

Chapter 3. Service Analysis and Future Service Concepts

This chapter reviews GCRTA's current service operations, discusses long-term service concepts, and highlights inter-county coordination between GCRTA and other transit service providers.

Service Performance

With about 670 buses, 1,500 passenger shelters, 8,400 bus stops, 100 routes and 1,600 route miles, GCRTA's bus system carries over 80 percent of all transit riders in Cuyahoga County. It also carries the most riders of any Northeast Ohio transit system. In 2004, 44.8 million of RTA's 55 million annual passenger boardings were on buses. With a fleet of over 100 rail cars, 34 miles of one-way track, and 52 stations, GCRTA's rail lines logged over 7.7 million passenger boardings that same year.

GCRTA's most productive routes serve densely populated areas, areas where automobile ownership levels are low, as well as places where suburban park-n-ride facilities are located. GCRTA's top 10 productive routes based on boardings per in-service vehicle hour include 2-E. 55th-E. 79th, 6-Euclid, 10-E. 105, 22-Lorain, 30-E. 140-Hayden, 51F Drake-Howe, 246 – Westlake Park & Ride, 251-Strongsville Park & Ride and 326-Detroit-Superior. In terms of passenger boardings the top 10 routes are the 1-St. Clair, 6, 10, 14-Kinsman, 15-Union, 20-Broadview, 22, 40-Lakeview-Lee, 25-Madison and 326. In 2003, these high ridership routes carried about 50% of total boardings, or 20,499,796 rides (see Fig.3.1).

From 2000 to 2002 GCRTA's performance trend by mode reflects the economic recession. Bus and rail passenger boardings declined and in response vehicle hours were reduced. However, in 2003 bus ridership began to recover and systemwide ridership increased in that year and the next. Rail passenger boardings increased in 2004 and the second consecutive year of total system ridership growth was posted.

Table 3.1 Passenger Boardings (Ridership): 1999-2004

Source: Service Planning, GCRTA

Mode	1999	2000	2001	2002	2003	2004
Bus	48,239,753	49,140,405	45,393,260	41,885,766	43,606,112	44,897,012
Rail	9,823,152	9,404,634	9,359,859	8,054,661	7,297,414	7,779,709
Circulators	1,240,842	1,931,010	2,603,427	2,361,261	2,216,441	2,349,452
TOTAL	59,303,747	60,476,049	57,356,546	52,301,688	53,119,967	55,026,173

Table 3.2 Vehicle Hours: 1999-2003

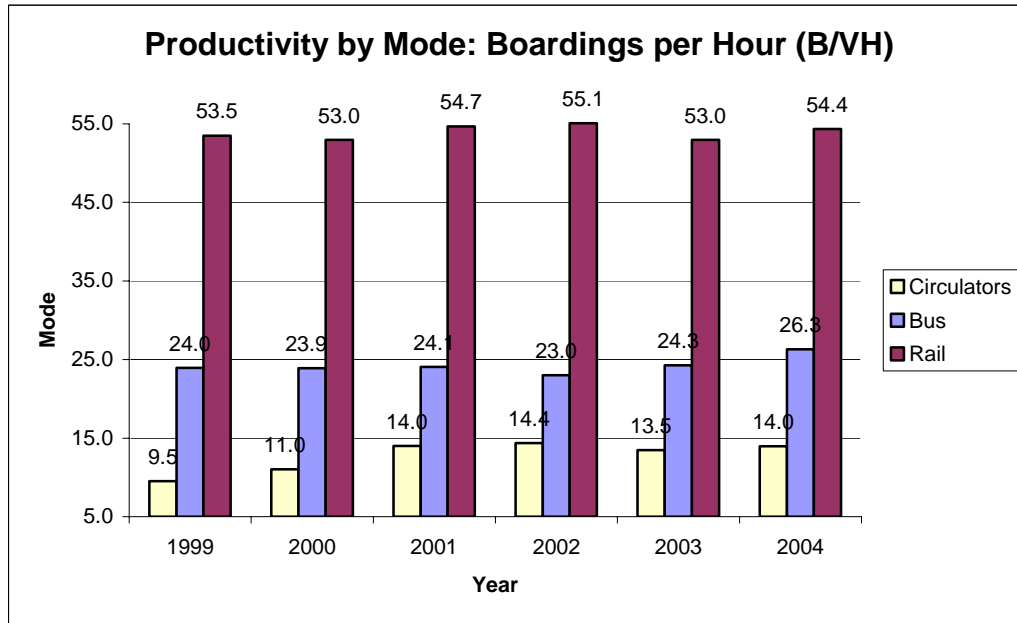
Source: Service Planning, GCRTA

Mode	1999	2000	2001	2002	2003	2004
Bus	2,050,396	2,066,665	1,827,252	1,756,909	1,745,915	1,706,292
Rail	183,660	177,517	171,759	146,263	137,807	143,126
Circulators	130,470	175,315	184,902	164,449	164,713	168,110
TOTAL	2,364,526	2,419,497	2,183,913	2,067,621	2,048,435	2,017,528

Systemwide, productivity or "boardings per vehicle hour" improved slightly because of improved bus service productivity; the vast number of passengers carried on bus outweighed the slight productivity declines with rail and community circulators. GCRTA continually examines and refines its services according to travel demands.

Circulators contribute about 5% of systemwide boardings. Due to the smaller ridership base, circulator ridership changes have minor impact on systemwide boarding counts. Since 1999, circulator passenger boardings increased 90% or 1.1 million riders, while vehicle hours increased 26% or 33,000 hours.

Figure 3.1



Source: Service Planning, GCRTA

Trip Purpose and Destination

Commuting to and from work is the most common trip purpose. Twenty years ago, NOACA reported that 10.6% of all work trips within Cuyahoga County were on public transportation (1980 Census data). This figure declined to about 8% in 1990 and 6% in 2000. Almost 75% of trips on the Red Line, 63% of trips on the Blue/Green line, and 62% of bus trips, are work trips (*1990 RTA Onboard Origin-Destination Passenger Survey*). School trips are the second most common trip taken on GCRTA: 10.5% of the bus trips, 8.7% of the Blue/Green Line trips and 8.1% of the Red Line trips are school trips.

Intra- and Inter-regional Trips

Based on NOACA projections, between 1990 and 2020 there will be nearly an 8% increase in work trips, from 1.88 million to 2.03 million, in the NOACA region. During this time period the average number of daily work trips to downtown Cleveland is projected to decline by 11%. Similarly, there will be a 10% decline in trips to other locations in Cuyahoga County.

However, overall trips will increase to outlying counties, continuing a longstanding trend where population and jobs increasingly locate outside the regional core. Although fewer work trips will be made in and around downtown Cleveland and Cuyahoga County in the future, GCRTA can seek to capture a larger percentage of work trips. This issue is discussed later in this chapter.

Table 3.3 Comparison of 1990 and 2020 Projected Home-Based Work Trips

To:	1990 Work Trips	2020 Work Trips	Difference	% Change
Downtown	134,225	119,291	(14,934)	-11.1%
Rest of Cuyahoga	828,409	747,586	(80,823)	-9.8%
Geauga	28,073	54,851	26,778	95.4%
Lake	115,652	175,014	59,362	51.3%
Lorain	121,612	125,478	3,866	3.2%
Medina	41,203	69,800	28,597	69.4%
Ashtabula	42,957	37,736	(5,221)	-12.2%
Portage	62,314	114,980	52,666	84.5%
Stark	197,471	220,861	23,390	11.8%
Summit	313,872	367,630	53,758	17.1%
Total	1,885,788	2,033,227	147,439	7.8%

Source: NOACA

Future Service Concepts

GCRTA Bus

Cuyahoga County's transit network is likely to experience several changes within the next five years. Vast regions of GCRTA's service area have low passenger trip-density, which translate to expensive service. GCRTA therefore will need to focus on cost-effectiveness throughout the service area.

Today, downtown Cleveland bus service is extensive. Many bus lines follow independent routing, stops, and transfers in the downtown area, which are not always convenient. A more effective downtown distribution system for transit riders is being developed as part of the Euclid Corridor Transportation Project. Future service concepts will be based on the following general goals and objectives.

- GCRTA expects to reconfigure services in the Central Business District (CBD), with the following objectives:
 - (1) Improve the CBD bus network for travelers planning an intra-CBD trip. Many riders are not aware of their service options for intra-CBD trips.
 - (2) Increase travel convenience for passengers making intra-CBD trips from the Tower City Station or Public Square.
 - (3) Reduce unnecessary bus miles and hours from the CBD partly by feeding more bus routes to the rail system.
 - (4) Incrementally, redesign CBD service to complement the Euclid Corridor Transportation Project, including the Downtown Transit Zone and the two downtown transit centers.
- Seek opportunities to improve service to outlying employment sites that are not well served by transit. Explore additional private sector partnerships. GCRTA's rail network, suburban van services and reverse-commute buses have begun to improve suburban job access, but more can be done.

- Move closer to the transit hub service concept, by anchoring more service at major activity centers. Expand GCRTA's network of transit centers/park & ride lots with new facilities. Possible locations to serve are the Parma/Parma Heights, Mayfield/Highland Heights and Brecksville/Broadview Heights areas. The I-77/I-80 interchange, Independence/Rockside Road and Oakwood Village/I-271 are other areas under consideration. Based on demand, routes serving these hubs could not only link urban areas with suburban job centers, but could possibly link suburban areas with one another.

The opportunity for suburb-to-suburb commute is possible only if private sector suburban employers purchase large blocks of transit passes. This is an ideal scenario for large groups of employees that use the same bus. Marketing and selling GCRTA's Commuter Advantage and U-Pass Programs is a good way to build markets for this type of service.

- Continue to develop alternative service concepts such as reserved-ride van service to outlying employment sites, flexible radio-dispatched bus service for the general public in low-density areas, and taxicab service to complement fixed-route and ADA Paratransit services.

GCRTA proposes to test flex-routes anchored at a transit center, shopping mall or other activity center to serve these locations of low density. In this scenario, a bus will depart every hour from the anchor point, returning no longer than 55 minutes later. Trip routing will depend on in-person requests from customers boarding at the anchor, and telephone requests from customers in the route's designated service area. Service areas may be as large as 15-20 square miles. In-vehicle equipment will create and display the optimal vehicle routing to service these requests. The routing will be re-optimized each time a request is added, canceled or altered.

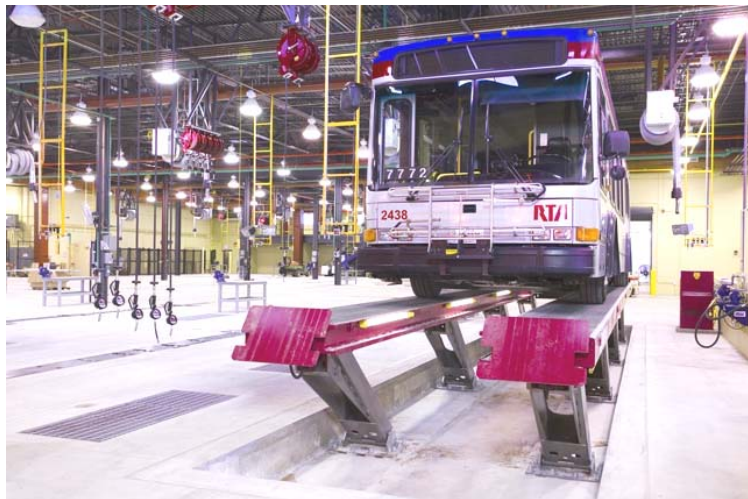


RTA's proposed Euclid Corridor Silver Line Bus Rapid Transit Vehicle.

Bus Garage Consolidation

In the past, GCRTA's network required more than 800 forty-foot buses to meet its service commitments, and four garages were required to house and maintain all vehicles. Currently, GCRTA only requires about 600 buses hence, three large garages (Triskett, Hayden and Harvard) with approximately 200 buses each will be adequate for daily bus operations.

GCRTA's Paratransit facility on Euclid Avenue is operating at its capacity. The demand for Paratransit services continues to increase and a larger facility will be required to meet this growth. Both the size and location of Brooklyn Garage make it a good facility for the future Paratransit operations. GCRTA intends to re-configure Brooklyn Garage to accommodate Paratransit, Revenue, non-revenue vehicle maintenance, and the shelter cleaning operations.



The RTA Triskett District bus maintenance facility renovation will be completed in 2005, enabling RTA to consolidate four main garages into three and significantly reduce operating and maintenance expenses.

Intercounty Transit Coordination

GCRTA and five other transit providers across Northeast Ohio, including one private operator, installed bicycle racks on buses beginning in mid-2001. Participants include Brunswick Transit Alternative in Medina County, Laketrans in Lake County, Lorain County Transit, Medina County Transit, and University Circle Inc. This has provided unprecedented intercounty bicycle access with public transportation.



From the successful 2001 Rack-n-Roll bus bicycle rack pilot project involving a joint purchase by NOACA region transit systems using clean air funding, all new RTA buses have factory-equipped bicycle racks and its fixed-route fleet is 100% bike accessible.

Future initiatives to improve coordination among adjacent county transit agencies will expand as technologies advance. Regional real-time bus arrival/departure information and regionally accepted pre-paid fare media are just a few of the concepts that could be explored in the future.

In the short-term, to the extent possible, schedules are being coordinated to minimize waiting time at intercounty transfer locations at the fringes of GCRTA's service area. Typically, these are locations where buses turn around, allowing convenient passenger connections to be made with adjoining county transit system buses.

Major Travel Corridors and High Occupancy Vehicle Lanes

Like most major metro areas, Greater Cleveland has developed around its major travel corridors. Developed areas first matured next to waterways and trails used by early settlers, then by state highways and railroads, and finally, by the interstate highways. GCRTA's buses use major arterial roads, highways and interstates to carry more than 80% of its passengers. The remainder are carried on rapid transit trains in separate and semi-separate rights-of-way.

If transit vehicles can avoid traffic conflicts, travel by transit can be made faster and more desirable. This concept has been integrated with the Euclid Corridor Transportation Project, which, for the first time, will give buses their own separate right-of-way on a major arterial street in Cleveland.

There are numerous other ways to give priority to transit buses on streets in order to speed their flow. Pittsburgh's transit buses use former railroad rights-of-way that have been converted to bus-only roads, called "busways." No commercial vehicles or private automobiles share these roadways, and passenger capacity is comparable to GCRTA's Blue and Green lines. In places like Houston, Seattle, Atlanta and Northern Virginia, buses operate in freeway lanes dedicated during rush hours only to multi-occupant vehicles, including vanpools and carpools. These are called High Occupancy Vehicle lanes, or HOV lanes. In some places, HOV lanes are being opened up to single-occupant vehicles for a fee, and are called HOT (High Occupancy Toll) lanes. GCRTA and ODOT have explored adding HOV lanes to area freeways in the past, and the Cleveland Innerbelt Study will update the findings of the earlier HOV studies.

GCRTA Rail

System Upgrade

Efforts to improve GCRTA's rail system are focused on upgrading and maintaining stations to modern standards, especially towards meeting federal Americans with Disabilities Act (ADA) standards. Running time and service reliability improvements are being achieved through track, power, and train control improvements. A railcar overhaul program is well underway to improve vehicle reliability, comfort and safety.

Far-Side Blue/Green Line Stations

Operationally, several key future improvements are being considered. One is preferential traffic signalization for transit. Another is a project to install far-side passenger stops to replace near-side stops at intersections along Shaker and Van Aken Boulevards. Far-side stops would be functionally superior to near-side stops in terms of reducing left-turn collisions. For example, the Lee Road/Shaker Boulevard stop was moved from near- to far-side with the Blue Green Line reconstruction in the late 1970s/early 1980s. Switching to far-side stops increases speed of operation and facilitates traffic signal preference for transit.

Any new far-side stop built would be ADA-compliant, and costs could be contained if life-cycle cost comparisons were made among various technologies for installing mini-high platforms, including prefabricated options. The far-side stops would likely be long enough for 2-car trains, but could be designed for expansion to a 3-car platform. There is no timeframe for the far-side transit stops at the present time.

Universal Rail Vehicles

Several studies have explored the idea of a new vehicle that is capable of operating on both high and low platforms. By eliminating the need for many transfers, this would increase travel convenience tremendously between the Red Line and Blue and Green Lines. Plans for a combined rail fleet would need to include rail station and shop facility modifications. Further, diesel self-propelled rail passenger vehicles capable of safely operating over the general railroad network have been contemplated.

As railroad tracks owned by Norfolk Southern and CSX become surplus, self-propelled diesel rail vehicles might prove to be a lower-cost option for extending the reach of the GCRTA rail system. Possibly, it may be more cost-effective to create dedicated Bus Rapid Transit rights-of-way where freight railroad service has been discontinued. These concepts would need further study before including them in this transit plan.



RTA's Light Rail Vehicle Overhaul Project is extending the life of this 1980 fleet, which is now beyond its mid-life.

Commuter and Intercity Rail

Commuter rail is a passenger rail service serving multi-county regions via existing railroad network. Typically, average U.S. commuter rail trip lengths are 20 miles long, compared to 3-5 miles length for bus and rapid transit. GCRTA participated in commuter and intercity rail studies, contributing both technical and financial support. These studies have clearly illustrated that the multi-jurisdictional planning and coordination associated with commuter and intercity rail's governance, funding, and private-sector railroad issues are well outside GCRTA's current priorities.

In the long-term, GCRTA envisions that with more effective land use planning that is supportive of transit-oriented development, commuter rail and intercity rail may become a key part of rebalancing the region's transportation network. Ultimately, commuter rail might offer a viable travel alternative for longer distance inter-county trips, especially for the transit dependent, senior citizens, and others who cannot drive or choose not to.

New Customer Services and Amenities

Transit Preference at Traffic Signals

Signal preference is a key element of the Euclid Corridor Transportation Project's Bus Rapid Transit service. Traffic signals across the NOACA region are being upgraded using Federal clean air funds. With help from municipalities, NOACA and ODOT, this concept can be expanded further to improve the safety and efficiency of bus operations in major travel corridors. In addition, GCRTA is working with the City of Shaker Heights to upgrade traffic signals that will give the Blue and Green Line trains priority at grade crossings. This would reduce auto and train collisions. Also it would better communicate to motorists when trains are approaching. Signal indications will also restrict automobile turns across the tracks when trains are present. This will provide better collision protection while also reducing delays at passenger stops, allowing faster end-to-end travel times.

Passenger Waiting Environments and Service Information Projects

GCRTA continues upgrading major passenger facilities, such as rapid transit stations and has recently built new transit centers at key bus transfer points such as Maple Heights and Fairview Park. During 2003 and 2004 GCRTA carried out a study proposed by its Citizens Advisory Board to enhance waiting environments. The study determined that people would ride transit more often if travel times were competitive with the automobile and they could save money. It also found that customers wanted more amenities at stops including lighting, basic schedule information and additional shelters. In addition, advertising revenues were found to be an acceptable way to pay for these amenities. During 2005 GCRTA will be developing the partnerships needed to begin implementing the transit waiting environments study recommendations.

GCRTA is also making major advances in upgrading its trip planning and service arrival information. Twenty electronic message boards have been installed on the rail system. These provide next-train scheduled arrival times and news updates. Fifty electronic real-time bus arrival signs, tied to the Authority's satellite-based radio system, are being installed in key transfer points. And sometime soon a modern trip planning package will be available on GCRTA's website, supplemented by an interactive voice response telephone system. GCRTA's Paratransit scheduling system has also been upgraded to enable vastly more efficient trip planning, resulting in far fewer customer trip denials.



The Lee Road & Chagrin Boulevard streetscape project in Shaker Heights included making a number of bus stop improvements throughout the entire intersection. Modern passenger shelters will be added next.

Conclusions

GCRTA will continue to concentrate on cost-effective improvements to all services. It will also make prudent investments in upgraded and new facilities. Future, long-term investments will be targeted to improve operations and service to transit riders. New services and amenities will be considered based on demand, benefits, and funding availability. Key strategies for achieving RTA's future goals include:

1. Improving basic bus and rail service;
2. Implementing Bus Rapid Transit and related corridor operational and safety improvements in Euclid Corridor and elsewhere (e.g. Advanced Pedestrian Signals);
3. Enhancing service through new technologies and vehicles, e.g. transit vehicle preference at traffic signals and global positioning satellite vehicle tracking;
4. Improving customer information and the waiting environment at transit stops.



In 2004 RTA purchased a new heavy-duty bus for its Community Circulator routes. The bus is pictured in front of RTA's headquarters on West 6th Street.