

RECORD INSERT

Congressman Les AuCoin



Future Mass Transit Alternatives

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With the sure future we all face of restricted petroleum supplies, no one can ignore the imperative of mass transit. Now is the time to weigh the choices before us, choices of mass transit systems that will move people and that are cost-efficient, choices of systems that service our mobile populations nationwide.

The following article I'm inserting into the Record today comes from the November issue of Nation's Business. I urge my colleagues and anyone remotely concerned about transportation to read it carefully. The author, John Jennrich, offers some necessary questions in this discussion of future transportation alternatives: are private and public efforts compatible in fostering the growth of mass transit? what adjustments will we face in adapting to new technologies? what alternatives seem the most efficient and the most preferred for passenger travel, for cargo shipping and for population changes?

While the answers can't be contained by one article, I believe this piece can initiate creative solutions -- solutions we all need and to which we can all contribute.

## TRANSPORTATION 2000:

# How America Will Move Its People and Products

By John H. Jennrich

**H**OW WILL Americans get where they're going in the year 2000?

The federal government has spent \$5 million over two years to find out. The answer: Not much differently than they do today.

There will be some changes in the ways America moves its people and its products, but very little of the futuristic transportation found in science fiction novels will materialize. The nation will still run on wheels, wings, tracks, and water. The primary changes will be in fuels—more diesel and synthetic gasoline—and in transportation costs.

The government's report, prepared by the National Transportation Policy Study Commission, forecasts a capital investment of \$4 trillion between now and 2000 to keep a growing America moving. Rep. Bud Shuster (R-Pa.), commission chairman, warns that the "world's best transportation system is in danger" because it may not be able to meet future needs.

"The present level of public and private investment will not preserve the existing system," he says. "The demand for transportation will grow dramatically, outdistancing the rate of population growth by nine times for freight and four times for passengers. Government over-regulation is inhibiting the return on investment necessary to attract capital for future growth."

Rep. Shuster's pessimistic alarm is

echoed by Peter G. Koltow, chairman of the Transportation Research Board, an arm of the National Academy of Sciences. He thinks the nation's highway system is living on borrowed time.

"The gap between highway needs and expenditures will grow substantially by 2000 unless our national transportation priorities are changed," he says. "Federal, state, and local governments are all going to have to deal with deteriorating highways."

"The report of the National Transportation Policy Study Commission shows that if we want a better system or even the status quo in the years ahead, we are already behind schedule in preparing for it," adds Mr. Koltow, who is also president of the Highway Users Federation. "Although the public has come to expect a good road system, the report clearly shows that we are in danger of losing it."

### Optimistic about impact

The commission's deputy executive director, John W. Fuller, is optimistic about the report's impact. He says it describes "moderate ways to make incremental changes." One or more congressional bills will result from the report, he predicts. Even with the big aggregate numbers, the cost of transportation as a percentage of family and national budgets is expected to decline.

But, Dr. Fuller adds, even if all the changes sought by Rep. Shuster and

the other commissioners do not occur, America's transportation system will still operate. "It just won't be as efficient," he says.

Nevertheless, efficiencies in a system that costs trillions of dollars can amount to real savings, and everyone in the transportation field agrees that there are problems with efficiency.

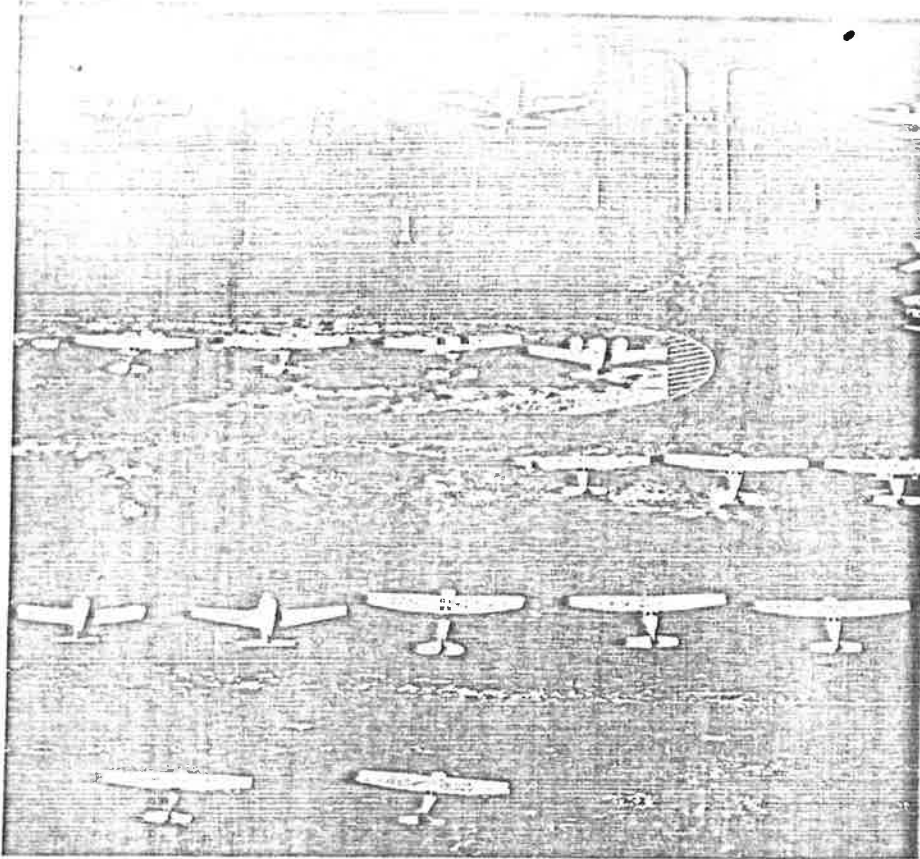
The report lists about 80 recommendations to make the present system more efficient. These suggestions can be grouped under four themes:

- An overall reduction in federal involvement. The commission feels that the government should do less itself and restrain business less. Its conclusion: "For most transportation issues, public interest and private profit are consistent rather than opposed."

- Uniform national policy. While the same policy will not work for each transportation issue, "policies should not work at cross-purposes," the commission says.

- Economic analysis of proposed federal actions. The government should know what a project will cost before it begins. Also, the cost benefits of alternatives should be available. Economic analysis should be applied to non-transportation goals such as environmental protection, safety, energy conservation, and national defense. For safety and research, federal involvement, including financial assistance, is required.

- Support from system users. "Free



More than 185,000 private aircraft play an important role in personal and business transportation. General aviation operates from more than 14,000 airports. This compares with 2,200 commercial aircraft serving 620 points.

markets operate on the principle that those who benefit must pay for the costs," says the commission, which excludes urban and rural transit systems and air traffic control. These exceptions benefit the public generally, it says, and should be subsidized through taxes.

Underlying the recommendations is a complex, three-part forecast of trends and demographics that will affect transportation decisions of most businesses in the future.

The commission included low, medium, and high-growth scenarios, but generally used a medium-growth analysis. The report covers urban, rural, and intercity transportation of both freight and passengers. Its base year is 1975.

The transportation system over the next two decades shapes up like this:

- Personal travel was 2.6 trillion miles in 1975 and will grow to 4.6 trillion miles in 2000. People will depend primarily on automobiles, although airlines will carry more long-distance travelers and by 2000 burn more fuel than cars. Despite increases in mass transit, traffic jams and urban congestion will survive. Highway fatalities will increase from 46,000 in 1975 to 67,000 in 2000, although the number of

deaths per 100 million vehicle miles will go down.

- Trucks, railroads, ships, barges, and pipelines will be the freight carriers. Railroads and ships will increase their market share. Freight hauling accounted for 2.4 trillion ton-miles in 1975; by 2000, it should reach 6.3 trillion.

- America will still run predominantly on oil, although synthetic and other fuels will be used. The wellhead price of domestic crude oil, assuming deregulation, will rise 59 percent in constant dollars between 1975 and 2000. Domestic production will continue to decline until 1985 and then increase gradually. Demand will exceed domestic supply and until 1990 will be met through increased imports.

By the 1990s, synthetic crude oil will represent 20 percent of all crude oil available to refineries. Of the synthetic crude, 78 percent will be from coal.

Because of increased mining in the West, three times today's volume of coal will be moved twice its average distance, for a sixfold increase in ton-miles. The increase will mean that more energy will be spent in transporting energy.

Sufficient petroleum-based fuels can be made available for transportation

only if oil reserves, including those that are exploited, including shale, natural oil shale, tar sands, and coal liquefaction, the commission says.

- Capital investment in transportation will equal \$4.2 trillion between 1975 and 2000, with \$1.2 trillion of that from various levels of government. While these are big numbers, the cost burden is actually decreasing. In 1975, the total transportation bill was 21.1 percent of gross national product. By 2000, it should decline to 19.8 percent.

In 1975, the cost of passenger transportation as a percentage of disposable income per capita was 17.6 percent. By 2000, with increases in real income, this will have dropped to 13.2 percent.

- Gross national product will be nearly \$3.6 trillion in 2000, or 2.35 times 1975 GNP. There will be 260 million Americans living in 104 million households, up from 214 million Americans in 71 million households in 1975. Disposable personal income per capita will grow to \$9,826, nearly double that of 1975, leaving more money available for traveling and transportation costs.

### Growth predictions

The commission predicts that average income will rise faster than the cost of owning and operating a car, that demographics will show a shift toward more and smaller households, and that the average age will continue rising, with more people reaching driving age.

In urban areas, where 75 to 80 percent of Americans live, passenger trips will grow steadily from 359.4 million in 1975 to 462.7 million in 2000. These trips account for about one third of all travel miles throughout the country.

About seven percent of the urban trips will be in mass transit vehicles, which will average about the same or slightly below the percentage in 1975. Only in cities with a million-plus people is transit ridership expected to rise.

### Optimistic estimates

One of the hazards of forecasting transportation trends shows up in the urban mass transit figures. The commission report predicts that from 1975 to 2000 bus seat-miles will grow from 232.6 million to 433.9 million. During the same time, rail (subway, light rail or trolley, and commuter rail) will grow from 172.7 million seat-miles to 437.4 million, more than doubling in 25 years.

Arthur L. Webster II, the commission's director for policy integration,



... "These estimates are probably very optimistic." Although data for the prediction were obtained in June, 1978, rail service was bullish in 1978, he says. Ridership has not kept up with seat-miles, and high expenses tend to favor expansion of bus service over subways, Mr. Webster adds.

Mass transit will play a big role during rush hours, but the dominant vehicle for urban travel will still be the passenger vehicle, whether it be a car, truck, or van. While the number of highways increases moderately, and the number of freeway lanes increases faster, there will also be a big jump in the number of urban passenger vehicles, rising from 53.8 million in 1975 to 100.1 million in 2000.

Fuel consumption in 2000, assuming greater use of diesel-powered vehicles, is expected to drop below 1975 levels.

### Auto and air dominate

Some of the greatest changes will take place in intercity passenger movement. Measured in total passenger-miles, airlines will increase their share tremendously, bus and rail will decline from their already tiny fractions, and autos will decline slightly. Auto travel will still be nearly four times greater than air travel.

The commission report says: "While all modes exhibit absolute growth,

and air clearly dominates, accounting for more than 97 percent of all intercity travel. The most significant shift is from auto to air, which grows at the highest rate.

"As income rises, the value of time rises, and air travel becomes more desirable because of its speed," the report adds.

Although both aircraft and cars will become more fuel efficient, planes use more energy per passenger-mile than cars. With the shift toward air travel, fuel use is expected to rise. Indeed, says the commission, "by 2000, planes may replace the auto as the dominant user of energy for intercity travel."

### Interstate system

Cars today travel on 3.87 million miles of roads. Most intercity travel occurs on about 20 percent of that, and about 20 percent of all travel is on one percent of the roads, the nearly completed 42,500-mile Interstate Highway System. In 1975, autos accounted for 1,123 billion intercity passenger-miles, or about 86.3 percent of the total. In 2000, autos will account for 1,830 billion passenger-miles, or about 78.2 percent of the projected total of 2,340 billion. By 1985, smaller autos will lose ground to medium-sized autos, a trend that will continue to 2000.

However, Eugene Bordinat, Jr., vice

president of Budget Rent-a-Car Corp., believes that government regulations will force automakers to produce a lightweight, fuel-efficient city car. It won't be an electric.

### Hybrid vehicle

"I predict that the power plant of the city car will be a small, air-cooled reciprocating engine—an aluminum motorcycle engine, for example," he says. The car would carry a driver and one passenger, weigh 1,000 to 1,200 pounds, and get 50 to 60 per miles per gallon.

Mr. Bordinat also sees a "practical, multipassenger, front-wheel-drive vehicle that can be readily converted into a high-volume cargo carrier, a cross between a station wagon and a van, but smaller.

"As we downsize luxury cars," he says, "we will replace pure size through the magic of electronics and new creature-comfort features—at no sacrifice to interior passenger space."

Another sort of vision came from postwar futurists who thought that by 1980 Americans would have a helicopter in every garage. Today, many Americans don't even have a garage.

The day is going to come, says Morris Belzberg, president and chief executive officer of Budget Rent-a-Car Corp., when private cars will be banned from center cities. In their place, along with mass transit, will be fleets of two-seater cars parked in strategic locations and available to anyone.

Activated by special electronics or magnetic credit cards, the autos could be driven to other sites and dropped off. A computer would keep track of how many miles a person had driven, and he would be sent a monthly bill. "Naturally," says Mr. Belzberg, "we'd like to be a part of that system."

### Own small, rent big

Meanwhile, Budget pushes the rental of big or special cars. "People can rent a big station wagon for the once-a-year vacation," says Mr. Belzberg, "and own a small commuter car. That's much more intelligent and prudent."

He flatly disagrees with predictions of an increase in multiple-car families and two-car families going to three cars as vehicles become more specialized. "It simply costs too much for insurance, maintenance, depreciation, and taxes," he says.

Air travel will grow from 148 billion passenger miles, or 11.4 percent of the total, to 472 billion passenger-miles, or

PHOTO: TED STRESHINSKY—THE IMAGE BANK



This maze of Oakland, Calif., freeways and a station for the Bay Area Rapid Transit system illustrate the complexities and consequent high cost of urban transportation. Both systems have a common problem—traffic congestion.

...ready under way and the savings of automation are hitting hard

"We've boosted our estimate of capital needs through 1990 by 50 percent, from \$60 billion to \$90 billion," says George W. James, senior vice president for economics and finance at the Air Transport Association.

The commission report says "it is widely agreed that few new large airports will be built by 2000," but existing airports will be expanded. In addition, not all air travel will go to the trunk carriers. As deregulation allows the major airlines to withdraw from marginal operations, regional and commuter airlines will take over.

**Every penny counts**

"There's a trend toward more fuel-efficient planes," says Dr. James. "including the Boeing 767, 757, and 727/200, the Airbus A300, and the stretch DC-9s. Carriers are looking to a 30 to 40 percent increase in fuel efficiency."

And well they might. In the first half of 1979, jet fuel prices rose 17 cents to 58 cents a gallon. "Each penny increase costs us \$115 million a year," says Dr. James. "That 17 cents translates into nearly \$2 billion a year for the same amount of fuel."

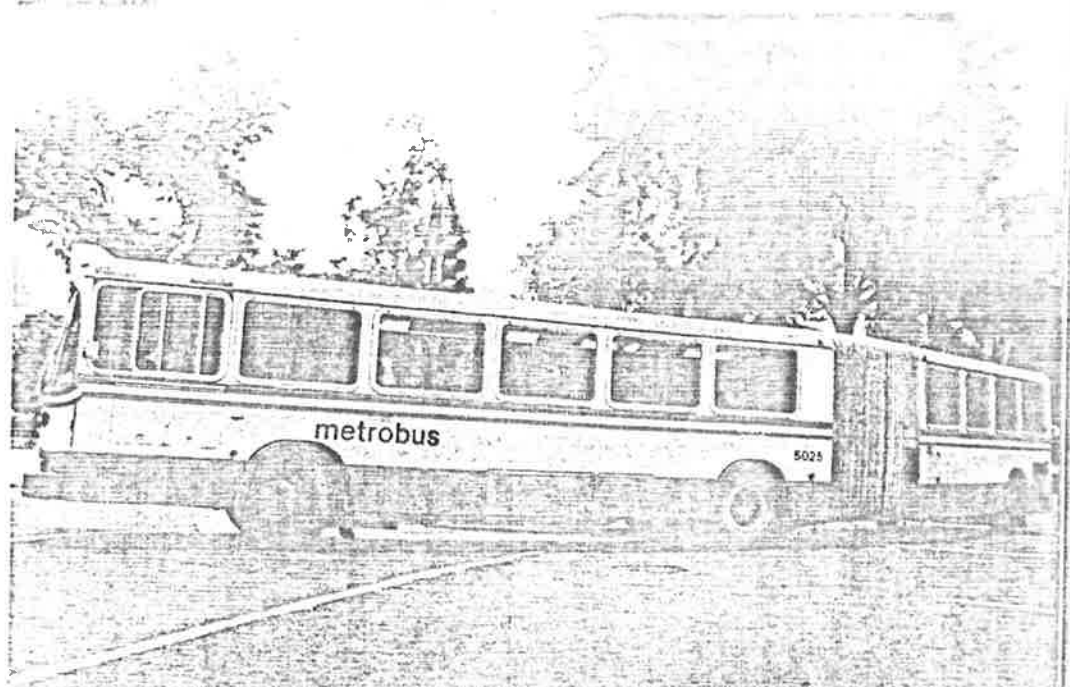
Intercity buses are expected to increase their passenger-miles from 25 billion in 1975 to 31 billion in 2000, but this will be a reduction in the bus industry's percentage of the total from 1.9 to 1.3 percent.

Says the commission: "Prospects are not particularly promising for the intercity bus industry, unless fuel availability problems induce shifts from the automobile." It adds that bus industry productivity is limited by the 55 mph speed limit, seating capacity of buses, and a lack of technical improvement in bus equipment.

**First class bus service**

The intercity bus industry is more optimistic. "I foresee a proliferation of bus service of all kinds," says Arthur D. Lewis, president of the American Bus Association. "I think we can expect a substantial increase not only in regular route operations, but also in charter and tour services. Likely innovations will include first class and perhaps even higher classes of service. Already the industry is experimenting with executive coach service seating 15 to 25 passengers in much greater comfort."

Mr. Lewis also sees more terminals



Urban bus systems are highly labor intensive, and efforts to increase passenger capacity are frustrated by narrow city streets. This Washington, D. C., transit bus is one solution—add a trailer so the unit can navigate around corners.

in suburbs. Lee Whitehead, director of public relations for Greyhound Lines, Inc., agrees. "That's where the people are," he says.

Greyhound, which accounts for 60 percent of the intercity bus service, is pushing for total deregulation of the industry. "Let economics, not government whim, be the deciding factor," says Mr. Whitehead. He thinks Washington is coming around to that view.

If buses are deregulated, the discount fares used by airlines when they were deregulated will not be much use in attracting more bus riders. "Our prices are not that flexible," he says.

**Own right of way**

Railroads accounted for five billion passenger-miles in 1975 and are expected to grow to six billion in 2000, which is a drop in market share from 0.4 to 0.3 percent. Quasi-public, government-sponsored Amtrak operates passenger railroads over private, freight-hauling tracks—except in the Northeast Corridor where it has its own right of way and 60 percent of its ridership. Congress has allocated \$1.75 billion to upgrade the Northeast Corridor for high-speed train service.

While rail is weak in intercity passenger movement, it is and will remain the dominant freight mode in terms of ton-miles. The key to rail's strong position is coal, which the commission predicts will rise from 10.8 percent of total rail traffic in 1975 to between 14 and 20 percent by 2000. Railroads hauled

673 billion ton-miles of all freight for a 28.7 percent share of the market. By 2000, they should carry 1,983 billion ton-miles, up to 31.9 percent of the total, which is projected at 6.3 trillion ton-miles, or 2.6 times the 1975 load.

**Crude oil**

Water is the only mode other than rail to show a steady increase in share of ton-miles over time, says the commission. As with rail, one commodity is critical—crude oil from Alaska. Because of Alaskan oil, water is expected to succeed pipelines in terms of ton-miles as the primary mover of crude oil by 2000. But this does not mean that oil tonnage will shift from pipelines to ships; the oil ships have long trips to make, which raises the ton-mile figure. Water transport will grow from 428 billion ton-miles in 1975 (18.3 percent of market) to 1,433 billion ton-miles (23.1 percent).

Coal accounts for 22 percent of barge traffic, a figure that will grow as more western coal is mined and transported. Federal Barge Lines, for example, is building a 15-million-ton facility to transfer coal from railcars to barges at Cora, Mo., 80 miles south of St. Louis on the Mississippi River.

John A. Creedy, president of the Water Transport Association, says that with one major exception—Lock and Dam 26 at Alton, Ill., on the Mississippi River—river system capacities far exceed today's traffic. "Of great importance," he says, "is increased coordina-



# The Ways of Getting There

Transportation in America is a jigsaw puzzle with a million pieces—and a billion-dollar price tag.

Last year, the transportation system made up about 20 percent of the gross national product, or more than \$415 billion, and involved about 20 percent of the labor force, or about 20.5 million workers.

Today, the parts of the system look like this:

## Highways and motor vehicles.

There are 3.87 million miles of roads, 81 percent of which are paved. Of the total, which has increased only 20 percent in nearly 60 years, nearly 3.2 million miles are in rural areas and 683,000 are in urban.

The Interstate Highway System, a projected 42,500 miles, is 93 percent completed. However, the system was begun in 1956, and now more than half of what has been built needs to be upgraded.

The total road system includes more than 563,000 bridges, with most travel over the 248,000 bridges on the major federal-aid system roads. More than 105,000 bridges, including nearly 40,000 major system bridges, are structurally deficient or functionally obsolete. About 72 percent of all the bridges were built before 1935.

Vehicles traveling on these roads and bridges include more than 117 million automobiles, 31 million trucks, five million motorcycles, and 500,000 buses. By 1980, says the National Transportation Policy Study Commission, 90 percent of the eligible population could be registered to drive.

**Air.** There are 11 domestic trunk air carriers and eight local service airlines. There are about 2,200 commercial aircraft, down in number from 1970 but significantly faster and bigger. There are also 199,000 private aircraft. In 1978, 280 million airline passengers traveled to 620 commercial points of service. Of the 14,574 airports in the nation, 428 have Federal Aviation Administration air traffic control towers. Domestic air freight serves 9,000 U. S. communities.

**Pipelines.** There are 440,000 miles of oil pipelines, 255,000 miles of gas pipelines, and 400 miles of coal slurry pipeline.

**Water.** Waterborne commerce travels in three basic types of vessels: Inland vessels, mainly tugs and barges drawing nine feet or less; Great Lakes ships with a maximum draft of 25½ feet; and oceangoing ships, which generally have a draft of 35 feet or more.

There are 25,543 miles of inland waterways, including 170 dams and 255 locks, carrying 4,400 towboats and tugs and 28,700 barges. The Great Lakes fleet numbers 150 bulk carriers and nine tankers. There are about 575 oceangoing ships including 214 flag vessels in the U. S. domestic ocean fleet; their average age is 21 years, double the age of the average international trade vessel.

The United States has 2,401 marine terminals, although only 170 are considered major commercial ports, and 50 get 87 percent of all commerce.

**Rail.** Amtrak passenger service carries 20 million passengers a year over 24,000 miles of track to 532 locations, using 350 locomotives and 2,000 railcars. Freight, 673 billion ton-miles in 1975, was hauled over 205,000 miles of track, using 27,700 locomotives—200 electrics, 11 steam, the rest diesel—and 1.7 million railcars, including 354,000 for coal.

**Urban transit.** The industry, which has declined significantly since just after World War II, now carries more than six billion passengers a year in 52,000 buses, 11,300 railcars, and 4,340 commuter railcars.

tion between rail and water modes, a continuation of the trend that has been going on quietly for years." Mr. Creedy suggests that railroads, many of which run east-west, can increase profits by greater coordination with barge lines on the Mississippi.

Urban freight movement, the commission notes, is an area in which "little success has been achieved in collecting data." Nevertheless, the trend is toward more frequent deliveries of smaller shipments. The number of truck-miles will increase faster than the number of trucks, reflecting a change in distribution patterns as more truck terminals move out of the central business districts into the suburbs with good access to freeway interchanges. One problem: More delivery trucks on the urban streets will cause more congestion and air pollution.

While both common carrier and private trucking will grow, its share of the market will remain about the same. Again, this is predicated on rail

and water carrying the commodities with the highest growth. Intercity trucks accounted for 488 billion ton-miles in 1975 for a 20.8 percent share of the market. By 2000, they will be up to 1,366 billion ton-miles for a 22 percent share.

## Pipelines lose share

Pipelines, both oil and gas, are expected to lose market share by the end of the century. Oil pipelines will grow in absolute terms from 437 billion ton-miles, to 1,062 billion ton-miles, but market share will drop from 18.6 to 17.1 percent. Gas pipelines will grow from 312 billion ton-miles to 356 billion ton-miles, with market share dropping from 13.3 to 5.7 percent.

Air freight's share of the market remains constant at 0.2 percent. In absolute terms air freight will grow from four billion to ten billion ton-miles.

Looking at the commission's overall forecasts, Sen. Russell B. Long (D-La.), a commission member, says: "Two

overriding themes emerge. First, our transportation system structure must be upgraded and maintained to enable it to move the domestic energy required to meet our future needs. This will require substantial funding.

"Second, we must strongly develop domestic fuels for transportation, which are vital for economic survival. This means increased domestic production of crude oil and rigorous development of alternative petroleum-based sources such as coal and shale oil and renewable liquid fuels such as alcohols from biomass, solid waste, and coal."

Looking at the challenges over the next 20 years, Mr. Belzberg of Budget Rent-a-Car says the nation cannot wait that long. He calls for a major project like the one that produced the atom bomb to upgrade and expand the nation's transportation system and develop energy self-sufficiency.

"If we have to wait 20 years," he says, "this country will be owned by the Arabs." □