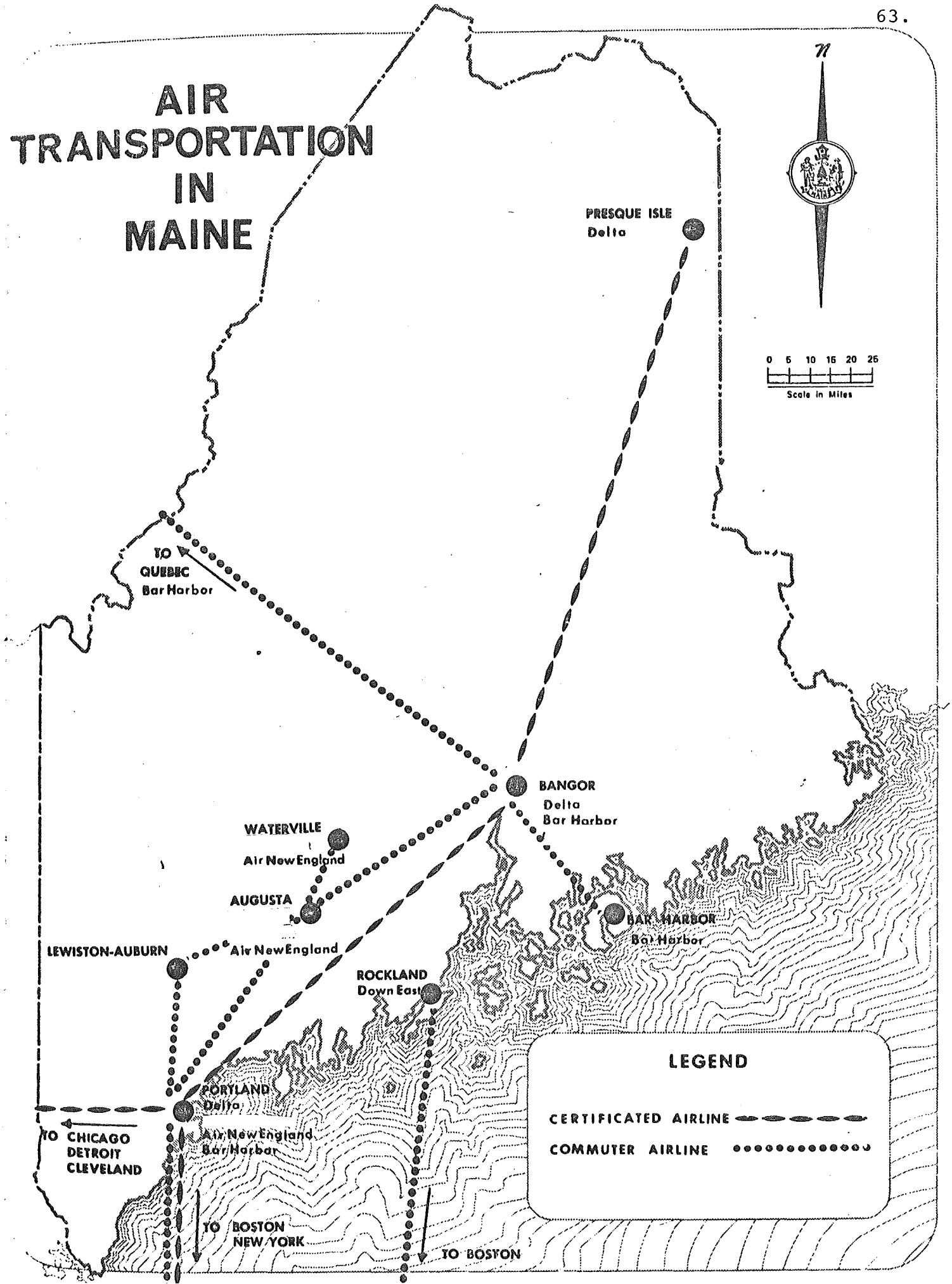
With regard to the overall air service available to the public, it can be stated that the service provided at the three major jet airports has generally improved since Delta Airlines acquired Northeast Airlines in August of this year and there has been no appreciable change in the commuter airline service being provided at the other airports. The only exception to this is that Presque Isle has suffered some reduction in the number of daily flights available due to the discontinuance of service by Aroostook Airways.

The routes flown and the airports served by the certificated and commuter airlines are shown on the route map. In addition the following table is provided to indicate the airlines currently serving these airports and the number of daily arrivals and departures available to the public.

AIRPORT	AIRLINE	ARRIVALS	DEPARTURES
Portland	Delta	9	9
	Air New England	6	6
	Bar Harbor	3	3
Bangor	Delta	7	8
	Bar Harbor	2	2
Presque Isle	Delta	2	2
Augusta			
	Air New England	6	6
Waterville		4	4
	Air New England	3	3
Lewiston/Auburn	Air New England	5	5
Rockland	Down East	3	3
Bar Harbor	Bar Harbor	3	3

*Weekday flights, subject to change.

Air Canada will begin service between Montreal and Portland and Montreal-Bangor-Halifax by midsummer.


AIR TRANSPORTATION IN MAINE
N
PRESQUE ISLE
Delta
0 5 10 15 20 25
Scale in Miles
TO QUEBEC
Bar Harbor
BANGOR
Delta
Bar Harbor
WATERVILLE
Air New England
AUGUSTA
BAR HARBOR
Bar Harbor
LEWISTON-AUBURN
Air New England
ROCKLAND
Down East
PORTLAND
Delta
Air New England
Bar Harbor
TO CHICAGO
DETROIT
CLEVELAND
TO BOSTON
NEW YORK
TO BOSTON
LEGEND
CERTIFICATED AIRLINE
COMMUTER AIRLINE

Maine
Department of Transportation
Planning Efforts

The PACTS and LACTS* unified work programs for the Portland and Lewiston-Auburn ares designated as urban areas by W.M.T.A. (populations 50,000 or more) are programs intended to assess planning efforts, to provide means for avoiding duplication of effort and to provide technical documents necessary for application for grant monies at the federal level based on unified work programs. All types of transportation are considered and the planning and study is to be integrated into statewide study efforts carried on by MDOT in the areas of rail service, rail passenger service in Maine, Statewide Rural Passenger Transportation study, and the Statewide Transportation Plan (including all modes). Soci-economic activity and land use information will be updated to assist in planning.

Attached is an outline of the transit aspect of the Portland area program as well as the funding sources to demonstrate the scope of these projects.

* PORTLAND AREA COMPREHENSIVE TRANSPORTATION STUDY AND LEWISTON-AUBURN - COMPREHENSIVE TRANSPORTATION STUDY

TASK NO. V TRANSIT

Transit operations and planning are the responsibilities of the Greater Portland Transit District (GPTD) which has cooperative planning agreements with the Greater Portland Council of Governments (GPCOG). The 1974-75 Work Program of the GPTD consists of six major items and has three primary focal points.

1. Projects which will, upon completion, improve the functioning of the GPTD bus operations in the region and represented by project items 1-3, and 6;

2. Projects which will improve the marketing of, hence public attitudes toward, the bus fleet and Transit District operations and represented by project item 4; and

3. Projects which will improve the maintenance and management techniques of Transit District operations and represented by project items 5 and 6.

Project items 1-6 are all low-capital intensive projects which will, upon completion, reflect increased system flexibility, extend the usable life of the transit capital investment, and provide a higher quality of service to all segments of the District population. This work program, in addition, is consistent with regional goals and objectives as determined in previous planning studies listed below and will provide a solid basis for a continuing program of improvement in the future.

PREVIOUS WORK: Prior to the acquisition of Greater Portland Transportation Company by GPTD, eight documents had been published relating to transit services in the Greater Portland Area;

1. Portland Area Comprehensive Transportation Study, (PACTS), 1965.
2. PACTS updating study, 1970.
3. A Policy Plan for Regional Development, undated.
4. Public Transit in Greater Portland, 1971.
5. Community Needs Assessment Study, 1973.
6. A Proposed Mass Transit Plan for GPCOG, 1969.
7. National Transportation Report, 1972.
8. Report on Plan of Assistance Incident to the Acquisition of Greater Portland Transportation Company...., 1972.

The program outlined here represents the first major work undertaken by the GPTD after recent purchase of the bus company. The program relies heavily upon recommendations from previous studies and is also expected to update and fill gaps. A strong emphasis is in implementing previous and anticipated recommendations for overall system improvements.

ITEM ONE, TRANSIT PLAN UPDATE (5.1)

I. Project Description

The transportation plan for the Greater Portland Area, including the bus transit element, was originally contained in the Portland Area Comprehensive Transportation Study (PACTS) of 1965. The first major updating study of the PACTS subsequent to the original study of 1965 was done in 1970 but did not make any mention or update of the transit element, because the 1970 update study was not intended for that purpose.

It is anticipated that this project will fulfill the annual review requirements of the transit elements of PACTS, with a particular emphasis given to updating and expanding the basic information presented in the 1965 study. Such work will include:

1. An update of the organizational framework for transit planning, focusing on the changes in transit operations since 1965;
2. An update of the general ridership data which was developed in 1965 with a particular focus on changes in the service and routing which would, in turn, reflect on the basic services the transit operations provide to the Region;
3. An expansion of the PACTS to include current and anticipated future transit planning activities and transit goals and objectives.
4. A re-examination of the role local communities play in overall transit operations especially relating to alternatives in attract-

ing new members and alternative methods of assessing member communities in determining subsidy payments to the District.

II. Project Need

This project will fulfill the requirements of UMTA's Continuing Planning Phase by providing an annual update of PACTS which, in turn, functions as the regional transportation plan. Much of the basic data was updated in the E. C. Jordan Report of 1971 (See Page 1) so the focus of this project is to assure the data is current and sufficiently reflects current transit conditions. It has been previously stated that the 1970 update of PACTS excluded any discussions of transit and so it will be the function of this project to update the document and take note of significant changes which have occurred in transit since that time, particularly related to organizational framework.

III. Expected Results

The expected results of this project will be to monitor recent changes in the regional transit plan and operations since 1971, which will serve as the overall regional transit plan until such time as a major, more comprehensive update of PACTS is undertaken.

ITEM TWO, TRANSIT SERVICE AND ROUTING (5.2)

I. Project Description

The basic planning goal of the project is to provide for much of the personal mobility needs of the non-car minority groups, examine the special needs of the handicapped and elderly, explore the possibilities for special services, and at the same time to obtain supplemental income for the transit system from affluent car-owning citizens attracted by improved, more convenient service. This is consistent with long range planning goals aimed at improving the "quality of life" in the Portland region.

Previous studies, particularly the 1971 E. C. Jordan report (See Page 6) have noted that increased ridership is unlikely without marked improvement in frequency, quality of service, and convenience and that there is a recognized social need for bus services in Greater Portland. Abandonment of unprofitable bus routes without a complete study may eliminate an economic loss but it may also create a community of social problems. It is the intent of this project to provide current data in such a form that it is capable of addressing basic needs in route structuring and may be designed as a single, comprehensive and well-coordinated routing plan that connects major suburban centers by providing radial and lateral mobility within the region. During the course of project completion, previous transit studies done in the Greater Portland Region relating to service and routing (See Page 1) will be expanded where necessary and a focus will be placed on the details necessary to design, implement, and publicize an improved route structure. Specific tasks in this study include:

1. Review and analysis of current routing and scheduling characteristics and policy;

2. Review and update previous transit data given in earlier studies to provide a current determination of ridership characteristics;

3. Suggest alternative methods of maximizing system coordination with particular reference to identifying and correcting existing gaps and duplications of service;

4. Determination of present and desirable access and coverage;

5. Determine most efficient and desirable speeds and headways;

6. Suggest improvements or alternative methods in the current transfer procedures;

7. Analyze route deployment;

8. Explore alternatives and methods of implementation in: express services, service to suburban centers, dial-a-ride and circulators; supplemental commuter services, special event services, and in-town loop and shuttle services.

9. Analyze current and desirable loading standards;

10. Address the problems and potentials in the area of dependability of service and schedule supervision.

11. Identify local citizens groups or agencies that have special interests or needs related to transit and develop procedures for them to become involved in the transit planning process, especially in the design stage of new routing and scheduling proposals.

II. Project Need

One of the major deficiencies in the existing transit system is the failure to respond to the changing land-use pattern that has created new personal mobility needs. There also exists little or no planning and operational coordination among bus operations and the other elements of the regional public transportation system, viz. arrival and departures of airplanes, ferries, inter-city buslines. The result is a costly and inconvenient duplications of service in some areas, a lack of service in others, and untimely congestion in the constricted downtown area of Portland.

There is a need, therefore, for an immediate effort toward reducing operational expenses and improving convenience through route and schedule improvements coupled with a marketing program to hold present and future ridership.

III. Expected Project Results

The basic result of this study is the development of new routes and schedules which may be quickly implemented to encourage new ridership and retention of present users through improved operations, services, and marketing techniques. Through implementation of results, it is hoped that a much higher degree of reliability in service will be insured by the rearrangement of routes and schedules to provide more complete public convenience.

Such proposals might include a determination of trade-off between fewer routes and more schedules on each remaining route, suggestions to provide the highest possible degree of labor efficiency and route scheduling, redesigning of routes used during non-rush hours to dial-a-ride or to circular patterns, detouring of buses during non-rush hours to provide direct service to destinations such as the major medical centers, and experimentation with new routes.

ITEM THREE, FARE STRUCTURES (5.3)

I. Project Description

The basic purpose of this project is to analyze present and potential fare structures so that fare charges are maintained within limits that reflect changes in the cost of living experienced by lower income groups and to explore a wider range of fare box alternatives that encourage the use of transit.

This project is conceived to be dependent upon at least the following two general areas of research and analysis: 1) Analysis of the current fare structures and alternatives, and 2) Analysis of charter operation and its relation to other Transit District responsibilities. Specific studies under this project item includes:

1. An assessment of the current and potential problems with charters;

2. An analysis of how revenues from such operations might be increased and services improved or, conversely, what effects the termination of charter services would have on the district operations;

3. Analysis of the present and desirable services viz. fare charges, provided to:

   a) the elderly
   b) the handicapped
   c) youth and school
   d) minorities

4. Exploration of alternatives available to provide better service to present riders and attract additional, new riders from automobiles including options of:

   a) dial-a-ride
   b) express and commuter services
   c) special event services
   d) shoppers services
   e) shuttle services

5. Establishing procedures whereby active citizen participation particularly from elderly and minority groups, may be used on a continuing basis in the planning process.

6. Analysis of present and alternative methods of determining incremental fares.

II. Project Need

Fare structuring and alternatives are probably one of the least understood and most difficult characteristics to work with in transit operations. The buses are operating at a loss and have, in fact, received some form of operating subsidies under private ownership. It is probably true, in view of previous studies made in the region, that if a fare increase were imposed in an effort to recoup operating losses, an already declining ridership would drop off even further. Any resulting increase in revenue would be short term in nature and offset by reduced ridership in a few years. Alternatives do exist, however, which would be useful for the District to study. The need is to identify such alternatives and formulate a realistic program which will minimize the current operating cost of the District and simultaneously continue to provide adequate levels of service at a reasonable cost to those persons dependent upon the buses. The results of this project are addressed to meet these needs and to suggest alternatives for future action.

III. Expected Project Results

The end result of this study will be the provision of enough information and ideas to allow for the implementation of new fare concepts into the GPTD operations, including alternative methods of determining fares based on passenger convenience, ability of the passenger to pay, and charging the users the incremental cost incurred by expanding service into certain areas. This also includes the possibility of experimenting with special fare charges for door-to-door or dial-a-ride service, express service, a reduced fare for children, elderly riders, or downtown shoppers. This item is expected to be designed in close conjunction with items Two (Transit Service and Routing) and Four (Public Information).

ITEM FOUR, PUBLIC RELATIONS AND INFORMATION (5.4)

I. Project Description

This project item will seek to gather and implement information and programs that will serve to improve the public image, hence the attractiveness of the buses. The specific areas of information sought will provide studies and implementable programs in the following specific areas.

1. Analysis of the current methods of information and publicity which are used by the Transit District including a measure of their effectiveness;

2. Description and recommendations of alternative techniques in marketing which will aid the Transit District in providing quick, accurate, convenient and easily understandable information to the public, including:

   a) new schedule designs
   b) information services
   c) master route guide
   d) markings

3. Conduct Bus Driver and Public Opinion surveys to assist the development of a comprehensive marketing program and public image improvement campaign;

4. Explore the possibilities of developing a systematic program for providing waiting shelters and improving present methods of marking bus facilities and services;

5. Determination of the effect that a well-organized publicity/information program using new marketing techniques will have on the District and its ability to attract new riders.

6. To develop definite programs of short, intermediate and long-range duration so that a continuing, well-coordinated program of marketing may be implemented with maximum effectiveness.

II. Project Need

To be successful, implementation of the necessary transit programs must be accompanied by a major public information campaign to inform passengers and potential passengers of the features and advantages of the new system. Cosmetic actions and eye-catching paint jobs on old buses are not likely to surmount the problem. Answers to the problem lie in the area of public attitudes and public policy.

III. Expected Results

The essential result of this study is the development of an implementable program, with a follow-up analysis, to improve public relations through more understandable and widely distributed routing, scheduling and service information. The goal is to present the local bus system as a public servant with high visibility and a reputation for complete reliability and safety by emphasizing convenience and image improvement measures.

Upon completion of this project, it is anticipated that additional technical and capital assistance grants will be applied for so that conclusions and recommendations may be implemented.

ITEM FIVE, CAPITAL IMPROVEMENT PROGRAMMING, MAINTENANCE, AND MANAGEMENT (5.5)

I. Project Description

A revised and updated program for replacing buses is one objective of this project. Such a program was originally discussed in the TDP but was in insufficient detail to meet current conditions and needs to be revised in order to maximize potential benefits. A second objective of great importance is to develop a program of preventative maintenance which may be employed swiftly and easily to maintain a high level of operating performance in the fleet and to diagnose potential problems before they cause significant "down time" or result in costly repairs. Such techniques are now used in private and public enterprises with success and should be explored by the Transit District in detail.

The specific tasks of this project will be:

1. Update and modify the bus replacement program;

2. Develop and implement a more efficient and modern program of preventative maintenance;

3. A complete examination of District manpower deployment including an examination of responsibilities;

4. Complete an overall "efficiency analysis" of the Transit District operations which would have a prime focus of identifying areas of possible improvement in day-to-day operations, management, and administrative practices;

5. Explore the possibility of developing a program of in-service training for District personnel.

Much of this project will be in gathering and analyzing available programs and literature already in practice and making appropriate modification based on the unique local conditions.

II. Project Need

Antiquated buses contribute significantly to the deficiencies of the present system. Frequent breakdowns cause occasional disruptions of scheduled service. The total effect of the bus fleet is an unattractive, uncomfortable and sometimes undependable service with a poor public image. Immediate action is needed to improve the operation of bus quipment through a program to assure maximum efficiency in the future by taking advantage of all available management and maintenance techniques.

III. Expected Results

The goal of this study is to analyze and recommend improved methods of systems programming and maintenance prevention techniques to assure all buses and related facilities are kept in good working order with safety, efficiency and dependability of operation insured. The results will be specifically an updated bus replacement program, a more efficient program of preventative maintenance based on local needs and circumstances, and an intensive evaluation of the management and administrative procedures necessary to assure good, long-range results.

ITEM SIX, ARCHITECTURAL/ENGINEERING STUDY OF TRANSIT DISTRICT OFFICES AND GARAGE (5.6)

I. Project Description

A comprehensive architectural/engineering study which will provide required design and cost information is necessary for the renovation of the outdated, inefficient, and unsafe conditions presently characterizing Transit District offices and garage. The project is expected to address itself to the problem of correcting major deficiencies in:

1. Ventilation system in the garage pit area;

2. Refurbishing District offices and operators lobby;

3. Replacing a major portion of the electrical fixtures and wiring;

4. Enlarging the undersized drains in the wash and storage area of the garage, including the tapering of the floor to a central drain;

5. Provision of new bus washing facilities;

6. Repair or replacement of garage pits;

7. Replacement of heater blowers;

8. Removal of skylights and sealing the roof or caulking the skylights and replacement of 45 broken windows;

9. Fire protection, including repairing the fire doors in the service area and around fuel pumps;

10. Replace water pipes;

11. Repave yards;

12. Lower ceiling, and,

13. Relocation of sprinkler systems.

In addition to studying and redesigning these current inadequacies, it is expected that alternatives to the renovation of the older buildings will be explored. Such alternatives will include the options of (1) constructing completely new facilities on the present or (2) new site or (3) locating the necessary existing facilities to accomodate transit operations at another site.

II. Project Need

The present conditions found in the shop and office plant of the Transit District are unsafe, inefficient, and promote adverse employee morale. In addition, they are far below the minimum standards required by the Occupational Safety and Health Act as currently administered by the O.S.H.A. Without significant improvement in these conditions, the Transit District will continue to operate in violation of these minimum standards. The project is needed to begin positive action in correcting present deficiencies.

III. Expected Project Results

The primary focus of the project is to provide essential architectural and engineering designs necessary to give accurate cost/benefit estimates for either; (1) the complete renovation of present facilities so that they may be brought up to minimum standards, or (2) alternative proposals concerning new buildings or new sites. It is expected that, upon completion, this study will provide the basis for an application for an UMTA Capital Grant in 1974/75 to implement actual design and construction work on the option deemed most desirable.

STAFF

The GPTD has given GPCOG major responsibilities in transit planning in the region and for the District. (See Attachment #1) In this capacity COG will assume an important role in developing the requisite UMTA applications for funding assistance and in providing staff personnel necessary in completing some of the work items. COG will hire a transit planner to provide in-house expertise in this area. Throughout the entire program, COG will be coordinating and providing staff services to assure a maximum of intermodal and interregional cooperation. It is anticipated that consultants will be needed to accomplish some of the work items within the required time span.

Proposed Funding Sources*

TASKS	UMTA	SLS*	TOTAL	DESCRIPTION
5.0	50,000	12,500	62,500	Total 1974 Transit Funding Sources
5.1	800	200	1,000	Plan Update
5.2	8,000	2,000	10,000	Service and Routing
5.3	4,000	1,000	5,000	Fare Structure
5.4	5,200	1,300	6,500	Public Relations
5.5	12,800	3,200	16,000	C.I.P., Management
5.6	19,200	4,800	24,000	CPTD Shop Study

* based on an 80-20 matching ratio

** local share will be funded by GPTD

PROPOSED AGENCY PARTICIPATION

TASKS		COG	STATE	GPTD	CONS.	TOTALS
5.0	Total 1974 Transit Funding Source	22,500		4,000	36,000	62,500
5.1	Plan Update	900		100		1,000
5.2	Service and Routing	9,400		600		10,000
5.3	Fare Structure	4,500		500		5,000
5.4	Public Relations	6,300		200		6,500
5.5	C.I.P. Management	500		750	14,750	16,000
5.6	GPTD Shop Study	900		1,850	21,250	24,000

DEPARTMENT OF TRANSPORTATION STUDY

In addition to these programs the Maine Department of Transportation is conducting a study of Maine Passenger Transportation needs. In addition to "in house" personnel the department has acquired the services of two consulting firms, Fay, Spoffard and Thorndike Inc. of Boston, Massachusetts and Northeast Markets, Inc. of Maine. Their study will include a review and analysis of existing reports and statistics related to their study and a complete inventory of existing transportation facilities of all types, publicly and privately financed and owned. Surveys and sampling techniques will be utilized to assess demand, availability, use, need, condition, costs and financing as well as future prospects for the kinds of service provided. 400 personal interviews will be condicted in 3 representative service areas for a total of 1,200 interviews. These surveys will be evaluated to identify "the magnitude of latent demands" for specific passenger transportation services. Forecasts of service needs for "five and ten years hence, actual and latent" will be made. Development of solutions to needs for the general population and specific geographic service areas will be made and evaluated with respect to costs and benefits and the revenues necessary. The detail provided will be sufficient to describe a service and assess its effectiveness and impact. A complete report incorporating findings, conclusions and recommendations with supportive data will be printed. The study will take 14 months and is expected to be completed December 1, 1975.

VII

Experimental or Innovative Systems

A program developed by the West Virginia Department of Welfare called (TRIP) Transportation Remuneration Incentive Program addresses itself to the transportation needs of the aged and handicapped, while providing new customers for failing transportation systems and incentives for the development of new transit facilities.

Eligibility is based on age (60 or over) or physical disability and low income, (see accompanying chart). Over 100,000 West Virginians are eligible. TRIP provides tickets to individuals at a discount, based on their ability to pay. Providers of transportation can cash in the tickets for their full face value.

By increasing the low-income, elderly and handicapped citizen's financial access to transportation, TRIP will help them travel more. It is hoped that increased revenues for providers will enable them to improve and expand their services for all members of the community. All providers must meet Public Service Commission regulations for insurance, safety and fair rates. Only certified providers may redeem tickets for cash. Assistance is given to providers on routing, scheduling or acquiring vehicles. Providers will be asked to share route and schedule information to provide statistics for federal funding.

Tickets can be used on any authorized transportation to travel anywhere. Tickets can be saved for long trips as long as the ticket is purchased in the state. Tickets cannot be sold or transferred. Each ticket has five boxes by which the traveler can check for what purpose the trip is intended.

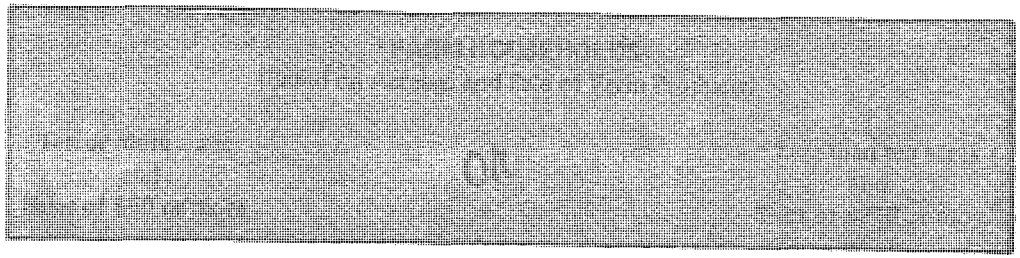
In areas where transportation is inadequate or unavilable TRIP will encourage development of new vehicles and services which will be available to all individuals. It is hoped rural areas will benefit from newly established means of transportation and urban areas from improvements of existing service. Overlapping systems will be coordinated increasing overall efficiency and reducing costs.

The West Virginia program is supported by a grant from the Office of Economic Opportunity. Funding for a full four year pilot program was received with support of the U.S. D.O.T. and U.S. H.E.W. Capital grants to state agencies will be made to identify local needs, develop plans, new routes and schedules. Hopefully private carriers will take over the route if fiscal feasibility is documented. Market research results will be made available to private carriers.

Further information on the program will be made available as it is developed and a training seminar is planned for interested states.

MAXIMUM ALLOWABLE INCOME STANDARDS

Number of Persons	Non-Farm Family		Farm Family *	
	Yearly	Monthly	Yearly	Monthly
1	$2,200	$183	$1,870	$156
2	2,900	242	2,465	205
3	3,600	300	3,060	255
4	4,300	358	3,655	305
5	5,000	417	4,250	354
6	5,700	475	4,845	404
7	6,400	533	5,440	453
Each Additional Member Add:	700	58	600	50



MAXIMUM ALLOWABLE RESOURCES

One Person Household	$1,500
Two or More Person Household	$3,000

MONTHLY ALLOWABLE INCOME AND BASIS FOR TICKET BOOK ISSUANCE

MONTHLY HOUSEHOLD INCOME	NUMBER OF ELIGIBLE PERSONS IN HOUSEHOLD					
	ONE PERSON		TWO PERSON		THREE OR MORE	
	TICKET COST	TICKET VALUE	TICKET COST	TICKET VALUE	TICKET COST	TICKET VALUE
$ 0 - 35	$1.00	$8.00	$ 2.00	$16.00	$ 3.00	$24.00
36 - 70	2.00	8.00	4.00	16.00	6.00	24.00
71 - 105	3.00	8.00	6.00	16.00	9.00	24.00
106 - 140	4.00	8.00	8.00	16.00	12.00	24.00
141 - 183	5.00	8.00	10.00	16.00	15.00	24.00
184 - 242	5.00	8.00	10.00	16.00	15.00	24.00
243 - 300	5.00	8.00	10.00	16.00	15.00	24.00
301 & Over	5.00	8.00	10.00	16.00	15.00	24.00

ELIGIBILITY IS DETERMINED by age, degree of disability, total household income and the total number of persons in the household.

TRANSPORTATION TICKETS ARE ISSUED according to the number of eligible persons in relation to the total household income with a maximum of three (3) books per household.

Demand - Responsive Transportation Systems

Demand - Responsive Transportation systems provide a personalized public transit service by offering customers direct pick up to destination service. From the point of view of the customer the service is similar to that of taxi service except that it is less expensive and the vehicle picks up other customers on its route to "your" destination so that the ride is longer and shared with others. These systems are referred to as Dial-a-Ride, Dial-a-Bus, Call-a-Ride, etc.

Demand - Responsive systems can be complementary to fixed - route bus systems. They can be operated in the less urban lower density areas. Where no fixed route systems are available, these demand-responsive systems can serve all transit needs or they can provide feeder service to intercity bus or rail systems.

Initial systems, operating a limited number of vehicles, (10 or fewer) with manual dispatching and a small area of coverage (10 sq. miles or less) led to the establishment of observable characteristics and impacts of demand-responsive systems. Service areas can be described as neighborhood, small cities, area or metropolitan area. The types of service range as follows: Route-deviation service - a fixed route vehicle "detours" to pick up or drop off a passenger; Point-deviation service permits the driver to choose routes according to passenger request between designated - scheduled pick up points; zone service limits service to a specified area -

customers must transfer usually at a central activity area to another vehicle; and areawide service permits service similar to taxi service, unlimited but planned pickup discharge points.

Differences between random route and fixed route systems are responsive to different types of physical environments. The random route system most effectively serves low-density, widely spread, non centralized activity areas on a door to door basis. Conversely, it is least effective in a centralized situation, for the vehicular congestion greatly decreases the advantages of route-selection at random. Fixed route systems operate most efficiently when the stations serve great numbers of passengers and are least effective in low density areas with scattered populations. The systems however can complement each other.

Several of the systems currently operating in Maine under the auspices of the Department of Health and Welfare, Bureau of Human Services and Maine's Bureau of the Elderly are examples of demand-responsive service. Many other voluntary or charitable organizations provide transportation service on an individual basis. The usual taxi services in many Maine communities are long standing examples of this kind of service, although usually only one customer is served at a time. The demand-responsive systems in Maine are generally area wide-route deviation systems. Passengers call a central number to request service and the operator plans his route accordingly, but for a particular trip has one or more destination points within the area. The service is free with costs subsidized by one of several federal programs.

A typical example of a demand-responsive system is an experimental program in Westport, Connecticut designed to relieve traffic congestion and parking lot and highway expansion expenses. This community of 30,000 has 18,000 automobiles registered. The system operates a fleet of Mercedes-Benz diesel engine buses. The routes during commuter hours are planned to ferry workers to train stations. During the day at 35 minute intervals, the buses transport residents to shopping, recreational and cultural centers. Fifty cents flat fare is charged for each trip with yearly passes offered for $7-$25 with special rates for families. Three thousand passes had been sold in the first month of operation. Daily ridership is up to 2500 passengers. This apparently successful system was funded by a state and federal capital grant of $302,000. Operating expenses of $250,000 per year are expected to produce a deficit of $140,000 to be shared equally by the state and the city of Westport.

A summary of four experimental commuter service transit systems which were terminated after test periods of up to two years stated that:

1. Insufficient numbers of commuters were willing to give up the use of their car during commuting hours.

2. Insufficient off peak use was made of the system to provide operating funds to make the service economically viable.

3. When the grant funding from federal agencies concluded the communities were unable or unwilling to subsidize the service.

Funding varied in amounts of $180,000 to $2,230,000.

4. All were designed to relieve congestion on city streets and parking areas adjacent to fixed route commuter trains or buses or to mobilize unemployed workers.

5. When unemployed workers gained employment they quickly acquired automobiles and drove to work.

A study of Shared-Ride Taxi Systems prepared for the U. S. Department of Transportation Urban Mass Transportation Administration by the University of Tennessee Transportation Research Center describes the demand, level of service and economic and operating characteristics of shared-ride taxi systems. A brief summary of their findings follows:

There are a small number of taxicab companies in both large and small urbanized areas which offer shared-ride service similar to that provided by a dial-a-bus system. Two systems are described in the report, one in Davenport, Iowa, a city of 90,000 population within a metropolitan area of 300,000 and an unincorporated community of 48,000, Hicksville, Long Island, New York.

In both communities requests for service are similar. The user calls the company and gives the required information as to location and size of group. A dispatcher selects a vehicle and notifies it by radio. An attempt is made to pool riders. Consequently, a customer may have to share the cab with passengers with whom he has no affinity. No maximum or minimum intervals for waiting or riding are guaranteed. In both systems the drivers lease their vehicle from the company on either a flat rate or per mile basis. All expenses except fuel costs are borne by the company. In the Davenport system with a base fare of 75 cents plus a 25 cent increment per zone fares on the Davenport bus system were not given but can be assumed to be appreciably lower. Ridership increased during 1967 to 1972 by 179% on the shared-ride system

and declined on the bus systems by 50% during the same period. The shared-ride system carried about 48% of the average number of weekday trips handled by the conventional bus system.

TABLE 1

DAILY RIDERSHIP ON SHARED-RIDE TAXI AND BUS SYSTEMS IN DAVENPORT

Date	Shared-Ride Taxi Person Trips	Bus Person Trips
Tuesday, April 10, 1973	1303	2516
Wednesday, April 18, 1973	1137	2622
Thursday, April 26, 1973	1108	2587
Friday, May 4, 1973	1528	2826
Saturday, May 12, 1973	1278	2422
Sunday, May 20, 1973	680	No Service

Figure 1 represents the temporal demand pattern for the shared-ride system.

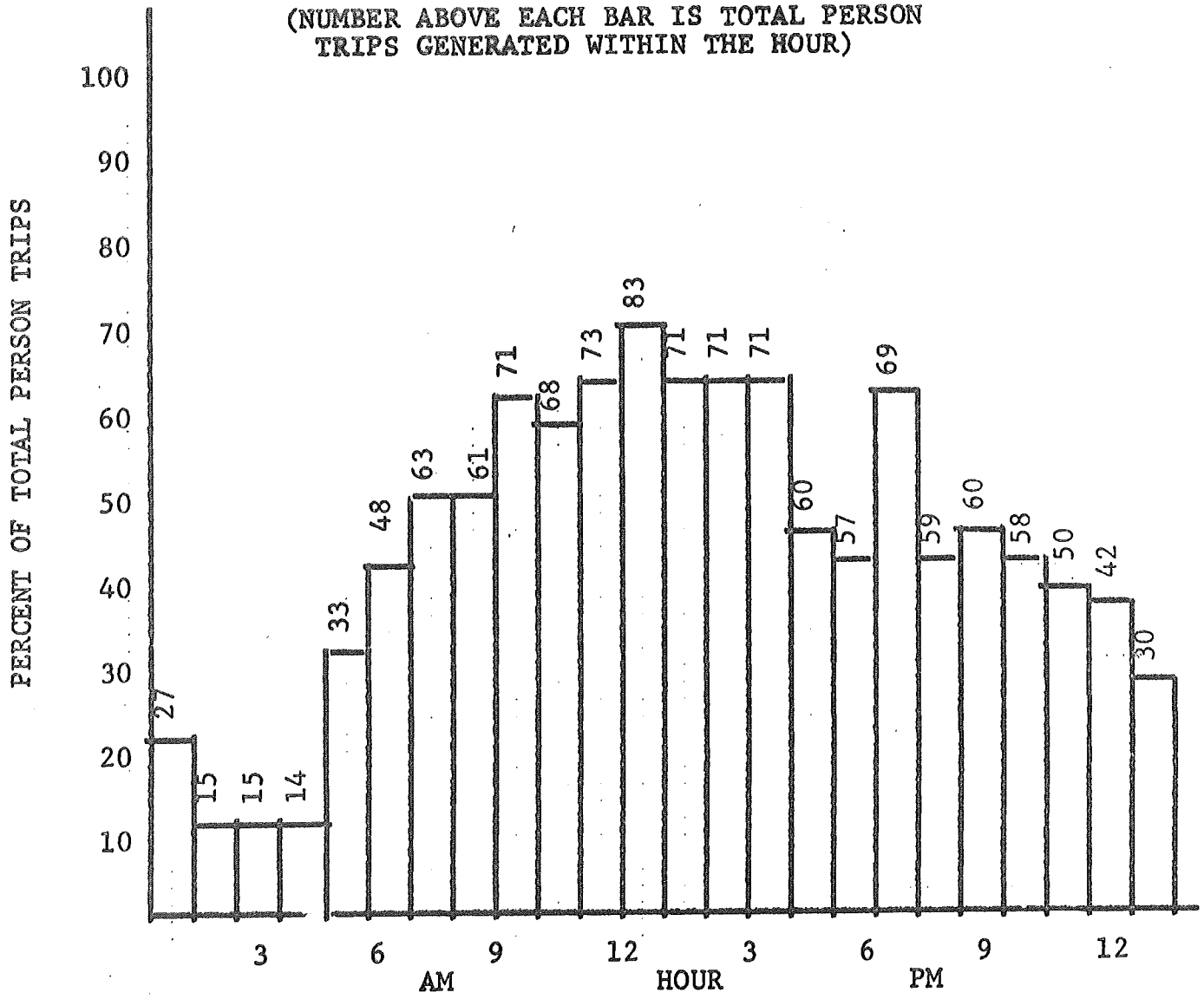


FIGURE 1

HOURLY DISTRIBUTION OF PERSON TRIPS

ON AN AVERAGE WEEKDAY IN DAVENPORT

TABLE 2

DOMINANT WEEKDAY ORIGIN-DESTINATION FLOWS

ON DAVENPORT SHARED-RIDE TAXI SYSTEM

Type of Origin	Type of Destination	Average Number of Person Trips	Percent of Total Person Trips
Residence	Residence	348	26.4
Business	Residence	265	20.1
Residence	Business	211	16.0
Tavern	Residence	69	5.3
Residence	Medical Facility	68	5.2
Medical Facility	Residence	56	4.2
Business	Business	47	3.6
Residence	Public Facility	26	2.0

Table 2 indicates that shared-ride service is used extensively for social trips and the overall use suggests primary use is by Davenport residents and that tourists, visiting businessmen and other non-residents constitute a minor market. The Central Business District generated a higher percentage of trips with the next most productive zones clustered around the C.B.D. Therefore, this shared-ride system is highly spatially concentrated.

The Hicksville system, although serving a population about half of that of Davenport, has an average weekly demand for services at three-fourths that of Davenport. Hicksville has no bus service and the base fare is $1 to $1.25 with 50¢ per mile increments.

TABLE 3

DAILY RIDERSHIP ON SHARED-RIDE TAXI SYSTEM IN HICKSVILLE

Date	Person Trips
Wednesday, April 10, 1973	858
Thursday, May 3, 1973	943
Friday, May 18, 1973	971
Saturday, June 2, 1973	528

The temporal demand for the Hicksville system is shown in figure 2. The principal role of the service is collecting and distributing commuters to one of three railway stations, generating 39% of the total demand.

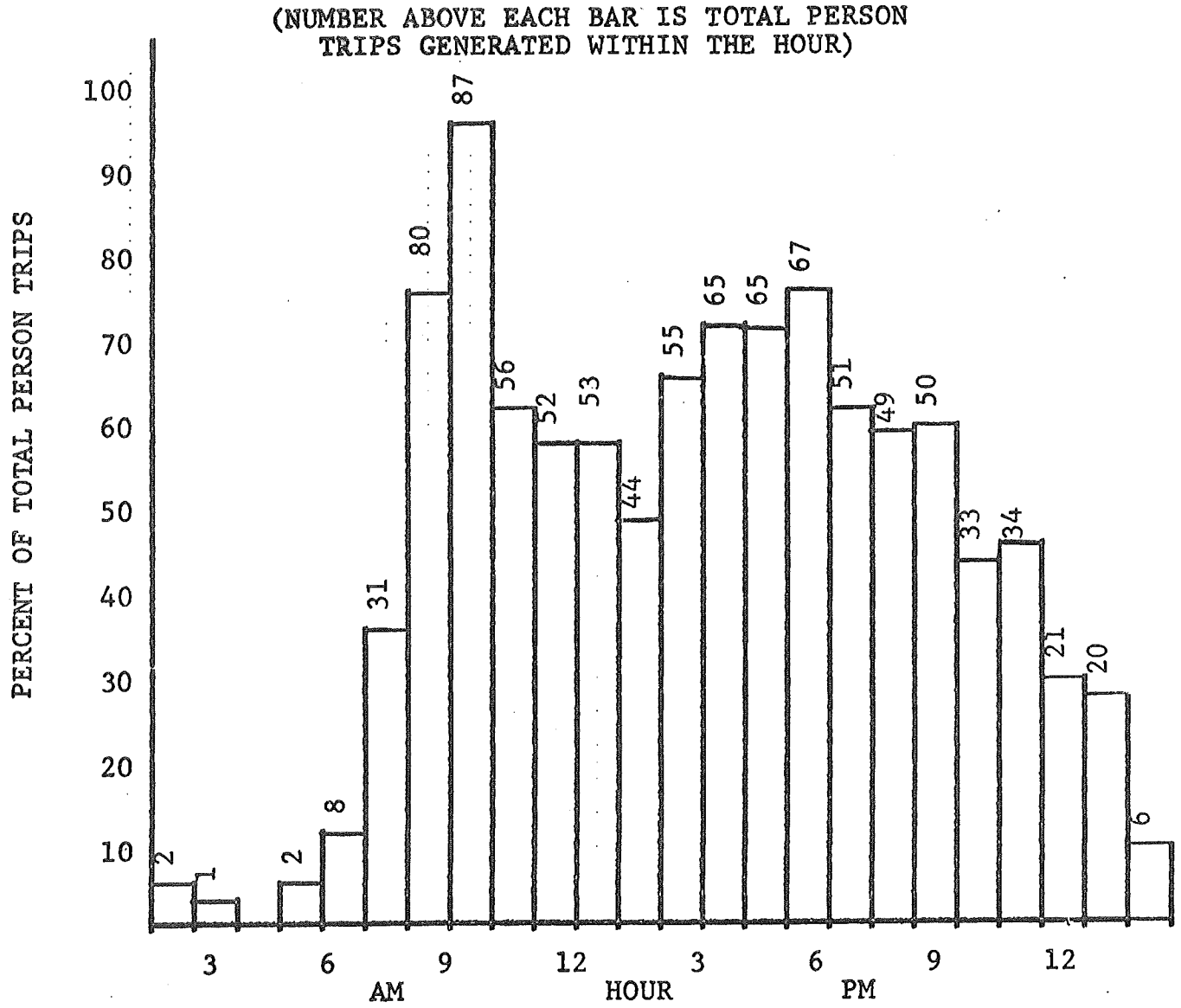


FIGURE 2

HOURLY DISTRIBUTION OF PERSON TRIPS

ON AN AVERAGE WEEKDAY IN HICKSVILLE

A larger percentage of non-home based trips implies non-residents use the service to conduct business in the Hicksville area.

TABLE 4

DOMINANT WEEKDAY ORIGIN-DESTINATION FLOWS ON HICKSVILLE SHARED-RIDE TAXI SYSTEM

Type of Origin	Type of Destination	Average Number of Person Trips	Percent of Total Person Trips
Public Facility	Residence	234	25.3
Residence	Public Facility	200	21.6
Business	Residence	120	12.9
Residence	Business	109	11.8
Residence	Residence	68	7.4
Public Facility	Public Facility	43	4.6
Public Facility	Business	37	4.0
Business	Public Facility	22	2.4

LEVEL OF SERVICE CHARACTERISTICS

The users in Davenport must wait between sixteen and twenty-four minutes for the arrival of the vehicle following a request for service. The Hicksville system varied considerably and the average wait time varied between four and twelve minutes. Both cab systems respond to prearranged trips within five minutes of the requested pickup time. In the Davenport system about five percent of its trips are goods-delivery trips, transporting a wide variety of equipment, parts, telegrams, medicines, et cetera.

VEHICLE MILEAGE REVENUE AND PRODUCTIVITY

SHARED-RIDE SYSTEMS

PLACE	HOURS OF OPERATION	NUMBER OF MILES PER HOUR	REVENUE PER HOUR	REVENUE PER MILE
Davenport	18.4	10.5	$4.61	$.44
Hicksville	13.5	11.3	$6.83	$.50

BUS VS SHARED-RIDE SYSTEM IN DAVENPORT

VEHICLE	ROUTE MILES	SEAT CAPACITY	NUMBER PASSENGERS PER MILE	NUMBER PASSENGERS PER HOUR	PASSENGERS PER GAL. FUEL WITH AIR COND.	PASSENGERS PER GAL. FUEL WITH AIR COND.
Fixed route bus	2400	32-36	1.27	14.70	3.79	5.41
Shared ride	194	5	.39	4.12	3.57	4.26

The findings demonstrate the ability of these systems to adapt to different socio-economic environments. Although no data was given as to the socio-economic characteristics of the riders (a significant omission) the study does demonstrate that two quite different systems, in terms of ridership, level of service and economic characteristics appear to be economically viable never having received capital or operating subsidies and are "important components of the total public transportation system." "While conventional bus systems in Davenport and Hicksville have experienced an economically painful reduction in ridership, both of the shared-ride taxi companies have watched ridership gain." Public operation of similar systems to compliment or in some cases substitute for fixed route systems should be considered. The West Virginia TRIP program envisions these kinds of systems as

part of the public transportation picture by making such a system economically viable for the operator by subsidizing the rider who could not afford the service under ordinary circumstances. Average trip costs of $1.00 to $1.45 of the two systems make its use acceptable to the more affluent.

Auto Rapid Transit System

To use private automobile capacity more fully a new transportation system dubbed ART (Auto Rapid Transit) was designed. The system would provide peak period, line haul service between Regional Transportation Centers operated by drivers traveling to and from work in their own cars.

Centers would be sheltered, regional passenger pick up points, strategically located in large, easily accessible suburban parking lots near highways. In central business districts, they would be located preferably near employment centers. Drivers would charge each rider an appropriate fare ranging from 10 or 25 cents for a trip of a few blocks to a dollar for a suburb to the central business district. ART vehicles would provide service between suburban and downtown centers only during peak periods. Buses and taxis would provide off peak service.

The author hypothesizes great use based on the following incentives to drivers and users:

Driver's additional costs would be $500 for insurance, operator's license, vehicle license and display tags. Driver incomes would be about $2,500 per year based on a six passenger vehicle and a fare charge $1.00 per rider per trip: a 12 passenger wagon would yield up to $5,500 assuming full occupancy.

Driver profits are predicted at $2,000 to $5,000.

Riders would benefit by having a high frequency line haul service superior to present bus services. Riders could board an ART at a Regional Transportation Center or hail the vehicle identified by a special card stating destination.

This system is suggested as a more flexible type of car pooling which demands common schedules and shared living and working locations.

Environmental and energy advantages suggested are less air and noise pollution, less highway widening and construction, and fewer central business district parking lots. Accepting the following table, the proposed auto rapid transit operation is just as efficient as bus transit.

Vehicle type	Occupancy Peak Period	Rate of Consumption	Peak Period Consumption
Automobile	1.4	12 MPG	8,150 BTU/PM
Bus	50	4 MPG	1,380 BTU/PM
Rail	100	5 KWH/CM	1,160 BTU/PM
ART VW	9	20 MPG	756 BTU/PM
ART sedan	6	12 MPG	1,890 BTU/PM
ART wagon	12	12 MPG	945 BTU/PM

MPG - miles per gallon
KWH/CM - kilowatt hour per car mile
BTU - British thermal unit
PM - passenger mile

A demonstration project operating in three corridors for six months is estimated at $400,000 including $200,000 management, $75,000 parking rental space, $50,000 signs, $30,000 advertising, insurance free to first 50 applicants $45,000.

This system is proposed as one method of increasing use of presently existing passenger space that now rides empty.

VIII

CAR POOLING EFFORT IN AUGUSTA-GARDINER -- 1974

A cooperative effort of the Maine Department of Transportation and the Southern Kennebec Regional Planning Commission attempted to establish the degree of interest of workers in the Augusta-Gardiner area in joining a car pool for commuting to work. 4,400 questionnaires were distributed within the State House complex and 6,000 in offices and businesses in the area. Additionally, 18,500 questionnaires were included in the Kennebec Journal as a supplement May 21, 1974. The S.K.V.R.P.C. was to provide services valued at $3,100 and would be reimbursed $2,790 by this Department. The Department of Transportation was to distribute questionnaires to employees in the State House complex and the S.K.V.R.P.C. was to contact other employers and employees in the Augusta-Gardiner area.

Questionnaires were returned as follows:

Total Returned: 2714

Interested in carpooling	
State Employees	621
Others	404
Total	1025
Not interested in carpooling	
State Employees	1098
Others	591
Total	1689

The Computer Program provided by the Federal Highway Administration was used in an attempt to match the 1025 employees who expressed an interest in carpooling. The following are results of the program match:

Individuals matched	
State Employees	422
Others	128
Total	550

Lists of possible carpool matches were mailed out to participants on July 19, 1974. It is noted that 1769 of the 2714 individuals completing the questionnaire expressed an interest in mass transit.

The results of the program in the Augusta area may have been somewhat disappointing -- one of the problems was with the Computer Program: adjacent home grids are searched but adjacent work grids are not. An example of individuals who should have been matched are three commuters living in the Freeport-Yarmouth area - all working the same hours. These commuters were not matched because they work in adjacent grids. Individuals who had home grids miles apart were matched only because they enter the area in the same grid and work in the same grids. It is also noted that although the program will not match adjacent work grids, it will match working hours that vary by 15 minutes. The Computer Program was obviously developed for use in a large urban area.

Although the number of matches may have been somewhat disappointing, it is noted that since the matches were made and mailed out to prospective carpoolers, the number of visitors or phone calls to this Department asking for carpool matches is estimated to be at least 100.

The Department of Transportation, on June 25, 1974, entered into another carpooling agreement with Androscoggin Valley Regional Planning Commission. A.V.R.P.C. has agreed to develop a Carpool Matching Program in the Greater Lewiston-Auburn area. A.V.R.P.C. had 12,000 questionnaires and maps printed. These were distributed in early October. Also, the Lewiston Sun (both daily and evening) with a total circulation of 47,000, printed the questionnaire and map. As of November 21, 1974, we had received approximately 650 questionnaires from A.V.R.P.C. November 29 was the cut-off date for returning the questionnaires to A.V.R.P.C. Matches will be made and are expected to be mailed out late in December, 1974.

Selected Bibliography

1. Providing for Air Quality and Urban Mobility, Salvatore J. Bellamo; Highway Research Record, Air Pollution Controls for Urban Transportation; Washington D.C. 1973

2. Report Maine Department of Environmental Protection; Implementation Plan for Air Quality Control, 1972

3. Highway Research Board, Number 465 National Research Council, Air Pollution Controls for Urban Transportation.

4. The Automobile, Energy and the Environment, A technology Assessment of Advanced Automotive Propulsion Systems, Hitman Associates Inc. Col. Maryland, 1974

5. Highway Users Federation for Safety and Mobility, Energy Efficiencies of Urban Mass Transportation. Alan M.Voorhes Assoc. McLean, Virginia, 1974.

6. Science and Public Affairs, November 1973

7. The Urban Lawyer, The National Quarterly on Local Government Law, Vol 6, Ho 2, Spring, 1974

8. Evaluation of Rail Rapid Transit and Express Bus Service in the Urban Commuter Market.

9. State-of-the-Art Overview U.S.D.O.T. and U.M.T.A. Demand-Responsive Transportation.

10. Shared Ride Taxi Systems: An analysis in Summary U.S. DOT, August, 1973

STATE OF MAINE

In House March 21, 1974

Ordered,

WHEREAS, mass transit is an appropriate means of reducing energy consumption, environmental pollutants, traffic congestion and loss of life and injury now resulting from private cars; and

WHEREAS, this nation has reached a point when alternative systems of transit must be examined to determine those means most suited to future needs; and

WHEREAS, the development of an adequate system of transportation is considered essential for the welfare of the citizens of this State at the earliest possible time; now, therefore, be it

ORDERED, the Senate concurring, that the Legislative Council is authorized and directed to examine the various systems for mass transportation presently suitable to this State to determine the feasibility of utilizing one or more such systems to meet the future needs of this State; and be it further

ORDERED, that the Council shall report the results of their findings and recommendations, including any necessary implementing legislation, to the 107th Legislature.

HP 1079
IN SENATE
TAKEN FROM TABLE
BY PRESIDENT AND
MAR 25 1974
Passed
IN CONCURRENCE

(Jalbert)
Name:
Town: Lewiston

SENT UP FOR CONCURRENCE
HOUSE OF REPRESENTATIVES
PASSED
MAR 21 1974
SENT UP FOR CONCURRENCE
E. Louise Lincoln
CLERK
ORDERED SENT FORTHWITH

IN SENATE CHAMBER
TABLED BY SEN. RICHARDSON
OF CUMBERLAND
MAR 22 1974
PENDING Passage
HARRY N. STARBRANCH, Secretary
SPEC. ASSIGN'D FOR 3/25/74