

Chapter 12

When the Rubber Hits the Road

The motor bus is the historic successor to all previous forms of surface public transportation systems. It proceeds from the horse-drawn omnibus and horse-streetscar technologies, and trolleys.

The bus provides public transportation service over public streets and highways, although separated rights-of-way (busways) are provided in some cases for faster service. While the capacity of a single bus varies widely depending upon its specific design, bus services can accommodate as few as 50 passengers an hour to as much as 7000 to 8000 passengers per hour. Because they use local streets, buses can pick-up and drop-off passengers closer to their desired origins and destinations than rapid transit. For many parts of the country, buses are the only, or primary, form of public transportation.

New York City has, and has had, one of the largest bus systems in the world, despite the fact that it operates in a region dominated by one of the largest rapid transit systems in the world. On a typical weekday, more than 2.4 million passengers ride the buses of New York City.

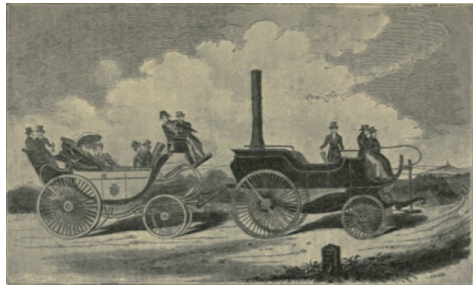
12.1 The First Motor Bus

One of the first inventors to develop a motor bus was Sir Goldsworthy Gurney of Great Britain. A professional surgeon and inventor, he is best known for the invention of the “gurney” used throughout the world’s hospitals and clinics. Between 1825 and 1829, Gurney developed plans for a large stagecoach/wagon powered by a steam engine. In July of 1829, a prototype was driven from London to Bath without incident, except for an unruly crowd in Bath that tried to demolish the vehicle. A regular service between Cheltenham and Gloucester was operated by Sir Charles Dance using three Gurney vehicles. Because the new service was viewed as a threat to competing omnibus services, a series of taxes and fees on steam-carriages, known as the Turnpike Acts, were passed effectively putting an end to the service.

One of the difficulties faced by these early steam-carriages was the real and perceived instability of steam engines. Many people feared riding in a vehicle on top of a steam engine that might explode. In an attempt to combat this, Gurney actually produced two steam-carriages with the steam engine on a separate articulated cart that “pulled” the carriage along. Neither of these was ever used in service. Unfortunately, during a test-charging of one such engine, it exploded, seriously injuring two people.



(a) Gurney's steam-carriage in 1827



(b) Gurney's steam-drag vehicle, circa 1830

Fig. 12.1 Gurney's early attempts at a steam-powered carriage

Gurney was not the first to develop a steam-powered road vehicle. Richard Trevithick had built a steam-carriage as early as 1805, but it was not a commercial success. Others, both before and during the time of Gurney, developed parallel designs. Unlike the others, however, Gurney is the only one to have accomplished the implementation of a regular omnibus operation using the vehicle.

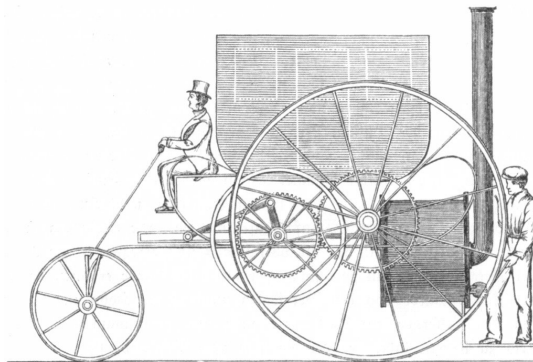


Fig. 12.2 Trevithick's Steam Carriage, circa 1805

12.2 Buses Come to Fifth Avenue

New York was the first city to make extensive use of motor buses, and it was indeed the test bed for a wide variety of vehicles throughout the early years of the 20th century.

The first "bus" was placed in operation along Manhattan's Fifth Avenue. Fifth Avenue never had either horse-railways or trolleys. Residents and business owners located along this elite thoroughfare had long opposed the laying of rails. Because of this, the horse-drawn omnibus was the only form of public transit on Fifth Avenue until the introduction of buses.

The first “bus” was placed in service in 1902. It was a battery-powered vehicle, and did not prove very reliable. In 1905, the Fifth Avenue Coach Company purchased a fleet of 15 French DeDion Bouton double-deck buses and put them in service on Fifth Avenue. The buses were a huge success, and within a few years, a fleet of 132 DeDion buses replaced all horse-drawn omnibuses. Similar buses were purchased from Daimler (English) to complete the fleet.

The first buses were quite interesting. They were not truly “motor buses,” but were hybrids. A small gasoline engine turned an electric generator that supplied power to the axles. The second deck was open, and the wheels were solid rubber, making for a somewhat bumpy ride, but smoother than that of the omnibuses, which used wooden wagon-wheels.



Fig. 12.3 DeDion Bus on Fifth Avenue



Fig. 12.4 Early Daimler Buses in operation along Fifth Avenue

The early success of the Fifth Avenue operation was the spark that ignited a nationwide movement to replace horse-drawn vehicles with motor buses. The movement led to the development of several significant U.S. manufacturers of motor buses, and to a great deal of technical innovation. In New York, virtually all surface transit operations, including trolleys, would be replaced by buses by 1940, with the exception of a few trolley services in the outer boroughs.

In Manhattan, Mayor Fiorello LaGuardia hastened the conversion of trolley lines to buses. In the early 1930s, he established a policy to remove elevateds and trolleys from Manhattan. LaGuardia, along with Robert Moses, whom he appointed to a number of positions of power and influence, believed that the future of the city was more tied to growth in automobile use. The construction of the 8th and 6th Avenue subways led to the elimination of the 6th and 9th Avenue Els. The 2nd and 3rd Avenue Els were eliminated without having replacement subways. The same zeal was applied to eliminating trolleys and replacing them with motor buses.

12.3 Building a Better Bus

The first bus operations in the U.S. used foreign manufactured vehicles. At the turn of the century, there were no manufacturers of motor buses in the U.S. that could produce transit vehicles in any quantity. That would change in the early 1920s, as a number significant companies began to focus on the development and manufacture of buses.

12.3.1 Fageol Motors, Fageol Truck & Coach, and Twin Coach Companies

The first motor vehicles specifically designed and manufactured for intercity or urban transit use were designed and manufactured by the Fageol brothers. Originally formed to make luxury cars and trucks, their company found its greatest success in the motor bus business. Earlier bus models were basically a passenger body placed on a light truck or touring car chassis. Neither of these produced very comfortable or efficient vehicles.

The first vehicle designed for passenger transit was the Fageol Safety Coach, which was first manufactured in 1920. It featured a wider track and lower body, (only two feet above the street) than previous models, and could accommodate 22 passengers. It was powered by a four-cylinder gasoline engine. Shortly after its introduction, a six-cylinder model accommodating 29 passengers was introduced. In 1922, Fageol introduced air-brakes in yet another technological improvement. The Fageol Safety Coach was immediately successful. While most of these vehicles were used in intercity bus service, many of them were used in urban transit service.

In 1925, the American Car and Foundry Company (ACF) purchased both the J.G. Brill Co. and the Fageol manufacturing facilities. The Fageol brothers became vice-presidents of ACF. Both left in 1927 when it became clear that ACF was not interested in some of the innovations the Fageols were proposing. In 1926, the brothers formed the Twin Coach Company.



Fig. 12.5 A Fageol Safety Coach operated by Public Service of New Jersey in 1923

The first Twin Coach was the Model 40, which became one of the most successful bus designs in history. It was widely used throughout the U.S. The Model 40, so called because it had a capacity of 40 passengers, introduced a number of novel features:

- The bus was powered by two gasoline engines mounted on each side of the bus, each with its own driveline and differential.
- The entrance doors and driver's position were moved ahead of the front wheels.
- Because of the change in engine location, passengers could be seated throughout the bus, including over the engine compartments.

With the Twin Coach Model 40, the Fageols had created a template for future bus designs over the next fifty years. The Twin Coach proved to be a very reliable vehicle, with many remaining in service for 20 years or more.

The Fageol brothers had originally formed the Fageol Motors Company in 1916. In 1932, after a bankruptcy, they formed the Fageol Truck and Coach Company. Even after merging with ACF in 1925, the Fageols kept one manufacturing site in Oakland independent. The Twin Coach Company continued through the mid-1950s, after which it was sold to Flxible. Their truck business was sold to T.A. Peterman in 1939. The truck company was renamed "Peterbuilt" at that time.

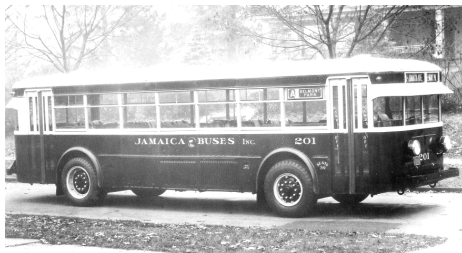


Fig. 12.6 Two examples of the Twin Coach Model 40, one operated by the Brooklyn Bus Corporation in 1930, the other by Jamaica Buses Inc. in 1933

12.3.2 *Yellow Coach Manufacturing Company*

Yellow Coach was also an important innovator in the design and manufacture of early motor buses. The company had its roots in the Yellow Cab Company of Chicago, formed by John D. Hertz (of car rental fame) and an associate in 1915. In 1920, Hertz formed the Yellow Cab Manufacturing Company to build vehicles for the rapidly-growing taxi industry in U.S. and abroad. In 1922, Hertz and his associates acquired several smaller companies involved in bus building in Chicago. In 1923, the bus-building operation was established as the Yellow Coach Manufacturing Company.

Shortly after its formation, Yellow Coach became quite successful in selling its buses. A large order from Philadelphia attracted the attention of Alfred Sloan, the President of General Motors. In 1925, Sloan proposed a merger with Yellow Coach, establishing the Yellow Truck and Coach Manufacturing Company, with GM Truck Company as a subsidiary. The company continued through 1943, when a controlling interest was acquired by General Motors. The company continued under the name of General Motors Truck and Coach Division.

The first Yellow Coaches were built and operated in Chicago. The first buses were gasoline-electric hybrids, and were similar to the early Fageol models. The first buses to appear in New York were a fleet of double-decker buses for the Fifth Avenue Coach Company. The double-deckers seated 62 passengers, and the second level was fully enclosed for comfort. While Yellow Coach provided the chassis, the body was manufactured by Fifth Avenue in its own body-building facility.



Fig. 12.7 Yellow Coach Double-Decker, Fifth Avenue Coach, 1932

Yellow Coach was responsible for many significant technological innovations in bus design and manufacturing. In 1932, they were one of the first companies to move the engine to the rear of the bus. The original rear-engine drives were more efficient than the prior front-engine designs, but the engine intruded on the passenger compartment, creating both heat and noise. The engine, which could be removed from the rear, had to be serviced from inside the passenger cabin.



Fig. 12.8 Yellow Coach Company rear-mounted engine, 1933

In 1934, Yellow Coach hired inventor Dwight Austin. He had developed and patented a new rear engine angle drive for use in buses. This invention allowed both the rear engine and transmission to be mounted transversely, with the angle drive connecting the transmission to the drive shaft. In this configuration, the engine and transmission could be isolated from the passenger compartment.

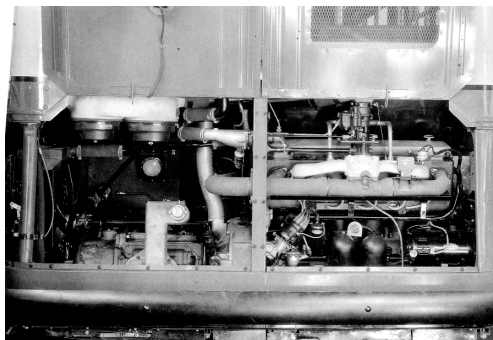


Fig. 12.9 A Yellow Coach with a transverse gasoline engine

Three hundred and sixty-six of the angle-drive buses were ordered for New York City operation. One of the first purchasers was the Madison Avenue Coach Company, which put 76 into service in late 1934. The Madison Avenue Coach Company was a short-lived operation. It operated a single route using the franchise of the former New York and Harlem RR streetcar line, which had been abandoned. It was a subsidiary of the New York Railways Company until 1936, when it was merged into the New York City Omnibus Corporation.



Fig. 12.10 A Yellow Coach with a transverse rear engine, operated by Madison Avenue Coach Inc. in 1934

Yellow Coach was also a leader in the development of bus transmissions. Until 1936, all bus transmissions were manual. The process of manual shifting by the driver often resulted in a “jerky” acceleration motion which was uncomfortable for passengers. In 1936, Yellow Coach introduced a semiautomatic transmission which was not particularly successful. In 1938, however, it began to produce fully automatic hydraulic transmissions, which quickly became a mainstay in transit buses throughout the U.S.

Yellow was also heavily involved in the development of diesel engines for buses. The first Yellow buses produced with diesels were built in 1938, using two-cycle diesel engines made by GM.

All of the early buses were bodies mounted on separate chasses. In 1938, Yellow introduced the “monocoque” design. In this integrated design, the entire body frame supported all bus components. No separate chassis was required.

Yellow Coach was merged into General Motors in 1943, after which all buses were sold under the General Motors brand.



Fig. 12.11 A Yellow Coach with diesel power and monocoque design, operated by Triboro Coach Corporation in 1939

12.3.3 ACF–Brill

The American Car & Foundry Company was a major builder and refurbisher of railcars. It was formed in 1899 through a merger of 13 railroad manufacturing

companies. During the same period, the J. G. Brill Corporation manufactured trolleys and interurban electric railcars, as well as cars for railroads. Through a series of complicated mergers and take-overs, by 1925, ACF had obtained control of Brill, the Hall–Scott Motor Company (an engine manufacturer), and Fageol Motors. The association with the Fageol brothers was a brief one, with the brothers leaving to form Twin Coach in 1927.

ACF was far more successful in building railroad cars than it ever was in building buses. ACF actually built the first all-steel transit cars for the IRT. While it managed a profitable bus business for a number of years, ACF was never considered to be a leader or innovator in the field. It sold many more intercity buses than transit buses. It didn't compare well with the Twin Coach in the early years. Later, it lost significant business to GM when ACF failed to follow the trend and place diesel engines in its transit vehicles. In 1953, ACF abandoned the bus and trolley field.

ACF never sold a significant number of buses to New York operators. In 1935 and 1936, it provided a fleet of 54 twenty-two passenger gasoline-powered buses to the Staten Island Coach Company. Triboro Coach, a private operator in Queens, bought 24 ACF buses during WWII, when overall bus production was hampered by wartime rationing of supplies.



(a) ACF Bus in Staten Island, 1934



(b) ACF–Brill Bus in Queens operation, 1943

Fig. 12.12 Examples of ACT–Brill Buses in NYC use

When ACF left the bus industry, production of ACF–Brill postwar designs continued in Canada under a previous agreement with the company. Buses manufactured in Canada bore the name CCF (Canadian Car Foundry)–Brill, and continued into the 1960s. No CCF–Brill buses were ever used in U.S. transit service.

12.3.4 Mack Buses

Mack is most known as a major producer of trucks, a business in which it still plays a significant role. At various times in its history, however, Mack also manufactured railcars and locomotives, fire engines, and buses.

An early Mack advertisement states that “The first Mack was a bus and the first bus was a Mack.” The second part of this slogan exaggerates, as several foreign

manufacturers produced bus-type vehicles before the turn of the century. The first Mack bus was sold to Isaac Harris for use as a sightseeing vehicle in 1900. After an initial trial period, additional vehicles were sold to Harris.



Fig. 12.13 First advertisement of a Mack Bus, Sightseeing Coach, 1903

Production facilities were originally located in Brooklyn, NY, but moved to Allentown in 1905, where truck and bus production facilities were combined. Bus and truck chassis were the same until the early 1920s.

During WWII, the Navy took over the Allentown bus plant to make torpedo bombers. Bus manufacturing restarted in 1945, and continued until Mack left the bus business in 1960.

Over the years, Mack earned a reputation for durability and reliability, and Mack buses were prominent in New York City through the 1960s. They were used by the Fifth Avenue Coach Company in Manhattan and extensively by the Surface Transit System in the Bronx. Several Queens operators also used Macks.

Mack exited the transit bus business in 1960. It continued to make intercity buses for several years, but eventually abandoned that business as well. In 1985, it attempted to reenter the intercity bus business in cooperation with a French manufacturer, but that experiment was short-lived.



Fig. 12.14 Mack Bus operating in Brooklyn

12.3.5 *Flxible Transit Buses*

Flxible was a very old business, but did not enter the transit bus business until 1951, when the company acquired Twin Coach. The company was formed in 1913 as a manufacturer of motorcycle side-cars. The company name results from dropping the letter “e” from the more common word. Because “flexible” was a word in common usage, the name could not be copyrighted and used as a trademark.

The side-car business dried up after Ford introduced his Model T at a cost of \$360, which was less than the cost of a motorcycle and side-car. Flxible decided to enter the intercity bus market in early 1920s. Unlike most other bus manufacturers, Flxible focused on manufacturing bus bodies. They were mounted on chasses purchased from a variety of vehicle manufacturers, including Studebaker, Buick, and Chevrolet.

After several cooperative ventures with Fageol Twin Coach, Flxible bought the bus-building operation from Twin Coach in 1951, when the Fageols left the bus business to concentrate on trucks and aircraft parts. The Chicago Transit Authority was the first major client for the initial buses, usually referred to as “Flxible Twins,” purchasing over 300 buses. The CTA buses were powered by propane. The Flxible Twin buses did not see extensive use in New York, although the Surface Transportation System acquired a used diesel-powered Flxible Twin in 1956 for use in the Bronx.



Fig. 12.15 Flxible Twin Coach in New York City operation, circa 1956

In 1961, Flxible discontinued production of the Flxible Twin, and introduced its version of the “new look” buses that had been introduced by General Motors. Through the 1960s and 1970s, the “new look” design were the only buses purchased for transit use in New York City. While General Motors snagged the lion’s share of the sales, Flxibles were used by a number of private operators, and by the New York Transit Authority.



Fig. 12.16 Flexible “New Look Buses” operated by Queens Surface Co. and Triboro Coach Corp. circa 1980

In 1969, Flexible was taken over by Rohr Industries. Rohr continued to make “new look” buses until 1978, when Flexible was purchased by Grumman Allied Industries. Grumman discontinued production of “new look” buses and introduced its “advanced design bus” (ADB). The ADB had several innovations. Its driver windshield was angled to be glare-free. There were no external fastening devices, and floor heights were lowered to 30 inches for production models. The bus was also designed to provide easy access to the engine, transmission, and air conditioning equipment. The design made regular replacement of parts much simpler and faster than on previous buses.

In 1980, the New York City Transit Authority ordered over 1000 advanced design buses from Grumman–Flexible. Operation on New York City streets, however, caused a massive number of frame cracks to appear. Eventually, the entire fleet was pulled from service, when a steering shaft collapsed and dropped from the bus. The NYCTA was forced to lease and purchase many used buses from other systems to maintain basic service. After a long legal battle, the city could not prove that the cracks and other defects were the result of either a faulty design or a manufacturing defect. The NYCTA was forced to pay back \$56,000,000 to the federal government (which had provided the money to buy the buses), and sold the buses back to Grumman–Flexible. The buses were refurbished and sold to a number of transit operators across the nation, including New Jersey. The NYCTA did not purchase Flexible buses thereafter, an action which weakened Grumman–Flexible’s financial condition.



Fig. 12.17 Flexible Advanced Design Bus in New York

In 1983, Flxible was sold to General Automotive Corporation, and began manufacturing the Flxible Metro, the successor to the ADBs. It also launched a major program for the rebuilding and refurbishing of both Flxible and GM “New Look” buses. Despite these efforts, Flxible declared bankruptcy in 1995, and its assets were sold. A long-running legal battle over the handling of the bankruptcy and distribution of the assets continued into the early years of the 2000s.

12.3.6 General Motors Buses

General Motors entered the bus manufacturing business through cooperative arrangements with Yellow Coach. When it purchased Yellow Coach outright in 1943, GM became the largest American bus manufacturer for over 45 years.

In its history, GM produced a number of variations on three fundamental designs:

- The GM “old look” bus (1943–1959)
- The GM “new look” bus (1959–1977)
- The GM “advanced design” bus (1977–1986)

The “old look” bus was the continuation of earlier Yellow Coach designs. It was never referred to by the “old look” name until the introduction of the “new look” model in 1959. At that point, all previous designs were tagged as “old look” to differentiate them from newer models. Some of the smaller “old look” models were not actually built until 1969.

The buses were often referred to as “bread loaf” buses because of the general shape of the bus. The buses were built using a monocoque design, rather than the body-on-frame approach of most earlier buses. Virtually all of the “old look” buses were powered using a six-cylinder diesel engine, although some of the shorter versions were gasoline powered. Manual and automatic shift was available, but most buses were manufactured with automatic two-speed transmissions. From 1953 on, an air-ride suspension was standard, and air conditioning was offered as an option beginning in 1958. “Old look” GM buses were used throughout New York by most private and public operators.



Fig. 12.18 “Old look” GM Bus, circa 1956

The “new look” bus was introduced in 1959. It was also referred to as the “fishbowl” because of its six-piece rounded windshield. The “new look” bus used an airplane-like stressed-skin construction. In this design, an aluminum riveted skin supported the weight of the bus. Most of the “new look” buses were powered by two-cycle diesel engines. The entire engine, transmission, and radiator assembly was mounted on a cradle that could be quickly removed and repaired or replaced.

The GM “new look” bus was the single most successful model ever produced. There were over 41,000 “new look” buses in transit service between 1959 and 1977. In 1977, U.S. production of the “new look” bus ceased, and was replaced by the RTS bus. Canadian production, however, continued, as many Canadian transit operators had rejected the RTS design.

The GM “new look” bus was the most popular model in New York, and was extensively used by both private and public operators throughout its production period. The buses were found to be durable and efficient, and many remained in service a decade after the last bus had been manufactured.



Fig. 12.19 “New look” GM Buses, one operated by the NYCTA in Brooklyn, one operated by Queens–Steinway Transit on an express bus route

The Rapid Transit Series (RTS) bus is the last model manufactured by General Motors. The bus resulted from GM’s participation in the USDOT Transbus project, through which subsidies were provided to develop an improved bus for urban transit use. The RTS had a more streamlined look, and featured a curved body side with curved window panels. The RTS bus was used throughout New York through the 1980s and into the 1990s. GM sold the RTS design and patent to the Transportation Manufacturing Corporation (TMC) of Roswell, New Mexico in May of 1987, and left the transit bus manufacturing business. TMS sold the design and patents to NovaBus in 1994. NovaBus left the U.S. market in 2002. Production was briefly revived by Millennium Transit Services, though the company went out of business in 2009.



Fig. 12.20 A new GM-manufactured RTS bus operated by Jamaica Bus Inc., circa 1985

12.4 The Bus Industry – Post-GM

With the departure of General Motors from the bus-building business in 1986, transit operators have become dependent on a number of foreign manufacturers, some of whom have set up small manufacturing facilities in the U.S., with very mixed success.

As early as 1976, MAN Nutzfahrzeuge AG, a major German bus manufacturer, formed a joint venture to manufacture articulated buses in the U.S. A plant was set up in Marshall, Texas, where bodies built in Germany were assembled. Sold under the name “AM General,” ten non-articulated buses were purchased by Steinway Transit in New York. Their performance was deemed poor, and the buses were taken out of service.

Scania, a Swedish company, in conjunction with Saab, began assembling complete buses in Orange, Connecticut in 1984. The Saab–Scania factory closed after four years.

Volvo also set up a short-lived manufacturing facility for buses in Chesapeake, Virginia, producing buses under the name “Nova Bus.” The factory lasted only two years, but continued its operations in Canada. In 2008, Nova Bus announced plans to open a new plant in the U.S.

Neoplan, a German company, established Neoplan USA in 1981, and opened a factory in Lamar, Colorado. Neoplans enjoyed some success in the U.S. transit market for some time, but the company folded in 2006.

New York has purchased buses from a variety of foreign manufacturers. The newest buses have been manufactured in Canada by Daimler Buses North America. Originally established as Orion International by the Government of Ontario in 1975, the company was privatized in 1993 and acquired by Daimler–Chrysler. When Daimler divested itself of Chrysler, the bus operation continued under the Daimler label, although the bus brand name remains Orion. The latest purchases from Orion have been diesel-electric hybrids.

Since 1995, new buses have been purchased from Nova Bus, New Flyer Industries (a Canadian manufacturer), and Daimler/Orion. A variety of equipment is in service, including standard diesel-powered vehicles, diesels using Compressed Natural Gas (CNG), and hybrids. NYCTA also operates a large number of articulated buses. For all of its express bus routes, NYCTA has purchased intercity-type coaches from Motor Coach Industries and Prevost.

The first NYC buses, as noted previously, were gas-electric hybrids. Certainly, the current hybrid technology is greatly advanced from the early days of the 20th century, but the fundamental concept was the same.

At this writing, New York is buying buses with three different technologies:

- *Compressed Natural Gas*: These buses generally provide reliable service and cleaner emissions. It has, however, proved costly to convert maintenance facilities to accommodate them.
- *Diesel-Electric Hybrid*: These vehicles offer advantages of requiring a smaller diesel engine, batteries that can recapture braking energy normally discharged as heat, and lower floors due to the elimination of bulky differentials. Higher capital and maintenance costs remain a problem, particularly the short service life of batteries and other electronic components.
- *Diesel*: The standard diesel engine has seen great improvements in both fuel efficiency and emissions.

New York continues to consider and analyze these alternatives. In terms of cost-benefit, the newer diesel engines may be the most cost-effective alternative over the next several years.

12.5 The Operating Companies

The corporate history of bus operators flows from the complicated, uncoordinated, and interlocking history of omnibus, horse-streetcar, and trolley operators. Like the rapid transit system, operations began as entirely private operations. As the bus business suffered the same financial difficulties as the subways, private operation gave way to public operation for most services. Along the path to public operation, several private companies continued their operations with direct subsidies from the city for a time.

The bus operators discussed in the sections that follow include all of the large operators with a substantial history. The list, however, is hardly exhaustive, as there have been numerous short-lived operators of only a few routes.

The boroughs have different histories, and thus the discussion is organized along borough-specific lines. Manhattan and the Bronx are treated as a unit, as there has been considerable overlap in the history of operators in the two boroughs.



(a) RTS bus manufactured by Nova Bus



(b) CNG-powered bus manufactured by New Flyer



(c) Articulated bus manufactured by New Flyer



(d) Orion VII electric-hybrid bus



(e) MCI express bus coach



(f) Prevost express bus coach

Fig. 12.21 Samples from the current fleet of NYC buses (2011)

12.5.1 Bus Operators in Manhattan and the Bronx

Fifth Avenue Coach Corporation: Fifth Avenue Coach was one of the earliest transit companies operating in New York. It began operations in October of 1885 as an omnibus operation along 5th Avenue. Since powerful residents consistently opposed the laying of rails along 5th Avenue, Fifth Avenue omnibuses had to compete with faster horse-streetcar lines on adjacent streets. To maintain operations, Fifth Avenue Coach charged a 10-cent fare, compared to the five cents charged by

other omnibus and horse-streetcar operators. By 1901, Fifth Avenue had acquired additional franchises, and operated seven routes, most of which were in upper Manhattan.

After a failed attempt to operate battery buses, Fifth Avenue Coach became the first major operator of motor buses, having converted all of their routes to the motor bus by 1907.

In 1925, Fifth Avenue Coach was reorganized, becoming a subsidiary to the Omnibus Corporation, which was headed by a group of Chicago investors, including John Hertz. In 1954, Fifth Avenue Coach merged with the New York City Omnibus Corporation (Manhattan). In 1956, it purchased Surface Transit Inc. (the Bronx). In 1956, the merged operation was renamed Fifth Avenue Coach Lines, with New York City Omnibus operating as a subsidiary to it. In 1962, after a costly strike and a fight for corporate control with financier Harry Weinberg, the bus operations were placed under city control. The Manhattan and Bronx Surface Transit Operating Authority (MABSTOA) was formed for the purpose of the acquisition. MABSTOA continues to operate as a subsidiary of MTA Regional Bus operations.

At the time of the city takeover, Fifth Avenue Coach Lines was the largest operator of buses in NYC, and was still running at a profit.

Fifth Avenue Coach was famous for its operation of a fleet of double-decker buses along 5th Avenue until 1953, when poor acceleration and slow loading characteristics led to their replacement by single-level buses. Many of its buses in the late 1940s and 1950s sported a signature multicolored exterior, featuring a cream-colored roof and a two-tone green lower body.



(a) World-famous Fifth Avenue Double-Decker, circa 1940



(b) Traditional tricolor scheme of Fifth Avenue Coach on a GM “old look” bus

Fig. 12.22 Historic buses of the Fifth Avenue Coach Corporation

New York City Omnibus Corporation: The New York City Omnibus Corporation was formed in 1923 as a holding company to acquire bus route franchises in New York. It took 14 years before the company began operations in 1936. Within a year, NYC Omnibus was the largest bus operator in NYC, with Fifth Avenue Coach in second place.

Despite being competing entities, NYC Omnibus and Fifth Avenue Coach shared owners, as both were subsidiaries of the Omnibus Corporation, and operations. Even

the exterior of the buses were similar. In 1954, management of the two operations decided to buy the properties when the parent holding company offered them for sale. Each company operated separately and retained separate names on their buses. While the companies were originally merged under the name “New York City Omnibus Corp.,” in 1956, the name was changed to “Fifth Avenue Coach Lines.” The merged company was absorbed into MABSTOA in 1962.



Fig. 12.23 This “old look” NYC Omnibus Corporation bus is almost indistinguishable from Fifth Avenue Coach buses, as markings and colors are virtually the same

Avenue B and East Broadway Transit Corporation: The Avenue B and East Broadway Transit Corporation operated only two routes on the lower east side of Manhattan, but these were among the most heavily-used routes in the city. Its roots are in the horse-railways of the Dry Dock, East Broadway and Battery Railroad. Electrified in 1905, the Avenue B line was operated with storage-battery trolleys from 1911 to 1932, when the line was abandoned.

Bus operations were initiated in 1932. The franchises for the two routes were purchased by M. Bernard Greenberg in 1934, and the Avenue B and East Broadway Transit Corporation was born. The corporation outlasted its Manhattan rivals. Private operation ceased on March 29, 1980, when the franchises and operations were absorbed into MABSTOA.

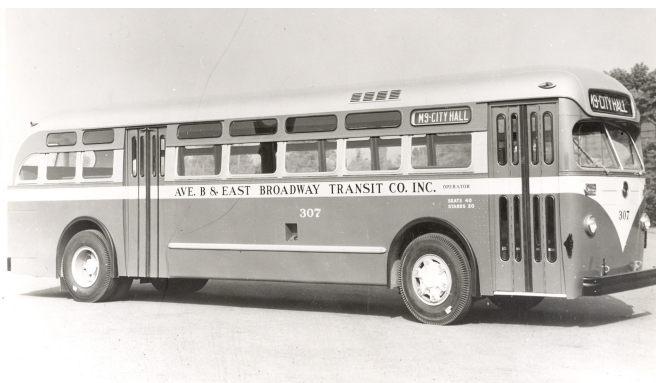


Fig. 12.24 Ave B & East Broadway Transit Corp, Mack Bus 1955

Surface Transportation System: The Surface Transportation System can be traced back to 1853 and the Third Avenue Railway which eventually operated all of the streetcar lines in the Bronx. By the early 1920s, competition from the IRT significantly eroded the financial position of the trolleys. To keep the Bronx public transportation system under one operator, Third Avenue Railway created a subsidiary to operate buses. Surface Transportation was incorporated in 1924 for this purpose. By 1935, Surface Transportation obtained additional franchises that created a virtual monopoly for bus service in the Bronx.

The company ran into financial difficulties in the early 1940s. By 1948, the company entered receivership. In 1956, Fifth Avenue Coach purchased Surface, setting up a subsidiary, Surface Transit Inc., to operate its bus services. Private operation ended with the creation of MABSTOA in 1962.



Fig. 12.25 Surface Transit bus in the traditional red and cream markings; Mack Bus, circa 1951

Manhattan and Bronx Surface Transit Operating Authority: MABSTOA was created in 1962 as a subsidiary to the NYCTA. It was created to take over operations from the financially defunct Fifth Avenue Coach Corp, which included the operations of the former NYC Omnibus Corp. and Surface Transit Inc.

The end of the Fifth Avenue Coach empire was quite dramatic. Harry Weinberg, a newly-elected board chairman precipitated a dispute with the city by threatening the elimination of all night and Sunday services if Fifth Avenue was not permitted to raise its fare from 15 to 20 cents. Within weeks, this led to labor disputes. On March 1, 1962, a strike was called, leaving most of Manhattan and all of the Bronx without bus service. The NYCTA, with the support of the mayor, pursued legal and legislative actions which resulted in a takeover of most of Fifth Avenue Coach's property and franchises by condemnation. By March 30th, NYCTA had reinstated service on all but two of Fifth Avenue's routes. These were restored to service on July 1, 1962.

MABSTOA was established as a separate subsidiary to allow Fifth Avenue's employees to avoid becoming part of the civil service system, and to allow the continuance of a separate pension fund for Fifth Avenue's employees.

By 1984, MABSTOA was no longer identified as a separate operating unit. Manhattan and Bronx bus services are currently operated under MTA Regional Bus Operations.

12.5.2 Bus Operators in Brooklyn

Brooklyn-Manhattan Transit Corporation: The Brooklyn-Manhattan Transit Corporation (BMT) was formed in 1923 when the former Brooklyn Rapid Transit Co (BRT) exited receivership after five years.

The BRT was initially established as a holding company with the objective of unifying elevateds, trolleys, and streetcars under a single operating agency. By 1902, BRT controlled all of the elevateds and all but two of the streetcar lines. Because of the restrictions requiring the five-cent fare and rapidly-rising costs associated with the new Dual Contracts subways, BRT was forced into receivership in 1918. While not the sole trigger, the Malbone Street wreck certainly hastened the trip to bankruptcy.

BMT created a subsidiary, the Brooklyn Bus Corporation, in 1924. Its objective was to obtain as many bus franchises as possible to maintain unified control over Brooklyn transit operations. Mayor John Hyland, at the tail end of his term, however, opposed giving BMT any substantial portion of the bus services in Brooklyn. His opposition to BMT and its predecessor (BRT) was deep-seeded, as he had been fired from his position as engineer after he nearly ran over a company executive on one of his runs.

The BMT operated for a year on temporary bus permits, and even offered free fares to demonstrate the need for their routes. In 1925, the NYC Board of Transportation decided to issue 23 permanent route franchises for the Borough of Brooklyn. BMT applied for the franchises.

In 1927, the Board granted all open bus franchises in all boroughs to the Equitable Coach Corporation. The action was specifically aimed at preventing street railways from obtaining control of bus operations. Equitable, however, refused to begin operations until they could be assured of profits from the proposed routes. The franchises were revoked by the Board of Transportation in 1929. After protracted negotiations and legal maneuvering, BMT was finally awarded permanent franchises to operate 20 bus routes in 1931.

New York City Board of Transportation: As part of the process of unification, the BMT was acquired by the Board of Transportation on June 1, 1940. BMT was literally forced to sell, as it was bound by the five-cent fare, written into the Dual Contracts, and the ability of the City to acquire any part of the rapid transit system under the “recapture” provision of those contracts. In acquiring the rapid transit system, the Board of Transportation also obtained all of the bus operations of the BMT.

The 1940 purchase of the BMT was the city's first entry into the direct operation of transit services. Takeovers of some Queens and Staten Island bus lines soon followed. The period of the mid- to late-1940s involved a frenzied effort to update bus fleets and garage/maintenance facilities. Direct public operation of public transportation, however, would only last 13 years, with the creation of the New York City Transit Authority in 1953.

New York City Transit Authority: In 1953, the legislature created the New York City Transit Authority to take over all transit operations and facilities in the city. The legislation also required that all trolley and bus lines be retained only until private buyers could be found. Since virtually no competitive bids were forthcoming, NYCTA retained virtually all of its bus operations. As time progressed, NYCTA would take over additional private bus operations, a trend unanticipated by the original legislation. Brooklyn bus operations are today part of MTA Regional Bus Operations.

12.5.3 Bus Operators in Queens

The development of Queens bus services differed somewhat from the other boroughs. Manhattan was dominated by a number of powerful private operators that sprung from the trolley routes. In the Bronx and Brooklyn, private and public interests worked to coordinate bus service under single operators.

Queens was originally served by many small operators. The city developed a plan to segregate the borough into four zones, with a single operator providing all services within each zone. In 1936, this "four-zone" plan was formally adopted. Triboro Coach was awarded all franchises in Zone A (Woodside and surrounding areas). Zone B (Flushing and surrounding areas) went to the North Shore Bus Company; Zone C (Ozone Park and surrounding areas) and Zone D (Jamaica and surrounding areas) was awarded to Bee Line. North Shore Bus Company took over Bee Line shortly thereafter, and was eventually the first private operator to be taken over by the NYCTA. After 1936, the general organization was preserved, with only a few exceptions, mostly in the Jamaica sector.

North Shore Bus Company: The North Shore Bus Company operated a number of bus routes in eastern Queens, many of which provided bus connections to rapid transit depots in Jamaica and Flushing.

The company was originally founded as the Rauchwerger Bus Company by Joseph Rauchwerger in 1923 to take over two streetcar lines operated by the New York and North Shore Traction Company. He founded North Shore Bus Company in 1926 when additional routes were added.

North Shore routes were generally long, and served areas with no other transit. As such, they were heavily utilized. During WWII, the company fell on hard

times, as both new buses and parts were difficult to acquire. Its fleet of prewar buses fell into disrepair. After court intervention and arbitration, the NYCTA took over its routes in 1947. Its routes are currently operated by MTA Regional Bus Operations.



(a) North Shore operates one of only two REO buses that run in NYC



(b) One of the few White buses used in NYC transit operation

Fig. 12.26 Unique North Shore buses operating on Main Street, Flushing routes

Triboro Coach Corporation: Triboro Coach was originally founded in 1919 by Salvatore Fornatora as the Woodside-Astoria Transportation Company. Triboro was officially born on April 10, 1931.

Triboro was one of the most successful private bus operators, and provided most of the bus service in northwestern Queens for decades. In 1936, it acquired nine additional franchises from the city. The “hub” of its operation was the 74th Street/Roosevelt Avenue junction of the Corona/Flushing Subway and the Queens IND line. It operated out of a unique three-lane, multibay terminal located under an adjacent building, which is still used.

After WWII, Triboro was taken over by another private operator, Green Bus Lines, but continued as a separate operation under the “Triboro” name. Always looking to expand, Triboro extended the Q33 route into LaGuardia Airport when it opened. It was also the first private operator to enter the express bus field. The first “express” route in 1956 was a replacement for the abandoned Long Island Railroad Rockaway Branch. The service continued until the LIRR service was restored as an extension of the A-train subway route.

In 1961, Triboro actually took over a route being operated by the NYCTA, the B72, which was renumbered the Q72, as its entire route was within Queens. In the 1970s and 1980s, Triboro obtained franchises for six express bus routes.

Triboro Coach was one of the last companies to operate privately. While it had been receiving direct subsidies from the city for over a decade, it operated until February 2, 2006, when its operations were taken over by MTA Regional Bus Operations.



Fig. 12.27 Triboro Coach “old look” GM Bus

Jamaica Buses Inc.: In 1931, a city plan to widen Jamaica Avenue led to the demise of Jamaica Central Railways, which had operated several trolley lines using Jamaica Avenue. Jamaica Buses was formed in 1933 to replace the trolley lines with motor buses.

Jamaica Buses was never a large operation. It operated four local bus lines emanating from the trolley lines it replaced, and one express bus service initiated in the early 1970s. After WWII, it was purchased by Green Bus Lines, but continued to operate independently under the “Jamaica Buses” name. On January 30, 2006, MTA Regional Bus Operations took over all of its operations.



Fig. 12.28 A Jamaica Bus vehicle operating on an express route from Jamaica to Midtown Manhattan

Green Bus Lines: Green Bus Lines was incorporated on April 3, 1925, providing local bus service in several boroughs. In 1933, it acquired several Manhattan routes, but in a swap of franchises, turned these over to NYC Omnibus Corp in 1936 in exchange for franchises in south-central Queens.

In the period immediately after WWII, Green Bus Lines acquired Triboro Coach Corporation, Jamaica Buses Inc. and the Command Bus Company (a small private operator in Brooklyn). In each case, they continued to operate each under its own brand.

Like Triboro Coach, Green Lines was aggressive in providing new services. It established an express bus service in the early 1950s to replace Long Island Railroad service to and from the Brooklyn Manor station on the abandoned Rockaway Beach Branch. In the 1970s, it introduced four additional express bus lines. Green Line services were taken over by MTA Regional Bus Operations on January 9, 2006.



Fig. 12.29 A Green Lines RTS bus operating on Queens Blvd.

Queens Transit/Steinway Transit: Both Queens Transit and Steinway Transit trace back to streetcar and trolley lines of the early 1900s. The Queens-Nassau Transit Corp. was formed to replace trolley lines of the New York and Queens Transit Corporation with buses in 1937.

The Steinway Railway Company was incorporated in 1892. It leased the Rikers Avenue and Sanford Point Railroad and acquired the Steinway and Hunters Point Railroad. The company was subsequently merged into the New York and Queens County Railroad. In 1932, a reorganization left the Steinway operations under the control of the New York and Queens Transit Corporation, that is, the same parent company that controlled Queens, Nassau Transit. In 1938, Steinway operations were bought out by the Queensboro Bridge Railway Company, which set up a subsidiary called the Steinway Omnibus Corporation. The Queensboro Bridge Railway Company was the last operating trolley in New York, controlling the single route that ran back and forth over the 59th Street Bridge until 1957.

In 1986, Queens Transit and Steinway Transit were merged into a single company, aptly named the Queens/Steinway Transit Corporation. In 1988, just two years later, the company was acquired by Lindon Bus Company. Before operations began, however, Lindon changed its name to the Queens Surface Corporation.

Unlike many of its competitors, Queens Transit began operations using a fleet of 41 ACF buses. After WWII, they were the only company to resist standardizing their fleet with GM or Mack Buses. They purchased 15 ACF-Brill buses in 1947, the only postwar ACF-Brills to be purchased in NYC. Steinway made a more conventional choice, and initially equipped themselves with Twin Coaches and Macks.



(a) A Queens-Nassau ACF-Brill bus, circa 1947



(b) A Queens-Nassau ACF H16 bus, circa 1945

Fig. 12.30 Unique buses used by Queens-Nassau Transit, predecessor to the Queens/Steinway system

The company operated local bus routes primarily in northwestern Queens. Like other Queens operators, it operated a number of express bus routes as well. When the company was taken over by MTA Regional Bus Operations on February 27, 2005, it was running 11 local bus routes, nine express routes to and from Manhattan, and one interborough local route over the Whitestone Bridge.

12.5.4 Bus Operators on Staten Island

Even today, Staten Island has the lowest population density of the New York boroughs. Until the opening of the Verrazano Bridge in 1964, the only connection between the other boroughs was via ferries, most of which operated out of the St. George area and connected to Manhattan.

Because of this, early omnibus and horse-streetcar operations, beginning in 1867, focused on bringing people from relatively remote areas and over long distances to the ferry docks in St. George. The current structure of bus routes in the borough still reflects this characteristic, although some other local services have been added, as have been a significant number of express buses operating over the bridge into Brooklyn and Manhattan.

Tompkins Bus Company: The company was originally formed in 1925 as the American Travel Corporation, with the intent of applying for bus franchises throughout the borough of Staten Island. The company was awarded 18 bus routes in 1927, and was permitted to charge a fare of 10 cents, double the citywide five-cent fare in the other boroughs. It is not clear whether the city allowed the 10-cent fare due to the much longer distances involved in Staten Island routes, or simply an oversight by the city. The company had great difficulty getting its routes certified for operation, with four routes taking until 1931 to begin operation. Tompkins operation was brief. By 1937, the company was in serious financial trouble, and its franchises were awarded to the Staten Island Coach Company.

Staten Island Coach Co./Isle Transportation Co.: Formed in 1902, the Richmond Light & Railroad Company operated streetcar services in Staten Island, although the actual operation was leased to the Midland Electric Railroad. When the streetcar system ceased operation in 1920, a plethora of private buses began operating over four routes. In 1927, the successor to Richmond Light & Railroad, Richmond Railways, set up the Staten Island Coach Company, and purchased 25 buses, expecting to be awarded franchises for 18 routes created by NYC. Unfortunately, the city awarded all 18 routes to Tompkins.

Richmond Railways continued to operate a number of trolley lines until 1933, when they reestablished the Staten Island Coach Company, and replaced the remaining trolley lines with motor buses. As noted previously, in 1937, they took over all operations of Tompkins. When this was done, the fare was dropped from ten to five cents.

Due to financial problems, Staten Island Coach did not renew their franchises in 1946. Isle Transportation took over the franchises and the operations, but proved to be unsuccessful. In 1947, the company was taken over by the Board of Transportation.

Until the opening of the Verrazano Bridge in 1964, most Staten Island bus routes made connections with the ferry. After the bridge opened, a significant number of express bus routes were initiated, as well as several local routes that used the bridge to connect with Brooklyn and Manhattan.

12.6 The Era of Public Operation

Virtually all of the bus services in New York City, and indeed throughout the nation, are now operated by local governments or government agencies. New York was indeed unique: large private bus operations continued in Queens until 2006, although direct public subsidies to these companies had been given for over a decade.

The economics of bus operation deteriorated steadily from the end of WWII. The costs of operation, including labor, equipment, maintenance, and fuel continued to rise, while fares were controlled by local agreements. The argument for keeping fares as low as possible has always been tied to affordability. Many bus systems had become the primary source of mobility for low-income residents. Faced with the practical inability to raise fares to meet expenses, private operations began to vanish.

With the deteriorating state of bus finances, it became almost impossible to keep up with increasing demands for service, and to keep an operable fleet of buses on the street.

Help for equipment costs began to flow from the federal government in 1961, when \$25 million was authorized for mass transit demonstration projects as part of the Housing Act. The demonstration projects provided support for planning and loans for capital improvements. Demonstration projects were funded to test such ideas as express buses, alternatives to fixed-route transit services, and other ideas.

In 1964, the Department of Transportation became a cabinet-level agency. In the same year, the Urban Mass Transportation Act was passed. In 1968, the Urban Transportation Administration, housed in HUD (Housing and Urban

Development) was moved into the DOT. The 1964 Act providing funding for capital investments in transit covering up to two-thirds of the total cost.

Despite this, federal funding for transit depended on periodic legislation that had to be renewed. Changes in administration and the general political climate made planning for such funding difficult, if not impossible.

In the mid-1970s, the federal government set up the Transbus program, providing funds for manufacturers to develop a more efficient bus design. Three companies agreed to participate in the program, that is, GM, AM General, and Rohr Flexible. Each company produced a prototype, but the program was deemed unsuccessful, and the prototypes were scrapped. Nevertheless, both GM and Flexible produced new bus designs by 1977. The GM Rapid Transit System (RTS) bus and the Flexible Advanced Design Bus (ADS) were clearly descendants of the program.

Beginning in 1983, federal transit financing was folded into legislation and programs for highway finance (which had been in continuous existence since 1916). The Federal-Aid Highway Act of 1983 introduced the “interstate trade in” provision. This allowed, at state and local option, funding for uncompleted portions of the Interstate System to be “traded” for equivalent amounts of funding for public transit systems. Boston and New York were the first major users of this provision.

In 1991, the largest overhaul of federal-aid highway programs occurred with the Intermodal Surface Transportation Efficiency Act (ISTEA). In terms of transit, it provided significantly increased flexibility for state and local governments to divide their federal funds among highway and transit projects. The successor act, the Transportation Equity Act for the 21st Century (TEA-21), continued and expanded this trend in 1998.

At this writing, all federal funding for mass transportation is contained in the most expensive transportation act in history, that is, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act – A Legacy for Users (SAFETY-LU), passed in 2005. While the initial act only extended through 2008, continuing resolutions have kept the program in place while a successor act is debated and written. As of late 2011, no successor act has been passed, although it is under congressional discussion as part of the broader efforts to attack generally-deteriorating infrastructure across the nation.

With the federal government providing substantial support for capital expenses involved in transit, including the purchase of buses, state and local operators could concentrate on operating issues. In New York, the city’s takeover of private bus properties spanned decades. The city’s first entry into direct operation of buses came in Brooklyn in 1940, with the “recapture” of the BMT. By 1947, it operated most of the buses in Staten Island. Manhattan and Bronx operations were acquired in 1962 and 1980. In Queens, subsidized private operation was maintained through 2005 and 2006.

12.7 Flirting with Double-Deckers

On September 15, 1976, the MTA conducted an experiment using new double-decker buses along 5th Avenue and Riverside Drive. The experiment was an

attempt to recapture the nostalgia of Fifth Avenue Coach's double-decker fleet that operated along 5th Avenue until April of 1953. They purchased a fleet of eight new buses from Leyland, a British manufacturer (Model AN682K) and assigned them to the M4 and M5 routes operated by MABSTOA. The buses were air-conditioned and had a seating capacity of 69 passengers, 44 of them on the upper deck. If the experiment was deemed successful, additional buses would have been added to the fleet.

In many ways, the buses were highly successful. They had higher capacity, the public was very positive towards them, and they were a draw for tourists. Several problems, however, doomed the experiment. The buses were too tall for the doors of the 132nd Street bus depot, so they had to be reassigned to the 146th Street depot, and traffic lights along 5th and Madison Avenues had to be raised. The last runs were made in 1981, and the buses were sold to Gray Line of San Francisco, where they were used for tourist services.

The experiment with double-decker buses was financed through the Urban Mass Transportation Administration (UMTA) as a demonstration project.

12.8 Modern Problems for an Old System

As has been discussed, the current bus system in New York emanates from franchises originally awarded to omnibus and horse-streetcar operators, and other franchises awarded in a haphazard and uncoordinated fashion.

Particularly in Queens and Staten Island, buses cover long routes that in most cases became necessary when the expansion of subways was halted in the 1940s. The long-planned connection from Staten Island to Brooklyn's 4th Avenue Subway never happened. In Queens, plans to extend most subways and/or elevateds to the city line were also shelved. In these cases, buses are trying to service passenger volumes and distances that would be far more efficiently accommodated by rail.

In Manhattan, buses struggle to handle traffic on the East Side, particularly the Lower East Side, where the departure of elevateds left this part of the island without rapid transit service. Express buses attempt to provide service to riders who cannot easily access a rail line to get into and out of Manhattan.

There are many smaller cities in the nation where buses provide the only form of public transportation to modest ridership densities. New York is not one of these. Buses work most efficiently when they cover shorter distances and serve less intense ridership. In New York, this means as feeders to the rail system.

In Queens, this is what buses do, except it feeds to an incomplete rail system that covers only about one-third of the borough. In Brooklyn, many buses provide efficient feeders to a rail system that covers a great deal of the borough. Other routes serve direct connections within the borough that are either too short or inconvenient to make via rail. In Staten Island, express buses make up for the lack of a rail connection, while local buses provide feeders to the Staten Island Ferry. In the Bronx, feeder service is more efficient, but there are still areas not well-served by rail.

The NYC bus system is amongst the largest in the world. Over 4400 buses ply the streets every day carrying a daily load of 2.4 *million* people per day. A mammoth operation on its own, it is dwarfed by the New York rail system. Its role in keeping the city and its residents mobile, however, continues to be indispensable.

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