

# NEW YORK STATE'S HIGH SPEED EMPIRE CORRIDOR

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The Amtrak TurboTrain running through the Empire Corridor

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## LOCATION

The 462 mile NEW YORK City to NIAGARA Falls "Empire Corridor" became known as the "water level route" because it follows the East shore of the HUDSON River North from NEW YORK City to ALBANY, the North shore of the MOHAWK River and the Lake ONTARIO coastal flatlands West to BUFFALO, and the East shore of the NIAGARA River North to NIAGARA Falls (fig. 1). Its Western extension from BUFFALO to CHICAGO via CLEVELAND maintains a similar profile as it continues along the shores of Lake ERIE and Lake MICHIGAN.

## HERITAGE

Tracing its roots to NEW YORK State's first railroad (the MOHAWK and HUDSON Railroad of 1831), the "Empire Corridor" has historically combined the ultimate technology of the period with a well maintained track structure to provide rail passenger service unsurpassed. The "Empire Corridor" was the site of a 70 mph test run in 1834. It was the route of the "Empire State Express" of 1893 (the world's first 100 mph train), and the route of the post World War 1 "Great Steel Fleet". In 1938, its most famous train, the "Twentieth Century Limited", was modernized using aerodynamically streamlined equipment which proved so appealing to the travelling public, that the "Empire State Express" was similarly modernized soon thereafter. The passenger equipment introduced at that time became the standard equipment worldwide for the three decades to follow, and enabled the "Empire Corridor" to maintain its excellence throughout the first half of this century.

## DETERIORATION

A decline in both service and track structure on the "Empire Corridor" occurred over a 20-year period (1954-1974), and was caused by several factors. Track maintenance was reduced. The NEW YORK State Thruway (1) was completed the full distance between NEW YORK City and BUFFALO in 1956. Intercity automobile travel became much more convenient in NEW YORK State. As a result, rail patronage (and revenue) declined. Equipment was in need of replacement by the 1960's. There were insufficient funds for either the purchase of new equipment or a major rebuilding of existing equipment.

1. NYS Thruway is a limited access superhighway which parallels the "Empire Corridor" for the full length of NEW YORK State

#### A POSITIVE NOTE

During the 20-year period of decline described above, one event can be construed as a positive note. In December 1967, the NEW YORK Central completely reorganized its passenger train operations. Discarded was the time-worn, long distance passenger train. Instead of a dozen overnight trains from NEW YORK City to various destinations in the Midwest, a lone, NEW YORK-CHICAGO train was instituted. Featured instead, in the NEW YORK City - ALBANY portion of the "Empire Corridor", were several all-coach trains. These two-to-four car trains provided shorter running times between NEW YORK - ALBANY (142 miles), and actually resulted in a temporary increase in ridership. Known as "Empire Service", the new concept served to indicate that certain passenger service still had potential if tailored to the needs of the travelling public. This was one of the few initiatives taken by privately owned railroads on behalf of passenger service during the two decades immediately prior to the formation of AMTRAK. New Yorkers have benefited from this venture as it established an operational configuration which has been the basic pattern of service on the "Empire Corridor" ever since.

#### AMTRAK

On May 1, 1971, the newly formed National Railroad Passenger Corporation (AMTRAK) assumed responsibility for the operation of all "Empire Corridor" passenger trains. Service was immediately curtailed to within the borders of NEW YORK State. Gone were the runs to BOSTON, CHICAGO, and MONTREAL. Scheduled running times were increased, yet the basic philosophy of short distance, rapid train service instituted by the NEW YORK Central was retained.

#### ENERGY CRISIS

The energy crisis of 1973 provided an incentive for motorists to leave their automobiles at home and utilize available public transportation. "Empire Corridor" trains became patronized in excess of their capacity, particularly in early 1974. The dissatisfied travelling public demanded improvements to NEW YORK State's deteriorated rail system and called for new/additional equipment.

#### NEW YORK STATE RESPONDS

In a pioneer venture for state government, NEW YORK State responded to the public demand by instituting its landmark HIGH SPEED RAIL PASSENGER PROGRAM. Included was the rebuilding of certain portions of the "Empire Corridor" from the ground up. NEW YORK State voters endorsed the venture by overwhelmingly approving the 1974 RAIL PRESERVATION BOND ACT which provided for the funding of the program by the issuance of NEW YORK State government bonds on the open market. Such an issuance of bonds requires the approval of the statewide electorate in a general referendum (2). This contrasts which the funding of the French TGV program where the railway (rather than the government) issued the funding bonds directly to private investors. It is interesting to note that voters will vote for rail capital investments.

### THE TASK

Rebuilding a railroad from the ground up is a vast undertaking. When accomplished while the railroad remains in service, it becomes monumental. This was the task confronting NEW YORK State in 1975.

In addition to the rebuilding of active trackage, two stretches of track had to be restored if the "Empire Corridor" was to become a high speed rail line serving the needs of additional communities.

1. The 16 miles of trackage immediately South of ALBANY-RENSSELAER had been reduced from double track to single track by Penn Central in 1969 in an economy move. Restoration to double track was a must.

2. The 13 miles of single track from the East side of SCHENECTADY to a rail junction called HOFFMANS (10 miles West of SCHENECTADY) had been closed to service by Penn Central in 1973 and passenger trains rerouted over circuitous 50 mph freight trackage. The more direct route was preferable for high speed operation (up to 110 mph) in addition to providing access to a new station in downtown SCHENECTADY.

### RECONSTRUCTION

The first segment designated for rebuilding was the 94 miles of trackage between POUGHKEEPSIE and HOFFMANS which included the two missing stretches of track described above. The work schedule called for new subgrade, ballast and crossties, for continuous welded rail throughout, and a modern cab signal system. Track work began in late 1975 and was completed in late 1978. The cab signal system began operation in 1979 allowing 110 mph running for the first time.

2. Funds for rail purposes have been on the statewide ballot three times :

- 1974 Rail Preservation Bond Act
- 1979 Energy Conservation Through Improved Transportation Bond Act
- 1980 Transportation Infrastructure Renewal Bond Act

The second segment designated for rebuilding was the 48 miles of trackage between OROTON-HARMON and POUGHKEEPSIE. The scope of work was essentially the same as specified for the POUGHKEEPSIE to HOFFMANS section. Direct State appropriations in the 1979-80 budget of \$ 14.0M coupled with \$ 16.0M from other sources, funded this program. Work began in 1979. By late 1982, reconstruction had been completed and the cab signal system was fully operational.

### STATION IMPROVEMENTS

As the "Empire Corridor" trackage was being rebuilt, passenger stations, including parking areas, were being improved throughout the corridor. Brand new or extensively renovated stations would soon greet passengers boarding "Empire Corridor" trains.

### EQUIPMENT

Attractive, efficient high speed passenger equipment was a necessity if NEW YORK State's investment was to be fully realized. The fastest non-electric powered trains in the world in 1976 were the French RTG Turbo Trains. That same year, ROHR INDUSTRIES of CALIFORNIA modified the French design and produced a North American version known as the Turboliner (RTL). The new train sets were higher, wider, and heavier than their European counterparts, and had a speed capability of 125 mph. AMTRAK assigned the Turboliners to the "Empire Corridor" where they became the visible centerpiece of the high speed service.

### RIDERSHIP

NEW YORK State's HIGH SPEED RAIL PASSENGER PROGRAM has produced a statewide ridership growth since 1974 that is twice the AMTRAK national average (fig 2).

#### RIDERSHIP ON NEW YORK STATE ROUTES

| <u>1974</u> | <u>1983</u> | <u>% Increase</u> |
|-------------|-------------|-------------------|
| 713,576     | 1,250,068   | 75.2              |

The fastest running time between ALBANY and NEW YORK City has been reduced to an all-time low of 2 hours and 11 minutes. Since 1977, when the running time between the same two cities was 3 hours, ridership has increased 53.7 %.

#### RIDERSHIP ON NEW YORK CITY - ALBANY ROUTE

| <u>1977</u> | <u>1983</u> | <u>% Increase</u> |
|-------------|-------------|-------------------|
| 208,797     | 321,005     | 53.7              |

A simple mathematic model of the relationship between train ridership growth and travel time improvements for travel in the HUDSON Valley indicates the following :

$$\text{ridership growth factor} = \frac{1.44 \text{ (old travel time)}}{\text{(new travel time)}}$$

where travel time is expressed as station to station scheduled running time and expressed in minutes.

Applied to the 1977-1983 experience in the NYC-ALBANY ridership, the model would have predicted a 58 % growth based upon travel time improvement from 180 to 131 minutes. The actual ridership result noted above was 53.7 %.

The HIGH SPEED LINE ridership chart (fig. 3) focuses on the ridership gains realized on the NEW YORK City to ALBANY - RENSSELAER segment of the "Empire Corridor" since High Speed service became a reality. The chart clearly indicates that each reduction in running time reinforces the upward trend in ridership.

### NATIONAL COMPARISON

AMTRAK has experienced steady growth in its national ridership in recent years as the nation's rail service has been greatly improved, particularly on the BOSTON - NEW YORK City - WASHINGTON "Northeast Corridor". Until the beginning of High Speed service, the "Empire Corridor" routinely claimed five percent of the national ridership. In the first three years of High Speed service, the "Empire Corridor's" share of the nation's total has increased to well over six percent and is continuing to climb.

National comparison of station patronage further illustrates the success of the HIGH SPEED RAIL PASSENGER PROGRAM. During the first three years of high speed service, the patronage at ALBANY - RENSSELAER increased 21 %. ALBANY-RENSSELAER's patronage ranking rose from 18th to 13th nationally. Over the same period, SCHENECTADY's patronage climbed 52 % resulting in an improvement in ranking of from 90th to 47th among AMTRAK stations nationwide.

### THE FUTURE

Additional track and signal improvements are immediately scheduled for the "Empire Corridor" in the NEW YORK City metropolitan area. This will further reduce NEW YORK City - ALBANY running time to less than two hours. Plans also call for a new connection linking the "Empire Corridor" with AMTRAK's "Northeast Corridor" at Penn Station in NEW YORK City. Through passenger train runs from usstate NEW YORK to Long Island communities will also be possible for the first time as a result of the new Penn Station Connector.

Eventually the "Empire Corridor" high speed trackage will be extended West to BUFFALO and NIAGARA Falls. This will drastically reduce running time and continue to increase statewide ridership to record levels.

Pre-feasibility studies are currently under way regarding the proposed construction of a Very High Speed Rail system linking NEW YORK City with MONTREAL. Initial plans call for the use of existing "Empire Corridor" trackage as far North as ALBANY - RENSSELAER and construction of a French TGV style dedicated line beyond.

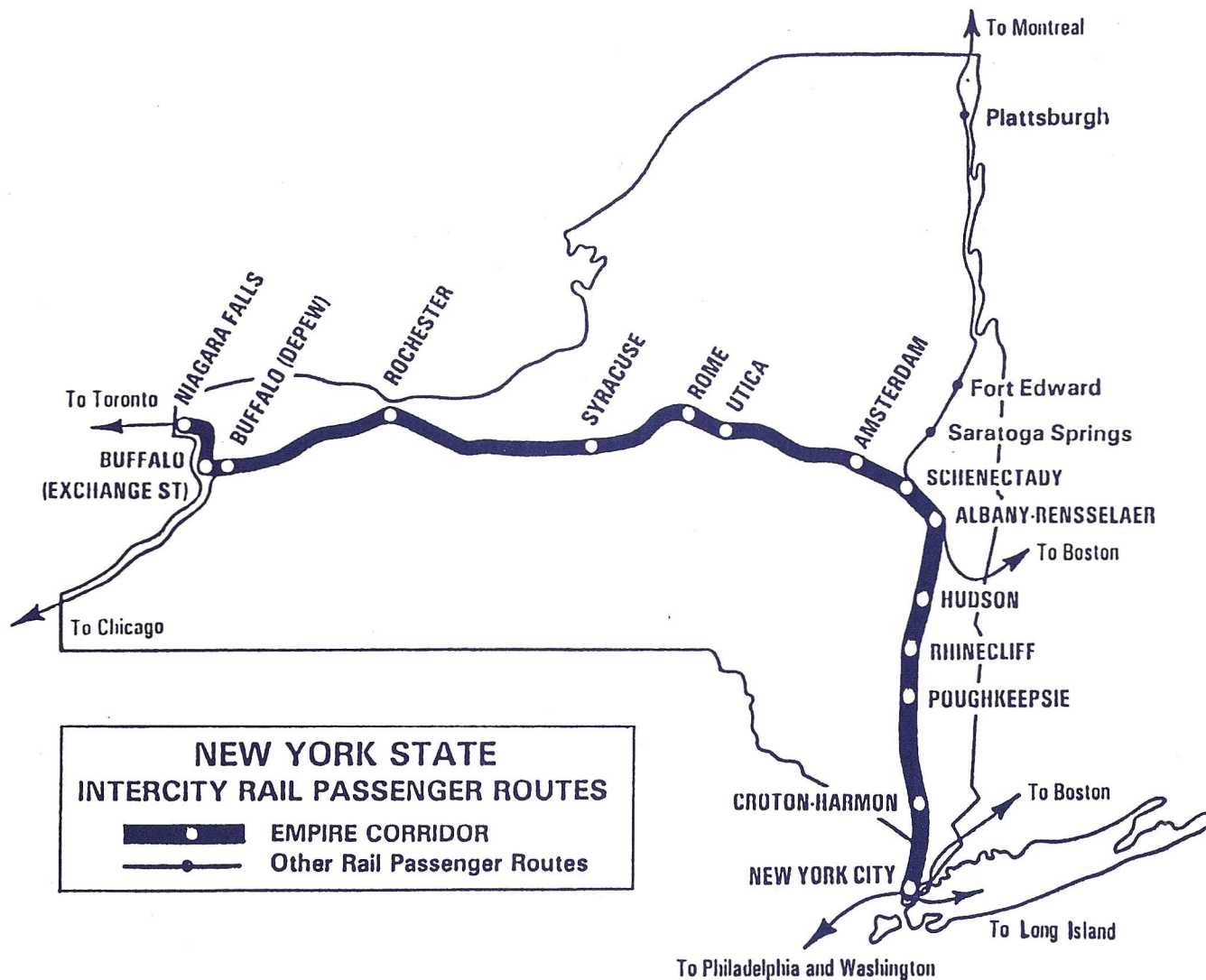


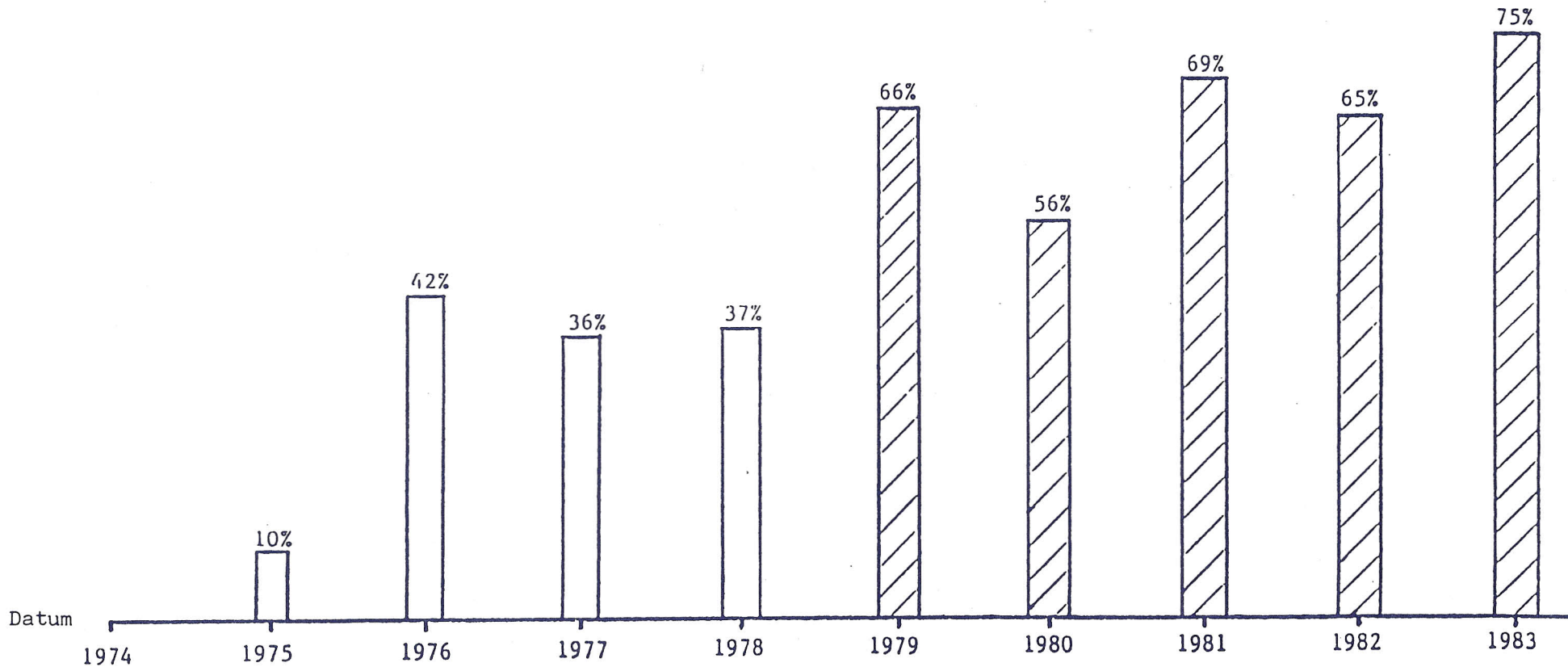
Fig. 1

NEW YORK STATE'S

HIGH SPEED RAIL PASSENGER PROGRAM

Amtrak Ridership on New York State Routes

Increase since 1974



Service Improvements: 1976 - First full year of service - "Lake Shore Limited"  
1976 - Rohr Turboliners enter service  
1979 - Begin "High Speed" service - Poughkeepsie to Hoffmans  
1983 - Additional "High Speed" service - Croton-Harmon to Poughkeepsie



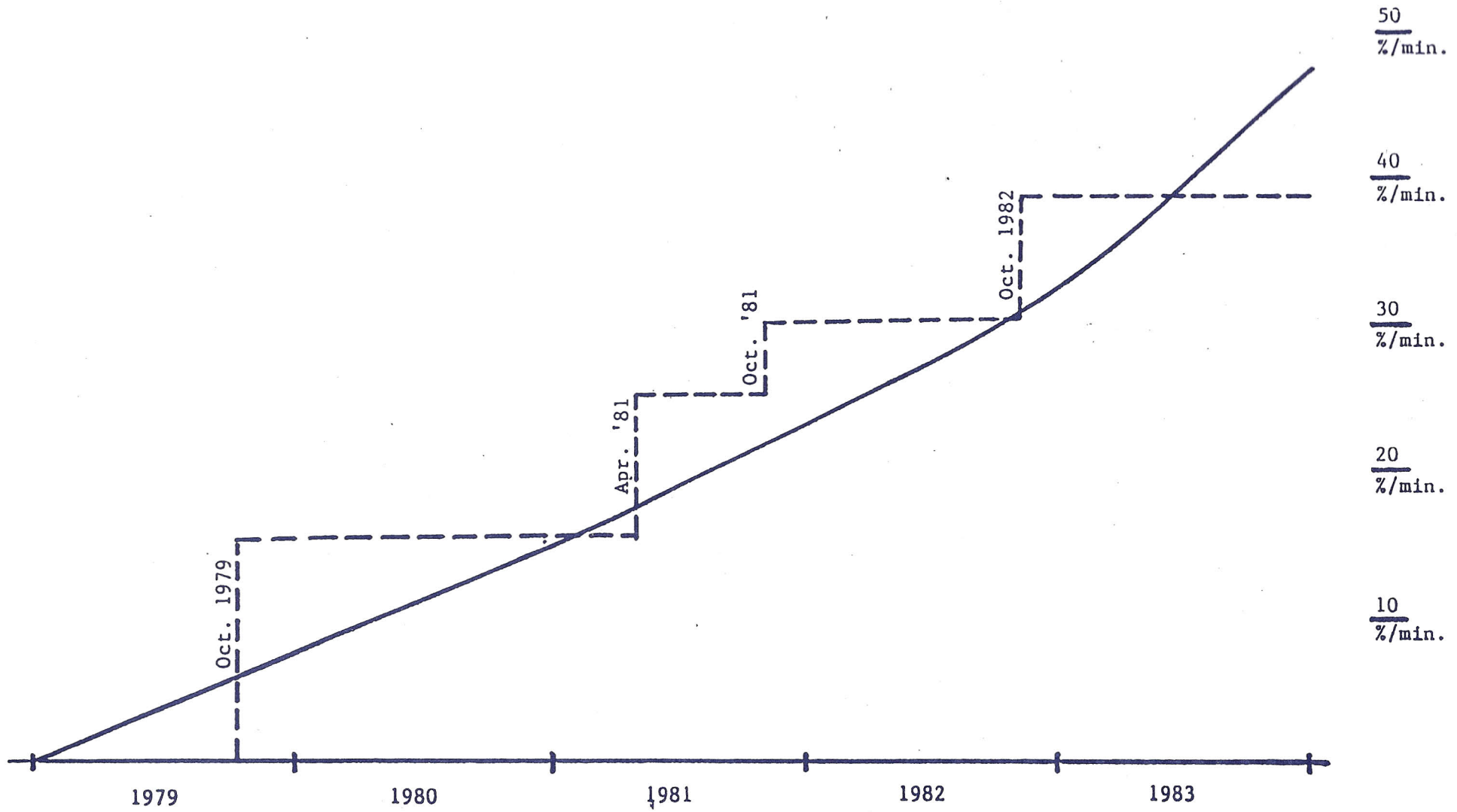
Year during which High Speed service was available

Fig. 2



New York City to Albany - Rensselaer

Reduction in Running Time vs. Ridership Increase



----- Minutes reduced since January 1979 (NYC-ALB)  
 \_\_\_\_\_ % Ridership increase since January 1979 (NYC-ALB)

Fig. 3